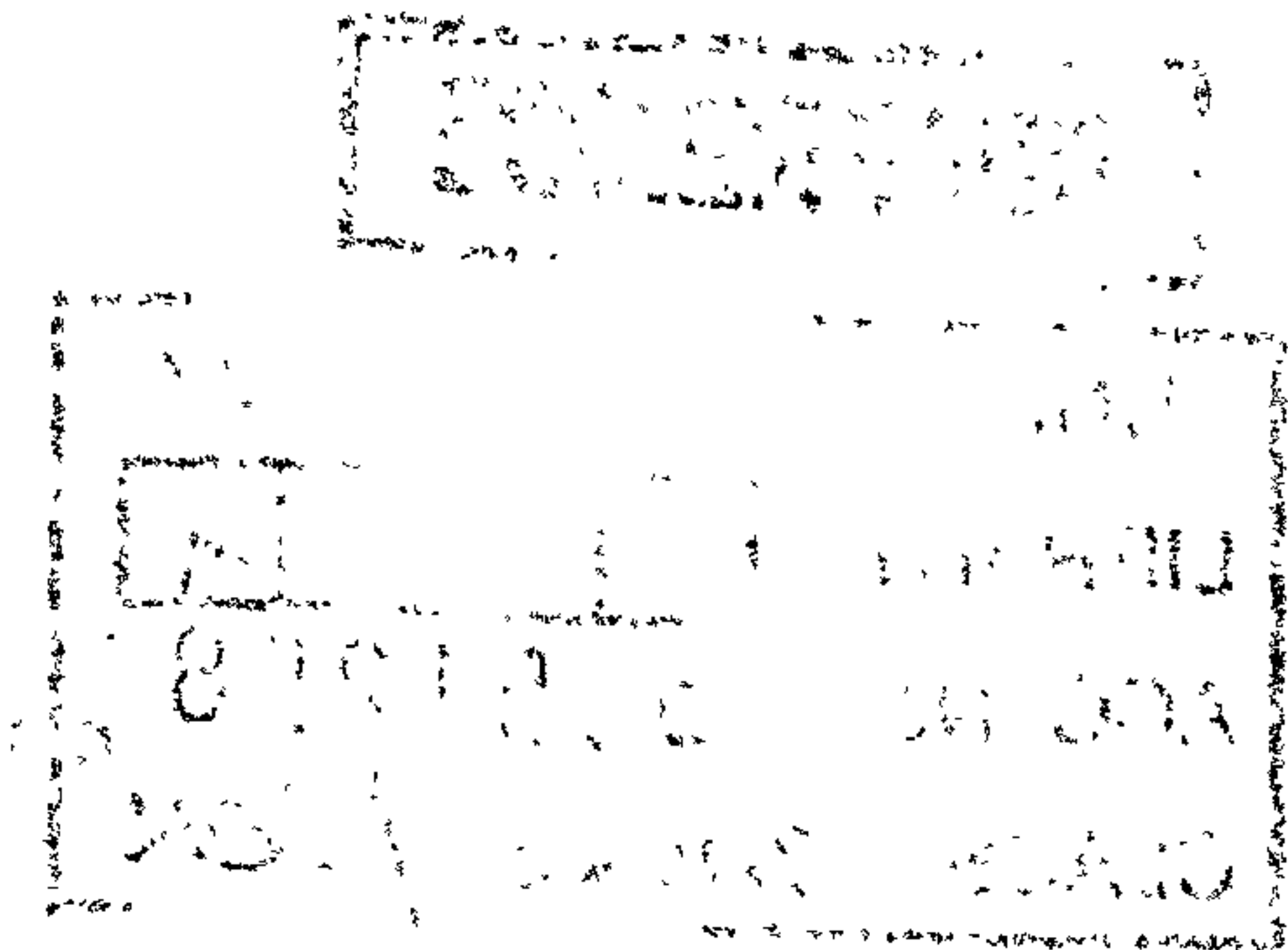


**THE ROLE OF COMMUNITY PHARMACISTS
AS ADVISORS ON PRESCRIPTION MEDICATION**

BY

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**THESIS SUBMITTED TO THE UNIVERSITY OF DERBY FOR THE DEGREE
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**THE ROLE OF COMMUNITY PHARMACISTS
AS ADVISORS ON PRESCRIPTION MEDICATION**

	Page
Contents	1
Acknowledgements	4
Legend	5
Definitions	6
List of tables	7
List of figures	10
List of letters	11
List of forms	11
Abstract	12
CHAPTER 1 INTRODUCTION	
1.1 Summary	13
1.2 Historical development of community pharmacy	
1.2.1 The origins of community pharmacy	15
1.2.2 The Pharmaceutical Society of Great Britain	21
1.3 The development of legal restrictions governing access to medicines	23
1.4 Pharmacy demographics	24
1.5 Remuneration	
1.5.1 The National Health Service	28
1.5.2 Community pharmacies	30
1.6 The prescription	
1.6.1 Prescription dispensing	33
1.6.2 The epidemiology of prescription dispensing	36
1.7 Conclusion	39
CHAPTER 2 DESCRIPTION OF THE PROBLEM	
2.1 Summary	40
2.2 Community pharmacists' proposed role as advisors on medicines	42
2.3 A perceived need for prescription medication advice	
2.3.1 A legitimate role for community pharmacists?	44
2.3.2 Preferred sources	45
2.3.3 Patients want more information	46
2.4 Advice on prescription medication	
2.4.1 What the patient wants to know	50
2.4.2 Activities of advisors	53
2.5 Patients' comprehension, memory and compliance	
2.5.1 Patients' comprehension of their treatment advice	59
2.5.2 Patients' memory of their treatment advice	65
2.5.3 Patients' compliance with their treatment advice	67
2.6 Conclusion	78

CHAPTER 3 THE RELATIONSHIP OF POLICY, PRACTICE AND THE ADVISORY ROLE

3.1 Summary	79
3.2 Sanctions by The Society and legal rulings	80
3.3 Independent and Governmental sanctions for an advisory role	85
3.4 The issues	92
3.5 Conclusion	97

CHAPTER 4 AIMS OBJECTIVES METHOD

4.1 Foreward	98
4.2 Quantitative or qualitative research methods	99
4.3 Aims, objectives and hypotheses of research conducted	100
4.4 Determination of method	104
4.5 An overview of research conducted	104
4.6 Statistical parameters	113
4.7 Conclusions	115

CHAPTER 5 DISCUSSION OF OBSERVED ACTIVITY

5.1 Summary	116
5.2 The extent of prescription medication advice	118
5.3 The prescription medication advisory activities of community pharmacists	127
5.4 Conclusion	140

CHAPTER 6 EXPLANATIONS FOR OBSERVED ACTIVITY

6.1 Summary	141
6.2 Constraints on advisory activity	142
6.3 Explaining the advisory practice of community pharmacists	153
6.4 Developing the role using the British National Formulary	155
6.5 Conclusion	156

CHAPTER 7 RECOMMENDATIONS

157

APPENDIX 1 DETAILS OF METHOD

A1.1 Schedule-structured interview method	159
A1.2 Observational study	
A1.2.1 Sampling	168
A1.2.2 Equipment and piloting	170
A1.2.3 Protocol	173
A1.2.4 Exclusions	180
A1.2.5 Sample	183

APPENDIX 2 SUPPORTING STUDIES	
A2.1 Foreward	186
A2.2 Attitudes of community pharmacists	
A2.2.1 Aims, objectives, method	187
A2.2.2 Pilot	189
A2.2.3 Results	196
A2.2.4 Summary	208
A2.3 Customers' selection of visual display	
A2.3.1 Aims, objectives, method	210
A2.3.2 Results	215
A2.3.3 Summary	220
A2.4 Conclusion	221
APPENDIX A3 RESULTS OF OBSERVATIONAL STUDY	
A3.1 Prescription medication advice	
A3.1.1 Presentation and collection of prescriptions	222
A3.1.2 Prescription orientated individuals	227
A3.1.3 Quantitative	
A3.1.3.1 Advice	249
A3.1.3.2 Specific problems	262
A3.1.3.3 What to do with it	264
A3.1.4 Qualitative	
A3.1.4.1 Side effects	268
A3.1.4.2 What is prescribed	272
A3.1.5 Effect of the poster	274
A3.2 Labelling	277
A3.3 Time based analyses	280
3.4 Supply	289
APPENDIX 4 SUBMISSIONS AND PAPERS	
A4.1 Submission on the future role of community pharmaceutical services	293
A4.2 Patients' advisory requirements for prescribed medication	302
A4.3 Pharmacists' advisory requirements for prescribed medication	303
APPENDIX 5 REFERENCES	306

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Legend

Included in text and verbatim transcripts

A	=	Assistant (in a community pharmacy)
BNF	=	British National Formulary
BP	=	British Pharmacopoeia
BPC	=	British Pharmaceutical Codex
C	=	Customer
CCA	=	Company Chemists Association
CN	=	Case number
CPs	=	Community pharmacists
CPTP	=	Co-operative Pharmacists Technical Panel
DofH	=	Department of Health
DT	=	Dispensing Technician (in a community pharmacy)
FHSA	=	Family Health Service Authority
FPC	=	Family Practitioner Committee
f	=	Frequency
GB	=	Great Britain
GP	=	General (medical) Practitioner
HBM	=	Health-Belief Model
NF	=	National Formulary
NPA	=	National Pharmaceutical Association
OTC	=	Over-the-Counter
P	=	Community pharmacist
POI	=	Prescription Orientated Individual
POM	=	Prescription Only Medicine
PMA	=	Prescription Medication Advice
PPA	=	Prescription Pricing Authority
PSGB	=	Pharmaceutical Society of Great Britain or The Society
PSNC	=	Pharmaceutical Services Negotiating Committee
PSNI	=	Pharmaceutical Society of Northern Ireland
p	=	Patient
℞	=	Prescription
Res	=	Researcher/author
RPSGB	=	Royal Pharmaceutical Society of Great Britain or The Society
RDC	=	Rural Dispensing Committee
SLB	=	Street-Level Bureaucracy
UK	=	United Kingdom
WHO	=	World Health Organisation
...	=	Slight pause, interjection, text between quotes or quote from part of a sentence
#	=	Number

Definitions

Term	Definition
advice	Prescription medication advice (PMA).
advice	General advice including PMA and OTC.
customers	Individuals who presents a prescription at the pharmacy for dispensing or collect a dispensed item.
general public	All individuals in society.
locum	A short period of time when a CP, not usually, associated with a pharmacy is temporarily in charge.
Medicine	The profession (occupation) of medicine
patients	Individuals who are taking dispensed medication, using medical and pharmacy services, or are described as such in a cited reference.
pharmacists	Community pharmacists plus those working in any other branch of Pharmacy.
Pharmacy	The profession (occupation) of pharmacy
pharmacies	Community pharmacies
prescription event	An occasion based on any single prescribed medication.
prescription medication advice	Advice concerning prescription medication which may be assigned to specific categories and which is not solely concerned with supply (PMA)
prescription orientated individuals	Customers who submit at least one prescription form to be dispensed or collect one or more dispensed items for themselves or on behalf of the patient <u>plus</u> those individuals who proactively request information or are advised by community pharmacist in addition to dispensing activity (POI).
proactive pharmacists	Those pharmacists who initiate all the topics of discussion for more than 50% of subjects given prescription medication advice.
reactive pharmacists	Those pharmacists who are not proactive.

List of tables

Number	Title of table	Page
1	Patients' perceived and reported requests for prescription medication	48
2	Importance of advice by category of information	50
3	Prescription medication advice provided by general medical practitioners (A) and community pharmacists (B) to patients	56
4	Patients' comprehension of their medication treatment (A), labelling instructions (B)	62
5	Patients' recall of advice given by general medical practitioners	66
6	The magnitude of non-compliance with prescribed medication advice	68
7	Correlates of compliance	71
8	Percentage of elderly patients deemed to be non-compliant	75
9	Effect of patient counselling by pharmacists on compliance	76
10	Issues concerning the prescription medication advisory role of the community pharmacist	93
11	Details of the 27 pharmacies and community pharmacists in the observational study	184
12	Analysis of details of the 20 pharmacies and community pharmacists in the observational study	185
13	Pharmacist's attitudes to counselling	189
14	Comparison of piloting samples	192
15	Responses to pilot attitudinal questions	193
16	Independence of responding to the 1987 attitudinal study and selected variables	199
17	Independence of type of responder and selected variables	199
18	Frequency of response to statements for the 1987 and 1988 attitudinal studies	200
19	Associations between absolute response to 1987 attitudinal study statements and selected variables	201
20	Relationship of absolute response for 1987 and 1988 attitudinal studies to age and experience	202
21	Independence of 1987 and 1988 attitudinal study responders and selected variables	203
22	Change in attitude with time	204
23	Comparison of absolute responses for 1987 and 1988 attitudinal study statements	205
24	Associations between absolute response to 1988 attitudinal study statements and selected variables	206
25	Ordinal associations between 1987 and 1988 attitudinal studies and selected variables	207
26	Sequence of poster display vs time of session	217

27	Independence of choosing a poster or not and specific variables	217
28	Social class of current and previous occupations	217
29	Independence of specific poster selection and current or previous occupation	218
30	Respondents' choice of poster	218
31	Independence of poster selection or independently consulting the pharmacist and specific variables	218
32	Independence of selection of poster and display order	219
33	Independence of choice of poster and specific variables	219
34	Frequency of advisory activity compared to the degree of devolved responsibility for customers presenting their prescriptions to pharmacy staff	224
35	Frequency of advisory activity compared to the degree of devolved responsibility for customers collecting their prescriptions from pharmacy staff	225
36	Analysis of patterns of prescription presentation and collection	226
37	Advisory activity of community pharmacists by epidemiological characteristics of those advised	236
38	Analysis of the advisory activity of community pharmacists and epidemiological characteristics of those advised	238
39	Algorithm for ownership of prescription medication	243
40	Advisory activity and type of community pharmacist	244
41	Independence of socio-economic status of patient and community pharmacy	245
42	Relationship between socio-economic status of patient and advice	246
43	Independence of category of advice and socio-economic status of patient	247
44	Independence of category of advice requested and socio-economic status of patient	247
45	Independence of socio-economic status of patient receiving advice and display of poster	248
46	Independence of socio-economic status of patient for customer initiated advice and display of poster	248
47	Frequency of preparation events including advice and customer initiated advice	256
48	Associations of preparation events, initiation of advice, display of poster, and type with therapeutic class	257
49	Associations of advice, initiation of advice by therapeutic class	259
50	Associations of category of advice, initiation of advice and display of poster	260
51	Associations of category of advice and type of community pharmacist	260
52	Associations of category of advice sought and type of community pharmacist	261

53	Algorithm for allocation of specific problems as a category of advice	262
54	Roles for community pharmacists identified from verbal discussion categorised under the label 'What to do with it'	264
55	Independence of advice and type of community pharmacist	267
56	Four common themes for discussions concerning the side effects of medicines between community pharmacists and prescription orientated individuals	270
57	Unique themes in discussions between community pharmacists and customers concerning side effects of medicines	272
58	Roles identified for discussions between community pharmacists and prescription orientated individuals concerning the category of advice 'what is prescribed'	276
59	Independence of customer initiated requests for advice on display of the poster	276
60	Independence of scanning the poster or customer initiated requests for advice and age	276
61	Community pharmacists' additional labelling activity	279
62	Independence of community pharmacists' labelling policy and selected variables	279
63	Observational study data collection	284
64	Dependence of advice on observational study period	286
65	The number in specific time bands of prescription orientated individuals requesting services from community pharmacists	287
66	Relationship of time of possible discussion with observed time of advice and customer initiated advice	288
67	Independence of customer initiated advice and time in bands	288
68	Algorithm for allocation of supply as a category of advice	290
69	Dependence of advice on supply	292

List of figures

Number	Title of figure	Page
1	The historical development of community pharmacy	20
2	The number of pharmacists [A] and pharmacies [B] in the United Kingdom, population per pharmacy [C] by time	24
3	Number of registered resident pharmacists in Great Britain employed in community or hospital service by time	25
4	The number of full-time registered resident pharmacists in community practice [A] and pharmacies [B] in Great Britain, ratio [C] by time	25
5	The percentage female [A] and part-time [B] pharmacists in community practice in Great Britain by time	26
6	The percentage of community pharmacists in age bands by time	27
7	Remuneration from dispensing in the United Kingdom compared to health care expenditure by time	32
8	Number of unique formulae for local compounding and industrial manufacture by time	33
9	The number of prescription items dispensed in the United Kingdom from 1949 to 1993	36
10	Prescription items dispensed in England in age categories by time	38
11	Preparations dispensed in Great Britain by therapeutic class, 1983 to 1989	38
12	Health Belief Model	70
13	Hypothesised medication compliance model	72
14	British National Formulary written and verbal counselling recommendations	82
15	Hypothesised advisory action model for community pharmacists	95
16	Frequency of prescription orientated individuals, prescription medication advice and customer initiated advice by time	118
17	Percentage of preparation events which included advice and advice which was customer initiated by pharmacy	120
18	Percentage of patients in bands of socio-economic status receiving items by dispensing community pharmacists in order of advisory activity	125
19	Numbers of patients receiving and requesting advice in socio-economic bands	126
20	Frequency of prescription medication advice, customer initiated advice and preparation events by therapeutic class	127
21	Prescription events compared to prescription medication advice in categories by therapeutic class	128
22	Inter-professional relationships concerning prescription medication noted in qualitative analysis of verbal interactions involving the community pharmacist and the patient or general medical practitioner	146

23	Flow diagram for baseline advisory activity schedule-structured interview questions	164
24	Flow diagram for 'cued' advisory activity schedule-structured interview questions	167
25	CRX receiver	170
26	CTXP/1 transmitter	170
27	Poster A	211
28	Poster B	212
29	Poster C	213
30	Poster D	214

List of letters

Number	Description of letter	Page
1	Letter requesting support for schedule-structured interview method	161
2	Letter introducing the author's piloting of the observational method	172
3	Letter of introduction for the observational study	174
4	Letter confirming non-participation of Boots the Chemist Ltd outlets in the observational study	181

List of forms

Number	Description of form	Page
1	Schedule-structured interview form for baseline advisory activity	162
2	Schedule-structured interview form for 'cued' advisory activity	165
3	Form used for 1987 and 1988 attitudinal studies	194
4	Form for collecting data on respondents' preferences between visual displays	216

Abstract

This thesis describes the historical and functional evolution of British community pharmacists showing the succession of a compounding role by a supply function with incumbent bureaucracy. Development of a role as advisors on prescription medication is reviewed and the potential benefit explored by reviewing patients' lack of understanding about their medication following advice from general medical practitioners. Although ethical directives and specific guidance could be identified for the application and use of additional labels, little was found for provision of verbal advice.

No comprehensive research was found to describe the prescription medication advisory role of community pharmacists. The present thesis primarily addresses this lack of knowledge. For a total of 65½ days between June 1988 and February 1989 the discussions of twenty of twenty four randomly selected community pharmacists which involved prescription medication were tape recorded, transcribed and the circumstances observed. For half this time a poster advertising community pharmacists' advisory service was displayed.

Verbal advice was provided by the community pharmacist to 473 of 3519 individuals involved with prescription medication. Two types of community pharmacists were identified, proactive and reactive. Irrespective of type, a constant level of requests for advice was noted. Overall, display of the poster was not associated with any significant effect on the quantity of advice; however, it was associated with changes in the nature of advice with greater emphasis on 'Specific problem' and 'Side effects' over 'What is prescribed' and 'What to do with it'. Although reiteration of the prescribers' directions and verbalising additional label warnings accounted for the majority of verbal advice, qualitative analysis revealed an element of independent judgement. The sociological literature on the professions provides an understanding for the observations. It is argued that guidance for verbal advice provided in the British National Formulary may facilitate community pharmacists' prescription medication advisory role.

CHAPTER 1 INTRODUCTION

1.1 Summary

This chapter considers the general question, 'Who are community pharmacists?' Specifically, what are their origins, who governs them or directs their activity and how their position in society is maintained. Also how many are there, how they are paid, and finally, what do they do? This short historical and functional account of community pharmacists (CPs) provides a general understanding which prepares the reader for an account of potential areas of concern regarding their activity.

Briefly, the origins of CPs and general medical practitioners (GPs) are inexorably intertwined. Both have a common ancestry in the apothecary of the 18th century. It was the orientation of apothecaries towards either diagnosis or drugs which resulted in a division of practice. Those who favoured diagnosis were the predecessors of today's GPs while medicine-orientated apothecaries became chemists or druggists and ultimately CPs. Some medicine-orientated apothecaries further diversified into manufacturing and wholesaling and developed the basis of today's pharmaceutical industry. Central to this discussion is the knowledge of compounding medications and the struggle between both orientations of practitioners over who would control the use of such knowledge. It was the additional drug knowledge which led to a widening of the medicine-orientated apothecaries' role, when it was noted that the provision of advice on medicines was in the public interest. In response to the recurrent threat of medical domination individuals with a medicine-orientation banded together to form the Pharmaceutical Society of Great Britain (The Society). Educational standards were imposed by the Society. In recognition, Government gave it right to manage registration which then became a prerequisite for practice. Although precluded from an industrial council role, The Society represented pharmacy in the development of legal restrictions governing the general public's access to medicines. The legal right to dispense became the powerbase of today's pharmacist, and they assumed the role of custodians of drugs in contemporary society.

There has been a steady increase since the 1940s in the overall number of individuals in the United Kingdom choosing to become a member of the pharmacy profession (pharmacists). A steady decline in community pharmacy outlets and an increasing population has meant that the number of community pharmacies per head of population has decreased. However, this has not meant that the number of CPs per pharmacy has increased. In fact, the ratio in Great Britain has remained relatively constant with time. This discrepancy may be explained by the increasing number of pharmacists choosing a hospital based career in preference to one in the community. The picture for community pharmacy is further complicated by changes in the proportions of full- to part- time and female to male CPs such that part-time females are becoming a notable proportion of the workforce. Prescription dispensing by CPs is remunerated through an administrative structure within the National Health Service. For community pharmacy returns in 1988, the main period of data collection for this thesis, the Prescription Pricing Authority collated and determined the amount of remuneration on behalf of the Family Practitioner Committee which in turn acted in a managerial capacity for

Government. Community pharmacists must be conversant with a complex system of endorsing for full payment of dispensing services. Evidence from changes in preparation formulae indicates that compounding or preparing preparations has largely been superseded by the supply of manufacturers products. Although this has released CPs from a time consuming function, the act of supply has become increasingly structured to contend with clerical and monitoring functions. Coincident with a relatively static number of community pharmacies and CPs, the number of prescriptions dispensed in the United Kingdom has increased in excess of the population. This is due to a growth in the elderly population and a change in prescribing patterns.

1.2 Historical development of community pharmacy

1.2.1 The origins of community pharmacy

"The history of Medicine and Pharmacy is not a record of continuous human progress" George Edward Trease.¹

From the earliest times there have been groups of individuals concerned with medicines. The sale and preparation of medical drugs derived from vegetable, animal and mineral products, the "*materia medica*", has been directly associated with physicians, herb-gatherers, drug-peddlers, apothecaries, spicers, pepperers, grocers, mercers, chemists, druggists, dispensers and most recently pharmaceutical industry and pharmacists. To understand the current relationship between CPs, the general public and relevant health care professions, it is helpful to examine the origins of Pharmacy in the context of those groups dealing with the *materia medica* and to describe the attempts of the medical profession (Medicine) to dominate the practice of preparing and selling medicines. Specifically the case of William Rose will be detailed. A flow diagram found at the end of this section (figure 1, page 20) traces the major relevant events. Specifically, it indicates whether groups of individuals compounded medicines, diagnosed or were involved in wholesaling.

Although drug-traders existed earlier, it was not until the early part of the ninth century in medieval Islam that shops were run by educated and responsible apothecaries. The word apothecary is derived from the Greek *apotheke* or *apotheca* which originally meant a storehouse, but gradually came to mean a storehouse for specific commodities including drugs. At this time there was no clear legislation to prohibit the apothecary from diagnosing and the physician from compounding and dispensing. Specialisation was inevitable due to the expanding knowledge on drugs.² It was this enforced development which influenced Emperor Frederick II in the Kingdom of Sicily to pass legislation in 1231 and 1240 which; recognised the professional status of the apothecary, separated compounding from the practice of medicine, recommended a single formulary - the *Antidotarium Salernitanum*, and, set educational standards and introduced a system of fixed scales of remuneration.^{1 2 3}

Perhaps the first European title of interest for this thesis was that of 'spicer', used in the late 12th century to identify a merchant who both dealt in drugs and prepared medicines in addition to a wide variety of spices and vegetable drugs. A similar function was associated with pepperers. However, the latter confined themselves entirely to ports such as London. Pepperers resembled present-day drug importers and wholesale produce merchants, while spicers became concerned with retail trade practised either from booths at fairs, or from permanent shops, which were the first English pharmacies.

The name apothecary acquired a pharmaceutical meaning in England about the middle of the 13th century. During this time, the term spicer-apothecary might be used to describe a spicer, an apothecary or a pepperer. On the 9th May 1345, the Fraternity of St Anthony was formed which brought together the earlier mysteries of spicer, pepperer and apothecary to be

replaced by the term grocer. By 1373 the name grocer was established and the Fraternity of St Anthony had evolved to become the mystery of Grocers or Grocers' Company which was given power by civic ordinance to search all spicers, and presumably apothecaries. That the name and associated spicer function of the apothecary persisted, points to an activity which was unique within this area of public service and retail enterprise.

Aware of the dangers from the practice of medicine by totally unskilled persons, Parliament in England authorised the Privy Council in 1421 to make regulations restricting medical practice to those of adequate training. However, physicians were few in number, mainly ecclesiastical and practised among the rich; thus, the bulk of medical care continued to be conducted by surgeons, barbers, well-intentioned amateurs and fortune-seeking quacks. Although some apothecaries may have practised medicine as a sideline, most remained viable through the manufacture and sale of medical drugs.¹

In 1518, during the reign of Henry VIII, Thomas Linacre founded the College of Physicians with the avowed aim to guard the profession from men *"who profess physic rather from avarice than in good faith"*. This consolidated the power of the physicians, and in 1553 an Act provided them with the power to fine or have imprisoned *"Poticaries who sell evil and faulty stuff"* as well as to search apothecaries shops and to destroy any drugs which they regarded as inferior. The Act was not repealed until 1875.¹

Partially arising from such legal power, the practice developed whereby the physician would use rooms in 'his' apothecary's shop for consultation and would encourage the apothecary to see patients on his behalf. Physicians regarded the apothecary as an agent to increase their number of patients and relieve them of compounding duties, but who must be kept in an inferior position. Through contact with physicians, apothecaries acquired a supplementary knowledge of medical diagnosis. As the number of legally qualified medical practitioners was relatively small, many of the sick, especially in areas lacking a physician, turned to the apothecary for advice. Concurrently, physicians who had the knowledge were able to compound medicines, an activity central to the livelihood of apothecaries. Crossing of role boundaries contributed to rising tension between physicians and apothecaries. Under this climate of conflict, the compounding function of the apothecary continued to develop.

By the 17th Century the term 'pepperer' has disappeared. London apothecaries who were founder members of the Grocers' Company had retained their original identity. In 1607, the Grocers Charter was amended such that London apothecaries became a separate section within the Company. They were chartered in 1617 as the Worshipful Society of the Art and Mystery of the Apothecaries or Society of Apothecaries, with the power to make rules for the practice of members within seven miles of London. The Masters and Wardens of the Society were empowered to enter the premises of any persons, question them and prohibit from practice those found to be unskilful or ignorant of their profession. The College of Physicians supported the granting of the charter because, as Atkins its president remarked, *"they would be brought under the control of the College much more efficiently than while they were*

members of the Grocers' Company". London apothecaries held a monopoly over their patrons, as it was illegal for other mysteries *"to furnish, have, hold or keep an apothecary shop"*.⁴

By the end of the 17th century, the herbalist was becoming a botanist and as the demand for chemicals increased, the title 'Chemist' became associated with one who made and sold chemicals. An apothecary could describe himself as a chymist, a druggist, or a chemist and druggist.

The early 18th century was important in the history of pharmacy as a turning point in the long struggle between prescribing apothecaries and dispensing physicians. The number of physicians was smaller than that of apothecaries who, under legal domination, had acquired a knowledge of diagnosis and treatment and were justifiably able to claim that they had the skills necessary for the additional practice of medicine.¹ The full extent to which apothecaries practised medicine in the early years is, however, unclear.⁵

In 1696, the College of Physicians established a dispensary at Warwick Lane, London. Six years later, the Society of Apothecaries established an outlet nearby at Bishopgate, with the undertaking to provide and dispense medicines gratis to the poor for four years. It is important to this thesis that in 1687 the Society of Apothecaries had unanimously agreed to give advice free of charge to *"all their sick neighbouring poor, when desired, within the City of London, or seven miles around"*.⁶

Charges and counter-charges were made between the College of Physicians and the Society of Apothecaries. Apothecaries claimed that unqualified dispensers working under the guidance of physicians at Warwick Lane had set up in competition against them; however, the main issue involved the allegation by physicians that apothecaries were prescribing and thus practising medicine in contravention of the Act of 1522.

In 1703 the College of physicians took the apothecary William Rose to court for the supply of *"medicines proper for distemper"* to one John Seale, *"a poor butcher"*. The Queen's Bench jury, realising that Rose had acted in accordance with accepted practice for the period, asked for a definition of 'practice'. Having defined 'practice' the law necessitated the conviction of William Rose. However, the judgement was reversed on appeal by the House of Lords. This was based upon the opinion that it was *"in the public interest to allow apothecaries to give advice as well as to sell medicines"*. Thus, until the Act of 1815, apothecaries provided *"advice gratis"* and only charged for medicines.¹⁴⁶

Only a new Act of Parliament could abrogate the legal status of London apothecaries. The London apothecary practising in 1704 could continue his business of the preparation and sale of medicines, or compete with the physicians on their own ground. No exact figures are available to indicate how many changed to medical practice, but gradually the medically-orientated apothecaries and physicians merged to become medical practitioners, and those

concentrating on medicines associated themselves with the emerging force of Chemists and Druggists. Medically-orientated apothecaries did not relinquish their trade in medicines easily and in 1795 founded the short-lived General Pharmaceutical Association of Great Britain which later unsuccessfully petitioned Parliament to limit the chemist and druggist to wholesale business. In response, the Association of Chemists and Druggists was founded in 1802 which was successful in protecting members' interests, notably in the 1815 Apothecaries Act.

Over the next century the number of unqualified or ill-qualified practitioners of medicine necessitated a reform in both education and registration. With the passing of the Apothecaries Act of 1815, the Society of Apothecaries became responsible for training and registration, and a court decision in 1829 made it legal for such apothecaries to charge for their advisory skill. Importantly, the 1815 Act contained a clause making it clear that chemists and druggists could continue their trade *"in buying, preparing, dispensing and vending of drugs, medicines and medicinal compounds, wholesale and retail"* as it was before the passing of the Act.¹ Further, Chemist and Druggist had acquired legal status without being subject to inspection by the Society of Apothecaries or any requirements regarding education or apprenticeships. Most apothecaries moved towards medical practice and the preparation and sale of medicines passed into the hands of chemists, druggists and those apothecaries who remained orientated towards medicines. Research and manufacturing industries, for example Allen and Hanbury's, later absorbed by Glaxo Laboratories Ltd, have their origins with those latter pharmacists. As a consequence, *"the true origins of pharmacy are to be found in the trading community"*¹ and those of the GP linked to the medically-orientated apothecary.

The Association of Chemists and Druggists expanded and in 1829 became The General Association of Chemists and Druggists of Great Britain, which disbanded after obtaining a promise from the Chancellor of the Exchequer not to continue a duty on the lucrative manufacture and sale of soda water. For a decade chemists and druggists had little cohesion. However, they rallied in response to a Parliamentary Bill in 1841 which proposed that it should be an offence for chemists and druggists to recommend a simple remedy or advise on how a medicine should be taken and that they should be controlled by an independent body consisting largely of medically-orientated apothecaries.

The Bill was successfully opposed, but the realisation that chemists and druggists were lucky to practice without fixed standards of education, training and examination prompted a general meeting on the 15th April 1841, at the Crown and Anchor Tavern in the Strand, London. It was resolved that a Pharmaceutical Society be formed and with the granting of a charter of incorporation by the Queen in 1843, the Pharmaceutical Society of Great Britain became the official body holding and administering the register of its members. The Medicines Act of 1858 transferred the responsibility for medical training to the General Council for Medical Education and Registration and charged it with producing the first British Pharmacopoeia. It is significant that the first meeting of the general council resolved to

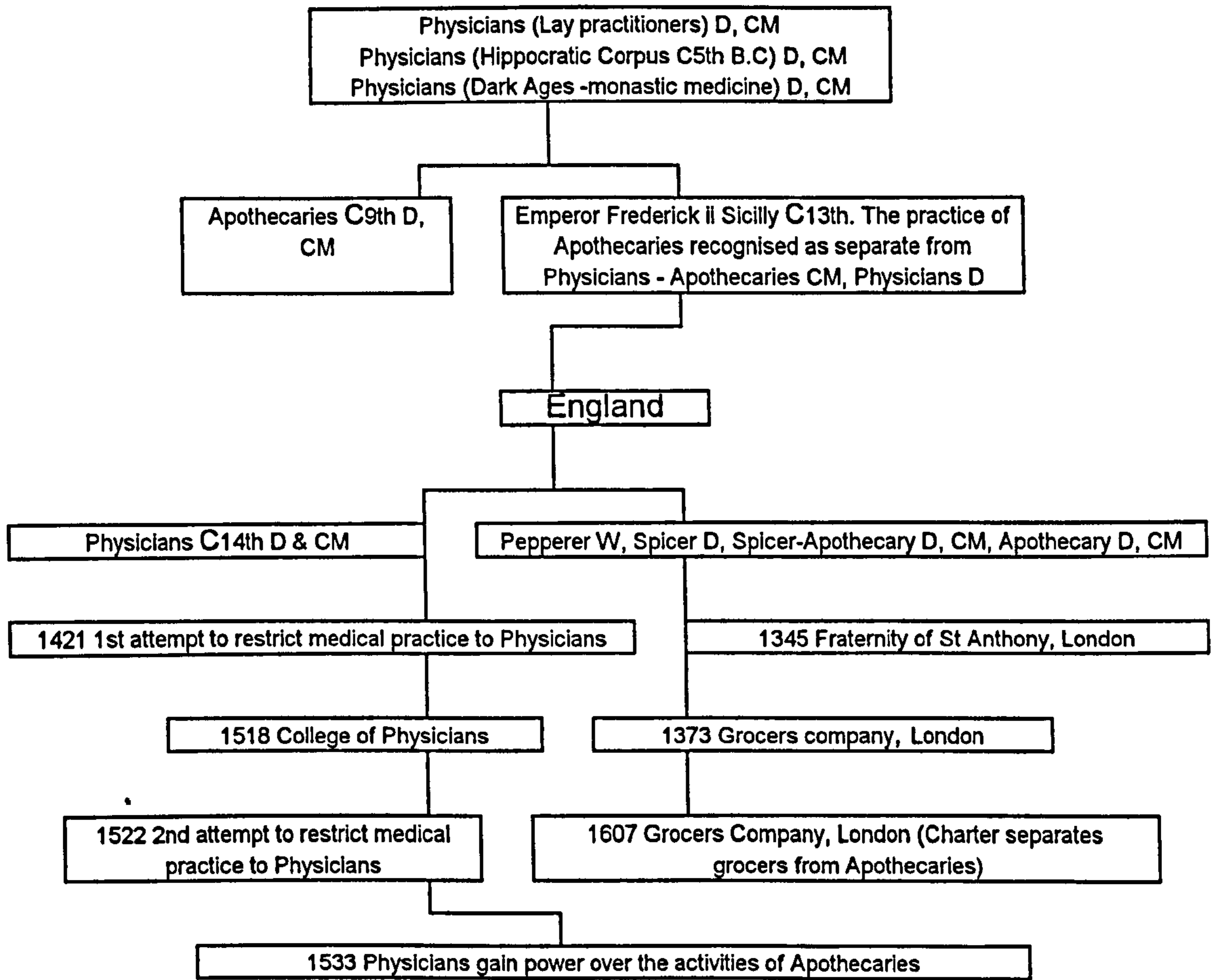
request the involvement of the Pharmaceutical Society in producing the British Pharmacopoeia, an action which went far in healing the rift between the physician and the chemist and druggist.

By the late 19th Century, the title apothecary had disappeared. A medical education led to practice as physician or surgeon. By then, The Society had introduced the title pharmacists to further complicate those of chemist and druggist, a situation which persists to this day.

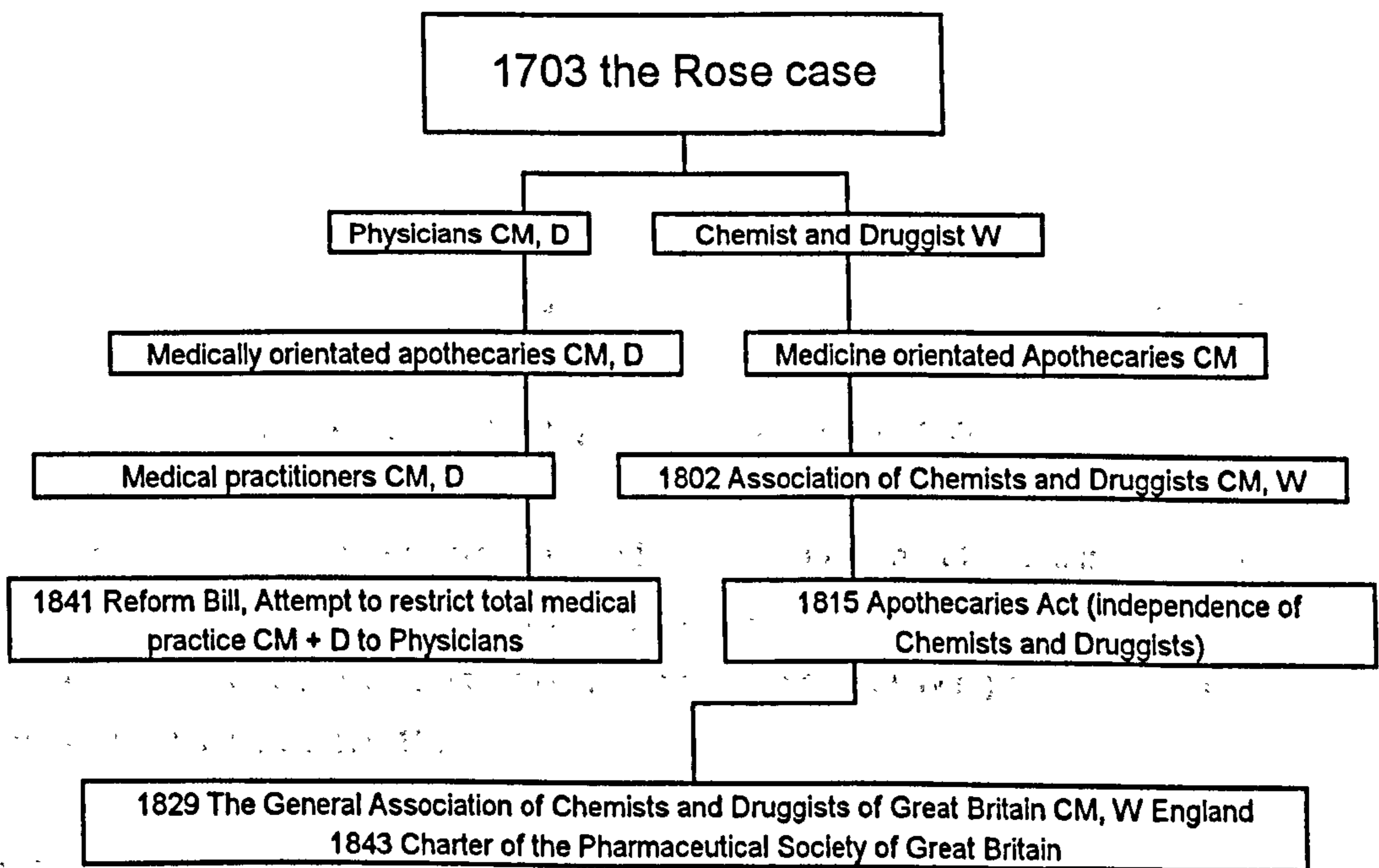
This short account has followed the development of groups who have been involved in preparing and retailing medicines. Originally the physician held the knowledge for the preparation of medicines. With time, drug-traders evolved and the apothecary emerged as a compounder of medicines. Although spicers and pepperers became involved in the drug trade, the apothecary retained a unique involvement in the preparation of medicines. Attempts by physicians to dominate apothecaries by legal right of inspection lead to increased inter-professional contact and enabled apothecaries to absorb medical skills. It was this additional knowledge which led to a widening of the apothecarist's role when it was noted, and established by the Rose case, that the provision of advice on medicines was in the public interest. Medically-orientated apothecaries later amalgamated with the physicians and threatened those apothecaries orientated towards medicines who had joined forces with the emerging and powerful chemists and druggists. In response to the dangers of domination by the medical profession chemists and druggists plus functionally related apothecaries formed the Pharmaceutical Society of Great Britain. In the next section the historical development of community pharmacy is continued through the activities of its governing body, The Society.

Figure 1

The historical development of community pharmacy



Rivalry intensifies, Physicians compounding medicines CM, Apothecaries diagnosing D



Legend: Century (C), Compounding medicines (CM), Diagnosing (D), Wholesaling (W)

1.2 Historical development of community pharmacy

1.2.2 The Pharmaceutical Society of Great Britain

In this section, the further historical events predisposing the nature of the CP will be detailed through the guiding activities of The Society.

Initially, most members of The Society believed its chief function was to protect their interests from outside interference; specifically, repeated threats of legislation that would have been inimical to their interests.^{7 8 9} Greater definition of the powers of The Society were sought in response to the threat of external control from the General Council, which, under the 1858 Medicines Act, had powers to examine and register persons practising medicine, and sought to similarly control Pharmacy. With the passing of a second Pharmacy Act in 1868, The Society became the sole official examining body for persons seeking registration and assumed responsibility for registration of pharmaceutical chemists, chemists and druggists, assistants and apprentices. Legally, therefore, a person wishing to practise as a CP in Great Britain required registration with The Society. Similarly, registration is required with the Pharmaceutical Society of Northern Ireland (PSNI) which came into being by virtue of the Pharmacy and Poisons Act (Northern Ireland) in 1925. Currently, much of pharmacy activity is regulated by the 1954 Pharmacy Act.

From the initiation of formal training, education has assumed a high profile. Results of examinations in 1941 were officially published,¹⁰ a practice which continues to the present day. The minimum qualification for registration has evolved, with the result that a CP in practice may have one of three educational backgrounds, the Chemists' and Druggists' diploma, the Pharmaceutical Chemists' Diploma or a university degree. From 1970, a degree from an institution accredited by either The Society or the PSNI, and 12 months supervised practical experience became the minimum requirement. Presently, an unknown number of CPs are still in practice with the older qualifications. The 16 schools of pharmacy must conform to educational requirements set out in The Society's Calendar, if their graduates are to be accepted for registration. The Society makes quinquennial visits to each School to grant approval subject to proof of appropriate standards and requires that courses cover three aspects of pharmaceutical sciences. These are; pharmaceutics which includes the microbiology, formulation, preparation, production and testing of medicines; pharmaceutical chemistry which deals with chemistry and the analysis of drugs and drug-containing systems and pharmacology or the interaction between drugs and the living organism,¹¹ the latter topic having been included since 1935.

The following paragraphs detail four important court cases involving The Society which directly affect the practice of pharmacy in Britain. These cases are described in detail by Holloway⁹ and indicate the historical shackles which bind the activities of The Society.

First, the case of *The Society versus The London and Provincial Supply Association Limited*, which was considered by the House of Lords in 1880. Their decision that limited companies were not persons and could use the titles restricted by the Pharmacy Act of 1868, was a constant reminder that rectification could only be achieved by legislation.¹

Second, in 1890, The Society unsuccessfully sponsored a Parliamentary Bill to prevent companies carrying on a chemists' business unless all the directors were registered pharmacists. These two cases are important as they opened the way for multiple ownership of pharmacies by non-pharmacists.¹

Third, an injunction sought by Mr Jenkin was upheld in the High Court preventing The Society acting as an Industrial Council. The Retail Pharmacists' Union - later known as the National Pharmaceutical Association (NPA) - was formed as a direct result of this decision and undertakes some of these functions. As a result, the 1954 Pharmacy Act includes the directive *"to maintain the honour and safeguard and promote the interests of the members in the exercise of the profession of pharmacy"*.^{12 13 14} Thus, The Society has no direct ability to manipulate financial reward in order to influence practising CPs, rather, its sanctions are through registration to practice.

Fourth, The Society sought to influence the nature of trade based on recommendations put forward in the Report on the General Practice of Pharmacy submitted to The Society's Council in July 1961. A motion was put to the Annual General Meeting of The Society in 1965, requesting that *"new pharmacies should be situated only in premises which are physically distinct, and should be devoted solely to (1) professional services, as defined...(2) non-professional services, as defined... and (3) such services as may be approved by the Council..."*.¹⁵ Subsequently, an injunction was sought by Mr R.C.M Dickson - a director of the Boots Pure Drug Co - claiming that the motion was outside the scope of The Society's powers and that, if implemented, would lead to a restraint upon trade. Although a Special General Meeting voted overwhelmingly by 5,020 votes to 1,336 for the motion, the High Court declared *"that it is not within the power, purpose or objects of the PSGB...to enforce or carry outthe provisions of the motion... on the grounds that the said provisions are in restraint of trade"*.¹⁶ The Court of Appeal and the House of Lords failed to reverse the High Court decision.^{17 18} Thus, The Society failed in its bid to influence the nature of community pharmacy trade.

By their very nature people tend to protect and promote their area of expertise - their livelihood. Pharmacy had on the one hand gained recognition and legislative protection yet found itself constrained by the very mechanisms that gave it status. Recently the title Royal was conveyed to the Society and membership is now of the Royal Pharmaceutical Society of Great Britain (The Society)¹⁹ with the letters MRPharmS to describe the title.²⁰ The development of legal protection is detailed in the following section.

1.3 The development of legal restrictions governing access to medicines

Restraint on the access of the general public in Great Britain to specific chemical substances can be traced back to the Arsenic Act of 1851, as *"the unrestricted sale of arsenic facilitates the commission of crime"*. The sale of arsenic was confined to *"licenced sellers of poisons"*.¹

Restriction continued with the 1868 Pharmacy Act introducing a poison list. A series of Poison Acts increased the number of substances listed for limited access. Notably, in 1933 under the Pharmacy and Poisons Act, poisons were divided into two parts, defining in part one substances that could only be sold at pharmacies. A Poisons Board was created which replaced the system set up by the 1868 Pharmacy Act whereby The Society proposed amendments to the Schedule of Poisons.⁵ At this time The Society was empowered to establish a disciplinary body to reprimand offenders in courts of summary jurisdiction and not, as previously, in the civil courts.

Similarly, The Penicillin Act of 1947 and the Therapeutic Substances Act of 1953 restricted the supply of antibiotics to pharmacies or from GPs. The Therapeutic Substances Act of 1956 combined control of manufacture and supply but was replaced by the all encompassing Medicines Act of 1968 which also incorporated relevant sections of the Pharmacy and Poisons Act of 1933. Special consideration was given to drugs liable to abuse which culminated in the Misuse of Drugs Act 1971 and the 1986 Drug Trafficking Offences Act. It is through the prescription that the prescriber conveys instructions for dispensing to the CP. The latter Acts placed greater controls on prescription writing and drug storage for those substances open to abuse.

The legal powerbase for those registered as CPs in Great Britain is currently derived from section 52 of the Medicines Act 1968. The Act defines certain substances as either a Prescription Only Medicine (POM), a General Sales List item (GSL) or, by default, a pharmacy medicine (P). Exemptions are made in section 55 for doctors, dentist and hospitals. Further restriction is enforced by the National Health Service Acts which require that the general public obtain medicines only from pharmacies if they are to be subsidised.

The Society, in maintaining the register of pharmacists and having the power to de-register persons convicted of an offence, is able to exert considerable influence on the current practice of pharmacy. Offences are generally contraventions of The Society's Code of Ethics. This code brings together The Society's expectations of pharmacy practice under the relevant Acts.

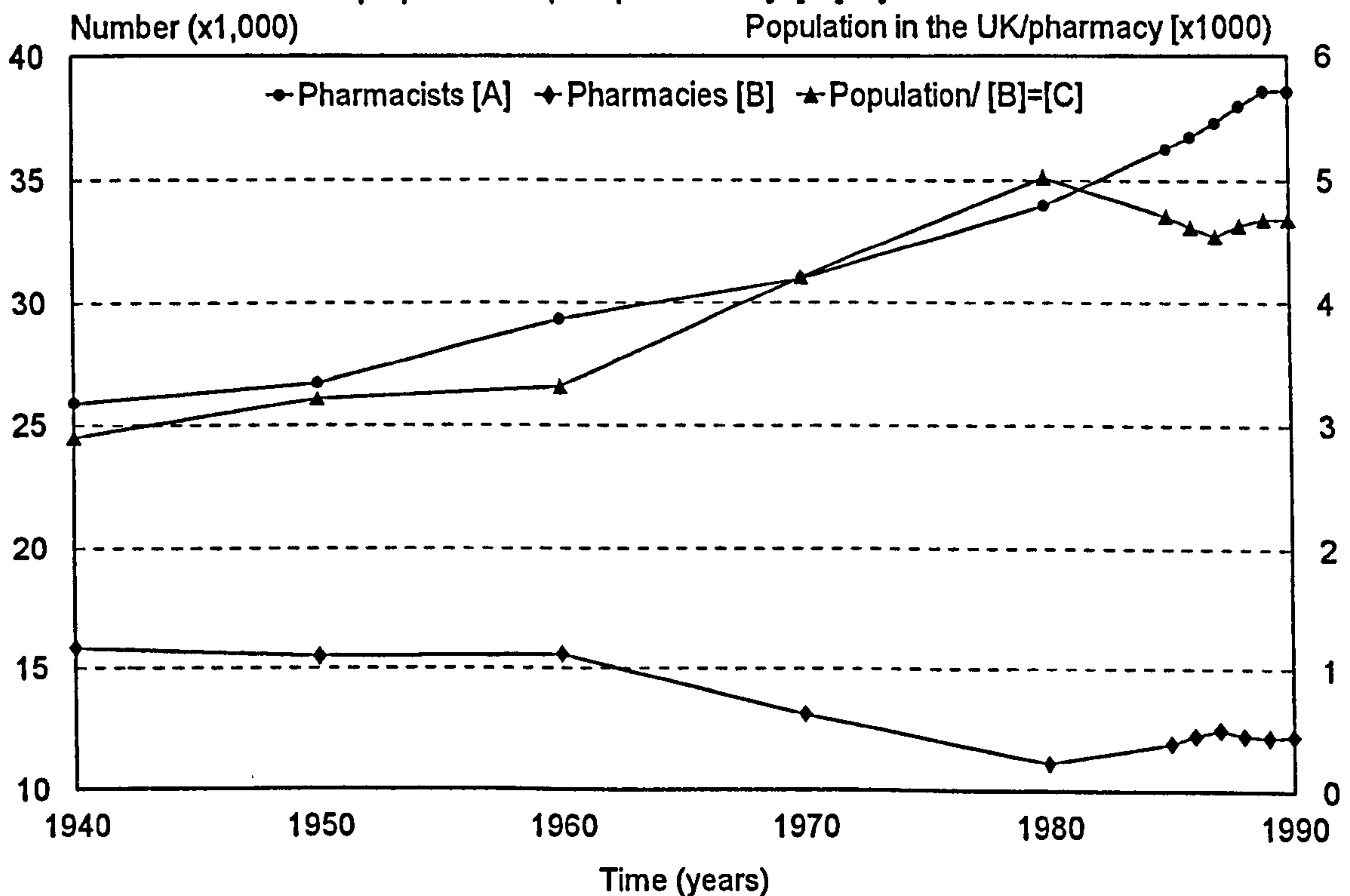
At this point it will be useful to examine the number of pharmacies and CPs who provide access to restricted substances.

1.4 Pharmacy demographics

Records from 1940 indicate that the number of registered pharmacists resident in the United Kingdom has been steadily increasing (figure 2 [A]). During this period the availability of pharmacy outlets for the general public declined (figure 2 [B]), with the result that each pharmacy served progressively more members of the general public, until the 1980's when the trend appears to level out (figure 2 [C]).

Figure 2*

The number of pharmacists [A] and pharmacies [B] in the United Kingdom, population per pharmacy [C] by time



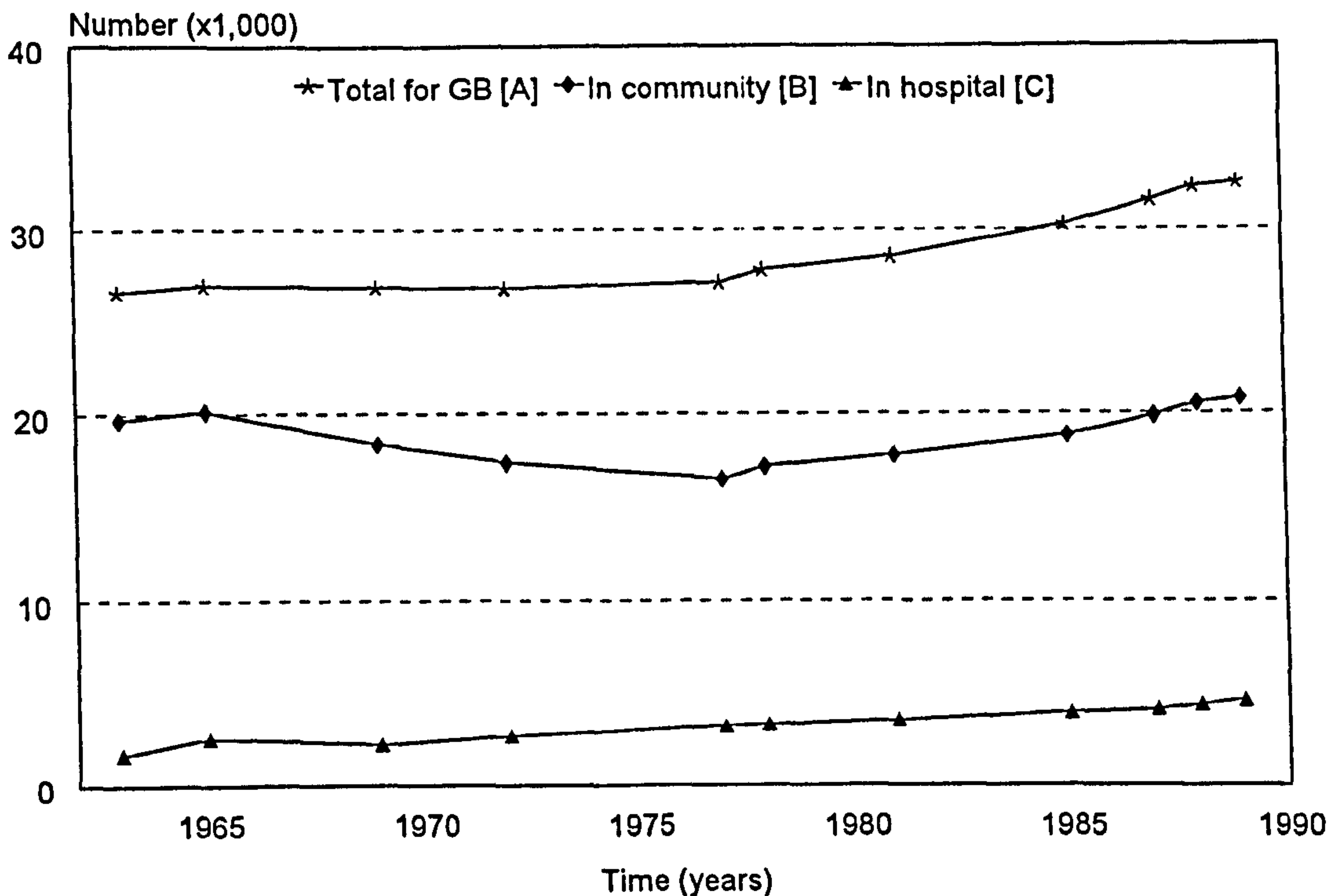
Notes

- * References 11 21 22 23 24 25 26 27 Data for Great Britain represents the number to the end of the calendar year. Data for Northern Ireland prior to 1985/6 was collected for the 12 month period ending 1st August. This was subsequently changed to 1st June. Calculations based on projected mid-year estimates of UK population.

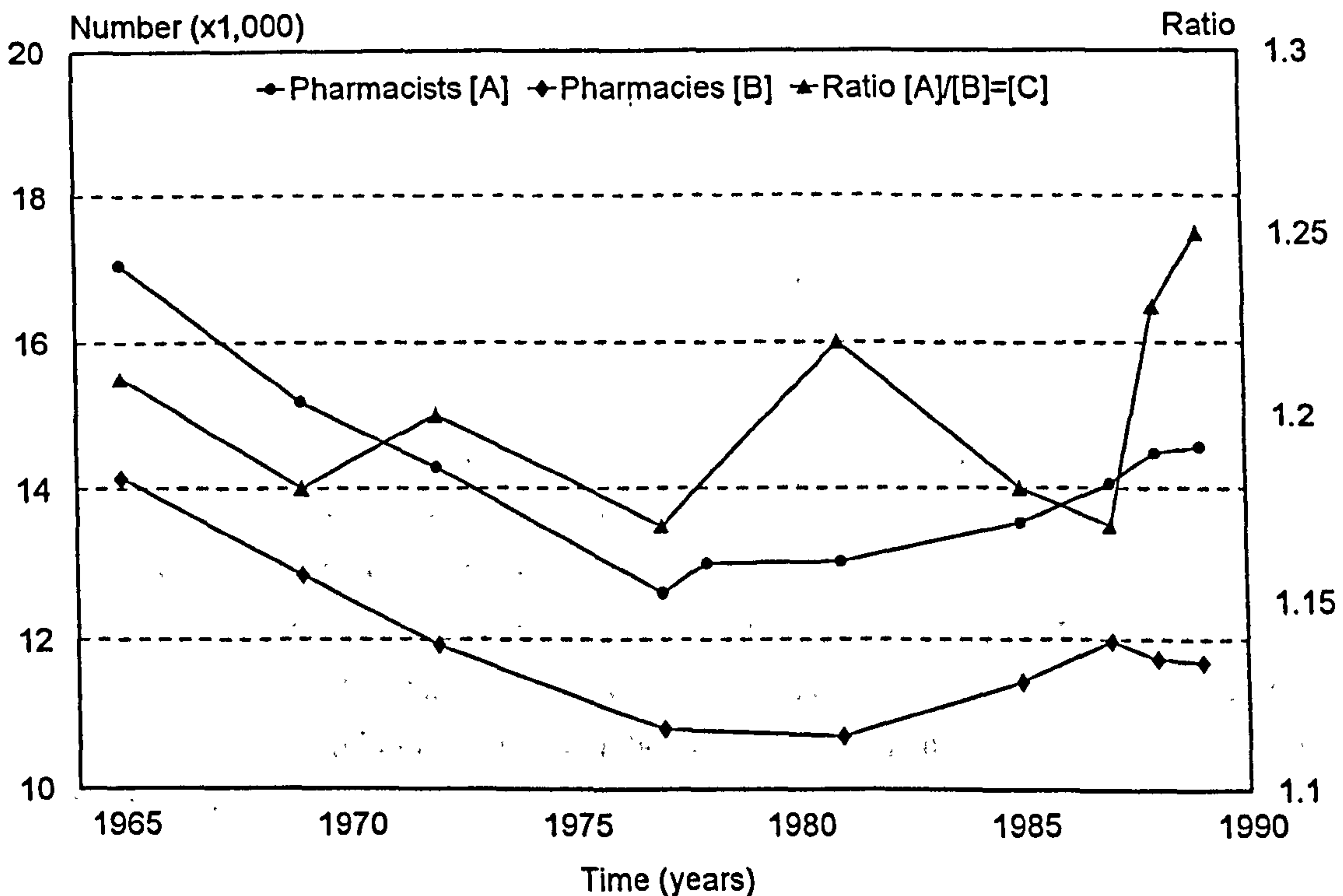
Concern over pharmacy closures prompted several studies during the mid to late 1970's which cited economic viability as the prime reason for closure.^{28 29} Pharmacy demographics have been influenced by: the aggregation of GPs into practices in the 1960's and, more recently, into health centres; restrictions on opening a pharmacy;³⁰ an increasing proportion of multiple compared with independent pharmacies.^{31 32 33 34} The numbers of resident, registered pharmacists has increased (figure 3 [A]). However, the number who identify the location of their employment in the community (figure 3 [B]) initially decreased until the late 1970's then rose slowly; a pattern which closely matched changes in the number of pharmacies (figure 4 [B]). In fact, the increase in overall pharmacy numbers can be accounted for by a dramatic expansion in hospital pharmacy employment (figure 3 [C]). Thus, the ratio of full-time CPs per pharmacy has remained relatively constant since surveys were undertaken (figure 4 [C]).

Figures 3 and 4*

Number of registered resident pharmacists in Great Britain employed in community or hospital service by time



The number of full-time registered resident pharmacists in community practice [A] and pharmacies [B] in Great Britain, ratio [C] by time



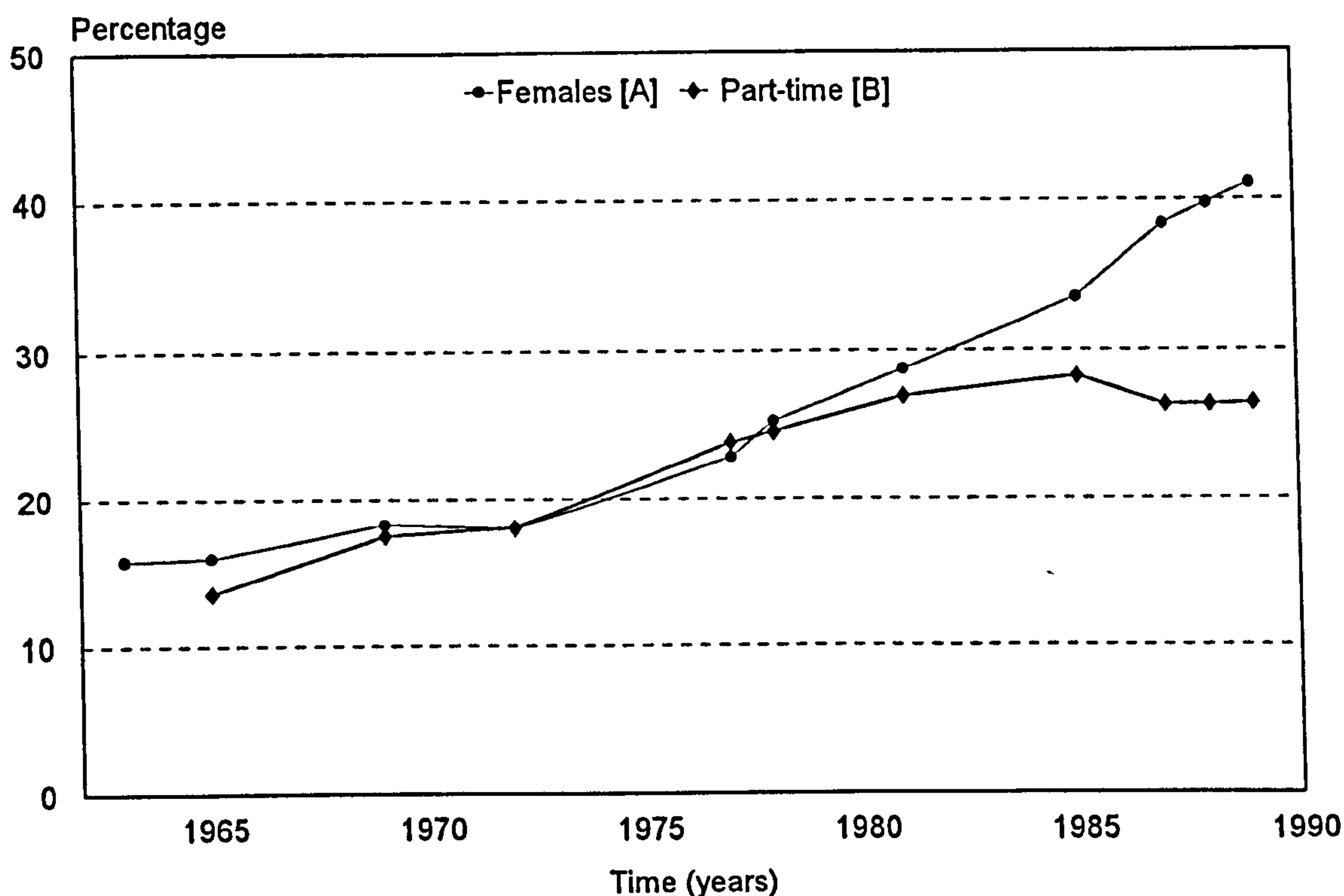
Notes

* = References 11 28 29 35 36 37 38 39 40 41 42 43 44 45 46 The first survey of pharmacists not related to retention details was commissioned by The Society in 1966. Three further surveys of pharmacists were carried out by The Society, before the more accurate data from revised retention fee forms was published.

There have, however, been shifts in the proportions of part- to full- time and male to female CPs. It is known that the absolute number of part-time CPs increased in the sixties and seventies and levelled out in the eighties (figure 5 [B]).

Figure 5*

The percentage female [A] and part-time [B] pharmacists in community practice in Great Britain by time



Note * = References are the same as for figures 3 and 4.

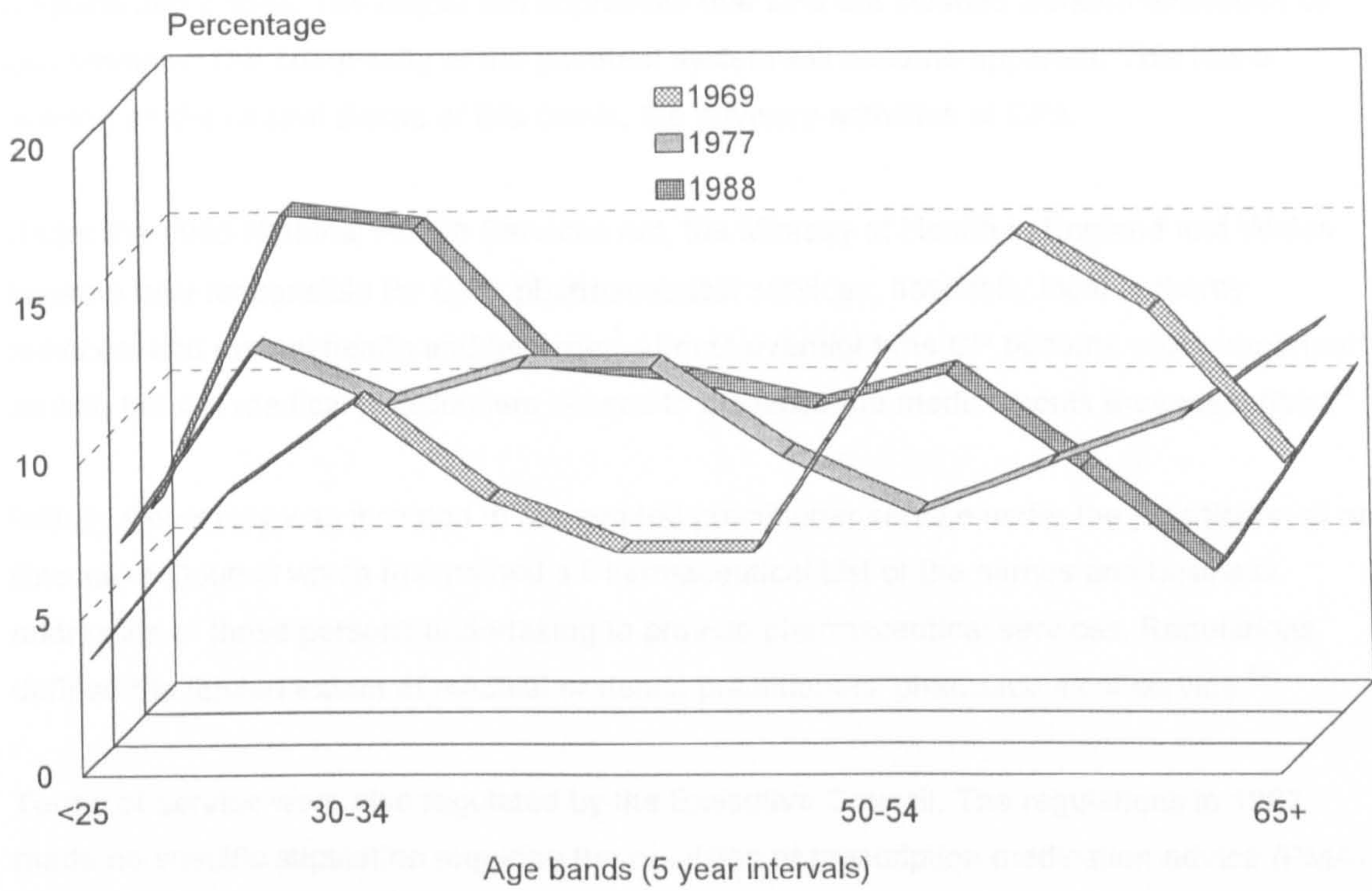
The ratio of full-time CPs to pharmacies has remained static during this period. Thus, the total number of CP, full- plus part- time, to pharmacies has increased. Manpower surveys conducted by The Society^{47 48 49} report the following ratios for the number of CPs to pharmacies; 1.32, 1.49 and 1.82 corresponding to the years 1970, 1974 and 1982 respectively. Although the admission of females to the register was hotly debated,⁵⁰ evidence suggests that these changes may be due to increasing numbers of female pharmacists^{45 46} possibly working part-time.^{48 51} Since 1963 the percentage of registered resident pharmacists identifying themselves as unemployed appears to have peaked in the late 1970's, when attention was drawn to the trend.⁴¹ There is no evidence of involuntary unemployment.

Studies of CPs have recorded age bands specific to those employed full- or part- time in community pharmacy (figure 6, page 27).^{44 45 52} Numbers of male and female or full- and part- time CPs in age bands is not available. Taking a 20 year span, there was a peak in the number of CPs in their early thirties reported in the study of 1969. Many of these individuals have remained in community pharmacy and are now in their early to late fifties. Currently there is an additional peak number of CPs in their mid-twenties. Pharmacists may have

varying educational backgrounds and experience in several branches of pharmacy, both of which are age dependent. If behaviour is related to education and experience, then the two current age peaks may represent separate groups for investigation. Empirical assessment of figure six provides a value of 50 years to divide the two groups.

Figure 6*

The percentage of community pharmacists in age bands by time



Note

* = References 44 45 52

In summary, the number of CPs in the UK has increased. The trend for a net closure of pharmacy outlets until the late 1970s was reversed in later years. Reasons for this are complex and involve the distribution of general practice surgeries and legal restrictions on the siting of new pharmacies. There appears to be a current expansion in multiple ownership of pharmacies. In 1986 it was stated that *"insofar as there is a general model, it is of a pharmacy in which there will be a single CP available at any one time"*.¹¹ Indeed, surveys have shown that the number of full-time CPs per pharmacy has remained constant. However, there are increasing numbers of part-time CPs. It is likely that females dominate this part-time workforce. In 1988, two peaks of age bands for practising CPs can be identified. That this is the case may indicate two distinct groups, therefore, investigations based on data collected at this time should use a figure of 50 years to divide CPs into separate age groups.

1 5 Remuneration

1.5.1 The National Health Service

The first section on remuneration briefly describes the structural evolution of the National Health Service relevant to remuneration of pharmaceutical services. This background introduces the second section which broadly describes the mechanism of payment in England and Wales. The reader will appreciate that CPs are salaried workers employed by Government. The complexity of the payment system will become apparent. This has a bearing on the central theme of this thesis, the advisory activities of CPs.

Under the 1946 National Health Services Act, the Ministry of Health in England and Wales became fully responsible for GPs, pharmaceutical services, hospitals, local authority services, and mental health and hygiene.¹ Almost overnight the CP became more important as with the Act medical practitioners ceased to dispense the medicaments they prescribed.⁵

Initially Pharmacy was included in the general practitioner service under the jurisdiction of an Executive Council which maintained a Pharmaceutical List of the names and business addresses of those persons undertaking to provide pharmaceutical services. Regulations defined the limited extent of medical or dental practitioners' pharmaceutical service.⁵³

Terms of service were also regulated by the Executive Council. The regulations in 1962 made no specific stipulation requiring the provision of prescription medication advice (PMA) by the CP.⁵⁴ However, provision was made for complaints from the general public through the Pharmaceutical Services Committee or Joint Service Committee, both of which reported to the Executive Council. A local Pharmaceutical Committee was created which dealt with inter-pharmacy disputes.⁵³

The Service was eventually reorganised into a single management structure with the National Health Service Reorganisation Act 1973 and in Scotland by the National Health Services (Scotland) Act 1972. The National Health Services Act in 1977 consolidated the 1946 and 1973 Acts and finally, an Act in 1980 extended the 1977 Act to allow alteration in the structure of the Service. The 1977 National Health Services Act, as amended, controls pharmaceutical services in England and Wales⁵⁵ Details are set out in Part One of the Fourth Schedule to the National Health Services (General Medical and Pharmaceutical Services) Regulations 1974. No specific stipulation requiring provision of information on PMA by the CP was made.⁵⁶

The 1977 Act required District Health Authorities to set up Family Practitioner Committees (FPCs) with responsibility for pharmaceutical services. The Health and Social Security Act 1984 amended the 1977 Act allowing the Secretary of State to establish 83 FPCs as special authorities.⁵⁷ Upon receipt of a legally correct prescription form, CPs are contracted to supply the items requested. Recent regulations amended the terms of service such that CPs are

able to exclude or limit the supply of certain drugs and medicines. This created the medication "black List".⁵⁸

The FPC, currently renamed as the Family Health Services Authority (FHSA), enters into a contract with individuals providing pharmaceutical services, prepares a list of names and addresses, operates statutory disciplinary arrangements, and administers the terms of the contract, including remuneration as defined in the Drug Tariff which is published by the Secretary of State. Increased power and autonomy came with Authority status in September 1990.

Pharmaceutical services in Scotland, like medical services, are still governed by the National Health Services (Scotland) Act 1972. A contract is made with one of the 15 Area Health Boards which are directly responsible to the Scottish Home and Health Department. There is no FPC. The Pharmaceutical General Council (Scotland) is the body recognised by the Secretary of State for Scotland as being representative of pharmaceutical contractors. Terms of service are similar to those in England and Wales.

From the political perspective, since 1979, Government has been directed by a fundamentally anti-collectivist ideology which emphasises the social values of freedom, inequality and individualism.⁵⁹ Anti-collectivists have argued that the collective force made up of individuals with freedom to choose within a market is essential to reveal inequality in service and, through the voting-with-their-feet principle, to generate incentives for innovation and improved service efficiency. This has manifested in the most recent structural changes to the NHS, fundholding GPs, hospital trusts and most recently the creation of autonomous District purchasers of services. By 1996, the latter locally defined bodies will purchase services from GPs. Whether this will be through the FHSA or a hybrid with the District purchasing authority is unknown.⁶⁰

1.5.2 Community pharmacies

Community pharmacists receive payment for dispensing services from a Government agency. As such, they are essentially salaried employees with an additional income from non-dispensing activities. In American, Boyd and colleagues⁶¹ demonstrate the high percentage of CPs' time spent performing nonprofessional tasks. They suggest *"that the time was not available under the present system to expand the pharmacists' professional activities"*. The following discussion demonstrates the complex nature of payment for British CPs. Negotiating this bureaucracy must inevitably detract from the time available for professional activities, such as that required for an advisory role.

Under the National Health Services Acts 1946-77, payment to holders of a contract with the FHSA, to dispense items at a licenced premises on a general practitioner's prescription, is calculated by the Prescription Pricing Authority (PPA). In England, the Pharmaceutical Services Negotiating Committee (PSNC) discusses terms of payment with the Department of Health (DofH) on behalf of pharmacy contractors. Any agreements are operationalised by the PPA.

Details of payment for dispensing prescriptions are set out in the monthly edition of the Drug Tariff. As data was collected for this thesis from 1988 to 1989, the September 1988 edition,⁶² is considered. At this time, calculation of payments to the pharmacy contractor was determined by a formula consisting of:

- A. the cost of drugs, appliances and chemical reagents;
- B. plus an on-cost payment;
- C. plus a fee for bulk quantity;
- D. plus a professional fee;
- E. plus an 'essential small pharmacy' payment if applicable;
- F. plus a container allowance;
- G. plus a training fee;
- H. plus a broken bulk fee, if applicable;
- I. plus a fee for pharmacies operating on a "rota" basis to cover emergencies and which remain open in addition to the hours required in their contract;
- J. plus a fee for emergency supply of a prescription medicine; and,
- K. less a percentage based on the total amount remunerated.

The principle of on-cost was introduced as a commercial payment to reflect that dispensing was both a commercial as well as professional activity. Initial postal surveys,^{63 64} to define the expenses incurred by contractors, proved unreliable. From 1962 to the demise of the cost-plus contract⁶⁵ in 1989, periodic audits were conducted with a reported three percent error in generalisation.⁶⁶ Notably, Jones⁶⁷ cites a newsletter of the Chemist Contractors Committee⁶⁸ which stated that one of the activities paid for in 1971 was the *"handing out to patients the dispensed item; giving any verbal instructions as to usage etc"*.

In 1988, the pharmacy contractor was paid a professional fee of £1.30 for each of the first 1,400 prescription items dispensed per month. The next 5,250 were paid at £0.61 per prescription and thereafter at a rate of £0.67. Additional professional fees are paid if a prescription item involves extra paper work or responsibility, as with Controlled Drugs, or requires aseptic dispensing, sterilisation extemporaneous compounding, the measurement of appliances and dressings, supply of oxygen or urgent dispensing. Each of these additional fees requires a suitable endorsement on the prescription. The author was unable to locate an official breakdown of the elements paid for by the professional fee.

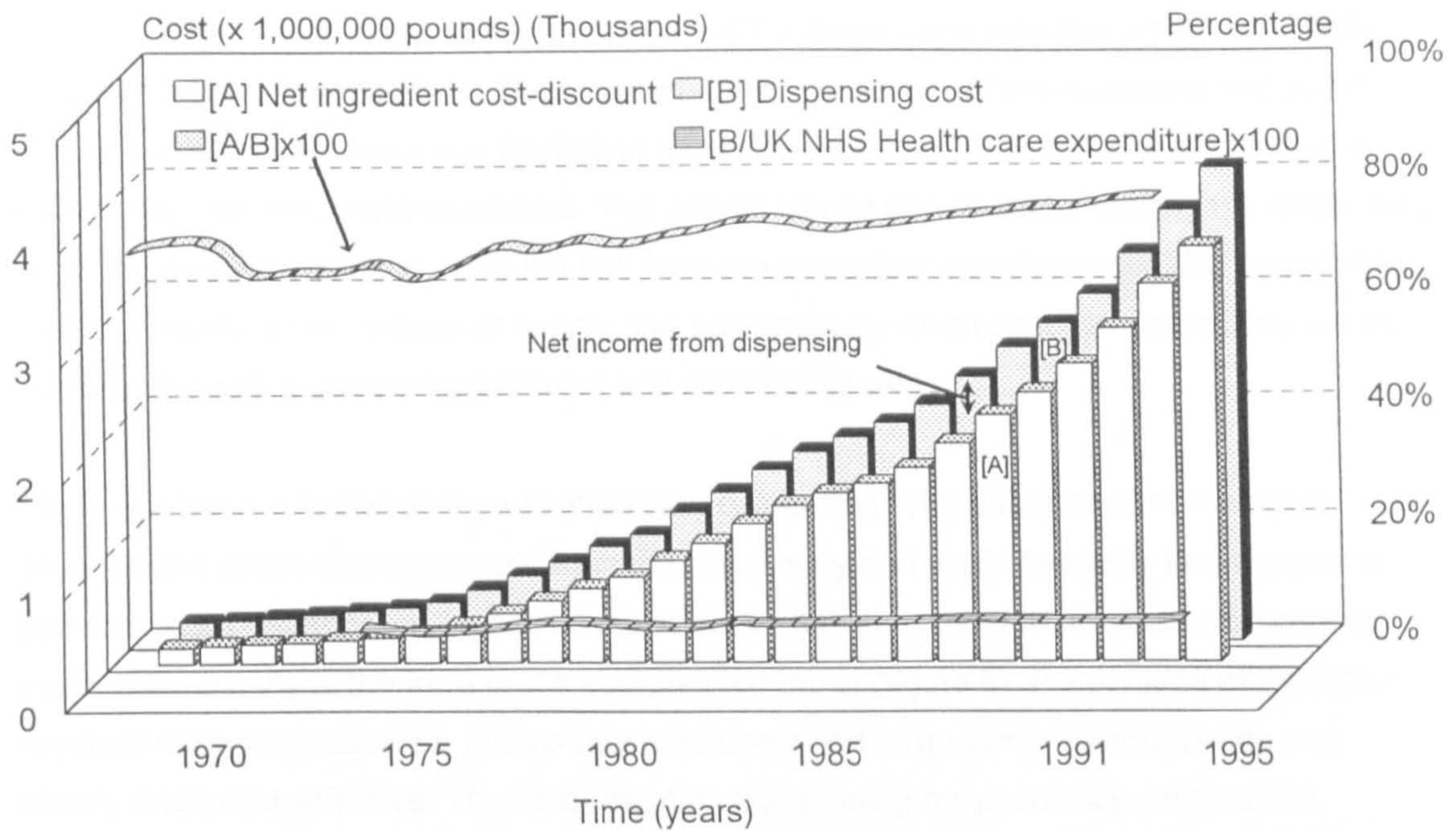
Pharmacies are required to forward dispensed prescriptions by the 5th day following the end of the month in which the supply was made. The processing of prescriptions by the PPA takes a finite time and drug wholesalers require payment by pharmacy contractors within two to four weeks. To obviate the cash flow problem pharmacy contractors receive an estimated sum plus any arrears at the start of each month.

This account outlines the method by which payment is calculated for individual prescription items dispensed. In April 1985, National Health Service reimbursement was withdrawn for specific items. This created the so called 'Black list' or *carte blanche*. General practitioners were still able to prescribe such items; however, the cost was met by patients.

Published figures are available from Government sources detailing both the cost of dispensing in the United Kingdom by pharmacies and by appliance contractors and the net ingredient cost taking into account the reduction based on the amount remunerated (figure 7, page 32).^{25 69} Both CPs and appliance contractors have contracts with the FPC to dispense prescriptions, the latter for specific non-drug products. As the numbers of dispensed prescriptions and associated prescription costs for CPs have been shown to account for over 99% of the total,⁶⁷ figure seven, page 32, can be taken as representative of the economics of community pharmacy dispensing. It would appear that, over the last 15 years, the net cost of ingredients has been consistently just under 80% of the total cost of dispensing and the total cost of dispensing hovering around 11% of total NHS health care expenditure. Net income from dispensing in relation to the net cost of ingredients has remained stable. Increases in absolute remuneration for dispensing may be accounted for by increasing inflation in conjunction with changes in the number of prescriptions dispensed.

Figure 7*

Remuneration from dispensing in the United Kingdom compared to health care expenditure by time



Note

* = Reference: 25. Editions of this reference included the discount in net ingredient cost. Values minus discount were supplied personally.⁶⁹

In summary, this account of community pharmacy remuneration began with the Governmental structure managing pharmaceutical services. Since 1977 the FPC and after 1990 the FHSA have provided the first level of management. The purchaser-provider philosophy is bringing about local variations in this structure.

Payment for community pharmacy services is calculated on a cost-plus basis. Community pharmacists' livelihoods depend on accurate endorsing of prescription forms and prompt completion of accompanying documentation. It is implicit that endorsing and processing each item requires an intimate knowledge of the relevant application of the Drug Tariff. Time taken in this bureaucratic process is not available for other activities such as PMA. Net income from dispensing plus non-pharmaceutical sales funds CPs' salaries and maintains businesses. Remuneration from dispensing as a proportion of health care expenditure and overall dispensing costs has been stable since the mid 1970s.

Having described who pays, how payment is calculated and how much is involved, the next section continues with the changing nature of dispensing and an account of how many and which drugs are dispensed.

1.6 The prescription

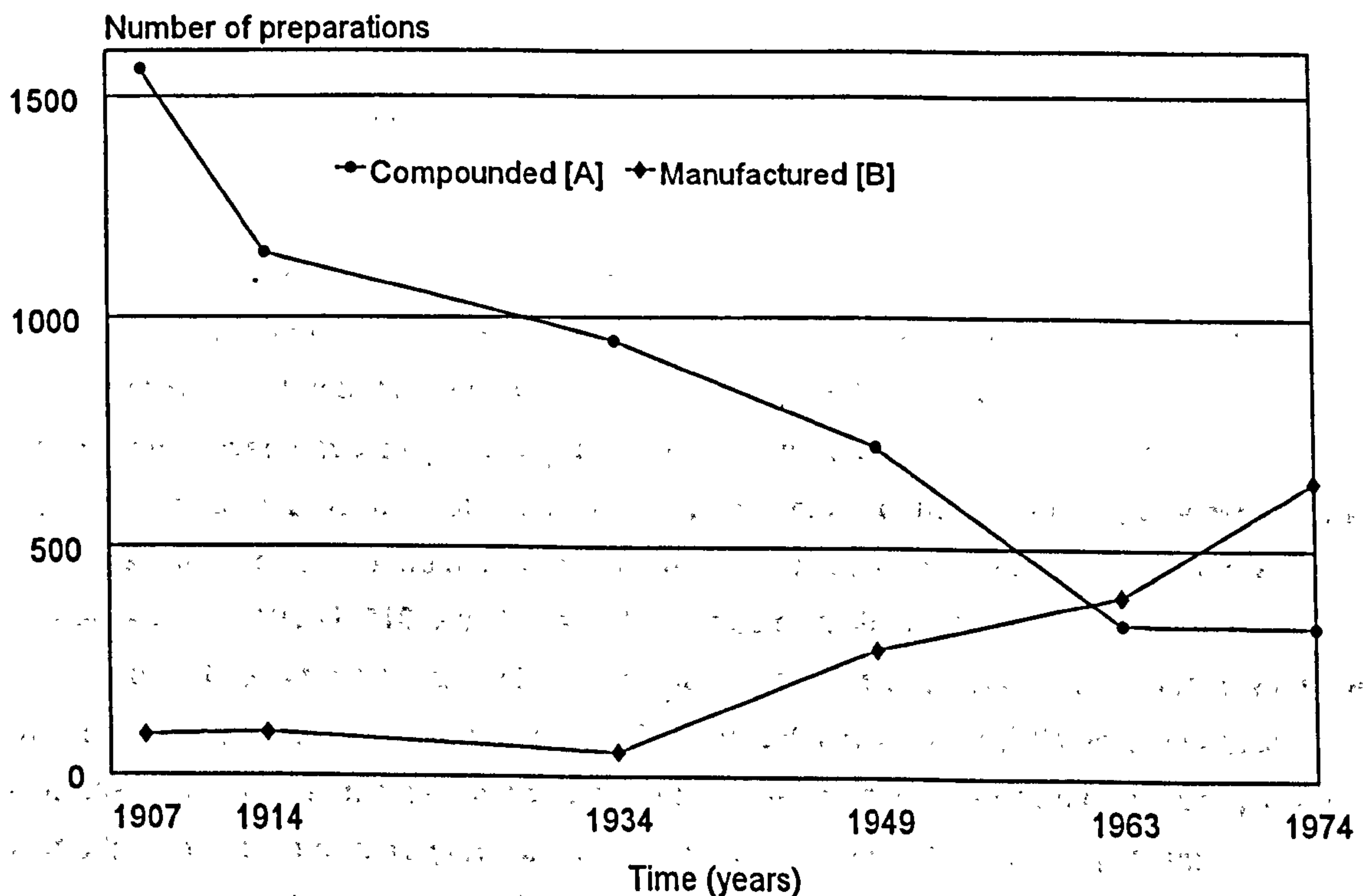
1.6.1 Prescription dispensing

This section provides evidence for a change in CPs' dispensing activities from small scale manufacturer or compounder to their current role as dispenser of pre-manufactured items. Although this may be seen as a decline in technical expertise,⁷⁰ the process of supply has become increasingly more structured. This aspect will be examined by placing the dispensing act in the context of supply using the link between prescriber and dispenser, the prescription. Having described the process of supply, the epidemiology of prescription dispensing will be investigated with a comparison of local and National figures.

There has been a forced change in pharmacy dispensing. The dominance of the liquid dosage form which was compounded in the dispensary and could be easily manipulated to accommodate variations in prescribers' directions, has given way to prepacked dispensed medicines, usually in the form of the compressed tablet (figure 8). Preparation of the latter required more sophisticated, heavy-duty machinery and large scale manufacturing was clearly more cost-effective. The fundamental underpinning for pharmacy, small-scale manufacturing, was gone. As early as 1944, it was noted that Pharmacy's role might be *"little more than an intelligent retail distribution of ready-made and centrally standardised products"*.⁷¹

Figure 8*

Number of unique formulae for local compounding and industrial manufacture by time



Note.

* = References British Pharmacopoeia, 72 73 74 75 76 77 78 79, British Pharmaceutical Codex 80 81 82 83 84 85, National Formulary 86 87 and British National Formulary 88 89.

Pharmacists are currently seldom directed to compound medicines. Their role has changed to one of the retailing middle-man. To place dispensing in context, it is helpful to examine a strict set of procedures which are relevant to current pharmacy practice. To ensure safety and efficiency,⁹⁰ CPs are encouraged to:

1. Read the prescription carefully and check that it is complete and valid;
2. Check that the dosage and directions are appropriate;
3. Dispense the medicine;
 - 3.1. check any calculations;
 - 3.2. check the storage requirements;
 - 3.3. collect the container;
 - 3.4. write the label;
 - 3.5. prepare or select the medicine;
 - 3.5.1. Compounded extemporaneously;
 - 3.5.2. Weighed or measured from stock which has been previously compounded from basic ingredients on a small scale in the pharmacy;
 - 3.5.3. Weighed, measured or counted from stock purchased from a manufacturer; or,
 - 3.5.4. Supplied in a manufacturer's original pack.
 - 3.6. pack the medicine into the container;
 - 3.7. fix the label; and,
 - 3.8. check the finished product.
4. Counsel the patient;
5. Endorse the prescription and collect any fee;
6. Dispose of the prescription; and,
7. Make the appropriate records.

This description reinforces the relatively minor role of compounding, and indeed the act of supplying pre-packed items. Notably, procedure four, to "*counsel the patient*", is a unique activity which is not under the umbrella term "*to dispense the medicine*". Procedures two, five, six and seven have a monitoring and clerical implication, to check, to endorse, to dispose, to record. Evidence for the increased bureaucracy of the dispensing process can be seen in subtle changes to the design of the 1988 FP10 prescription forms compared with its predecessor the 1963 EC10. Additions include: a box which prescribers may use to indicate the number of days treatment; the letters NP which may be cancelled to avoid identifying the medication with a specific title; and a specific area entitled 'Pharmacist's pack and quantity' endorsement'. Community pharmacists must follow each monthly edition of the Drug Tariff and adhere to the current requirements in order to receive payment for dispensed prescription items. Space allocated specifically for endorsing testifies to an increasing commitment on the part of the CP to processing rather than compounding. This is further emphasised if the back of both prescription forms are compared. Since 1st June 1952, patients have been charged a levy in respect of each item dispensed. In 1963, a fee of £0.10

per form was charged with no exemptions. Form FP10 contains a multiple-category declaration section for exemptions. Community pharmacists are not directly liable for inaccuracies in the completion of the declaration but time is inevitably spent in servicing this aspect of the dispensing process. The 1st April, 1995 introduced even more complicated declarations to form FP10.⁹¹

Procedure one of the supply process has more than a monitoring or clerical overtone. The 1968 Medicines Act (section 1.3, page 23) dictates the manner in which a prescription must be written before a POM can be dispensed by a CP. The regulations restrict the prescriber and also place the CP in a gate-keeping position, a role which is reinforced as payment is based on adherence of all parties to the code. Briefly, a current prescription for a POM must have:

1. The patient's name, address and age if under 12 years;
2. The names and quantities of the medicaments to be supplied;
3. Instructions for the patient;
4. The prescriber's profession, address and signature;
5. The date on which the prescription was written or signed; and,
6. The proper name (designated on prescription forms as "NP" for *Nomen Proprium*).

Certain substances are additionally controlled by the Misuse of Drugs Act 1971 and subsequent regulations.⁹² Prescriptions for Controlled Drugs must be indelibly written, signed and dated by a valid prescriber, individually recorded by the CP and include:

1. A date not more than 13 weeks previously;
2. The form of the medicine, whether tablet, capsule, injection etc;
3. Strength of the preparation if appropriate;
4. Dose to be taken; and,
5. Total quantity to be taken in words and figures.

In summary, it can be shown that compounding has largely been superseded by the supply of manufacturers' products. The act of supply has become increasingly burdened with clerical and monitoring functions and legal directives have positioned the CP as a custodian of drugs in society. It is emphasised that these activities will have a time element attached. However, time taken in compounding has also been released. Previous sections have shown that the number of pharmacies and CPs has slowly declined for a number of years, having only recently levelled out (figure 3, page 24 and figure 4, page 25). If the number of prescriptions dispensed has followed the same pattern, then, in a gross sense, CPs' prescription supply activities are likely to have remained static with time. In the following section, the number and type of prescriptions dispensed is examined.

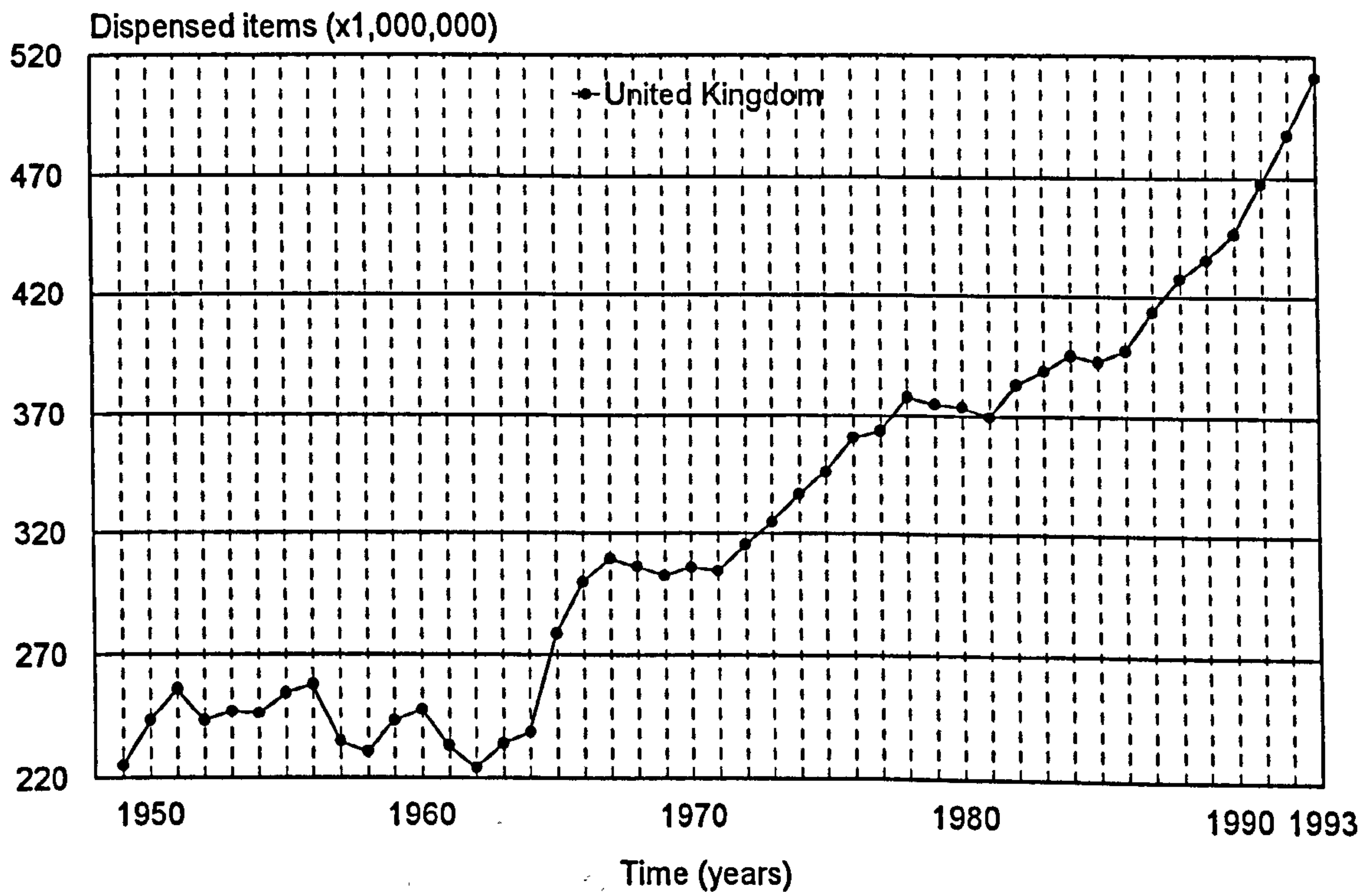
1.6 The prescription

1.6.2 The epidemiology of prescription dispensing

Currently, about eight out of ten NHS patients who consult a family doctor are given at least one prescription as part of their medical treatment. The number of prescription items dispensed per head of population has risen from 4.5 to 8.8 items per year during the period 1949 to 1993. In 1988 the figure was 7.5.⁹³ Information on the number of prescriptions dispensed in the United Kingdom between 1949 and 1993 is provided in figure nine. Of all prescriptions, approximately six percent are dispensed by GPs in rural areas where pharmacies are not readily accessible. Figures for such dispensing are excluded from those cited. As shown, the number of prescriptions dispensed has more than doubled during this period. Although the reduction in compounding or preparation activities plus the advent of computerisation would offset time taken by increasing bureaucracy in supply, it is likely that the increase in number of prescriptions has led to an increasing emphasis on all aspects of dispensing.

Figure 9*

The number of prescription items dispensed in the United Kingdom from 1949 to 1993



Note

* = References 25 69
Figures include prescriptions dispensed by CPs and appliance contractors, however, the numbers by the latter are said to be negligible in comparison to the former.⁶⁷

Numerous factors underlying the increase in the number of prescriptions dispensed have been suggested, including:

1. increases in the overall population;
2. changes in the populations' demographic structure, notably the rising proportion of elderly people;
3. the development of radically new medicines; and,
4. social factors such as raised public expectations.

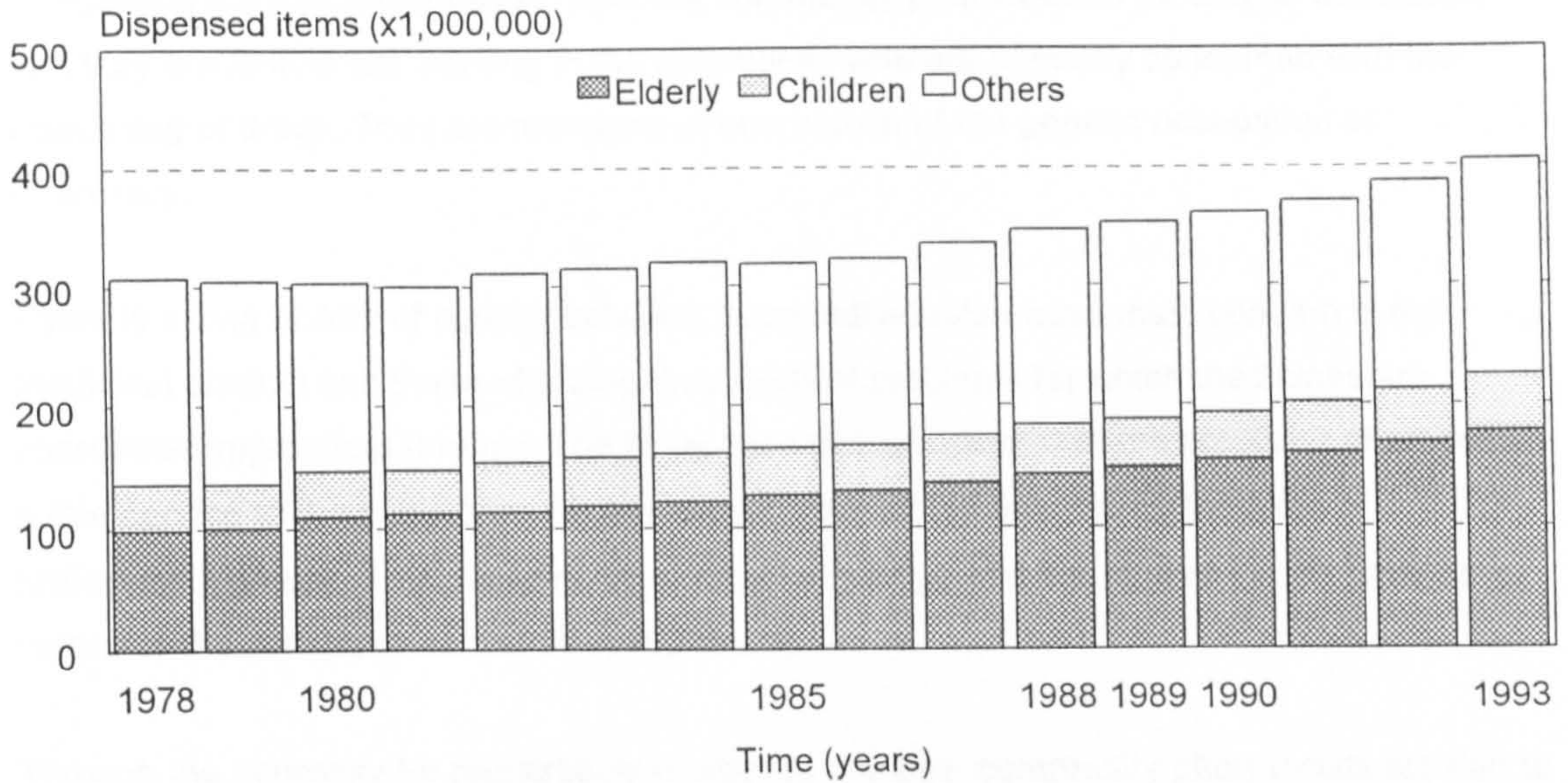
Of these factors the most numerically obvious is the increase in dispensing for the elderly, such as those of pensionable age, men aged 65 and over plus women aged 60 and over. The total number of prescriptions dispensed for this group increased from 98 to 176.5 million between 1978 and 1993 (figure 10, page 38). This represents an increase in prescriptions dispensed for each individual per year from 12.2 to 19.8 respectively. Figures for those who were chargeable fell from 5.5 to 2.2 items per person. Increases in dispensing for the elderly more than balanced decreases in other sections of the community.²⁵

By 1988, there were approximately 2,300 pharmaceutical preparations available for prescribing and dispensing in various strengths and pack sizes in the United Kingdom. It is estimated that only 20% of this total were frequently dispensed.²⁵ Dispensed items are classified therapeutically by the PPA for the DoH using the Drug Master Index and relevant appendices.⁹⁴ Figure 11, page 38, lists the percentage of preparations dispensed in Great Britain in each class for the years 1983 to 1989 ordered according to the number dispensed in 1988. One of the most striking features of prescription dispensing during this period has been the pronounced decrease in the frequency of prescribing for class one drugs, those acting on the central nervous system. The major component of this effect was the reduction in prescribing of sedatives and hypnotics, class 01(3), from 17,604,000 in 1983 to 10,882,000 in 1989. A further feature concerned preparations acting on the respiratory system, class five, which showed a dramatic decrease in 1985, the year a 'limited list' or 'Black list' was introduced. Specifically, remuneration for dispensing of expectorants and cough suppressants was limited to a reduced number of products resulting in a drop in dispensed items from 10,358 in 1985 to 7,855 in 1986.⁹⁵

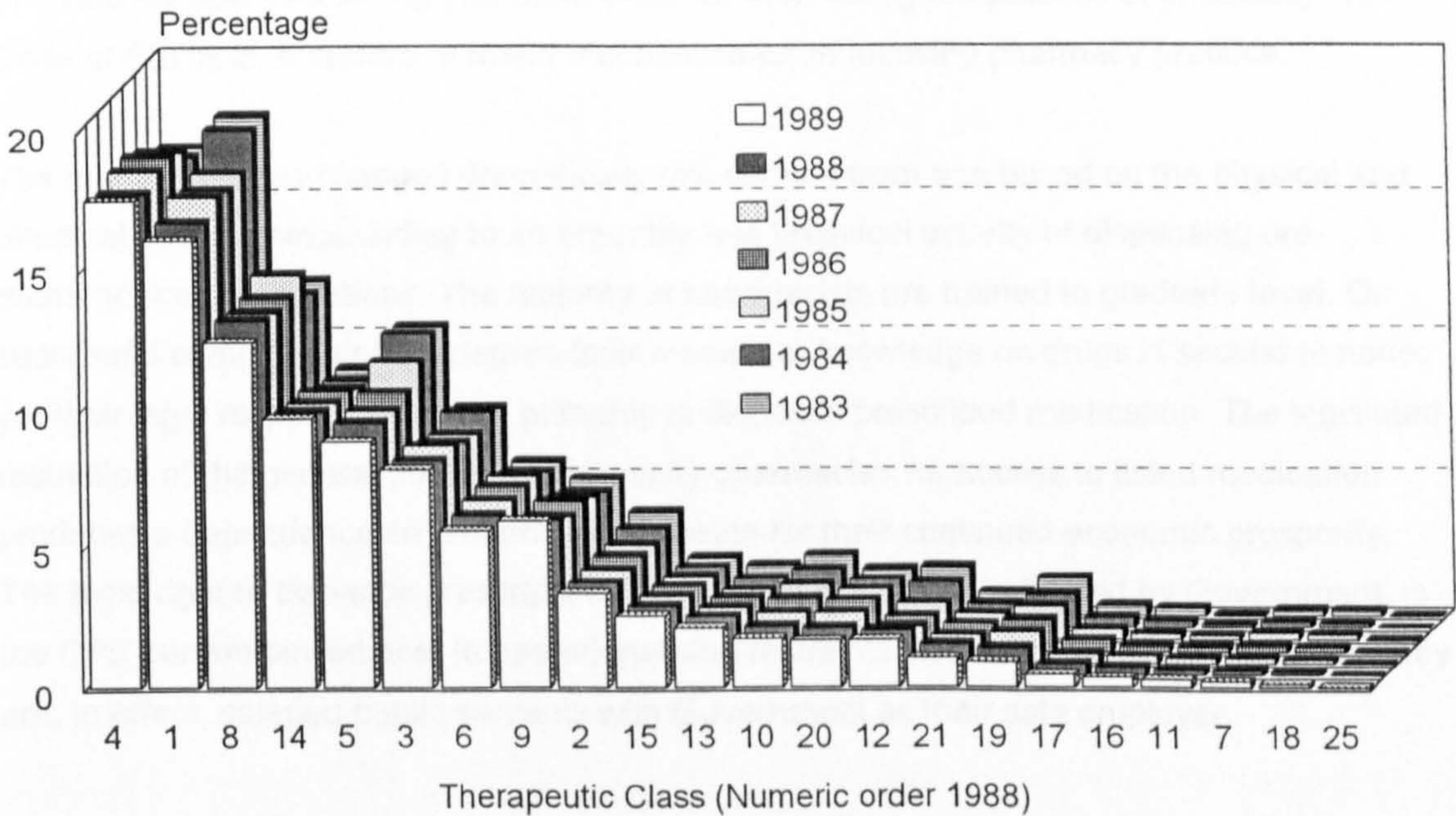
In summary, the number of prescriptions dispensed in the United Kingdom has increased in excess of the population. The difference can be accounted for by the growth in the elderly population and a change in prescribing patterns. Examination of prescribing using the number of prescriptions dispensed in defined therapeutic classes indicates reductions in class five items and in class one items, specifically, sedatives and tranquillizers.

Figures 10 and 11*

Prescription items dispensed in England in age categories by time



Preparations dispensed in Great Britain by therapeutic class, 1983 to 1989



Note

* = Reference(s) for figure 10 are 25 69 and that for figure 11 is 95. Descriptions of therapeutic classes are as follows. Preparations acting on or prescribed for/as:

4	cardiovascular system and diuretics	10	affecting haemopoiesis and the blood
1	nervous system	20	dressings
8	systemically on infections	12	nutritional disorders
14	locally on the skin and mucous membranes	21	appliances
5	the respiratory system	19	other drugs and preparations
3	gastro-intestinal system	17	used in diagnosis
6	prescribed for rheumatism	16	immunology
9	hormone or anti-hormone activity	11	the treatment of malignant diseases
2	the nervous system	7	acting on the uterus and the urinary tract
15	the eye	18	disinfectants, antiseptics, surgical and industrial spirits
13	affecting allergic reactions	25	bulk sterile fluids and radio-pharmaceuticals

1.7 Conclusion

Concerning the general question 'Who are community pharmacists?', it can be concluded that they are individuals working in the community who are primarily concerned with the dispensing of drugs. They are members of one branch of the generic occupation of Pharmacy.

There is a long history of conflict between those individuals whose main concern is the medicinal product and those who diagnose medical problems for which medicines are considered appropriate therapy. The Rose case demonstrates that the provision of advice as a free service to the public may be a powerful argument in developing the roles of professional groups. Thus, acquisition of drug knowledge and the right to inform patients is central to the continued existence of Pharmacy.

Through the necessity for registration in order to practise, community pharmacists are tied to the decisions of The Society. It follows that co-operation of The Society is a necessary prerequisite for any external influence on pharmacy practice. Legal rulings necessitate that The Society operates through its Code of Ethics in directing the practice of pharmacy. The Code of Ethics is, therefore, a major mechanism for influencing pharmacy practice.

The role of CPs has changed dramatically this century from one based on the physical and practical skill of compounding to an arguably less technical activity of dispensing pre-manufactured preparations. The majority of pharmacists are trained to graduate level. On successful completion of the degree their breadth of knowledge on drugs is second to none, yet their legal responsibilities are primarily to dispense prescribed medication. The legislated restriction of the general public to community pharmacies for access to listed medication produces a dependence on Government backing for their continued economic prosperity. The legal right to dispense prescriptions, the cost of which is reimbursed by Government, is the CPs' current powerbase. In operationalising restraints on public access to medicines they are, in effect, salaried public servants with Government as their sole employer.

Trends in both the number of full-time CPs and pharmacies have levelled out. Given net increases in the number of prescriptions written per head of population, increasing general population and the proportion who are elderly, the number of prescriptions dispensed per CP is likely to continue increasing. The effect on pharmacy practice will depend on recent increases in the number of part-time CPs and the proportion of females.

In the next chapter, a requirement for PMA and the response of occupations which are in a position to provide such information are considered.

CHAPTER 2 DESCRIPTION OF THE PROBLEM

2.1 Summary

"In policy analysis, the most creative calculations concern finding problems for which solutions might be attempted" - Aaron Wildavsky⁹⁶

In chapter one it was argued that the provision of advice on medicines is an activity of public concern. Chapter two continues in section 2.2, page 42, by reviewing evidence affirming this activity as an area for development by Pharmacy. As predicted in chapter one, hostility towards the activities of pharmacists comes from GPs. Legal rulings are described which indicated a shared responsibility between CPs and GPs for dispensing and providing the correct PMA. The importance of dispensing compared with over-the-counter (OTC) and front-shop sales is described.

If CPs have a role as advisors to the public, then fundamental questions must be asked. First, do the general public and patients perceive CPs as legitimate sources of advice? Limited evidence that they do is presented in section 2.3.1, page 44. Second, who is the patient's preferred source of PMA, the GP or CP? Qualified evidence is presented demonstrating a preference for the GP (section 2.3.2, page 45). Third, do patients want advice? A literature review is presented demonstrating a perceived need on the part of patients for more advice, yet a reluctance to ask advisors. The lack of feedback creates a breakdown in communication whereby patients' needs remain unmet. A potential mismatch in the category of advice provided by advisors and that perceived as required by patients is first noted (section 2.3.3, page 46). This mismatch is explored in greater detail in section 2.4.1, page 50, where studies of 'what the patients want to know' are reviewed. It is argued that advice may be categorised under headings of 'What to do with it', 'What is prescribed', and 'Specific problems'. A sub-category of 'Specific problems' with the heading of 'Side effects' is specifically identified. Evidence is presented that patients require advice across this broad range of categories. This requirement is compared in section 2.4.2, page 53, with studies of the activities of advisors. Although the advisory activities of CPs and GPs is difficult to ascertain, it is argued that it is likely to be low in comparison to perceived need, and also dependent on the category of advice involved. The disparity is at its greatest for the sub-category 'Side effects'.

Unless advice can be comprehended by patients, is remembered and results in compliance with medication, then its provision is of limited value. Section 2.5.1, page 59, presents a review of the literature and demonstrates patients' lack of comprehension of both GPs' verbal advice and written advice in the form of prescription labels. Patients are said to be diagnosis-orientated when visiting GPs and medication-orientated when having a prescription dispensed. It is argued that the patients' medicine orientation presents the potential for CPs to remedy any failures in comprehension. That patients also fail to remember advice from GPs is demonstrated in section 2.5.2, page 65. However, this is of little consequence for their

prognosis providing they are still compliant with their medication. In the final section of this chapter (section 2.5.3, page 67), non-compliance is shown to be of the order of 50%. Relationships between compliance and structural variables, situational barrier models, educational approaches and motivational models provide evidence that the means exist by which advisors may optimise their activity. It is argued that it is possible for CPs to have a valued impact on patients' use of medicines. However, there is little evidence that CPs' normal activity has such an impact.

The problem identified in this chapter is simply that patients want PMA and advisors are not meeting demand. When advice is provided by GPs much of the understanding is lost. Due to their education and position in the medication process, there may be a role for CPs as advisors on prescription medication. However, little is known about their normal activity or whether it is of any use. The problem has been noted, but the evidence that CPs are able to do anything about it is lacking.

2.2 Community pharmacists' proposed role as advisors on medicines

Authors have suggested that community pharmacists develop their advisory role on prescription medication.^{97 98} Mr John Tapster PhC writes in *The Practitioner*, a journal directed at GPs:⁹⁸

"there has been a distinct shift of emphasis from the pharmacist's former role of compounder of medicines, to dispenser of pre-packed preparations. The time saved should increasingly be used to advise and counsel patients about their prescribed medicines and to treat minor ailments. [he continues] The pharmacist will devote as much time as is necessary to advising patients about the dosage and time of doses of their dispensed medicines, reinforcing the importance of compliance and warning of any possible side-effects".

From the history presented in chapter one of this thesis, this perception of the future is unlikely to be shared by all GPs. Commenting on the future of pharmacy, Dr Malvin Salkind, a professor of general medical practice, states that pharmacy has *"lost control of the drug"* and that patients are bombarded with information and asked the CP for products rather than advice.⁹⁹ Dr David Roberts, general practitioner and chairman of the Dispensing Doctors Association, writes in the *Journal of the Royal College of General Practitioners* that:¹⁰⁰

"the main role of the chemist is to supply medicines according to prescriptions written by the doctor. It is assumed that the doctor is aware of the effects of the medications he prescribes and it is, of course, the doctor who takes sole responsibility for inappropriate prescribing. In effect, the chemist acts rather like the chef in a kitchen, preparing the order as written on the piece of paper presented to him. Unlike the chef, however, he is not allowed to embellish it in any way. He is simply a supplier of goods, a storekeeper reaching for goods from a shelf. [he continues] It has been said that by double-checking the prescription the chemist has saved many a patient from the mistakes of doctors. That may be so but this role is rapidly being supplanted by computer technology in doctors' surgeries and dispensaries".

Five months later and in the same journal, a medical sociologist, Dr Geoffrey Harding, and an academic pharmacist, Dr Kevin Taylor,¹⁰¹ responded to the above statements. They cited the Migril case,^{102 103} where an overdose of tablets for relief of acute migraine attacks¹⁰⁴ caused ischaemia, and made the point that pharmacists shared legal responsibility with GPs for medicines dispensed. This is one of two such cases, the other being where Daonil,TM used for the treatment of diabetes, was misread and the antibiotic AmoxilTM dispensed in error. The mistake reinforced the joint responsibility for dispensing.^{105 106} An appeal by the GP involved was later lost in the High court.¹⁰⁷ Harding and Taylor noted that computers rely on the capabilities of the operator and cannot make clinical, pharmacological or professional judgements. They state that CPs have the required knowledge and *"are skilled at making such judgements"* for the ultimate benefit of the patient. Dr Roberts made no mention of the shared responsibility nor of a possible role for CPs as advisors on prescription medication.¹⁰⁰ On this latter point, Harding and Taylor¹⁰¹ noted that:

"At the point of handing over a dispensed medicine, pharmacists reiterate prescribers' instructions and give additional advice where appropriate. [they continued] ...by reinforcing the prescriber's instructions, the pharmacist enhances the compliance of patients with their drug regimen".

Thus, concurrent with the loss of a compounding function, an advisory role on prescription medication is acknowledged and even used in defending the existence of CPs.

Community pharmacists continue to dispense and be paid accordingly. However, they supplement their income by the sale of OTC, non-prescription goods. A question might be asked, what incentives are there to provide a dispensing service with 'free' advice if an alternative income provides economic viability? In 1982, British community pharmacy accounted for only 66.5% of OTC sales and this figure is on the decline.¹⁰⁸ In 1988, a marketing company is reported to have expressed the opinion that the future of CPs lay in expanding their health care role, by keeping patients' medication records and giving advice.¹⁰⁹

It has already been shown that the amount remunerated per prescription item has reflected changes in the general economy and the number of prescriptions dispensed per pharmacy is increasing (section 1.6.2, page 36). Thus, the decline in income from non-dispensing activities will produce even greater reliance on prescription dispensing as a source of income for CPs. It might be argued that as dispensing assumes even greater prominence so will the available resources to refine associated tasks such as the provision of advice.

So far in this section we have noted the emerging prominence of dispensing as an activity for CPs. Also, that an advisory role for prescription medication is perceived to be a fundamental activity. In recent history it has been the general public through its representatives in Government and Law who have been the arbiters of the availability of advice on medicines. In the Rose Case, compounders were allowed to provide medicines on the basis that advice was perceived as a public benefit. It is reasonable to propose, therefore, that public opinion on legitimate sources of advice might be a major factor in ascribing an advisory role to CPs. It follows that the critical questions are; to what extent does the general public perceive CPs as legitimate sources of advice, who do they prefer, CPs or GPs as advisors and are they satisfied with the advice provided? These questions are addressed in the next section.

2.3 A perceived need for prescription medication advice

2.3.1 A legitimate role for community pharmacists?

No survey has been conducted to investigate the perception of either the general public or its subset, 'patients', as to the legitimacy of CPs or GPs as advisors on prescription medication. It must be accepted, therefore, that individuals reporting that they would seek, or have sought, information are indicating their perceived need for advice and by implication are legitimising the advisor's role.

The only relevant British study of this kind was commissioned by the NPA and carried out by the market research organisation, Marplan. Surveys were conducted before and after newspaper and magazine advertising which promoted CPs as advisors on minor ailments and OTC preparations - the 'Ask your pharmacist' campaign. Individuals were asked whether they would consider asking their local CP for advice on prescription medicine; 30% answered affirmative in August 1982 and 34% in February 1986. Further, the 1,982 interviewees in the 1982 study were given the options of 'dispenser of medicines', 'retailer of cosmetics/toiletries etc', 'adviser on medicines' and 'adviser on minor ailments' then asked "*which of these aspects do you consider as the most important, 2nd most important and 3rd most important of the retail pharmacist's jobs?*" Community pharmacists' activities as advisors on medicines was ranked first by 12.8% of interviewees and dispensing, by 82%.¹¹⁰

In America, researchers have asked, "*What kind of health matters do you think you might discuss with the pharmacist?*".¹¹¹ Prescription medication as a topic was noted by 12.5% of the sample¹¹² and 37% responded 'yes' to the question "*During the past year, have you asked a pharmacist for advice or for counsel on prescription or non-prescription drugs?*"¹¹³ Pharmacists were regarded as a principal source of prescription information by 25% of the respondents to a survey of elderly patients.¹¹⁴ Other investigations have concluded that; the general public's perception was that the CP did not offer advice about the prescriptions they dispense,¹¹⁵ and that "*the failure of the pharmacist to serve as an advisor to patients does not appear to stem from patient unwillingness to accept advice. Rather as other studies indicate, it appears pharmacists do not offer advice, but when they do, the patient willingly accepts it.*"¹¹⁶ In Australia, seven of 68 respondents indicated that they had sought PMA from a pharmacist in the previous 12 month period. The authors suggested that "*pharmacists may need to become more forceful in counselling about prescribed medication.*"¹¹⁷

In summary, there is some, albeit limited, published evidence which legitimises a role for pharmacists in Britain as advisors on prescription medication. Evidence from America and Australia support the view that a similar perception exists in those countries.

2.3.2 Preferred sources

An unnamed market research company interviewed 500 shoppers in a Newcastle shopping centre, asking each about their current sources of information on prescribed medicines. Most respondents (65%) said they would refer to their 'doctor' if they had a problem with prescription medication, 25% gave a pharmacist as their preferred source, 6% would approach nurses, 1.6% relatives and no mention was made of the remaining 2.4%. Such evidence confirms the dominance of the doctor as a legitimate source of information on prescription medication in the eyes of this subsection of the general public.¹¹⁸

Similar findings are reported from America. Joubert and Lasagna¹¹⁹ asked orthopaedic inpatients, general medical outpatients and 'customers' at two community pharmacies to rate their knowledge of OTC and prescription drugs, then to assess the importance of various sources of information by labelling them as; 'very important', 'fairly important' or 'unimportant' and finally to indicate the preferred main source of information. Four results are notable. First, evidence from the sample indicates that public knowledge of OTC drugs and prescription medication is similar. Second, of the 137 (66.2%) respondents, 51.5% felt that pharmacists were a 'very important' source of information on prescription medication, although, the preferred main source was clearly the doctor. Interestingly, package inserts and medical reference books were preferred to both pharmacist and medication labels as sources of advice. Third, the trend for preferences in sources of advice was reversed for OTC drugs where the majority of respondents preferred the pharmacist as a source over the doctor. Finally, the perceived differences between OTC drugs and prescription medication, means that published results based on respondents perceptions of generic terms like 'drugs' or 'medicines' without qualifications such as, OTC or prescription, may be misleading. Thus results such as doctor 86%, pharmacist 21% as responses to the question "*Where do you find out about drugs and their usage?*" are difficult to interpret.¹²⁰ Similarly, the change between 1979 and 1985 from 67% to 71% in numbers who agree with the statement "*Chemists are really just small shop-keepers and know very little about medicines*"¹²¹ must be interpreted cautiously.

In answer to the question of the British general public's preferences for an advisor on prescription medication, the limited evidence available points to the doctor as the main choice. Again, American literature supports this conclusion. But what about the advice itself? How does the general public perceive the advice it is given? Do they want more? Is there a perceived need which is not being met by current practice and if not, is there a reason?

2.3.3 Patients want more information

This section provides evidence that information on drug treatment and specifically drug side effects is both perceived as required by the patient yet not generally sought. Details of major studies are provided in table one, page 48.

Morrow and colleagues in 1993, asked, 'when I am collecting a prescription the pharmacist explains to me about how to take the medicine'. Of 254 respondents, 93 (36.6%) indicated that this was always their current experience while, 168 (66.4%) desired that such advice is always provided.¹²² Clearly the public want information and may desire more than is being provided. Studies in the community report 79%¹²³ and 92%¹²⁴ of respondents who would like the CP and 62%¹²⁵ either the CP or the GP to give more advice concerning prescription medication. Notably, 93%¹²³ felt they should be informed on the dangers and hazards of side effects from prescribed medication and between 72.7%¹²⁵ and 80%¹²⁴ were uninformed about potential side effects. In conclusion the authors state; *"The results of the survey would appear to suggest that there is quite a strong urgent demand by the public for the [community] pharmacists to play an official and expanding role in the advisory field...";*¹²³ and, *"the survey revealed an unsatisfactory state of knowledge about prescription medicines by the general public".*¹²⁴ The importance of these few studies may be demonstrated by the number of citations.^{126 127 128 129 130} A figure of 72% for respondents requiring more prescription drug information has been published in America.¹³¹

Studies in Hospitals also support an underlying perceived need for advice. In addition they variously identify 11%,¹³² 24%,¹³³ and 53%¹³⁴ of respondents who wanted more information yet failed to ask for it. Studies of communication between patients and medical practitioners suggest that patients are satisfied with the advice provided,¹³⁵ but are reluctant to ask questions.¹³⁶ Summarising public opinion concerning the NHS, detailed in Royal Commission research papers, Klein¹³⁷ reported that *"almost half of those who wanted to know more felt that they could not ask their doctor for the required information"*. Clearly, the general public and patients perceive that they want more advice. Yet they fail to make their wishes known. As patients do not provide feedback, medical practitioners assume their information needs are met. A communication breakdown results.¹³⁸ Ley, in 1988,¹³⁹ summarises the available evidence and suggests that the patient's reluctance to ask questions:

"probably stems mainly from over-deferential attitudes towards doctors. Its main consequences are:

- a. *patients being less informed about their condition than they would like;*
- b. *absence of feedback to clinicians about the adequacy of their performance as communicators; and,*
- c. *clinicians believing that patients do not want information".*

It has been shown that patients do request some information from GPs¹⁴⁰ but leave the consultation perceiving a need for more advice^{123 124 125} and reportedly request information from other sources, such as pharmacists.^{136 141 142 143}

Global figures for patient initiated request for advice from CPs vary from 2.8%¹⁴¹ to 2.4%.¹⁴² Figures of 3% and 4% were reported for specific requests on 'how much to take' and 'possible side effects' respectively from both pharmacist and medical practitioners.¹³⁶ Inspection of table one, page 48, reference 136 shows that respondents recall being offered advice far more frequently than actively seeking information and that they report making a similar number of requests in both medical and pharmacy settings. Much greater values for patient initiated advice were noted in a hospital setting.¹⁴³ From inspection of the results, it would appear that hospital pharmacists supplied information about how often to take the drugs, how much to take each time and the best way to take it, while hospital medical practitioners discussed the duration of treatment and possible side effects. Concluding remarks made by the authors are noteworthy in the light of the differing emphasis. They state: *"The pharmacist is generally the last practitioner the patient sees in hospital and may therefore be an influential source of information. The prescribers' instructions can be reinforced and supplemented, and the patient can be encouraged to ask questions"*. This was the summary of a Drug and Therapeutic Bulletin article which suggested that *"the information given by the different professionals should be concordant and mutually reinforcing"*.¹⁴⁴ However, it would appear in practice, certainly from the results presented, that the two advisory groups are reinforcing only part of the message, and where advice on side effects is concerned, the hospital medical practitioner is providing the majority of the information.

In summary, it would appear that patients perceive a need for additional advice yet are reluctant to request information from either pharmacists or GPs. Patients and GPs appear caught in a communication trap whereby patients' perceived needs for advice are not fulfilled. Comparable studies of patients' perceptions of pharmacists as advisors on prescription medication which might rationalise why so few patients seek advice have not been published. In the community, respondents remember receiving more information in medical rather than pharmacy settings. The nature of advice may depend on who is providing the information. As CPs are the last link in the advisory chain, it is important to investigate any mismatch between advice sought by patients and provided by advisors.

Table 1

Patients' perceived and reported requests for prescription medication

Reference Source	Year Published	Research method used	Selection and sample population	Sample size response rate	Category of advice	Percentage of sample requesting more advice
123	1979	Questionnaire (not provided). Given out over a four week period in 1977 at two 'independent' community pharmacies Verbal explanation. Not stated by whom	Every 10th patient presenting. Sample of 200. 54% visited to have medication dispensed. 154 completed questionnaires 150 used in analysis	150 (76.5%) excludes four	Concerning prescription medication Dangers or hazards	79 93
124	1986	Questionnaire (not provided) given out by branches of Boots the Chemist Ltd. 25 questionnaires to each of 1,096 outlets. Selection of subjects not stated to be random. No analysis of non-responders. Analysis by social class	Patients or the person responsible for administration of prescribed medication. Over 10,000 returned, 8,831 received in time for analysis	8,831 (32.2%)	Concerning prescription medication	92
125	1986	Questionnaire (provided) mailed Jan 1984.	1/200 random "systematic" sample of Southampton electorate, 740 adults	443 (66.4%) excludes 73	Concerning prescription medication	62
140	1978	Direct observation of consultation between patients and general medical practitioners (coding scheme provided). Follow-up interview of patients	20 female patients attending in each of four volunteer Australian general practice surgeries.	74 (92.5) 34 primary 46 follow-up	Concerning prescription medication	% Patient initiated 47.1 23.9
141	1968	Notes made by British community pharmacists during the 5th to 6th June 1967	Every customer served at a counter of any of eight community pharmacies	21,807	Concerning prescription medication	2.8
142	1980	Notes made by British community pharmacists. Low response rate makes data suspect	93 (22.3%) randomly sampled community pharmacists recorded 'sales' for one day in April 1977. Customers are cases	7,452	Concerning prescription medication	2.4

Table 1 (continued)

Reference Source	Year Published	Research method used	Selection and sample population	Sample size response rate	Category of advice	% Patient Initiated	% Source of information*		
							Medical	Pharmacy Both	
136	1983	Survey by market research organisation. Probability sample of adult subjects for randomisation of sample someone in their household in the four weeks prior to interview. 8,000 households gave 1,104 for interview between 7th and 26th September 1982	American 'consumers' ≥18 years old who had one or more prescriptions dispensed for themselves or for	1,104	How much to take How often to take If it can be refilled Precautions Possible side effects		59 (55+4†) 61 31 31 26 (22+4†)	25 (22+3†) 26 15 16 11(7+4†)	19 19 9 9 4
143	1987	'Independent' assessor interview of recalled advice. No validation of interview techniques given, no correlation with observed activity	Patients dispensed target drugs from a British hospital outpatient dispensary Patients are cases	154 (100%)	How often to take drugs How much to take each time Best way to take drugs Duration of treatment Side effects of treatment Concomitant drugs Allergies Action of drugs	34.4 20.1 32.5 27.9 32.5	59.1 57.8 17.5 39.6 26.6 40.9 28.6	63.3 59.7 36.4 16.2 6.5 3.9 0.6	30.5 26.5 6.5 5.2 2.6 1.3

Notes

* = Figures represent the percentage of respondents who indicated they had received advice in the given category.

† = The first figure in brackets represents the percentage of respondents who reported receiving information initiated by the source indicated, the second value is the percentage of 'customers' who requested such information from the same source.

2.4 Advice on prescription medication

2.4.1 What the patient wants to know

Results of the four studies A,¹¹⁹ B,¹²⁵ C¹⁴⁵ and D¹⁴⁶ which sought to determine what patients want to know about prescription medication are provided in table two below.

Table 2

Importance of advice by category of information

Category of information (median%, range)†	Percentage requesting advice			Rating of advice*	
	A ¹¹⁹ n=368	B ¹²⁵ n=137	C ¹⁴⁵ n=84	D ¹⁴⁶ n=67	n=70
(1) What to do with it (69.9%, 46.8)					
Disposal of medicines			44		
Duration of use				4.63 (0.79)	59
Explanation of medication directions			87		
Generic and brand names				3.94 (1.34)	11
How long to take it	75.5				
Number of refills				3.88 (1.26)	33
Storage			56		
Storage instructions				4.21 (1.16)	13
What to do if a dose is missed	64.4			4.04 (1.18)	10
When and how much to take				4.46 (0.95)	64
When and how to take it	90.8				
(2) What is prescribed (81.25%, 42.4)					
All other uses		54.7			
How to tell if it is not working	58.4				
Medication purpose				4.44 (0.96)	67
Name of medicine	82.9				
Other important uses		74.5			
Purpose of medication			91		
Purpose of treatment	79.6				
The name		97.1			
Ways to know if the medicine is working				4.46 (0.81)	31
What you are using it for		93.4			
(3) Specific problems (80.3%, 15)					
Actions to avoid, eg driving			76		
Drug interactions			72		
Effect of alcohol with this medicine				3.32 (1.72)	19
Effects of foods with this medicine				4.55 (0.95)	24
Effects of other drugs				4.73 (0.74)	17
Precautions such as possible effects on driving	87.0				
Precautions to observe				4.90 (0.53)	60
Problems with alcohol or other drugs	84.0				
Risk of using too little		80.3			
Risks of not using at all		78.8			
Risks of overdosage		86.1			
(4) Side effects (76.6%, 46.1)					
All the possible risks of normal use		76.6			
Common risks of normal use		89.1			
Common side effects				4.50 (0.91)	40
Major side effects			43		
Minor side effects			75		
Side effects and what to do about them	88.3				
What to do about side effects				4.62 (0.72)	17

* = Figures for 'Rating of advice' column one are responses on a scale of 5=highly important to 1=not very important described as the Mean \pm SD. Column two is the percentage of patients claiming to have received advice in that category.

† = Categories taken verbatim. In study C categories have been taken from the text itself. The median percentage and range are boxed and given in brackets.

Referring to table two, the first two studies A¹¹⁹ and B,¹²⁵ from Britain and America respectively, surveyed patients' opinions on the information content of written inserts enclosed with the dispensed item. In both of these studies, the perceived importance of types of advice is indicated in percentage terms. It is not stated whether or not respondents were asked to comment on the categories in the context of receiving such information through prescription information leaflets. For this discussion it is assumed that responses are independent of method of information delivery. The third study from Australia set out specifically to determine what patients wanted to know¹⁴⁵ and the fourth,¹⁴⁶ from America, to examine patients' perceived importance of types of information about medications.

In table two, the median response and range for categories under each heading are provided as summary statistics. Comparing these with the median and range for all responses of 79.2% and 54.1 respectively, it is demonstrated that there is little difference across a broad range of topics in the percentage of respondents who want advice.

Categories of advice were collated under four discrete headings 'What to do with it', 'What is prescribed', 'Specific problems' and 'Side effects'. The latter category may be considered a sub category of 'Specific problems'. These categories were devised from the results of open-ended questioning of patients¹⁴⁷ and pharmacists¹⁴⁸ in two discrete studies conducted by the author. The published papers are reproduced in full in appendices A4.2 (page 302) and A4.3 (page 303). Notable findings included the significant dependence on younger age for a perceived requirement for advice on side effects. The relative importance of side effects has been consistently noted by authors. For example, Joubert and Lasagne¹¹⁹ noted the perceived importance of the concept of side effects. They included the dedicated question 'If there is a remote chance (e.g., 1/100,000) of dying from a usual dose of a medicine you have to take, do you want to know?' to determine the reliability of earlier responses. Eighty one percent of respondents answered affirmatively. Similarly, Ridout and Waters¹²⁵ concluded that, *"most patients needed to have more information about prescribed medicines, especially their unwanted side effects"* and Larmour¹⁴⁵ noted that 60% of the under 35 age group wanted information about serious side effects which contrasted with only 26% for the over 65 age group. The perceived importance to patients of the same categories of advice was determined by Gardner and colleagues¹⁴⁶ (table 2, page 50) which reinforces this notion of a global requirement for advice by patients. The authors comment that:

"Physicians, pharmacists, and others who provide patient education about medications should be sensitive to the fact that patients perceive information about adverse drug effects and interactions to be highly important. A heightened awareness and provision of such information to patients may lead to improved patient satisfaction and compliance".

From the patients' perspective the importance of information on side effects has been demonstrated. Even oncology patients with likely terminal illnesses still wish to be informed of investigations, treatments and side effects.¹⁴⁹ Only one study¹⁵⁰ has specifically investigated the attitudes of staff in health care occupations towards the seriousness and

need for disclosure of prescription drug side effects. Patients indicated a desire to know all potential side effects no matter how rarely they occurred or how minor they were. In contrast, medical practitioners and pharmacists felt only minor, frequently occurring side effects should be listed. Limitation of the research method were noted. The clinical importance of side effects has been described in a study of randomly selected medical outpatients attending an American hospital.¹⁵¹ Approximately 30% of subjects taking medication reported adverse symptoms with at least one medication. Subjects rarely reported modifying their medication regimens in response to adverse symptoms and one in four subjects did not discuss their symptoms with either the hospital medical practitioner or hospital pharmacist. Commenting on the results of the study the authors suggest that *"providers [of advice] must be aggressive in seeking out such problems. The alternative approachmay seriously delay the initiation of remedial measures by the provider"*. Thus, it would appear that advice on the side effects of prescribed medication has important implications for health care and is an issue which requires addressing in a proactive manner.

So far we have mainly considered advice from the patient's perspective. Evidence has been presented (section 2.3.3 reference ¹³⁹) that by failing to ask questions of their advisors, patients are not setting the agenda for the categories of advice they require. They do not appear to have much control over the advisory activities of either CPs or GPs so the next question must be, what do the advisors feel patients should know?

A report on the minimum information for self-prescribed medicines argued that *"what information is essential depends primarily on the medicine and the purpose for which it is used, although the cultural setting of its use and the educational attainment of the user must be taken into account"*.¹⁵² Using this as a base, a guide has been published for the minimum information in package inserts or patient information leaflets needed to enable patients to make treatment with prescribed drug therapy both effective and safe.¹⁵³ These guidelines appear to have been accepted ¹²⁹ and the debate has turned to problems of format ¹⁵⁴ and readability ^{155 156 157} for package inserts. Categories, such as side effects or unwanted effects, noted in table two, page 50, are contained within the guidelines. Thus, for package inserts at least, there is agreement on the categories of advice which should receive attention between patients and medical practitioners.

In summary, we have qualified evidence that patients want to be informed across the full range of categories of advice. Advice on side effects appears to be of specific importance to patients yet limited studies have been conducted. Categories supported by patients are also evident in medical guides. It now remains to be determine exactly what information is provided by advisors?

2.4.2 Activities of advisors

There is a dearth of information about what pharmacists actually do as advisors on prescription medication! Even fewer studies, none in Britain, have investigated the extent of provision of advice on medication by GPs. Details of the major relevant studies are summarised in table three, page 56.

A reluctance to proactively control or interfere with the clinical freedom of GPs¹⁵⁸ means that some studies may, by default, be an accurate reflection of their prescription medication advisory activities. Unfortunately, few studies^{140 158 159 160} have set out to investigate the PMA provided by GPs. Of the three available quantitative studies, two^{140 160} reported similar percentages of patients who were provided advice and both used observational methods. The remaining study¹⁵⁸ relied on the less valid method of self-reported activity which may account for the higher percentages noted. Alternatively, activity may be related to severity of illness, type of medication and a host of other factors. In addition, the sample frames of all studies were very specific, females,¹⁴⁰ diabetics,¹⁵⁸ and individuals prescribed antibiotics.¹⁶⁰ Thus, it is not possible to generalise the results and accurately determine the average advisory activity of GPs. What little evidence is available (table 3[A]) suggests a considerable range in reported advisory activity. Lower levels of activity would appear to support the findings of Svarstad (unpublished Ph.D., thesis cited by Ley¹³⁹) where a series of medical consultations were observed and only one third of patients were assessed as receiving adequate information about the medicines prescribed for them. Inspection of table three [A] and the categories of information provided supports a differential between topics which would be collated under the heading 'What to do with it' and 'Side effects'.

Turning to the advisory activity of pharmacists, it would appear that the results of studies are dependent on the methodology which is chosen. Individuals' perceptions of their own verbal activity¹⁶¹ (table 3[B]) suggests that pharmacists favour the provision of advice on side effects. No correlation was made with observed activity and all the evidence so far refutes this finding. The reliability of self-evaluation is called into question and it is tempting to suggest that the results of this study indicate the perceptions of what pharmacists feel they should be doing, rather than their actual activity. Using the questionnaire method a similar magnitude of perceived activity¹⁶² (table 3B) was reported. In contrast, much lower levels of advisory activity were seen with self-completed work analysis sheets.¹⁶³ The activity levels reported in the latter study are only slightly lower than those employing observational methods^{164 165} (table 3[B]). Thus, pharmacists' perceive their prescription medication advisory activity being greater in magnitude and with a different content pattern than is suggested by work activity or direct observation studies. Verbal advisory activity has been determined by Livingstone and colleagues¹⁶⁶ using the pseudo-patient technique, but the method restricts generalisation of the findings.

A similar conclusion was reached by Ortiz and colleagues¹⁶⁷ in a comparison of three methods^{168 169 170} of assessing patient counselling in Australian community pharmacies (table 3[B], page 56). Unfortunately, specific categories of advice were not provided in the published results of the three studies. However, it was possible to calculate, by multiplying the average number of patients counselled per day by the average percentage of counselling events involving prescription medication, an approximate figure for the number of patients counselled per day for each study. Comparing the questionnaire,¹⁶⁸ self-completed diaries¹⁶⁹ and direct observation¹⁷⁰ methods reveals a familiar pattern. The authors concluded,¹⁶⁷ *"that the self-completion questionnaires greatly overestimated these values [the frequency and duration of counselling] while diaries underestimated frequencies but overestimated durations. Direct observations influence counselling behaviours but this influence did not appear to be great...[and continue]...Direct observation would seem, prima facie, to be the most reliable survey method, at least with respect to the accuracy and consistency of recording counselling events"*.

Only one study has observed CPs' advisory activities in Britain. The work of Hayes and Livingstone¹⁶⁴ was first presented as a poster exhibited at the 1990 British Pharmaceutical Conference held in Cardiff (table 3[B]). It was not possible from the data presented to determine what percentage of the total subjects receiving a dispensing service were advised. It was reported that 98 'prescriptions' were associated with advice out of 718 (13.6%) observed. Although figures were not provided, it was stated that CPs provided significantly more advice than assistants. In addition, it is reported that eight patients were involved in request for information on prescription medication. Here, then, is the first study with subject validity which indicates that British CPs are asked for advice on prescription medication even if only occasionally.

Two other studies based on an observation method have been published. One¹⁷⁰ (table 3B) gave no indication of categories of advice, only that 42% of counselling episodes related to prescription medication. It is not possible to directly compare such results with the second study¹⁶⁵ as advice on 'the number of the tablets or capsules dispensed, the number of refills remaining, or the cost' was excluded. This study concluded that, *"the individual pharmacist was the most important determinant of the level of patient counselling that did take place"*.

From these studies it is clear that quantifying the advisory activities of CPs depends on the method of assessment. At best CPs advise slightly over half and at worst less than 10% of patients.

In terms of both quantity and quality, studies of professional non-compliance^{171 172 173 174} provide further insight as to the advisory activities of CPs.¹⁷⁵ Pharmacists were tested for their adherence to published recommendations for; advising on prescription drug interactions,¹⁷¹ compounding, labelling and the provision of advice,¹⁷² dispensing,¹⁷³ and advice.¹⁷⁴ For each study selected pharmacists were asked to complete test prescription(s)

by pseudo-patients. The following negative conclusions are characteristic and need little elaboration. Rowles and colleagues ¹⁷² stated, *"the results are a grim set of data that need little explanation...that the results turned out as they did is surprising and regrettable to the authors"*. Similarly, Puckett and colleagues ¹⁷⁴ commented that the *"assessment of quality is still poor and minimal"* and noted that only 13% of the prescriptions carried the appropriate additional information in the form of auxiliary labels.

In chapter one the Rose case was central to the expansion of apothecaries' activities. It was the provision of free advice which was at the heart of the decision to allow them dispensing rights. We now see that advice is still sought yet evidence is lacking that the public need is satisfied. How and by whom advice is provided is a social question. If CPs are part of the solution, it is first necessary to establish the extent to which the advice currently provided is appropriate to the task. For their advice to be of value, patients must comprehend, remember, and act on the information. Given the centrality of the role it is surprising that the pharmacy literature in this area is limited and dwarfed by that generated from the medical arena. The final section of this chapter provides a brief overview of this literature.

Table 3

(A) Prescription medication advice provided by general medical practitioners (A) and community pharmacists (B) to patients

Reference Source	Year published	Research method used	Selection and sample population response rate	Sample size given advice	Category of advice by subject	Percentage given advice	Percentage initiating advice
158	1975	Questionnaire (not provided) of general medical practitioners' input. semi-structured interview of patients (questionnaire not provided)	American study. Attendance at a general medical practice during a four month period with criteria of adult onset diabetes	242 patients, 23 on insulin 170 on oral tablets	Insulin type Insulin strength Insulin frequency Oral medication name Oral medication dose Oral medication frequency	100.0 95.5 91.0 100.0 96.0 98.8	
140	1978	Direct observation of consultation between patients and general medical practitioners (coding scheme provided). Follow-up interview of patients	20 female patients attending in each of four volunteer Australian general practice surgeries.	74 (92.5)*	Type of drug Instructions for treatment Effect of drug Side effects	40.5 37.8 32.4 18.9	
160	1987	Questionnaire to patients before and after consultation (not provided). Videotape of consultation. Coding system provided	56 (52%) general medical practitioners provided 2,934 Australian patients. 80% agreed to participate. Sample frame, the 380 patients taking antibiotics.	201 (52.9%)	Tablet was an antibiotic Type of antibiotic agent Name of antibiotic agent Schedule Dosage Length of course Restrictions while taking tablet Side effects When tablets would start to have effect What to do if a tablet forgotten What tablets looked like Cost of medication What to do if worried about any effect of the tablets after prescription	75. 29. 46. 52. 44. 44. 13. 10. 10. 0. 24. 0.5 3.0	

Table 3 (continued)
(B)

Reference Source	Year published	Research method used	Selection and sample population response rate	Sample size given advice	Category of advice by subject	Percentage given advice	Percentage initiating advice
163	1982	Self-completed work analysis sheets. Non-random sampling. Recorder bias Cautions in interpretation noted by Author	Patients of Australian community pharmacies. Calculations based on total dispensed prescriptions	1743 98s 587 events	Explanation of ancillary labelst Explanation of label dosage Unusual dosage forms Side effectst Other	12.0 11.8 2.2 1.7 6.1	
162	1983	Mail questionnaire (not provided) No indication of pre-piloting, validation or reliability. Perception of activity for elderly patients	Random sample of 80 from 118 full-time Canadian pharmacists. Cases are community pharmacists	60 (75%)	How to take medicines When to take medicines Foods or drugs to be avoided Nonprescription drugs	58. 55. 48. 30.	
168	1984	Mail questionnaire 37 piloted questions to 2,017 pharmacies in New South Wales and the Australian Capital Territory, on August 4th 1982. Patient counselling defined, "advice given by pharmacists in order to assist clients with their health care needs"	98.1% Australian community pharmacists in location. Average of 32 patients counselled per day. 54% of episodes were 9 medication related. Cases are patients counselled per day, 54% of 33	1,364 (68%)	Prescription medication advice	17.28 patients per day	
161	1985	Pre-piloted mailed questionnaire (not provided). Response to points 4 or 5 (always) on Likert scale for "type of information provided frequently on new prescriptions"	20% random sample of 2,040 American community pharmacists (408)	234 (58.8%)	Drug side effects Drug interactions Drug Administration Drug name Drug purpose Drug storage	59.8 48.7 47.4 41.6 36.6 34.8	
169	1985	Self-completed diaries (provided) recording counselling events over one week in 1984. Counselling episodes defined as a period which may contain several counselling events	Stratified random sample of Australian (NSW) community pharmacists. 91 (91%) agreed, returning 52 diaries. 12.2 patients counselled per day, 42% events 9 medication related. Cases are patients counselled/day. 42% of 12.2	52 (57%)	Prescription medication advice	5.1 patients per day	

Table 3 (continued)
(B)

Reference Source	Year published	Research method used	Selection and sample population response rate	Sample size given advice	Category of advice by subject	Percentage	Percentage initiated
170	1988	Observation of activity using activity analysis methods. Same worksheet as used in ref 169. Data on 80 days between July 1984 and Nov 1985	Stratified random sample of Australian (NSW) community pharmacists. 20.4 patients counselled per day. 41% of Cases are patients counselled per day. 41% of 20.4	28 (56%)	Prescription medication advice	8.4	patients per day
165	1989	Direct observation. Recording by activity sheet (provided) reliability via videotape and paired field observation. Baseline and post-educational input. Consultation define Timing of recordings not provided	Eight American community pharmacies volunteered. Only baseline results are reported here. Observation for 5.5 hours each during 1983	381 dispensing encounters,	Administration† Side effects‡ Name† Cautions Purpose of drug	19.4 8.1 4.7 2.1 1.0	
164	1990	Direct observation. Patient counselling defined as 'any verbal information relevant to the prescribed medicine given to the patient by the pharmacist or assistant'. Difficult to interpret as prescriptions are cases. Not stated whether prescriptions are individual medicines or forms	Supply of prescription medicines for one working day in a British community pharmacy setting. Prescriptions were analysed as cases. Prescriptions could have more than one counselling event n=718 prescriptions actual figures in brackets	20 (68.9%) pharmacies 718 cases 98 cases with 149 events	Dosage schedule Additional warnings Name/class of drug How to use Duration of treatment Storage instructions Purpose of drug Adverse effects	9.8 (70) 6.3 (45) 1.8 (13) 1.3 (9) 0.6 (4) 0.6 (4) 0.4 (3) 0.14 (1) 0.14 (1)	0.42 (3) 0.56 (4) 0 0 0 0 0.14 (1) 0.14 (1)

Notes

* = (A) Inconsistencies were noted in the tabulation of the data. There were six refusals from all surgeries yet the figures provided add up to 80 not 74. Further the 80 were divided into two groups 'primary consultations' and a 'follow-up group' with 34 and 46 patients respectively, however, tabulated results for communication concerning treatment implied 43 and 68 patients in the two groups. For the purposes of this table both groups have been summed to determine the percentage of information discussed in each category. These figures should be considered as a guide only.

† = (B) Explanation of ancillary labels may include information on side effects.

‡ = (B) Categories in the original reference amalgamated for comparison

2.5 Patients' comprehension, memory and compliance

2.5.1 Patients' comprehension of their treatment advice

It has been argued (section 2.3.3, page 46) that patients may want more information, yet are unlikely to request advice. As communication is a monologue, it is essential that the intention behind the information must be comprehended, understood and translated into accurate prescription medication treatment. The most frequently reported situations where counselling is indicated is confusion over medication.¹⁷⁶ Advice may be given verbally or, where prescriptions are concerned, conveyed through the label. In both cases a failure in comprehension has been found. Details of studies which have reported a degree of non-comprehension with verbal advice and prescription labelling are listed in table four, page 62.

A major problem in interpreting studies of patient comprehension is in distinguishing between actual non-comprehension or misunderstanding and feigned non-comprehension or memory failure. Using the patients' understanding of treatment information provided by GPs, Kincey and colleagues¹³⁵ associated non-comprehension with six (14.3%) patients. Ley¹³⁹ notes that patients may incorrectly believe that they have understood directions. This results in an underestimate of failures to comprehend. Remaining studies all used 'expert' opinion to estimate non-comprehension. This method assumes that patients can accurately interpret their own actions and are able to convey the information to researchers or 'experts' who are, in turn, able to accurately assess comprehension. Differences in methods of data collection and interpretation, lack of reliability and validity, plus the assumption that advice from the GP accounts for the total of patient comprehension, all combine to make interpretation of these studies difficult.

Three studies collected data using a telephone method,^{177 178 179} but only one reported the number of interviewees and a measure of reliability.¹⁷⁷ Four used questionnaire-structured interviews,^{158 180 181 182} but in only one were the details confirmed using patients' notes¹⁸² and one¹⁸¹ provided the instrument used. The results of the latter study¹⁸¹ were published in an expanded form, with additional authors, in a second journal¹⁸³ and is one of only two sources which clearly distinguished between understanding or comprehension and non-compliance, where patients understood the prescribed regimen but did not follow the instructions. Three further studies used multiple techniques,^{135 184 185} but in only the one case was specific detail on the method provided.¹⁸⁴ Even then it was assumed by the researchers that an incorrect response was a misinterpretation rather than a lack of knowledge. This was a dubious assumption, as the tabulated data implies that respondents had some knowledge on every prescribed item. Three studies reported no specific method of data collection other than a home visit^{186 187} or interview.¹⁸⁸ Finally, one¹⁸⁹ based comprehension on a communication score for key points as determined by each GP. The average error rate of non-comprehension reported in this study contrasts with the majority of investigations. Tuckett and colleagues¹⁹⁰ reaffirmed the link between patients' comprehension and their perception of the information's importance using a method based on interviews, rating procedures and

'third party' judgement. Although investigations of reliability and validity were undertaken, no account was made of the number of advisory statements provided in the consultation nor the degree of probing allowed during interview. Quantitatively, the topic of 'treatment action' was discussed with all of the 328 randomly chosen patients attending one of 16 selected British GPs. Only twenty-three patients (7.0%) were reported to have a different interpretation from GPs on a key point.

It has been shown that results from studies of non-comprehension (table 4 [A], page 62) are dependent on the method of data collection and what is considered relevant information. Inspection of table four ([A]) reveals similar categories of advice to those listed in tables two and three. With qualification, it appears non-comprehension does occur and it does so in categories of advice perceived as required by patients and proffered by advisors. Although research has begun into the way patients perceive prescription medication instructions, the process by which they integrate directions into their own framework of understanding or what leads to non-comprehension is, as yet, unknown.

General medical practitioners may also communicate by transferring instructions to the medication label (table 4 [B]). Two studies^{191 192} have correlated comprehension of labelling with compliance. Malahy¹⁹¹ in 1966 reported that an understanding of drug 'purpose' was second only to 'timing sequence' as a category of reported error in compliance, 22.4% and 33.7% of all errors respectively. Similarly, Boyd and colleagues¹⁹² in 1974 noted that: *"the written prescription, and subsequently the prescription label, was deficient in providing information concerning timing of administration and purpose of the medication...[and continued]... with respect to timing and purpose, the patient's comprehension is found to be greater than the label information. Although many patients were able to establish an acceptable timing schedule without receiving specific label directions, the approximately 25% of the population which could not do so emphasizes the necessity to include this information"*. As patients gain some understanding of dosage schedules from other sources, it is clear that patient comprehension must be studied in the context of the total information provided. Unfortunately, remaining studies have only investigated patients' understanding of dosage schedule instructions and it is these investigations which are now considered.

Although studies have investigated the variation in dosing frequency^{193 194} using technologically sophisticated methods¹⁹⁵ only four have related their findings to patients' understanding of their regimens. Three studies^{196 197 198} (table 4[B]) conducted with hospital patients were consistent in identifying that *"directions did not have a clear meaning to the patients"*.¹⁹⁶ In a fourth study, only 22% of 37 elderly patients at home asked to interpret the directions 'Take one tablet every six hours' were judged to have understood the instructions.¹⁹⁹

These studies support arguments that medication instructions and auxiliary labels can be misunderstood and that the wording of information is crucial to understanding. This latter

point is further illustrated by a 78 year old lady who had antibiotics prescribed for her, the label stating, "Take after food". As she did not eat an evening meal she did not take the scheduled tablet.²⁰⁰ Similarly, a 63 year old woman's near perfect compliance with a dosage schedule for prescribed eye drops was due to her permanent state of anxiety and fear that she would lose her eyesight because, in her words, *"my doctor said what may happen if I don't take the eye drops exactly as he said"*. The patient remembered the day a month earlier when she was one hour late instilling an evening dose.²⁰¹ These latter two reports provide further evidence that misunderstanding the intention of treatment advice can lead to, at least, unnecessary anxiety and even total failure in treatment.

In summary, the provision of advice is a one way process in which the intention of the information must be understood by the patient as a necessary step to accurate dosing of prescription medication. Studies of patients' non-comprehension are fraught with methodological uncertainties such that only tentative conclusions are possible. This review has provided evidence that patients may be advised by GPs both verbally and in writing yet misinterpret the information such that treatment with medicines is compromised. Non-comprehension does occur and it does so in categories of advice perceived as required by patients and proffered by advisors.

Not only may patients fail to comprehend advice during consultations, the next section presents evidence that they may also simply forget medication advice. This has obvious implications for the CP as the last link in the advisory chain.²⁰² It has been suggested that patients are diagnosis-orientated when they visit their general practitioner, and prescription-medication orientated when having prescribed items dispensed. Smith²⁰³ wrote of this when she suggested that:

"Patients tend to remember the instructions which are most important to them personally. This may not be the most important information from the viewpoint of the physician or pharmacist. Patients tend to remember details of the diagnosis, but frequently forget information about the drug. One reason is that the instructions for therapy are usually given by the physician immediately after the diagnosis. After patients learn the diagnosis, their level of anxiety increases, and high levels of anxiety are associated with low levels of recall. Therefore, information provided after the diagnosis has a decreased chance of being remembered. By the time patients arrive at the pharmacy, they are more relaxed and more receptive to information about the medication. In addition, the primary purpose of the visit to the pharmacy is to obtain the medication, in contrast to the visit to the physician's office which has the primary purpose of diagnosing the medical complaint".

Table 4

Patients' comprehension of their medication treatment (A), labelling instructions (B)

Reference Source	Year published	Research method used	Selection and sample population and response rate	Sample size	Comprehension criteria	Percent judged NOT to have comprehended
188	1969	Initial clinic interview followed seven to 10 days later by a home interview	30 patients randomly selected from each of six outpatient clinics	180 (100%)	Patient did not understand instructions	16.9*
180	1970	Questionnaire (not provided) schedule-structured interview	All patients prescribed antibiotics during several weeks in 1968 from an American general medical practice	104 out of 150 (69.3%)	Dose Name and type of drug	3.8 2.9
135	1975	Open interview + questionnaire at patients' home one to 10 days after clinic	All patients attending a British general medical practice over a three week period with a new problem	42 of 61 requiring information	Treatment information	14.0†
158	1975	Questionnaire (not provided) of medical practitioners' input. Questionnaire semi-structured interview of patients (not provided) two weeks after 'input'	Attendance at an American study general medical practice during a four month period with criteria of adult onset diabetes	242 patients, 23 on insulin 170 on oral tablets	Type of insulin Name of oral tablets	34.8 39.4
181	1976	Questionnaire (provided) semi-structured interview	All discharge hospital patients from medical wards of a Scottish hospital over four months taking regular drugs	134 of 165 (81.2%)	Drug regimen	34.3
189	1976	General medical practitioners' list of relevant information compared to patients' recall during interview within two weeks of consultation. Verification with patients' notes and pharmacy records an error. Cases are prescriptions	46 (68%) America general medical practitioners and "internists" provided 357 (84%) patients with diabetes or congestive cardiac failure. 58% of prescription associated with	? total number of prescribed drugs	Scheduling misconception	17.
184	1977	Tape-recording of consultation, patient and general medical practitioner. Classification by "unit of expression" Follow-up questionnaire (provided) of patients' recall of medical advice	Patients of a Scottish general medical practice seen over one year. Prescriptions are cases	328 consultations 394 prescriptions n=394	Name of drug How often Duration of treatment	37.5 21.3 25.3

Table 4 (continued) (A)

Source	Year published	Research method used	Selection and sample population and response rate	Sample size	Comprehension criteria	Percent judged NOT to have comprehended
185	1979	Verbal and written information on discharge compared with follow-up, verbatim recording of discussion with medical practitioner	'unselected' discharge patients from acute medical and respiratory wards of a Scottish Hospital	56 (100%)	'Understanding' of drug treatment	21.4
187	1980	Visit three to seven days after discharge, no specific data collection method mentioned	South African parents of paediatric outpatients, randomly selected	104 (100%)	Purpose	54.3
182	1980	Medical practitioners and patients completed structured questionnaires (not provided) immediately after consultation. Correlation with patients notes	Randomly selected patients attending an American general medical clinic for six months or more. Patients are cases	104 (89.7%)	Scheduling misconception increased frequency decreased frequency	16.3 15.4
186	1981	Home visit, no specific data collection method mentioned	Random selection of individuals ≥65 years old from a British FPC register	50 (100%)	Purpose	41.0†
178	1982	Targeted advice tested by follow-up telephone interview after one month who could be contacted later by phone	All patients discharged from Oct 1979 to Mar 1980 from an American hospital	545 (73.3%)	Purpose under 65 year age group Purpose 65 years or older group	31.1 45.5
179	1983	Notes on attendance compared with response after one week using telephone interview	50% random sample of 1,367 patients attending an American hospital during two weeks in October	515 (75.3%)	Instructions for taking	<25.0
177	1985	Interview by telephone conducted by three nurses (0.95 reliability)	Random selection of patients attending an American hospital	199 (98.5%)	Name Purpose Side effects	5.0 10.1 70.4
(B) 196	1973	Assessment of understanding determined by hospital pharmacist when dispensing medication. Patients asked to specify at which hour(s) of the day they planned to take their medicine	All patients of an American hospital outpatient pharmacy department during one shift over a week. Medication schedules are cases	381 (84.5%)	Inability to state an interpretation of the dosage schedule	15.5

Table 4 (continued) (B)

Source	Year published	Research method used	Selection and sample population and response rate	Sample size	Comprehension criteria	Percent judged NOT to have comprehended
197	1974	Interview asking patients to interpret instructions on 10 prescription medication labels (provided). Conducted by first year medical student	Patients of American hospital who were judged to be 'alert'. No additional selection procedure reported	67 (100%)	Frequency of misinterpretation	9.0 to 64.2
198	1982	Interview. Labels presented on cards. Responses recorded on a printed form. Criteria only provided for non-comprehension of interval. No other criteria given	Inpatients of a British hospital. Selection procedure unknown	80	x to be taken three times a day x to be taken every eight hours x to be taken four times a day x to be taken every six hours The drops to be instilled Complete the prescribed course Use sparingly This medicine may colour the urine or stools	13.8 88.8 10.0 86.3 31.3 40.0 32.5 43.8

Notes

- * = Figures refer to the percentage of prescribed items for which 'patients did not understand instructions'.
- † = Study based on patients' perceptions of information received. It is assumed that the patients were given information but failed to understand.
- ‡ = Figures refer to the percentage of prescribed items for which respondents 'were deemed to have correct knowledge of the purpose'.

2.5.2 Patients' memory of their treatment advice

In 1963, The British Ministry of Health published a document entitled 'Communications between doctors, nurses and patients', which noted problems of communication between practitioners and patients. More recently, Tuckett and colleagues,¹⁹⁰ in their more qualitatively orientated study, reported that only 11 of 328 (3.4%) patients were unable to recall the key points of treatment action provided during consultation with the GP. The study used probing interviews to assess recall and commented that, "*difficulties which patients gave in processing information from doctors are not due to a failure of memory; instead, they appear to arise at the stages of active interpretation and evaluation of the doctor's views*". In contrast, four studies^{204 205 206 207} (table 5, page 66) reported much higher values for the percentage of total information on treatment regimens not retained. Studies that demonstrate that the amount of information presented is related to memory have been reviewed by Ley who summarised that.²⁰⁸

1. *"patients fail to recall much of what they are told;*
2. *the number of statements not recalled is a linear function of the number presented;*
3. *age is not consistently related to recall;*
4. *intelligence is not related to recall*
5. *medical knowledge is related to recall;*
6. *anxiety is related to recall;*
7. *content of recall can be influenced by manipulating*
 - 7.1. *serial position effects,*
 - 7.2. *perceived importance; and,*
8. *amount of recall can be influence by*
 - 8.1. *shorter words and sentences,*
 - 8.2. *explicit categorization,*
 - 8.3. *repetition,*
 - 8.4. *use of concrete-specific rather than abstract-general advice statements".*

There is evidence that patients forget prescription medication information provided by their GP. Also that an intervention in the form of verbal advice provided by pharmacists improves the level of patient knowledge.²⁰² Community pharmacists may, therefore, be in a position to improve this situation. However, if patients still take their medication in the prescribed manner, the CP's intervention is not critical. In the next section evidence for a lack of compliance with prescribed medication is presented.

Table 5

Patients' recall of advice given by general medical practitioners

Source	Year published	Research method used	Selection and sample population	Sample size	Category of advice	Percentage of information NOT retained
204	1965	Verbatim record made by consultant compared with interview of patient shortly after consultation	47 (94%) of consecutive new attenders of a British medical outpatient clinic	21 statements 71 statements	Statements about treatment Instructions	47.6 56.3
205	1973	Tape recordings of consultation with general medical practitioner and five minutes later with subject. Two groups baseline mean proportion recalled. Free recall method of data collection used	40 (100%) patients of British general medical practitioner presenting with a new illness. Mean number of statements 7.15 per patient for all categories of advice. Two groups, baseline 20 patients	Sample number of statements in category not provided	Tests, what will happen, treatment	53.9
206	1976	Subjects' account of advice assessed by questionnaire (provided) and compared to records made during consultation with general medical practitioner	80 (51%) patients of British general practice presenting with a new illness or new episode of an old illness. Mean of 5.1* statements per patient in all categories of advice	Sample number of statements in category not provided	Instructions and advice	56.
207	1977	Tape recordings of consultation with general medical practitioner followed immediately by questionnaire (provided) and interview using cues to aid response. Two groups baseline reported	50 (100%) patients of American general practitioner who had not yet received information about their illness or treatment. Further selection criteria not provided.	4.3 mean number of items of information for specific category	Regimen and treatment	36.8

Notes

* = It was not possible to calculate a figure for the mean number of statements made in all categories from this reference, however, a figure can be cited from an review of patients' memory for medical information also by the principal author Dr Philip Ley.¹³⁹

2.5.3 Patients' compliance with their treatment advice

*Keep watch also on the faults of patients which often make them lie about the taking of things prescribed - Hippocrates*²⁰⁹

Three questions are relevant to patient compliance and the role of CPs. First, are medicines taken as prescribed? If not, then a role for CPs in giving advice might be possible. Second, can the factors which are associated with compliance be understood and manipulated? If so, then pharmacists would have a theoretical structure to optimise their activity as advisors. Third, does the provision of advice by CPs improve compliance with treatment regimens? If so, then they have a positive role to play as advisors on prescription medication.

It is not possible to provide a detailed, comprehensive review of the literature on compliance due to the explosion of research in this area. Therefore, only reviews of the literature and the most relevant papers will be cited in discussing the three questions. An appreciation of the academic effort directed towards compliance is evidenced by the increase in publications from 25 in the 1950s to 744 between 1980 and 1984.²¹⁰ Journals such as *Patient Education and Counselling*, and *The Journal of Compliance in Health Care* are devoted to research in this area. Publications have included reference texts in 1976,²¹¹ 1979,²¹² and 1988,²¹³ plus major reviews of treatment adherence in 1970,²¹⁴ 1976,²¹⁵ 1983,²¹⁶ and 1992.²¹⁷ Researchers into sociobehavioural determinants of compliance have generated a mass of theories and correlations which have been reviewed in a monograph, published in 1974,²¹⁸ with an update 10 years later.²¹⁹ In addition, reviews of studies into the psychology of compliance have been published in 1975,²²⁰ 1979,²²¹ and 1980.²²²

First the question, 'are medicines taken as prescribed?' This is important as there are health risks to non-compliance²²³ which can be reduced.²²⁴ Although patients' reports of non-compliance have been shown to be reliable indicators of their activity,²²⁵ unfortunately, a continuing difficulty in obtaining objective measurements²²⁶ and variations in the definition of compliance and the method of data collection²¹³ mean a global 'figure' for the magnitude of non-compliance must be replete with cautions and disclaimers. Thus, Sackett and Snow²²⁷ considered only 40 (7.45%) publications from their reference pool to be useful in determining the magnitude of non-compliance. Of these, only 18 concerned prescription medication. Further reviews^{214 228 229} have selected studies and listed their respective rates of non-compliance, then averaged the values to report a summary statistic. Table six, page 68, provides summary statistics calculated from the original lists of rates of non-compliance provided by such sources. The increase in the population of elderly people (figure 10, page 38) has prompted concern for their non-compliance with prescribed medication.²³⁰ A list of available studies of non-compliance in elderly people was compiled (table 8, page 75) using a format similar to Ley¹³⁹ and the summary statistics provided in table six. Inspection of table six indicates a general consensus that nearly fifty percent of patients are non-compliant with treatment regimens.

Table 6

The magnitude of non-compliance with prescribed medication advice

Reference Source	Year	Treatment Regimen	Years covered	Number of studies	Non-compliant Mean \pm SD	Median
214	1970	General	1954-1969	33	40.6 \pm 20.1	40
228	1976	General	<1970	49	43.4	
227	1979	General	1964-1975	18	41.4 \pm 16.0	60
229	1979	General	1970-1979		48.2	
231	1985	Hypertension	1975-1983	14	37.2 \pm 18.5	65.5
table 8	1994	Elderly	1962-1986	14	53.1 \pm 18.2	57

Studies of elderly non-compliance rates do not appear to support the view that this group presents an unduly greater problem than might have been thought, although their sheer numbers make this a logical area for concentrating effort. In summary, a sizeable proportion of patients using treatment regimens are non-compliant. It is prudent²²⁷ to note variation in definitions of compliance and measurement techniques, possible selective publication of 'bad news' and the specific nature of sample frames as limitations in determining overall compliance patterns.

Second, the question 'can the factors which are related to compliance be understood and manipulated?' Although non-compliance affects individuals the collective cost is a considerable burden for society.²³² The involvement of pharmacy in reducing total health care expenditure by improving compliance has been noted.²³³ In order to provide some direction for focusing pharmacy involvement, variables associated with treatment regimen non-compliance are required. In determining these variables, relationships between compliance and structural variables, situational barrier models, educational approaches and motivational models have been investigated.

If the 1970's was an era for determining the magnitude of non-compliance, it was also a period for attempting to understand why patients failed to adhere to treatment regimens. Table seven (A), page 71, lists the number of studies showing stated associations of structural variables with compliance in relation to treatment regimens. Scrutiny of the results indicates a consensus that increasing the duration of therapy or complexity of regimens, as assessed by the number of medications involved, has a detrimental effect on compliance. Parenteral medication is positively associated with compliance; however, this is not due to the administration technique of injection alone as, for example, insulin dependent diabetics are notoriously non-compliant.²³⁴ Studies appear to be based on a biomedical model of compliance²³⁵ in that the dependent variable was dichotomously defined as to whether treatment were adhered to or not. While insight into these relationships might be helpful in directing pharmacy services, they do not suggest how the independent variables, such as complexity or duration, are related to one another. Further, if structural demographic factors such as gender, age, ethnic origin or education are related to compliance, there is not a great

deal that can be done to alter them.²²² Such correlations fail to inform how compliant and non-compliant behaviours are generated.

As early as 1968, research suggested that provision of information without regard to patients' views was not sufficient to ensure compliance.²³⁶ However, studies which have sought to improve compliance by influencing patients' perceptions and attitudes have stumbled, due to a lack of methodological direction.²³⁷ Attention was refocused from the patient to the treatment setting. The situational barrier models developed^{238 239} were specific and did not provide a broad framework for examining non-compliance. Although useful for optimising treatment facilities and as an aid to management of services, they were unable to answer why patients were non-compliant.

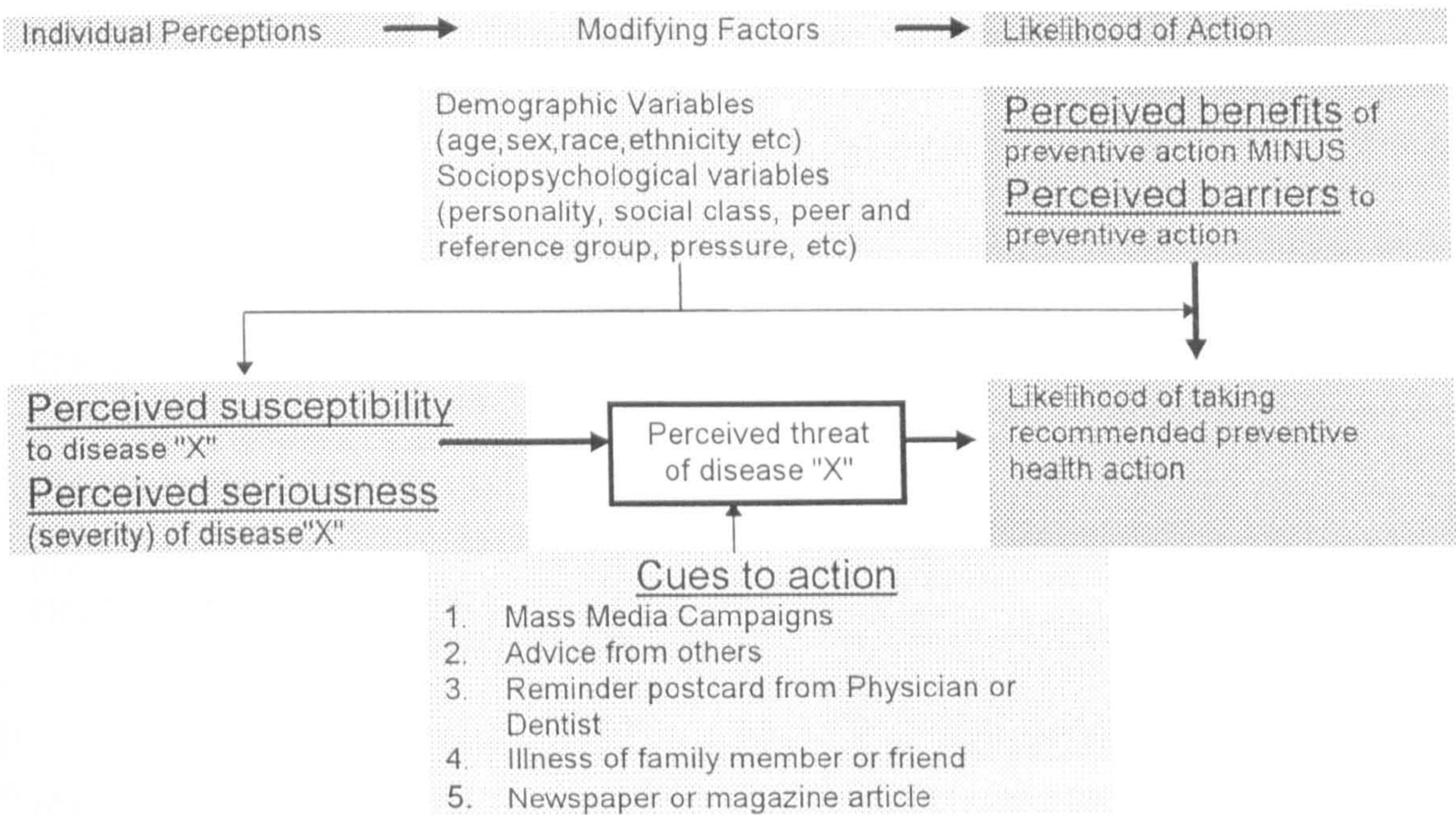
Based on the idea that knowledge is necessary for compliance, educational approaches were employed as early as the 1950's. Such studies are a marked change from the structural or situational theories as they sought to investigate the more social psychological steps needed for education, such as attention, comprehension, retention and belief change, then relate these to compliance. Although knowledge was found to be necessary for accurate compliance, it was not found to be sufficient, motivation was also a requirement.²⁴⁰

The search for predictive motivational models has occupied the efforts of a great many researchers. Emotional drive models have been used to understand patients' behaviour and have generally studied fear arousal as the motivating force for activity. Reviewing the literature, both Sutton²⁴¹ and Rogers²⁴² agree that studies conducted by psychologists consistently find stronger threat messages superior to changing attitudes. However, where medication is concerned, high fear messages may not be superior to low fear messages in motivating compliance.²²² Fear can lead individuals to resign themselves to inevitable dangers, making them less willing to take adequate protective action.²⁴³ An obvious application of this model would be in respect of patients' perceptions of medication side effects, although the author knows of no such work. Ethical dilemmas may account for the lack of studies in this area.²²²

The major theoretical work which has formed the basis of investigations into compliance is the Health Belief Model (HBM) which emphasises the directive aspects of motivation. It treats patients' health and illness actions as the end products of a sequence of rational decisions. Behaviour is seen as being dependent on the value placed by an individual on a particular outcome and the individual's estimate of the likelihood that a given action would achieve the desired outcome.^{244 245} The dimensions of the model (figure 12) were first reported in 1966²⁴⁶ with the aim of increasing, "*professional health worker's knowledge of selected research findings and theory so that they may better understand why, and under what conditions people take action to prevent, detect and diagnose disease*".²⁴⁷

Figure 12

Health Belief Model*



Note

* = Figure adapted with permission of Medical Care.²²⁰

Taking each dimension in turn, 'perceived susceptibility' includes the degree to which patients believe themselves to be vulnerable to a particular illness. Under the HBM, patients may perceive themselves to be susceptible. However, appropriate action will not take place unless patients believe that their illness has, or could have, serious undesirable consequences. The dimension 'perceived susceptibility' is modified by the dimension of 'perceived seriousness'. Similarly the 'perceived benefits' which patients understand they will gain from adhering to treatment regimens is modified by the 'perceived barriers' to implementing the preventive action. Acting on all dimensions are modifying factors, and the process of rationalisation may be initiated by a cue-to-action. Following this model, advisors may provide information on prescription medication; however, compliance with their advice depends on whether patients believe their condition does in fact exist, is serious and that they are personally susceptible to it; plus whether the overall benefits of adhering to the advice outweighs barriers to implementing the advice. Table seven, page 71, sections [B] and [C] provide an indication of the extent to which compliance has been significantly correlated with the dimensions of the HBM. Clearly, this model provides a useful theoretical framework for directing the nature and provision of advice in optimising compliance.

Table 7

Correlate	Correlates of compliance*		
	Positive	Negative	No association
(A)			
Side effects	2	2	
Complexity	1	11	
Frequency of dosing	2	3	
Dosage	1		
Duration	12	3	
Change of treatment			
for the same condition	7	12	
for a different condition	3	1	
Use of parenteral administration	6		
(B)			
Health Belief Model up to 1979			
perceived susceptibility	15	1	3
perceived severity	10	2	7
perceived benefits	8	0	8
perceived barriers			
(C)			
Health Belief Model up to 1984			
perceived susceptibility	9	1	2
perceived severity	10	4	
perceived benefits	9	1	2
perceived barriers	10	2	

Notes

* = Adapted from summary references; (A) Haynes,²⁴⁸ (B) Ley,¹³⁹ who cites the collective works of compliance studies referenced by Haynes and colleagues,²¹² and (C), calculated from the 14 studies concerning treatment regimens included in review of the HBM by Janz and Becker.²¹⁹

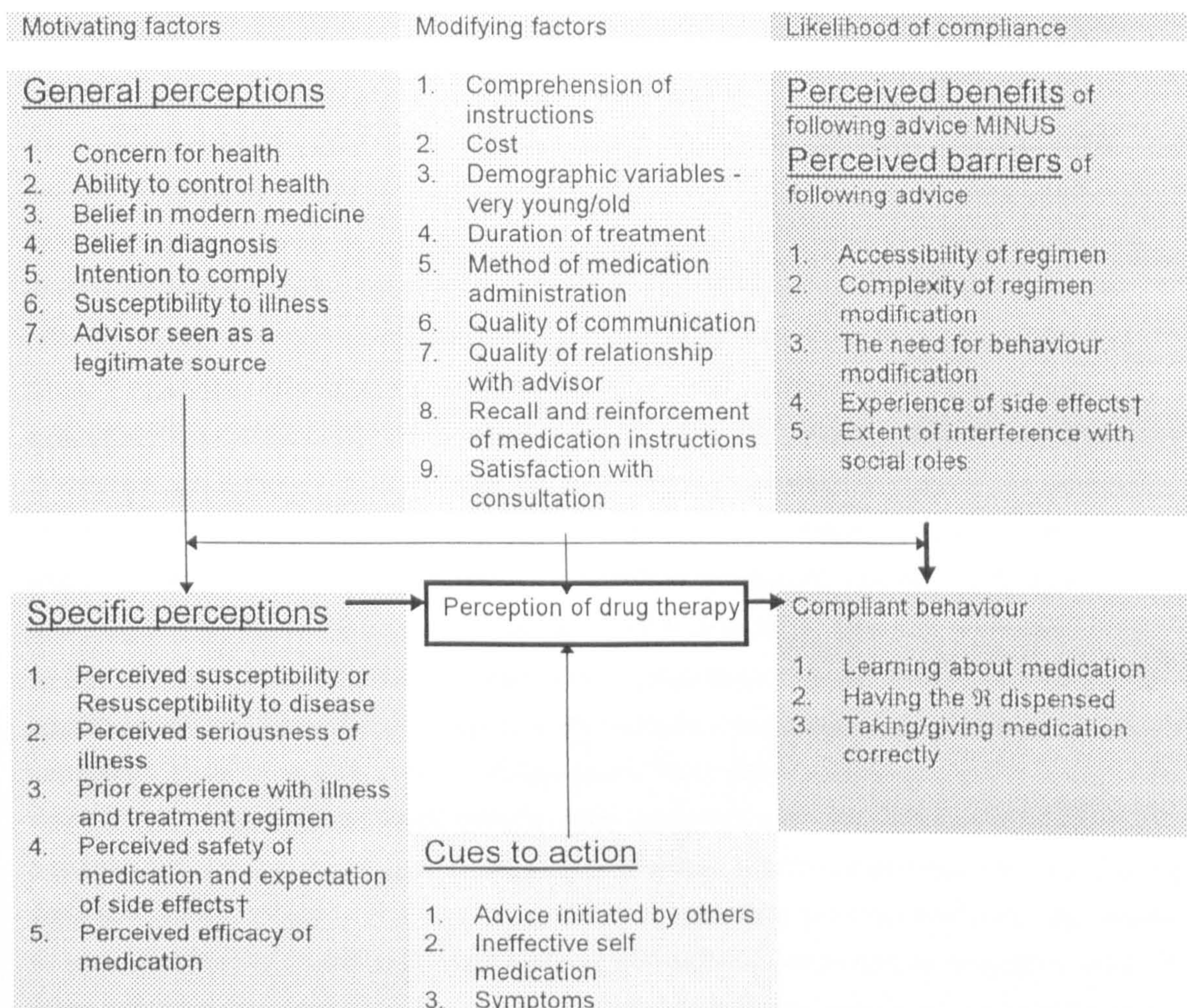
† = Number of studies showing a significant correlation in the direction shown.

The HBM has at least seven practical and theoretical limitations. First, perceived severity often fails to correlate with the degree of compliance by patients. Second, as most studies have related individual dimensions to outcome, the model does not account for a large proportion of the explained variance in behaviour. Third, cues to action appear to influence attitudes in a predictable manner, but this may not be translated into appropriate activity. Fourth, it may be incorrect to assume the underlying rationale of the model which is that people think in terms of probability, or levels of perception. Fifth, problems are only defined from a health perspective. Sixth, the model is not historical. Failure to encompass factors which may have led to patients' perception lessens the understanding of the processes involved in a patient choosing to be compliant with treatment regimens. Seventh, it is not clear whether educational interventions change patients' beliefs and, as a consequence, behaviour, or if a change in behaviour precedes a change in attitudes. Although the HBM incorporates at least five other 'value expectancy' behavioural models,²⁴⁹ additional dimensions have been suggested^{250 251 252 253 254} to account for its shortcomings. As yet, no single model has found universal acceptance.²⁵⁵

Based on discussion in the earlier sections of this chapter and the dimensions of the HBM plus additional specific correlates known to predict compliance with treatment regimens, the known sociobehavioural factors likely to influence medication compliance which advisors should take account of when providing advice can be modelled (figure 13).

Figure 13

Hypothesised medication compliance model*



Notes

- * = Adapted from the original HBM²¹⁹ and subsequent modifications for application to treatment regimens by Becker^{220 256} and Smith.²⁵⁷
- † = Fear motivation may be motivating or inhibiting.²²²

In summary, non-compliance with prescription medication treatment has been shown to be widespread and prevalent. The results of investigations into why patients are non-compliant have provided advisors with key areas for concentrating their efforts. It is known that patients fail to comprehend or forget much of the advice provided by GPs during the consultation. It has been proposed that CPs, the last link in the advisory chain, may have a positive role in improving patient compliance by advising on prescription medication.²⁰³ In 1984, Eraker and colleagues,²⁵⁸ stated "recent studies provide strong empirical support for the value of involving pharmacists in attempts to increase patient co-operation with prescribed therapies". Further, it has been shown that pharmacists do provide patients with advice (section 2.4.2, page 53). The third question in this sections now remains, 'does the provision of advice by

CPs improve compliance with treatment regimens?' In this discussion, evidence for 'can' CPs be effective is distinguished from 'are they normally' a positive force for patient compliance. In this way their potential role is differentiated from their actual role.

There are many ways by which CPs may initiate information giving to patients concerning prescription medication. The act of dispensing the prescription⁹⁰ is not one of them. During this process they are only acting as a remote processing system, an activity which, it has been argued, does not require as skilled a workforce. They may, however, make a unique contribution by reinforcing appropriate administration instruction but the value of that activity must be realised as an increase in compliance if the intervention is to be effective. What options are there for reinforcing the directions given to patients? First, written material including auxiliary labels and concise patient information leaflets may be provided with the dispensed medication. These written information sources have been shown to positively affect patients' compliance with antibiotic regimens when added to the usual prescription label.²⁵⁹ However, CPs often fail to attach the appropriate auxiliary labelling information¹⁷² and, as with prescribers' directions, such instructions are often misinterpreted. Even the presentation of the prescriber's instructions on the label has been criticised.²⁶⁰ Commenting on the use of additional written drug information, Morris and Halperin²⁶¹ state, "*numerous studies have demonstrated that written information for the patient can be an effective aspect of a program to improve patients' knowledge about their therapy. There is no evidence that written information can or should replace verbal consultation*". Verbal instruction plus written reinforcement has been shown to significantly improve compliance compared with verbal instruction alone,²⁶² or no advice.²⁶³ Studies have found improvements in patient compliance when varying degrees of educational input were compared with normal dispensing activity. For example, private medication counselling plus written reinforcement was successful at an American military hospital pharmacy department.²⁶⁴ Similarly, planned instruction given with or without written reinforcement was found to be effective at an American outpatient clinic.¹⁹¹ More intensive monitoring and multiple educational techniques have also been employed in American community²⁶⁵ and hospital settings.^{266 267} Such evidence indicates that pharmacists can be a force for improving patient compliance. Unfortunately, there is no evidence to support the view that the provision of information leaflets is a normal activity for pharmacists. Similarly audio-visual aids and compliance aids have not been shown to be normal activities used in patient prescription medication education. Written advice appears to be the most researched activity which pharmacists may undertake in the area of patient education concerning prescription medication. However, 72 of 84 (85.7%) outpatients of an Australian hospital, when interviewed about their preferences for a method of information delivery, indicated a preference for verbal counselling OTC.¹⁴⁵ Joubert and Lasagna,¹¹⁹ commenting on the results of a similar study, judge "*by the importance accorded to the doctor and the pharmacist as preferred sources of information on drugs,...[that] the patient package insert may not be able to replace them, but could be an important source of complementary information*". The evidence supports the view that verbal advice assisted by

written information is a useful mechanism whereby information is conveyed to patients by advisors. Also, that verbal advice is the communication mechanism preferred by patients.

There is growing body of evidence that verbal advice from British pharmacists' may improve patient compliance. Five studies have investigated the effect of the provision or absence of hospital pharmacists' verbal advice on patient compliance (table 9, page 76).

Methodologically, only one study reported attempts at validity or reliability²⁷⁴ but failed to provide evidence of how representative the data was. One provided the form used for data recording,²⁶⁸ one standardised the verbal information provided,²⁸² three^{274 278 282} were further limited to geriatric populations and one to hypertensive patients.²⁶⁹ Of the studies, one²⁷⁸ failed to show a positive effect on compliance when patients were counselled by the hospital pharmacist. In this study it was suggested that the single verbal hospital counselling session may not be sufficient to improve drug compliance in elderly patients.

Only one study has considered the effect of CP's advice on recall of information. Wilson and colleagues^{270 271} used tape recordings of 44 customers' conversations and interviews the following day to determine the quantity of information recalled. Both advice and OTC advice were combined in the analysis. Results presented can not be generalised as only two of 11 CPs participated. As with the method used in this thesis, information provided was categorised by 'phrases' such that a single sentence may contain one or more categories of advice. That a mean of three of a possible 11 items of information were recalled is strikingly similar to more advanced studies of medical effectiveness reviewed in section 2.5.1, page 59 and section 2.5.2, page 65. The authors concluded that "*customers recall of information, including instructions considered to be essential, was low*". Assuming that recall of advice relates to subsequent compliance there is some evidence that CPs may have a positive role in the advisory process. However, if this study is any indication of results in the future then CPs and GPs might share a lack of influence over patients' compliance with prescribed medication.

In answer to the third question, multiple methods of patient education have been employed by pharmacists and have been found to be superior to verbal advice alone in promoting patient compliance. There is a suggestion that that verbal advice provided by British pharmacists can affect patient compliance. The level of influence in community settings may be comparable with GPs.

Table 8

Percentage of elderly patients deemed to be non-compliant*

Source†	Year published	Sample population	Method of determining compliance	Sample size	Age range	Percentage non-compliant‡
272	1962	outpatients	interview	178	60+	59
273	1976	community	interview + pill count	132	75+	30
274	1977	recently discharged	pill count	60	elderly	67 (after one week) 77 (after 12 weeks)
275	1978	community	Interview + pill count	74	elderly	51
276	1980	inpatients	pill count	51	elderly	67
277	1980	outpatients	pill count	1662	elderly	38
278	1981	recently discharged patients	Pill count	42	elderly	47
199	1982	community	pill count	40	65+	57
279	1982	community	interview	111	60+	43
280	1982	recently discharged patients	pill count	38	elderly	66
178	1982	recently discharged patients	interview	139	65+	54
281	1983	recently discharged patients	pill count	30	65+	8
282	1984	discharged patients	pill count	44	65+	57
283	1986	community	pill count	42	elderly	76

Notes

* = Additional studies of elderly populations have been published^{186 284 285} but it was not possible to determine the percentage of subjects who were non-compliant as compliance was related to prescriptions rather than patients as cases.

† = Studies include populations in American,^{178 272 279} Britain,^{273 274 276 278 282 283} Canada,¹⁹⁹ Finland,²⁷⁵ and France,²⁷⁷

‡ = Summary statistics, 25th, 50th and 75th percentiles were 43, 57 and 67 percent non-compliance respectively. The mean and standard deviation were 53.1 and 18.2 respectively.

Table 9

Effect of patient counselling by pharmacists on compliance

Reference Source	Year published	Research method used	Selection and sample population	Sample size (response rate)	Compliance criteria compliant patients	Percentage of Control	Advice
268	1971	Telephone survey (data recording form provided) approximately two weeks after discharge from hospital. Patients' notes compared with survey. Patients allocated to: 1. verbal PMA by hospital pharmacist 2. no PMA 3. verbal PMA plus administration assistance	75 randomly selected American hospital inpatients between 18 and 80 years of age. Patients are cases	75 (100%) 25 in each group	Administration; underdose overdose premature discontinuation scheduling error	24.0	92.0
274	1977	Patients "asked to detail dose schedules fully and the purpose of each tablet" at seven and 84 days upon return to a Day hospital. Random spot checks at subjects' homes. Patients allocated to: 1. verbal PMA by hospital pharmacist 2. verbal PMA plus compliance aid 3. no PMA	165 consecutive discharge patients from a British department of Geriatric medicine. Patients are cases	165 (?) groups 1. 60 patients 2. 45 patients 3. 60 patients	Administration; After seven days underdose After 84 days overdose additional medication	33.3 23.3	63.3 53.3
269	1980	Interview three times over 12 weeks at 28 day intervals when patients returned with medication container for hospital visit or prescription refill. Patients with hypertension randomly assigned to one of four groups: 1. No PMA (control) 2. verbal PMA by hospital pharmacists 3. compliance aid 4. verbal PMA plus compliance aid	100 hypertensive patients taking two or more prescription medications per day. Prescription for 28 days supplied by American hospital clinic pharmacy. Patients are cases	100 (?) 25 in each group	Sum of pill counts for three assessments >=95%	47.5	60.0

Table 9 (continued)

Reference Source	Year published	Research method used	Selection and sample population	Sample size (response rate)	Compliance criteria compliant patients	Percentage of Control	Advice
278	1981	Interview in Day hospital with follow-up when patient returned with medication container for hospital visit. Random allocation to one of two groups; 1. No PMA (control) 2. verbal PMA by hospital pharmacist	All patients referred to a British geriatric day hospital over a 15 month period with a mental test score of >20. Patients are cases	53 (?) 1. 23 patients 2. 30 patients	Pill count, 90-110% of estimate from prescription	47.2	46.7
282	1984	Patients counselled by pharmacist, nurse medical practitioner according to a standard protocol (provided) or discharged by nurse as 'normal'. Patients interviewed by a health visitor six days later. Random allocation to one of four groups; 1. verbal PMA by medical practitioner 2. verbal PMA by medical nurse 3. verbal PMA by hospital pharmacist 4. discharge by nurse	Consecutive convalescence patients discharged from an acute medical geriatric ward of a British hospital. Minimum age 65 years taking one or more prescription medicines. Patients are cases. Two excluded but data included, no reason given.	80 (97.6%) 1. 18 patients 2. 24 patients 3. 18 patients 4. 20 patients	Pill count, 80% of estimate from prescription deemed to be a "satisfactory level of compliance"	52.3*	75.6*

Note

* = Compliance related to the number of drugs taken accurately not the number of patients who took their medication 'satisfactorily'

2.6 Conclusion

From the discussion presented in this chapter it can be concluded that there are many positive indicators for CPs to act as advisors on prescription medication. Patients clearly wish to be informed, It is argued that; the lack of feedback from patients to GPs, the medicine-orientation of patients when engaging with CPs, patients' non-comprehension and misunderstanding of medical instructions, plus the availability of proven models of patient compliance which may be used to optimise advisory activity, all act to encourage a role for CPs as advisors on prescription medication. Much of the literature predicts that CPs' advisory service would be readily accepted by patients and especially welcomed if advice on side effects is offered. It is concluded that there is an opportunity to develop the role of the CPs as advisors on prescription medication.

However, evidence shows a shortfall in the activities of advisors. Further, there is little proof that CPs are actively seeking to capitalise on the opportunity to develop their role. In the dialogue espoused by Wildavsky,⁹⁶ the development of an advisory role on prescription medication is a problem which is small enough to tackle and worth doing something about. However, for change to take place either a policy needs to be developed or an existing policy amended. The current policies which have a bearing on CPs' advisory role are the substance of the next chapter.

CHAPTER 3 THE RELATIONSHIP OF POLICY, PRACTICE AND THE ADVISORY ROLE

3.1 Summary

This chapter considers those policies of the The Society and Government which impact upon the advisory role of community pharmacists. The influence of an independent assessment of pharmacy, the Nuffield Report is considered. The final section brings together conclusions from the preceding chapters to present an overview of the direction of the thesis and the research conducted.

In section 3.2 American definitions of Pharmacy which legitimise advisory activity are presented. In Britain it is The Society's Code of Ethics which sanctions pharmacists' prescription medication advisory role. Sanctioned in this context being to give the role professional backing. Although guidance is given for the use of auxiliary labels for specific named medicines, little direction is provided for verbal advice. Following this, the results of relevant American legislation are reviewed. Notably, that legal directives for both verbal and written advice only encouraged the use of auxiliary labels. Although the bulk of recent legal cases in America have failed to find pharmacists responsible for their failure to advise, the general principle exists in both America and Britain that pharmacists are responsible for the accuracy of advice volunteered.

Section 3.3 considers the effect on Pharmacy and Government policy of a report to the Nuffield Foundation, the Nuffield Report. While it sanctioned CPs' advisory role, noting the perennial conflict with GPs, it sought to release their time for additional roles by proposing changes in supervision laws. In the debate which followed, arguments for a change were based on professional ideals, while those against noted practical difficulties and the risk of occupational 'suicide'. The proposed changes included the potential for pharmacy assistants to be the 'gate keepers' of CPs' advisory activity. A special general meeting overturned the proposals and currently there is an expectation that, if a pharmacist considers it necessary, they will personally advise patients. The advisory role is, therefore, discretionary.

Government policy also took into account the Nuffield Report's recommendations. The green paper, 'Primary Health Care', specifically noted the pharmacists' advisory role and the following white paper, 'Promoting Better Health', while not mentioning the role, outlined payment for CPs' advice to residential homes.

Section 3.4 brings together the conclusions from preceding chapters. It considers the issues which might be addressed in this thesis and argues the major thrust of the research presented in this thesis. This choice is in line with the literature on implementation of social policy. A summary model is presented which outlines the author's thoughts on the motivating, initiating and modifying factors which influence CPs' decisions to provide advice. It provides a theoretical basis for testing CPs' advisory policies.

3.2 Sanctions by The Society and legal rulings

Chapter one described the changing function of pharmacists and the environment in which they currently practise. Chapter two argued that many patients, following consultation with their GPs, are not aware of aspects of their medication. It was noted that CPs provide PMA to patients. This section of chapter three addresses the question, 'is such activity an officially sanctioned role?' If the answer is affirmative, CPs acting to advise patients would then be seen to be acting in accordance with the accepted activities of their occupation. If negative they might be viewed as businessmen seeking an elusive customer.

In Britain, no functional definition for the activities of CPs exists. However, it is reasonable to suppose that there are parallels with conceptual definitions of pharmacy in the American literature. Initial attempts²⁸⁶ defined the generic pharmacist as *"an individual who has acquired the formal knowledge of the professions"*. The oversimplification of this definition was noted.²⁸⁷ The more elaborate alternative proposed considered pharmacy *"as a system which renders a health service by concerning itself with knowledge about drugs and their effects upon men and animals"*. Within this definition they declare that, *"Pharmacy knowledge is disseminated to physicians, pharmacists and other health care professionals and to the general public to the end that drug knowledge and products may contribute to the health of individuals and the welfare of society"*. Such definitions sanction advice as a legitimate action for pharmacists and have been quoted in Britain in the development of clinical pharmacy activity.²⁸⁸ Pharmacy is seen as a knowledge system and the use of information for the benefit of patients is specifically acknowledged.

In Britain, an expectation that advice is a sanctioned function of pharmacy activity was clearly described in 1963 when The Society's Council, commenting on a report of the Committee on the General Practice of Pharmacy,¹⁵ noted that, *"the right medicine should be supplied in the right form with the right safeguard at the right time, at the right place"* and that *"the general practice of pharmacy is an activity involving...the supply of medicines and... the giving of information and advice relevant to such supply"*. Similarly a charter²⁸⁹ published in 1983 by the Pharmaceutical Services Negotiating Committee commented that *"it is essential to increase the advisory and counselling role of the pharmacist"*.

The Society published its first collated medicines and ethics guide²⁹⁰ in November, 1988. This included principles in the Code of Ethics, guidance notes, appendices and supplementary Council statements which applied during the main data collection period for this thesis. By law, the Statutory Committee of The Society is the arbiter of what constitutes misconduct. It has the power of deregistration and may look to the nine points of the Code of Ethics to provide an indication of the 'normal' or 'expected' actions of pharmacists. With reference to the guide, and its subsequent editions, it can be shown that pharmacists are ethically sanctioned to use their judgement and may refuse to dispense prescribed medication, yet are directed to be tactful when interacting with medical practitioners. Further,

that pharmacists are expected to use their judgement and if necessary provide advice, however; where verbal advice is concerned, guidance for specific medicines is limited.

The following guidance notes, which expand on a principle of the Code of Ethics, are a testament to the forceful expectation that CPs must not enter into conflict with prescribers unless absolutely necessary. It is stated that: *"A pharmacist should not deviate from the prescriber's instructions when dispensing a prescription, except when necessary to protect the patient. If a pharmacist is uncertain about the content of a prescription or believes that the prescribed medicinal product could harm the patient, he should make every effort to contact the prescriber. Even if the prescriber confirms that the product which the pharmacist believes could harm the patient should be dispensed, the pharmacist may refuse to dispense the prescription. However, before refusing to dispense, the pharmacist must carefully weigh up the consequences for the patient of refusing to dispense the prescription against the harm which may arise if the prescription is dispensed. If it is impossible to contact the prescriber, the pharmacist should use his professional judgement and decide, in all the circumstances, what course of action would be in the best interest of the patient"*.²⁹⁰ As further evidence of the restraining nature of the Code of Ethics, principle nine states, *"A pharmacist shall at all times endeavour to co-operate with professional colleagues and members of other health professions so that patients and the public may benefit"*. It is noted that freedom to judge the appropriateness of a prescription is not included in the contract between pharmacists and the employing agent.

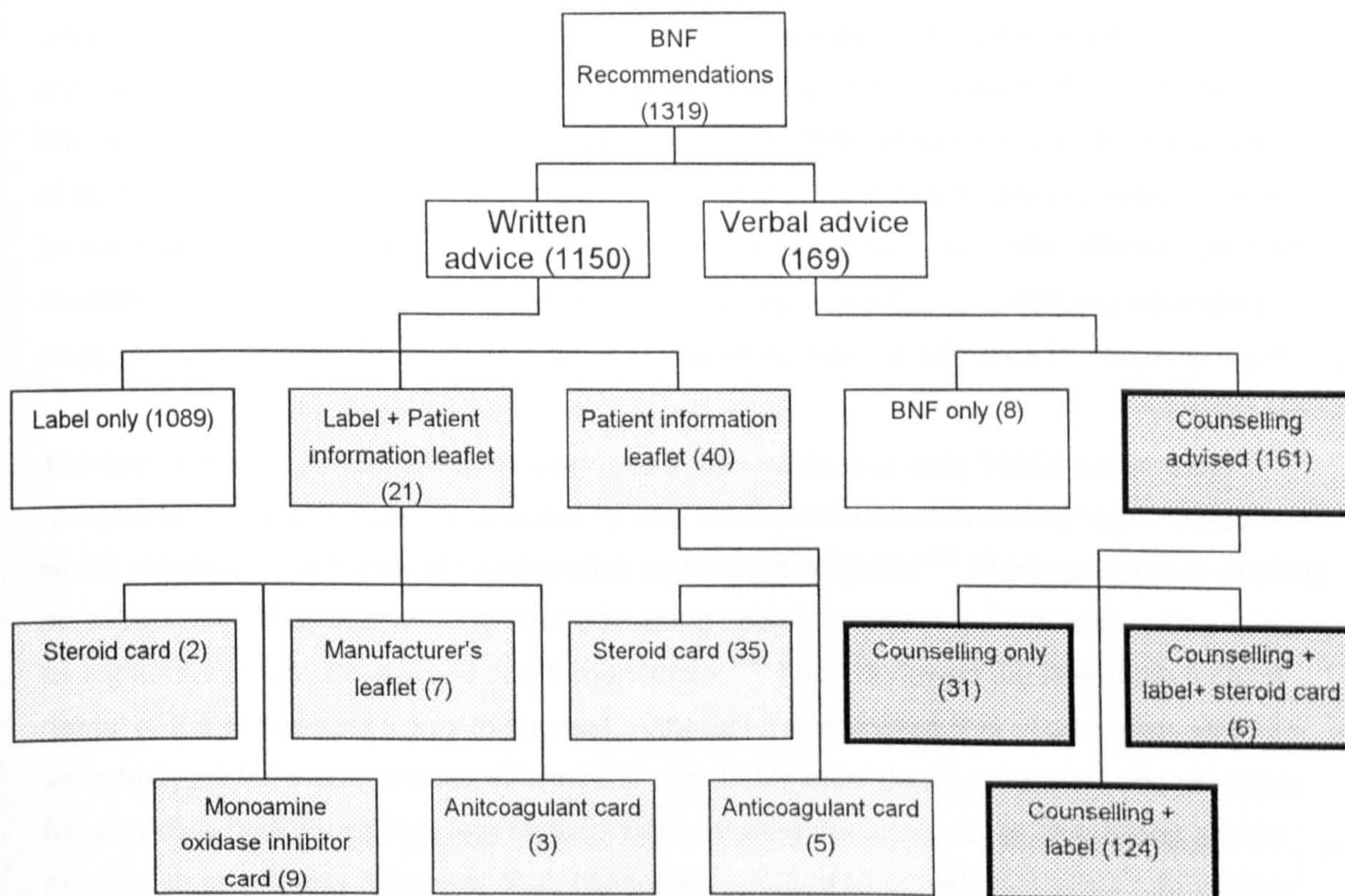
That pharmacists are personally responsible for providing advice and are expected to use judgement in the provision of advice is described in the 1988 Medicines and Ethics Guide. It states that: *"The pharmacist has a general responsibility for the provision of information and advice, and should take reasonable precautions to see that it is both accurate and appropriate...[and]...in appropriate situations in which information has not been requested, provide it to the patient"*.²⁹⁰ The advisory element of this statement has been progressively elaborated with the inclusion of possible categories of advice plus the additional expectation to specifically account for the wishes of the prescriber and ensure that patients understand directions. The April 1995 edition states:²⁹¹ *"(a) A patient (or his agent(s)) should be provided with the information and advice required for safe and effective use of their medicines. Care should be taken to assess the wishes of the prescriber and the information and counselling needs of the individual patients. Written information should be used to supplement oral communication, as appropriate. (b) The pharmacist should ensure that the patient is given and understands sufficient written and oral information to enable him to obtain maximum benefit from the medicine. Such information may include possible side effects, interactions, dosage, duration of treatment and any special precautions to be taken....The pharmacist is responsible for ensuring the provision of advice when the medicines are delivered to the patient."*

Although more specific definition and expectation for advice is laid down in the latter edition, the only officially^{292 293} identified reference linking medicines with advice has been the list of

auxiliary or cautionary labels included in a joint publication between the Pharmaceutical and Medical societies, the British National Formulary (BNF).²⁹⁴ Co-authorship by both bodies strengthens the CPs' claim that by following the BNF their actions are legitimate and sanctioned. Figure 14 provides a breakdown of the number of preparation which have recommendations for written and verbal advice in the BNF of 1988.²⁹⁴ These recommendations were operational for the period of data collection for this thesis. It can be seen by the numbers of preparations in heavily shaded boxes that guidance for the provision of written advice far outweighs that for verbal advice.

Figure 14

British National Formulary written and verbal counselling recommendations*



Note

* = Figures in brackets are the number of specific prescribable items listed in the 15th edition of the BNF²⁹⁴ for which labels and/or verbal advice are recommended. Directions for both brand names and generic substances are included.

Further evidence that pharmacists are associated with an advisory role for prescription medication can be seen in American policies and legal requirements. In 1984, The American Society of Hospital Pharmacists²⁹⁵ published summary categories of advice about which pharmacists should inform, educate and counsel patients. Subsequently, Kalman and Schlegel,²⁹⁶ in consultation with the American Pharmaceutical Association and the American Association of Colleges of Pharmacy, published an account of the responsibilities of pharmacists. Responsibility five details how a pharmacist "Confirms and further clarifies patient's understanding of medication dosage, dosage frequency, and method of administration" and responsibility six that a pharmacist "Advises patients of potential drug-related or health related conditions which may develop from the use of the medication for which the patient should seek other medical care". The latter responsibility includes

explaining pertinent side effects, what to do if signs and/or symptoms occur and how to minimise side effects.

Such standards imply an active role for pharmacists in America as advisors on medication. Notably, they are more prescriptive than even recent British directives. Legislation has partially reflected this activity. By 1986 eight states in America had legal requirements for pharmacists to keep patient medication records, 35 required pharmacists to be involved in continuing education, 10 encouraged patient counselling by including an advisory function in definitions of the practice of pharmacy, 13 legislated that the pharmacist should provide some sort of patient counselling, and four allowed limited pharmacist prescribing.²⁹⁷ Such policy decisions have had a mixed effect on pharmacists' advisory activities. Mandatory counselling did not translate into verbal practice,^{298 299} rather an increase in the use of auxiliary labelling was shown.²⁹⁹ Although no study critically investigated CPs' rationale for failing to adhere to legislation, one sought to determine their attitudes to the implementation of such policies. Robinson and McKenzie³⁰⁰ suggested that if mandatory regulations were to be used as a method of stimulating patient-pharmacist interaction the *"interrelated issues of reimbursement, facility changes, technician support, patient profiles, continuing education programs and pharmacist's attitudes towards regulated practice will need to be addressed"*.

The momentum in America which developed in the 1970s and early 1980s towards the recognition of the pharmacist's counselling role has not continued in recent court rulings which reflect a limited view of pharmacists' legal responsibilities.³⁰¹ Pharmacists may perform an expected service according to their governing bodies, but such activity may not be seen as legitimate in law. Brushwood and Simonsmeier²⁹⁷ have reviewed the American judicial denial of the pharmacist's duty to counsel. Although it is accepted that pharmacists who voluntarily undertake to provide information to patients must do so accurately and are liable for providing misinformation, legal rulings necessitating the provision of unsolicited advice are less clear. Notably, all cases cited concerned a failure to provide adequate information on possible side effects of medication. The authors describe two types of advisory activity, risk assessment and risk management. They suggest that the former is rightfully provided by the prescriber before dispensing and the latter by both prescriber and pharmacist. Thus, American courts failed to recognise the pharmacist's role as a provider of information for which assessment or judgement is necessary. Also, that cases generally fail to suggest why the fact that the prescriber does have a responsibility in law to warn means, necessarily, that a pharmacist does not have a similar duty.

In summary, there is sufficient evidence from definitions of practice and occupational expectations, that British CPs' prescription medication advisory role is sanctioned, or professionally underwritten, by The Society. There is an expectation that CPs will counsel patients when necessary and, as a matter of professional conduct,²⁹³ provide verbal and written advice. Although preparation-specific direction is provided for the use of auxiliary labels, there is little similar instruction for verbal advice.

No specific rulings have indicated a legal requirement for the British pharmacist to provide PMA. Yet, they are required by law to directly supervise the dispensing of a prescription.³⁰² In contrast, several states in America have introduced legislation which requires pharmacists to provide advice; however, the form this should take was not specified and the law only served to encourage the use of auxiliary labels. The bulk of recent legal cases have failed to find the pharmacist responsible for any failure to advise. It is notable that legal cases all concern the failure to manage or provide advice on side effects. That pharmacists appear to be ethically and 'professionally' bound to give advice but are not legally responsible if they don't, is incongruous.

For the future, there are moves by the European Commission to introduce strict liability, regardless of any professional concept of fault or good faith.³⁰³ This section has outlined the policies of The Society and the legal system in Britain and America relating to pharmacists advisory role. Independent assessments and Government policies regarding this role are now considered.

3.3 Independent and Governmental sanctions for an advisory role

In October 1983, a committee chaired by Sir Kenneth Clucas was appointed by the Nuffield Foundation with the following terms of reference; "*To consider the present and future structure of the practice of pharmacy in its several branches and its potential contribution to health care and to review the education and training of pharmacists accordingly*". By March 1986, the results of the committee's deliberations had been reported. In September of that year, the then president of The Society Dr TG Booth, speaking at the opening session of the yearly British Pharmaceutical Conference, is reported to have said, "*I doubt if any single document has ever been analysed so closely by so many pharmaceutical bodies throughout the world. Clearly the developing role of the pharmacist, particularly in community practice, is a topic which keenly interests the profession in every country with a developed pharmaceutical service*".³⁰⁴

The impact of the Nuffield Foundation's independent assessment on policy has been considerable and reaction to the changes it sought to implement provides a unique insight into community pharmacy in Britain. Critical to this chapter, the report of the committee, the Nuffield Report ¹¹ specifically advocated support for the pharmacist's advisory role. It is stated that, "*The dispensing process now consists of handing it... [the prescription] over with any necessary instructions to the patient or his agent. ... and [making sure] that the patient is informed of the way in which the medicine is to be used*". The provision of PMA was seen as one of many 'extended roles', those in addition to its dispensing role.³⁰⁵

Four suggestions were proffered by the Nuffield Report ¹¹ which have a direct bearing on this thesis. First, closer liaison between pharmacists and GPs was advised and agreed by Council of The Society (The Council).³⁰⁷ From the discussion presented so far in this thesis, it is clear that this must entail a degree of conflict. Second, a note of warning that 'professionalism' must not be compromised by the contradictory setting of community pharmacy as a business. Third, it proposed targeting pharmacists' advisory involvement towards, as a generalisation, the elderly, chronically sick, mentally handicapped and psychiatrically disturbed or those individuals taking continuous medication. This view was only partially supported by The Council which, since 1953, has been responsible for managing and directing the affairs of The Society. Six months after publication of the Nuffield Report and one month after circulation of a consultative document,³⁰⁶ The Council published its deliberations.³⁰⁷ Although concentrating on minor medical and OTC product advice, the final wording of its response commented that community pharmacy involvement would benefit patients when "*medicines form an important part of NHS treatment*". There was little support for the concept of targeted advice, however, investigations to determine the effect of such a policy were suggested. It was stated that "*...additional advice might be unnecessary with certain categories of medicinal products. There is a need for research to be commissioned on this subject*". Fourth, that the Medicines Act 1968, which directs that pharmacists are in a position to intervene when a prescription is given to the patient, be altered to allow for development of an 'expanded role' encompassing more health, rather than drug, related

endeavours. The following summary of events initiated by this latter suggestion provides a useful insight into The Council's perceived role for CPs as advisors on prescription medication.

Six months after the publication of the Nuffield Report, the Government indicated its noncommittal stance on the suggested changes to supervision.^{308 309} The PSNC³¹⁰ gave general support to changes in supervision one month later, but emphasised the need for an additional CP to implement any additional activities. The Council³⁰⁷ proposed to operationalise the fourth suggestion above through a set of rules whereby CPs could assess prescriptions and allow dispensed items to be given out in their absence. An editorial, commenting on their complexity, suggested that *"Pharmacies could become as unpopular as main post offices"* when patients failed to appreciate why an individual prescription could not be dispensed.³¹¹ Notably, the rules included a condition *"that the person presenting the prescription did not raise a query related to the prescribed medicine that could only be properly dealt with by the pharmacist"*. The council's recommendations found favour with the NPA³¹² but by early 1988, individuals began highlighting the dangers of implementing the proposals. Plumb³¹³ suggested that, *"the public now had an expectation of being able to enter any pharmacy and have access to a pharmacist. It is similarly expected that a pharmacist will be available to counsel and assist with problems and uncertainties relating to dispensed medicines, appliances and dressings"* and voiced the fear that The Council was about to *"sell us [pharmacists] down the river"*. Such thoughts found favour with individuals who were describe by a Privy Council nominee, Lord Peston³¹⁴ as 'luddites'.

The action which subsequently focused debate was a motion proposed at the Annual General Meeting of The Society on the 11th May 1988 by Mr John Davies.³¹⁵ Whereas The Council's proposals allowed CPs to define when they should see the prescription, Davies's motion sought to restrict this to the final stage of the dispensing process. The motion was rejected by 19 votes to three at the following monthly meeting of The Council³¹⁶ in June 1988. At that time, Mr John Ferguson,³¹⁷ secretary and registrar of The Society, reiterated The Council's view that, in accordance with the philosophy of the Nuffield Report, CPs would be directly involved with each prescription but the extent should be a matter of professional discretion rather than the legal requirement implied by Davies' motion. That the issues were not clear cut was suggested one month later when the PSNC altered its original allegiance to a hybrid of the two proposals.³¹⁸ In August 1988, following an unofficial referendum, The Council was again asked at its monthly meeting to adopt Davies' motion and voted 16 to three against such action.³¹⁹ Debate continued between the 'final checkers' or 'luddites' and those in favour of The Councils' proposals. Model supervision procedures were outlined, first, unofficially³²⁰ then, in January 1989, by The Council.³²¹ Notably a 'suitably qualified assistant' was empowered to provide advice on prescribed medication directly to patients.

Although earlier calls for a special general meeting had been made,³²² the lack of a final check in The Councils' model procedure prompted an official request for a special general meeting.³²³ This was arranged for the 9th April 1989 at the National Theatre, London.³²⁴

Although The Council was not required by law to act on the result,³²⁵ authors called for it to take notice of the response³²⁶ and the 'final checkers' indicated they would abide by any decisions.³²⁷ In March 1989, The Council sent a leaflet to each member of The Society setting out in simple and clear terms its case for a new approach to supervision.³²⁸ Support was forthcoming from pharmacy students at their annual conference.³²⁹ The arguments for, against and concerning the supervision changes are now summarised.

Arguments for changes in supervision noted:

1. that critics had not provided an alternative for developing CPs' roles;²¹⁶
2. that the proposals were in keeping with the intentions of the Nuffield Report;³³⁰
3. that CPs should be, and act as, professionals;^{331 332}
4. that technicians would not be allowed to dispense in the absence of a CP,³³³ and,
5. that CPs were already delegating responsibility.³³⁴

Arguments against the changes in supervision and for the motion of Davies contended that:

- A. only a final check could account for all dispensing errors;^{335 336}
- B. it was impossible to define professional activity;³³⁷
- C. They were ill prepared and would require mandatory further education;³³⁸
- D. there was a lack of remuneration;³³⁸
- E. the proposals would make little time available for additional activity;³³⁹
- F. patients would lose faith in the dispensing activities of CPs;³⁴⁰
- G. there was no monopoly over dispensing;^{341 342}
- H. Government would take advantage of the delegation of responsibility;^{341 343 344}
- I. technicians would undermine the authority of the CP;^{345 346}
- J. a lack of published evidence to support any change;³⁴⁷
- K. there was a failure to indicate what objections there are to a final check;³⁴⁷ and,
- L. The Council could be manipulated to the detriment of the rest.³⁴⁸

Further, note was made that whether or not The Councils' proposals were implemented:

- I. no court had considered supervision³⁴² and only the law determined change;^{336 349 350}
- II. patients had not been consulted;³⁵¹
- III. only professional ethics could guarantee CPs' actions,³⁵² and,
- IV. there was a dilemma in that the CP could not be in two places at once.³⁵³

With these arguments well aired for a period of 21 months, over 700 pharmacist met to debate and provide a mandate for, or an indication of the level of disagreement with, The Council's supervision proposals. On the day, the then president of The Society, Mr Bernard Silverman stated that *"no issue which had so far ever faced the profession had been the subject of so much anguish and acrimony"*. A vote of 371 to 306 in effect defeated the proposed changes in supervision.³⁵⁴ Subsequent discussion noted dissatisfaction with the result, implying that those present at the meeting were not representative,³⁵⁵ and suggested a referendum.³⁵⁶ Others, called for the resignation of specific members of The Council³⁵⁷ and complained that they had not been allowed to speak, that nothing new had been ventured during the meeting.³⁵⁸ As a consequence of the decision, The Council indicated in May 1989 that it would look again at the supervision issue.³⁵⁹ In May, a motion 'that a dispensed

medicine should not be supplied to a patient unless a pharmacist has checked the final product' was withdrawn.³⁶⁰ One month later a working party was set up by The Council.³⁶¹ In October 1989, three years and five months after the Nuffield Report first proposed changes the following policy statement was published:³⁶²

"A pharmacist responsible for supervising the dispensing, sale or supply of any medicine in a pharmacy bears the associated legal and professional liability. Every prescription for a medicine must be seen by a pharmacist and a judgement made by him as to what action is necessary. The pharmacist will exercise judgement to ensure that he fulfils his professional duties to his patients in the best possible way. He will thus be able to delegate to suitably trained staff to those tasks that he is confident can be undertaken by them. He will be available in the pharmacy to intervene, to advise and to check the dispensing of any prescription under his supervision. The pharmacist's prime responsibility in dispensing is to the patient. In exercising professional responsibility, the pharmacist will determine whether his advice needs to be given and if so, he will personally hand out the dispensed item".

This description of the events linked to the Nuffield Report's proposed supervision changes was necessary as a prelude to the author's following three observations. First, it would have been possible under The Council's proposals for CPs to totally devolve the advisory role on prescription medication to assistants, yet remain responsible *in absentia*. Although The Council's response to Nuffield included a condition that prescriptions could not be given out if the patient raised a query, in the official model procedure, assistants could be responsible for deciding whether an appropriate query had been asked and whether the CP needed to be involved. At the very least, the assistant would have become the *de facto* gate-keeper of CPs' advisory activity. If the CP were absent then there would be considerable patient pressure on the assistant to attempt an answer to any query. Certainly, as Mutton³⁵³ notes, CPs could not be in two places at once. Visiting residential homes in person, would leave the assistant 'holding the fort'. Even though the CP was still supposedly contactable, patients may not have sought advice if they knew there would be an unaccustomed delay. Alternatively, history demonstrates that it is the perception of the public which counts. Assistants may have become the recognised 'experts' on prescription medication³⁴⁶ and in a similar manner to the Rose Case may have sought due recognition. It does not make sense that The Council would agree with the prescription medication advisory role for CPs and then propose policy changes to delegate such activity, especially as it recognised the lack of research to support targeting of advice. The answer for this seeming inconsistency may lie in the Nuffield Report's strong recommendation that CPs develop so called 'extended' roles in the community.

Second, the basis of The Council's approach was a move to professional ideals and devolving responsibility. However, it was argued that some CPs could not be trusted to exercise restraint and that their individual failure would be cited by Government in withdrawing its protection of the dispensing role.³⁶³ There are ideological grounds which support this reasoning which were never explored during the debate. Politically, Britain has been guided by Conservative government since 1979. Its fundamental values are freedom,

individualism and inequality. These are historically linked to the 'Laissez-faire' ideology, from the French 'allow to do'. Government policy is currently against collective state decisions, an 'anti-collectivist' stance, and seeks to promote the philosophy of the 'free market'. Freedom is stressed because of its inter-relationship with a market economy. Government views society as individuals pursuing their own interests in a free market economy and its role to make rules and enforce law and order but otherwise not to interfere. As such, it sees the Welfare state as an embryo socialist state incompatible with the prime social values of anti-collectivism. Ideally, it would be dismantled to allow free market mechanisms to determine policy.⁵⁹ However, Government needs professions to service the Welfare state. The historical trade off has been collusion in the development of legal restrictions preventing encroachment on professional areas of activity,³⁶⁴ a process known as 'social closure'. The consequence of legislation is to reduce market freedom, to restrict patients to professions for specific services. Social closure is, therefore, incompatible with individual freedom and choice. The conflict between ideology and practicality has been partially resolved with the active promotion of professional accountability through the notion of patient's and citizen's charters. It is clear that current Government is ideologically less disposed to professions than in the recent past. If the proposed change in supervision rules had lead to a decrease in 'professionalism' as perceived by the public and patients, then this literature predicts a danger of Government review of 'social closure' benefiting pharmacists.

Third, that several points were not made by 'luddites' was noted by the author. A strong argument might have been made that the advisor-patient relationship would be threatened by devolution of the advisory role and concurrent absence of the CP. It has been suggested in chapter two that pharmacists are experts on drugs and their possible advisory activities potentially essential in the promotion of patient compliance. In order to realise this potential, personal interaction with patients would be essential, if only to monitor the requirement for information. However, patients may present at any time. It follows that maintenance of relationships and fulfilment of an advisory role would require CPs to be present at all times. A further argument arises from the ample evidence¹³⁹ that patients benefit from constant advisory input. Finally, no mention was made of legislation in America requiring pharmacists to be directly involved with patients. It was, however, noted at the special general meeting that direct involvement is legislated in France.³⁵⁴

It was stated at the beginning of this section that the Nuffield Report was instrumental in directing change. Government policy was also influenced by the Nuffield Report and its *"...general thrust...that pharmacists should be developing their roles as advisors on the safe use of medicines"*.³⁵³ In April 1986, the green paper Primary Health Care³⁰⁹ was published. It noted *"the important task of dispensing accurately and promptly medicines prescribed by doctors, and counselling on their use"*. The changing role was thereby acknowledged and the advisory activity of the CP recognised. The green paper also specifically recognised the benefit of patient medication records and non-pharmacy based community activity. However, it indicated that role boundaries must be maintained and stated that; *"Neither the profession nor the Government would wish to see an extension of the pharmacist's role result in*

confusion over responsibilities to the patient". No statement on responsibility for advice to patients was made. In November 1987, the white paper Promoting Better Health³⁶⁵ was published. No mention was made of the prescription medication advisory activities of CPs, however, advising on 'medicines' was noted under 'the extended role'. As the term 'medicine' was not defined as either prescribed or OTC, its meaning is unclear (section 2.3.2, page 45). It is, therefore, an anomaly that the Government's new patients' charter launched in 1995, indicates that *"you [the patient] can expect your pharmacist to explain these [prescription] instructions to you if you are not sure"*.³⁶⁶ Three and a half years after the Nuffield Report's recommendations, the white paper announced payment for both pharmacists' advisory activities to residential homes and the keeping of medication records, the latter presumably to assist their advisory role.³⁶⁷ Critically, the governing statutory instruments³⁶⁸ specify payment for advice and thereby endorse the advisory role of the CP. In keeping with Government ideology contracts for some defined, limited community pharmacy services are now locally negotiated. Notably Annex E of FHSL(94)59 includes advice to general managers in monitoring and ensuring that advice on prescribed medicines is provided.³⁶⁹

In a global sense the World Health Organisation has recognised the advisory role of pharmacists. In the 1988 report³⁷⁰ of a WHO consultative group on 'The role of the pharmacists in the health care scheme', one of the functions of pharmacists was to inform health care professionals and the public. Specifically, a motion to *"provide appropriate advice on medicines to the public, to other health professionals and to regulatory bodies and policy makers"* was put to the 1994 World Health Assembly.³⁷¹ and accepted.³⁷² Pharmacists are currently expected to *"provide informed and objective advice on medicines and their use to the public"*.

In summary, an independent assessment of Pharmacy confirmed The Society's policy guidelines that pharmacists have a role as advisors on prescription medication. The report sought to target CPs' advisory resource both at the pharmacy and in the community. In response, The Council of The Society noted the lack of research to support targeting, yet produced guidelines for devolving the advisory role. The subsequent debate split the profession. Arguments for change centred on developing 'professionalism' and against on the risk of losing Government backing for 'social closure'. The point was also made that only decisions in law could determine the advisory role of pharmacists. A special general meeting defeated the proposal. The Council then reversed its proposal and announced the current policy that CPs should be in a position to give out prescription medication personally if advice was perceived to be required. The Council's initial proposals would have placed assistants in a key position with regard to the provision of advice to patients. Although CPs were deemed to be responsible, their rapport with patients may have been compromised as assistants became the 'gate-keepers' of CPs' advisory activities and advisors in their own right. The rise of pharmacy assistants as a qualifying occupation of dispensers was alluded to in the debate. Arguments for the role pharmacists play in patient compliance and the practical requirement to be available for such advisory input were notably absent from the debate. It is concluded by the author that both The Council and many pharmacists do not

consider advice should accompany each dispensed item. Although such a role is proposed to fill the void caused by the changing nature of dispensing, it is seen as discretionary rather than critical to the future of pharmacists.

Following the Nuffield Report, the Government introduced allowances for CPs undertaking advisory activities in residential homes and for maintaining a dispensary record of patients' prescriptions. This action confirms the Government's stance that CPs provide valued advice in the community but only in specific areas. Government support for the idea that pharmacists hold responsibility for advising patients of their prescribed medication is not addressed. The general policy that pharmacists must avoid compromising the GP-patient relationship is clear. It should be noted that the value of an advisory service has been acknowledged by the World Health Organisation.

In this and the previous section evidence has been presented to demonstrate the kind of official support which exists for the advisory role of pharmacists. That it has proved necessary to cover diverse literature and make substantial inferences may either demonstrate that the role is implicitly understood and further definition unnecessary or testify to a lack of general attention paid to such activity. That The Council proposed devolution of advisory activity to assistants must place a question mark over extension of the advisory role. In this discussion, the lack of research to underpin a role has been noted. Indeed the Nuffield Report stated, "*There is a notable absence of information on what pharmacists actually do - as distinct from what they say they do*".¹¹ Clearly, a rational decision as to the future must be made on the basis of evidence. The next section considers how this thesis might contribute to such evidence.

3.4 The issues

From chapter one it can be said that pharmacists are historically orientated towards the manufacture, preparation and supply of medicines. Only the latter activity remains for practising CPs. Chapter two presents evidence for their proposed and actual advisory activity plus theoretical models which may be used to support their intervention. In chapter three so far, we reveal that the provision of advice is expected by The Society yet not in Law or explicitly as the pharmacist's responsibility by Government. A constant theme throughout has been a lack of concrete evidence to indicate the current nature of CPs' advisory activity. The growing concern over this lack of research³⁷³ is evidenced by the initiation of specific forums for publications.^{374 375} However, no individual's efforts can hope to encompass the whole of the problem. It must select the issues which can be appropriately and usefully addressed. As The Society has responsibility for 'managing' the activities of pharmacists, the research must provide evidence which can be readily incorporated into its current policy. Where prescription medication advisory activity is concerned, The Society's policy appears to be one of allowing pharmacists discretion as to the nature of their service while providing guidance of an ethical nature and recommendations for specific preparations through the BNF.³⁷⁶

In determining an appropriate policy-sensitive direction for research, Jung³⁷⁷ reminds us to avoid large solutions which often become large problems. Gunn³⁷⁸ provides practice-related preconditions necessary for the implementation of a successful top-down³⁷⁹ approach to policy implementation. Using these preconditions, four key requirements can be derived which The Society should consider when making and implementing policy for an advisory role. First, CPs must have sufficient resources at the point in time when advice is appropriately proffered. Second, their advice must be accepted by patients such that subsequent behaviour leads to improved use of drug therapy. Third, they must only be minimally dependent on other individuals in order to provide such a service. Fourth, they must have control over the advisory process and clearly defined roles for each person involved.

Using these four requirements the main issues, related questions and associated research topics have been compiled (table 10). This enables an overall appreciation of the extent of the research area and also serves to locate the research specifically undertaken in this thesis. Those topics which have been the subject of literature evaluation in this thesis are highlighted. Issues are also presented which have not been alluded to in the text and are not the subject of future in-depth research or discussion. For example, the feasibility of assessing pharmacists' competence to give advice has been raised by The Council³⁸⁰ but is not a central focus in this thesis because more fundamental issues are yet to be resolved.

Table 10

Issues concerning the prescription medication advisory role of the community pharmacist

1*. Are the necessary resources available for CPs' advisory role?

Issues: Do CPs have the appropriate knowledge of or access to information which will allow them to advise? Are proven educational tools freely available? Do CPs have time which can be allocated to an advisory role? Are CPs able to delegate tasks in order to release sufficient time to fulfil an advisory role? Is it necessary to have a clearly defined area set aside for patient counselling? Is remuneration necessary to fund CPs advisory activities?

Research topics

- 1.1 Community pharmacists' knowledge base on medication.
- 1.2 Availability and effectiveness of continuing education programmes.
- 1.3 Availability of educational aids to complement verbal advice.
- 1.4 An assessment of time which can be allocated to an advisory role.†
- 1.5 The level of dispensing assistance available.
- 1.6 Information on the use of dedicated counselling areas.
- 1.7 The effect of remuneration on the advisory role.

2*: Is the advice provided by CPs appropriate?

Issues: What exactly do CPs advise and is the advice correct? What should they advise? What advice do patients ask for? Is the advice provided perceived as necessary by patients? Are CPs seen as legitimate sources of PMA? What is the socialising role of CPs in giving PMA? Does the advice affect compliance? Do all medicines dispensed require advice? What is the best method of providing advice? What effect would patient registration with individual CP have on their activities? What effect would assessment of competence have on advisory activity? Would legal rulings or "professional" discretion best serve the advisory role?

Research topics:

- 2.1 The categories of advice provided.†‡
- 2.2 The standard of advice;
 - 2.2.1 which is provided,‡ and
 - 2.2.2 which should be provided.
- 2.3 The categories of advice sought.†‡
- 2.4 The categories of advice perceived as needed;
 - 2.4.1 by patients,†?
 - 2.4.2 by CPs for patients,†‡ and††.
 - 2.4.3 by general medical practitioners for CPs to advise patients.†
- 2.5 The effect of advice provided;
 - 2.5.1 on patients behaviour in the dispensary;†
 - 2.5.2 on patients compliance with prescribed medication;‡ and,
 - 2.5.3 on patients' perceptions of CPs.†‡
- 2.6 An assessment as to whether individual medicines require PMA by the CP.
- 2.7 A determination of how information is best conveyed;
 - 2.7.1 verbally,‡ and.
 - 2.7.2 in writing.‡
- 2.8 The effect of patient registration on;
 - 2.8.1 community pharmacists' advisory activity, and,
 - 2.8.2 therapeutic outcome.
- 2.9 The effect of mandatory assessment of CPs' competence on;
 - 2.9.1 quality and quantity of PMA; and
 - 2.9.2 patients' use of prescribed medication.
- 2.10 The effect on the advisory activities of CPs of;
 - 2.10.1 legislation;‡ and,
 - 2.10.2 delegation of the role to professional discretion.†‡

3*. What is the involvement of others in the advisory process?

Issues: What restrictions arise from community pharmacy's position in the dispensing process and their dependence on general medical practitioners for additional prescription information and ultimately, their income? Can the advisory role be delegated to dispensary assistants?

Research topics:

- 3.1** The relationships between CPs and general medical practitioners.†‡
- 3.2** Use of assistants for conveying advice;
 - 3.2.1** extent of reliance on assistants, and,
 - 3.2.2** quality and quantity of advisory activity provided by assistants.

4*. Do CPs have control over the advisory process?

Issues: Do CPs have a policy to provide advice or do they mainly respond to requests for information - who is in control, CPs or patients? Is confidentiality maintained between patient, CP and others involved? Are there intervening variables beyond the CP's control which affect their advisory activities? Does the environment in which CPs work affect their capacity to render an advisory service? What level of responsibility is, or should be accepted?

Research topics:

- 4.1** Are CPs proactive or passive in giving advice.†
- 4.2** Do CPs have definite policies for themselves and involved others concerning advisory activities.†
- 4.3** Control over confidentiality of information between;
 - 4.3.1** general medical practitioners and CPs, and,
 - 4.3.2** patients and CPs.
- 4.4** The influence of situational variables such as;
 - 4.4.1** the dynamics of when prescriptions are presented and whether CPs are able to respond appropriately,†
 - 4.4.2** the ability to contact relevant others in the event that additional information is required.
- 4.5** The effect of community pharmacy setting on prescription medication advice;
 - 4.5.1** offered by the CP, and,
 - 4.5.2** perceived by the patient.
- 4.6** An assessment as to whether CPs have access to sufficient information to become involved in an advisory role.
- 4.7** The level of responsibility accepted for;
 - 4.7.1** the advice or lack of advice provided by Cps, and,‡
 - 4.7.3** the actions of patients in response to the advice provided.

Notes

*** =** Issues related to the four key requirements derived from Gunn's preconditions for successful policy implementation.

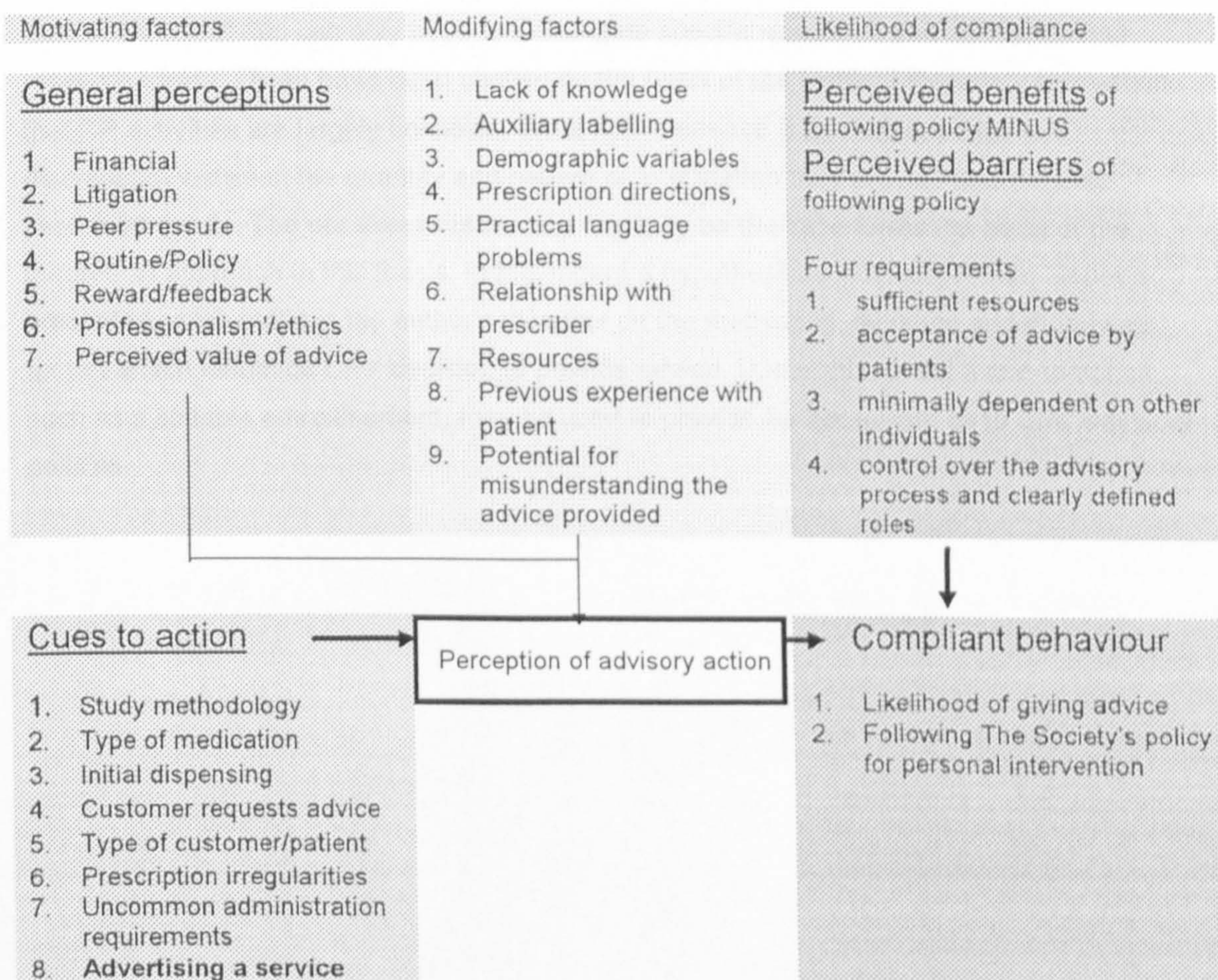
† = Topics which are the subject of original data collection in this thesis.

‡ = Previously discussed in this thesis using literature sources.

It can be appreciated from table 10 that the issues surrounding the CP's advisory role are many and varied. The implicit request by the Nuffield Report for evidence as to what pharmacists actually do, was considered crucial in deciding research topics which might benefit community pharmacy and provide direction for future policy. The need to remedy this shortfall is emphasised by Haywood and Alaszewski who made the point in 1980 that *"the threat to the NHS posed by current economic conditions and the growth of private medicine strengthens the case for almost total preoccupation with what the service actually does for the welfare of the patients"*.³⁸¹ If it is assumed that their advisory activities are less than optimal, then the main concerns of this thesis must be; to determine exactly what CPs do, to rationalise this activity using available literature and theory, and to consider changes in policy which may improve the advisory service. In this regard it might be helpful to consider what likely pressures and modifying factors are involved in CPs' decision to provide advice. Using a similar format to the hypothesised medication compliance model (figure 13 page 72) an advisory action model specific to CPs and the provision of advice can be devised (figure 15).

Figure 15

Hypothesised advisory action model for community pharmacists



The model is presented as the author's rationalisation of the process whereby the CP decides to provide advice. For example, it includes the paradox of a professional calling within a business setting and notes relationships with prescribers as a factor effecting CPs' advisory role. It also proposes that cues to action might prompt CPs to provide advice. Introducing an

appropriate cue, such as an advertisement in the form of a visual display promoting the CP as a source of advice, may prompt a response and provide some insight as to CPs' advisory policies.

In summary, the general policy of The Society, Government and the recommendations of independent assessors, has been to place the responsibility of a prescription medication advisory role with The Society which in turn uses the Code of Ethics and practice guidelines to direct individual CPs. There is little evidence describing CPs' advisory activity. However, any policy to affect their actions must consider the following four requirements to be successfully implemented.

1. Are the necessary resources available for CPs' advisory role?
2. Is the advice provided by CPs appropriate?
3. What is the involvement of others in the advisory process?
4. Do CPs have control over the advisory process?

Under these main elements the broad spectrum of associated issues provides an overview of relevant questions which may be asked of the advisory role. Given the limitations of time and resources, this thesis can only hope to investigate specific questions and corresponding research topics. These have been chosen on the basis of the Nuffield Reports' observation that CP activities are largely unknown. What little evidence is available, points to a discrepancy between the quantity and pattern of information they provide and patients' perceived needs. The possible reasons why this may be the case forms the basis of the theoretical approach in this thesis. In this regard a hypothesised Advisory Action Model is presented which outlines the author's thoughts on the motivating, initiating and modifying factors which influence CPs' decision to provide advice. Under this model a cue-to-action, such as a suitable advertisement, may be used to provide further insight as to CPs' advisory policies.

3.5 Conclusion

From the reviews presented in this chapter it is possible to conclude that America is ahead of Britain in clearly defining the activities and legal responsibilities of an advisory role for pharmacists. Also that legislation may not be a reliable method of encouraging specific pharmacists' activities. Britain has clearly defined in a Code of Ethics the expectation that pharmacists should advise patients. Both Medicine and Pharmacy have collaborated to provide joint recommendations for the provision of advice for specific preparations. Recommendations are predominantly for written advice, not verbal. It is concluded that pharmacists have an ethically, pharmaceutically, medically supported advisory role, yet guidance on how to verbally carry out this role is lacking. The role is discretionary and independent of general medical practitioners.

The Council of The Society entered into debate over a potential extended role which it sought to implement by advocating devolution of the advisory role on prescription medication to certified assistants. It is concluded that The Society does not hold the prescription medication advisory role as sacrosanct. It, in common with the Nuffield Committee, considers that not all medication requires counselling by the CP. That pharmacists during the debate failed to cite the literature on compliance and the effect of advice on patients, leads to several possible conclusions. Either they were more mindful of practicalities, including the loss of Government protection for the dispensing role, than their role in patient's well-being, or they simply failed to appreciate the potential of the available literature. Alternatively, a lack of concrete evidence for their advisory activity may have limited their use of this argument.

Government policy, by initiating payment for both an advisory role outside the pharmacy premises and storage of patient medication data, has provided legislative support for pharmacists' advisory role. However, no indication of how this relates to responsibility for patient welfare is evident in Government policy, rather pharmacy is advised not to let an *"extension of the pharmacist's role result in confusion over responsibilities to the patient"*.³⁰⁹ While providing some incentive for the 'extended role,' the Government clearly seeks to limit expansion of CPs prescription medication advisory role. No official body has produced a comprehensive programme with specific aims and objectives to direct the advisory activities of pharmacists. It is concluded that there is little scope for macro-sociological policy analysis.

As table 10 indicates, the research agenda associated with CPs' advisory role is large. Only a handful of issues can be considered by a single researcher. Without information on what CPs actually do in their prescription medication advisory role and possibly why, the outcomes of policy decisions are largely guesswork. This thesis seeks to address these most fundamental of questions. In doing so, the advisory action model (page 95) predicts that advertising a service will 'cue' interaction between CP and customer. The effect of an advertisement which prompts advisory activity is considered in this thesis.

CHAPTER 4 AIMS OBJECTIVES METHOD AND RESULTS

4.1 Foreward

Chapter four provides the reader with an overall understanding of the research conducted. The research is essentially epidemiological. Although qualitative and quantitative data reduction techniques are used and results presented in summary form in tables, the results are nonetheless extensive. For ease of reading, this thesis has been arranged with the bulk of analysis and results in the appendices (pages 159 to 293). In chapter four and the discussion chapters (five and six), key results are all fully cross-referenced. In this way the reader may elect the depth with which they access the data and analysis presented.

In addressing the issues selected as research topics for this thesis, section 4.2 considers the methodological problem of taking a specific epistemological stance. It is decided that neither a structuralist nor interactionist stance is appropriate. The design of studies is driven more by the research problem, available techniques and a gradualist approach rather than a particular philosophical stance.

Section 4.3 sets out the overall aim of the research. The specific aims for the study of CPs' attitudes to the provision of advice and an observational study incorporating an intervention designed to test CPs' advisory policies are set out in detail. Objectives and hypotheses are listed. In each case aims, objectives and hypotheses are cross-referenced to the relevant section in the appendices.

Section advice 4.4 discusses three methods of data collection, schedule-structured interview, activity analysis and direct observation and concludes that the latter is most appropriate to the research undertaken.

Section 4.5 provides an overview of the research conducted and specifically sets out the method used for the observational study. This section contains extensive cross-referencing to the appendices and may be used to help readers to structure their access to the material.

Section 4.6 sets out the statistical statements governing data analysis. The statistical range for significance is defined. Criteria for sample size in contingency tables analysed with the chi-square statistic are discussed and arguments for no limit on the sample size for Fisher's exact test provided.

4.2 Quantitative or qualitative research methods

This thesis concerns itself with a 'role' yet is directed to first determine 'activity'. The former might be considered discursive and open to qualitative research methods while the latter is distinctly quantifiable and the use of quantitative methods would be expected. Bryman³⁸² notes that qualitative and quantitative research methods have been aligned to divergent interactionist and structuralist epistemological stances respectively, and that entering into debate as to the 'correct' philosophy would result in the exclusion of research methods which might be technically appropriate to the task. Gerrett and Stevenson³⁸³ summarise both stances and agree with Bryman that the point of exactly how we can gain 'knowledge' and get to the 'truth' is lost in the general debate. They describe the dilemma which 'socially' orientated pharmacy practice research has in gaining recognition from the 'natural' or 'scientific' community. Although no definitive solution is provided they suggest that researchers in 'social' pharmacy practice should state their epistemological stance, if any.

A statement as to the stance taken is warranted as this thesis is written from a 'social' perspective of policy and relies on literature from the social sciences to understand observed behaviour yet is informed by essentially numerical findings. The author does not hold to any one specific epistemological stance. Rather he considers that the expectation of a limited range of research methods associated with any one specific stance would be too restrictive to enable research of the topic area. The approach is therefore eclectic, a stance which enables a combination of methods. The strength of combining methods has been noted.³⁸⁴

A second consideration is whether to use theory for generating hypotheses, a constructivist approach, or to allow theory to grow from an accumulation of data, the gradualists conception.^{222 385} As the prescription medication advisory activities of British CPs are largely unknown, no data was available to generate theories or concepts as to CPs' advisory activities and none had been proposed in the literature. As such, the constructive view would have relied heavily on supposition. Therefore, a gradualist approach of allowing theory to develop from the data collected was considered appropriate. Support for this approach is provided by Glaser and Strauss³⁸⁶ and their concept of grounded theory. Precise methods for extraction and reduction of data, such as fieldnotes and observations, without compromising the context of the original observation are available.^{387 388}

4.3 Aims, objectives and hypotheses of research conducted

This section states the general aims and objectives of the research undertaken for this thesis. The prime purpose, which is the title of this thesis, is to determine the following:

THE ROLE OF COMMUNITY PHARMACISTS AS ADVISORS ON PRESCRIPTION MEDICATION.

In so doing, the personal, motivating objective for the author is to increase the quality and quantity of interactions between CPs and patients concerning prescription medication. The overall aim of the thesis is to:

To investigate and rationalise interactions between community pharmacists and patients which concern prescription medication advice.

The research question is 'what do community pharmacists do and why?' Research studies were conducted with the following aims, objectives and hypotheses.

1. **To differentiate CPs by their attitudes to the provision of advice and relate CPs' attitudes to direct observations of their activity.**
(The bulk of research concerning the first aim is found in sections A2.2.1 page 187 to A2.2.3 page 196);
Objectives for the first aim are as follows:
 - a) **to develop a set of statements which differentiate and determine CP's attitudes towards patient counselling;**
 - b) **to examine associations and differences between CP's attitudinal responses and epidemiological variables;**
 - c) **to compare the attitudes of CPs' participating in the observational study with those of the remaining sample frame; and,**
 - d) **to compare responses with observed activity.**
2. **To determine whether a particular visual display or poster is likely to prompt individuals into requesting prescription medication from pharmacists.**
(The bulk of research concerning the second aim is found in sections A2.3.1 page 210 to A2.3.3 page 220);
Objectives for the second aim are as follows:
 - a) **to develop a series of visual displays promoting interactions between pharmacists and individuals who present prescriptions at a dispensary (customers) which include topics or themes for discussion developed in previous studies;**
 - b) **to determine which of the visual displays is most likely to prompt discussion concerning prescription medication between pharmacists and customers; and,**
 - c) **to relate choice of visual display by customers with their residence, gender, whether they are the patient or collecting on behalf of the patient, age and occupation.**

3. To determine the extent and nature of interactions between CPs and customers concerning advice on prescription medication.

(The bulk of research concerning the third aim is found in sections A3.1.1 page 222 to A3.5 page 289).

In testing the nature of advisory policy, baseline data was collected then a visual display introduced. Research for the third aim is specified by the following hypotheses:

- a) from section A3.1.1 Presentation and collection of prescriptions, page 222:
 - i) that the provision of advice is not correlated with CPs' policies of giving out dispensed prescriptions; and,
 - ii) that the poster would not prompt CPs to give out dispensed prescription medication items personally.
- b) from section A3.1.2 Prescription orientated individuals, page 227:
 - i) that CPs advise similar proportions of prescription orientated individuals (POIs);
 - ii) that advice provided by CPs is independent of customer's gender, age, age controlled for gender, ethnic association and ownership of the medication.
 - iii) that customer's requests for advice are independent of their gender, age, age controlled for gender, ethnic association and ownership of the medication; and,
 - iv) that the preceding two hypotheses hold for all CPs.
 - v) that CPs can not be distinguished on the basis of socio-economic status of patients for whom they dispense;
 - vi) that advice provided by CPs is not dependent on the socio-economic status of the patient;
 - vii) that the category of advice provided by CPs is not dependent on the socio-economic status of the patient;
 - viii) that, for customers receiving advice, display of the poster was not associated with changes in the socio-economic status of patients; and,
 - ix) that the above three hypotheses hold for customer-Initiated requests for advice;
- c) from section A3.1.3.1 Advice, page 249:
 - i) for preparation events, advice does not depend on the CP involved;
 - ii) that dispensing by observational study CPs may be generalised to a wider sample frame in terms of therapeutic class.
 - iii) for preparation events grouped by therapeutic class, advice does not depend on the category of medication involved;
 - iv) that the category of advice discussed did not depend on the therapeutic class of the medicine involved.
 - v) that the above hypotheses H_i , H_{iii} and H_{iv} do not hold for customer Initiated requests for advice;

- vi) that hypothesis H_{iii} holds for both proactive and reactive CPs;
 - vii) that display of the poster was not associated with changes in the frequency of CPs' advisory activity;
 - viii) that display of the poster was not associated with changes in the therapeutic classification of medicines for which advice was provided;
 - ix) that the category of advice discussed did not depend on display of the poster;
 - x) that the above hypotheses H_{viii} and H_{ix} hold for customer initiated requests for advice;
 - xi) that the category of advice discussed did not depend on the type of CP; and
 - xii) that the category of advice sought did not depend on the type of CP.
- d) from section A3.1.3.3 What to do with it, page 264:
- i) that the frequency of advice identified as discrete roles for the advisory category 'What to do with it' is not dependent on type of CP; and,
 - ii) that unique pharmacy advice which includes judgement is not dependent on the type of CP.
- e) from section A3.1.5 Effect of the poster, page 274:
- i) that display of the poster had no effect on the numbers of POIs initiating discussion on a prescription medication;
 - ii) that customer initiated requests for advice are independent of age.
- f) from section A3.2 Labelling, page 277:
- i) that CPs' verbal advisory activity is not related to their use of written additional labelling; and,
 - ii) that the use of non-verbal additional labelling was not related to the use of automatic printing systems.
- g) from section A3.3 Time based analyses, page 280:
- i) that the presence of the researcher had no demonstrable effect on the prescription medication activities of CPs; and,
 - ii) that the advice seeking behaviour of POIs is not related to the number of individuals who concurrently ask for pharmacy services.
- h) from section 3.4 Supply, page 289:
- i) that prescription medication advice is not dependent on whether advice on supply aspects of medication is provided.
- i) from section A3.1.3.3 What to do with it, page 264:
- i) to determine the nature of the advisory role for topics under the heading 'What to do with it'.
- j) from section A3.1.4.1 Side effects page 268:
- i) to determine the nature of the advisory role for topics under the heading 'Side effects'; and,

- ii) to use data reduction and contingency table presentations in determining any differences in approach between CPs in their discussion on side effects.
- k) from section A3.1.4.2 What is prescribed, page 272:
 - i) to determine the nature of the advisory role for topics under the heading 'What is prescribed'.

4.4 Determination of method

In chapter two, section 2.4.2, page 53, arguments made in the literature were cited which concluded that direct observation is the most appropriate method for determining quantitatively the exact advisory activity of CPs.^{165 167} Alternatives include the use of market research techniques, such as the schedule-structured interview, and activity analysis.³⁸⁹ Initially, the author spent six months developing a schedule-structured interview method for determining the advisory activities of CPs. Unfortunately when individuals were approached for details of their observed interaction with the CP, they failed to answer the questions accurately. For whatever reason, the research instrument was found to lack subject validity and the method of schedule-structured interview was considered to be unsuitable. Section A1.1, page 159, provides a full account of this failed method. The final versions of the schedules and their flow diagrams are given on pages 162 to 167.

Activity analysis has also been used to determine what CPs do.⁶¹ Studies report values of 3.6%³⁹⁰ and 1.6%³⁹¹ for the percentage of observations where CPs were noted to be communicating with patients. Using work sampling theory,³⁹² to verify the frequency of prescription medication counselling by CPs in England at a 95% confidence level with 5% accuracy if the activity occurred 3.6% of the time, then the number of observations required would be 42,844. At one minute intervals this would require 89, eight hour days of observation. However, even with the most detailed observations, only limited information as to why events occurred could be determined. Further, a considerable proportion of research time would have been wasted waiting for such an infrequent activity. For these reasons, the use of direct observation was considered more appropriate.

Two methods of direct observation may be employed. Either pseudo-patients present a fabricated scenario and directly observe CPs' responses¹⁷¹ or researchers observe activity as it occurs in the normal course of events.¹⁶⁴ As the first would have limited discussion to CPs' policies for specific drugs only, the latter option was chosen.

Direct observation has the advantage of subject validity because the activity is actually observed as it occurs. In qualitative³⁹³ and quantitative³⁹⁴ research, validity and reliability are highlighted as major issues. The disadvantages of direct observations are the possible reactions to the presence of the observer, customer reactivity, and difficulties in recording which may affect reliability. Reactions to the presence of the observer can often be identified statistically. Section A3.4, page 289, presents a time-based analysis to determine any affect on advisory activity associated with the researcher. This section also includes a discussion of customer reaction to the chosen method. In order to minimise variation in recording and improve use of time, a form with predetermined categories can be used. Section A1.2.3, page 173, provides the protocol for the observational study and includes the form used to record observed activity (page 175). However exhaustive published^{147 148} categories of advice may be, they can never include all cases. For this reason, a form may also allow for open reporting as in fieldwork notes. Even with these measures, there is always the

possibility of misinterpreting actions. Time to record fieldwork notes may be compromised by the necessity to note quantitative data. Such problems might be solved by a second data collection mechanism.

Ideally, a second observer would provide additional data and a measure of reliability, however, limited resources precluded this possibility. A second option used in both community pharmacy^{395 396} and medical settings^{133 205 190} is the use of tape recordings and subsequent transcripts of discussions. Using this technique it would be possible to test for reliability of data transfer and categorisation by comparing independently entered results of observed activity from a devised recording form and the results determined by field notes plus transcripts. In addition, the combination of transcripts, field notes and information from such a form would provide a suitable source of data for abstraction, extraction and reduction to determine CP advisory 'role'. The decision was taken to employ both direct observation and tape recording with transcription as the study method. This precluded collection of the following data; whether the prescription is a repeat of earlier medication, the knowledge the CPs has of the patient, previous advice given to the patient, and, whether the prescription is prescribed for the first time. The limitations imposed by a lack of such information are acknowledged.

An advertisement, such as a poster, acting as a cue-to-action, is included in the hypothesised advisory action model (page 95). Section A2.3, starting on page 210, provides details of the development of a suitable poster. This intervention is included as part of the research undertaken for this thesis for the following reasons:

1. to test this aspect of the hypothesised advisory action model;
2. if CPs are failing to provide any advice, to engineer the potential for observing some activity;
3. if CPs are providing PMA, to determine how advertising specific categories of advice affects the nature of discussion; and,
4. if proved successful, advertising is an inexpensive method of increasing community pharmacist-patient interaction.

To investigate the effect of an intervention, requires a minimum 'before and after' study design if it can be demonstrated that there is a pre-existing baseline activity. Literary evidence presented (section 2.3, page 210, and section 2.4, page 221) suggests a low level of background activity. A small pilot investigation was conducted by the author to verify personally the likely existence of background activity in local community pharmacies. On Wednesday 1st April and Monday 7th September, 1987, the author, a registered pharmacist, spent a day dispensing at Buchans Chemist, Castle Bromwich, Birmingham. It was possible to be continuously available for consultation during the period from 9.00am to 1pm and from 2pm to 6.45pm and each dispensed item was given by the author to the person presenting the prescription. Prescriptions were not handed out during the interval. Considering the combined results of the two days, of 125 prescriptions and 215 individual items, 28 patients had been prescribed one or more new items and two had initiated discussion on prescription

medication. This exercise served to verify that a very small number of individuals, possibly fewer than 2%, initiate discussion on prescription medication with the CP. Based on the premise that information should be provided for all newly prescribed medication then CPs should be actively advising at least 20% of their patients. As there is clearly a baseline advice activity, data collection before and after an intervention was the minimum study design.

The following section presents an overview of the research conducted. Cross-referencing allow the reader to access as much detail in the appendices as is required.

4.5 An overview of research conducted

Relating to the first aim on page 100, a study was first carried out to determine attitudes of CPs to PMA (appendices A2.2.1, page 187 to A2.2.3, page 196). Data collection was by questionnaire (form 3, page 194) developed after extensive pre-piloting (appendix A2.2.2, page 189). Analysis of results (appendix A2.2.3, page 196) included a comparison of attitudes between the observational study sample of CPs and CPs practising within the borders of Southern Derbyshire. Results of this comparison showed no significant differences in attitude between the two groups. Also that observational study CPs showed an ability to estimate their own frequency of verbal advice when compared with observed activity (appendix A2.4, page 221).

Relating to the second aim on page 100, a series of four advertisements in the form of posters were developed (figures 27, page 211 to 30 page 214) and their likely ability to act as cues for promoting customer-community pharmacist interactions assessed (appendix A2.3.1, page 210 to A2.3.3, page 220). The posters were designed around advertising the CPs' services in providing information on the previously researched ¹⁴⁷ ¹⁴⁸ categories of non-supply orientated advice 'What to do with it', 'What is prescribed', 'Specific problems' and its sub-category 'Side effects'. Analysis of the results (appendix A2.3.2, page 189) showed that poster C (figure 29, page 213) was the most likely to have an effect. In summary, (appendix A2.3.3, page 220) note was made of age and ownership of the prescription as important variables for further study.

Relating to the third and major aim on page 100, a piloting exercise was conducted at a non-sample frame pharmacy using a radio microphone and transmitter (section A1.2.2, page 170) attached to the CP. Appropriate discussion was recorded on tape by equipment connected to the receiver, all of which was contained in a box situated with the researcher. The researcher was discreetly positioned to observe any interaction including the CP without becoming involved and was able to record details of discussion on a pre-piloted form (page 175). Experience was gained in collecting the required information with minimal disruption to the normal activities of the pharmacy. In order to further anticipate occupational difficulties and the possibility of alternative research designs, the researcher used the methodology developed and undertook a three week period in two community pharmacies as the sole CP in charge. It was found that a single CP could not simultaneously operate the recording system, take field notes and also attend to normal dispensing activities. This exercise excluded the possibility of CPs collecting the data themselves and indicated the requirement for a full-time observer.

Twenty-seven pharmacies were randomly chosen from the 105 listed with the Derbyshire Family Practitioner Committee on the 11th April 1988. The sampling procedure is outlined in full in appendix A1.2.1, page 168. Three branches of a large multiple were chosen but were eliminated as permission was not granted for the study by the superintendent in charge of the areas outlets (section A1.2.4, page 180). The twenty-four remaining pharmacies were visited

individually by the researcher. The CP in charge of the dispensary was asked who was normally in charge on the randomly assigned day(s) for observation. The CP identified as being in charge of the dispensary on the predetermined day was given a protocol (section A1.2.3, page 173) and a verbal summary of the study objectives and methodology. On the same day one week later each CP was contacted to determine their willingness to participate. Community pharmacists were contacted a total of three times over six months before being designated non-participants. Twenty pharmacies of twenty four (83.3%) agreed to participate and are henceforth designated as the observational study pharmacies. The experimental design ideally required data collection for two periods, each of up to three days, on the same days of the week and not more than two weeks apart. With a before and after research design it was considered essential that the same CP was present on both occasions. In four cases this meant that the time scale was relaxed, although the days observed were consistent. Table 63, page 284, details the time spent at each of the study pharmacies. The protocol required the CP to carry the radio microphone and transmitter until 74 possible pharmacy-patient interactions occurred. This figure was determined to be the mean number of prescriptions dispensed per day by pharmacies in Derbyshire (section A1.2.1, page 168). Pharmacies were randomly chosen to display the poster on the first or second visit. Patients were notified about the study by the display in the dispensary area of a self explanatory poster. A copy of the notice is provided with the study protocol (section A1.2.3, page 173). Ethical approval for the study was granted by the Local Medical Committee and Southern Derbyshire Health Authority ethics committee. No attempt was made by the CP to conceal the microphone, although it was by nature inconspicuous. Details of interactions were recorded on a dedicated form. The names of patients and prescription details were noted and tape recordings taken of every discussion concerning advice which included the CP. Specific details on the pharmacy premises and labelling practices and non-pharmacy staff were also recorded. Notes were taken of all interactions which included verbal information on the supply of prescription medication to customers. Customers were considered cases as they entered the community pharmacy and presented one or more prescriptions to be dispensed or collected one or more prescription items. If a customer presented a prescription and left the community pharmacy then returned later that day or on an alternative day during the observation period, then they were considered a new case.

At the end of the second observational period, the dispensing CP was asked to complete an attitudinal questionnaire (section A2.2.1, page 187) and type four labels (section A3.2, page 277). The attitudinal section was identical to that piloted and used previously and a stamped self-addressed envelope was provided for its return. The four CPs who did not take part were visited specifically and asked to furnish the same details. Data for the observational study was collected from June 1988 to February 1989. Categorisation of observed topics of discussion used the heading and associated descriptions developed from previous studies.¹⁴⁷

¹⁴⁸ Two sets of results were entered into the Data Entry II spreadsheet of the SPSS suite of programmes for personal computers or SPSS/PC+. Analysis used versions two, three, four and Windows 6.1 of the SPSS/PC+ package. Concerning data entry, information was taken from the field notes and observations recorded using the devised forms. A second set of data

was entered independently using verbatim transcriptions made of all discussion recorded on tape concerning advice. A two percent error rate for data entry was detected. In cases of inconsistency, the verbatim transcripts were relied upon as the accurate indication of activity. It should be noted that the use of the poster resulted in no statistically significant effect on the quantity of advice observed. Where analysis concerns quantity, the data is aggregated. In most cases, the data is still split into before and after intervention groups and analysis presented to reaffirm overall statistical interpretation.

The analysis of observational data was performed at four 'levels'. This was possible as the data collected allowed the type of advice, the prescription item, the prescription or the customer to be analysed as cases. For the analysis presented in this thesis, if discussion included one or more categories of advice for one or more prescriptions with a number of prescribed medicines, then, irrespective of ownership of the medication, the interaction was said to have included a single episode of advice and be at level one. In this instance, the POI was a case for analysis. For levels two three and four, customers who are directly involved with prescription dispensing or POIs may be counted many times over depending on the number of prescriptions involved, (level 2), medicines on prescription, (level 3) or categories of advice per medicine per prescription (level 4). In other words, cases for analysis may be at the level of first, customers or POIs; second, prescriptions and details pertaining to the form or patients; third, individual drugs and their classification; and, fourth, the category of advice. As supply-orientated advice was never specifically cited as being required by customers (section 2.4.1, page 50) it was excluded from 'PMA'. The relationship of supply-orientated advice to PMA was considered separately in section A3.4, page 289.

Whether the hypotheses tested for the observational study (section A4.3, page 100) were confirmed or rejected and the level of analysis, are now presented with cross-referencing. The statistical value below which the decision is taken to reject the null hypothesis is $p < 0.05$.

1. from section A3.1.1 Presentation and collection of prescriptions, page 222:
 - a) that the provision of advice is not correlated with CPs' policies of giving out dispensed prescriptions;
 - i) a gamma value of 0.3499 (table 36, page 226) provides an indication of the strength of ordinal association between CPs' policies of giving out dispensed medication and their subsequent advisory activity;
 - b) that the poster would not prompt CPs to give out dispensed prescription medication items personally;
 - i) confirmed (analysis, level one, table 36, page 226).
2. from section A3.1.2 Prescription orientated individuals, page 227:
 - a) that CPs advise similar proportions of POIs;
 - i) rejected (analysis, level one, table 40[B], page 244);
 - b) that advice provided by CPs is independent of customers' gender, age, age controlled for gender, ethnic association and ownership of the medication;

- i) gender, confirmed; age, rejected; age controlled for gender, rejected; ethnic association, confirmed; and, ownership of the prescription, rejected (analysis, level one, stage one, table 38, page 238);
 - c) that customers' requests for advice are independent of their gender, age, age controlled for gender, ethnic association and ownership of the medication;
 - i) gender, confirmed; age, confirmed; age controlled for gender, confirmed; ethnic association, confirmed; and, ownership of the prescription, rejected (analysis, level one, stage two, table 38, page 238);
 - d) that the preceding two hypotheses hold for all CPs;
 - i) gender, confirmed; age, rejected; age controlled for gender, rejected; ethnic association, confirmed; and, ownership of the prescription, confirmed (analysis, level one, stage one, table 38, page 238);
 - e) that CPs cannot be distinguished on the basis of socio-economic status of patients for whom they dispense;
 - i) rejected (analysis, level two, table 41, page 245);
 - f) that advice provided by CPs is not dependent on the socio-economic status of the patient;
 - i) rejected (analysis Kolmogorov-Smirnov, level two, table 42, page 246);
 - g) that the category of advice provided by CPs is not dependent on the socio-economic status of the patient;
 - i) confirmed (analysis, level four, table 43, page 247);
 - h) that, for customers receiving advice, display of the poster was not associated with changes in the socio-economic status of patients;
 - i) confirmed (analysis, level four, table 45, page 248);
 - i) that the above three hypotheses hold for customer-initiated requests for advice;
 - i) confirmed (analysis: level two, table 42, page 246; level four, table 43, page 247; and, level four, table 46, page 248).
3. from section A3.1.3.1 Advice, page 249:
- a) for preparation events, advice does not depend on the CP involved;
 - i) rejected (analysis, level three, table 47, page 256);
 - b) that dispensing by observational study CPs may be generalised to a wider sample frame in terms of therapeutic class;
 - i) confirmed (analysis, level three, table 48, page 257);
 - c) for preparation events grouped by therapeutic class, advice does not depend on the category of medication involved;
 - i) rejected (analysis, level three, table 48, page 257);
 - d) that the category of advice discussed did not depend on the therapeutic class of the medicine involved;
 - i) rejected (analysis, level four, table 49, page 259);

- e) that the above hypotheses H_a , H_c and H_d do not hold for customer initiated requests for advice;
 - i) rejected (analysis: level three, table 47, page 256; level three; and, table 48, page 257)
 - f) that hypothesis H_c holds (rejected) for both proactive and reactive CPs;
 - i) confirmed (analysis, level three, table 48, page 257);
 - g) that display of the poster was not associated with changes in the frequency of CPs' advisory activity;
 - i) confirmed (analysis, level three, table 47, page 256);
 - h) that display of the poster was not associated with changes in the therapeutic classification of medicines for which advice was provided;
 - i) confirmed (analysis, level three, table 48, page 257);
 - i) that the category of advice discussed did not depend on display of the poster;
 - i) rejected (analysis, level four, table 50, page 260);
 - j) that the above hypotheses H_h and H_i hold for customer initiated requests for advice;
 - i) confirmed H_h (analysis, level three, table 48, page 257)
 - ii) rejected H_i (analysis, level four, table 50, page 260)
 - k) that the category of advice discussed did not depend on the type of CP;
 - i) rejected (analysis, level four, table 51, page 260);
 - l) that the category of advice sought did not depend on the type of CP.
 - i) confirmed (analysis, level four, table 52, page 261).
4. from section A3.1.3.3 What to do with it, page 264:
- a) that the frequency of advice identified as discrete roles for the advisory category 'What to do with it' is not dependent on type of CP;
 - i) rejected for the specific role of reiteration of prescribers' instructions (analysis, level four; table 55, page 267);
 - b) that unique pharmacy advice which includes judgement is not dependent on the type of CP.
 - i) confirmed (analysis, level four; table 55, page 267).
5. from section A3.1.5 Effect of the poster, page 274:
- a) that display of the poster had no effect on the numbers of POIs initiating discussion on a prescription medication;
 - i) confirmed (analysis, level one, table 59[A], page 276);
 - ii) rejected if scanning the poster is taken into account (analysis, level one, table 59[B], page 276);
 - b) that customer initiated requests for advice are independent of age;
 - i) confirmed (analysis, level one, table 60[A], page 276);
 - ii) rejected if scanning the poster is taken into account (analysis, level one, table 60[B], page 276).
6. from section A3.2 Labelling, page 277:

- a) that CPs' verbal advisory activity is not related to their use of written additional labelling;
 - i) confirmed (analysis, table 61, page 279);
 - b) that the use of non-verbal additional labelling was not related to the use of automatic printing systems;
 - i) rejected (analysis, table 62, page 279).
7. from section A3.3 Time based analyses, page 280:
- a) that the presence of the researcher had no demonstrable effect on the prescription medication activities of CPs;
 - i) confirmed (analysis, table 64, page 286);
 - b) that the advice seeking behaviour of POIs is not related to the number of individuals who concurrently ask for pharmacy services;
 - i) rejected (analysis, tables 66, page 288, table 67 page 288);
8. from section 3.4 Supply, page 289:
- a) that prescription medication advice is not dependent on whether advice on supply aspects of medication is provided;
 - i) rejected (analysis, table 69, page 292).
9. from section A3.1.3.3 What to do with it, page 264:
- a) to determine the nature of the advisory role for topics under the heading 'What to do with it';
 - i) three roles were determined; reiteration of prescribers' labelling instructions, reiteration of additional labelling instructions and unique pharmacy advice. (analysis, table 54, page 264).
10. from section A3.1.4.1 Side effects page 268:
- a) to determine the nature of the advisory role for topics under the heading 'Side effects'
 - i) four roles were determined; educational/informative, confirmatory, compliance and socialising (analysis, table 56, page 270).
11. from section A3.1.4.2 What is prescribed, page 272:
- a) to determine the nature of the advisory role for topics under the heading 'What is prescribed';
 - i) three roles were determined; educational/informative, confirmatory, and intent (analysis, table 58, page 272).

4.6 Statistical parameters

In the analysis, the following statistical range has been followed for the probability of a correct decision to reject the null hypothesis; 'statistical trend' less than 95% ($p=0.05$) but not less than 90% ($p=0.1$); 'statistical significance' greater than or equal to 95% ($p=0.05$) but not greater than 99% ($p=0.01$); and, 'very significant' greater than or equal to 99% ($p=0.01$). Data and analysis were presented with the x axis as the independent variable, the y axis as the dependent variable and the z axis as categories of the independent variable. For reasons of presentation this pattern may be altered. In such cases, this is acknowledged in the corresponding footnote.

As much of the data was described as frequencies in discrete categories at the nominal or ordinal level of measurement, the test of choice was often Pearson's chi-square. One of the assumptions made when deriving the chi-square distribution, as an approximation to the distribution of the chi-square statistic, is that the expected frequencies are not small. For small expected frequencies in contingency tables with more than four cells, the common recommendation is that fewer than 20% of cells have expected frequencies less than five and all cells have a minimum of unity^{402 397}. A review of such recommendations notes selected authors who consider this 'rule' unduly restrictive.⁴⁰⁰ It has been suggested by Lewontin and Felsenstein³⁹⁸ that for $2 \times n$ tables with fixed marginals, *"a very conservative rule of operation would be that if expectations are 1 or greater the test is certainly conservative at the 5%, 2% and 1% level of significance and that for most cases even fractional expectations do not affect the test. For those cases of fractional expectations in which the [chi-square] test is non-conservative, the deviations of the true [unknown] values from those given by the [chi-square] distribution are quite small"*. Similar conclusions were reached by Slakter³⁹⁹ when the expected frequencies are taken to be equal and very small. As deleting or combining categories to realise a minimum expected frequency is not a preferred method of analytical manipulation,⁴⁰⁰ the author used his judgement as to appropriate analysis in $2 \times n$ and $k \times n$ tables. For 2×3 tables the more stringent criterion was used, that no cell had an expected frequency less than unity and only one less than five. In the case of a 2×2 contingency table, the suggestion by Everitt⁴⁰⁰ to use Fisher's exact test when one or more cells has an expected frequency less than five is accepted in the analyses presented in this thesis. It should be noted that there is some confusion over the size of the sample appropriate for Fisher's exact test. Cohen and Holiday⁴⁰¹ suggest limiting the test *"to N's as large as 30 where neither row or margin totals exceeds $N=15$ "*. Similarly, Norusis⁴⁰² limits the total to less than 30 with no statement concerning row or column totals. Everitt⁴⁰⁰ uses a numerical example to demonstrate the procedure for calculating the exact probability of the observed frequencies then advocates ways in which the probability calculations involved may be made easier by reference to a table applicable for total sample sizes up to 50. It would appear that the limit for Fisher's exact test is based on available tables rather than mathematical inaccuracy. A literature search failed to determine otherwise. Version 4.01 of the statistics package employed calculates both one and two tailed probabilities for Fisher's exact test when the expected frequency of one or more cells of a 2×2 table is less than five. It does this

irrespective of the sample size. Examination of the algorithm used by version 4.01 programme to calculate the probability for a sample size greater than 30 indicates no reference to a stored table.⁴⁰³ As an exact probability is calculated, no limit has been set for the analysis presented in this thesis, on the sample size for Fisher's exact test.

For the Mann-Whitney 'U' test, the two-tailed probabilities are based on Z values where the number of cases exceeds 20 and an exact probability calculated, based on 'U' values, where the number of cases is less than 20. Values of Z are calculated with a correction for ties.

For analyses of responses to attitudinal questions, although it has been argued that the numbers assigned can be manipulated at interval level regardless of their relationship to the underlying property being investigated,⁴⁰⁴ it was not considered statistically valid for the studies conducted. In the attitudinal study, the scale used was not constructed between absolutes and customers were asked to choose discrete categories rather than a relative position on a continuous scale. This stance was taken in agreement with published literature that responses to vague quantifiers could not be assumed to be at the interval level of measurement.^{405 406} Analysis was, therefore, limited to ordinal associations.^{407 408}

4.7 Conclusions

This chapter has justified the methods and provided an outline of the research conducted for this thesis. It is clear that the researcher is taking an eclectic approach to qualitative and quantitative methods. It is also clear from the appendices that quantitative analysis has dominated the results. This is because the research question 'what do community pharmacists do' is primarily a question of epidemiology.

Examination of possible options for data collection including schedule-structured interview, activity analysis and direct observation concluded that the latter was the method of choice in this instance.

Statistical canons used in the analysis were described and it was concluded that use of Pearsons chi-square and Fishers exact test could be extended and maintain their statistical validity.

The following chapter integrates the results of the research conducted, usually shown graphically, in a discussion which draws upon relevant literature and models to provide an understanding of the role of CPs as advisors on prescription medication.

CHAPTER 5 DISCUSSION OF OBSERVED ACTIVITY

5.1 Summary

Before summarising the discussion in chapter five, it is useful to recall the substance of previous chapters. Chapter one outlines the historical development of community pharmacy. It focuses on CPs primary activity, that of dispensing and argues that the nature of dispensing is changing.

Chapter two presents arguments that CPs may adopt a 'new', more proactive role as advisors on prescribed medication to replace the lost activity of compounding. Evidence that such advice is perceived by the general public as valuable is presented. A disparity is noted between the perceived needs of the public for advice and the recorded activity of advisors. The gulf is at its greatest for advice on the side effects of prescribed medication. That advice may be a positive force in the effective use of medicines is demonstrated.

In chapter three, the ethical expectation that CPs should provide PMA is explored. The provision of advice is clearly within CPs' professional remit. The Code of Ethics is the major determinant of ethical expectations. The BNF is the main reference source for CPs. It provides a list of medications each with the corresponding suggested written additional labelling advice. Community pharmacists have the final responsibility as to whether, how, when and where such advice is afforded. A full account of the issues involved is presented and those considered by this thesis identified. Principal among these is the most basic; to determine the prescription medication advisory behaviour of CPs. As such, this thesis concentrates on the epidemiological findings of the research conducted. A model for advisory action is presented. It proposes a cue-to-action for promoting community pharmacist-patient interactions.

Chapter four defines the research aims and objectives for this thesis. Arguments for the method of direct observation with remote recording and an intervention in the form of a poster are presented. Research hypotheses and results of analysis are listed.

Given this background, the content of chapter five is summarised in the next paragraphs. Section 5.2 is primarily concerned with the results from level one and two analyses, where POIs and prescriptions respectively were used as cases for analysis. Full definitions for levels of analysis are given on page 109. The principal finding that the study CPs counselled approximately one in every 7.44 POIs, is discussed and compared with published literature. Note is made that this thesis presents the first evidence with subject validity of the full extent of CPs' advisory activity. The seeking of advice by POIs, but not the provision of advice by CPs, is found to be related to concurrent dispensing activity. This finding is discussed in the context of the Health Belief Model (HBM). The identification of two distinct types of CPs, proactive and reactive, is discussed in the context of CPs' physical environment. Four key activities are then considered; the use of additional labelling, CPs' apparent selectivity in not advising elderly POIs; whether CPs' are aware of the extent of their advisory activity, and,

their observed activity in relation to both the Government's and The Society's apparent policy. Finally, the relationship of CPs' advisory activity and patients' socio-economic status is discussed. Community pharmacies serve patients in narrow bands of socio-economic status. They tend to advise patients with higher socio-economic status, yet advice is sought across the range of status. The limitations of the evidence are presented.

In Section 5.3, the main results of level three, where a case for analysis is the item prescribed, and level four, where a case is the category of advice, are discussed. Prescribed medication for the elderly was found to be linked to therapeutic categories, which are associated with relatively high compliance. This finding is discussed in the context of the level one finding that CPs may be ignoring the needs of the elderly. It is argued that in adopting this strategy, CPs may be seen as appropriately marshalling their resources rather than avoiding any one single group. Community pharmacists' advice is very significantly associated with verbal reiteration of labelling instructions for antibiotics. This finding is discussed in the context of qualitative analysis which points to a further element of judgement in the advice afforded. The low relative position for the frequency of advice on side effects compared to other categories is described. Five rationales for this observation are presented:

1. CPs may be receiving mixed messages from peers on the problems of prescription medication side effects;
2. CPs' personal experiences may have alerted them to possible problems;
3. CPs believe that advice on side effects may psychologically induce problems in patients;
4. role boundaries between CPs and GPs may act as barriers to the provision of advice; and,
5. CPs may be influenced by the absence of legal obligations to provide advice on 'Side effects'.

The provision of advice for medication in therapeutic classification nine, steroids, is the sole exception to the low levels of information provided on 'Side effects'. In discussing the anomaly of therapeutic class nine, three theoretical models are examined; the sick role, the HBM, and, the Fear Drive Model. The Fear Drive Model was found to provide a useful understanding of the findings. A level four analysis revealed a significant change in the relative quantity of advice categorised under the headings of 'Side effects' and 'Specific problems' when the poster was displayed. The implication for future policy is discussed. Attention is then turned to a discussion of the results from qualitative and quantitative analysis of advice categorised under headings of 'specific problems' and 'what is prescribed'. The diversity of advice is noted and discussed. Finally in this section, the finding that when CPs have problems supplying medication they are more likely to provide advice is considered.

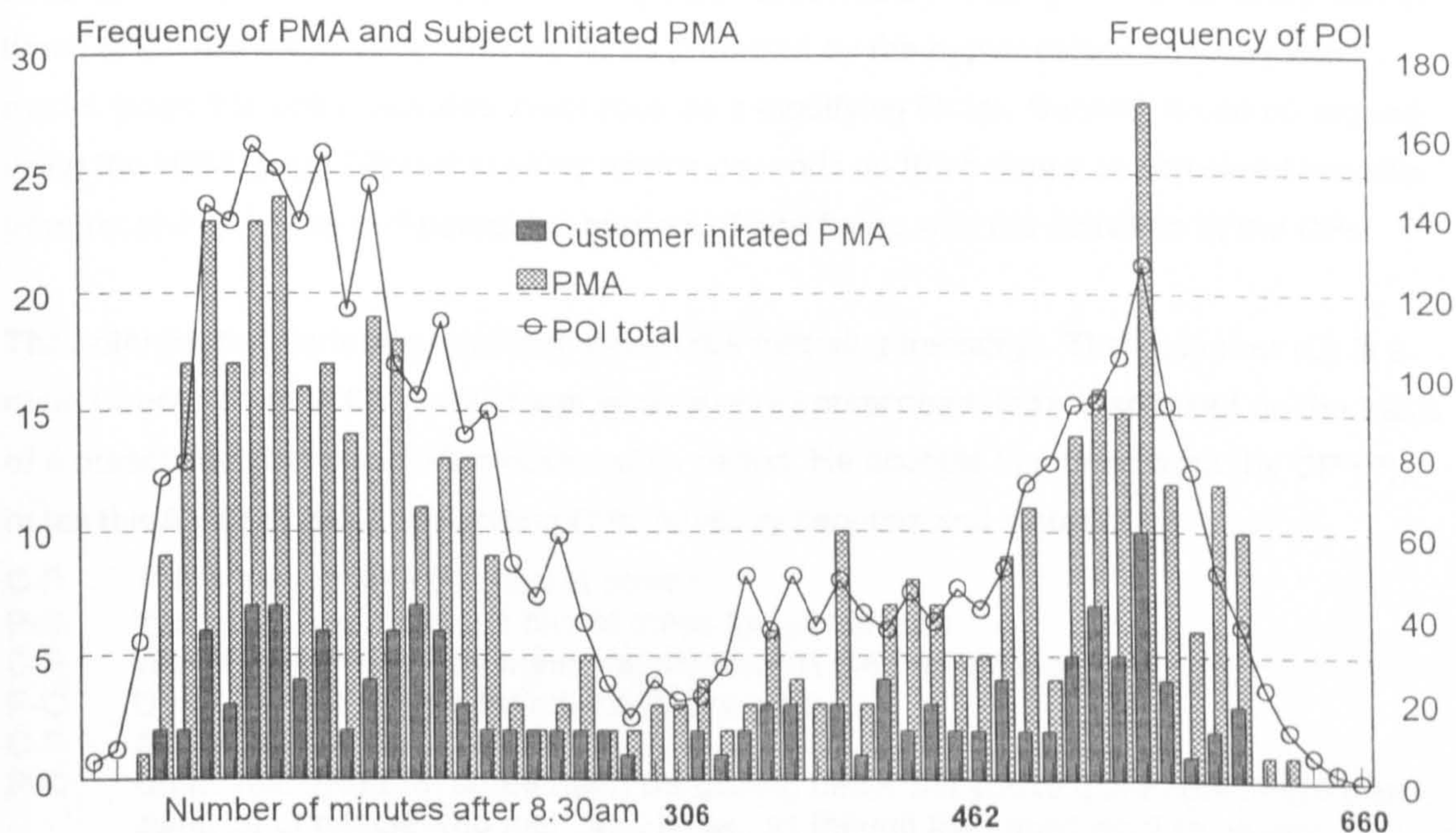
5.2 The extent of prescription medication advice

This section considers the results of levels one and two analyses where POI or prescriptions were cases for analysis. For each discussion point a common structure has been adopted. First the key results are presented, then discussed and the impact of the findings on the role of CPs as advisors on prescription medication made. Conclusions are collated at the end of the chapter.

Global findings from this study of observed activity are summarised in figure 16. That CPs do not advise all POI who enter their community pharmacies can be predicted by retrospective studies of patients' recall of information presented (section 2.4.2, page 53). Visual inspection of figure 16 confirms this prediction. Simple comparison of axes indicates that approximately one in six POIs are involved in verbal PMA of a non-supply nature. As the intervention did not produce significant change in any of the before or after measures, observed activity for both periods was combined. From the total data, the more accurate figure of one in 7.44 (473:3519, 13.4%, table 37, page 236) is derived as an indicator of advisory practice.

Figure 16*

Frequency of prescription orientated individuals, prescription medication advice and customer initiated advice by time



Note * = A graphical representation of data in table 65, page 287.

Considering only customers, who by definition present or collect one or more prescriptions, rather than POI which includes the total of all those involved with prescriptions, then 12.2% (424/3488, table 39, page 243) were involved in advice. This figure may be directly compared with the value 13.1% (50/381) in the observational study conducted in America by Berardo and colleagues.¹⁶⁵ Categories of advice were not provided in the Australian study by Ortiz and colleagues. The author suspects that information on supply was included in their figure of 41% for 'giving advice about prescribed medication'.¹⁷⁰ In the English study by Haynes and Livingstone¹⁶⁴ comparable data on either the numbers of POIs or customers

involved were not published. This thesis is therefore the first to describe the total of advice, POIs receive from CPs within a defined area of Britain. The use of the observational method with subject validity, indicators of reliability (section A3.3, page 280) and data entry (section 4.5, page 107) provide strong support for the accuracy of the results presented. From this evidence it can be stated that CPs act as advisors, possibly at a level comparable to their American counterparts.

Figure 16 compares PMA given by CPs with the coincident number of individuals receiving a dispensing service. A fundamental finding is that the provision of advice is not associated with the variation in dispensing activity. Section A3.3, page 280, provides a full account of the analysis and statistical results for this finding. Berardo and colleagues¹⁶⁵ plus Dickson and Rodowskas⁴⁰⁹ both reported similar findings. The latter study⁴⁰⁹ used work sampling methods and path analysis. It was found that the time of the day in two hour segments was only weakly correlated (0.023) with 'patient communication'. It can be demonstrated that the CP's role as an advisor appears independent of the coincident number of individuals present.

Figure 16, page 118, also illustrates that POI are more likely to initiate discussion during periods when fewer individuals are present in the pharmacy (section A3.3, page 280). This is an original finding not reported elsewhere in the literature. Two explanations are possible. First, CPs may be consciously conserving their resources by limiting their availability during times of intense dispensing. This would be predicted by the hypothesised advisory action model (page 95) which includes 'resources' as a modifying factor. Second, it can be argued using the HBM (page 70) that seeking advice depends on the balance of perceived benefits from receiving advice and perceived barriers of interfering with the activities of the CPs.

The potential for barriers is demonstrated in the following transcript. The customer (C) is a male Caucasian over 65 years of age who received prescribed items dispensed on the basis of a prescription left prior to the observation period. He accepts the items from the CP (P), notes the A3 size poster advertising CPs' advisory services and states:

C-P That's a good idea (looking at poster)
P-C Yes well ... we might get one of these things full-time
C-P Well it's surprising how many people haven't the faintest idea
P-C Umm..that we're here for advice if they want it
C-P And almost afraid to ask
P-C Umm yes...(Nods in agreement) It's getting better but you're quite right..there's an awful lot of people who feel...you know...as though they don't want to be any trouble..you know
C-P I know
P-C It's quite the opposite really
C-P I know we used to find the same in our field but...er..
P-C Umm....

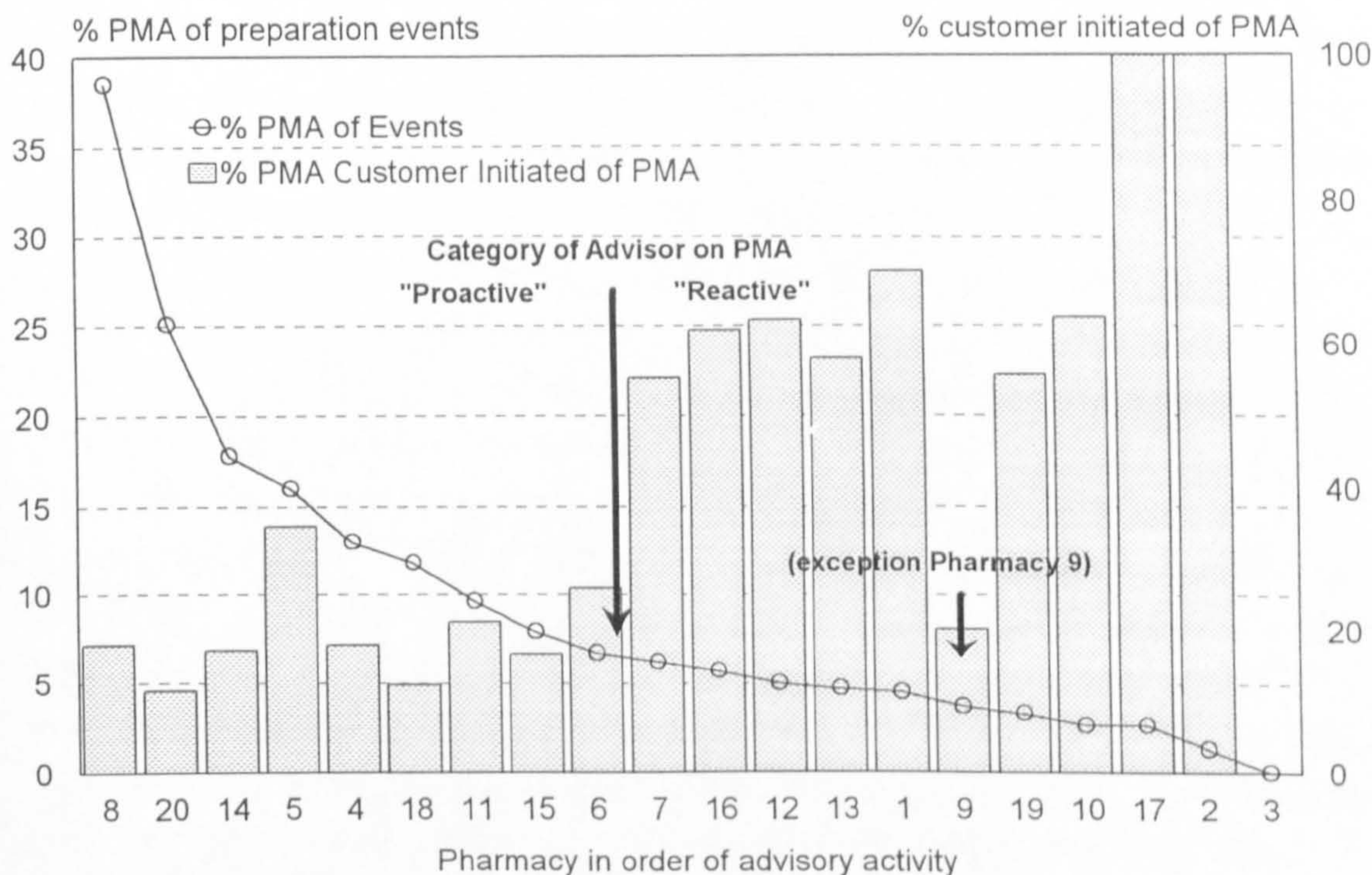
Assuming that POIs who would like to request advice visit community pharmacies throughout the day, the finding that they do not approach the CPs at certain times, points to a problem which requires addressing if individuals are relied upon to make their advisory needs known. Just as a lack of feedback from patients has been identified as a major problem for GPs (section 2.3.3, page 46) the same may apply to community pharmacy. There are two options CPs might consider. First, they might educate POIs to be more proactive in seeking advice

and/or second, CPs might be proactive in providing advice irrespective of dispensing activity. It would appear that the latter option has already been taken by a proportion of CPs.

Figure 17 demonstrates a further original finding of this thesis, that there are two distinct types of CPs; proactive CPs who provide advice and personally hand out dispensed medicines and reactive CPs who only provide advice when it is specifically requested and devolve the prescription handling activity to assistants (section A3.1.1, page 222).

Figure 17

Percentage of preparation events which included advice and advice which was customer initiated by pharmacy



Note

* = A graphical representation of data in table 47, page 256.

It may be proposed that CPs' environments affect their activities as advisors. Evidence suggests that for proactive CPs, the availability of dispensing technician support has no significant effect on their advisory activities.⁴¹⁰ In the research presented in this thesis, there was a clear ordinal association for reactive rather than proactive CPs to be physically located closer to surgeries (table 12, page 185). The same ordinal association was found for managers more than manager proprietors to be reactive. Clearly, there are complex relationships which policy makers should consider. For example, advocating the location of community pharmacies adjacent to surgeries may increase CPs' interactions with prescribers but may reduce the advice provided to patients. Similarly, the expansion of multiples⁴¹¹ with managers rather than proprietor managers may have a bearing on the advisory service. The cost implication of dispensing from surgeries has been noted.⁴¹²

In the present study, the dispensary area of two community pharmacies could be likened to a consulting room; the CP in one setting was proactive, in the other reactive. In neither case

were adjusted chi-square residuals for the frequency of customer initiated advice, compared to the total distribution, statistically significant (section A3.1.3.1 table 47, 'note' page 256). The observation that POI were reluctant to request advice was consistent for both types of CPs (section A3.1.1, page 222, also table 52, page 261). These results are supported by those in Britain of Wilson and colleagues²⁷⁰ who reported the amount of information given or recalled in community pharmacy settings was unaffected by the area in which discussion took place.

In contrast, Ludy and colleagues⁴¹³ found significantly more advice, greater patient satisfaction and higher levels of compliance using a private consulting room at an American hospital satellite pharmacy when compared to a traditional local community pharmacy with an open window setting. Such data supports arguments for physically secluded, dedicated consultation settings and has led to a policy statement in a DoH commissioned report⁴¹⁴ *"that basic minimum standards for community pharmacy premises should be established"* by enacting Regulations under sections 66 of the 1968 Medicines Act. In their assessment there is a need *"to take account of the desire on the part of some members of the public for confidentiality when consulting the pharmacist"*. A counter argument may be made that consulting rooms within the community pharmacy may be outside the normal experience of POIs. The private consulting room is associated with the GP's setting and it may transpire that duplicating such an environment within community pharmacy would decrease CPs' contact with those who desire anonymity. It may, of course, be possible to have consulting rooms which are removed from the dispensary area and available to CPs at their discretion. While the data in this thesis is not able to fully address the question of the advisory setting, no evidence is found to support the theory that proactive or reactive CPs are influenced by physical setting. Indeed, advice seeking appears independent of type of CP. It is concluded, therefore, that the role of CPs may be variously influenced by policy decisions which mandate dedicated physical areas for counselling.

Four key questions are now discussed. First, do CPs use other than verbal advice to inform POIs? It has been proposed that CPs may rely on additional labelling as a means of educating patients.¹⁶⁴ From evidence in this study, this appears to be the case. However, results of the investigations into the labelling activities of CPs (section A3.2, page 277) show no statistical evidence (tables 61 and 62, page 279) that this method of patient education was used as an alternative to verbal advice, rather, that unless the mechanism for producing additional labelling information is automatic then customers were significantly less likely to receive such written advice. Community pharmacists in the observational study provided at least one correct additional label for 40.7% of sampled dispensed items for which labelling was advised. This may be compared to the 40% found by Ross and colleagues²⁹⁹ in America who investigated the use of auxiliary labels with mandatory regulations in operation. In the present study, just over 22% (110/500) of prescribed items were dispensed with an additional label. Labels were therefore the major method by which CPs provided patients with information during the period studied. Aside from additional labels and two steroid cards to advise in emergencies that the patient was on such medication, POIs were not provided with

any other written information or package inserts other than those included by manufacturers. No audio-visual methods of education were employed, or dedicated information leaflets supplied. Such baseline results may enable more current studies to determine the effect of a European directive⁴¹⁵ on the provision of patient information leaflets for medicines. The directive requires all side effects mentioned in a products licence to be included in the leaflet. The first proprietary medication to include the new, specifically designed patient information leaflets is due for introduction in December, 1995.⁴¹⁶ Irrespective of the use of written information, it is argued that verbal advice should still be provided.^{119 144 417}

Second, are CPs selective in the POIs they advise? Evidence suggests that CPs have a positive attitude towards the elderly, although are concerned about non-compliance.⁴¹⁸ Even so, section A3.1.2, page 227 and table 38, page 238, presents the finding that elderly customers, especially females, are very significantly less likely than expected to receive advice. Also, that these same individuals are very significantly more likely to request advice from the CP. Care should be taken in the interpretation of the data presented as significant associations were for proactive not reactive CPs (table 38 page 238, columns 21,22) who were responsible for 75.9% (359/473, table 38 page 238) of the numbers of POIs involved in discussion. Section 1.6.2, page 36, and figure 10, page 38, detail the growing number of individuals in the elderly population and consequent changes in prescribing patterns. The report to the Nuffield Foundation¹¹ notes these events and advises the need for specific CPs' involvement with the elderly. From the results of this level one analysis, it would appear that CPs are not concentrating their advisory activity as recommended¹¹ and, in ignoring the elderly, appear to be doing the opposite. From the evidence presented so far, it would appear that CPs are discriminatory in their advisory role.

Third, do CPs know the level of their advisory activity? A moderately positive correlation was found between the estimates of advisory activity made by CPs and the subsequent results of the observational study ($r = 0.56628$, $p = 0.043$, section A2.2.3, page 196). Such a relationship suggests that CPs are able to estimate the extent of their activity and by implication are aware of their actions. In addition, the analysis shows that the CPs in the main study and their contemporaries within Southern Derbyshire had similar attitudes to prescription medication counselling (section A2.2.3, page 196, table 23, page 205). If CPs attitudes also correlate with their advisory activity, it becomes possible to generalise the results of the observational study to the sample frame. Mason and Svarstad⁴¹⁹ report a significant correlation between positive attitudes towards counselling and observations of increasing counselling activity for a random selection of American CPs ($r = 0.54$, $p < 0.001$). Assuming that both studies tap similar entrenched attitudes then there is literary evidence that the results of the observational study may be generalised to the sample frame.

As CPs are aware of their advisory activity, and only one in 7.44 POIs are given advice, the fourth question asked must be, are CPs failing to adhere to the expectations of The Society as described in the Code of Ethics? The Society's expectation is that *"a patient (or his agent(s)) should be provided with the information and advice required for safe and effective*

use of their medicines".²⁹¹ Section 3.2, page 80, describes that advisory activity is sanctioned, in the sense that it is given professional backing, but that during the data collection period and up to the submission of this thesis in July 1995, CPs are responsible for when, how and to whom advice is provided. The Society, in regulating the profession, assesses CPs in comparison with the 'normal' behaviour of their peers. Unlike in America, there are no legal rulings which direct CPs to provide advice (section 3.3, page 85) yet, if they advise incorrectly, they will be held accountable in law. The critical point in this discussion is implied in the action required by the Code of Ethics *"to be provided with the information"*. In order to determine who should be provided with advice, CPs must somehow communicate with patients. At a practical level the BNF directs that CPs consider supplying written advice for just over half (section A3.2, page 277, 54% table 61, page 279) of dispensed items and verbal advice for a very small number of prescribed medications. It can be argued that for the drugs specified in the BNF there are yardsticks with which to assess CPs' advisory activity and their adherence to the Code of Ethics. This thesis has identified that the vast majority of verbal advice is reiteration of BNF written labelling instructions. The implication is that CPs provide no advice to the remaining proportion of patients for which there are no BNF labelling instructions. Also that there are no yardsticks with which to assess this lack of activity. Perhaps these patients are receiving repeat medication? Even so, evidence suggests that the majority always want to receive advice.¹²² It is a limitation of this study that repeat prescriptions could not be identified (section 4.4, page 104). Little evidence was found in the research for this thesis to support the view that CPs are actively seeking to determine either the extent of patients' knowledge of their medication or how patients take their medication. The conclusion must be that CPs are failing to meet the expectation of the Code of Ethics for a large proportion of patients. They are not determining who should be *"provided with information"*,²⁹¹ rather they are relying on the BNF to direct their role.

A further dimension relevant to this discussion is how CPs are remunerated for their advisory activity. An evaluation of prescription related activities in Australia by Berbatis and Sunderland⁴²⁰ proposed the *"linking of a professional fee to the standards of pharmacist performance and the adoption of a scale of fees for specified professional services"*. Based on the finding that there are two types of CPs, proactive and reactive, the author presented a report (section A4.1, page 293) and a verbal submission to The Society's joint working party on the future of community pharmacy, suggesting that such a scheme was viable in Britain and might help to improve the overall frequency of advice provided by CPs. Studies^{421 422 423} have shown how the use of 'standardised (simulated) patients' may be used to assess GPs' competence. The corresponding method for CPs, using 'standard' prescriptions and direct observation to verify CPs' advisory service, might be used to delineate proactive and reactive types and, thus, determine correct payment. The presumed response from the DofH working party⁴¹⁴ was as follows:

5.4 *It was suggested in evidence to us that pharmacists should be specifically remunerated for this function [the provision of prescription medication advice], on the basis that it is an effective use of pharmaceutical knowledge and expertise and makes a substantial demand on their time. This is in part based on a*

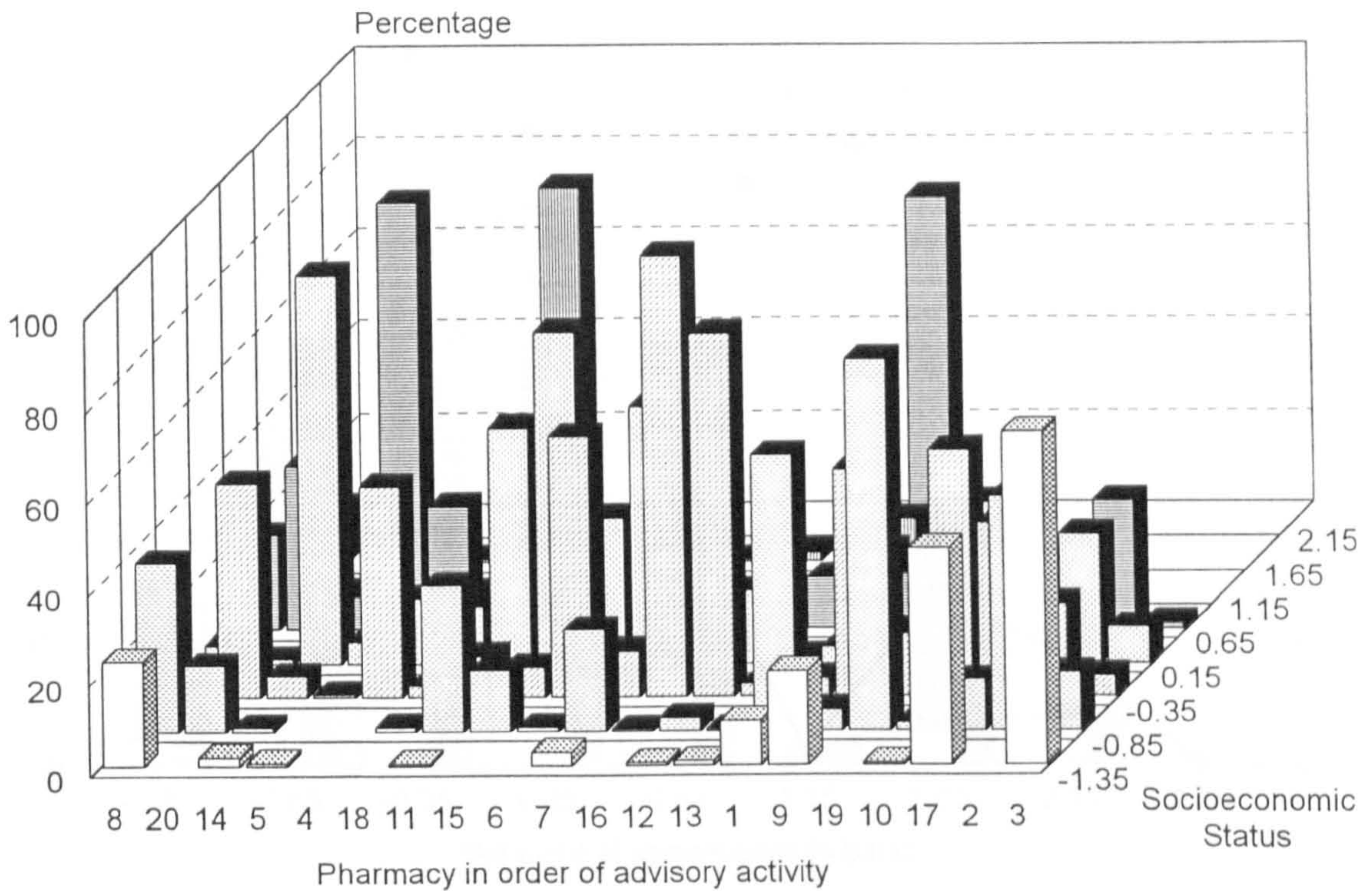
misapprehension. Pharmacists are remunerated within the NHS for the provision of pharmaceutical services, and pharmaceutical services are currently defined in terms of dispensing. But as we have seen the dispensing process consists not just of the manipulative skills required to supply the medicine but also the cognitive and communication skills required to verify the appropriateness of the medication and counsel the patient on its effective use".⁴¹⁴

The DofH response is, however, in conflict with the fact that the 'on-cost' (section 1.5.2, page 30) carried with it an element of indirect payment for advice. With the demise of the 'on-cost' payment in 1989, it would appear that the official monetary recognition of CPs' advisory role ceased. Inspection of the 1994 contract between CPs and the FHSA has revealed no specific responsibility or payment for CPs to advise those individuals who enter their premises. No definition of the composition of the professional fee could be found. Indeed Mr Graham Hart, permanent secretary of the Department of Health, is reported as saying *"that while advice-giving was important, it was not specifically mandated in the contract and related to wider issues than NHS dispensing".⁴²⁴* Clearly the issue of payment for advice appears to be variously perceived by Government, The Society and practising CPs.

No associations between patients' socio-economic status and CPs' advisory activity have been reported in the literature. Visual inspection of figure 18, page 125, indicates that community pharmacies appear to provide dispensing services to patients from narrow bands of socio-economic status. It is proposed by the author that the higher the socio-economic status of patients receiving community pharmacy services, the greater the advisory activity by CPs. This proposition is based on the presumed greater expectation of service held by individuals living in these areas and such patients' higher levels of education. Visual inspection of figure 18 reveals clustering along the top left to bottom right diagonal. As the data is arranged in order of CPs' advisory activity, this diagonal corresponds to higher levels of advice being given in pharmacies serving patients with higher socio-economic status. Analysis (section A3.1.2, page 227, table 41, page 245) indicates a low ordinal association (gamma -0.29812) between order of advisory activity and order of socio-economic status.

Figure 18

Percentage of patients in bands of socio-economic status receiving items by dispensing community pharmacists in order of advisory activity



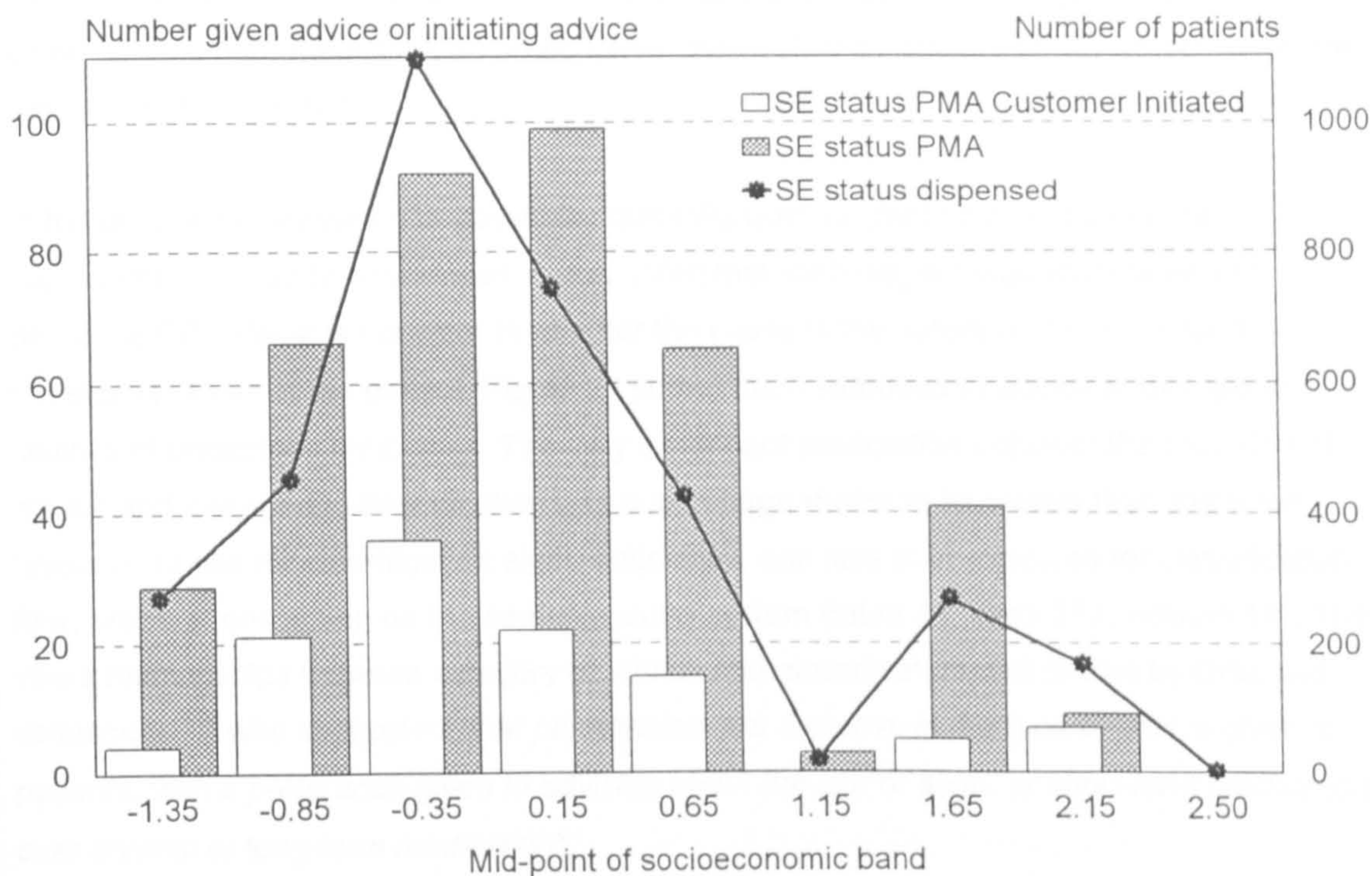
Note

* = A graphical representation of data in table 41, page 245.

While no significant difference in the distribution of socio-economic status was found (table 42, page 246) for customer initiation of advice compared to the population, the distribution of customers receiving advice compared to the population was significantly different. Similarly the distribution of those initiating advice was significantly different to those provided advice. Visual inspection of figure 19, page 126, confirms the patterns implied by these results. It shows that those receiving advice were more likely to be of a higher socio-economic status than those seeking advice. Limitations imposed by the method of data collection restrict further discussion. However, the results point to potentially important future areas of social investigation based on the advisory expectations felt by CPs, their observed activity and the social profile of patients using their service.

Figure 19

Numbers of patients receiving and requesting advice in socio-economic bands



Note

* = A graphical representation of data in table 41, page 245.

From the evidence discussed so far, PMA may appear a loosely conducted, defined and regulated activity, which is clearly seen by some POIs as useful but is probably outside the experience of most of them. Raynor⁴²⁵ published a review of the pharmacist's role in patient compliance citing literature from studies in hospital settings. He concludes that effective verbal counselling requires considerable resources and is more likely to increase knowledge than compliance. He suggests that interventions which simplify the dosage regimen are the most fruitful areas for pharmacists' attention. This stance was also taken by the Committee which reported to the Nuffield Foundation.¹¹ In response, the author would suggest that the effect of CPs' advice on compliance is still unknown. This thesis presents evidence from a small but representative sample which suggests that pharmacists in Britain vary greatly in the quantity of advice they provide. Also that the nature of advice varies enormously. As evidenced by the reviews in chapters one to three, the results in chapter four and the appendices plus the discussion so far, the author feels that Government, The Society and published literature underestimate the range and potential for CPs role as advisors on prescription medication and that they do so with little or no evidence. Given the lack of 'official' direction and reassurance it is not surprising that a considerable range of advisory activity was observed. The following section considers the thesis findings in greater depth.

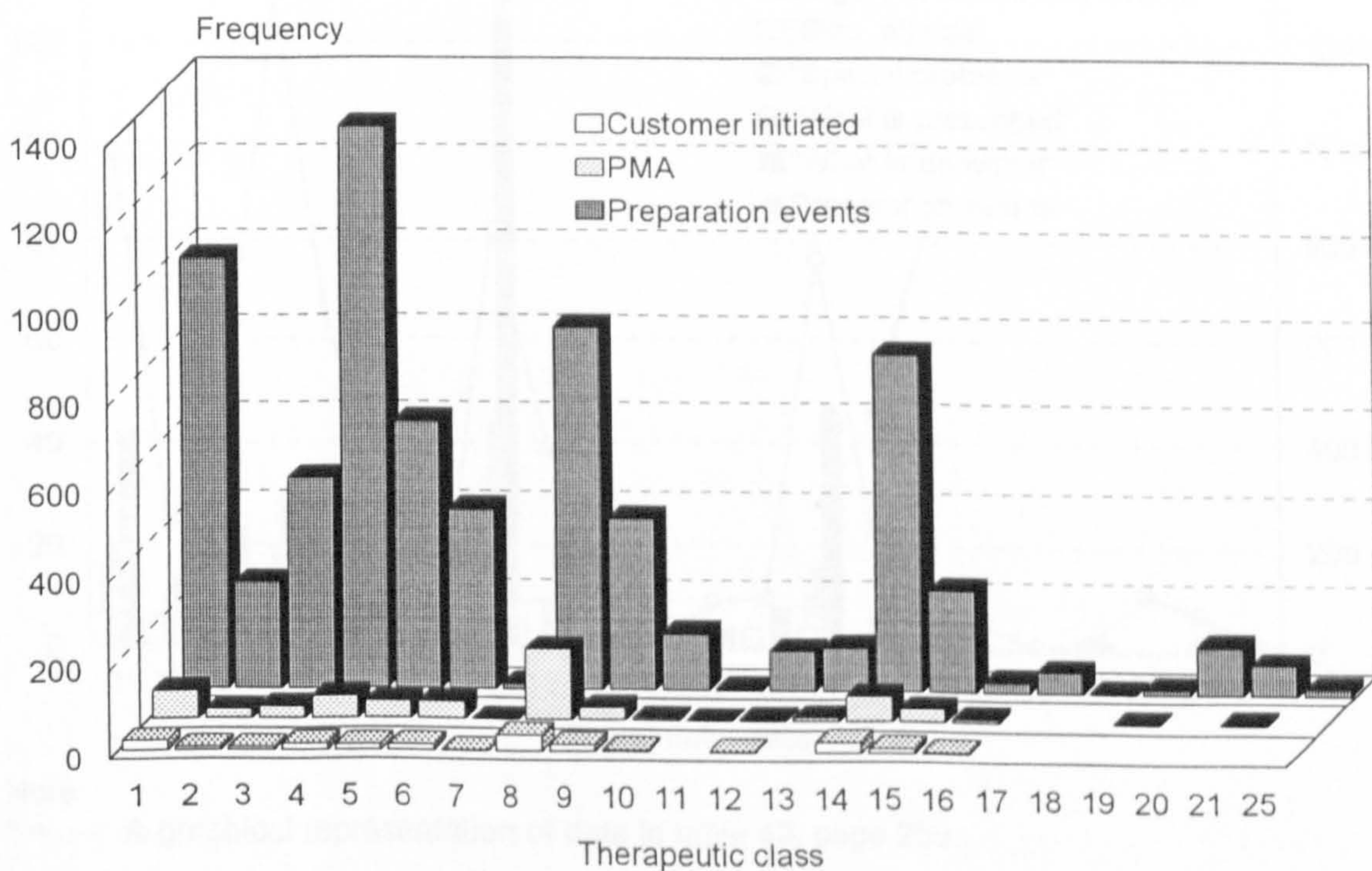
5.3 The prescription medication advisory activities of community pharmacists

This section discusses the main results of level two, three and four analyses, where the cases for analysis of the observed activities of CPs were the number of prescriptions involved, (level 2), medicines on prescription, (level 3) or categories of advice per medicine per prescription (level 4).

In the previous discussion the possibility that CPs were neglecting a section of the population, the elderly, was raised. It was noted that such neglect was associated with proactive CPs. What is not clear is whether the cause is the nature of the prescribed item or the elderly status of the patient. Figure 20 shows the distribution of advice in therapeutic classes of prescribed medicines. The very significant association between the provision of advice and therapeutic classification was due in large measure to greater than expected levels of advice for classification eight, antibiotics, and less than expected for classification four, preparations acting on the cardiovascular system (table 48, page 257, column 14). The same relationships between category of advice and classification was shown by Ortiz and colleagues¹⁷⁰ who suggested *“that pharmacists are selective in the type of advice given to patients, with a preference given to advising about the use of acute or short-term medication over chronic or long-term medication”*.

Figure 20

Frequency of prescription medication advice, customer initiated advice and preparation events by therapeutic class



Note

* = A graphical representation of data in table 48, page 272.

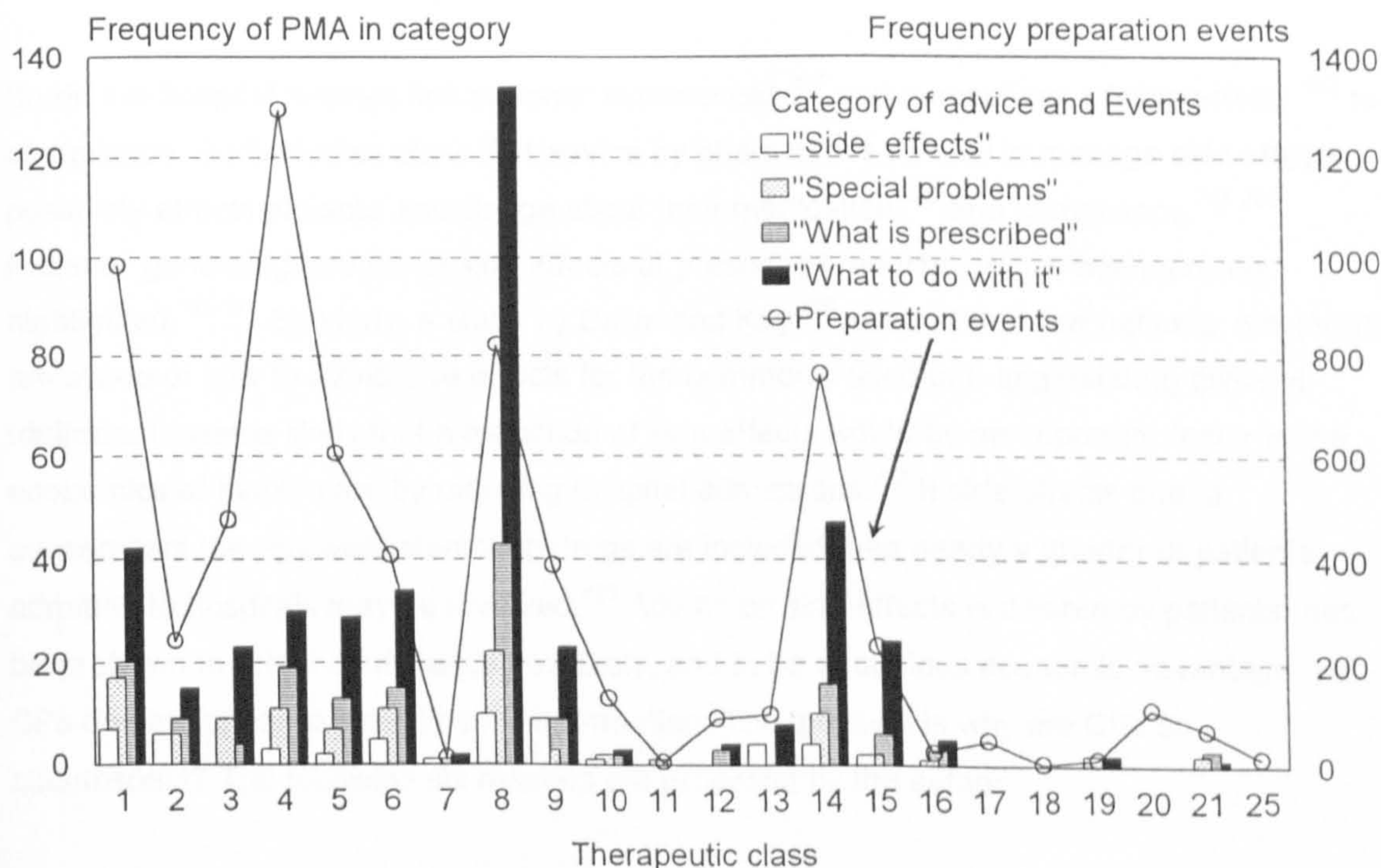
Nearly one third (table 48, page 257, column 20, 130/421, 30.9%,) of the total number of prescribed items for which proactive CPs provided advice were antibiotics. It has been shown that the clinical implication, in terms of compliance, of a failure to provide advice for

drugs in classification four is less than that for classification eight.^{426 427} Section 1.6.2, page 36, provided evidence that the elderly consume a greater quantity of medication than other groups. It is consistent that with such consumption they should be highlighted by the report to the Nuffield Foundation¹¹ for advice unless, as is suggested, their medication is for chronic conditions and of a nature where compliance is in any case likely. When it is considered that the elderly are more likely to be taking drugs in classification four, then the classification of drug, rather than the age of the patient can be seen to account for the finding that fewer than expected numbers of elderly individuals received advice. Community pharmacists may be perceived as 'directing' their resources and as a consequence seeming to 'neglect' the elderly. In terms of the role of CPs as advisors, suggestions by the report to the Nuffield Foundation¹¹ that CPs should direct their activities towards the elderly must, therefore, be qualified to take into account the medication consumed by this group, the likely improvement in compliance that may be induced and the consequence for other groups of altering the present pattern of advice provided.

Figure 21 provides a graphical representation of the observed frequency of advice for each of the four categories by the therapeutic class of the item prescribed.

Figure 21

Prescription events compared to prescription medication advice in categories by therapeutic class



Note

* = A graphical representation of data in table 49, page 259.

Two major elements are striking. First, there is the dramatic frequency of advice on 'What to do with it' for classification eight. Section A3.1.3.3, page 264, provides a quantitative assessment of this category of advice. Community pharmacists' most prominent proactive advisory role is found to be a reiteration of prescribers' directions or a verbal account of sanctioned additional labelling information. The evidence shows that this activity mainly

concerns antibiotics. However, both reactive and proactive CPs also provide advice not sanctioned by official sources or the prescribers' written intentions. Such activity goes beyond that of a verbal extension of prescribers' intentions.

Second, the low overall observed advisory activity related to side effects together with the relatively greater frequency of such advice for drugs in classification nine, preparations with hormone or anti-hormone activity, are notable (table 48, page 257, column 14). Chapter two emphasised an apparent difference between patients' perceived need and CPs' 'activity' with regard to provision of information on side effects. Figure 21 confirms this relative lack in practice. Other research conducted to support this thesis^{147 148} shows that both CPs and patients, when asked open questions, agree on the areas or topics of information concerning prescription medication about which information should be provided. This consistency allows a comparison of what is expected by both parties with the activity observed. The number of respondents who indicated that side effects of medication was a necessary element of advice was 67.9% (55/81) for CPs and 47.1% (40/85) for patients; the second and highest rankings respectively.^{147 148} In contrast, the frequency of advice on side effects is ranked last in the observational study. It would appear that there is indeed an inconsistency between perceived need and observed activity as proposed in section 2.4.1, page 50. The results presented in this thesis confirm the limited role of CPs as advisors on the side effects of prescribed medication and reveal therapeutic classification nine as a category of advice about which POIs are seeking to be informed about (section A3.1.3.1).

Studies in hospital settings link patients' experiences²⁷⁷ and perceptions of side effects⁴²⁸ to compliance. Such studies show that advice by pharmacists on how to manage side effects positively affects patients' knowledge about their medication⁴²⁹ and compliance.^{267 268} Patients' general ignorance of side effects of prescribed medication has been already highlighted.^{125 177} Similarly, a study by Baillie and Kay⁴³⁰ showed that few patients, 6% (3/50) are aware of how to avoid side effects for the commonly used anti-anginal drug glyceryl trinitrate. It seems likely that a reduction of side effects would be an important factor in the economics of health care by reducing hospital admissions.²²³ If side effects due to concomitant therapy with interacting drugs are included then nearly a quarter of patients admitted to hospitals may be involved.⁴³¹ Advice on side effects is desired by patients, has been shown to affect compliance positively, and to be of obvious economic advantage, yet CPs do not appear to provide such information. The question is why are CPs so circumspect? The following six reasons are proposed by the author.

First, they may be receiving mixed messages in the literature. The Pharmaceutical Journal presents clinical cases where advice on side effects is perceived as alarmist.^{432 433} Although there appears no problem with the provision of written information,⁴³⁴ the tone of written information^{154 435} is reported to alter the effect in individual cases. Community pharmacists may have personally experienced such cases. In addition, standard texts state that "*efforts were made to exclude information such as rare or very uncommon side effects that could be suggestive to, or frighten some patients*".⁴³⁶ Studies of the effect of written information on

compliance propose that informed patients may be better able to identify clinically irrelevant side effects from potentially dangerous reactions, tolerating the former and seeking assistance for the latter. Reviews in 1979²⁶¹ and 1984⁴³⁷ have considered the impact of providing advice on side effects on the reported incidence of such effects. They conclude that no evidence supports a detrimental outcome from providing this advice. The bulk of evidence supports the inclusion of side effects as a category of advice. Indeed as Balon stated,⁴³⁸ *"the most common claim made by clinicians and drug companies is that side effects cause non-compliance. However, the bulk of evidence available refutes that claim"*. That this is the case has been demonstrated for both verbal plus written advice^{439 440} and verbal advice.^{441 442} Even so, specific cases have been published where such information has had a detrimental effect on patient compliance. This may have been due to the way in which the information was presented and received. However, the existence of such cases may act to deter CPs from giving advice on the side effects of prescribed medication.

Second, CPs personal experiences seem likely to influence their activities. This point is clearly demonstrated by the following case. The customer (C), a female Caucasian under 60 years of age, notices the poster and hands a prescription to the CP (P) for Sandomigran tablets which are used in the treatment of migraine. She asks:

C-P Your advice on this

P-C Yes, of course

C-P Umm...Could you tell me what they're for?

P-C Basically, they are for migraine

C-P Are there any side effects?

P-C Yes, there can be with that particular one...um, let me tell you for sure what they're likely to be (CP goes to dispensary to get data sheet information) (CP asks from the dispensary) You've obviously not had these before

C-P No, no

P-C Dizziness is, I think, one of them, that you can get with that one. Having said that ...

C-P Dr. C.. (GP) said take it night - it may cause drowsiness is what he said

P-C Drowsiness is quite likely...yes. They are a fairly specific tablet in that they are not just an analgesic - they are specific for migraine

C-P I did sort of debate the issue of whether or not to try some herbal remedy like Feverfew or something

C-P Yes

P-C I've known success with that, but it's the same with a lot of these things, particularly things like migraines. What one person finds effective might be totally useless for another. I've known people use Syndol tablets to good effect for migraine and I'd recommend them to someone else on that basis.

C-P No, it didn't do anything at all

P-C So it's very specific for each person, and it's a case of finding something that suits them and staying with it. But this is fairly strong and is only available on prescription. I'll just tell you for sure what they are (Referring to side effects)

P-P (P to himself while in the dispensary) Of course, I'm not going to find it now. (P leafing through Data Sheet Compendium) I think dizziness and drowsiness are going to be the main possibilities, and again it doesn't always affect everyone in that way. Yes ... drowsiness, dizziness

C-P Umm...

P-C Umm...possibility of an increased appetite with a possibility of a gain in weight

C-P Umm...Sure?

P-C Yes, as I say, quite often they are...probably been reported in one in so many hundred or thousand people ... so it's not necessarily going to happen with yourself

C-P Umm...but it is a possibility?

P-C I didn't realise there was a possibility of a gain in weight to be honest...drowsiness is the most likely.

C-P Probably the most common thing anyway. I may try the Feverfew method before resorting to those I think

- P-C Yes, I think you'll probably find that these are more likely to be helpful. Is it the gain in weight, the drowsiness that is possibly putting you off?
- C-P Yes
- P-C Umm..My advice would be to have this for the first month and see if it has any effect. If it doesn't in the first month, the chances are that it won't in the future anyway
- C-P Umm...
- P-C I mean, obviously you could try the Feverfew
- C-P I'll think about it
- P-C It's a herbal...
- C-P Yes, I'll think it through
- P-C By all means ..have a think about it. It's the sort of preparation where it probably is a choice of yourself. You know, it's not like a blood pressure, where the doctor said 'you need it', then you really do need it. It you'd rather take an alternative, then by all means
- C-P Yes
- P-C I have heard of people using Feverfew to good effect
- C-P Yes...I think I'll think it through first (Customer takes the prescription back)
- P-C OK.
- C-P Thanks very much
- P-C OK.

It may be that such local experiences, where the provision of advice on possible side effects has apparently resulted in the potential for non-compliance with prescribed medication, may outweigh literature reports to the contrary and have contributed to the observed low level of CPs' advisory activities concerning the side effects. Additional points may also be noted from this interaction. The customer used the CP to confirm the use of the medication or 'What was prescribed'. Additional advice was provided by the CPs and resulted in non-compliance and loss of business. The CP did not insist that the medication should be taken just because it was prescribed, rather that the customer should decide, given the likely effects. Such reactions imply a caring relationship between professional and patient where the latter's well-being is of concern.

Third, CPs may avoid disclosure of side effects as they believe psychologically induced reactions might occur because people are highly suggestible.⁴⁴³ That patients do attribute untoward effects to medication has been shown in studies which included placebo 'treatment'. As early as 1933⁴⁴⁴ and 1948⁴⁴⁵ reports warned of the existence of pre-treatment conditions and placebo reactions. Pogge,⁴⁴⁶ in 1963, found that 23% of 549 patients in 67 published studies who were given placebos reported at least one side effect. In 1964 Green⁴⁴⁷ reported an investigation which described variety of signs and symptoms which may be attributed to side effects of medication. The problem of distinguishing true reactions to drug treatment has already been highlighted.^{448 449} Such studies suggest that advisors have grounds for non-disclosure of information. If mentioning a side effect coincides with a similar underlying pre-existing unrelated symptom, then the medication may be erroneously identified as the cause which could lead to discontinuation of drug treatment. The following exemplary transcript demonstrates this potential for unnecessarily alarming customers. The customer (C), a female Caucasian under 60 years of age, scans the poster and is approached by the CP (P) who is unable to supply the strength of medication ordered. He arranges to dispense the required amount in multiples of lower strength tablets and in defence states:

- P-C So, you know, I'll let you do it that way. I think they're only made by the hospital

C-P Yes

P-C Er, because it's such a high dosage

C-P Is it really a high dosage that I'm on at the moment?

P-C Well it is...it is a high dosage to start with, and that's the reason why they don't actually...

C-P Yes

P-C You know, make them. But obviously if he's (Physician) trying to cut them down, he'll probably start from that and cut it down slowly to....

C-P I'm hoping so...

P-C You know, that's right. How long have you had these..er..25mg for?

C-P I've been on...um., two weeks, I've been on them for two weeks

P-C Two weeks, yes, er, that's all right...anyway, you wouldn't ...

C-P 'Cause they say they're quite dangerous aren't they, if they're used...

P-C If they're used correctly, then they're Ok

C-P Oh, all right

P-C The...the Consultant knows exactly what he's treating

C-P Yes

P-C Yes? Um, he would.. he would reduce the dosage gradually, but it's the sort of thing you can't just cut it down

C-P No, it has to be....

P-C So, it's when...

C-P Why is that...what exactly?

P-C You get...because it, er...acts on the adrenal cortex

C-P Yes

P-C And if you stop abruptly, you would, er...you get a rebound effect

C-P Oh

P-C You know, and er...that has quite nasty symptoms, so what if you start on it, which he's put on it. He (Consultant) knows exactly your condition, right, so...

C-P Yes

P-C Just take....

C-P I've been on it before

P-C Yes, that's right. What he (Consultant) will actually do is review the situation

C-P Yes

P-C And then...then see you and bring the dosage down

C-P Yeah

P-C To, you know, nil, but it's the sort of thing you can't just stop

C-P No

P-C You know, Ok

C-P Right

P-C Right...er, don't get worried about it

C-P all right, thanks

(The CP returns to the dispensary then brings out the dispensed items and advises on the dosage schedule)

This transcript exemplifies the customer's anxiety over the medication and its implied side effects. It shows the 'hole' which the CP dug for himself, and his use of both pharmacological knowledge and the 'expertise' of medical practitioners as a strategy to alleviate that situation. Given such experiences, CPs might try to avoid such uneasy interactions and potentially alarmist statements by simply refraining from all such interactions. In their eyes, information on side effects may equate with anxiety and if dialogue is not able to reassure the patient, then this may be a contributing reason for avoiding such advice. That customers are anxious over their medication and, as predicted by the theoretical models (figures 12, 13, and 15, pages 70, 72 and 95, respectively) may initiate discussion if prompted in some way, is demonstrated by the two cases which follow. In the first, the poster was used as a cue and in the second the CPs' activities prompted action. The customer (C), a female Caucasian under 60 years of age, presented three prescriptions, one for herself and two for her children. A second adult drew her attention to the poster. The CP (P) took the dispensed items to the front counter and asked:

P-C It's for the C... family
 C-P Pardon
 P-C Sorry
 C-P Umm I'm just looking at that (the poster), are there any side effects with...with the little ones (antibiotics for children)
 P-C Umm well, there can be yes umm well they...have they had any antibiotic syrups before?
 C-P Umm yeah, my daughter has, he (son) hasn't
 P-C Yeah.. ok.. umm.. I mean there's a er slight chance of er things like umm diarrhoea or or stomach upsets or umm there are some...a risk of skin reactions, so so getting a rash. But if they have had antibiotics mixtures before and not had any any trouble then then it's unlikely that there'll be any
 C-P (Nods understanding)

The customer (C) a male Caucasian over 65 years of age who was also the patient, is called by name to receive the dispensed items and initiates discussion with the CPs (P) asking:

C-P Any side-effects with these (Oxtetracycline)?
 P-C Not really you must take them on an empty stomach half..well the label says an hour before food so..there's no side-effects with those at all umm but you may find that the way they're absorbed into the body is affected by umm food and other things like milk, indigestion mixtures so you must avoid taking those at the same time of day as your tablets but apart from that...
 C-P Milk...but I take tea
 P-C I should avoid, I should avoid milk in tea as well
 C-P You would
 P-C An hour or half an hour at least before you take
 C-P What after as well
 P-C Either way
 C-P Either way
 P-C It does affect the absorption...it won't...it won't affect how you feel but it will affect how well the drug works
 C-P I saw you looking in the book you see
 P-C Oh, no, I was just checking that gentleman's umm
 C-P Oh I see
 P-C Medication
 P-C That's just er
 C-P So it's an hour before food
 P-C Yes
 C-P But if possible if I...on an empty stomach
 P-C Yes
 C-P So that's er...what would you call...
 P-C Umm let's see, what time do you have breakfast?
 C-P Oh, about, eight
 P-C About eight, right well leave, leave about a hour to two hours and say take one at ten
 C-P Umm take one at ten for dinner
 P-C Well take one at ten o'clock then you've got to take them at regular intervals throughout the day so, just try and space it in between in between your meals as much as you can
 C-P Umm
 P-C So that your taking it on an empty stomach last one you take at night, take it just before you go to bed
 C-P Just before you go to bed
 P-C Well then you've got enough...sort of like from the day to space them out as equally as possible
 C-P Umm you see, when you take them an hour before ah say dinnertime is one o'clock so before twelve
 P-C Umm take them about twelve o'clock
 C-P And then don't have your dinner before one give a good hour
 P-C Oh, it's not..yes give a good hour but it's not it's not critical, I mean, don't worry if you, you know
 C-P Umm, all right, when you first get up it's all right on an empty stomach
 P-C Yes you can take them when you first get up and then perhaps...say if you got up at seven take them at seven then you'll be all right for eating your breakfast at eight
 C-P Umm but don't take them with tea

P-C Well umm try any avoid it as much as possible but that's again, not too critical but try to avoid it if you can, take them with a glass of water, something like that ok (laughs)

Critically, after this interaction the CP volunteered the following explanation:

P-Res Yes er...it is a bit difficult really. They say, are there any side effects. There are side effects with everything more-or-less but, I mean, you could go through the whole list and, you'd worry 'em half to death I mean he's worried now because he's not going to take them at the right time of day.

These transcripts demonstrate that patients are anxious over their treatment and given the opportunity, ask for advice. The second case also indicates that CPs are aware of the anxiety induced by information on side effects and the potential for such information to influence compliance. Avoiding discussion on side effects might be seen as one way of reducing such anxiety. It might be said that CPs follow the adage 'what you don't know can't harm you' and this has resulted in the lower than expected frequency observed for this category of advice.

Fourth, the lack of advice concerning side effects may be due to a perceived division of labour between GPs and pharmacists. Woods and colleagues⁴⁵⁰ investigating the incidence of adverse reactions or side effects in children stated:

"The role of pharmacists in advising about treating children with drugs could be more widely recognised in their training. Doctors might consider whether their present apparent reluctance to give parents specific prospective advice on the likely occurrence of common adverse reaction to drugs is appropriate".

Woods and colleagues imply that advising on side effects is a medical role while conveying details of administration is within the pharmacists' domain. This was the finding of McMahon and colleagues¹⁴³ in a sample of hospital outpatients who were interviewed about who provided them with information. Hence, a further plausible reason why CPs are reluctant to give advice may be because they perceive such activity to be within the role of GPs.

Fifth, there is no legal obligation to provide advice on prescribed medication in Britain or America³⁰¹ and as discussed in the chapter three, the direction offered by official bodies is minimal.

Sixth, customers may require a cue-to-action inviting them to ask for advice on side effects. Without prompting, inhibitions towards disturbing CPs may be too great. When the frequencies of advice in each category with and without the poster were compared, statistically significant increases in the proportion of individuals given and seeking advice on side effects and information categorised under the heading of 'specific problems', were noted (table 50, page 260). The poster may have reminded POIs and CPs of the other options for discussion. Unfortunately, relatively few individuals scanned the poster and the overall effect was such that no statistically significant changes in the quantity or nature of advice was observed (A3.1.5, page 274, table 50, page 260). Even so, the results imply that in the absence of other influences, CPs and POIs normal advisory policies default to the more reiterative topic of 'What to do with it'. For policy makers, it indicates that a reminder of other

topics for discussion can affect behaviour. Judicious use of cues or prompts may be one method of affecting the advisory policies of CPs and POIs.

Inconsistent messages, personal experiences, suggestive effects, role definitions, legal or official incentives and prompting have been presented so far to account for the discrepancy between patients' perceived need for advice on side effects and the observed activities of CPs. These points suggest that to produce change in CPs' present role as advisors where such advice is concerned, sufficient acceptable evidence must be presented as to the overall benefits of such activity. Further, CPs may need specific, official sanction that such advice is within their role. Also, a cue to motivate advisory activity may prove useful.

Analysis of levels of advice on side effects when compared to advice in the four categories (table 66 section A3.1.3.1) indicates two further findings which inform the role of CPs as advisors. First, inspection of adjusted residuals reveals that CPs also initiated advice in therapeutic classification two, preparations acting on the nervous system. Warnings of sedation and interactions with alcohol are recommended as additional labelling for anti-depressants and sedative/tranquilliser combinations, a prominent sub-class of therapeutic classification two. The translation of these recommendations to verbal advice accounts for the observed significance. Second, POIs were very significantly likely to initiate discussion for prescribed medication in classification nine, medication with hormone or anti-hormone activity. Application of the Sick Role, Health Belief and Fear Drive models to this observation is instructive. Before such discussion, the reader should be aware that steroids are the most prescribed medication in therapeutic classification nine. Conditions which require steroid therapy are of a serious, generally emotive, nature and the dose-dependent, inevitable side effects are extensive, physically noticeable, dose dependent and potentially life threatening.¹⁰⁴ Items in therapeutic classification nine accounted for over 5% of the total prescribed items in 1988 Error! Bookmark not defined. which testifies to a body of experience in the community. Only therapeutic classifications nine and two include medications where patients are advised to carry information cards notifying that they are on specific therapy. This is the case for steroids in the former and monoamine oxidase inhibitors in the latter.

In a variety of settings it has been shown that individuals making use of health services may assume a 'sick-role' behaviour. This has been described as *"the activity undertaken, for the purpose of getting well, by those who consider themselves ill. It includes receiving treatment from appropriate therapists, generally involves a whole range of dependent behaviours, and leads to some degree of neglect of one's usual duties"*.⁴⁵¹ Perhaps patients rely on CPs to act on their behalf where advice on side effects is concerned. That patients were motivated to ask for advice in the case of therapeutic classification nine implies that any application of the 'sick-role' model should consider the nature of the medication. There is an implication that with the advent of increasing potent drug medication, CPs may find a role as advisors forced upon them.

Theoretical elements described by the Health Belief Model and Health Action Model (figure 12, page 70, figure 13, page 72) include side effects as a modifying factor in determining compliance. It would be predicted that knowledge of the potential negative aspects of a drug such as its side effects would be perceived by the patient as a barrier to compliance. Whether medication is correctly administered will be determined by the balance between the magnitude of this barrier, the patient's perceived susceptibility to the underlying clinical problem and their understanding of its seriousness. As a corollary to this, CPs' and GPs' perceptions of the potential negative and positive aspects of providing advice on side effects would be balanced by thoughts of patients' subsequent compliance with therapeutic directions. Clearly, a predictive theoretical framework is available for future research. What has been shown by the results of research conducted for this thesis is that such studies should control for specific therapeutic classifications of medication.

In section 2.5.3, page 67, the Fear Drive Model was introduced and its application to patients' perceptions of medication side effects alluded to. Before discussing the Fear Drive Model, it is acknowledged that the approach taken appears to provide an explanation for observed activities by excluding complexities even though authors have noted that an individual's response to fear is in fact very complex.^{222 241} Levanthal and colleagues²²² have simplified the complexity and described the causal linkages of the model as follows:

1. the message is received;
2. the message gives rise to an emotional fear response;
3. the fear response produces discomfort;
4. awareness of the subjective discomfort motivates the individual to eliminate it;
5. the stronger the discomfort, the stronger the motivation will be to act to eliminate it. To eliminate fear, the individual searches for various coping responses and tries them out, either symbolically or actually, to identify which ones will reduce fear; and,
6. when coping response effectively lowers fear it becomes a permanent part of the individual's coping repertoire.

An application of this model leads to the view that patients' limited understanding of the potential side effects of medication included in therapeutic classification nine, say, recalled from a consultation with GPs (the first link), would lead to perceived implications and induced fear (the second link), resulting in anxiety (the third link), and motivation to seek more information and reassurance from others (the fourth link). The more serious the perceived side effects, the stronger the motivation to ask for advice. As steroid medication can cause demonstrable side effects and this potential is likely to be known by patients, there will be a motivation to consult and gain as much information as possible (the fifth link). Once information has been obtained and fear is lowered, the coping response becomes permanent (the sixth link). The lesson from this model for the role of CPs is that patients' perceptions of medication may prompt them to become proactive in seeking advice. When they do so, they may be looking for coping mechanisms. Once satisfied they will no longer be frightened, however, they may remain wary. Concerning this latter state, a female

Caucasian customer (C) over 60 years of age was observed noticing the poster and while purchasing Potters catarrh pastilles asks the assistant (A1):

C-A1 I'm on steroids. Can I have something, you can't be too careful

A1-P (explains the request to the CP and that she had recommended Potters Catarrh Pastilles for runny nose. The CP takes the dispensed item, Cordarone tablets, to the front counter)

P-C Yes, that will be OK.

It is interesting to note that in this case, half an hour later, the CP involved provided a steroid card with a dispensed item; however, one day later steroids were dispensed to a different customer without any additional information. The provision of a steroid card appears to be a 'cued' action with a residual effect rather than a specific policy on the part of the CP.

Qualitative analysis of discussions concerning advice on side effects is presented in section A3.1.4.1, page 268, table 56, page 270. The two roles, 'compliance' and 'socialising' are identified. It is demonstrated that CPs' attempt to socialise patients and engender an attitude towards maintaining their well-being. In doing so they use the fear of potential side effects as a method of motivating patient compliance. If they are tapping elements of the Fear Drive Model then it follows from this discussion that patients will develop a coping response which will nullify their efforts. Community pharmacists should be advised that their role in promoting compliance using fear as a method of motivation may induce coping responses in patients.

This discussion has dwelt on 'What to do with it' as the most frequent category of advice. The focus on 'Side effects' was also taken as there was literary evidence and observed confirmation of a discrepancy between perceived need and activity. Attention is now turned to the remaining categories of advice, 'Specific problems' and 'What was prescribed'.

Advice listed under the category 'specific problems' (section A3.1.3.2, table 53, page 262) included whether the prescribed medication was appropriate to the medical condition. In contrast to 'what is prescribed' as therapy, is the question, is 'what is prescribed' correct for the problem? Responses in such cases imply more than just knowledge, rather an assessment of many factors such as medical condition, options for medication both therapeutically and pharmaceutically, plus an implied understanding between CPs and prescriber. On two occasions CPs provided advice on clinically important interactions between concurrently prescribed medication. Community pharmacists also referred POIs back to their GPs when problems with prescribed medication became apparent. A sub-category of 'concern' was identified (table 53, page 262) which included cases where CPs asked POIs whether they had received the medication before and even if the answer was 'yes', on 35.7% (table 53, page 262, concern, 10/28) occasions reinforcing information was provided. The content of the category 'Specific problems' serves to indicate that CPs provide a wider range of advice than may be documented in the literature. The appropriateness of medication, advice on referral, concern that patients are not anxious and clearly understand their medication, and specific pharmaceutical advice have been identified. If the poster was noticed, then significant increase in requests for advice on topics listed under 'specific problems' were demonstrated (table 50, page 260). Again, it is the more problematic, less repetitive or defined elements of drug therapy which were associated with prompting. In

terms of the advisory role, CPs and those in positions of influence should be made aware of the many facets of advice which may be provided.

Section A3.1.4.2, page 272 provided a qualitative evaluation of the role of CPs as advisors on prescription medication concerning 'What is prescribed'. Similar roles to those listed under side effects are identified, 'educational/informative' and 'confirmatory' (table 58, page 272). In addition a unique role of 'intent' was noted whereby the CP not only infers from the prescribed item the prescriber's intentions but also describes the medication's mode of action. It is noteworthy that the largest proportion of POIs were observed requesting advice in this category. In contrast, CPs were strongly orientated to advise on 'What to do with it'. Perhaps CPs rely on the prescription label to convey information on 'What is prescribed' but they assume that patients are able to link brand names with therapeutic action. The extent to which patients are able to do this has not been researched. When considering their role as advisors, CPs should take note of the relative importance patients place on 'What is prescribed'.

Finally in this section, field notes taken during the observational study suggested a relationship between problems of supplying medication and the provision of advice. The following transcript is exemplary of the process noted by the author. The customer (C), also the patient, is a female Caucasian under 60 years of age who presents a prescription at 9.50am and subsequently receives the dispensed item from the dispensing technician. At 10.22am she returns and ask the following of the CP (P):

C-P Hello
P-C Hello
C-P You've just given me these (Vibramycin capsules) and on the box it said there should be ten and there's only eight in it
P-C Let me have a look
(CP checks Prescription)
It's my mistake. Sorry, only I do these in my sleep. Only Dr. C....(General Practitioner' name) normally gives eight and Dr. W.....'s (General Practitioner) given you ten. I'm sorry
(P adds extra capsules and returns to C in the "Front Shop")
The saying's very true, you know. Familiarity breeds contempt
C-P (Laughs)
P-C Have you taken any?
C-P Yes
P-C When you do, make sure you have them after food, 'cause they're OK if you take them after food, but if you take them on an empty stomach, they do tend to make you a bit sickly
C-P So 'me first two....
P-C Two straight away, yeah. If you take them, well, you know, you want to take them after a meal anyway
C-P Yeah
P-C OK

In the first instance no verbal advice was provided, but when a dispensing error was made advice was provided. In addition, Vibramycin capsules have British National Formulary labelling notes six, nine and 27 which do not include taking the medication after food. However, it is noted in the official manufacturing information available 'If gastric irritation occurs, it is recommended that Vibramycin be given with food or milk'.¹⁰⁴ In this case the CPs has gone further than normally sanctioned and provided a slightly enhanced advisory

service. Advice as defined in this thesis does not include discussion between CPs and patients concerning the supply of medication; however, it appeared to the author that whenever there was a problem with supply, medication was more likely to be associated with advice. Section A3.4 details an analysis of such an association and, after accounting for duplication, it was shown that such a relationship exists. Perhaps CPs offer advice in order to entice those individuals they have inconvenienced back to their premises? Alternatively, the fact that supply problems were dealt with by both proactive and reactive CPs means that they were driven into contact with POIs. It has been shown that coming into contact is correlated with advice (section A3.1.1).

In the previous section it was concluded that policy directives defining CPs' advisory role are, at the least, difficult to define. Following on, discussion in this section has relied on the results of level two, three and four analyses to inform future policies for directing CPs' advisory role. If neither directives nor remuneration are maintaining CPs' level of verbal activity, the question must be asked, what is? It is this question which is addressed in the following chapter.

5.4 Conclusion

From the discussion presented in chapter five; which is based on the results, summaries and conclusions from previous chapters and appendices, further conclusions may be drawn. These are now presented with paragraphs numbered according to the chapter section. Numbers for conclusions correspond to those used for recommendations in chapter seven.

The following major conclusions are drawn from section 5.2:

- 5.2.1. that CPs are providing a demonstrable level of verbal and written advisory service;
- 5.2.2. that CPs may be divided into proactive and reactive types;
- 5.2.3. that the location of pharmacies near surgeries and ownership of pharmacies may affect the advisory service provided by CPs and that, if current trends continue, it is likely that there will be a decrease in PMA provided to patients
- 5.2.4. that POIs request a demonstrable level of advisory service;
- 5.2.5. that the results of this study can be generalised to the sample frame of Southern Derbyshire CPs;
- 5.2.6. that POIs are not making their needs for PMA known during busy dispensing periods.
- 5.2.7. that written additional labelling is quantitatively the major form of advice provided by CPs;
- 5.2.8. that The Society's Code of Ethics is the mechanism whereby CPs are given guidance on The Society's expectations of their advisory activity. The labelling instructions in the British National Formulary (BNF) provide the main source of instruction for the advisory role; and,
- 5.2.9. that there may be general associations between the socio-economic status of patients and CPs advisory activity.

The following major conclusions are drawn from section 5.3:

- 5.3.1. that CPs may be taking into account the nature of prescribed medication in seeming to focus their advisory activity away from the elderly;
- 5.3.2. that, while CPs' advisory role is fundamentally reiterative in nature, advice requiring value judgement is also provided;
- 5.3.3. that there is a disparity between customers' perceived need for advice on side effects and CPs' activity. Also, that there are arguments and theoretical models which provide a basis for understanding this finding;
- 5.3.4. that an external 'cue', in the form of a poster advertising advisory services, can alter the content of discussion between POIs and CPs bringing it more in line with POIs' expectations; and,
- 5.3.5. that the overall effect of the external 'cue' in this study was negated as POIs failed to notice the poster's message.

CHAPTER 6 EXPLANATIONS FOR OBSERVED ACTIVITY

6.1 Summary

This chapter is divided into three sections, all of which draw on the literature of the professions. The first section begins with a brief history of the professional literature. Two descriptions of professional activity are proffered, one using trait theory, the second, focusing on professional control through the use of social and political closure.

It is argued that CPs are constrained in their advisory role by the expectations of The Society's Code of Ethics and a lack of information on diagnosis. Specific examples of the consequences are provided. Indications that there is a willingness to share information on diagnosis are considered. However, concerns over cultivation of medical backing are noted. Given the current anti-collectivist political climate, the potential for lobbying Government to facilitate access to information is discussed. The importance of highlighting any improvement in patients' well-being due to a change in policy is stressed. The potential for direct conflict with GPs over the diagnosis aspects of the 'expanded role' and the lack of positive evidence for CPs' advisory role for OTC medicines are described. It is argued that CPs' prescription medication advisory role should not be linked to either of these roles. The observation that conflict arises when financial interests overlap, or there is an element of judgement by a professional other than a medical practitioner, is used to structure a discussion which predicts conflict between the professions of Pharmacy and Medicine if the provision of advice were to become a tendered service.

This thesis has already presented evidence that CPs provide advice to POIs. Section two of this chapter focuses on professional motivation to help account for this finding. Two motivational drives are proposed, one based on specific educational objectives, the second on adherence to the traits of a professional as espoused in the literature. Published observations are cited to support the first option and the response of individuals to criticism of the professional nature of pharmacy practice provide evidence for the second motivation. A problem is described where, due to professional or ethical directives, CPs are unable to off-load the blame for inappropriate drug therapy instigated by GPs. The resulting decrease in credibility and perceived expertise attacks the core of motivation.

The final section argues the case for the use of the British National Formulary (BNF) to provide medication-specific information on the provision of verbal advice to patients.

6.2 Constraints on advisory activity

"What the pharmacist can say and do in interaction with this customers who bring a prescription to be dispensed, appears to be determined by the pharmacist's relationship with the prescribing doctor".⁴⁵²

It is a central contention of the author that CPs' advisory activities are inevitably constrained both by a lack of information on diagnosis and by their relationship with prescribers.

Sociologists have observed and debated the activities of professions from an academic perspective. Their understandings provide the basis for further discussion of the role of CPs as advisors on prescription medication. It is not, however, a central concern of this thesis to argue pharmacy's place as a 'profession' or pharmacists' actions as professional.

To place this discussion in context it is useful to first provide a brief chronological overview of the relevant literature of the professions. Only principal authors widely acknowledged as having presented original thoughts and perspectives are included. It should be noted that no single theory of the professions exists. The literature is a massive collection of observations and postulations based on selected elements of society who have existed within a recent narrow period of history and only within a limited number of nations, principally America and Britain.^{453 454} The size and importance of those groups describing themselves as professionals lead sociologists to first define and characterise what constitutes a profession.⁴⁵⁵ The earlier trait approach has its origins in the work by Flexner⁴⁵⁶ who identified 'professional spirit' in his 1915 paper 'Is social work a profession?' Millerson⁴⁵⁷ in 1964 and Greenwood⁴⁵⁸ in 1965 distinguished 23 and 5 'traits' of professions respectively. The latter identified systematic theory, community sanction, authority, an ethical code and a professional culture as the elements which underpin a profession. If traits are the criteria, Harding argues that Pharmacy is a profession, but notes the limitations imposed by its dependence on the prescriber.³⁰⁵ Limitations of this approach are identified by Wilding⁴⁵⁵ who notes firstly, the assumption that professional work is in some way unique, secondly, the requirement for an archetype against which aspiring occupations may be measured and finally, and perhaps most telling, that the status of traits and their direct influence on occupations has not been researched, rather their mere existence is taken as an indication of behaviour.

Freidson⁴⁵³ also observes a lack of theory to link the various elements in the trait model and notes the 1960s as a watershed in sociological writings on the professions. Subsequently, authors became far more critical of the privileged positions professions held in society and began to locate such occupations in given social structures. In 1970, Freidson⁴⁵⁹ used the political and socialising activities of the medical profession to demonstrate its functional autonomy. Two years later Johnson³⁶⁴ argued that trait model did not produce definitions of particular type of occupation, rather they specified the characteristics of an institutional form of occupational control. Using this approach he considered the relation of professions to the state. Five years after this, in 1977, Larson⁴⁶⁰ considered the relationship of professions to

market and class systems. Turner⁴⁶¹ succinctly describes the two mirror-image models of professionalism noting:

"In the first model, a profession is defined in terms of a group of attributes which takes a particular notice of the prominence of knowledge (which is exact and systematic) and ethics (which underline the importance of a service rather than a business orientation to the client). In the second model, professionalization involves occupational control which, through credentialism and social closure, excludes competitors and allows the exercise of occupational dominance and autonomy".

In the literature of the 1970s, the profession of medicine came under the sociological microscope. By the 1980s authors, such as Larkin,⁴⁶² began to consider non-medical participants in the health division of labour. He charted the development of ophthalmic opticians, radiographers, physiotherapists and chiropodists under medical domination which he describes as a form of 'occupational imperialism'. The 1990s would appear to be the decade in which sociologists may chart the decline in medical domination in America⁴⁶³ and arguably in Britain.⁴⁶⁴

No sociologist has specifically charted the historical development of community pharmacy from the perspective of domination by the medical profession. Although, an attempt to apply the first model, as outlined by Turner,⁴⁶¹ to perceptions of pharmacists in varying branches of practice failed.⁴⁶⁵ Unlike the occupations considered by Larkin, pharmacy does not have a predominance of medical representation on its controlling board. This renders The Society a degree of autonomy in determining its expectations of its members. It also means that The Society has the potential to implement policy and bring about change.

Throughout this thesis, the tension between CPs and GPs has been noted. The following transcripts exemplify how CPs were observed by the author managing the day-to-day consequences of this tension.

First, CPs' advisory activities are inevitably constrained by a lack of diagnostic information from prescribers. They are thereby constrained in the extent to which they are able to inform patients. Consider the following case. The customer (C) a Caucasian female under 60 years of age approaches the CP (P) and asks:

- C-P What is it for...is it a tranquillizer (Stemetil tablets)?
P-C No, they're not tranquillizers, but the indications for them vary
C-P Oh
P-C They also cause drowsiness but they're not tranquillizers
C-P Are there directions?
P-C He put twice a day when needed, so yes
C-P Morning and evening
C-P Right, thank you very much

Stemetil tablets have Data Sheet¹⁰⁴ indications which include; the prevention or treatment of nausea and vomiting, vertigo and Meniere's syndrome, the short term management of anxiety, and schizophrenia and other psychotic disorders. This example demonstrates that CPs are practically limited due to a lack of prescribing knowledge. The CP is unable to verify that the correct medication has been prescribed and is limited to a reiterations of directions.

Savage ⁴⁶⁶ identifies the problem in stating, "I know that I am not in the full possession of that patient's health records or all the relevant details and therefore in no position to challenge a colleague's decision".

Second, there is an expectation defined in The Society's Code of Ethics that CPs regard patients well-being as paramount, yet avoid implying any inadequacy on the part of the GP. What has not been appreciated is nature of the dilemma this produces for CPs and the confusion it might generate in patients. For example, CPs may verbalise the limitations imposed by the Code of Ethics yet advise patients to seek confirmation. Alternatively, CPs may provide both prescribers' instructions and 'normal' dosing which must cause the patient some conflict. Two cases are now presented which show the pattern of activity observed. In the first case a Caucasian female customer (C) under 60 years of age presents a prescription for herself. She is approached by the CP (P) with the dispensed item and asked:

P-C Did the doctor tell you how to take them (Vibramycin capsules)?
C-P Yes, two immediately then one twice a day
P-C But er.... well...I've never....I've never ever come across.....
C-P Twice a day?
P-C No, I've never ever come across that...never come across anything other than...
C-P (Murmur)
P-C Pardon?
C-P You do it your way (Unpleasant tone of voice)
P-C Well, I can't obviously tell you, you know. I can't go over the doctor's head, but I should probably advise you to phone you know, and say the chemist said just one a day. That's the normal dose anyway
C-P Yeah
P-C I've never known any different to that
C-P What's that....fourteen day course is it?
P-C Well it'll be thirteen 'cause you're taking two today
C-P Right
P-C All right?
C-P Yes
P-C Thanks, cheerio

In a further case, a female Caucasian under 60 years of age, is approached by the CP who uses printed information to correct the inaccurate prescription advice from the GP. The CP states:

P-C The doctor says use (Cerumol ear drops) twice a day, but if you follow the instructions on the back, there's some comprehensive....
C-P OK
P-Cinstructions there
C-P Thanks very much
P-C Thank you

Third, they act to encourage patients to accept the GP's role while offering corrections to inaccurate prescribing. Community pharmacists may strongly emphasise the general practitioners right to diagnose, to define the problem yet provide the customer with the 'normal' administration pattern thus demonstrating a degree of both autonomy and judgement. The following case is exemplary of this activity. A female Caucasian customer (C) under 60 years of age presents a prescription for her son to the assistant (A1) and asks:

C-A1 What's it for? He got a temperature this morning...he's got a runny nose and a measles jab about a fortnight ago
P-C Oh

C-P Is that what it's for?
P-C That's an antibiotic to clear up an infection basically
C-P Oh, he hasn't got an infection
P-C Oh...um..well, well let's leave the diagnosis to the doctor shall we? She's the expert
C-P But she told me to give one of them in the morning and one at night, and two spoons of that four times a day (inconsistency with directions on the prescription) and you've put one to be taken four times a day (Erythroped-PI) and she told me two
P-C Oh dear
C-P No, I'm not being funny...it's just that she said give him two teaspoonfuls
P-C (Laughs) Oh dear...oh dear. For a one year eight....
C-P Well he's twenty months
P-C Yeah, twenty months that's what she's (general practitioner's) put, one year eight months
C-P Oh course she has, yeah!
P-C Lactulose syrup, one 5ml spoonful at night, Calpol syrup one 5ml spoonful four times a day, Erythroped "PI" 5ml four times a day
C-P But she said didn't she....told me to take two teaspoonfuls of Calpol (Inconsistent with directions)
P-C I rather think for the Lactulose what she means is...um..initially you can give it twice daily, morning and night
C-P Yeah
P-C That's how they normally use it anyway
C-P But if it goes you can knock it off completely?
P-C Yeah

Finally, CPs act as a safeguard against incorrect supply. It is argued that they have a role in safeguarding patients.⁴⁶⁷ They are aware of inter-professional issues, perceiving and accepting both the dominance of the medical profession and the relative impotence of the pharmacy 'profession'. The following case confirms this role. A male Caucasian customer (C) under 60 years of age presents a single prescription to one of the two assistants present. At 11.18 in the morning, he is the only POI in the dispensary. Within minutes the CP (P) offers the customer a dispensed item saying:

P-C I can't pronounce it I'm afraid Briz...
C-P Yeah, that's not her name though
P-C Is it not
C-P No it's K...(incorrect name on the prescription)
P-C & C2 Is the address right
C-P No
P-C & C2 That was another lady a polish lady
P-C You've just seen?
C2-P Dr D...(GP)
C2-C Yes just, just
P-C & C2 And did she give you that prescription (Stemetil tablets)
C2-P Yes but another person
C-P Yes I was in there
C2-C Another polish lady
P-C & C2 I should go back to the surgery and just check that you've got the right prescription. I don't want to give you another ladies prescription
C-P The reception, just go to reception

At this point the CP turned to the researcher (Res) and offered the following unsolicited opinion:

P-Res Other professions tend to look after their own don't they yet ours wants to get rid of you at the slightest error. I mean like doctors they seem to carry on whatever they've done don't they they're protected by their own association
Res-P Yes they're a very strong association
P-Res Umm yet we're the ones who get done for dispensing their mistakes (laughs)

Figure 22 below lists the observed content of discussion and direction of communication between CPs, POI and GPs.

Figure 22

Inter-professional relationships concerning prescription medication noted in qualitative analysis of verbal interactions involving the community pharmacist and the patient or general medical practitioner*

Inter-professional relationship	Content of discussion	Direction of communication CP (P) POI GMP
(A†) Mechanical	Verification of prescriber's intent	P⇒GMP
(B) Advisory clinical	Notification of a drug interaction, incompatibility, side-effect, dosage change	P⇒GMP
(C†) Advisory	Information for prescribing	P⇐GMP
(D) Reassurance	Appropriateness of prescriber's intent	P⇒POI⇒GMP
(E) Blame, mechanical	Prescribers responsibility for dispensing irregularities	P⇒POI⇒GMP
(F) Professionalism	Professional ethical constraints influence advice	P⇒POI⇒GMP
(G) Advisory clinical	Appropriate item to be prescribed	P⇒POI⇒GMP
(H) Advisory personal	Advising on interacting with the general practitioner	P⇒POI⇒GMP
(I) Referral	Referred to general practitioner	P⇒POI⇒GMP
(J‡) Confidant	Relationship of POI with the general practitioner	P⇐POI⇐GMP
(K†) Dependence diagnosis	Information on diagnosis required for discussion	P⇐POI⇐GMP
(L†) Dependence directions	Information on prescribers directions required	P⇐POI⇐GMP
(M) Referral	Referred to CP	P⇐POI⇐GMP

Notes

- * = Arrows indicate the direction of initiation of discussion in the interaction. The relationship of CP to general practitioner can be direct as in groups A to C or indirect where the inter-professional relationship is implied through discussion between the CP and customer. Evidence of implied inter-professional relationships includes the data on clinical judgements made by the CP where advice is in addition to or not exactly in accordance with the prescribers directions.
- † = Supply function.
- ‡ = Confidant in this context is where the CP is given confidential information concerning the relationship between the POI and GP and acts in a sense as a counsellor on behalf of the latter

Inspection of figure 22 shows evidence of the verification process CPs undertake on the patients behalf to ensure appropriate supply of medication (A and B). Also, that CPs are dependent on customers for critical information (K and L). Only on rare occasions did CPs contact prescribers directly to confirm their intent. The lack of information necessitates that CPs make judgements. This has been demonstrated in this thesis and more recently by Greene.⁴⁶⁸

The prescription form used to convey information for dispensing activity (section 1.6.1) contains no reference to diagnosis. At no time were either CPs, prescribers or patients observed in discussion as to what constitutes appropriate PMA. However, the current Code of Ethics,²⁹¹ which details what is expected of CPs' for continued registration, directs CPs to "assess the wishes of the prescriber and the information and counselling needs of the individual patients". Practical difficulties for CPs in continuously liaising with prescribers have prompted studies to improve access to information between patients, prescribers and CPs using a notification card⁴⁶⁹ and patient held computer cards.⁴⁷⁰ Although these studies were well received, information has tended to be conveyed in one direction, from CPs to

prescribers, and the level of pharmacy access to diagnostic information has remained minimal or non-existent. Other than the patient and the implication from what is prescribed, there are currently no communication mechanisms which would provide a basis for CPs' advisory role. Thus, if a prescribed item has more than one therapeutic indication, then there is highly likely to be an element of guesswork in providing advice. The dangers involved have been highlighted by the NPA director Mr Tim Astill ⁴⁷¹ advised, *"giving advice by guesswork is always going to be dangerous, so don't do it"*. As CPs have little information upon which to base even the most basic clinical interpretation it is no wonder that most discussions between POIs and CPs includes reiteration of prescribers' directions and verbal advice based on 'professionally' sanctioned written information available in the BNF.³⁷⁶

Literature ⁴⁷² cites restricted access to information as one mechanism used by the medical profession to maintain domination over related occupations. It may be argued, therefore, that the power currently rests with the prescriber to enable greater development of CPs' prescription medication advisory role. Historical requests for a team approach ⁴⁷³ have been taken up by the World Health Organisation.³⁷⁰ which states that, *"At all levels of health care, the provision of care is multiprofessional. The health care team, which is inevitably concerned with the use of drugs, must therefore include a pharmacist. This has been adequately demonstrated in the team approach to clinical care in hospitals and health centres"*. Although 'demonstration' in community settings is not acknowledged, the multiprofessional approach is advocated at all levels. So far only isolated accounts of integration ^{474 475 476 477} and calls for better relations ¹¹ pre-empt the sharing of information. Recently, it has been argued that all CPs should be located in surgeries.⁴⁷⁸ Parallels can be made with the Rose case of 1703, where apothecaries eventually dominated medical practice. Then it was the provision of free advice and a unique knowledge of compounding which forced events. Similarly, the provision of free advice and an in-depth understanding of drug action, which enables CPs to make sure patients understand their medication, might be crucial to future events. Currently, however, examples of the underlying tension between Pharmacy and Medicine dominate.⁴⁷⁹ As the much referenced General Report of the Pharmaceutical Survey ⁴⁸⁰ notes, *"Nevertheless, when one digs beneath the surface of things as they appear to be, one finds that medicine, as a profession, maintains an attitude of condescending superiority towards pharmacy as a profession"*.

It has been suggested that interactions between CPs and GPs should take place at a higher level than clarification of prescription ambiguities.⁴⁸¹ However, there has been a failure to identify, and place on the agenda for discussion, the specific need for information on diagnosis for CPs from GPs. Therefore, there is no policy to specifically address this problem.⁴⁸² Lukes ⁴⁸³ would describe this lack of policy as an example of latent conflict whereby power is operating at its most advanced level of control. Preferences are influenced neither overtly nor covertly yet power is demonstrated by decisions taken to avoid conflict. In contrast, the advantages of the CPs' knowledge for GPs has been espoused.¹¹ Yet American studies have reported that the infrequent discussions which do occur between CPs and GPs concern mainly practical supply problems ⁴⁸⁴ with even fewer requests for information on

side effects or drug contraindications.⁴⁸⁵ General medical practitioners still see the CP's role as that of a compounder and dispenser.⁴⁸⁶ In Britain only 4% of GPs indicated that they would make use of CPs for information concerning adverse drug effects and contraindications.⁴⁸⁷ In a report to the Nuffield foundation¹¹ it was suggested that community pharmacies be located near surgeries. Subsequently, it has been argued that the CP's place is in the general practitioner's surgery.^{488 489} Harding,⁴⁹⁰ using a semi-structured interview method, reported the influence of a health centre environment on the CP's role as a drug information source. It was noted that CPs practising in such an environment were consulted more frequently by GPs than those less accessible. Such results confirm earlier questionnaire based results from America.⁴⁹¹ That there is little contact between CPs and GPs is verified by the present study as, during the observation period, only one GP contacted a CP for advice on a supply issue. Notably on two occasions CPs contacted prescribers to notify them of clinically significant drug interactions and on one occasion the problem identified was one of side effects.

There are, nonetheless, indications that GPs are not entirely against sharing information. Marsland⁴⁹² reported in 1987 that 47% of 403 British GPs, representing a 35% response rate, were prepared to share patients' details with CPs. Similarly, 90% of 493 CPs representing a 60% response rate were willing to exchange information. Sutters and Nathan reported 80% of GPs who would welcome CPs input in a variety of extended roles including compliance.⁴⁹³ Such research points to the potential, however small, for policy makers to rectify the information chasm confronting CPs. It may have been considered that confidentiality as a concept would have precluded exchange of information between CPs and GPs, although, in hospital settings it is normal practice. From the rural dispensing example of inter-professional conflict presented later in this section, it may be surmised that greater resistance is likely in rural settings. This is confirmed by Marsland⁴⁹² who reported only 23% of GPs in rural areas who also dispensed were in favour of information dissemination. Clearly, any policy bringing about a sharing of information may need to contend with varying entrenched attitudes on the part of GPs. In a separate study Gerrett and Willcocks⁴⁹⁴ investigated the extent of GPs' perceived mandate for a drug counselling role by CPs and the magnitude of that role in terms of surgery consultations. Of 194 (74% response rate) responses to a questionnaire, 46.6% felt CPs had a role in advising patients on medication side effects. In a prospective study 16 (66.7%) general practitioners provided details on 1590 patients and felt 62 (3.9%) would have benefited from the CP's intervention concerning side effects of prescribed medication. This was the most frequently identified area of advice. The authors concluded that such an invitation to provide advice implied "*a mandate to advise*" but only for specific individuals. The problem arises, how can CPs be made aware which individuals require such additional service?

Clearly, access to information on patient diagnosis is a key topic for Pharmacy. Although research has been conducted, it appears to have missed the point that CPs cannot be expected to provide an advice service at the level desired by patients without the additional information on diagnosis being made available by GPs.

Community pharmacists are the last health care professionals to interact with patients before they take over responsibility for their own medication. General medical practitioners as members of the dominant profession may order the service but do not interpret, evaluate or consume the dispensing and advisory service. That CPs have access to patients and are not overseen by the medical profession is critical to expansion of their advisory role. For policy makers this thesis identifies what Wildavsky⁹⁶ would describe as a problem *"for which solutions might be attempted"*. At issue is to what extent the medical profession can be persuaded to provide the necessary information to enable the full potential of CPs' advisory role to be realised.

Consistently authors^{364 459} have noted collusion between the medical profession and the state in sanctioning the former's dominant position. As described in sections 1.5.1, page 28 and section 3.3, page 85, the current Government ideology is one of anti-collectivism which emphasises the social values of freedom, inequality and individualism. Individual choice is incompatible with the principle of social closure and Government backing for all professions has come under pressure. As Medicine is also losing Government backing, then its ability to successfully resist calls for access to diagnostic information must be in question. Larkin's thesis,⁴⁶² although published in 1983, provides several observations of inter-professional relationships which are still useful in discussing this point. He notes that the paramedical occupations he considered tried to improve their status by cultivating the medical profession and all ended up subservient. The price of medically assisted 'closure' was the containment of further growth. It follows from these arguments that it may be an opportune time for Pharmacy to make proposals for such access. Also, that calls for access might be better served by lobbying Government rather than directing all efforts towards Medicine. The necessity to involve Government and change policy in order to surmount inter-professional dilemmas has been recently noted by Jepson and Strickland-Hodge.⁴⁹⁵

If information on diagnosis were made available, and CPs role as advisors on prescription medication became central to their existence, it may be asked, what would be the effect of devolving the act of dispensing to assistants while CPs retained direct access to patients for the provision of advice? Larkin's⁴⁶² thesis is instructive on this point. He noted that radiology as a medical discipline only attained high status when the physical activity of developing X-ray plates was devolved to radiographers. The important additional point to note is that radiologists report their judgements direct to their colleagues. Similarly, if CPs gave out all dispensed medicines to patients, providing an advisory service involving judgement as to the optimum use of medication, and assistants only prepared the dispensed item, then it follows that community pharmacy as an activity would increase in status.

It would seem, therefore, that the supervision debate (section 3.2.2) missed the point. The 'Luddites' fought to maintain the need for the CP's presence when a prescription was given to the POI, and The Society, suggested that an assistant could interact directly with POIs without direct supervision; however, neither party suggested elevating CPs' advisory role in

the manner which has led to radiologists' increase in status. To have delegated the dispensing role plus the advisory role to assistants would have further distanced CPs from POIs and weakened their claim for promoting patient well-being. The intention of The Society to revise the Code of Ethics and require CPs to personally determine that a patient understands their prescribed medication, must provide a more solid basis for the future.⁴⁹⁶

Of all the prerogatives the medical profession covet, the exclusive right to diagnosis is the most fundamental.⁴⁹⁷ Recently, CPs have expanded into areas which involve some degree of diagnosis or at the very least judgement. As early as 1947, pharmacists' non-prescription advisory role was placed under the umbrella term of 'health education'.⁴⁹⁸ Calls have been mounting since the early 1960s in Britain¹⁵ and America⁴⁹⁹ to recognise and develop the role further. However, this has proved controversial. Recent involvement in the simple provision of leaflets (section A3.3) has been less contentious than, for example, the provision of advice on coronary heart disease.⁵⁰⁰ Taking such advice as an exemplar, initial research was conducted,^{501 502} case studies presented,⁵⁰³ and training provided⁵⁰⁴ which demonstrated a positive advisory role for pharmacists. Conflict with the medical profession did not become apparent until community pharmacies began diagnosis in the form of blood pressure screening.^{505 506 507 508} However, it was not possible to continue suggesting that CPs lacked suitable training to provide such a service, as the medical knowledge base was shown to be insecure;⁵⁰⁹ rather inaccuracies in the measuring instrument⁵¹⁰ and warnings against mass screenings⁵¹¹ were voiced. That CPs' expansion into areas of high independent judgement or autonomous action are likely to meet medical resistance has been shown,⁵¹² although, Norwood and colleagues⁵¹³ in America determined that the lowest resistance was for advice on prescription medication.

The health education example demonstrates that a proposal implying any right for CPs to diagnose would be contested by the medical profession. The inclusion of 'advice and counselling' under the heading of health promotion has been noted.⁵¹⁴ As access to information on diagnosis is less contentious than the act of diagnosis, the case presented for advancing CPs' advisory role should avoid confusing the provision of PMA with 'health education' or its synonym 'health promotion'.

Evidence has recently been published that many CPs already perceive their advisory role to be under the umbrella of the extended role.⁵¹⁵ It is argued that this may dilute the case for the advisory role.⁵¹⁶ Community pharmacists have not been educated for the majority of extended roles. However, they are educated to provide PMA (section 1.2.2, page 21). Further, this thesis provides evidence that POIs accept CPs' role as advisors on prescribed medication. Evidence is also available to show that the public are unaware of the extended roles.⁵¹⁷ Even linking PMA to over-the-counter (OTC) drugs may not help the case for developing CPs' prescription medication advisory role. While the quality of OTC advice appears to be satisfactory,³⁹⁶ independent pseudo-patient studies published in 1975,⁵¹⁸ 1985,⁵¹⁹ 1987,⁵²⁰ 1988,⁵²¹ 1991,⁵²² and 1994⁵²³ have consistently demonstrated the lack of appropriate supervision. If an independent proposal were made to Government to facilitate

CPs access to information on diagnosis, The Society's moves to tighten up practice by accepting profession audit ^{524 525} and considering assessment of competence ³⁸⁰ would enhance the case. Also, the recent availability of patient compliance training packs freely available for CPs ⁵²⁶ must register the importance placed on the advisory role. The medical profession may counter the argument for enabling CPs' advisory role on the basis of a lack evidence that it exists. This thesis provides one more response to this criticism.

It may also be proposed that advice on prescription medication is a service which should be fully remunerated. In section 5.2 the issue of payment for CPs' PMA was discussed and left unresolved. Consider, for this debate, and in keeping with the current government's market-forces philosophy,⁵⁹ that PMA was 'put out to tender'.

Larkin makes the point that when areas of financial interest overlap there will be conflict. The occupations he considered initially practised in areas which were neglected by medical practitioners, but were still of economic importance. As financial incentives for this work increased, so did conflict. The Rose case, described in section 1.2, page 15, is a clear historical example of financial conflict between CPs and GPs. Then it was the patients' well-being which decided the outcome. More recently, the rural dispensing dispute provides a useful example of financial conflict. Once again, it is the patients' well-being which is a key factor, one which is consistently ignored by both parties.

In early 1990, Sir George Young, the then member for Ealing South, noted the fact that GPs in rural areas could dispense under the National Health Service and wondered why the same was not true of all doctors.⁵²⁷ The Society found itself defending its members Government sanctioned dispensing role and responded by comparing community pharmacy dispensing costs with those of dispensing general medical practices.⁵²⁸ Sir George's proposed amendment to the National Health Service and Community Care Bill, which would have allowed medical practitioners and dentists freedom to dispense on the National Health Service, failed to reach debate and was lost.⁵²⁹ Sources close to the then Secretary of State for Health, Mr Kenneth Clarke, noted that, "*the argument about who should dispense should be fully determined by what provides the best service for patients and not by inter-professional quarrelling*".⁵³⁰ In parting Sir George ⁵³¹ warned the issue of dispensing GPs "*will not go away*". The Government's response to the sole use of financial arguments by both professions is exemplary of its fundamental anti-collectivist ideology.

The rural dispensing example demonstrates that the patient's well-being would be a major factor in defending and advancing with the current Government an advisory role for CPs. In this respect, public opinion polls in Australia ⁵³² and Britain,⁵³³ which place pharmacists high on the list for ethics, honesty and quality of advice, would provide some evidence of patient's general attitudes towards community pharmacy practice

In summary, a major stumbling block for the role of CPs as advisors is a lack of information on diagnosis. Attempts to convey information between CPs and GPs have so far failed, but

reportedly on technological grounds. Community pharmacists are currently adhering to their Code of Ethics and attempting to provide PMA to patients while avoiding the implication of any inadequacy on the part of GPs. They do so while ensuring correct supply and advising patients with only limited knowledge available to them about diagnosis. Inevitably their advice comes into conflict with that of the prescriber. This may cause confusion in patients. As the last link in the professional advisory chain logic dictates that CPs should be the ones who are fully informed.

With respect to conflict with the medical profession, CPs' role as advisors is less contentious than activities under the banner of 'health education' which require diagnostic skills. The subservience of professions who have courted the favour of the medical profession indicates that the alternative of lobbying Government to enable access to information on GPs' diagnosis should be considered. In doing so, the patients' well-being must be central to any arguments. The potential for success is supported by indicators such as the decrease in the power of the medical profession and calls for multidisciplinary teams. It may be predicted that that CPs and GPs will come into direct conflict if advice is 'put out to tender'. Critically, to advance CPs' role as advisors on prescription medication the topic must first become part of the policy agenda and be openly and fully discussed. It may truly be said that their advisory activities are currently 'a well kept secret'.

This thesis presents evidence for two types of CPs, proactive and reactive. Although proactive CPs provide very significantly greater amounts of advice than their reactive peers (table 40, page 244), both do provide advice. The next section considers pharmacy education and adherence to the ideal of being professional to account for the advisory actions of CPs.

6.3 Explaining the advisory practice of community pharmacists

Community pharmacists offer advice on prescribed medication. At no time during the study was a request for advice ignored and in only 4.4% (22/495, section A3.1.2 table 57) of the total observed cases of advice was information provided through a third party. The question may be asked, why do CPs provide 'free' advice on prescribed medication? Two reasons are proposed. First, the professional education of CPs may train them to behave in a particular manner. Second, the concept of being a professional and being part of the professional culture may be promoting adherence to a particular pattern of activity.

Professional education is generally seen as having a long term influence on subsequent actions. This may account, in part, for CPs' advisory activity. The influence of undergraduate education on professional judgement has been published for hospital⁵³⁴ not community pharmacy settings. This discussion must, therefore, rely on the general observations in the literature. There is a body of opinion that the education of professional groups shape their future activity. Ham and Hill³⁷⁹ cite Lukes in maintaining "*...that people's expressed preferences are shaped by socialisation, education and the mass media*". Freidson⁴⁷² notes "*...the indubitable fact that doctors are not wholly born but are in some way made by medical school*". Also, that educational processes are to prepare practitioners "*...to resist all temptations to ethical or technical lapses by virtue of his inner resources alone*". In 1956 McCormack⁵³⁵ writes of "*The young pharmacist who develops a professional identification through his education*". Clearly there is an opinion that education prepares practitioners for the future. It has been argued in this thesis that CPs confront the dilemma of a lack of information from GPs at the same time as being expected to be mindful of their wishes. That CPs are able to remain faithful to their Code of Ethics yet, with limited knowledge, provide judgmental advice may be due to their educational preparation. Recent graduates who have had the benefit of an increasing emphasis on behavioural sciences and effective preparation for communication with patients and health professionals⁵³⁶ may be better equipped to deal with this ethical dilemma. No research has addressed this supposition.

A second potential explanation why CPs provide advice may be based on the ideal of being professional. Consequently, a value is placed on adherence to the Code of Ethics. The etymology of the term professional can be traced to the word profiteor, to 'acknowledge openly', 'confess', 'avow', 'declare ones self to be'. Dingwall⁵³⁷ argues that it is the perception of members of an occupation and the individuals with whom they interact which defines whether organisations are professional. Indeed, Moline⁵³⁸ speculates "*that to be a professional x in the honorific sense is to be a self-declared x*". Pharmacists perceive themselves to be professional.⁵³⁹ They may be adhering to the ideals proffered by the trait theories which act as a driving force for their advisory activities. Their activities may be sustained by the constant literature espousing their professional role. Brown and colleagues, in 1991,⁵⁴⁰ identified a collective professional consciousness in nine occupations, including medicine and pharmacy, using content analysis of documents such as Codes of Ethics. Although Wilding's⁴⁵⁵ criticism is valid, that existence of words does not necessarily equate

with activity, for the purposes of this discussion, the use of professional concepts particularly in connection with pharmacy was shown.⁵⁴⁰ That pharmacists perceive advice as a professional activity has been shown by Kirking.⁵⁴¹ Freidson⁴⁷² identifies professional orientation where the practitioner *"put his client's interests before his own"*. In the same manner Moles⁵⁴² advocates *"Let us serve because that is the calling of a profession - because we care - and not tell our patients that we will not care unless we get paid to do so"*. Such literature testifies to patterns of reinforcement, of what is expected of a professional. It is this calling which may be a factor in sustaining the advisory activity. The detrimental impact of a recent preoccupation on the negative aspects of CPs' activities is noted.⁵⁴³

Just as there is literature reinforcing CPs' self-identity as professional, sociological debate is querying this supposition and challenging the idea of a vocational calling. Arguments centre on the dilemma for professionalism which is created by Pharmacy's professional business orientation.⁵⁴⁴ Evidence for a relationship between the act of supply and the provision of PMA is provided in this thesis (section A3.4, page, 289). In 1939 Talcott Parsons⁵⁴⁵ argued that professional practice was the antithesis of business. However, McCormack,⁵³⁵ in 1965, noted that *"professionalization by means of formal training has been the major counteracting force"* against the non-professional ideals of business. In 1988, a marketing report notes the conflict of a profession in business and reportedly states, *"the roles of pharmacist and retailer have never fitted comfortably together. The chemist often finds it difficult to take a commercial view which does not compromise his professional role"*.¹⁰⁹ Even in law the actions of pharmacists may not be judged by the implication of being a professional.²⁹⁷ Recent perspectives on professionalism provide an alternative. Turner⁴⁶¹ in 1985 presented a perspective of professionalism which emphasised the interpretative nature of practice rather than the validity of knowledge where the *"range and necessity for professional judgement"* was the key issue. Similarly, Harding and Taylor⁵⁴⁶ published a short balanced account of pharmacy's professional dilemma and concluded that judgement is the essence of professionalism. This thesis provides evidence that CPs use judgement in their actions. However, pharmacy has been poor at educating the public as to its 'professionalism'.^{547 548} This may be a consequence of being ignorant of the diagnosis and ethically unable to refute prescribers' actions. The patient who is the judge of status, is left unaware of the level of CPs' expertise and the actions they undertake on their behalf. If Dingwall's⁵³⁷ proposition is correct, this must undermine pharmacy as a profession.

Both education as a professional, reinforcement of that role as a vocation and the debate as to the professional nature of pharmacy may all be factors influencing the advisory activities of CPs. The lack of a diagnosis is clearly a major stumbling block to the development of CPs advisory role. Even with the diagnosis, however, the only professionally backed literature which provides direction for advice is the list of additional labelling instructions in the British National Formulary (BNF). This text currently controls the role of CPs as advisors on prescribed medication. The final section of this chapter considers how the BNF may be used to advance the advisory activities of CPs.

6.4 Developing the role using the British National Formulary

It is proposed by the author that the additional labelling instructions in the BNF be expanded to provide a list of medication-specific indications of the verbal advice which The Society and the British Medical Association would expect to be provided and customers to understand.

Professional accountability by individuals is dominating current policy making.^{464 549}

Accountability is the cornerstone of the currently operational Government paper 'Working for Patients'. Community pharmacists must be made accountable for the provision of advice as directed in their Code of Ethics. However, it has been argued that for a large proportion of medication there is no yardstick with which to assess CPs additional labelling activity. A measure for their verbal activity is virtually non-existent. Until the expectations for both verbal and written advice are made more explicit, then there is little The Society can do to advance CPs' advisory role. Adherence to enhanced directives on advice would be a matter of good professional conduct, thereby invoking penalties for professional non-compliance. The actions of proactive CPs might be used as the basis for the 'average' CPs' advisory activity. This has the added advantage of acting as a peer reference for reactive CPs. The Society's inspectorate are in a position to act as the monitors for CPs advisory activities. The pseudo-patient technique recently reported by Fisher⁵⁵⁰ is a possible second option for mass measurement of advisory activity.

This thesis has argued that the BNF³⁷⁶ is the reference source which is dictating the advisory role of CPs. It is through this source that the expectations of The Society are communicated. It is proposed that the number of medications listed in this reference is expanded and each entry includes specific reference for both written and verbal advice.

Gunn³⁷⁸ (section 3.3, page 85) sets out the preconditions for the success of this policy. First, CPs must have sufficient resources at the point in time when advice is appropriately proffered. Available time is an issue for implementing this policy,^{390 551} however, locating advisory information in a single text and detailing the expectations explicitly would expedite the process. Second, CPs' advice must be accepted by patients such that subsequent behaviour leads to improved use of drug therapy. Only by having a set of expectations which can predictably alter CP's advisory activity can the delivery of advice be refined and optimised to improve the use of drug therapy. Third, they must only be minimally dependent on other individuals in order to provide such a service. The issue of diagnosis would need to be resolved, and CPs to be informed, before the full benefit of this policy could be realised. In this respect a pilot scheme with GPs providing the suspected diagnosis along with the prescription for an antibiotic may prove instructive and a basis for further development. Fourth, they must have control over the advisory process and clearly defined roles for each person involved. It is implicit in this policy that the CP must, either hand out dispensed medication and advise personally, or produce a written protocol for the involvement of other individuals. The CP would remain personally responsible.

6.5 Conclusion

From the discussion presented in chapter six; which is based on the literature of the professions plus results, summaries and conclusions from previous chapters and appendices, further conclusions have been drawn. These are now presented with paragraphs numbered according to the chapter section. Numbers for conclusions correspond to those used for recommendations in chapter seven.

The following major conclusions are drawn from section 6.2, that:

- 6.2.1. the lack of information on diagnosis is a major limitation to the expansion of CPs advisory role;
- 6.2.2. community pharmacists are remaining true to their ethical obligations;
- 6.2.3. Government assistance in enabling CPs' access to information on diagnosis should be sought on the basis that it would be of ultimate benefit to patients;
- 6.2.4. that cultivating only the medical profession to advance the advisory role of CPs may bring about short term gains at the expense of long term restrictions;
- 6.2.5. the advisory role for CPs on prescription medication may be disadvantaged if placed under the umbrella of the extended role or linked to their activities as advisors on OTC medicines.
- 6.2.6. the provision of PMA by CPs is not a priority agenda item; and,
- 6.2.7. if financial incentives are available for the provision of advice, then there will be conflict between Pharmacy and Medicine.

The following major conclusions are drawn from section 6.3, that:

- 6.3.1. that a complicated educational preparation may partially account for the professional actions of CPs in providing PMA;
- 6.3.2. that the idea of acting professionally is a factor underpinning the advisory role; and,
- 6.3.3. evidence of judgement in CPs' advisory activities presented in this thesis supports arguments for the professionalism of Pharmacy.

The following major conclusion is drawn from section 6.4, that:

- 6.4.1. that the advisory role of CP may be developed by expanding the medication-specific guidelines for both written and more importantly verbal advice in the BNF.³⁷⁶

CHAPTER 7 RECOMMENDATIONS

The following recommendations arise from the results, analysis and discussion presented in this thesis. Each has as its intention the optimisation of CPs' prescription medication advisory role. The paragraph numbers correlate with conclusions drawn and presented in the final section of chapters five and six.

The following recommendations arise from the conclusions of section 5.2, page 140, that:

- 5.2.1. the general public, patients and policy makers are made aware of the growing evidence for CPs advisory role. Further studies should consider collating data under comparable categories of advice and using observation as the study method;**
- 5.2.2. investigations are conducted to determine why CPs fall into reactive or proactive groups in providing PMA. This understanding may reveal ways of increasing the overall level of CPs advisory activity;**
- 5.2.3. trends to locate community pharmacies near surgeries and for multiple ownership should be considered in the context of what is best for the patient. Further research in this area is a priority;**
- 5.2.4. the general public, patients and policy makers are made aware of the fact that POIs independently request PMA from CPs and thereby legitimise the advisory role. The extent of customer initiated requests for advice should be considered for use as a baseline indicator for monitoring the developing role of CPs as advisors;**
- 5.2.5. studies are conducted in areas other than Southern Derbyshire in order to develop a clear understanding of the overall advisory activities of CPs;**
- 5.2.6. research should be conducted to determine why POIs are reluctant to initiate advice during busy periods. Community pharmacists should be made aware of such reluctance and advised to be more proactive during times of high dispensing activity;**
- 5.2.7. investigations should be conducted to determine why CPs apply additional labels in only the minority of recommended cases. Such information may clarify their use of discretionary power and their use of professional judgement;**
- 5.2.8. the importance of the BNF to CPs advisory role is made clear to policy makers;**
- 5.2.9. Further research is conducted to clarify the relationship between socio-economic status and advisory activity.**

The following recommendations arise from the conclusions of section 5.3, page 140, that:

- 5.3.1. the full impact of directing CPs to focus their PMA on the elderly should be assessed and must take account of the nature of prescribed medication, as well as, for example, the complexity of prescribed regimens;**
- 5.3.2. policy makers should be made aware of the fundamentally reiterative nature of CPs' advice and be prepared to recognise the extent of independent judgement provided;**
- 5.3.3. advisors are given a clear message that they are failing to meet the expectations of POIs with regard to advice on side effects. Also, that the literature both supports and explains the effect of providing such advice;**
- 5.3.4. community pharmacists consider advertising their availability to provide PMA; and,**
- 5.3.5. the use of any 'cue' in advertising is supported by an effective marketing strategy.**

The following recommendations arise from the conclusions of section 6.2, page 156, that:

- 6.2.1. that all efforts are made to securing access to information on diagnosis;
- 6.2.2. the actions of CPs in adhering to their Code of Ethics are acknowledged publicly;
- 6.2.3. research is conducted to determine the direct effect on patients of providing CPs with access to information on diagnosis;
- 6.2.4. in advancing CPs advisory role, a broad range of support should be sought. The major effort should be directed towards securing Government backing;
- 6.2.5. community pharmacists' role as advisors on prescription medication is not linked to their extended role or activities as advisors on OTC medicines;
- 6.2.6. the provision of PMA is made a major agenda item in discussions of the future of community pharmacy practice; and,
- 6.2.7. the issue of remuneration for CPs advisory services is made clear. If the role is clearly being financed, then policy makers must consider the implications carefully. This thesis argues that the provision of free advice to the public has been key factor in advancing the cause of Pharmacy.

The following recommendations arise from the conclusions of section 6.2, page 156, that:

- 6.3.1. from an educational perspective, the preparation of CPs for a professional role should be fully researched. Educationalists should re-examine the role they foresee CPs playing as advisors on prescription medication and structure student preparation accordingly;
- 6.3.2. those who publish on the 'professionalism' or otherwise of Pharmacy should be mindful of their potential to adversely affect CPs' concept of acting professionally; and,
- 6.3.3. any decisions affecting the role of CPs as advisors on prescription medication take into account the judgmental nature of this activity.

The following recommendation arises from the conclusion of section 6.4, page 156, that:

- 6.4.1. It is recommended that guidance for verbal advice on specific antibiotics is provided in the BNF.³⁷⁶ This should take account of CPs' judgement in educating patients as to the use of their medication. Provision of such advice should be made a matter of professional conduct. The Society's inspectorate should monitor CPs advisory activities, possibly using a pseudo-patient technique. The activities of proactive CPs should be the expectation of The Society in matters of de-registration. If such policy was shown to be successful then it could be widened to include other prescribed medication. Accountability to The Society would be seen as the initial motivation. In the long term, policy makers should consider the fundamental tasks of making such activity accountable to patients.

APPENDIX 1 DETAILS OF METHOD

A1.1 Schedule-structured interview method

The present section expands on the note made in section 4.5 (page 107) of the use of the schedule-structured interview method to collect data on the advisory activities of CPs.

A schedule-structured interview method is one in which an interviewer asks interviewees the same questions in a predetermined fixed sequence. With respect to the task of determining the advice CPs provide and patients seek, unlike direct observation, there is no issue of subject reactivity as the technique is essentially retrospective. Community pharmacists and prospective interviewees need not know that details of their communication may be queried at a later time; however, the retrospective nature of the interview method has its own problems of instrument validity, and the question must be addressed as to whether interviewees accurately recount their experiences. The method is labour intensive and a request was made to the College of Pharmacy Practice for support (letter 1, page 161) but to no avail. For six months, from late 1987 to early 1988, two schedule-structured interview forms were piloted. The first form (form 1, page 162) and corresponding flow diagram (figure 23, page 164) defined the questions for determining the nature of baseline advisory activity and pinpointing when recalled communication takes place. The second form (form 2, page 165) and its flow diagram (figure 24, page 167) included additional questions which were designed to determine the effect of a poster advertising the CPs prescription medication advisory service.

The objective of the study was; to evaluate the potential for a schedule-structured interview method in investigating the following:

1. the frequency of requests for information on prescription medication, minor medical matters and OTC products made by interviewees from specific pharmacy staff;
2. the frequency of provision of information on prescription medication, minor medical matters and OTC products made by CPs to interviewees;
3. the chronological sequence of events surrounding requests for information with and without observation of the poster; and,
4. relationships between advice, observation of the visual display and the epidemiological variables gender, residential address, age, and occupation, of interviewees.

Two pharmacies were chosen to pilot the development of schedule-structured interview forms. The CP in charge of each dispensary were aware of the exercise and an aspect of negotiation for determining the validity and reliability of the method was that the specific location of the pharmacy would remain anonymous. One was situated in an East Midlands city and one in a suburb of the same city. The former was a dispensing only establishment with chairs in the dispensary waiting area and the latter a more typical retail outlet with merchandise and advertising. The former was chosen to provide the poster with an environment in which the poster would be a unique element with little else to distract potential enquirers. The building construction of the latter enabled the researcher visual

access to the activities of the pharmacy while positioned outside the premises. Over a period of four months two formats (forms 1 and 2) of schedule-structured interviews with the general public were piloted with 125 interviewees and revised a total of 13 times. Customers were chosen randomly and were approached by the researcher for information as they left a pharmacy. Interviews lasted approximately 10 minutes and details were recorded immediately after completion. Unfortunately, on three separate occasions at the suburban pharmacy, customers were observed, and later confirmed by enquiry, to have discussed prescription medication with the CP; however, found to have responded inappropriately during interview. It could not be determined whether the fault lay with the interviewer, the research instrument, the CP or interviewee or a combination. In any case, it was clear that information on the actual events taking place in the dispensary was required in order to place the results of interviews in perspective. Either two researchers were required or an alternative method.

In summary, due to lack of subject or instrument validity and potential problems of reliability, the schedule-structured method was passed over in favour of observation and a radio microphone was used to tape interactions between CPs and the general public.

Letter 1

Letter requesting support for schedule-structured interview method*

SOUTHERN DERBYSHIRE HEALTH AUTHORITY

Your ref:
Our ref:CPP

Medicines Research Unit
Derby Royal Infirmary
London Rd
Derby DE1 2QY
0332 47141 ext 323
26th June, 1987

Dear Miss Mitchell

re: Funding for research on patient counselling

We read with interest one of the recent conclusions made by the Pharmaceutical Society Council's working party on information to patients (1). The recommendation made was that "Studies on a larger scale than those previously carried out should be undertaken in an attempt to assess the value of counselling and other methods of providing information to patients" and it was agreed that this should be referred to the College of Pharmacy Practice. The College has indicated a willingness to assist in the funding of appropriate practice research (2).

The appointment by Southern Derbyshire Health Authority (SDHA) of a Staff Pharmacist Health Education, has provided the opportunity of exploring effective methods of educating the public to seek counselling from pharmacists. Unique research in this aspect of patient counselling is currently being undertaken under the guidance of Professor Willcocks of Nottingham University. A brief summary of the research being undertaken is attached (appendix one).

By August, 1987 the investigation will have advanced to a stage which necessitates extensive interviewing of the public. To limit study variables and produce a valid analysis of the intervention, interviews must be conducted in a short period of time. For a three month period the support of a temporary assistant trained in market research will be required at an estimated cost of £3,000. The College has shown an interest in this type of research (3) and we hope that it could consider assisting us in our investigation by the provision of these additional funds to allow for the appointment of a research assistant. Please do not hesitate to request further information if you feel this investigation merits assistance.

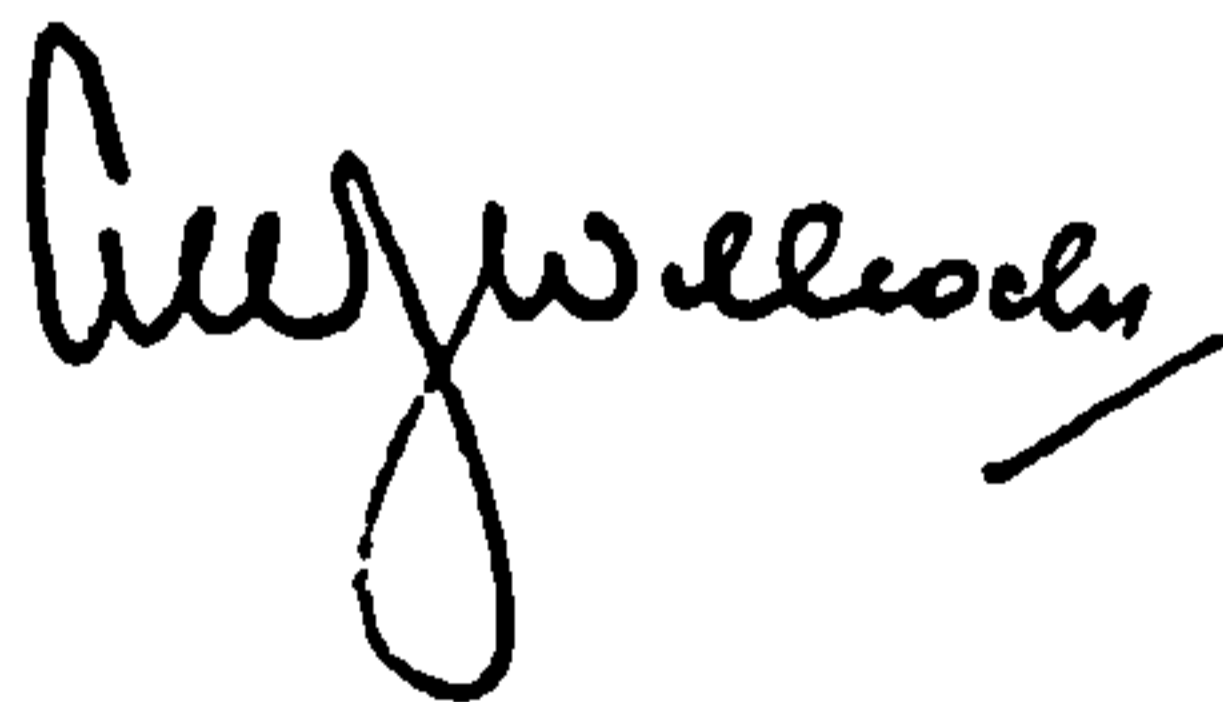
Your sincerely



Mr D. Gerrett (Staff Pharmacist HE)



Mr A.M.S. Cullen (DPhO)



Professor A.J. Willcocks, Dept Social Science, Nottingham University

- (1) Anon. Report to the working party on information to patients. Pharmaceut J 1986;237:306-8.
- (2) Anon. Getting started in practice research. Pharmaceut J 1986;237:547.
- (3) Anon, Post Hereford - The researchers' toolbox, College of Pharmacy Practice, 1987;Newsletter no 22 (Feb):5-8.

Note

* = Signatures have been scanned into this presentation from the original letter. The text of the original letter is accurately presented.

Schedule-structured interview form for baseline advisory activity

CONFIDENTIAL

Southern Derbyshire Health Authority
Baseline interview guide for the general public

Questionnaire No	Pharmacy	Case

		code	notes
1.	Date? __-__-88 /2. Time?/3. Selection method? A B C D E F	1. /2. /3.	- -88/ /
4.	Subject gender? Male..(1) Female..(2)	4	1 2
5.	Subject accompanied? If Yes, state numbers and details	Yes 5 No 5	1 2
Q6	Say-Excuse me, I'm doing some research for the Southern Derbyshire Health Authority. We are trying to determine who people talk to when they visit a chemist shop? I've only got a few questions, I wonder if you could help? Cite political polls if required. Details	Yes 6 No 6 Other 6	1 2 3

Q7	Ask-Could you tell me whether you (Q7=Yes, "or any member of the party") have just taken a prescription into the chemist shop to be made up? Details(eg prescription left yesterday)	Yes 7 No 7 Other 7	1 go to Q8 2 go to Q9 3
Q8	Ask-May I ask whether the prescription was for you or whether you were collecting it for somebody else? Details	Yes 8 No 8 Other 8	1 2 3
Q9	Ask-Did you speak to the pharmacist or assistant about anything at all? Prompted details recorded in Q13, A-D	Yes 9 No 9 Other 9	1 2 3
Q10	Ask-Did the pharmacist or assistant speak to you about anything at all?	Yes 10 No 10 Other 10	1 go to Q12 2 go to Q11 3
Q11	Ask-politely-It's unusual that nobody said anything, it is important, are you sure? Details	Yes 11 No 11 Other 11	1 Ask Q13 A 2 go to Q12 3
Q12	Ask-I know this may sound like I am prying but I assure you, anything you say will be kept in the strictest confidence. Would you tell me just generally what sort of things you talked about? (Interviewer pause)	Yes 12 No 12 Other 12 N/A 12	c PROMPTING 1 Ask Q13 A 2 go to Q12 3 4 volunteered

Q13	Prompt-For example,did-1 you or-2 the pharmacist or assistant; talk about...ABC. Qualify-1 Did you speak to..or-2 Who spoke to you;the Pharmacist the Assistant or Both?	Yes	No	O	P	A	B
		6	7	8	9	10	11
	A Anything to do with the prescription or something you would get on a prescription?	12	13	14	15	16	17
	B Anything to do with a minor medical matter for example a cough,a cold or an injury?	18	19	20	21	22	23
	C A product which you would normally buy over the counter of a chemist shop?	24	25	26	27	28	29
	D Other Specify						

NOTE Q13 = 6 8 9 or 10

SUBJECTIVE EVAL RELATED SENTENCES				
1	2	3	4	(5)

Q14	Ask-When you talked about (mention topic) did you ask the pharmacist the assistant or both (Q13=11) for information.....or did they start the discussion? Details NOTE Q13 = 7 and/or Q9 = No, Q10 = No, Q11 = Yes	Yes 14 No 14 Both 14 Other 14	1 subject 2 pharm/assist 3 4
Q15	Ask-Although you didn't talk to the pharmacist or assistant about a prescription or something you would get on a prescription, was there <u>anything at all</u> you would like to have asked? Details (of other sentence)	Yes 15 No 15 Other 15	SENTENCES 1 2 3 4 5 6

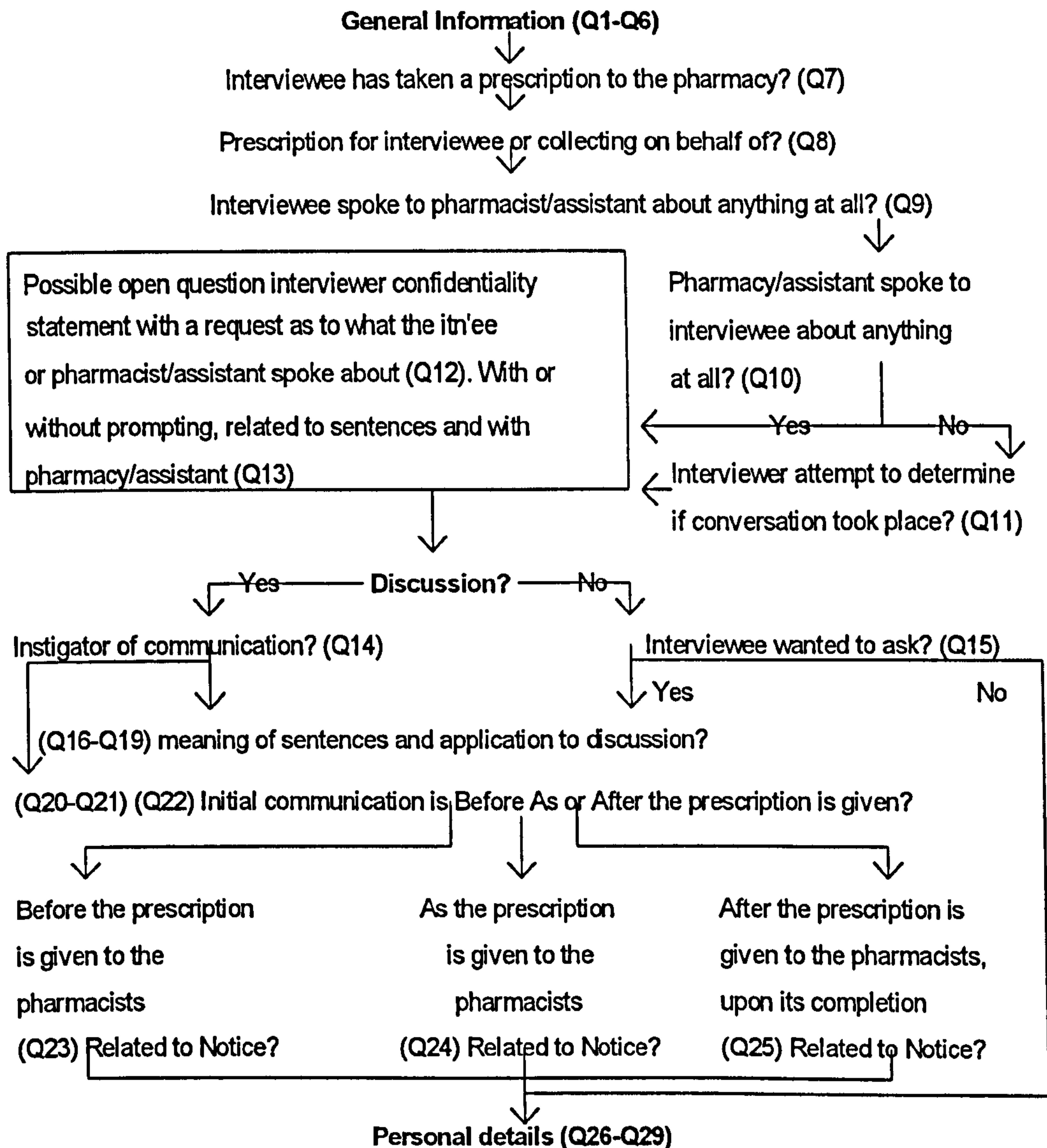
Q16	Interviewer explanation of poster Ask-Would you please suggest any improvements which might be made to the poster? Pause Can you think of different sentences? Details Subjective evaluation of understanding?	Yes 16 No 16 Alter 16 Other 16	SENTENCES -1----2----3----4 Q16 Q17 Q18 Q19 -1----2----3----4 -1----2----3----4 -1----2----3----4
-----	---	---	--

		code	notes
	Note Q20 - Q23 only if Q13 = 6 or 8		Sentences
Q20	Ask-Did one or more of the sentences apply to the discussion you have just had with the pharmacist/assistant about the prescription? Details	Yes 20 No 20 Other 20	1 2 3 4 5 6
	Note Q7 = Yes, Q13=7		
Q21	Ask-Did one or more of the sentences apply to the prescription you have just had made up at the chemist shop? Details	Yes 21 No 21 Other 21	1 2 3 4 5 6
Q22	Ask-When did you first talk about the prescription with the pharmacist /assistant? Was it Before, As or After you gave the prescription in to be made up? Details relative to prescription)	Before 22 As 22 After 22 Other 22	B=1 As=25 A=3 4
Q23	Before-State-In summary then, you first talked with the pharmacist/assistant Before you had given the prescription in to be made up and it was because..... (1) &/or (2) &/or (3) &/or (4) &/or Other Details	Yes 23 Other 23	1 2 3 4 5
Q24	As-State-In summary then, you first talked with the pharmacist/assistant Details	Yes 24	1 2 3 4
Q25	After-State-In summary then, you first talked with the pharmacist/assistant After you had given the prescription in to be made up and it was because..... (1) &/or (2) &/or (3) &/or (4) &/or Other Details	Yes 25 Other 25	1 2 3 4 5
State-It would be very helpful if we knew certain personal information in order to make sure people make the best use of the services available. Of course, any details you give will be kept in the strictest confidence.			
Q26	Ask-May I ask, where do you live? Derby city (DE1)..(1) Derby Suburb..(2) Country Town..(3) Country Village..(4) Other..(5) Specific Location	26	1 2 3 4 5
Q27	Ask-And what is your age? less than 20 (1) 21 - 30 (2) 31 - 40 (3) 41 - 50 (4) 51 - 60 (5) over 61 (6)	27	1 2 3 4 5 6
Q28	Ask-Could you tell, me what is your occupation? (Social class)	28	I II IIIa IIIb IV V
Q29	Ask-And finally, so that we are aware of any duplication, may I have the initials of your name, not your full name just your initials. Could you start with the initial of your first name then middle name(s), if any, then surname?	Yes 29 No 29 N/A 29	/ / / / Z Z O O

NOTES including PRESCRIPTION Item(s)

Figure 23

Flow diagram for baseline advisory activity schedule-structured interview questions



Schedule-structured interview form for 'cued' advisory activity

CONFIDENTIAL

Southern Derbyshire Health Authority
Interview guide place for the general public with poster in place

Questionnaire No	Pharmacy	Case

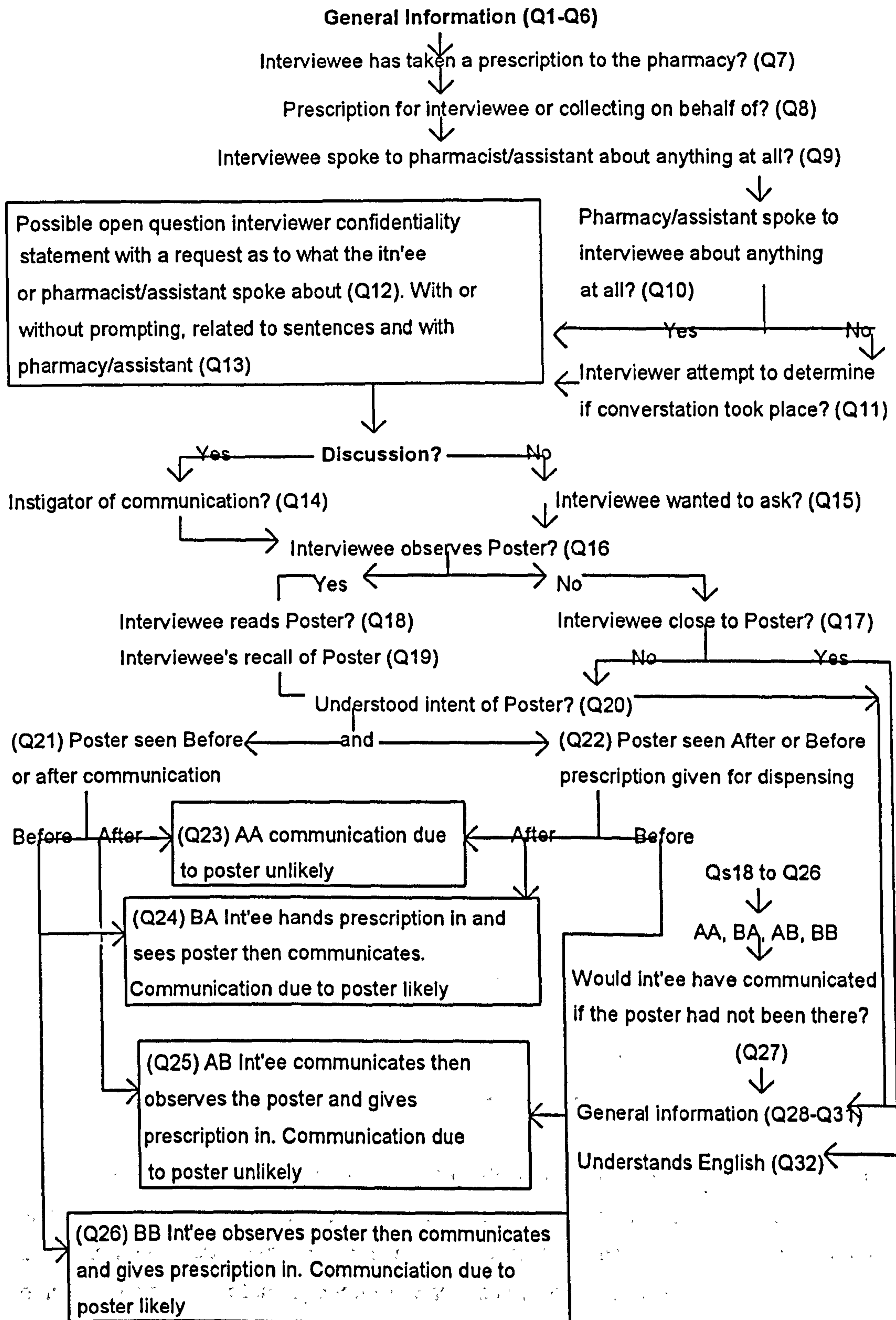
		code		notes																																																		
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Q16	Interviewer explanation of poster Ask-When you were in the pharmacy, did you see (a stand about three foot high) with an official-looking, black and white poster or notice (attached)? Details	Yes 16 No 16 Other 16	1 go to Q18 2 go to Q17 3																																																			

		code	notes
Q17	Say-As you did not see the poster, it has failed to attract your attention. Could you help us by telling me whether you were close to (the dispensary counter) at any time? Details (positional problems).....	Yes 17 No 17 Other 17	1 gp tp Q28 2 Show poster 3 (ask Q20 and go to Q28)
Q18	Ask-Did you read what was on the poster? Details	Yes 18 No 18 Parts 18	1 2 3 4 5 6
Q19	Ask-Can you tell me all you remember about the poster? Sentences Format of notice Position in pharmacy Other	19 19 19 19	1 2 3 4 5 6 7
Q20	Say-Overall, what do you feel the poster was asking you to do? "prompt the general public for advice" Details NOTE Q21 to Q26 if Q13 = 6 or 8	Yes 20 No 20 Other 20	1 2 3
Q21	Ask-Do you remember whether you saw (Q18=Yes, read saw) the poster Before or After your discussion with the pharmacist/assistant about the prescription? Details	Before 21 After 21 Other 21	<u>B=1</u> <u>A=2</u> 3
Q22	Ask-When you saw (read) the poster was it Before or After you gave the prescription in to be made up? Details	Before 22 After 22 Other 22	<u>B=1</u> <u>A=2</u> 3
Q23	State-So that I am clear about this, Ask-You saw (read) the poster After your discussion with the pharmacist/assistant and that was also After you gave the prescription in to be made up? Details	<u>AA (2,2)</u> Yes 23 No 23 Other 23	1 2 3
Q24	State-So that I am clear about this, Ask-You saw (read) the poster Before your discussion with the pharmacist/assistant and that was also After you gave the prescription in to be made up? Details	<u>BA (1,2)</u> Yes 24 No 24 Other 24	1 2 3
Q25	State-So that I am clear about this, Ask-You saw (read) the poster After your discussion with the pharmacist/assistant and that was also Before you gave the prescription in to be made up? Details	<u>AB (2,1)</u> Yes 25 No 25 Other 25	1 2 3
Q26	State-So that I am clear about this, Ask-You saw (read) the poster Before your discussion with the pharmacist/assistant and that was also Before you gave the prescription in to be made up? Details	<u>BB (1,1)</u> Yes 26 No 26 Other 26	1 2 3
Q27	Ask-Please tell me, had the notice not been there, would you have done the same thing? Details	Yes 27 No 27 Other 27	1 2 3
State-It would be very helpful if we knew certain personal information in order to make sure people make the best use of the services available. Of course, any details you give will be kept in the strictest confidence.			
Q28	Ask-May I ask, where do you live? Derby city (DE1)..(1) Derby Suburb..(2) Country Town..(3) Country Village..(4) Other..(5) Specific Location	28	1 2 3 4 5
Q29	Ask-And what is your age? less than 20 (1) 21 - 30 (2) 31 - 40 (3) 41 - 50 (4) 51 - 60 (5) over 61 (6)	29	1 2 3 4 5 6
Q30	Ask-Could you tell, me what is your occupation? (Social class)	30	I II IIIa IIIb IV V
Q31	Ask-And finally, so that we are aware of any duplication, may I have the initials of your name, not your full name just your initials. Could you start with the initial of your first name then middle name(s), if any, then surname?	Yes 31 No 31 N/A 31	/ / / / Z Z O O
Q32	Enquire delicately-I know this may sound terribly impolite but, could you tell me whether you are able to read English? Details (Notes of language ability).....	Yes 32 No 32	1 2

NOTES including PRESCRIPTION Item(s)

Figure 24

Flow diagram for 'cued' advisory activity schedule-structured interview questions



Possible permutations with time:-

- | | | | |
|-------------------------|-----------------------|----------------------|----|
| 1 Communicates, | hand prescription in, | see the poster | AA |
| 2 Hand prescription in, | communicate, | see the poster | AA |
| 3 Communicate, | see the poster, | hand prescription in | AB |
| 4 Hand prescription in | see the poster, | communicate | BA |
| 5 See the poster, | hand prescription in, | communicate | BB |
| 6 See the poster, | communicate, | hand prescription in | BB |

A1.2 Observational study

A1.2.1 Sampling

A list of the community pharmacies holding current contracts with the Family Practitioner Committee on the 11th April, 1988 was obtained. An operational decision was made to restrict, as far as possible, the full time data collection to the calendar year 1988. As the method for the observational study called for two visits to each pharmacy and up to three consecutive days in any week, the worst scenario would be for each pharmacy to require two weeks of research time. With 40 weeks left to the end of the year the least number of pharmacies expected in the study was 20. As not all pharmacies were expected to participate, a 75% response rate was assumed giving a figure of 27 pharmacies to be randomly chosen. It was accepted that all those who agreed to participate would be included in the study, even if data collection extended into 1989.

The method for random selection of observational study pharmacies was to first list the registered pharmacies in alphabetical order of their trading title and assign to each its rank order number between 1 and 105. Each pharmacy was then assigned a second unique number between 1 and 105 which was randomly chosen from standard mathematical tables.⁵⁵² Finally, the first 27 values between 1 and 105 in the random number tables were matched with the second unique figure to determine the observational study pharmacies.

Pharmacies were also randomly allocated to start observation on a particular day of the week. Saturdays were excluded as a starting day to ensure, as far as possible, that consecutive days were observed. First, observational pharmacies were listed in alphabetical order. Then, the days Monday to Friday were allocated numbers one to five. Using random number tables,⁵⁵² the values one to five were randomly selected 27 times and assigned sequentially to the 27 alphabetically sorted pharmacies. A bias towards the beginning of the week was noted with Monday to Wednesday chosen as a starting day for seven, six and six pharmacies respectively compared with Thursday, three and Friday, five.

Display of the poster was randomly allocated to the first or second visit by whether the last digit of the assigned unique random number was even or odd respectively.

As communication concerning prescription medication is most likely when a prescription is dispensed, it was felt necessary to provide guidance on the period of observation in terms of the number of customers who presented or collected prescriptions rather than the number of items dispensed or time spent observing activity. In this way all study CPs were given a minimum opportunity to demonstrate their advisory activity to customers. Unfortunately, figures for the number of individuals who present or collect prescriptions are not known and a decision based on the number of prescriptions dispensed was necessary. Either the mean value or the median for dispensing activity could be used. The most common pharmacy or median would have been the preferable figure, however, available details for Derbyshire dispensing only permitted calculation of the mean. Information from the PPA revealed that,

during the period January to December 1987, an average of 3,577,392 prescriptions and 6,009,061 items were dispensed each month by an average of 2044 Derbyshire FPC accounts. Assuming a 5.5 day working week for 52 weeks a year then the average number of whole prescriptions and prescription items dispensed was 74 and 124 respectively. As stated, in order to correlate numbers of prescriptions with numbers of customers, figures for the proportion of prescriptions per patient would be required. Such detail was not available at the time of this study. Further, it is known that the number of prescriptions dispensed by CPs is skewed. For the year 1989, just over 7% (700) of all pharmacies in England dispensed on average more than 6,000 prescription items per month which accounted for nearly 19% of the total. The median level of prescription dispensing was 2,500 per month.⁵⁵³ Use of the mean value is in this case an overestimate of the median; however, it is unlikely that all customers present single prescriptions which, in part, compensates for the overestimation. For want of an alternative, the figure of 74 prescriptions was used as the minimum number of customers to be observed at each pharmacy for both visits. As it was likely that 74 was still an overestimate, it was anticipated that the majority of pharmacies would be observed for two or more days before and after any study intervention.

A1.2.2 Equipment and piloting

The study method required the taking of field notes and recording of conversations. The technique of recording required the use of radio microphone equipment. A Cygnus series two kit from EDC Elkom Design Ltd of Dorset, England was available until December 1988 from the Derbyshire College of Higher Education's Media Services Department. The system included a remote "CRX" receiver (figure 25) requiring mains power and pocket transmitter using a six volt rechargeable battery. By balancing the audio gain and squelch controls on the receiver the quality and intensity of signal from the transmitter could be maximised. The status display also gave an indication of battery charge in the transmitter. A small microphone attached by a crocodile clip to the pocket or lapel was connected by a cable, which also served as the aerial, to a single input "CTXP/1" transmitter (figure 26) usually placed unobtrusively in the trouser or coat pocket. If the transmitter was left on continuously, a single battery enabled conversations to be recorded for a four hour period. The receiver was in turn connected to a Philips D6920 Mk2 AV Audio Visual portable stereo cassette recorder, which was also mains powered, and subsequently to a set of inconspicuous earphones. By listening to conversations between CPs and individuals the researcher was able to make field note observations and interpretations could be readily verified while a permanent record was being automatically kept.

Figure 25
CRX receiver

Figure 26
CTXP/1 transmitter

It was possible by using the transmitters on/off switch for the CP to cut transmission at any time. For two pharmacies observed in late 1988 and early 1989, a standby radio microphone was used. In these cases the "Audio RM5" manufactured by Audio was used. Here the receiver was powered by a nine volt PP9 batteries and the signal was less clear, however, the transmitter was of a similar size and design. For both sets of equipment the receiver and Philips recorder were concealed in a brown paper box resting on the researcher's knee.

Two piloting exercises were carried out prior to the main data collection. First, a non-sample frame CP, who requested to remain anonymous, agreed to wear the radio microphone for

one day and, for ethical reasons, to display the notice (section A1.2.3, page 173) to those individuals presenting at the dispensary. No comment concerning the notice was recorded or noted in field notes. Only minor format changes to the form for noting observed interactions (section A1.2.3) were required in order to further facilitate data collection. It was considered that the method could cope with considerable increases in PMA associated with advertising the advisory services of the CP. Experience of the use of the radio microphone system was gained. Specifically, the signal was effected when the microphone contacted clothing. Positioning the microphone through a button hole then clipped to one side of a garment was found to be the most effective method of reducing interference. Problems were found with the adjustments necessary to receive a clear signal. Battery power critically effected quality and below 5.5 volts the signal was indistinguishable from background noise. The receiver was not capable of simultaneously operating and recharging batteries for the necessary 14 hours, thus it was necessary to charge the batteries overnight using the receivers attachable battery charger. No problems were found from the CPs' perspective and the system was soon forgotten as the activities of the pharmacy intensified (section A3.3, page 280).

Second, the author undertook two periods of one and two weeks as a locum CP while simultaneously using the developed recording system. A letter of introduction outlined the study (Letter 2, page 172). During this time it was found that conversations could be recorded and details of the prescription taken but time did not allow extensive field notes to be made. It was concluded that the presence of the researcher was required to manage the recording system and take down additional notes. This excluded study designs where the CP was responsible for data collection.

For this and all research conducted using the radio microphone, a £12.50 five year "wireless telegraphy licence" from the Department of Trade and Industry was sought by completion of form BR9. The following letter was sent to CPs to introduce the second piloting exercise.

Letter 2

Letter introducing the author's piloting of the observational method

SOUTHERN DERBYSHIRE HEALTH AUTHORITY

your ref:
our ref:RT1.ltr

District Pharmacy
Derbyshire Royal Infirmary
London Rd
Derby
DE1 2QY
5th April, 1988

Mr A.M.S. Cullen
District Pharmaceutical officer

Dear Pharmacy manager
re:Two week Pharmacy locum

A fully qualified pharmacist with three years relevant experience wishes to spend two consecutive weeks in a series of community pharmacy outlets for the purpose of investigating a health education initiative. The effectiveness of a poster which directs the general public to consult the pharmacist for necessary advice on prescription medication, is being assessed.

The researcher will act as a pharmacy "locum" and will conduct the research in addition to the work requirements of the pharmacy. A fee of £6.00 per hour will be charged by the Southern Derbyshire Health Authority for a 39 hour week. Any time in excess of 39 hours, which is required to fulfil the opening obligations of the Pharmacy, will be undertaken at the same rate but paid directly to the researcher.

The research entails recording patient-pharmacist interactions concerning prescription medication. Patients will ultimately be anonymous and if requested, pharmacies shall not be identified by name. A radio-microphone will be used to tape conversations and a list of details (appendix 1*) kept for each interaction. A similar technique has been used successfully in London to evaluate the Pharmacist's "response to patient's symptoms". Patients will be advised about the recordings by a prominently displayed note (appendix 2*) and the tie microphone will not be concealed from view. The names of patients, initially kept for the purpose of identifying duplication and for earmarking conversations, will be subsequently erased. If the patient requests anonymity the transmitter shall be switched off. A suitable area in the pharmacy may be identified where the researcher can give out each prescription. Patients will be given the opportunity to initiate a request for information from the researcher but if a request is not forthcoming the necessary information shall be imparted.

A baseline for pharmacist-patient interactions will be recorded during one week and similar data collected during a second week when the poster will be on display. The poster shall be randomly selected to appear on the first or second week. Data will be held on a personal computer, accessible only by the researcher and analysed using the SPSS suite of programmes. The results will be forwarded to all participants.

For further details, please contact Mr David Gerrett on Derby 47141 x 2788 or after office hours on Derby 517525.

Yours faithfully,



Mr A.M.S. Cullen
Notes

* = Appendices were taken from the observational study protocol. The signature has been scanned into the presentation from the original letter. The text of the original letter is accurately presented.

A1.2.3 Protocol

The 27 community pharmacies randomly chosen by the process described in section A1.2.1 were visited by the author, advised of the study and provided with a full protocol. The protocol is now presented. First the wording of the letter of introduction (letter 3, page 174), then the protocol itself (protocol 1, page 175) with the form used to record observations, the first section of the attitudinal questionnaire which CPs were asked to complete at the end of the observation period, the poster used to advise the general public and patients of the research and finally the form used for field notes.

Letter 3

Letter of introduction for the observational study*

SOUTHERN DERBYSHIRE HEALTH AUTHORITY

your ref:
my ref:Poster2.ltr

Department of Community Pharmacy
Derbyshire Royal Infirmary
London Rd
Derby DE1 2QY
19th May, 1988

To whom it may concern

re: Response of the general public to a Health Education Initiative

This is to acknowledge that Mr D. Gerrett is conducting research for the Southern Derbyshire Health Authority to determine the response to a health education initiative.

The initiative is a visual display in the form of a poster which directs members of the public to identify themselves to the Pharmacist for information about prescription medication.

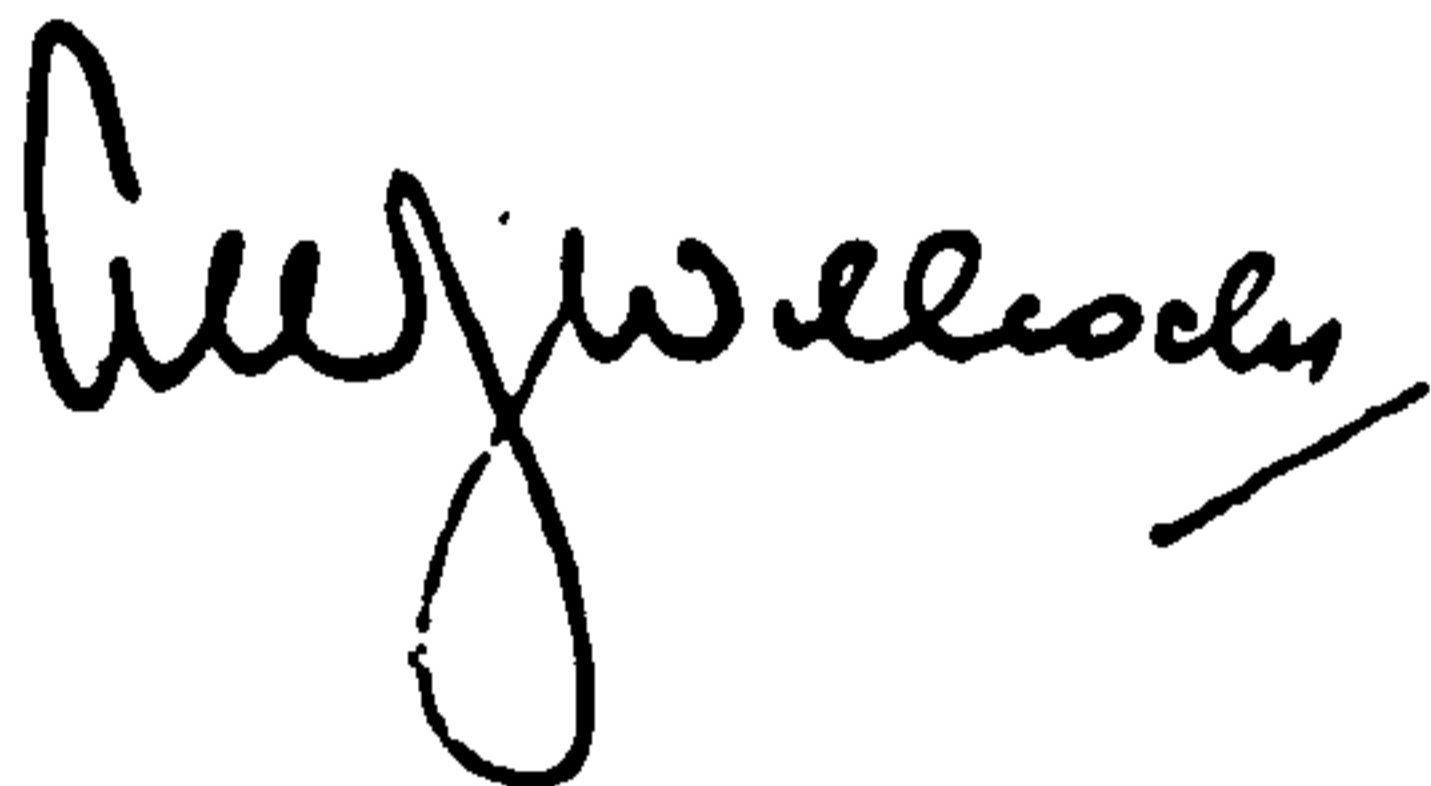
The work is under the supervision of the Department of Social Administration, Nottingham University.

If you have any questions concerning the study please do not hesitate to contact Mr D. Gerrett or Professor Willcocks at the University. The numbers are 0332-47141 x 2788 and 0602-484848 x 3073 respectively.

Yours sincerely



Mr A.M.S. Cullen - District Pharmaceutical Officer, SDHA



Professor A.J Willcocks

Department of Social Administration
Nottingham University

Note

* = Signatures have been scanned in. The content and format of the letter is original.

Protocol for the observational study

PROTOCOL

Researching the effect of a poster to promote pharmacist-patient interactions concerning prescription medication

INTRODUCTION

The Nuffield report ¹ states that community pharmacists should have greater involvement with members of the public (para 3.38) and that personal advice on the taking of medicines should be concentrated on those most likely to benefit from it (para 3.52). The District Pharmacy of the Southern Derbyshire Health Authority recognises the constraints and pressures of community pharmacy and that it is difficult to ascertain the prescription information needs of each and every individual. However, if patients were prompted to identify themselves to the pharmacist as having a problem then valuable time may be saved. With the guidance of Professor Willcocks of Nottingham University, the Department has produced a visual display in the form of a poster. It is hoped that the display will act as a filter by prompting those patients who do require prescription information to ask relevant questions of the pharmacist. A study of the general response to the poster is being conducted in randomly selected community pharmacies in Southern Derbyshire.

METHODOLOGY

The research entails recording patient-pharmacist interactions concerning prescription medication. A radio microphone will be used to tape conversations. A suitable area in the pharmacy will be identified where the researcher will be seated and able to note details of the interaction which are not recorded on tape (appendix 1). Details of the type of pharmacy and information from the pharmacist(s) present (appendix 2) will also be requested. Patients will be advised about the recordings and no attempt will be made to conceal the microphone. A note (appendix 3) will provide this information. The names of patients will be kept initially for the purpose of identifying duplication and for earmarking conversations after which such information will be erased. If the patient requests anonymity the transmitter will be switched off.

Patients will ultimately be anonymous and pharmacies will not be identified by name. Only conversations concerning prescription medication will be recorded.

Pharmacies will be randomly allocated a day in the week. The researcher will document a minimum of 74 patient-pharmacist interactions on this day, continuing into the next day if required to reach the minimum level. Similar data will be collected on the same day(s) a week later. Pharmacies will also be randomly chosen to display the poster on the first or second visit.

ANALYSIS

The data collected will be held on a computer accessible only by the researcher and will be analysed using the SPSS suite of programmes.

RESULTS

If requested, the information related to a particular premises will be available, in confidence, to that pharmacy only.

- (1) Pharmacy: A report to the Nuffield Foundation. The Nuffield Foundation: London 1986

Appendix 1 Confidential Questionnaire for Radio microphone

1. Date 2. Tape number 4. case number

5. Time 3. to..... 6. Mic on [1]/off [2]

7. Identification-gender M [1]/ F[2] 8. Initial tape count "C"

Name Final tape count

INTERACTION

9.1 Subject presents prescription(s)? Y [1] N [2] NS [3]
 2To P [1] A [2] DT [3] O [4] NS [5]
 3 Subject collects prescription(s)? Y [1] N [2] NS [3]
 4From P [1] A [2] DT [3] O [4] NS [5]
 5Prescription for subject? Y [1] N [2] NS [3]
 6 R for person accompanying subject? Y [1] N [2] NS [3]
 7Relevant discussion? Y [1] N [2] NS [3]
 8 Other..... Y [1] N [2]

10. age

11. approx ethnic group Caucasian [1] Oriental [4]
 Afro/Caribbean [2] Other (Mixed) [5]
 Asian [3] NS [6]

12. Notice seen? Y [1] N [2] NS [3] Not Applicable [4] ? [5]

13. INTERACTION	Discussion With				When R given?			Notice Seen			Who Started				
	P	A	DT	O	B	a	A	B	a	A	S	P	A	DT	O
1. Prescription given								1	2	3					
2. What is prescribed	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
3. Specific problems	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
4. What to do with it	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
5. Side effects	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
6. Supply	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
6+ Path	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
7. Minor medical	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
8. Product	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
9. Type Specific problem	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Where P=Pharmacist B=Before B=Before S=Subject
 A=Assistant a=as a=as P=Pharmacist
 DT Disp Tech A=After A=After A=Assitant
 O=Other O=Other DT=Disp Tech
 O=Other

Notes on Prescription

Name

14 Duplication Y [1] N [2] O [3] NS [4]

Address.....

.....

15 Within ward? Y [1] N [2] NS [3]

Prescription item

General Notes M=Male, F=Female, Y=Yes, N=No, NS=Not sure, NA=Not applicable, and, ?=don't know.

Appendix 1 (continued)

Research notes

1.	Date	/ /8	Label
2.	Tape number	side	
	to number	side	
3.	Case number		

4.	Is the premises a.....	Single Independent	[1]
		Branch of a small multiple	[2]
		Company (7 to 20 outlets)	[3]
		Company (21 to 500 outlets)	[4]
		Company (over 1000 outlets)	[5]
		Other (specify).....	[10]

5.	Number of staff in dispensary	P A DT O				P	A	DT	O	Qualifications
	Front shop special area									
	a.....									
	b.....									
	c.....									

6. Opening hours	
M	F
T	S
W	S
T	

7. Photo of the position of the poster. Y [1]/N [2].

8.	Labels	Propranolol tab 90 x 100mg 1 tds	Metronidazole tab 30 x 200mg 1 tds	Pondocillin tab 30 1 tds	Diazepam tab 30 x 2mg 1 tds
----	--------	--	--	--------------------------------	-----------------------------------

9. Customers tend to come from?

10. Position of nearest surgeries?

Diagram of premises indicating poster position, shelving, till(s), special areas, drawn to scale.

General Notes

Appendix 2

SOUTHERN DERBYSHIRE HEALTH AUTHORITY

All information supplied will be kept in the strictest Confidence

Please complete the following questions which will help us determine whether the public's response to the display is related to a particular aspect of the premises and/or the experience of the pharmacist.

Please circle the number in the box adjacent to your answer or write as appropriate. For example, if the premises has a "front shop" area of approximately 30 sq meters you would circle [2] in answer to Q1.

ABOUT the PREMISES

Q1 To enable us to categorise pharmacies by size, would you please indicate the approximate "front shop" floor area of the pharmacy as...

- | | |
|--|-----|
| "Small"....with a front shop floor area up to 25 sq meters | [1] |
| "Medium"...with a front shop floor area 25 to 50 sq meters | [2] |
| "Large"....with a front shop floor area over 50 sq meters | [3] |
| Not sure..... | [4] |
| Don't know..... | [5] |

Q2 What percentage of the overall income of the pharmacy comes from the activities of the dispensary?

- | | |
|------------|-----|
| 0 to 30% | [1] |
| 30 to 50% | [2] |
| 50 to 70% | [3] |
| 70 to 90% | [4] |
| over 90% | [5] |
| Not sure | [6] |
| Don't know | [7] |

ABOUT the PHARMACIST

Q3 Please indicate your Gender Male [1] Female [2]

Q4 Your date of birth/..../19

Q5 Please indicate where applicable, what total time (in years or fractions of a year) you have spent as a registered pharmacist in:

- (a) Community Pharmacy.... (years) (d) Academia ... (years)
(b) Hospital Pharmacy (years) (e) A related field ... (years)
(c) Industry (years)

Q6 Is your relationship with this pharmacy as...

- | | |
|------------|-----|
| Manager | [1] |
| Proprietor | [2] |
| Locum | [3] |
| Other | [4] |

If other (please specify).....

Q7 In the capacity mentioned in Q6 above, how long have you been involved with this particular pharmacy?.....(years)

Please turn to the second page and complete Q8 to Q23.

Questions 8 to 23 relate to pharmacists thoughts on patients counselling. As initial responses are required, this section of the study can't be given to participants until after the two data collection visits. We hope you will understand and bear with us in this matter.

Dear Customer

In order to make your visit to the Chemist more worth-while, the Southern Derbyshire Health Authority is looking into the sort of information you require. Many discussions take place so the Pharmacist is wearing a recording device. Any information collected will be kept in the strictest confidence and no customer will be ultimately identifiable. If you have any doubts or worries please do not hesitate to talk to the pharmacists concerning the recording device as it may be switched off.

Thank You

Note

***= The size of the notice has been reduced to 71% of the original A4 to enable printing within the margins dictated for thesis submission.**

A1.2.4 Exclusions

It was noted in section 4.5 page 107, that the three randomly chosen pharmacies owned and managed by Boots the Chemist Ltd did not participate in the main observational study. Similar exclusions applied to the radio microphone research conducted by Smith.³⁹⁶ Prior to randomisation, a meeting was arranged between the author and Mr Donald Crosslands, then superintendent pharmacist in charge of the study pharmacies. The protocol (section A1.2.3, page 173) was discussed and, unfortunately, no agreement was reached which would have enabled the study to take place, although, as a fall back position use of the schedule-structured interview method (section A1.1, page 159) was permitted. The result of this conversation was conveyed in Letter 4 (page 181).

Of the 24 remaining CPs, four were approached but did not participate in the observational study. One male was under pressure from the Department of Inland Revenue for tax evasion and, before the end of 1988, suffered a stroke. Another pharmacy was entirely staffed by locum CPs and there was no guarantee that the same CP would be available for two consecutive weeks. This was the case on three separate visits to negotiate participation in the observational study. One male CP in charge of the dispensary was restricted by his proprietor superintendent from participating and one female CP dispenser simply refused.

Letter 4

Letter confirming non-participation of Boots the Chemist Ltd outlets in the observational study

SOUTHERN DERBYSHIRE HEALTH AUTHORITY

your ref:
our ref:Boots2.ltr

Drug Information Centre
Derbyshire Royal Infirmary
London Rd
Derby, DE1 2QY
31st May, 1988.
96-47141 x 2788

Mr D.M. Crosslands
Superintendent Pharmacist
The Pharmacy Superintendents Office
The Boots Company PLC
Nottingham, NG2 3AA

Dear Mr Crosslands

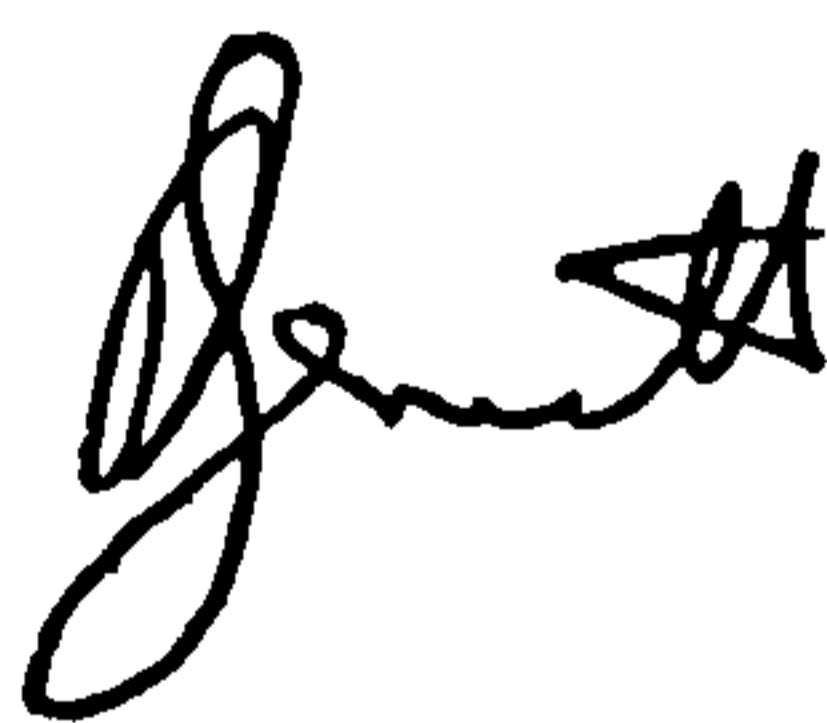
re:Health Education Initiative Study

Thank you for our discussions of the 12th April, 1988. We were considering my request for permission to approach Boots managers concerning the effect of a health education initiative. The initiative, as you recall, is in the form of a poster which directs members of the general public to consult the Pharmacist if they have a question about prescription medication. A copy of the particular poster which will be on display is attached (appendix 1*). I would ask you not to present this final format to widely until all the data has been collected as it may introduce a further variable which would be difficult to analyse. Data collection will be complete by December this year.

Please find attached (appendix 2) the addresses of the three establishments of the "large community pharmacy company" which were selected in the random sample of Pharmacies in Southern Derbyshire. I understand that you might be able to inform these branches about the research but that the final decision as to whether they participate in the study will be left to each manager. Also, that the technique of assessment will be by questionnaire not by radio microphone. Would you please confirm that I have your permission to approach each of the pharmacies concerned.

The results of the study will be forwarded to you in due course.

Yours sincerely



Mr D. Gerrett - Staff Pharmacist Health Education, SDHA

cc Mr A.M.S. Cullen -
Professor A.J. Willcocks -

District Pharmaceutical Officer, SDHA
Nottingham University, Department of Social Administration

Appendix 2

Boots the Chemist Ltd
507 Nottingham Rd
Chaddesden Rd
Derby
DE2 6NA

Boots the Chemist Ltd
122-124 Bath St
Ilkeston
Derbyshire
DE7 8FF]

Boots the Chemist Ltd
5 Shardlow Rd
Alvaston
Derby
DE2 0JG

Notes

* = Appendix 1 was poster C, page 213

A1.2.5 Sample

In table 11 immediately following this section, Community pharmacies who participated in the observational study have been arranged in alphabetical order from one to 20. Non-participants are similarly arranged from 21 to 27. Details of the CP in charge of the dispensary during the observational study or to whom advances to participate in the research were made, have been listed. Inspection indicates a spread in each category as would be expected from a random sample. Section A2.2.1.1-4 analyses the details in relation to responses to an attitudinal survey and the findings of the observational study. Of the 20 pharmacies participating in the observational study 11 (55.0%) were located outside the Derby city boundary. This figure can be compared to 57 (54.3%) in the sample frame of 105 pharmacies who were similarly located and 301,403 (58.4%) for the population resident in this area as of the 1981 Census. This figure was not calculated on mid-year estimates as the Southern Derbyshire boundary cuts a West Derbyshire ward, and a multiplication factor of 0.353 for the population in this ward to account for the population resident within the borders of the Southern Derbyshire Health Authority was only known for Census data.

Clearly, the balance of participants in the observational study were representative of community pharmacy in Southern Derbyshire and at a general level, the population they serve. The prescription medication advisory activity of the study CPs, when divided into proactive and reactive groups according to section A3.1.2 and by their advisory activity as a percentage of preparation events (section A3.1.3.1, page 249), was not found to be statistically related to CPs' age, whether they were managers or proprietor/managers, or whether the pharmacy was an independent or part of a multiple chain, proximity to the surgery, or whether located within the boundary of Derby city (table 12, page 185). However, if proactive and reactive types are considered ordinal in the sense of decreasing advisory activity, similarly, that there is an order to managers and proprietor/managers and proximity to the surgery, then the common Gamma values of -0.71429 and Somers' D of -0.41667 (table 12, page 185) provides evidence of ordinal associations. These figures imply that as CPs have greater personal involvement in their pharmacies or the pharmacy is located further from the surgery, advisory activity increases.

Table 11

Details of the 27 pharmacies and community pharmacists in the observational study

Pharmacist Number	Attitudinal questionnaire details				CP's details*			Pharmacy detailst				Notes
	Observed 1-20	Responded to 1st q'aire	Responded to 2nd q'aire	Before and After response	Gender	Age (years)	Community Experience (years)	Hospital Experience (years)	Manager (M) Proprietor/M	Independent Multiple	City Country	
1	Yes	New to area	Yes	Not possible	Female	23.05	0.3	0	M	Multiple	City	New to pharmacy§
2	Yes	Yes	Yes	Yes	Male	34.11	2	8	M	Multiple	Country	
3	Yes	Yes	Yes	Yes	Male	36.93	10	0	M	Multiple	Country	
4	Yes	Yes	Yes	Yes	Male	59.11	31	0	P/M	Independent	Country	
5	Yes	Yes	Yes	Yes	Male	30.25	3.5	3	M	Multiple	City	
6	Yes	Yes	Yes	Yes	Female	29.09	6	0	M	Multiple	City	New to pharmacy§
7	Yes	Yes	Yes	Yes	Male	35.61	3.5	0	P/M	Independent	City	
8	Yes	Yes	Yes	Yes	Male	57.97	34	2	P/M	Multiple	City	
9	Yes	Yes	Yes	Yes	Male	57.51	33	1	P/M	Multiple	Country	
10	Yes	New pharmacy	Yes	Not possible	Male	30.95	8	0	M	Multiple	City	
11	Yes	No	Yes	No	Female	28.52	6	0	M	Multiple	City	
12	Yes	Yes	Yes	Yes	Male	33.56	10	1	M	Independent	Country	
13	Yes	Yes	Yes	Yes	Male	53.64	29	2	P/M	Independent	Country	
14	Yes	Yes	Yes	Yes	Male	37.93	13	0	P/M	Independent	Country	
15	Yes	New to area	Yes	Not possible	Male	33.69	9	0	P/M	Independent	City	
16	Yes	New pharmacy	Yes	Not possible	Male	35.53	2	11	M	Multiple	Country	
17	Yes	New to area	Yes	Not possible	Male	22.47	1	0	M	Multiple	City	
18	Yes	Yes	Yes	Yes	Male	59.94	33	0	P/M	Independent	Country	
19	Yes	Yes	Yes	Yes	Male	68.28	42	1	M	Multiple	Country	
20	Yes	New Pharmacy	Yes	Not possible	Male	26.07	3	0	M	Multiple	Country	
21	No	Yes	No	No	Male	41.74	18	0	P/M	Independent	City	Excluded
22	No	Yes	Yes	Yes	Female	37.36	14.25	0	M	Multiple	Country	Excluded
23	No	Yes	Not possible	Not possible	Male	51.97	28	0	M	Multiple	City	Excluded
24	No	Yes	Not possible	Not possible	Male	34.41	8	0	M	Multiple	City	
25	No	No	Yes	No	Male	57.28	34	0	P/M	Independent	City	
26	No	Yes	Yes	Yes	Male	31.57	10	0	P/M	Independent	Country	
27	No	No	No	No	Female	?	?	?	Dispenser	Multiple	Country	

Notes

* = Age calculated for Numbers 1 - 20 on the last day of observation and for 21-27 on the final day of data collection 13th February, 1989.

† = Location 'City' includes premises within the Derby city boundary, those elsewhere are labelled 'Country'.

‡ = Community pharmacists had been relocated outside the SDHA boundary.

§ = These CPs were new to the observational study pharmacy but had practised within the SDHA at another site and their details were known from the first survey of CPs and pharmacies

¶ = A large multiple where participation was excluded by senior management.

Table 12

Analysis of details of the 20 pharmacies and community pharmacists in the observational study

	Independent Variable									
	Age in years* ≤50	>50	Type of pharmacy Multiple	Independent	Relationship to pharmacy Manager	Proprietor	Location City	Country	Proximity to surgery in yards ≤100	>100
Advisory activity†										
PMA >6.7%	6	3	5	4	4	5	5	4	4	5
PMA <6.2%	8	3	8	3	8	3	4	8	8	3
Fisher's Exact test?	1.0000		0.64241		0.36185		0.65342		0.36185	
Type of CP‡										
Proactive	6	4	6	4	4	6	5	4	4	6
Reactive	8	2	7	3	8	2	4	8	8	2
Fisher's exact test§	0.62848		1.0000		0.16980		1.0000		0.16980	
Gamma					-0.71429				-0.71429	
Somers' D					-0.41667				-0.41667	

Note

- * = Age, as expected from chapter one, was found to be bimodal with six CPs in their late fifties and the remainder in their mid forties or younger.
- † = Advisory activity was determined as in section A3.1.3.1. page 249
- ‡ = Type of CPs was determined as in section A3.1.2. with the CPs in charge of pharmacy number nine included as proactive.
- § = Fisher's exact test two-tailed.

APPENDIX 2 SUPPORTING STUDIES

A2.1 Foreward

This section considers two separate studies which support the main observational study in appendix three. Each section is presented as an individual study with an aim, specific objectives, method, results and summary. In each case responders and non-responders are compared for relationships with the available epidemiological variables. Analysis is presented which tests for links between responses and epidemiological variables.

Section A2.2 combines the results of four separate episodes of data collection into an analysis of the attitudes of specifically CPs towards advice. The studies include two piloting exercises and two attitudinal studies, 1987 and 1988.

Section, A2.3 details the development of four posters advocating the CP as a source of advice. Quantitative analysis of customers' opinions of each poster leads to the selection of a single display which is most likely to effect their advise seeking behaviour.

A2.2 Attitudes of community pharmacists

A2.2.1 Aims, objectives, method

This section concerns the aims, objectives and method used in studies of CPs' attitudes to the provision of advice.

Aim To differentiate CPs by their attitudes to the provision of advice and relate CPs' attitudes to direct observations of their activity.

Specific objectives of research conducted

1. To develop a set of statements which differentiate and determine CP's attitudes towards patient counselling.
2. To examine associations and differences between CP's attitudinal responses and epidemiological variables.
3. To compare the attitudes of CPs' participating in the observational study with those of the remaining sample frame.
4. To compare responses with observed activity.

Method

Commencing in January 1987, an attitudinal questionnaire was developed which would fulfil the aim and objectives of the study. Sixteen statements concerning CPs' positive or negative attitudes towards the provision of advice were designed and responses investigated. Positive attitudes were; to consider the provision of such advice as a worthwhile professionally-orientated activity all CPs should undertake proactively whatever the circumstances. Details of the piloting process are given in section A2.2.2. The final version was given to CPs on two occasions, the 1987 and 1988 attitudinal studies.

As the study aim was to determine absolute differences in attitudes to the provision of advice as a professional activity in a business setting, an operational decision was made to first exclude from quantitative analysis statements where over 20% of respondents were undecided. Following this, responses from individuals who were undecided for more than 25% of the remaining statements were excluded. The common methodological practice of scoring attitudes, summing, comparing distributions for reliability then ranking respondents and determining correlations with demographic and activity variables was not considered acceptable as outlined in chapter four section 4.6 (page 113). In addition, a short readily completed questionnaire was thought essential to achieve a usable response. Thus, respondents were not asked to report the difficult task of quantifying the interval between, for example, agree and strongly agree which would have enabled individuals' responses to be weighted and arguably produced interval level responses. Having indicated the statistical stance taken, analysis of was limited to ordinal associations such as Gamma⁴⁰⁷ and Somer's d.⁴⁰⁸

The 1987 attitudinal study's sample frame consisted of the CPs associated with the 95 pharmacies situated within the borders of the Southern Derbyshire Health Authority, having

contracts with the Derbyshire Family Practitioner Committee on the 18th May 1987. Over the next four months, each pharmacy was visited by the author who introduced himself to the CP in charge of the dispensary at the time of the visit as a colleague based at the Derbyshire Royal Infirmary with an interest in health education who was seeking their thoughts on patient counselling. Attitudinal questionnaires and a stamped self-addressed envelope were left with the CP seen on the day of the visit who was asked to distribute additional copies to all other CPs associated with the dispensary with the exception of 'one-off' locums. Details of the pharmacy, the CP seen and CPs associated with the pharmacy were noted.

Analysis of 1987 results was in four parts. First, personal and workplace details of respondents and non-respondents seen during the data collection visit were compared. Second, statements were altered to agree with the attitude of the majority of respondents to provide an overall picture of the attitude of CPs. Third, opposites of attitude were investigated for association with demographic variables. Fourth, internal correlations were tested using association measures for variables with ordered categories.

The 1988 attitudinal study's sample included the 20 pharmacies participating in the observational study having contracts with the Derbyshire Family Practitioner Committee on the 17th May 1988. Fourteen of these were included in the 1987 attitudinal study. The random sampling procedure and details of the pharmacies and CPs involved in this study are provided in sections A1.2.1 to A1.2.5.

Analysis of the 1988 attitudinal study was in five parts. First, personal and workplace details of CPs participating in the two attitudinal studies were compared. Second, absolute attitude responses were similarly compared and reliability tested by investigating changes in attitude with time using responses from the 14 CPs common to both attitudinal studies. To determine any divergence in attitude between the 1987 and 1988 attitudinal study groups, the distributions of responses for both studies were also compared. Third, the attitude responses of the 20 respondents were investigated for dependence and association with demographic variables. Fourth, a valid basis for interpretation of the direction and strength of absolute attitudes was provided by correlation with observed activity. Fifth, CPs' estimated activity was validated by correlation with observed activity. The former estimate was then used to interpret responses for those CPs' common to both attitudinal studies and the results of the 1987 study.

A2.2.2 Pilot

This section deals with the piloting process used in the development of the attitudinal questionnaire. Initially the available literature is described and inspected for themes which may divided CPs by their attitude to counselling. The development and piloting of statements tapping these themes is then reported and finally summarised.

Only one study is available which reported the frequency of pharmacists responses to attitudinal statements on generic patient counselling.⁵⁵⁴ The sample frame consisted of pharmacists in New South Wales, Australia from which a total of 1364 replies, representing 68% of all pharmacies surveyed, were received. Inspection of the raw data revealed five out of 29 statements where responses were divided by a minority of greater than 20%. These could be grouped under three themes, professionalism, remuneration and the practical aspects of counselling. Table 13 shows the specific statements and frequency of responses reported by the study under these three headings.

Table 13

Pharmacist's attitudes to counselling

Statement	Frequency of response*				
	1	2	3	4	5
Professionalism					
I am worried about contradicting doctors	21	257	186	659	241
Remuneration					
I am not paid for counselling	99	215	120	525	405
Practical aspects of counselling					
There is a lack of feedback from people	31	419	218	560	136
counselling may not be necessary	25	377	176	532	254
I should not counsel without adequate medical history	115	436	195	510	108

Note

* = Category of response 1=Strongly agree, 2=Agree, 3=Uncertain 4=Disagree, 5=Strongly disagree. n=1364.

Acknowledgement: selected results from Oritz M, Thomas RE, Walker WL, Beed TW.⁵⁵⁴

The study assumed interval level responses, summed scores and reported a small but statistically significant positive correlation between attitudes and stated behaviours. No correlation with observed activity was reported.

An assumption was made that CPs in the attitudinal studies would be divided by statements which tapped these same three themes. Sixteen statements (Q8 to Q23, first pilot table 15, page 193) were composed and positioned after seven questions asking for epidemiological and factual information plus one requesting a subjective estimate of counselling activity

(form 3, page 194). As the objective of the statements was to divide respondents by their absolute attitudes, an operational decision was taken to use the term 'undecided' as the middle option rather than 'uncertain' as used by Ortiz. It was felt the former term was more definitive and that the latter was more likely to lead respondents with no immediate response to waver and possibly record an unintentional absolute attitude. The statements were randomly assigned a sequence and the total questionnaire piloted with seven hospital pharmacists and one CP on the 26th March 1987. The CP practised outside the sample-frame area for the attitudinal studies.

Four statements (table 15; Q8, Q15, Q20, Q23) appeared likely to divided CPs and were incorporated in a second pilot. Three statements produced absolute responses (QA, QB, QC) and were discarded. Two further statements (Q11, Q12) were associated with absolute attitudes, however, an exaggerated response may have been produced by the bias of hospital pharmacists who are salaried and have a captive audience to advise, thus these questions were passed through, after improving their clarity, and re-piloted with a more homogeneous sample. Notice was taken of the implication of this result and responses in the full study from CPs with hospital experience were compared with their colleagues. Two statements concerned CPs and postgraduate education (Q14a, Q14b). Five respondents were undecided with the second statement which was discarded and the first was incorporated in the second pilot. Statement Q19 was altered for the second pilot to include a measure of how much information CPs felt GPs should provide patients. Two statements (Q21a, Q21b) concerned the availability of CPs for advice. As two respondents were undecided with the second statement and the separation was not as even, the first statement was used in the second pilot, although, 'continuously' was altered to 'always' as it was felt to be less suggestive that 'availability' was synonymous with 'burden'. Three respondents were uncertain for statement Q18 and only the CP disagreed. The context was altered to examine whether successful communicators could be 'made' by the currently popular postgraduate educational programmes in communication skills or whether it was a matter of genetics. A second related question (Q13) was added in the second pilot to determine whether respondents felt such programmes were in any way effective. Discussion with respondents after completion of the first pilot indicated that all questions were clearly understood and answered within a framework of issues recognised by the researcher and related to current literature and debate; however, concern was noted as to whether a mechanism for remuneration of counselling activity could be devised. Statement Q10 was reformulated to include a payment based on individual activity and re-piloted.

Twenty-one CP who indicated they would attend a one day seminar on patient counselling, held in northern Wales on Sunday 12th April 1987, were mailed the second pilot questionnaire with a reply self-address envelope prior to the event. All practised outside the sample-frame area for the main attitude study. Fourteen responses were received (66.6%) and all respondents attended the seminar. Non-responders included four males and three females who failed to attend on the day. One respondent defaulted on two statements,

commenting that for Q19 'Both should be regarded as equal' and for Q21 that 'If this condition arises, then ample remuneration for a second pharmacist should be made available'. As both statements divided the remaining respondents with few undecided, they were not altered in light of these isolated comments. Six respondents were undecided for the revised version of Q10 and were specifically approached during the seminar to discuss this result. The revised statement was perceived to have two dimensions. First, whether there should be a payment for the advice service CPs provide and second, the mechanism of assessment. Discussion led to the additional statement 'Pharmacists should be paid for the counselling service they provide' which would precede a revised Q10, 'If pharmacists received a payment for counselling, the amount involved should be calculated on a sliding scale which depended on the number of patients counselled'. Although statements Q13 and Q14 showed consistently absolute responses, they were included in the final version as markers to indicate whether respondents had read the statements and were discriminating in their responses. No other difficulties were expressed for either completion of the questionnaire or interpretation of the statements and the pattern of responses was consistent with the first pilot; thus, the second pilot with these revisions was used in both 1987 and 1988 attitudinal studies (table 20).

To determine whether the statements reliably tapped diverse but entrenched attitudes, a follow-up using the second pilot questionnaire was conducted after seven months. As in the second pilot, nineteen CP practising outside the sample-frame area for the main attitudinal study were mailed the second pilot questionnaire with a reply self-addressed envelope prior to a one day seminar on patient counselling held in northern Wales on Sunday 15th November 1987. Thirteen responses were received (68.4%) and all respondents attended the seminar. Table 19 indicates the epidemiological similarities of the second pilot and follow-up study respondents. Table 15, page 193, indicates the similarity of distributions for each attitudinal statement, with the sole exception of Q10 where there was a distinct shift in attitude with time.

In summary, published results of CPs' attitudes to patient counselling served as a basis for likely themes which would divide respondents into two groups. Initial piloting of statements tapping these themes was followed by a more extensive second pilot of revised statements which resulted in slight modifications but only major revision of one statement. A measure of reliability was indicated by the similarity of the second pilot responses to a matched follow-up group. An exception was a statement concerning the mechanism of payment for individual CP's prescription medication advisory activity. Empirical validity was confirmed in discussions between the researcher and respondents concerning the attitudinal basis of their responses.

Table 14

Comparison of piloting samples*

Variable	Second Pilot n=14	Follow-up n=13
Gender	Male	9
	Female	5
age	38 ± 13 (22-65)	45 ± 14 (21-64)
Experience in community pharmacy relationship with pharmacy.	14 ± 14 (<1-42)	18 ± 16 (<1-40)
Manager	3	0
Proprietor	5	4
Other	6	9
<u>Type of outlet</u>		
Single independent	7	7
Branch 1-7 outlets	0	2
Branch >7<1000 outlets	2	0
multiple >1000 outlets	4	3
other	0	1

Notes

* = Time variables in years at the time of the study, ± one standard deviation with the range given in brackets.

Table 15

Responses to pilot attitudinal questions

	1	2	3	4	5†		12th April 1987 n=14	15th November 1987 n=13		1	2	3	4	5†
(1)							Professionalism	Professionalism						
Q14a	5	2	1				Pharmacists repeatedly communicating incorrect information should undertake post-graduate education.	Pharmacists repeatedly communicating incorrect information should undertake post-graduate education		7	6	1		
Q14b	2	5	1				Pharmacists should undergo periodic tests of their pharmaceutical knowledge.			6	7			
Q19	5	2	1				Patients should get drug therapy information from their General Practitioner.	General Medical Practitioners should be the patients' main source of drug therapy information		2	3	3	8	1
								Patients expect too much from the pharmacist‡		5	2	4	7	2
(2)							Remuneration and Professionalism	Remuneration and Professionalism						
Q10	1	2	2	3			Pharmacists who counsel patients should be individually remunerated.	There should be a specific payment to general practice pharmacist who counsel over a given number or percentage of appropriate patients entering their pharmacy		3	3	6	1	4
Q11			2	6			Pharmacists have done the profession a disservice by counselling patients free of charge.	By continuing to counsel patients free of charge, pharmacists will do the profession a service		2	2	1	10	1
Q20	1	4	1	2			Financial reward should be secondary to professionalism.	Financial reward should be secondary to professionalism‡		2	5	3	3	3
(3)							Practical aspects of PMA	Practical aspects of PMA						
Q8	3	1	4				If everyone consulted a pharmacist when collecting their dispensed medicines, health care would improve overnight.	If everyone consulted a pharmacist when collecting dispensed medicines, health care would improve overnight.		2	8	3	1	3
Q12			6	2			Patients should bear the responsibility for indicating whether they require counselling.	Patients who require counselling are expected to ask for advice		2	7	2	10	2
Q15			3	3	2		It is difficult for a pharmacist to identify patients who need counselling.	Training pharmacists in communication skills makes them better counsellors		3	4	9	5	7
Q18			1	3	3	1	Some people seem to be born with communication skills.	It is difficult for a pharmacist to identify those patients who need counselling		6	3	7	1	1
Q21a			2	5	1		Being continuously available to talk to patients in a pharmacy is unrealistic.	There are enough general practice pharmacists to counsel adequately those patients who require advice.		1	4	4	4	1
Q21b			1	2	4	1	Pharmacists cannot always be available to talk to customers.	It is reasonable for pharmacists to manage a pharmacy and still maintain their pharmaceutical knowledge.		2	5	2	4	4
Q23			3	1	4		Supervision of dispensing is the pharmacist's first priority.	Good communicators are made not born		3	8	1	3	3
QA	2	6					Drug information should be provided in various languages.	Being always available to talk to patients in a pharmacy is unrealistic		4	4	4	6	6
QB	1	7					The public don't realise how much a pharmacist could contribute to the effective use of prescribed medication.	Supervision of dispensing is the pharmacist's first priority		5	4	2	5	2
QC					2	6	Communication skills are not particularly important in general practice pharmacy			2	8	1	1	3

Notes * = Statements are arranged under the three themes and assigned the number which relates closest to the order and version in the final study, for example, Q14 was derived from Q14a and Q14b.
 † = Category of responses 1 = Strongly agree, 2 = Agree, 3 = Undecided, 4 = Disagree, 5 = Strongly disagree. Figures represent the number of CP replying in each category. Figures underlined include responses from the non-sample frame, pilot, CP. See table 14 for details of the second pilot and follow-up groups.
 ‡ = One missing response in the distribution.

SOUTHERN DERBYSHIRE HEALTH AUTHORITY

[] []

QUESTIONNAIRE for PHARMACISTS

This questionnaire is CONFIDENTIAL.

Please complete the following questions concerning patient counselling by circling the number adjacent to your answer or indicating as appropriate. Confidential information has been requested in order to avoid future duplication.

Q1 Please indicate your marital status? Single 1 Married 2 Other 3

Q2 Please indicate your title? Dr 1 Mr 2 Mrs 3 Ms 4 Miss 5

Q3 What is the initial of your surname? []

Q4 What is your date of birth? .../.../19...

Q5 In which type of pharmacy do you currently work?

- Single independent 1
Branch of small multiple [1 to 7 outlets] 2
Branch of multiple [>7 but <1000 outlets] 3
Branch of multiple [>1000 outlets] 4
Other 5

If other, please specify.....

Q6 As a registered pharmacist, What total time - if at all- have you spent in:

- (a) General practice (retail) pharmacy? (years)
(b) Hospital pharmacy? (years)
(c) Industry? (years)
(d) Any other related field? (years)

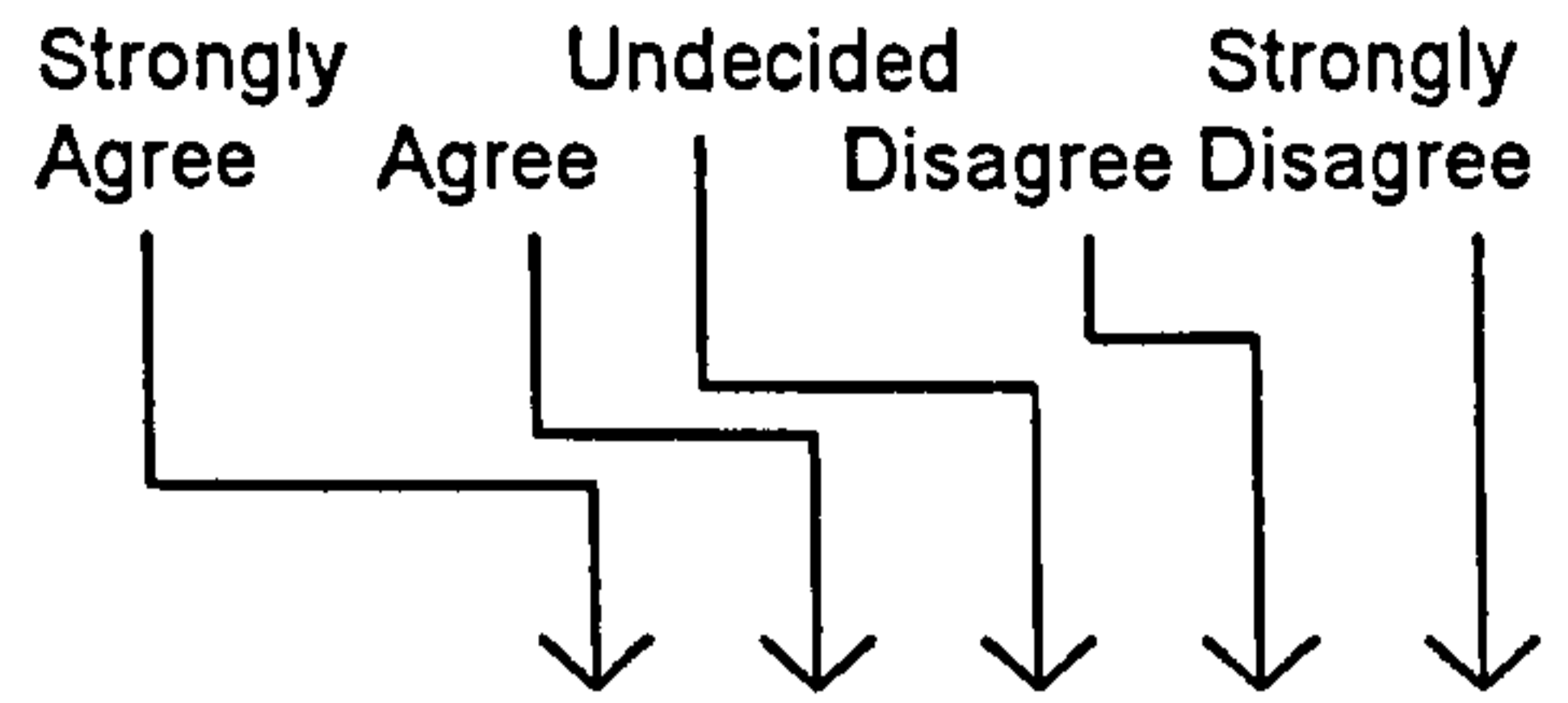
Q7 If counselling is defined as "the provision of any advice given to a patient concerning prescription medication", then -

- On average, during general practice (retail) pharmacy business hours, what percentage of available time do you estimate you spend "counselling" patients?

..... %

ANY COMMENTS:

Please complete Q8 to Q23 by circling the number which corresponds to your **INITIAL RESPONSE**. Indicate whether you; strongly agree (1), agree (2), are undecided (3), disagree (4) or strongly disagree (5) with the statements below.



Q8	If everyone consulted a pharmacist when collecting dispensed medicines, health care would improve overnight.	1	2	3	4	5
Q9	Pharmacists should be paid for the counselling service they provide.	1	2	3	4	5
Q10	If pharmacists received a payment for counselling, the amount involved should be calculated on a sliding scale which depended on the number of patients counselled.	1	2	3	4	5
Q11	By continuing to counsel patients free of charge, pharmacists will do the profession a disservice.	1	2	3	4	5
Q12	Patients who require counselling are expected to ask for advice.	1	2	3	4	5
Q13	Training pharmacists in communication skills makes them better counsellors.	1	2	3	4	5
Q14	Pharmacists repeatedly communicating incorrect information should undertake post-graduate education.	1	2	3	4	5
Q15	It is difficult for a pharmacist to identify those patients who need counselling.	1	2	3	4	5
Q16	There are not enough general practice pharmacists to counsel adequately those patients who require advice.	1	2	3	4	5
Q17	It is reasonable for pharmacists to manage a pharmacy and still maintain their pharmaceutical knowledge.	1	2	3	4	5
Q18	Good communicators are born not made.	1	2	3	4	5
Q19	General Medical Practitioners should be the patients' main source of drug therapy information.	1	2	3	4	5
Q20	Financial reward should be secondary to professionalism.	1	2	3	4	5
Q21	Being always available to talk to patients in a pharmacy is unrealistic.	1	2	3	4	5
Q22	Patients expect too much from the pharmacist.	1	2	3	4	5
Q23	Supervision of dispensing is the pharmacist's first priority.	1	2	3	4	5

COMMENTS:

A2.2.3 Results

This section details the results of the 1987 and 1988 attitudinal studies in the order listed in subsection A2.2.1 (page 187) under the heading method.

Analysis of 1987 results.

Ninety-five addresses were listed as having pharmacy contracts with the Derbyshire FPC on the 18th May 1987. One was a pharmacist, not a pharmacy, who asked to be placed on the register in order to receive information bulletins, two pharmacies had ceased to trade and one could not be located. Of the 91 pharmacies remaining, 71 responses were received from CPs in charge of the dispensary at the time of the visit. Analysis for generalisability of specific variables included comparison of the distributions of the CPs seen who responded and those seen who did not. No dependence on gender or status in relation to pharmacy management was demonstrated. Similarly, no association was noted between the type of pharmacy, independent or multiple and whether a response was received (table 16, page 199). Excluding 'one-off' locums, the 91 pharmacies were associated with 114 CPs of whom 89 (78%) replied, representing 76 pharmacies. Exclusions included; three respondents who were undecided for greater than 25% of remaining statements and one pre-registration CP leaving 85 responses for analysis. Of the 85, comparison of the distributions of the 66 respondents who were seen and responded and the 19 who were not seen but responded showed no dependence on gender, status, age or type (table 17, page 199). These results indicate that the results of the 85 respondents may be generalised to the sample frame for these variables.

Using the frequency of responses from the 85 respondents, the revised second-pilot statements were reoriented to reflect the majority view. Statements were listed under the three sub-themes of; (1) professionalism, (2) remuneration and professionalism and (3) practical aspects of advice (table 18, page 200). Over 20% of the 85 respondents were undecided for statement Q10 and it was excluded from further quantitative analysis. Qualitative inspection shows a majority belief that benefits were derived from advice and that such 'free' counselling promoted the profession. They felt this activity should be remunerated but were undecided as to whether payment should be related to the number of patients counselled. Respondents considered it was reasonable to manage a pharmacy and maintain their knowledge base with mandatory post-graduate education for those who fail to communicate correct information. Training in communication skills was considered effective in promoting such counselling skills. Finally, supervision of dispensing was seen as the CP's first priority.

By definition, CPs were divided if more than 20% were in a minority. Divisions occurred in the practicalities of whether CPs or patients should initiate discussions on prescription medication and the difficulties for CPs in identifying those to counsel. Community

pharmacists were split as to whether it was realistic for them to be always available for discussion and whether good communicators were born or made. General medical practitioners were not necessarily seen to be the patient's main source of advice and it was undecided whether financial reward should be secondary to professionalism.

Piloting indicated a strong bias for two statements Q13 and Q14 which were included in the 1987 and 1988 attitudinal studies to act as markers enabling isolation of indiscriminate respondents. A similar bias was seen in these studies with no disagreements received from the 1988 attitudinal study providing confirmation of the reliability of the results. Only one respondent disagreed with the majority view for both statements in the 1987 attitudinal study. Six other disagreements were received. As the numbers were small and the same individuals were not common for both statements none of these respondents were excluded.

Only one statement, Q10, was excluded as greater than 25% of respondents were undecided. The independence of absolute responses to the remaining 15 statements to the specific variables investigated for generalisability was analysed using the chi-square test. Due to observations during piloting, any divergence of attitude between CPs with previous hospital pharmacy experience and their colleagues was also investigated (table 19, page 201). Relationships between attitudinal response and respondent's ages were tested for significance using the Mann-Whitney U test (table 20, page 202). The non-parametric equivalent of Student's t-test was used as the distribution of the population could not be assumed normal for independent samples (figure 6, page 27). A second ordinal variable, respondents' estimates of the time spent counselling patients on prescription medication was investigated using Gamma⁴⁰⁷ and the non-parametric analogue of the traditional regression coefficient Somers 'd'⁴⁰⁸ (table 25, page 207).

Analysis of 1988 results.

In comparing the 1987 and 1988 attitudinal study groups, CPs in the sample frame of the latter were treated as a unique group and the details of those respondents common to both studies were deleted from the former study. Thus, details of the 20 CPs who participated in the latter study were compared with those of the 1987 attitudinal study. Of the 20, 13 were common to both studies and replied, one failed to respond and six were not able to participate in the second study. As the 1988 attitudinal study included managers who were also proprietors and managers, details of dispensers and locums were also excluded from the 1987 attitudinal study. The distributions of these populations were comparable in terms of gender, status, type, age and experience in community and hospital pharmacy (table 21, page 203).

Of the fourteen, 1988 attitudinal study participants common to both studies 13 completed the attitudinal questionnaire on both occasions. The sum change in absolute attitude over the 15 statements was not greater than ± 2 for any participant and appeared unrelated to observed prescription medication advisory activity (table 22, page 204). McNemar's test for changes in

absolute attitude over the period failed to reach significance for any statement. Each statement's absolute response distribution was found to be independent of study when 1987 and 1988 attitudinal responses were compared (table 23, page 205).

Absolute responses to the 15 statements to the specific variables previously investigated for generalisability plus hospital pharmacy experience was again analysed using the Mann-Whitney (table 20, page 202) and Fishers exact test (table 24, page 206).

As a valid basis for interpretation of the direction and strength of absolute attitudes relative to the provision of advice, two bands of respondents' activity were chosen to reflect the proactive and essentially passive or reactive groupings found in the observational study. In this respect, results for pharmacy number nine were included in the reactive grouping as the analysis concerned advisory activity rather than CPs' reaction to the provision of advice. In other words, one respondent in the observational study was noted to be proactive in giving advice but the rate of advice was less than 6.2% of possible prescription events. Values below 6.2% were generally associated with reactive CPs who responded to requests for information rather than initiated such activity. The figure of 6.2% was used as a benchmark to divide CPs' advisory activity into high and low groupings (table 25, page 207).

Level three observed prescription medication advisory activity of 'preparation events' (section A3.1.3.1, page 249) was correlated with respondents' estimates of time spent providing such advice for the 13 CPs common to both 1988 and 1987 attitudinal studies. A modest value⁵⁵⁵ of 0.56628 for Pearson's correlation coefficient provided a valid indication of respondents' capacity to estimate their own activity. The correlation was statistically significant with a probability of 0.043. Comparison of 1988 and 1987 means for the respective distributions of estimated time spent counselling shown no significant difference (students-t test, $F= 3.44$, $p=0.022$, separate variance, $t=0.30$, two-tailed $p=0.763$). Estimates of the percentage of time spent counselling were then used to interpret the direction and strength of absolute attitudes relative to activity for those CPs common to both attitudinal studies and the 1987 study (table 25, page 207).

Table 16

Independence of responding to the 1987 attitudinal study and selected variables

n=91	Variable analysed for independence						
	Gender*		Status†			Type‡	
Response	M	F	M/P	M	O	I	M
Responders	51	20	29	31	11	33	43
Non-responders	13	7	8	8	4	8	7
Chi-square§	0.0984		0.2439			0.1774	
Significance	0.7538		0.8852			0.6736	

Notes

- * = Test for an association between the 71 CPs seen during the visit who responded, the 20 seen who did not respond and the proportion of Males = M, Females = F.
- † = Test for an association between the 71 CPs seen during the visit who responded, the 20 seen who did not respond and the proportion of Manager proprietors = M/P, Managers = M, Dispensers or locums = O.
- ‡ = Test for an association between receiving a response, whether from the CP seen or not, and the type of pharmacy the CP was involved with, Independent = I or Multiple = M. Responders include the 71 CPs seen during the visit who responded plus the 5 CPs who were not seen represented their pharmacies as the person seen has not responded. No response at all was received from 15 pharmacies.
- § = Chi-square value calculated in accordance with the statistical methods described in section 4.6, page 113.

Table 17

Independence of type of responder and selected variables

n=85	Variable analysed for independence								
	Gender*		Status†			Age‡		Type§	
Responder	M	F	M/P	M	O	Mean Rank	Cases	I	M
Responder seen	47	19	26	30	10	43.57	66	7	12
Responder not seen	12	7	4	10	5	41.03	19	27	39
Chi-square°	0.1512		2.609			0.3956		0.0028	
Mann-Whitney U Significance**	0.6974		0.271			0.6924		0.9576	

Notes

- * = Test for an association between the 66 CPs seen during the visit who responded, and the 19 who were not seen but respond and the proportion of Males = M, Females = F.
- † = Test for an association between the 66 CPs seen during the visit who responded, and the 19 who were not seen but respond and the proportion of Manager proprietors = M/P, Managers = M, Dispensers or locums = O.
- ‡ = Test for age differences between the 66 CPs seen during the visit who responded, and the 19 who were not seen but respond.
- § = Test for an association between the 66 CP seen during the visit who responded, and the 19 who were not seen but responded and the proportion of Independent = I and Multiple = M pharmacies the CPs were involved with.
- ° = Chi-square value
- ¶ = Mann-Whitney U calculated as a Z value corrected for ties.
- ** = Chi-square probability. Mann-Whitney U two-tailed probability.

Table 18

Frequency of response to statements for the 1987 and 1988 attitudinal studies*

Statement	Response					
	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	(Missing)
Q10† If pharmacists received a payment for counselling, the amount involved should be calculated on a sliding scale which depended on the number of patients counselled.	6 1	24 3	24 6	24 9	6 1	1
(1) Professionalism						1
Q14 Pharmacists repeatedly communicating incorrect information should undertake post-graduate education.	1 0	3 20	11 3	49 14	20 3	0
Q19† General Medical Practitioners should [not] be the patients main source of drug therapy information.	5 1	16 2	13 4	40 13	11 0	0
Q22 Patients [do not] expect too much from the pharmacist.	2 0	9 3	14 4	47 13	13 0	1
(2) Remuneration and Professionalism						1
Q9 Pharmacists should be paid for the counselling service they provide.	4 1	11 1	10 3	25 7	35 8	0
Q11 By continuing to counsel patients free of charge, pharmacists will do the profession a []service.	4 1	5 2	14 1	43 10	19 6	1
Q20† Financial reward should be secondary to professionalism.	6 0	22 3	8 4	39 11	10 2	2
(3) Practical aspects of PMA						1
Q8 If everyone consulted a pharmacist when collecting dispensed medicines, health care would improve overnight.	0 0	16 4	17 4	41 10	10 2	0
Q12† Patients who require counselling are [not] expected to ask for advice.	0 0	24 5	9 1	42 11	8 3	0
Q13 Training pharmacists in communication skills makes them better counsellors.	0 0	3 0	7 4	47 11	28 5	1
Q15† It is [not] difficult for a pharmacist to identify those patients who need counselling.	2 0	29 8	17 1	36 10	1 1	1
Q16† There are [] enough general practice pharmacists to counsel adequately those patients who require advice.	4 1	22 6	15 5	39 8	5 0	
Q17 It is reasonable for pharmacists to manage a pharmacy and still maintain their pharmaceutical knowledge.	3 1	7 2	9 2	55 14	10 1	
Q18† Good communicators are [made not born].	6 0	19 3	12 7	35 9	12 1	
Q21† Being always available to talk to patients in a pharmacy is []realistic.	10 1	20 8	0 4	44 7	11 0	
Q23 Supervision of dispensing is the pharmacist's first priority.	2 0	14 3	8 2	34 9	26 6	

* = Statements have been altered to reflect the views of the majority of respondents for the first study. Alterations from the original questions (form 3) are given in brackets []. Statements concerned the main theme of provision of advice but have been arranged under the three sub-themes of: (1) professionalism; (2) remuneration and professionalism; and, (3) practical aspects of PMA. Responses for each statement have been arranged from strongly disagree to strongly agree with the statement indicated. Frequency of response for each statement for the 1987 attitudinal study (n=85) are listed above those for the 1988 attitudinal study (n=20). No missing values were reported in the latter study.

† = More than 20% of respondents disagreed with the majority response to statements Q12, Q15, Q16, Q18, Q19, Q20 and Q21. Statement 10 was excluded as >25% of respondents were undecided.

Table 19

Associations between absolute response to 1987 attitudinal study statements and selected variables

statement	Attitude Disagree=-ve Agree = +ve	Gender* M F	Test† F	Hospital‡ Yes No	Test †	Status§ M/P M/O	Test O	Type I M	Test	
(1) Professionalism										
Q14 Pharmacists repeatedly communicating incorrect information should undertake post-graduate education.	-ve 4 +ve 46	0 23	0.3011 ^f	1 25	3 44	1 34	0 12	2 28	2 41	1.0000 ^f 3xEf<5
Q19 General Medical Practitioners should not be the patients main source of drug therapy information.	-ve 16 +ve 33	5 18	0.5016	7 15	14 36	10 21	2 11	8 23	13 28	0.9626 0.4469
Q22 Patients do not expect too much from the pharmacist	-ve 8 +ve 42	3 18	1.0000 ^f	4 22	7 38	5 29	1 12	5 22	6 38	1.0000 ^f 2xEf<5
(2) Remuneration and Professionalism										
Q9 Pharmacists should be paid for the counselling service they provide	-ve 10 +ve 46	5 14	0.5096 ^f	7 15	8 45	4 26	4 7	7 25	8 35	0.1198 ^f 0.2858
Q11 By continuing to counsel patients free of charge, pharmacists will do the profession a service	-ve 6 +ve 48	3 14	0.4391 ^f	4 18	5 44	3 31	1 10	4 26	5 36	0.4444 ^f 3xEf<5
Q20 Financial reward should be secondary to professionalism	-ve 19 +ve 36	9 13	0.7932	11 13	17 36	19 20	3 10	9 22	19 27	0.3646 0.0467
(3) Practical aspects of PMA										
Q8 If everyone consulted a pharmacist when collecting dispensed medicines, health care would improve overnight.	-ve 14 +ve 36	2 15	0.3225 ^f	1 18	15 33	8 15	2 8	6 17	10 34	0.0277 ^f 0.3257
Q12 Patients who require counselling are not expected to ask for advice	-ve 16 +ve 34	8 16	1.0000	8 18	16 32	10 25	5 8	12 19	12 31	0.7753 0.4668
Q13 Training pharmacists in communication skills makes them better counsellors	-ve 1 +ve 52	2 23	0.2392 ^f	2 25	1 50	1 26	1 11	2 27	2 48	0.2738 ^f 3xEf<5
Q15 It is not difficult for a pharmacist to identify those patients who need counselling	-ve 19 +ve 27	12 10	0.4440	7 15	24 22	16 17	8 5	10 16	21 21	0.1880 0.1056
Q16 There are enough general practice pharmacists to counsel adequately those patients who require advice.	-ve 18 +ve 29	8 15	0.9820	12 10	14 34	11 20	7 7	15 14	11 30	0.5263 0.0612
Q17 It is reasonable for pharmacists to manage a pharmacy and still maintain their pharmaceutical knowledge.	-ve 9 +ve 45	1 20	0.2658 ^f	5 18	5 47	9 26	0 12	1 28	9 37	0.2670 ^f 3xEf<5
Q18 Good communicators are made not born	-ve 18 +ve 32	7 15	0.9405	7 18	29 18	9 15	5 8	15 15	10 32	0.5393 0.4583
Q21 Being always available to talk to patients in a pharmacy is realistic	-ve 20 +ve 39	10 16	0.8734	12 16	18 39	15 20	5 10	10 24	20 31	0.9227 0.4871
Q23 Supervision of dispensing is the pharmacist's first priority	-ve 11 +ve 42	5 18	1.0000 ^f	2 21	14 39	8 21	3 11	8 24	8 36	0.1254 ^f 0.4855

Notes

- * = Male (M) Female (F)
- † = Chi-square probability. Two-tail probability for Fishers exact test denoted by superscripted "f".
- ‡ = Hospital experience, Yes if any or No for none.
- § = Status of respondent in relation to pharmacy, Manager (M), Manager and Proprietor (M/P) and Other (O) including locums and dispensers but excluding pre-registration students.
- || = Type of pharmacy, Independent (I) or Multiple (M).

Table 20

Relationship of absolute response for 1987 and 1988 attitudinal studies to age and experience

Statement	Attitude		1987 age*			1987 experience†			1988 age‡			1988 experience§		
	-ve	+ve	Mean Rank	Cases	Test††	Mean Rank	Cases	Test††	Mean Rank	Cases	Test††	Mean Rank	Cases	Test††
(1) Professionalism														
Q14 Pharmacists repeatedly communicating incorrect information should undertake post-graduate education.	-ve	+ve	55.50	4	0.0729	56.75	4	0.0553	10.00	3	0.6107	9.17	3	0.8000
Q19 General Medical Practitioners should not be the patients main source of drug therapy information.	-ve	+ve	42.33	21	0.1291	42.57	21	0.1139	8.15	13	0.6107	8.35	13	0.8000
Q22 Patients do not expect too much from the pharmacist.	-ve	+ve	34.10	51	0.1291	34.00	51	0.1139	9.00	3	0.9000	7.00	3	0.6107
Q22 Patients do not expect too much from the pharmacist.	-ve	+ve	41.64	11	0.3245	39.68	11	0.5195	8.38	13	0.9000	8.85	13	0.6107
Q22 Patients do not expect too much from the pharmacist.	-ve	+ve	34.97	60	0.3245	35.33	60	0.5195	8.38	13	0.9000	8.85	13	0.6107
(2) Remuneration and Professionalism														
Q9 Pharmacists should be paid for the counselling service they provide.	-ve	+ve	35.33	15	0.5962	34.28	15	0.4538	7.50	2	0.7206	7.75	2	0.7206
Q11 By continuing to counsel patients free of charge, pharmacists will do the profession a service.	-ve	+ve	38.67	60	0.5962	38.94	60	0.4538	9.20	15	0.7206	9.17	15	0.7206
Q20 Financial reward should be secondary to professionalism.	-ve	+ve	43.17	9	0.2650	43.50	9	0.2430	10.33	3	0.9577	10.17	3	0.9577
Q20 Financial reward should be secondary to professionalism.	-ve	+ve	34.96	62	0.2650	34.91	62	0.2430	9.94	16	0.9577	9.97	16	0.9577
Q20 Financial reward should be secondary to professionalism.	-ve	+ve	34.07	28	0.2441	35.00	28	0.2353	14.00	3	0.0250	13.5	3	0.0393
Q20 Financial reward should be secondary to professionalism.	-ve	+ve	41.24	49	0.2441	41.29	49	0.2353	7.23	13	0.0250	7.35	13	0.0393
(3) Practical aspects of PMA														
Q8 If everyone consulted a pharmacist when collecting dispensed medicines, health care would improve overnight.	-ve	+ve	41.47	16	0.0789	44.28	16	0.0155	9.25	4	0.7703	9.63	4	0.5989
Q12 Patients who require counselling are not expected to ask for advice.	-ve	+ve	31.66	51	0.0789	30.77	51	0.0155	8.25	12	0.7703	8.13	12	0.5989
Q13 Training pharmacists in communication skills makes them better counsellors.	-ve	+ve	46.92	24	0.0091	45.17	24	0.0335	10.80	5	0.7539	11.20	5	0.6216
Q15 It is not difficult for a pharmacist to identify those patients who need counselling.	-ve	+ve	32.98	50	0.0091	33.82	50	0.8149	9.71	14	0.7539	9.57	14	0.6216
Q15 It is not difficult for a pharmacist to identify those patients who need counselling.	-ve	+ve	51.67	3	0.3429	42.50	3	0.8149	No -ve response	No -ve response	No -ve response	No -ve response	No -ve response	No -ve response
Q16 There are enough general practice pharmacists to counsel adequately those patients who require advice.	-ve	+ve	39.01	75	0.4828	39.38	75	0.6573	9.50	8	0.7780	8.25	8	0.2723
Q17 It is reasonable for pharmacists to manage a pharmacy and still maintain their pharmaceutical knowledge.	-ve	+ve	36.34	31	0.9419	35.66	31	0.6395	10.36	11	0.7780	11.27	11	0.2723
Q18 Good communicators are made not born.	-ve	+ve	32.96	37	0.3743	33.53	37	0.2327	8.43	7	0.7789	7.86	7	0.9551
Q21 Being always available to talk to patients in a pharmacy is realistic.	-ve	+ve	35.27	26	0.1256	34.02	26	0.2710	7.63	8	0.3706	8.13	8	0.9551
Q23 Supervision of dispensing is the pharmacist's first priority.	-ve	+ve	35.64	44	0.5138	36.38	44	0.4477	11.00	3	0.6544	9.67	3	1.0000
Q23 Supervision of dispensing is the pharmacist's first priority.	-ve	+ve	32.30	10	0.1256	30.35	10	0.2710	9.20	15	0.3706	9.47	15	1.0000
Q23 Supervision of dispensing is the pharmacist's first priority.	-ve	+ve	38.88	65	0.5138	39.18	65	0.4477	9.00	3	0.3706	9.67	3	0.2168
Q23 Supervision of dispensing is the pharmacist's first priority.	-ve	+ve	41.68	25	0.5138	40.22	25	0.4477	6.40	10	0.4698	6.20	10	0.2168
Q23 Supervision of dispensing is the pharmacist's first priority.	-ve	+ve	33.74	47	0.5138	34.52	47	0.4477	9.33	9	0.4698	9.39	9	0.4079
Q23 Supervision of dispensing is the pharmacist's first priority.	-ve	+ve	40.63	30	0.5138	40.25	30	0.4477	7.43	7	0.4698	7.36	7	0.4079
Q23 Supervision of dispensing is the pharmacist's first priority.	-ve	+ve	44.29	55	0.5138	44.50	55	0.4477	8.00	3	0.6544	10.00	3	0.4079
Q23 Supervision of dispensing is the pharmacist's first priority.	-ve	+ve	29.41	16	0.0638	33.09	16	0.2701	9.80	15	0.6544	9.40	15	0.9118
Q23 Supervision of dispensing is the pharmacist's first priority.	-ve	+ve	40.92	60	0.0638	39.94	60	0.2701	9.80	15	0.6544	9.40	15	0.9118

Notes

- * = Respondent's age in years when receiving the attitudinal questionnaire.
- † = Respondent's total experience in years practising in community pharmacy when receiving the attitudinal questionnaire.
- ‡ = Respondent's age in years at the end of the final day of observation in the Major study.
- § = Respondent's total experience in years practising in community pharmacy at the end of the final day of observation.
- || = Mann-Whitney 'U' test, two-tailed probability.

Table 21

Independence of 1987 and 1988 attitudinal study responders and selected variables

Responder	Variable analysed for independence											
	Gender*		Status†		Type‡		Age§		Experience			
	M	F	M/P	M	I	M	Mean Rank	Cases	Community Mean Rank	Hospital Mean Rank	Cases	
1987 Responder	28	12	21	19	17	23	31.0	40	32.15	40	7.39	9
1988 Responder	17	3	8	12	7	13	29.5	20	27.20	20	10.81	8
Test¶	0.9000		0.4088		0.0781		-0.3136		-1.0364		-1.4833	
Significance**	0.3428		0.5226		0.7799		0.7538		0.3000		0.1380	

Notes

- * = Association between the 40 proprietor/managers or managers seen during the 1987 attitudinal survey who responded only to the 1987 attitudinal study, the 20 respondents to the 1988 attitudinal study and the proportion of Males = M, Females = F.
- † = Association between the 40 proprietor/managers or managers seen during the 1987 attitudinal survey who responded only to the 1987 attitudinal study, the 20 respondents to the 1988 attitudinal study and the proportion of Manager proprietors = M/P, Managers = M, Dispensers or locums = O.
- ‡ = Association between the 40 proprietor/managers or managers seen during the 1987 attitudinal survey who responded only to the 1987 attitudinal study, the 20 respondents to the 1988 attitudinal study and the proportion of Independent = I and Multiple = M in which they were employed.
- § = Differences in age (years) between the 40 proprietor/managers or managers seen during the 1987 attitudinal survey who responded only to the 1987 attitudinal study, the 20 respondents to the 1988 attitudinal study.
- || = Differences in years of experience both as a CPs and in hospital practice between the 40 proprietor/managers or managers seen during the 1987 attitudinal survey who responded only to the 1987 attitudinal study, the 20 respondents to the 1988 attitudinal study.
- ¶ = Chi-square value. Time related variables tested with Mann-Whitney U calculated as a Z value corrected for ties.
- ** = Chi-square probability. Mann-Whitney U two-tailed probability.

Table 22

Change in attitude with time*

	Pharmacy	PMA†	Reactive‡ Proactive	Change§	Absolute change	
Essentially Reactive ↑	3	.0	r	-6.00	-1.00	
	2	1.3	r	-6.00	-2.00	
	10	2.6				
	17	2.6				
	19	3.3	r	+1.00	-1.00	
	9	3.7	p	+5.00	+2.00	
	1	4.5				
	13	4.7	r	+1.00	+1.00	
	12	5.0	r	+1.00	0.00	
	16	5.7				
	7	6.2	r	0.00	0.00	
	Essentially Proactive ↓	6	6.7	p	-2.00	-1.00
		15	7.9			
11		9.6				
18		11.8	p	-4.00	-2.00	
4		13.0	p	-5.00	-1.00	
5		16.0	p	0.00	0.00	
14		17.8	p	+3.00	+1.00	
20		25.1				
8	38.6	p	-2.00	-1.00		

Notes

- * = Pharmacies listed in order of prescription medication advisory activity. Thirteen of a possible 14 returned pre and post observational study questionnaires.
- † = PMA as a percentage of preparation events.
- ‡ = Reactive as defined in section A3.1.2.
- § = Change on the five point questionnaire scale.
- || = Absolute change of attitude agree ←→ disagree, excluding undecided responses. Total individual -ve changes = 9, total +ve changes = 4

Table 23

Comparison of absolute responses for 1987 and 1988 attitudinal study statements

	Attitude Disagree= Agree =	Study* 1987 1988		Test†	Attitude‡		Test§
		-ve	+ve		+ve	-ve	
(1) Professionalism							
Q14 Pharmacists repeatedly communicating incorrect information should undertake post-graduate education.		-ve	2	0	1	0	1.0000
Q19 General Medical Practitioners should not be the patients' main source of drug therapy information.		+ve	58	17	11	0	1.0000 ^f
Q22 Patients do not expect too much from the pharmacist.		-ve	16	3	3	1	0.7477 ^f
(2) Remuneration and Professionalism		+ve	46	13	3	0	0.2500
Q9 Pharmacists should be paid for the counselling service they provide.		-ve	7	3	0	1	1.0000
Q11 By continuing to counsel patients free of charge, pharmacists will do the profession a service.		+ve	51	13	5	0	0.4427 ^f
Q20 Financial reward should be secondary to professionalism.		-ve	12	2	0	1	1.0000
(3) Practical aspects of PMA		+ve	49	15	10	0	0.7223 ^f
Q8 If everyone consulted a pharmacist when collecting dispensed medicines, health care would improve overnight.		-ve	8	3	0	0	1.0000
Q12 Patients who require counselling are not expected to ask for advice.		+ve	49	16	9	2	0.5000
Q13 Training pharmacists in communication skills makes them better counsellors.		-ve	25	3	1	2	1.0000 ^f
Q15 It is not difficult for a pharmacist to identify those patients who need counselling.		+ve	39	13	7	0	0.2185
Q16 There are enough general practice pharmacists to counsel adequately those patients who require advice.		-ve	14	4	0	1	1.0000 ^f
Q17 It is reasonable for pharmacists to manage a pharmacy and still maintain their pharmaceutical knowledge.		+ve	41	12	8	0	1.0000
Q18 Good communicators are made not born.		-ve	21	5	0	3	1.0000
Q21 Being always available to talk to patients in a pharmacy is realistic.		+ve	41	14	8	0	0.7366
Q23 Supervision of dispensing is the pharmacist's first priority.		-ve	2	0	0	0	1.0000 ^f
Notes		+ve	62	16	10	0	1.0000
* = Comparison of the distribution of absolute responses for those CPs in the 1988 observational study and the remaining responses from 1987.		-ve	30	8	0	0	0.2500
† = Chi-square probability. Two-tail probability for Fishers exact test denoted by superscripted (f)		+ve	28	11	5	3	1.0000
‡ = Changes in absolute attitude for the 13 responses - of a possible 14 - who completed both 1987 and 1988 attitudinal questionnaires.		-ve	21	7	0	4	1.0000
§ = Probability using the McNemar test.		+ve	38	8	3	0	0.5000
		-ve	7	3	0	1	1.0000
		+ve	54	15	8	2	0.5000
		-ve	23	3	1	1	1.0000
		+ve	38	10	4	0	1.0000
		-ve	26	9	1	4	0.3750
		+ve	44	7	3	4	1.0000
		-ve	14	3	0	1	1.0000
		+ve	48	15	10	1	1.0000

Table 24 Associations between absolute response to 1988 attitudinal study statements and selected variables

Statement	Attitude Disagree= Agree=	Gender* M F	Test† Yes No	Status§ M/P	Test I M	Type I M	Test
(1) Professionalism							
Q14 Pharmacists repeatedly communicating incorrect information should undertake post-graduate education.	-ve +ve	No response 3 0	No response 1 2	No response 2 1	No response 2 1	No response 2 1	No response
Q19 General Medical Practitioners should not be the patients' main source of drug therapy information.	-ve +ve	12 1	7 6	5 8	0.5500	4 9	0.5179
Q22 Patients do not expect too much from the pharmacist.	-ve +ve	3 0 10 3	0 3 5 8	2 1 4 9	0.5179	2 1 3 10	0.2143
(2) Remuneration and Professionalism							
Q9 Pharmacists should be paid for the counselling service they provide.	-ve +ve	1 1 13 2	1 1 5 10	1 1 7 8	1.0000	0 2 6 9	0.5147
Q11 By continuing to counsel patients free of charge, pharmacists will do the profession a service.	-ve +ve	3 0 13 3	0 3 7 9	1 2 6 10	1.0000	1 2 6 10	1.0000
Q20 Financial reward should be secondary to professionalism.	-ve +ve	3 0 10 3	1 2 5 8	1 2 5 8	1.0000	1 2 5 8	1.0000
(3) Practical aspects of PMA							
Q8 If everyone consulted a pharmacist when collecting dispensed medicines, health care would improve overnight.	-ve +ve	3 1 11 2	1 3 5 7	3 1 2 10	0.0632	2 2 3 9	0.5467
Q12 Patients who require counselling are not expected to ask for advice.	-ve +ve	5 0 11 3	1 4 7 7	3 2 5 9	0.6027	2 3 5 9	1.0000
Q13 Training pharmacists in communication skills makes them better counsellors.	-ve +ve	No response 8 0	No response 4 4	No response 2 6	No response	No response 1 7	No response
Q15 It is not difficult for a pharmacist to identify those patients who need counselling.	-ve +ve	2 2 9 5	0.4500 4 7	0.6577	0.3521	6 5 1 6	0.1473
Q16 There are enough general practice pharmacists to counsel adequately those patients who require advice.	-ve +ve	2 2 7 1	0.5692 2 6	0.3147	0.6084	3 5 1 2	0.5692
Q17 It is reasonable for pharmacists to manage a pharmacy and still maintain their pharmaceutical knowledge.	-ve +ve	2 1 13 2	1 2 5 10	1 2 7 8	1.0000	1 2 6 9	1.0000
Q18 Good communicators are made not born.	-ve +ve	3 0 8 2	2 1 5 4	1 2 3 7	1.0000	1 2 2 8	1.0000
Q21 Being always available to talk to patients in a pharmacy is realistic.	-ve +ve	8 1 6 1	4 5 2 5	4 5 4 3	0.6329	3 6 3 4	1.0000
Q23 Supervision of dispensing is the pharmacist's first priority.	-ve +ve	2 1 14 1	2 1 5 10	1 2 7 8	1.0000	2 1 5 10	0.5282

Notes
 * = Male (M) Female (F)
 † = Two-tail probability for Fishers exact test.
 ‡ = Hospital experience, Yes if any or No for none.
 § = Status of respondent in relation to pharmacy, Manager (M), Manager and Proprietor (M/P) and Other (O) including locums and dispensers but excluding pre-registration students.
 || = Type of pharmacy, Independent (I) or Multiple (M).

Table 25 Ordinal associations between 1987 and 1988 attitudinal studies and selected variables

Statement	1988 observational study*			1988 attitudinal study†			1987 attitudinal study‡		
	PMA§ ≤6.2% ≥6.2%	Attitude -ve +ve	Gamma Somers d	Time ≤10% >10%	Attitude -ve +ve	Gamma Somers d***	Attitude -ve +ve	Gamma Somers d***	Attitude -ve +ve
(1)									
Q14	≤6.2%	No -ve attitude		≤10%	No -ve attitude		3	42	
	≥6.7%	1	8	>10%	1	2	1	25	+0.2821
	≤6.2%	2	5	≤10%	1	5	15	29	+0.1490
Q19	≥6.7%	2	6	>10%	1	3	5	20	+0.3483
Q22	≤6.2%	1	7	≤10%	1	4	6	38	-0.0903
	≥6.7%	1	7	>10%	1	4	5	19	-0.2500
(2)									
Q9	≤6.2%	2	7	≤10%	1	4	8	39	-0.0361
	≥6.7%	0	8	>10%	0	6	5	20	-0.0986
	≤6.2%	2	9	≤10%	2	4	8	36	+0.2500
Q11	≥6.7%	1	7	>10%	0	6	0	24	+1.0000
Q20	≤6.2%	2	8	≤10%	2	4	17	33	-0.0745
	≥6.7%	1	5	>10%	1	4	10	14	-0.1620
(3)									
Q8	≤6.2%	2	8	≤10%	2	3	11	31	+0.0597
	≥6.7%	2	4	>10%	0	5	5	19	+0.1484
Q12	≤6.2%	2	8	≤10%	3	3	20	26	+0.2862
	≥6.7%	3	6	>10%	0	7	4	22	+0.6177
Q13	≤6.2%	No -ve attitude			No -ve attitude		2	49	-0.0013
	≥6.7%	5	5	≤10%	4	2	1	24	-0.0103
Q15	≤6.2%	3	6	>10%	1	6	6	17	+0.5814
	≥6.7%	2	5	≤10%	2	3	16	30	-0.0320
Q16	≤6.2%	5	3	>10%	3	0	8	13	-0.0714
	≥6.7%	1	8	≤10%	2	4	7	41	+0.0838
Q17	≤6.2%	2	7	>10%	1	5	2	22	+0.3051
	≥6.7%	2	6	≤10%	1	4	19	28	+0.2199
Q18	≤6.2%	1	4	>10%	2	2	4	18	+0.5066
	≥6.7%	6	2	≤10%	4	2	21	33	+0.1023
Q21	≤6.2%	3	5	>10%	4	2	8	20	+0.2281
	≥6.7%	2	7	≤10%	2	4	10	40	-0.0256
Q23	≤6.2%	1	8	>10%	1	6	5	19	-0.0256
	≥6.7%	1	8	>10%	1	6	5	19	-0.0256

Notes

* = Responses of the 20, 1988 observational study participants to the attitudinal statements correlated with their PMA activities.

† = Estimates of the percentage of time spent counselling for the 13 respondents common to the 1987 and 1988 attitudinal studies.

‡ = Responses of the 85, 1987 attitudinal study participants to the statements correlated with their estimates of percentage time spent counselling.

§ = PMA divided into 'essentially' reactive and proactive groups. As the ordinal comparison was of advisory activity rather than between types, proactive and reactive, pharmacy number nine was included in the reactive group having an advisory rate of 3.7% of preparation events. Exclusion of pharmacy number nine resulted in the following changes in values of Somers' d: Q19, -0.2500; Q22, +0.2500; Q9, +0.5333; Q11, +0.1333; Q20, +0.0833; Q8, -0.3333; Q12, -0.3214; Q15, +0.1169; Q16, -0.2857; Q17, -0.1667; Q18, +0.1111; Q21, +0.5000; Q23, +0.2381. In four questions (Q19, Q15, Q16 and Q17) the strengths of correlations were increased by including pharmacy number nine, in one (Q9) the relationship remained the same and in the remainder a decrease was shown.

|| = Somers' d with PMA dependent on attitude.

*** = Respondent's estimated percentage time spent counselling on prescription medication divided into two groups using the median.

*** = Somers' d symmetric.

A2.2.4 Summary

This section considers the results of the piloting process plus both 1987 and 1988 attitudinal studies in the framework of the overall aims and objectives listed in section A2.2.1, page 187.

The first objective, to develop a set of statements which would reliably divide respondents into two camps depending on their absolute attitude, was addressed in the piloting process. Using published literature as a guide, 16 statements were researched and found on follow-up to be reliable in tapping entrenched attitudes to advice. Only one result was remarkable during piloting and reliability assessment. Statement Q10 showed a dramatic swing from disagreement that 'There should be a specific payment to general practice pharmacists who counsel over a given number or percentage of appropriate patients entering their pharmacy' in April 1987, to agreement in November 1987. This was a period when payment for items of service was beginning to become a reality.

The second objective was to examine associations and differences between absolute attitudes and selected variables. It was shown that respondents and non-respondents who were seen during the data collection for the 1987 attitudinal study did not differ in respect of the variables gender, status in relation to pharmacy management or the type of pharmacy, whether the respondent was associated with an independent or multiple chain pharmacy. Similarly respondents did not differ from those who were not seen in gender, status, type or age. With the assumption that hospital experience was also evenly sampled, the results of the analyses may be generalised to the response of CPs in Southern Derbyshire, with whom the general public may come into contact in having a prescription dispensed.

Notable associations or differences at a significant level indicated that of the 85 respondents:

1. a higher proportion of managers favoured financial reward over professionalism when compared to managers who were also proprietors, dispensers or locums (Q20);
2. previous hospital experience was a significant factor for CPs to feel that consulting a pharmacist when collecting dispensed medicines would positively effect health care (Q8). Those who disagreed had significantly more years experience in community practice;
3. a higher proportion of CPs employed by multiple, rather than independent outlets felt that 'Good communicators were made not born' (Q18); and,
4. respondents expecting patients who required counselling to ask for advice were significantly older and had more experience in community practice than those who did not expect such notification (Q12).

Trends were noted for:

1. community pharmacists with no hospital experience and those working at multiple rather than independent pharmacies to agree with the statement that "There are enough general practice pharmacist to counsel adequately those patients who require advice" (Q16);
2. managers who were also proprietors working at independent pharmacies to agree that "it was reasonable to manage a pharmacy and still maintain their pharmaceutical knowledge" (Q17); and,
3. Younger and less experienced CPs to agree that repeatedly communicating incorrect information should warrant undertaking post-graduate education (Q14).

Respondents to the second 1988 attitudinal study which incorporated the observational research and respondents to the 1987 attitudinal study did not differ significantly in gender, status, type, age, years of experience in community practice and years of previous hospital experience. As expected with smaller numbers, fewer statistically significant results were notable. First, CPs who felt financial reward should be secondary to professionalism were significantly younger and less experienced than those who disagreed (Q20). Second, managers who were also proprietors rather than those who were solely managers tended to feel that consulting a CP when collecting dispensed medicines would positively effect health care (Q8).

Responses to statements from the 1987 and 1988 attitudinal studies were compared as directed by the third objective. The results of three comparisons are presented. First, no clear pattern was discernible when overall and absolute changes in attitude for those participants common to both studies were ranked in order of observed frequency of advice. Second, no significant changes in absolute attitude were noted when the 1987 and 1988 responses to each statement were compared. Third, the distribution of absolute attitudes for each statement was independent of the study from which the data was taken. In summary, both 1987 and 1988 attitudinal study respondents had similar attitudes. Absolute responses were consistent with time and any changes were unrelated to advisory activity. These results, in conjunction with the evidence reported in the piloting process, are also a measure of the reliability of the research instrument.

Research conducted for the fourth objective showed that observed activity was positively correlated with respondent's estimated time spent providing advice. Community pharmacists responding to this study are clearly cognisant of their advisory activity. If attitude and behaviour are linked, then this finding may be generalised to the larger sample frame.

A2.3 Customers' selection of visual display

A2.3.1 Aims, objectives, method

This section concerns the aims, objectives and method used to determine patient's preferences for visual displays which prompt them to consult the pharmacist concerning prescription medication.

Aim To determine whether a particular visual display or poster is likely to prompt individuals into requesting prescription medication advice from pharmacists.

Specific objectives of research conducted

1. To develop a series of visual displays promoting interactions between pharmacists and individuals who present prescriptions at a dispensary (customers) which include topics or themes for discussion developed in previous studies.
2. To determine which of the visual displays is most likely to prompt discussion concerning prescription medication between pharmacists and customers.
3. To relate choice of visual display by customers with their residence, gender, whether they are the patient or collecting on behalf of the patient, age and occupation.

Method

Four visual displays in the form of A2 size posters were developed to convey the four categories of information; 'Side effects', 'Specific problems', 'What is prescribed' and 'What to do with it', pharmacist felt patients should be aware of and which individuals who present prescriptions at a dispensary thought they should be informed about.^{147 148} Central to each display was; the prescription form which was shown to be readily recognisable and associated with prescription medication, the appropriateness of the pharmacist to provide such advice and a directive to consult the pharmacist. Two visual displays, figures 27 and 28 labelled [A] [B], (pages 211 and 212) were constructed in the traditional document style of an important notice where the themes embodied in the four categories were conveyed using a sentence-like format with four sub-sections, the latter being more explicit about the meaning of the term 'medication'. Two further visual displays, figures 29 and 30 labelled [C] [D] (pages 213 and 214), employed a more modern, suggestive approach using short questions related to the four categories, the last being more directive of what a prescription item was and what medication comprised. Each visual display was mounted A1 size, in a randomly determined order, on separate display panels in the outpatient dispensary of the Derbyshire Royal Infirmary. Attached to each display panel was a cardboard mailing box. A questionnaire was designed and piloted to relate voting action with personal factors and implicit attitudes. The sequence of posters was then rotated during four equal study sessions for four working days from the 28th April 1988. Individuals were selected if they were the next person to present a prescription at the dispensary hatch when a clipboard with attached pencil and questionnaire became available. Two hundred possible respondents were given a brief verbal account of the objectives of the study as indicated on the questionnaire. The directions required that a completed questionnaire was 'mailed' in the collection box below the poster of their choice. When no possible respondents were in the dispensary the researcher collected the forms from each box and endorsed the choice accordingly.

IMPORTANT NOTICE

Your pharmacist is professionally qualified and has specialist knowledge of medicines

Please

Consult your pharmacist if:

(1) You would like to know more about a prescription

Pharmacy Stamp NATIONAL HEALTH SERVICE FORM 7710

SURNAME *A Patient*

Initials and one full forename

Address

(2) The doctor has prescribed any new item or changed any old ones

Pharmacy to pack quantity and amount

No of days treatment NP

Price Office use only

R Drug

(3) You are not sure how to take or use the medication

Sig as directed

(4) You feel the medication is having unwanted side-effects or isn't helping

Signature of Doctor

Date

Doctor's Name and Initials in Block Letters

Name of District or R.G. Name and Address of Hospital or Clinic and Institution Code

SDHA
DERRYSHIRK PHARMACY

IMPORTANT: Read Notes overleaf before going to the pharmacy

IMPORTANT NOTICE

Your pharmacist is professionally qualified and has specialist knowledge of medicines

Please

Consult your pharmacist if:

(1) You would like to know more about a prescription

(2) The doctor has prescribed any new item or changed any old ones

(3) You are not sure how to take or use the medication

(4) You feel the medication is having unwanted side-effects or isn't helping

Pharmacy Stamp NATIONAL HEALTH SERVICE FORM FP10

SIGNATURE
Dr. J. B. Smith

Address

No. of days to complete
in 8 hours dose to start

NP

Pharmacy only

Prescription item

Medication

Pills Tablets Capsules

Ointments Creams Mixtures

Medicines Sprays Suppositories

Signature of Doctor

Date

Doctor's Name and Initial in Block Letters

Name of Doctor or Sd Name and Address of Hospital or Clinic and Instruction Code

SDHA
DERBYSHIRE COUNTY HOSPITAL

Co. d

IMPORTANT: Read Notes attached before going to the pharmacy

DO YOU UNDERSTAND THE PRESCRIPTION?

WHAT IS PRESCRIBED?

WHAT TO DO WITH IT?

ANY SPECIFIC PROBLEMS?

ARE THERE SIDE-EFFECTS?

The diagram shows a prescription form with a large question mark in the center. The form includes fields for patient name, address, date, and a section for the prescriber's name and signature. The text 'DERBYE' is visible in the bottom section of the form.

CONSULT THE PHARMACIST

WHO IS PROFESSIONALLY QUALIFIED AND KNOWS ABOUT PRESCRIPTION MEDICATION.

DO YOU UNDERSTAND THE PRESCRIPTION?

For example-

★ DO YOU KNOW HOW TO TAKE OR USE THE MEDICATION

↓

PRESCRIPTION ITEM

Capsules Creams
Dressings Drops
Inhalers Injections
Medicines Mixtures
Ointment Pills
Powders Sprays
Suppositories
Tablets

- ★ HAS THE DOCTOR PRESCRIBED ANY NEW MEDICATION?
- ★ IS THE MEDICATION HELPING?
- ★ ARE THERE SIDE-EFFECTS?

For information-

CONSULT THE PHARMACIST

WHO IS PROFESSIONALLY QUALIFIED AND KNOWS ABOUT PRESCRIPTION MEDICATION

A2.3.2 Results

During the first day of poster display, four versions of a questionnaire were piloted, amongst 27 randomly chosen individuals who attended the dispensary and presented a prescription, to ascertain its clarity of instruction and suitability for determining the preferred poster. Alterations to the format and changes intended to personalise the questionnaire were made. The final version (form 4, page 216) was given to 200 randomly chosen individuals who present prescriptions at the Derbyshire Royal Infirmary dispensary hatch over the remaining six half-day sessions. Sessions continued until a total of 50 responses for the particular orientation of the posters had been collected. Table 26, page 217, indicates the relative position of each poster as viewed by respondents.

Of the 200 responses, five were excluded; four due to bad eyesight and one who couldn't read, write or understand English. Twenty-six of the respondents indicated 'No' to question seven, that there wasn't a poster which would prompt them into asking for advice. No significance was found between this group and those that selected a poster using Chi-square tests for independence to analyse available data on gender, whose prescription they were waiting for, whether they lived within the Derby city boundary or the border of the SDHA and whether they were over 50 years of age or not (table 27, page 217). Interestingly, only two of the 26 indicated that no poster displayed would prompt them, five that no poster at all would, but 19 that they would ask the pharmacist anyway.

Descriptive analysis of the 169 respondents who indicated a poster preference shows a wide representation of occupations and previous occupations (table 28, page 217). Further analysis indicated that poster choice was independent of two broad bands of occupations and previous occupations which were defined using the criteria for inclusion in OPCS social class categories (table 29, page 218). Thirteen of the 169 offered a poster preference but also indicated positively that they would ask the pharmacist anyway. Their choice of poster was similar to that for the bulk of respondents (table 30, page 218). Combining these with the 19 who did not choose a poster but also indicated they would approach the pharmacist provided two groups of respondents, those who would not be specifically influenced by the poster but would ask for advice and those who chose a poster and might be influenced. No significant dependence was found relating the two groups to a series of variables, although, a trend was seen for respondents collecting their own prescription to favour selection of poster (table 31, page 218). As the aim was to determine the poster which was most likely to prompt individuals who present prescriptions at a dispensary into discussion with the pharmacist, subsequent analysis was performed on the 156 who implied they may be influenced. Poster C was the clear choice with 81 (51.9%) 'votes' and no obvious second contender (table 29). Poster choice was not found to be significantly dependent on the order of display (tables 32, page 219 and table 43), gender or whether they lived within the Derby city boundary or the border of the SDHA; however, there were significant dependencies for choice of poster with whether or not respondents were waiting for their own prescriptions and for age (table 33, page 219).

SOUTHERN DERBYSHIRE HEALTH AUTHORITY

[] []

PLEASE HELP

In front of you are four posters A, B, C and D.

We would like to know which poster YOU like?

First, however, it would be VERY helpful if we knew certain personal details which will allow us to group the information, for example, into responses from males and females.

All details will be kept in the strictest confidence and you will not be identified.

BEFORE YOU VOTE

PLEASE ANSWER THE FOLLOWING QUESTIONS

Directions:
 In the following questions, circle the number in the box nearest your answer.
 For example, in Q1 for males your answer would be Male [1] Female [2].
 Otherwise write you answer in the space provided.

Q1 Are you a male or a female? Male [1] Female [2]

Q2 Is it YOUR prescription you are waiting for? Yes [1] No [2] >>

Q3 Where do you live in Southern Derbyshire?
 Derby city (DE1).[1] Derby Suburb..[2]
 Country Town.. ...[3] Country Village.[4]

Other (please specify).....[5]

Q4 What is your age in years? less than 20 [1] 21 - 30 [2]
 31 - 40 [3] 41 - 50 [4]
 51 - 60 [5] over 61 [6]

Q5 What is your present occupation?

Q6 If retired or unemployed, what has been your main occupation?
 Please specify

THANK YOU, Please read on

Q7 IF YOU HAD A QUESTION ABOUT A PRESCRIPTION WHICH YOU WERE TAKING TO A CHEMIST SHOP, IS THERE ONE POSTER (A,B,C OR D) WHICH IS MOST LIKELY TO PROMPT YOU TO CONSULT THE PHARMACIST FOR INFORMATION ?

Answer Q7 by circling [1] if there is, [2] if not. ----->Yes [1] No [2]

Q8 If the answer to Q7 is YES [1], YOU HAVE ONE VOTE Please fold this piece of paper and place it in the box below the POSTER of YOUR CHOICE. You have finished THANK YOU FOR YOUR HELP.

Q9 If the answer to Q7 is NO [2], please circle whether it is because
 You feel that NO POSTER DISPLAYED would prompt you? [1]
 You feel that NO POSTER AT ALL would prompt you? [2]
 You would ask the pharmacist anyway? [3]
 Other [4]
 (please specify).....

THANK YOU FOR YOUR HELP
 Please fold this paper and place it in any box

Table 26

Sequence of poster display vs time of session

	Time of session					
	29/4/88 am	29/4/88 pm	3/5/88 am	3/5/88 pm	4/5/88 am	4/5/88 pm
Sequence* of poster display	A	A	D	C	C	B
	B	B	A	D	D	C
	C	C	B	A	A	D
	D	D	C	B	B	A

Note

* = The posters were displayed in sequence from left to right as the customer viewed them.

Table 27

Independence of choosing a poster or not and specific variables

Number (#)	Variable analysed for independence							
	Residence* n=185		Gender n=195		Customer's request† n=192		Age‡ n=194	
	City	Country	Male	Female	Yes	No	≤50	>50
# of Respondents who chose a poster	96	64	70	99	102	64	93	75
# of Respondents who did not	16	9	14	12	12	14	14	12
Chi-Square Significance	0.02577 0.8725		0.95741 0.3278		1.59140 0.2071		0.0000 1.0000	

Notes

- * = Respondents were excluded if their residence was outside the boundary of the SDHA. Two indicated Burton-on-trent, Three Nottingham, Two gave no information and one response was received for Matlock, NW Lincolnshire and Amersham.
- † = Three respondents failed to indicate whether it was their prescription they were waiting for.
- ‡ = One customer failed to indicate their age in a particular band. Age ranges were selected to divide the smaller group for maximum analytical capacity.

Table 28

Social class of current and previous occupations*

Social Class	Present occupation	Social Class of previous occupation if presently a		
		Housewife†	Retired‡	Unemployed§
i	5	0	2	2
ii	22	3	7	0
iii Non-manual (iiiN)	12	6	4	1
iii Manual (iiiM)	28	3	8	1
iv	9	2	0	1
v	3	0	0	0
Total n=169	79	14	21	5

Notes

- * = Classification of occupations into social class is based on Office of Population Census and Statistics guidelines 1980. Data excludes 7 x students.
- † = 38 x Previous occupation inadequately described (housewife)
- ‡ = 1 x Previous occupation forces, 3 x previous occupation inadequately described
- § = 1 x Previous occupation inadequately described (unemployed)

Table 29

Independence of specific poster selection and current or previous occupation*

Choice of poster	Count Expected Value	Social class		Row total
		i, ii, iiiN	iiiiM, iv v	
A	14 13.4	11 11.6	25 21.0%	
B	7 10.8	13 9.2	20 16.8%	
C	32 30.1	24 25.9	56 47.1%	
D	11 9.7	7 8.3	18 15.1%	
Column Total	64 53.8%	55 46.2%	119 100.0%	

Chi-Square 3.53127 D.F 3 Significance 0.3167

Note

* = Non-manual and manual categories collapsed. 50 missing observations as for table 45

Table 30

Respondents' choice of poster

Poster	Number of respondents n=156	Number of respondents* n=13
A	28 (17.9%)	1 (7.7%)
B	24 (15.4%)	2 (15.4%)
C	81 (51.9%)	8 (61.5%)
D	23 (14.7%)	2 (15.4%)

Note

* = Respondents who indicated a specific poster would prompt them into discussion but also that they would ask the pharmacist anyway.

Table 31

Independence of poster selection or independently consulting the pharmacist and specific variables*

Number (#)	Variable analysed for independence	Residence*		Gender		Customer's $\mathcal{R}?$ †		Age‡	
		n=178	n=188	n=185	n=187	n=185	n=187	n=187	n=187
		City	Country	Male	Female	Yes	No	≤50	>50
Number choosing a poster	Observed f	85	62	64	92	96	57	86	69
	Expected f					91	62		
Number who would consult irrespective of poster	Observed f	23	8	18	14	14	18	16	16
	Expected f					19	13		
Chi-Square		2.23023		1.92182		3.21252		0.13855	
Significance		0.1353		0.1657		0.0731		0.7097	

Notes

* = Analysis included 188 respondents. Nineteen of the 26 respondents who answered no to question 7 but indicated they would ask the pharmacist plus 13 who preferred a specific poster but also indicated that they would consult the pharmacists compared with the 156 who indicated a poster preference without caveats. Missing values are the same for the notes in table 27, page 217.

† = Three respondents failed to indicate whether it was their prescription they were waiting for.

‡ = One customer failed to indicate their age in a particular band. Age ranges were selected to divide the smaller group for maximum analytical capacity.

Table 32

Independence of selection of poster and display order

	Count	Order of poster display*				Row Total
		First	Second	Third	Fourth	
Choice of poster	A	8	5	11	4	28
		6.5	7.7	6.5	7.4	17.9%
	B	4	10	5	5	24
		5.5	6.6	5.5	6.3	15.4%
C		19	25	15	22	81
		18.7	22.3	18.7	21.3	51.9%
D		5	3	5	10	23
		5.3	6.3	5.3	6.0	14.7%
Column Total		36	43	36	41	156
		23.1%	27.6%	23.1%	26.3%	100.0%
Chi-Square	D.F.	Significance				
13.98792	9	0.1228				

Note

* = The posters were displayed in sequence from left to right as the customer viewed them.

Table 33

Independence of choice of poster and specific variables

Choice of Poster A to D	Variable analysed for independence							
	Residence* n=147		Gender n=156		Customer's R?† n=153		Age‡ n=155	
	City	Country	Male	Female	Yes	No	≤50	>50
Observed fA	12	12	16	12	18	9	19	8
Expected fA					16.9	10.1	15.0	12.0
Adjusted residual§							+1.7	-1.7
Observed fB	10	11	9	15	20	4	8	16
Expected fB					15.1	8.9	13.3	10.7
Adjusted residual							-2.4	+2.4
Observed fC	47	33	30	15	41	38	50	31
Expected fC					49.6	29.4	44.9	36.1
Adjusted residual							+1.6	-1.6
Observed fD	16	6	9	14	17	6	9	14
Expected fD					14.4	8.6	12.8	10.2
Adjusted residual							-1.7	+1.7
Chi-Square	3.53087		3.69627		9.73266		10.95921	
Significance	0.3168		0.2962		0.0210		0.0119	

Notes

- * = Nine respondents were excluded as their residence was outside the boundary of the SDHA.
† = Three respondents failed to indicate whether it was their prescription they were waiting for.
‡ = One customer failed to indicate their age in a particular band.

A2.3.3 Summary

Four posters were produced with a mixture of styles and a central theme, to prompt the general public into discussion with the pharmacist over prescription medication. A mechanism for determining whether respondents felt they would be influenced by a poster and which of those displayed would be most effective was developed. Although extrapolation to the general public is not possible, respondents were members of a sub-population involved with illness and likely to be interacting with a pharmacist in some way, thus were considered appropriate to the study. In addition, the concentration of this population at a hospital dispensary enabled data collection over a short period.

The results of the study provide implicit support for the potential efficacy of a poster as the majority of respondents made the choice of which one would prompt them to consult the pharmacist for information. In addition, poster C was the overwhelming choice by respondents and, with no clear second contender, its potential for influencing the PMA activities of pharmacists was considered sufficient for its selection. The validity of this result is strengthened by the methodology of rotating posters and that choice of poster was shown to be independent of poster position.

No clear pattern emerged to indicate whether choosing a poster depended on a series of demographic and personal factors. However, analysis of the results showed two areas of dependence concerning the choice of poster. First, that respondents who are patients rather than acting on behalf of patients chose a poster implying that a poster would act as a cue. Those collecting for another individual were more inclined to consulting directly with the pharmacist. Being a patient was also associated with choice of poster. Those respondents not collecting a prescription for themselves clearly preferred poster C whereas this trend was not as dramatic for respondents waiting for their own. Poster C was still the choice for over twice as many of the latter respondents than for any other display. Second, choice of poster appeared dependent on age with respondents 50 and under preferring the less complicated styles of posters A and especially C while those over 50 were less in favour of C and divided amongst the rest.

The results of this study proffered poster C for use as the instrument for influencing interactions concerning advice and that special attention should be made of age and ownership of prescriptions in subsequent studies.

A2.4 Conclusion

From the studies of CPs attitudes to prescription medication counselling it can be concluded that:

- 1. community pharmacists may be differentiated by their attitudes to prescription medication counselling;**
- 2. attitudes of CPs in the observational study were not significantly different to those of colleagues practising within the boundary of the Southern Derbyshire Health Authority; and,**
- 3. community pharmacists demonstrate through their estimated time spent counselling an understanding of the true level of their advisory activity.**

From studies of the development and subsequent opinion of customers concerning four visual displays, it may be concluded that poster C was the sole choice for use in the observational study.

APPENDIX A3 RESULTS OF OBSERVATIONAL STUDY

A3.1 Prescription medication advice

A3.1.1 Presentation and collection of prescriptions

This section deals with observed patterns of prescription handling and their relationship with both CPs' prescription medication advisory activities and display of the poster. Two hypotheses are considered:

- H₁ that the provision of advice is not correlated with CPs' policies of giving out dispensed prescriptions; and,
- H₂ that the poster would not prompt CPs to give out dispensed prescription medication items personally.

Tables 34 to 36, pages 224 to 226, list the data and analysis pertinent to this discussion. Considering the first hypothesis, tables 34 and 35 list the 20 pharmacies in order of the prescription medication advisory activity of the CP in charge (section A3.1.3.1 page 249). For each pharmacy, the relative and absolute number of customers who presented their prescription form(s) or collect their dispensed item(s) from either the CP or the assistant is listed. The data is presented to provide an indication of the CPs' actions relative to those of assistants in prescription handling activity, both collecting (table 34) and giving out dispensed medicines (table 35). By ordering CPs by their advisory activity it is possible to consider whether CPs involvement in an advisory service is correlated with prescription handling related behaviour. This may appear obvious to the reader at first, as advice occurs when CPs are present and CPs were listed in order of their advisory activity; however, CPs may physically give out medication and not provide advice. This was clearly the case in pharmacy number 17 (table 35) where the CP in charge gave out dispensed medication to 82.1% of customers but only provided advice with 2.6% of dispensed items. From the analysis in table 36, page 226, it can be seen by the values of Somers' D and Gamma that CPs' ultimate involvement in providing advice is weakly correlated with whether they personally collect prescriptions from customers. There is, however, a stronger correlation between the amount of advice CPs provide and their policy for personally handing out dispensed medication rather than devolving the responsibility to assistants. Such results are consistent with rejection of the first hypothesis, that CPs who give out medication are likely to provide advice while those who do not advise, devolve responsibility for the advisory role and leave the giving out of prescriptions to assistants.

The second hypothesis proposes that CPs would be prompted by the presence of the poster advertising their services to personally give out dispensed prescription medication items. To quantify observed change, columns 1 and 4 from both tables 34 and 35 were compared for all study CPs and within proactive and reactive groupings. Although the mean number of customers, seen by the CP personally, consistently increased when the poster was displayed, no level of significance or trend was found (table 36). It is not, therefore, possible to reject the hypothesis and it can be concluded that in this study the effect of the poster on CPs' prescription handling behaviour was insignificant. If individual CPs changes in prescription

handling behaviour are investigated (table 35, column 10), the average net percentage change in the number of customers given prescriptions by proactive CPs when the poster was displayed was +3.1% (+30.7%/10). This compares to +0.19 (+1.9%/10) for reactive CPs. This locates any overall positive change associated with the poster to the proactive rather than reactive grouping.

It was also noted that the relationship between providing advice and collecting or giving out prescriptions became consistently stronger when the poster was displayed. This was indicated by increases in values of Somer's D in table 36. By inspection of table 35 column 10, it can be seen that display of the poster was associated with dramatically altered patterns of prescription delivery for selected proactive CP. If these proactive CPs are influenced to give out more medication personally and the first result holds, then a corresponding absolute increase in the quantity of advice would be expected. Table 35 lists the standardised residuals for advisory activity when the poster was displayed. For example, the CPs in charge of pharmacy number eight increased by 24.5% the number of customers to whom he personally gave out prescription medication when the poster was displayed. A greater than expected increase in advice was recorded at this time, with 37 customers receiving information when the expected frequency was 34.1. The standardised residual $(37-34.1/\sqrt{34.1} = 0.5)$ indicates that the poster was associated with a positive effect on advice over and above that expected under the first hypothesis. Had the standardised residual been 0.0 then the poster would have had no effect and the first hypothesis would still hold. Considering table 35, at an individual proactive CPs' level, the poster encouraged four CPs, discouraged four and had no discernible effect on two. In other words, in the presence of the poster some CPs increased the percentage of customers to whom they personally gave out dispensed medication and provided advice to numbers in excess of those predicted under the first hypothesis. Conversely, in the same situation, those who handed out less dispensed medication to customers provided advice to even less than expected numbers of customers. For whatever reason, the poster was associated with a mixed but measurable effect on individual CPs' prescription handling and advisory activities.

In summary, the data and analysis supports rejection of the first hypothesis. It was demonstrated that the more CPs give out dispensed medicines the more they provide advice. Those that generally delegate such activity to assistants are reactive to customers requests for information. The second hypothesis was not rejected by the data and the overall effect of the poster on prescription handling was insignificant. However, at an individual level, the poster was associated with a mixed reaction. Proactive CPs appeared either encouraged to interact with more customers and advise more frequently or discouraged from interaction and provided even less advice than would be expected under the first hypothesis by the numbers of customers involved.

Table 34

Frequency of advisory activity compared to the degree of devolved responsibility for customers presenting their prescriptions to pharmacy staff*

Pharmacy number ‡	Type §	Column †								
		1	2	3	4	5	6	7	8	9
8	p	26.6	73.4	79	53.6	46.4	56	37.8	62.2	135
20	p	29.8	70.2	47	25.0	75.0	32	27.8	72.2	79
14	p	10.5	89.5	38	15.3	84.7	59	13.4	86.6	97
5	p	31.9	68.1	69	28.0	72.0	75	29.9	70.1	144
4	p	44.7	55.3	47	33.3	66.7	45	39.1	60.9	92
18	p	7.1	92.9	112	15.1	84.9	106	11.0	89.0	218
11	p	2.3	97.7	86	14.5	85.5	76	8.0	92.0	162
15	p	15.5	84.5	58	8.8	91.2	68	11.9	88.1	126
6	p	9.2	90.8	109	16.7	83.3	84	12.4	87.6	193
7	r	3.6	96.4	110	4.5	95.5	111	4.1	95.9	221
16	r	21.2	78.8	104	17.6	82.4	91	19.5	80.5	195
12	r	11.9	88.1	159	12.8	87.2	149	12.3	87.7	308
13	r	1.8	98.2	55	0.0	100.0	59	0.9	99.1	114
1	r	13.2	86.8	68	30.4	69.6	56	21.0	79.0	124
9	p	8.8	91.0	57	3.8	96.2	52	6.4	93.6	109
19	r	19.0	81.0	52	54.0	46.0	50	38.0	62.0	92
10	r	13.6	86.4	88	18.1	81.9	83	15.8	84.2	171
17	r	29.1	70.9	79	14.8	85.2	81	21.9	78.1	160
2	r	11.9	88.1	84	9.8	90.2	82	10.8	89.2	166
3	r	2.2	97.8	91	1.9	98.1	105	2.0	98.0	196
	Total ⇒			1582			1520			3102

Notes

* = Statistical analysis for this table is summarised in table 36.

† = Columns represent the percentage of customers who give their prescription(s) to the CP (columns 1, 4 and 7) or any assistant (columns 2, 5 and 8). Columns three, six and nine are the actual number of customers for each pharmacy where, in the first instance (columns 1 to 3) the poster was not on display and in the second, (columns 4 to 6) the poster was displayed. Columns seven, eight and nine list the combined data, thus column nine is the sum of columns three and six.

The data excludes three occasions (1 x pharmacy 14, 2 x pharmacy 15) when prescriptions were handed by the customer directly to the researcher who was mistaken for pharmacy staff. On each occasion the prescription was handed on and no discussion took place between the researcher and the customer. Six further customers were excluded (2 x pharmacy 15, 4 x pharmacy 10) as the researcher could not be sure who the prescription was given to.

‡ = Pharmacies are listed in order of the CP's prescription medication advisory activity as indicated in table 37 section A3.1.3.1. The number identifies each pharmacy by alphabetical order. It should be noted that pharmacy number nine was proactive by definition but provided relatively little advice.

§ = Type is divided into proactive and reactive CPs as defined in section A3.1.2.

Table 35

Frequency of advisory activity compared to the degree of devolved responsibility for customers collecting their prescriptions from pharmacy staff*

Pharmacy number ‡	Type §	Column †										
		1	2	3	4	5	6	7	8	9	10	11
8	p	66.7	33.3	75	91.2	8.8	57	77.3	22.7	132	+24.5	+0.5
20	p	95.7	4.3	46	100.0	0.0	35	97.5	2.5	81	+4.3	0.0
14	p	90.0	10.0	40	85.2	14.8	61	87.1	12.9	101	-4.8	-0.2
5	p	94.2	5.8	69	88.6	11.4	70	91.4	8.6	139	-5.6	-0.2
4	p	63.3	36.7	49	55.8	44.2	52	59.4	40.6	101	-7.5	-0.4
18	p	38.6	61.4	114	32.7	67.3	107	35.7	64.3	221	-5.9	-0.3
11	p	35.4	64.6	82	53.2	46.8	77	44.9	56.0	159	+17.8	0.0
15	p	41.4	58.6	58	29.0	71.0	69	34.6	65.4	127	-12.4	+0.4
6	p	56.1	43.9	114	80.0	20.0	80	66.0	34.0	194	+23.9	+0.8
7	r	17.4	82.6	109	20.7	79.3	111	19.1	80.9	220	+3.3	
16	r	94.7	5.3	114	93.7	6.3	95	94.3	5.7	209	-1.0	
12	r	41.4	58.6	157	32.9	67.1	149	37.3	62.7	306	-8.5	
13	r	25.8	74.2	97	28.7	71.3	108	27.3	72.7	205	-2.9	
1	r	11.9	88.1	67	11.1	88.9	54	11.6	88.4	121	-0.8	
9	p	54.5	45.5	55	50.9	49.1	53	52.8	47.2	108	-3.6	+0.3
19	r	51.5	48.5	66	66.3	33.8	80	59.6	40.6	146	+14.8	
10	r	22.7	77.3	88	25.9	74.1	81	24.3	75.7	169	+3.2	
17	r	86.4	13.6	81	77.8	22.2	81	82.1	17.9	162	-8.6	
2	r	13.6	86.4	81	15.3	84.7	85	14.5	85.5	166	+1.7	
3	r	2.2	97.8	91	2.9	97.1	105	2.6	97.4	196	+0.7	
Total		1653			1610			3263				

Notes

* = Statistical analysis for this table is summarised in table 36.

† = The following customers are excluded; five (5 x pharmacy 12) when prescriptions were given to the customer by a vocational training student, one when the research was asked by the CP to give dispensed medication to a customer (1 x pharmacy 11), and, six when it was not absolutely clear which member of the pharmacy staff provided customers with their dispensed medication (1 x pharmacy 14, 5 x pharmacy 10). On the occasion when the prescription was handed on by the researcher, no discussion took place.

Columns represent the percentage of customers who received their dispensed prescription(s) from the CP (columns 1, 4 and 7) or any assistant (columns 2, 5 and 8). Columns three, six and nine are the actual number of customers receiving prescriptions for each pharmacy where, in the first instance (columns 1 to 3) the poster was not on display and in the second, (columns 4 to 6) the poster was displayed. Columns seven, eight and nine list the combined data, thus column nine is the sum of columns three and six. Column 10 is the change in the percentage of customers given their medication by the CP (column 4 - column 1). The net value for proactive pharmacies was +30.7 and for reactive, +1.9. Column 11 lists the contingency table standardised residuals,⁴⁰⁰ or the difference between observed and expected frequencies (residuals) divided by the square root of the expected frequency, for the number of customers given advice when the poster was displayed. This is a relative measure of whether the observed frequency of advice when the poster was displayed was greater than expected.

‡ = Pharmacies are listed in order of the CP's prescription medication advisory activity as indicated in table 37. The number identifies each pharmacy by alphabetical order. The reader should note that pharmacy number nine was proactive although the amount of advice afforded was minimal.

§ = Type is divided into proactive and reactive CPs as defined in section A3.1.2.

Table 36

Analysis of patterns of prescription presentation and collection

Source	Study design	Customers	Gamma*	Somers'D*†	Proactive group (n=10)		Students' t-test‡		Combined (n=20)				
					Mean	t-value	p§	Mean	t-value	p§	Mean	t-value	p§
table 34	A. Baseline	1582	0.15591	0.14831	18.6400	0.76	0.232	12.7500	0.85	0.208	15.6950	1.18	0.127
	B. Poster	1520	0.20597	0.19649	21.4100			16.3900			18.9000		
	C. Combined	3102	0.18101	0.17229									
table 35	A. Baseline	1653	0.32971	0.31689	63.5900	0.70	0.251	36.7600	0.37	0.361	50.1750	0.81	0.215
	B. Poster	1610	0.37025	0.35662	66.6600			37.5300			52.0950		
	C. Combined	3263	0.34986	0.33655									

Notes

* = Values for Gamma and Somer' D compare the order of decreasing advisory activity with the order of devolved responsibility from CP to assistant. The minimum expected frequency for any cell was 5.471 in table 34(B).

† = Somers' D calculated with advisory activity dependent on the degree of devolved responsibility.

‡ = Student's t-test compares activities as assessed by the percentage of customers CPs interacted with when the poster was on display and during baseline assessment. Two activities of CPs are considered, collection of prescription forms from customers (table 34) and giving out dispensed medication (table 35). Three groupings are considered for each activity, proactive, reactive and the combined data. Proactive and reactive groupings are defined in section A3.1.2, page 227, thus, the data for pharmacy number nine is included in the proactive group. Exclusion of this data in the analysis resulted in no changes to statements of significance. The one-tailed probability for table 34, proactive and combined was altered to 0.194 and 0.109. Similarly, for table 35, results of 0.226 and 0.193 would have been obtained had pharmacy number nine been excluded.

§ = As the second hypothesis in this section proposed a one way change in activity when the poster was displayed, a one-tailed probability (p) is quoted.

Source

Table 34, page 224, the relationship of decreasing frequency of advisory activity to the degree of devolved responsibility for customers presenting their prescriptions to pharmacy staff.

Table 35, page 225, the relationship of decreasing frequency of advisory activity to the degree of devolved responsibility for customers collecting their prescriptions from pharmacy staff.

A3.1.2 Prescription orientated individuals

This section concerns relationships of advisory activity to observed characteristics of POIs. The bulk of the data concerns customers who handed in at least one prescription form to be dispensed or collected one or more dispensed items, whether for themselves or on behalf of the patient. This is the basic activity which brings the customer into possible contact with CPs and therefore provides the opportunity for advisory activity. In addition, sections of the data and subsequent analysis include the characteristics of those individuals who proactively request information on prescription medication and have not already been recorded plus those individuals who CPs advise outwith their dispensing role while still remaining in the vicinity of the pharmacy. The combined data represents the characteristics of the total number of 'POIs' who have the potential for, or are actively engaged in, discussion concerning prescription medication. Thus, it will be noted that the total cases of 3519 in table 37, (page 236, column 24) is greater than the 3263 cases listed in table 35, page 225. The difference is accounted for by those individuals involved in discussion concerning prescription medication but not associated with the concurrent dispensing of prescriptions. The definition of 'customer initiated' is that, during discussion directly with the CP, one or more topics defined within a category of advice was started by an individual. Thus, for level one analysis, a CP may provide advice in several categories, but if dialogue included at least one original category of discussion started by the customer, the whole advisory episode was deemed customer initiated. Of the 151 POIs whose discussions were deemed customer initiated (table 37 column 27), 64 (42.4%) received additional categories of advice initiated by the CP. Categories used to define advice are discussed in section A3.1.3.1, page 249. In addition, the aforementioned section demonstrates that display of the poster did not significantly effect the frequency of advice provided by CPs, therefore, the data for both visits is combined in this analysis.

It was noted in an analysis of social policy indicators for Derbyshire⁵⁵⁶ that, *"In social status terms Derbyshire is very much a divided county. There is a sharp contrast between the affluent rural west of the country with high percentages of professional and managerial workers and the industrial urban centres of the east dominated by skilled and unskilled manual workers. These differences are reinforced by a similar contrast in the distributions of car ownership, higher education qualifications and housing tenure"*.

With such a divide and the potential for CPs to provide information selectively, it was decided to investigate the effect of socio-economic status on advice. As customers are not restricted to specific outlets, analysis required individuals residential addresses, rather than the crude location of community pharmacies and their implied catchment area. It was methodologically impractical to determine the socio-economic status of customers directly, however, information on patients' addresses was recorded for each dispensed prescription. It should be noted, therefore, that there is an assumed link between customers and patients in this analysis. Customers entering into discussion concerning advice were allocated the socio-

economic status of the patients' ward whether or not the customer was known to be the patient. Thus, analysis on socio-economic status concerning advice is at best directive of possible associations and interpretation of the results limited.

Using a list of street names, house numbers and corresponding 1981 District Electoral Ward names,⁵⁵⁷ in conjunction with the census abbreviation for District Electoral Wards⁵⁵⁸ prescriptions were coded by the 1981 District Electoral Wards of patients. Codes were subsequently related to published ward loadings of socio-economic status for Derbyshire.⁵⁵⁶ Unfortunately, no comparable analysis of socio-economic status was available for counties other than Derbyshire. Analysis of ward data is, therefore, restricted to those patients whose addresses were within the boundary of the SDHA. Of the prescriptions dispensed during the observational study, 3,458 (91.7%) were included in this analysis.

To demonstrate the method of data manipulation for analysis of socio-economic data, consider the following case. The customer was a male Caucasian, exempt from prescription charge being over 65 years old, who presented a single prescription to an assistant, noticed the poster and upon receiving the dispensed items from a community pharmacist-initiated discussion which included elements of advice. In this case, the customer, who was also the patient, presented a prescription with a Derby address within ward "FPAT". This ward is allocated a relative loading of -1.1 in the published literature.⁵⁵⁶ and in the present analysis, was similarly coded. Loadings for Southern Derbyshire ranged from +2.5 to -1.6 with more positive values related to higher socio-economic status. In this way each prescription in the analysis is allocated the value of the socio-economic status of the patients ward. As described on page 109, cases for analysis may be at four levels. Table 41, illustrated by figure 18, page 125, provides details of the level one analysis, where patients are cases, of 20 community pharmacies and the socio-economic status of patients in bands. Pharmacies are ranked in order of the CPs' advisory activity. Table 42, page 246, details the analysis of CP's activities and relates advisory activity to socio-economic status. Figure 19, page 126, illustrates the results of this level two analysis. Although, the data is banded to improve presentation, that the socio-economic divide exist for customers was demonstrated in this figure. Tables 43 to 46, pages 247 to 248 detail level four analyses of type of advice, display of the poster and type of CP with socio-economic status.

The following hypotheses were considered in the analysis of the data presented at the end of this section:

- H₁ that CPs advise similar proportions of POIs;
- H₂ that advice provided by CPs is independent of customers' gender, age, age controlled for gender, ethnic association and ownership of the medication.
- H₃ that customers' requests for advice are independent of their gender, age, age controlled for gender, ethnic association and ownership of the medication; and,
- H₄ that the preceding two hypotheses hold for all CPs.

- H₅ that CPs can not be distinguished on the basis of socio-economic status of patients for whom they dispense;
- H₆ that advice provided by CPs is not dependent on the socio-economic status of the patient;
- H₇ that the category of advice provided by CPs is not dependent on the socio-economic status of the patient;
- H₈ that, for customers receiving advice, display of the poster was not associated with changes in the socio-economic status of patients; and,
- H₉ that the above three hypotheses hold for customer-initiated requests for advice;

Considering the first hypothesis, empirical assessment of table 37 column 28 indicates the potential for two distinct types of CPs, those who are proactive and those who react to requests for advice from POIs. Taking a figure of 50% for the proportion of customer initiated advice of total advice clearly divides the pharmacy sample. Using this figure, pharmacy number nine was included in the proactive group. Analysis indicated that the proportion of advice initiated by POIs is very significantly dependent on the type of CPs (table 40 [A], page 244).

Table 37 ranks CPs by the percentage of preparation events associated with advice (section A3.1.3.1, page 249). With only one exception, CPs were divided into reactive and proactive groupings. It would appear that for those CPs associated with infrequent advisory policies, what information is provided is asked for. The proportion of POIs who receive advice was found to be very significantly dependent on type of CP (table 40 [B]), however, the proportion who initiated advice was not dependent on type (table 40 [C]). This points to an underlying, relatively constant, rate of customer initiated requests for advice directed towards pharmacy. A further dimension to this hypothesis is that indirect customer initiated requests for advice, where face-to-face discussion between CPs and the POI does not take place rather information is conveyed through the assistant, were very significantly dependent on type. Reactive CPs proportionally electing not to engage in direct conversation (table 40 [D]).

In summary, there are two statistical findings which lead us to reject the null hypothesis and accept that there are difference between CPs on the basis of the numbers of POIs given advice. First, the proportion of POIs provided with advice was dependent on type. Second, the proportion of indirect customer initiated advice of advice was dependent on type. On the basis of these results it was accepted that two types of CPs existed and value of 50% was incorporated in the definition of type, 'proactive' or 'reactive'. In addition, it was noted that the proportion of POIs who initiated advice was not dependent on type which lead to the conclusion that such activity was consistent across types of community pharmacies and proactive CPs were a separate group as they provided advice in addition.

The following three hypotheses; H₂, H₃ and H₄ are considered by interpretation of the analysis presented in table 38, page 238. Data was collected by direct observation, however,

certain information on POIs characteristics could not be validated. Whereas it was possible to determine gender without hesitation, the ability of any researcher to distinguish an individual's age or ethnic association by observation is not as clear. Figures have been published for the gender and age distributions of individuals observed to be involved in prescription 'counselling events'.¹⁷⁰ As an individual may be involved in several events, this data distorts the relative proportions of individuals directly involved with the CP and is not comparable with the present analysis. In other words, studies have reported 'counselling events' as cases, while this present analysis considers individuals as cases. Further, the age categories used in this thesis were based on the bandings of the Office of Population Censuses and Surveys and are not comparable with published figures known to the author. In any case, the subjective nature of assessing age without validation is so limiting that little use can be made of the data. Perhaps this partly explains why, although data on age was collected, analysis of this information was not reported by a further study using an observational method.¹⁶⁵ In order to produce partially validated data on age for this analysis, prescriptions were inspected to determine whether one or more were for the customer and if so, whether they were exempt from payment. Males aged 65 and over plus females aged 60 and over were exempt during the period of data collection. Of the 3519 cases processed, one or more prescriptions could be attributed to 1861 customers. For those individuals who did not present or collect one or more prescriptions but were involved in prescription medication discussion, or if the customer presented a previously signed prescription, a subjective assessment was made as to their age. It was felt that this method of determining age relationships with advisory activity was slightly more valid than subjective assessment by a single researcher of individuals' ages.

Ethnic association is a further area of subjective assessment. Using a combination of the name on the prescription, dress, language, the location of the pharmacy and patients' residential address, an assessment was made as to individuals ethnic association. It is a limitation of the method chosen that the information on ethnic origin was not externally validated.

It was possible to determine ownership of medication by observing customers when they signed for prescriptions and noting the similarities of individual signatures with identifying prescription names. Further clarification and confirmation of the relationship between customer, medication and patient was often determined from customers' discussions with CPs or assistants. Inevitably, as considered above, cases arose where individuals presented pre-signed prescriptions and it was not possible to determine ownership of medication from discussion within the pharmacy. In such cases customers' ownership was assigned to an 'unknown' category in common with those for whom the relationship of customer, prescription medication and patient was not observable. Two further categories used in the analysis included, where the customer was the patient and where the customer was 'related' to the patient as defined in a specific algorithm (table 39, page 243). Ownership was limited to those individuals who were customers by definition and therefore presented a prescription or

collected a dispensed item. The potential for this method of determining ownership of medicine may be assessed by noting that 76% of prescriptions dispensed in England in 1988 required a signature in claiming exemption from prescription charge.⁵⁵³

With these constraints the data in table 38 was analysed in three stages for dependence of advisory activity on the independent variables gender (A), age (B), age by gender (C), ethnic association (D) and ownership (E) (table 38). First, the analysis compares the distribution of those individuals who could possibly receive advice and those who were observed being advised when divided into the categories of the independent variable. The data was then divided into proactive and reactive groups and reassessed. Second, as a critical element in this thesis is the policy of customers in initiating advice, the data was then analysed for dependence of customer initiated episodes against each variable using the total sample. Again this analysis was repeated dividing the sample into types. Third, the dependent variable, customer initiated advisory activity was tested for association with the independent variables for the sub-section of POIs who received advice. The three stages of analysis were given the labels '1','2' and '3'. The hypothesis H_2 is tested by the first stage, hypothesis H_3 by both stages two and three and H_4 at all stages.

From the results of first stage analyses presented in table 38, the following associations concerning H_2 were noted. First, advisory activity appears independent of customers' gender (columns 1,2) but significantly dependent on age (columns 19,20) with those males and females aged over 65 and 60 years respectively receiving proportionally less advice. This significance can be traced to a trend for females over 60 years rather than males over 65 (columns 37,38 and 39,40) to receive less advice. A positive ordinal association was found between decreasing advisory activity and increasing age, although the correlation was weak. No evidence was found for a dependence of ethnic association and advisory activity (columns 73,74,75). Ownership of the prescription was very significantly associated with receiving advice (columns 94,95,96) with those customers who were related to the patient received markedly less information than expected (column 95).

The third hypothesis H_3 considered customer initiated requests for information both at stage two analysis, related to the total sample, and, at stage three, in comparison to the sub-section who received advice. At stage two, the dependent variable, customer initiated advisory activity appears independent of gender (columns 7,8), age (columns 25,26), age controlling for gender (columns 49 to 52) and ethnic association (columns 82,83). Ordinal comparisons showed a reversal from earlier observations with customer initiated advice increasing as age increased. At this stage of analysis, only ownership of the medication was found to be very significantly associated with customer initiation of advice. Stage three analysis, where customer initiated advice was compared to otherwise initiated advice for each of the independent variables, revealed a trend for females to request advice proportionally more than males (columns 13,14). There was a very significant dependence for advice which was requested to be given to older POIs (columns 31,32). By controlling for

gender (columns 61 to 64) it was shown that the stage of significance was related more to females age than males. There was no dependence noted for customer initiated advice and ethnic association (columns 88,89).

Having listed the relationships between advisory activity and selected characteristics of customers, the hypothesis H_4 holds that the preceding findings are consistent for both proactive and reactive CPs.

Considering stage one analyses and hypothesis H_2 , the lack of dependence for advisory activity on gender (columns 3 to 6) holds for both types, however, the significant dependence on age noted earlier is clearly due to the activity of proactive rather than reactive CPs (columns 21 to 24). This continued to be the case when age is controlled for gender (columns 41 to 48). Advice and ethnic association remained independent for both types. Advisory activity was also found to be dependent on ownership of the prescription for both proactive and reactive CPs.

Greater divergence was found between types for stage two and three analyses and hypothesis H_3 . Although the proportion of customer initiated advice of the total sample was independent of gender for both types (columns 9 to 12), comparison with the advised population (columns 15 to 18) showed a trend for females rather than males to request advice from reactive CPs. The earlier finding that advisory activity was dependent on age for proactive CPs was further strengthened as only for this type was the proportion of customer initiated requests for advice dependent on age. This was the case whether customer initiated advice was compared to the total sample (columns 27 to 30) or the advised population (columns 33 to 36). When age was controlled for gender and customer initiated advice compared within the advised population, both males and females in the older age group requested proportionally more advice from proactive CPs than expected. No such finding was found with reactive CPs (columns 65 to 72). Customer Initiation of advice was found to be independent of ethnic association for both types of CP and at stage two and three analysis (columns 84 to 93). The dependence of advice and customer initiated requests for information on ownership when compared with the population of customers held for both types (columns 106 to 111), however, the dependence of customer initiated advice was lost when compared with the advised group (columns 112 to 120).

In summary, this analysis lead to the rejection of H_1 , thus CPs may be divided into two advisory groups on the basis of the percentage of advice which is initiated by POIs. Proactive CPs are associated with very significantly more advisory activity and direct involvement with POIs. There was no evidence to suggest that POIs have a bias for requesting advice from one or other types of CPs which points to a low consistent ubiquitous level of customer initiated requests for advice.

A mixed result was found for the independence of CPs' advisory activity and the variables gender, ethnic association, age, age controlled for gender, and ownership of the medication. For the first two variables the null hypotheses could not be rejected, however, for the latter three, dependencies were noted and H_2 rejected. Specifically, a significant relative lack of advice was afforded males and, to an even greater extent, females over 65 and 60 years of age respectively. Increasing age was weakly correlated with decreasing advice. Advice was also dependent on ownership of the medication with customers collecting on behalf of a relative receiving relatively less advice.

The null hypothesis H_3 for independence of customer initiated advice on the same variables as above could not be rejected for all but ownership of the medication. It was noted that increasing age was now weakly correlated with increasing initiation of advice. When the proportion of customer initiated advice was considered relative to the advised population rather than all POIs or customers, the older age group, mainly females, were found to be responsible for a disproportionately greater amount of requested advice. In this analysis of customer initiated advice compared with total advice, the hypothesis H_3 was rejected for age and gender but not ownership of the medication.

Community pharmacists appear involved in advising younger males and females while responding to requests for advice from older, mainly female, customers. When the data was controlled for type, it was shown that these dependencies were clearly due to the selective activity of proactive CPs. The hypothesis H_4 was rejected for the variables gender, age and age controlled for gender. Only ethnic association and ownership of the medication was consistent for both types across all levels of examination.

With the exception of customer ownership of the medication, no statistical differences were found between the characteristics of the population who ask for advice and those of customers. As this group was responsible for the majority of advice for reactive CPs, it is not surprising that little difference was found when customer initiated advice was compared with the total population for reactive CPs. In contrast to the characteristics of the customer initiated groups, proactive CPs demonstrate a policy for advising a younger, less female dominated group and it was this activity which lead to rejections of hypotheses as outlined.

We now turn our attention to hypotheses H_5 to H_9 and take each in turn.

Concerning the fifth hypothesis, empirical assessment of figure 18, page 125, a three dimensional histogram with the x axis showing CPs in order of their prescription medication advisory activity, the z axis the socio-economic bands of patients addresses and the y axis percentage of patients, demonstrates that CPs dispense for discrete sections of socio-economic status. A second level analysis (table 41, page 245), where prescriptions are cases, of the $k \times n$ contingency table indicates that pharmacy and socio-economic status are very significantly dependent. Thus, the null hypothesis is rejected and community

pharmacies can be distinguished on the basis of the socio-economic status of the patients for whom they dispense.

The sixth hypothesis contends that CPs' advisory activity is not associated with the socio-economic status of patients. Figure 19, page 126, shows the banded socio-economic status of those patients for whom advice was provided to the presenter of the prescription in comparison with the socio-economic status of those patients not linked to advice. Analysis of the unbanded data (table 42, page 246) failed to find a statistically significant difference between the mean ranks of both populations (Mann-Whitney). Using this result the null hypothesis would not be rejected, however, further analysis sensitive to variations in distribution were very significant (Kolmogorov-Smirnov). It will be noted in figure 18 that as CPs' advisory activity decreases, the socio-economic status of patients for whom prescriptions are dispensed also decreases. Notable exceptions to this pattern were community pharmacies eight and 20. This is reflected in the analysis presented in table 41 where gamma has a value of -0.2981. From this finding, it would be a reasonable postulate that the frequency of individuals provided with advice would be dependent on socio-economic status of the patient for whom prescribed items were dispensed. As expected, figure 19 shows that the socio-economic status of patients for whom advice is provided is skewed towards the positive, however, there also appears to be a relatively large proportion of patients in the lower band. This is due to pharmacies eight and 20 which, due to high rates of advice, pulled the distribution to the lower bands. An interpretation of these findings would be that socio-economic status was not a factor for individual CPs in determining their own advisory activity, however, those CPs who provide advice are more likely to be providing an overall service to patients of a higher socio-economic status. Clearly this area requires further clarification with a larger sample of CPs. With the conflicting results of the present analysis it is not possible to make a clear statement with regard to the sixth hypothesis.

A level four analysis (table 43, page 247) comparing the distributions of socio-economic status of patient for the four categories of advice provides evidence that the hypothesis H_7 can not be rejected, therefore, the category of advice provided by CPs is not dependent on the socio-economic status of the patient.

Investigation of the 516 cases of advice and the socio-economic status of patients with and without display of the poster does not lead to rejection of hypothesis H_8 (table 45, page 248). It can be stated that the poster was not associated with changes in the socio-economic status of those patient for which advice was directly or indirectly provided.

Hypothesis H_9 contends that the previous three hypotheses hold for customer-initiated advice. Figure 19, page 126, shows the banded socio-economic status of those patients for whom advice was requested by the presenter of the prescription in comparison with the socio-economic status of those patients not linked to advice. Empirically, it is clear from this figure that the distribution appears to mimic that of the non-advised patient population. Thus,

not only is the frequency of customer initiated advice constant across community pharmacies, the socio-economic status of patients linked to such initiation may also reflect the larger population. That this is the case is demonstrated in table 42, page 246, as both Mann-whitney and Kolmogorov-Smirnov tests failed to show statistical significance. Thus, for customer initiated requests for advice, it is possible to state that advice sought is not dependent on patients' socio-economic status. Similarly, for hypotheses H₇ and H₈ no measure of statistical significance was found in the customer initiated population for the dependence of category of advice on socio-economic status of patients (table 42, page 246) or socio-economic status of patient on display of the poster (table 46, page 248). In both these cases the null hypotheses are not rejected. It can be stated that for the population of individuals who request advice on prescription medication, category of advice is not dependent on the socio-economic status of patients and that the socio-economic status of patients for whom advice was requested was not dependent on display of the poster.

In summary, this section considers the relationship of prescription medication advisory activity to the epidemiological, structural and demographic variables of those individuals receiving advice. Categories previously defined were used to quantify the advice provided. Socio-economic status was included as a social factor which may have been linked with patterns of advisory activity. Evidence based on analyses detailed at the end of the section was presented to determine the statistical justification for a series of hypotheses. Each of these was considered in turn and the findings summarised at the end of the discussion. In one case, hypothesis number six, it was not possible to make a clear statement as to rejection or otherwise of the hypothesis.

Table 37 Advisory activity of community pharmacists by epidemiological characteristics of those advised
Characteristics*

Community characteristics	Male by age						Female by age						Ethnic characteristic						Total Cases	Total PMA	% Total PMA of total PMA	type												
	Male < 65		Male ≥ 65		Total Male		Female < 60		Female ≥ 60		Total Female		Ethnic Caucasian		Ethnic Afro/Caribbean		Ethnic Asian						Ethnic A/SI											
	< 65 PMA	< 65 SI	≥ 65 PMA	≥ 65 SI	< 65	≥ 65	< 60 PMA	< 60 SI	≥ 60 PMA	≥ 60 SI	< 60	≥ 60	C PMA	C SI	A/C PMA	A/C SI	A PMA	A SI					26	27	28									
8	49	23	3	12	10	4	61	59	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29				
20	31	13	2	2	0	0	33	44	20	1	18	7	1	62	95	42	4	138	1	1	0	1	1	0	0	95	42	4	138	81	58.7	13	16.0	p
14	32	15	3	9	1	1	41	58	21	3	23	4	1	81	120	41	8	122	1	0	0	1	0	0	0	122	41	33.6	8	19.5	p			
5	51	12	1	10	2	0	61	72	18	10	33	8	5	105	162	38	15	166	1	1	0	3	1	1	1	166	40	24.1	16	40.0	p			
4	32	7	0	10	0	0	42	44	10	3	28	7	3	72	114	24	6	114	1	0	0	2	0	0	0	114	24	21.1	6	25.0	p			
18	59	11	2	23	3	1	82	111	21	3	39	5	1	150	232	40	7	233	1	0	0	0	0	0	0	233	40	17.2	7	17.5	p			
11	80	17	4	18	4	2	98	54	15	2	15	0	0	69	164	36	8	168	1	0	0	2	0	0	0	168	36	21.6	8	22.2	p			
15	42	8	1	18	0	0	60	64	9	3	18	2	0	82	87	9	3	142	11	3	1	40	7	0	0	142	19	13.4	4	21.1	p			
6	67	7	1	18	1	1	85	90	13	2	43	5	3	133	209	25	7	218	5	0	0	2	1	0	0	218	26	11.9	7	26.9	p			
7	99	9	6	17	1	1	116	84	8	4	29	3	2	113	197	19	13	229	9	0	0	21	2	0	0	229	21	9.2	13	61.9	r			
16	48	5	1	5	0	0	53	127	7	5	55	3	2	182	234	15	8	235	0	0	0	0	0	0	0	235	15	6.4	8	53.3	r			
12	74	3	1	28	2	0	102	137	16	12	83	8	7	220	322	29	20	322	0	0	0	0	0	0	0	322	29	9.0	20	69.0	r			
13	63	6	3	14	1	0	77	78	9	8	54	2	0	132	208	18	11	209	0	0	0	0	0	0	0	209	18	8.6	11	61.1	r			
1	46	5	3	7	1	1	53	56	2	1	19	0	0	75	126	8	5	128	0	0	0	0	0	0	0	128	8	6.3	5	62.5	r			
9	28	4	0	19	0	0	47	56	4	2	26	2	0	82	127	10	2	129	2	0	0	0	0	0	0	129	10	7.8	2	20.0	p			
19	50	4	3	16	0	0	66	63	3	1	21	1	1	84	150	8	5	150	0	0	0	0	0	0	0	150	8	5.3	5	62.5	r			
10	71	3	2	4	0	0	75	94	2	2	20	1	1	114	71	2	2	190	23	1	0	92	3	3	0	190	6	3.2	5	88.3	r			
17	61	0	0	19	1	1	80	56	1	1	33	3	3	89	168	4	4	169	1	1	1	1	1	1	0	169	5	3.0	5	100.0	r			
2	38	0	0	14	1	1	52	67	1	1	46	2	2	113	164	4	4	165	0	0	0	0	0	0	0	165	4	2.4	4	100.0	r			
3	49	0	0	23	0	0	72	85	0	0	40	0	0	125	196	0	0	197	3	0	0	3	0	0	0	197	0	0.0	0	0.0	r			
total	1070	152	36	286	30	13	1356	1499	216	66	661	75	36	2160	3281	451	145	3519	54	1	1	163	5	5	473	151	473	151	151	151	151	151		

Notes for table 37, page 236

- * = Legend: SI =customer initiated as defined in this section; C is Caucasian; A/F is Afro/Caribbean; and, A is Asian.
- † = Pharmacies ranked in order of the prescription medication advisory activity of the CP in charge. Note that the ranking closely parallels that obtained in considering the percentage of individuals CPs interacted with concerning advice, column 26.
- ‡ = Columns 7+14=24-3. Missing data includes one missing case in pharmacies 18,11 and 10 occurred where the age of the customer could not be determined with any certainty. These were cases of telephone conversation concerning advice.
- § = Columns 15+18+21=24-21. Missing data includes twenty-one cases, six of oriental extraction, eleven of mixed race and four not sure. Three of the latter were the telephone cases referred to above.
- ¶ = Columns 3+6+10+12 and 17+20+23 =27. This excludes 22 cases of indirect 'customer initiated' discussion where the CP did not converse directly with the enquirer. The two types of CP can clearly be seen based on whether 50% or more of discussions between the CP and those advised were 'customer initiated'. These groupings are designated proactive (p) and reactive (r). Note that the CP in pharmacy number nine was proactive by definition but only advised on a limited scale.

Table 38

Analysis of the advisory activity of community pharmacists and epidemiological characteristics of those advised
Variable analysed for independence*

(A) Gender	Stage 1 Gender				Stage 2 Gender				Stage 3 Gender			
	Proactive		Reactive		Proactive		Reactive		Proactive		Reactive	
	n=1523	n=1993	n=1523	n=1993	n=1523	n=1993	n=1523	n=1993	n=359	n=359	n=114	n=114
Dependent Variable	M	F	M	F	M	F	M	F	M	F	M	F
Column⇒	1	2	3	4	5	6	7	8	9	10	11	12
PMA	182	291	140	219	42	72	49	102	26	49	23	53
Expected value	1174	1869	470	694	704	1175	1307	2058	584	864	723	1194
Chi-square	0.00000		0.16416		0.00117		2.22867		0.73169		1.42976	
Significance	1.00000		0.68535		0.97276		0.13547		0.39234		0.23180	
Customer advised	133	189	114	170	49	102	58.1	92.9	26	49	23	53
Customer initiated PMA of PMA†	133	189	114	170	49	102	58.1	92.9	26	49	23	53
Expected value	123.9	198.1	114	170	49	102	58.1	92.9	26	49	23	53
Chi-square	3.04041		0.53498		3.43527		3.04041		0.53498		3.43527	
Significance	0.08122		0.46452		0.06382		0.08122		0.46452		0.06382	
(A) Gender	Stage 1 Age†				Stage 2 Age†				Stage 3 Age†			
Dependent Variable	Proactive		Reactive		Proactive		Reactive		Proactive		Reactive	
	n=1523	n=1993	n=1523	n=1993	n=1523	n=1993	n=1523	n=1993	n=359	n=359	n=114	n=114
Column⇒	<65	≥65	<65	≥65	<65	≥65	<65	≥65	<65	≥65	<65	≥65
PMA	368	105	284	75	48	27	102	49	55.3	19.7	102	22
Expected value	345.6	127.4	264.7	94.3	55.3	19.7	117.5	33.5	59.3	15.7	117.5	33.5
Chi-square	2201	842	839	325	1362	517	266	56	236	48	266	56
Significance	2223.4	819.6	858.3	305.7	1067.7	380.3	250.5	71.5	224.7	59.3	250.5	71.5
Gamma	5.95215		6.64285		3.35049		12.63957		11.96463		12.63957	
Somers' D	0.01470		0.00996		0.06719		0.00038		0.00054		0.00038	
	+0.14558		+0.18924		-0.23697		-0.39059		-0.46888		-0.39059	
	+0.03237		+0.06539		-0.02476		-0.18949		-0.19099		-0.18949	
	0.02905		0.86466		0.86658		0.02823		0.86658		0.02823	
	+0.03047		+0.00325		-0.03856		-0.03856		-0.03856		-0.03856	
	+0.00325		+0.00325		-0.00287		-0.00287		-0.00287		-0.00287	

Table 38 continued

Variable analysed for independence*

(C) Age by gender	Stage 1 Age by Gender Total data				Stage 1 Male age by type				Stage 3 Female age by type			
	Males n=1356	≥65	<60	Females n=2160	Proactive n=610	≥65	<60	Reactive n=746	Proactive n=913	≥60	<60	Reactive n=1247
Dependent Variable	37	38	39	40	41	42	43	44	45	46	47	48
Column⇒												
PMA	152	30	216	75	117	23	35	7	167	52	49	23
Expected value					108.1	31.9			156.4	62.6		
No PMA	918	256	1283	586	354	116	564	140	485	209	798	377
Expected value					362.9	107.1			495.6	198.4		
Chi-square (Yates)	2.37165		3.43418		3.71926		0.09606		3.00506		0.00000	
Sig	0.12356		0.06386		0.05379		0.75661		0.08301		1.00000	
Gamma	+0.17113		+0.13622		+0.25007		+0.10759		+0.16105		+0.00323	
Somers' D	+0.03716		+0.03063		+0.08294		+0.01081		+0.05690		+0.00035	
(C) Age by gender	Stage 2 Age by Gender Customer Initiated				Stage 2 Male age by type Customer Initiated				Stage 2 Female age by type Customer Initiated			
Dependent Variable	Males n=1356	≥65	<60	Females n=2160	Proactive n=610	≥65	<60	Reactive n=746	Proactive n=913	≥60	<60	Reactive n=1247
Column⇒	49	50	51	52	53	54	55	56	57	58	59	60
PMA (Customer initiated)	36	13	66	36	17	9	19	4	31	18	35	18
No PMA	1034	273	1433	625	454	130	580	143	621	243	812	382
Chi-square (Yates)	0.59642		0.89010		1.51447		0.00029		1.28839		0.02254	
Significance	0.43995		0.34545		0.21846		0.98633		0.25635		0.88066	
Gamma	-0.15531		-0.11136		-0.29797		+0.07882		-0.19481		-0.04452	
Somers' D	-0.01181		-0.01043		-0.02865		+0.00451		-0.02142		-0.00368	

Table 38 continued

Variable analysed for independence*

(C) Age by gender	Stage 3 Age by Gender		Stage 3 Male age by type		Stage 3 Female age by type	
	Males n=1356	Females n=2160	Customer Initiated PMA of PMA	Customer Initiated PMA of PMA	Customer Initiated PMA of PMA	Customer Initiated PMA of PMA
Dependent Variable			Proactive	Proactive	Proactive	Reactive
Column=>	<65	<60	<65	<60	<60	>=60
	61	63	65	69	71	72
	62	64	66	70	70	72
	≥65	≥60	≥65	≥65	≥60	≥60
PMA (Customer initiated)	36	36	9	4	18	18
Expected value	40.9	75.7	8.1	19	37.4	11.6
PMA (Not CJ)	116	150	14	16	136	14
Expected value	111.1	140.3	100	100	129.6	40.4
Chi-square (Yates)	3.96872	6.69495			4.99514	0.10665
Significance	0.04635	0.00967	0.01513\$	1.0000\$	0.02542	0.74399
Gamma	-0.42264	-0.35440	-0.58172	-0.05785	-0.39806	-0.18033
Somers' D	-0.19649	-0.17444	-0.24601	-0.02857	-0.16053	-0.06832

(D) Ethnic association

(D) Ethnic association	Stage 1 Ethnic association		Stage 2 Ethnic association		Stage 2 Ethnic association	
	Total data n=3498	Proactive n=1515	Reactive n=1983	Total data n=3498	Proactive n=1515	Reactive n=1993
Dependent Variable						
Column=>	C	A	C	C	C	A/C + A
	73	74	79	82	84	86
	75	77	80	83	85	87
	78	78	81	83	85	87
PMA	451	6	107	145	2	4
	16	344	1	6	73	72
No PMA	2830	48	1729	3136	68	143
	147	1101	31	211	1764	1764
Chi-square	2.32349	0.23868	0.48771¶	1.34877	0.53218	0.53218
Significance	0.31294	0.88751	0.78360	0.24549	0.57660\$	0.46569

Table 38 continued

Variable analysed for independence*

Dependent Variable Column⇒	Stage 3 Ethnic association Customer initiated PMA of PMAT					
	Total data n=473		Proactive n=359		Reactive n=114	
	C	A/C+A	C	A/C+A	C	A/C + A
	88	89	90	91	92	93
PMA (customer initiated)	145	6	73	2	72	4
PMA (Not CI)	306	16	271	13	35	3
Chi-square (Yates) Significance	0.06006 0.80640		0.745\$		0.68435\$	

(E) Ownership of the prescription**

Dependent Variable Column⇒	Stage 1 Ownership of prescription Total data						Stage 2 Ownership of prescription Customer initiated									
	Total data n=3374		Proactive n=1430		Reactive n=1944		Total data n=3374		Proactive n=1430		Reactive n=1944					
	O	R	O	R	O	U	O	R	O	U	O	R	U			
	94	95	96	98	99	101	102	103	104	105	106	107	108	109	110	111
PMA	256	67	90	54	71	13	19	75	16	26	39	9	11	36	7	15
Expected value	233.6	114.0	65.5	94.6	53.3	23.7	13.8	66.2	32.3	18.6	32.0	17.3	9.7	33.8	15.3	8.9
No PMA	1652	864	445	365	165	1075	280	1833	915	509	736	410	225	1097	505	284
Expected value	1674.4	817.0	469.5	324.4	182.7	1080.5	285.2	1841.8	898.7	516.4	743.0	401.7	226.3	1099.2	496.7	290.1
Chi-square Significance	34.96404 0.00000		34.01711 0.00000		7.69774 0.02130		12.82876 0.00164		5.92430 0.05171		9.03861 0.01090					

Table 38 continued

Variable analysed for independence*

Dependent Variable Column⇒	Stage 3 Ownership of prescription Customer initiated PMA of PMA						Reactive n=90		
	Total data n=413			Proactive n=323					
	O	R	U	O	R	U			
PMA (Customer initiated)	75	16	26	39	9	11	36	7	15
PMA (Not CI)	181	51	64	159	45	60	22	6	4
Chi-square Significance	0.78500 0.67537			0.72978 0.69427			2.52421†† 0.28306		

Notes

- * = Proactive and reactive as defined in this section. Similarly, analyses are listed 1,2,3 as described. Data for pharmacy number nine included in proactive grouping.
Legend: CI customer initiated as defined in this section; M is Male; F is Female; C is Caucasian; A/F is Afro/Caribbean; A is Asian.
- † = Where analysis is 'customer initiated PMA of PMA', the dependent variables, unless otherwise stated, are PMA which is customer initiated and PMA which is not.
- ‡ = For columns 19 to 36, Age is divided into males plus females <65 years and <60 years respectively in the first column of a contingency table compared with males plus females ≥65 and ≥60 in the second.
CI is Customer Initiated as defined in this section. Ordinal analysis compares decreasing frequency of advice (PMA to no PMA) with increasing age (<65 for males and <60 for females to ≥65 and ≥60 respectively).
- § = Fishers exact test for cases when a cell in a 2x2 table has an expected frequency less than five. Two tailed probability given.
- || = Categories collapsed to caucasian (C) and non-caucasian (A/C+A) due to small cell size
- ¶ = Expected frequency of 1.840 for cell 1,2 in a 2x3 matrix.
- ** = Ownership of the prescription is defined in table 39, page 243, and is represented as follows: 'O' stands for Owned. This is the case when one or more prescriptions or dispensed items are for the customer; 'R' stands for Related. If customers are presenting or collecting on behalf of their spouse, parent or grandparent, or descendent, their actions and those of CPs are categorised under 'R'. Finally, 'U' is where the relationship between the customer and the prescription is Unknown or known to be unrelated by other definition.
- †† = Expected frequency of 4.622 for cell 2,3 in a 2x3 matrix

Table 39

Algorithm for ownership of prescription medication*

Customer is 'involved' with the \mathcal{R} , the Customer is.....	Category†
the patient	O
related to the patient.....	
Spouse	R
Parent/grandparent	R
Descendant	R
Sibling/ brother,sister -in-law	‡
signs pt's surname +/- address	‡
"involved" through occupation, the Customer is.....	
Community nurse	‡
Collecting for home	‡
General practitioner	‡
Staff of surgery	‡
Customer is not the patient but the patient is in the pharmacy	‡
Not known	U
Miscellaneous.....	
Collect from surgery pharmacy staff	‡
patient is an animal	‡
Not applicable	‡

Notes

- * = Based on the 3488 customers who presented a prescription or collected dispensed items from the pharmacy. Of these, 424 were provided with PMA.
- † = Categories O,R and U relate to those used in the analyses listed in table 38, page 238.
- ‡ = A total of 114 customers (3.3%) fell into these categories. Eleven cases of advice were observed when 13.9 were expected. As the numbers in this category were relatively small, the expected and observed frequencies close and the relationship of the customer with the medication diverse, the data in these categories was excluded in the analysis presented in table 38.

Table 40

Advisory activity and type of community pharmacist

Variable analysed for independence*

Dependent variable†	Type		n	Chi-Square	Significance
	Proactive	Reactive			
(A)					
PMA (customer initiated)	75	76			
Expected value	114.6	36.4			
PMA	284	38	473	81.33081	0.00000
Expected value	244.4	77.6			
(B)					
PMA	359	114			
Expected value	205.0	268.0			
No PMA	1166	1880	3519	234.42346	0.00000
Expected value	1320.0	1726.0			
(C)					
PMA (Customer initiated)	75	76			
No PMA	1450	1918	3519	2.31418	0.12820
(D)					
PMA (direct)	359	114			
Expected value	348.8	124.2			
PMA (indirect)	6	16	495	23.21810	0.00000
Expected value	16.2	5.8			

Notes

* = Prescription orientated individuals are divided by the type of pharmacy in which they were observed. Pharmacy number nine being included in the former category.

† = (A) Compares the distribution of the number of POIs given advice with those who requested advice from one or other type of CP.

(B) is a contingency table which compares the distribution of POIs who receive advice from one or other type of CPs.

(C) is a contingency table which compares the distribution of the number of POIs who request advice from one or other type of CP.

(D) In the above tables (A) to (C) advice was provided directly between CP and POI. Advice was also given indirectly with a pharmacy assistant acting as spokesperson for both parties. Twenty-two such cases were observed. The last table compares the distribution of these cases with the direct advisory activity of the two types of CPs.

Table 41

Independence of socio-economic status of patient and community pharmacy

Community pharmacy†	Socio-economic status A*									Row total
	-1.35	-0.85	-0.35	+0.15	+0.65	+1.15	+1.65	+2.15	+2.50	
8	34	55	2	6	31	1	18	1	0	148
20	0	13	42	1	32	1	0	0	0	89
14	2	1	5	89	8	0	0	0	0	105
5	1	0	1	7	132	0	1	0	0	142
4	0	0	48	15	28	1	4	7	0	103
18	0	3	7	34	4	0	218	1	1	268
11	1	60	17	96	10	1	0	0	0	185
15	0	20	10	107	11	0	0	0	0	148
6	0	2	111	62	18	0	0	0	0	193
7	7	55	25	138	19	0	0	1	0	245
16	0	1	205	0	0	2	4	0	1	213
12	2	10	268	54	3	1	0	0	0	338
13	2	1	6	3	25	5	20	156	0	218
1	12	74	5	4	21	0	4	1	1	122
9	22	5	53	8	13	4	1	0	0	106
19	0	112	19	1	6	0	0	0	0	138
10	1	4	114	74	17	0	0	0	0	210
17	80	19	64	1	0	4	0	0	0	168
2	0	0	88	35	48	0	0	0	0	171
3	108	19	7	12	2	0	0	0	0	148
Total	272	454	1097	747	428	20	270	167	3	3458

Community pharmacy†	Socio-economic status B*								
	-1.35	-0.85	-0.35	+0.15	+0.65	+1.15	+1.65	+2.15	+2.50
8	23.0	37.2	1.4	4.1	20.9	0.7	12.2	0.7	0
20	0	14.6	47.2	1.1	36.0	1.1	0	0	0
14	1.9	1.0	4.8	84.8	7.6	0	0	0	0
5	0.7	0	0.7	4.9	93.0	0	0.7	0	0
4	0	0	46.6	14.6	27.2	1.0	3.9	6.8	0
18	0	1.1	2.6	12.7	1.5	0	81.3	0.4	0.4
11	0.5	32.4	9.2	51.9	5.4	0.5	0	0	0
15	0	13.5	6.8	72.3	7.4	0	0	0	0
6	0	1.0	57.5	32.1	9.3	0	0	0	0
7	2.9	22.4	10.2	56.3	7.8	0	0	0.4	0
16	0	0.5	96.2	0	0	0.9	1.9	0	0.5
12	0.6	3.0	79.3	16.0	0.9	0.3	0	0	0
13	0.9	0.5	2.8	1.4	11.5	2.3	9.2	71.6	0
1	9.8	60.7	4.1	3.3	17.2	0	3.3	0.8	0.8
9	20.8	4.7	50.0	7.5	12.3	3.8	0.9	0	0
19	0	81.2	13.8	0.7	4.3	0	0	0	0
10	0.5	1.9	54.3	35.2	8.1	0	0	0	0
17	47.6	11.3	38.1	0.6	0	2.4	0	0	0
2	0	0	51.5	20.5	28.1	0	0	0	0
3	73.0	12.8	4.7	8.1	1.4	0	0	0	0

Analysis§			
Total	3458	Minimum expected frequency	4.278
test n	3435	Chi-square	9606.90198
DF	114	Probability	0.00000
fcells <5	2.1%	Gamma	-0.29812

Notes

- * = (A) = absolute frequency. (B) = percentage. Values of socio-economic status are the midpoints of bands of width 0.5. For example, values of -1.60 to -1.10 are in band -1.35, while those from -1.11 to -0.60 are denoted -0.85.
- † = Pharmacies in order of prescription medication advisory activity. Listed by alphabetical number from one to 20.
- ‡ = Rows may not sum to 100% due to rounding off errors.
- § = Analysis of absolute frequency excluded socio-economic categories 1.15 and 2.5 to account for multiple minimum expected frequencies less than unity.

Table 42

Relationship between socio-economic status of patient and advice

Statistical relationship of group with socio-economic status*

Group	Mean Rank	Cases n=3458	Mann-Whitney Z	Kolmogorov-Smirnov Z	2-tailed probability
Patients receiving no advice	1722.90	3054	-1.0719		0.2838
Customers receiving advice	1779.41	404			
Patients receiving no advice		3054		1.857	0.002
Customers receiving advice		404			
.....					
Patients receiving no advice	1730.52	3348	-0.3310		0.7407
Customers initiating advice	1698.58	110			
Patients receiving no advice		3348		0.451	0.987
Customers initiating advice		110			
.....					
Patients receiving advice	205.84	294	-0.9409		0.3468
Customers initiating advice	193.59	110			
Patients receiving advice		294		1.229	0.098
Customers initiating advice		110			

Note

* = Analysis based on the original unbanded data. An independent Students t-test was considered inappropriate as the population distributions appeared to be bimodal rather than normal (Figure 6, page 27).

Table 43

Independence of category of advice and socio-economic status of patient

Category of advice†	Socio-economic status*								Row total
	-1.35	-0.85	-0.35	+0.15	+0.65	+1.15	+1.65	+2.15	
Side effects	3	8	8	6	6	0	2	1	34
Specific problems	3	9	25	23	9	0	11	4	84
What is prescribed	6	14	26	17	20	2	10	1	96
What to do with it	27	52	57	77	53	1	31	4	302

Analysis‡

Total	516
test n	513
DF	18
fcells <5	17.91%
Chi-square	22.01419
Probability	0.23136

Notes

- * = Values of socio-economic status are the midpoints of bands of width 0.5.
 † = One cell (1,8) had an expected frequency less than unity, 0.663. In line with the robustness of homogeneity tests in 2 x n tables this was judged acceptable. Analysis excluding socio-economic factor 2.15 resulted in a change of probability to 0.28514.

Table 44

Independence of category of advice requested and socio-economic status of patient

Category of advice†	Socio-economic status*							Row total
	-1.35	-0.85	-0.35	+0.15	+0.65	+1.65	+2.15	
Side effects	1	4	4	4	6	0	1	20
Specific problems	3	5	14	8	5	4	3	42
What is prescribed	4	8	19	5	5	2	1	44
What to do with it	3	11	13	17	11	3	3	61

Analysis‡

Total	167
test n	167
DF	18
fcells <5	53.6%
Minimum expected frequency	1.0
Chi-square	17.15417
Probability	0.51253

Notes

- * = Values of socio-economic status are the midpoints of bands of width 0.5.
 † = Statistical interpretation was invalid due to the large number of cells with expected frequency less than five. This data is presented to demonstrate the pattern of advice sought in relation to the residence of the patient.

Table 45

Independence of socio-economic status of patient receiving advice and display of poster*

Display of poster†	Socio-economic status‡								Row total
	-1.35	-0.85	-0.35	+0.15	+0.65	+1.15	+1.65	+2.15	
Yes	20	39	72	67	53	1	22	5	279
No	19	44	44	56	35	2	32	5	237

Analysis

Total	516
test n	516
DF	7
fcells <5	18.6%
Minimum expected frequency	1.378
Chi-square	10.58775
Probability	0.15764

Notes

- * = The dependent variable, socio-economic status is given the y axis to improve display.
 † = Values of socio-economic status are the midpoints of bands of width 0.5.

Table 46

Independence of socio-economic status of patient for customer initiated advice and display of poster

Display of poster†	Socio-economic status*							Row total
	-1.35	-0.85	-0.35	+0.15	+0.65	+1.65	+2.15	
Yes	7	16	23	14	20	5	5	90
No	4	12	27	20	7	4	3	77

Analysis‡

Total	167
test n	167
DF	6
fcells <5	28.6%
Minimum expected frequency	3.689
Chi-square	8.67942
Probability	0.19243

Notes

- * = The dependent variable, socio-economic status is given the y axis to improve display.
 † = Values of socio-economic status are the midpoints of bands of width 0.5.
 ‡ = Contingency table judged valid.

A3.1.3 Quantitative

A3.1.3.1 Advice

In the first section of appendix three the activities of CPs in collecting prescriptions and presenting dispensed items to customers were explored. It was shown that CPs who give out prescriptions are likely to proffer advice and that the effect of the poster on prescription handling was insignificant. Following this, section A3.1.2, page 227, provided evidence for two types of CPs, proactive and reactive. Also, that the bulk of advice is provided by proactive CPs who advise younger customers while receiving proportionally more requests for advice from those who are older and mainly female. In addition, it was shown that a CP dispenses for patients whose addresses are banded within a limited range of socio-economic status, and that the category of advice is definitely not associated with such status. These previous sections dealt with CPs' policies or activities regarding people, but what about prescription medicines?

Research has demonstrated that advice can be described by three categories, 'What is prescribed', 'What to do with' and 'Specific problems'. Also, that a discrete subsection of 'Specific problems' containing issues of 'side effect' was justified.^{147 148} These headings form the framework used to quantify the observed topics of advice in the current analysis. As described on page 109, cases for analysis may be at four levels. An appreciation of the relative multiplication effect for level two analysis where PQIs may be counted many times over depending on the number of prescriptions involved, is gained by realising that 13.1% of customers in the observational study received dispensed items from more than one prescription. We now turn to the manipulation of data in preparation for additional analysis at further levels of investigation.

Concerning analysis of advisory activity and medication, prescribed items may be classified by therapeutic use, pharmacological action or form of administration such as drops or tablets. Medications have a range of pharmacological actions and may be presented in combination in several products intended for varying routes of administration, however, only two options for therapeutic classifications are readily available, either the system used in the British National Formulary or, alternatively, the classifications used by the Department of Health. The latter was chosen as National figures are published allowing comparison with observed data and the former is not an exhaustive list of prescribed items. Further, the DoH classification has elements of route of administration and pharmacological action, for example "preparations acting locally on the skin and mucous membranes" and "preparations acting on the nervous system" respectively. It is essentially a classification of prescribers' main intentions for the use of medicines. Specifically, the 1987 Drug Master Index,⁵⁵⁹ which lists prescribed items with respective therapeutic classes and the accompanying explanatory folder which details the interpretation of the index,⁹⁴ were used. Each medication was coded according to the schedule listed at the foot of figure 11, page 38 It was classification by this schedule which lead to figure 21, page 128. A total of 6,072 prescription items defined by

3778 forms were dispensed during the study period. The ratio of dispensed items to forms of 1.61 is similar to published figures for England of 1.68 for the period 1988.⁵⁶⁰ An additional 745 items were noted where the form was taken by customers for alternative dispensing, medication was left by customers to be collected later, items were owing from previous prescriptions, discussion included advice on previously prescribed medication, prescription medication was discussed OTC but no item dispensed, and items where CPs advised indirectly through the assistant. By considering the total of 6,817 discrete medications as cases (level 3), in other words, the total items which the CP was aware of, an appropriate measure of advisory activity relative to medication can be derived. Each case is defined as a 'preparation event'. In this way a prescribed item is linked semantically to the potential for advice. In order to illustrate the coding scheme used it may be helpful to consider the following complete verbatim transcription. The customer (C), upon receiving the dispensed items from a CP (P), initiated the following discussion:

C-P **Can you tell me what these are for? (1)**
P-C Yes. These red ones (Erythromycin tablet. Community pharmacist shows the tablets on her hand)
C-P Eh?
P-C **Red ones, that's an antibiotic (1)**
C-P Yeah
P-C **So it's important you take all of those (2)**
C-P Yeah
P-C Alright?
C-P (Nods)
P-C **Then there's some tiny purple ones. They're to help you breathe (1) (Ventolin tablets)**
C-P Yeah
P-C **When you feel a bit wheezy (2)**
C-P Yeah
P-C That's when you have one of those
C-P Yeah (Mumble, mumble)
P-C Yeah, OK then!
C-P **Thank you.... and no beer? (3)**
P-C Well, not too much. You can have a couple
C-P Not too much. Thank you kindly
P-C Alright
C-P 'Bye, 'bye

Two preparation events, or prescribed items, are noted in this example, Ventolin and Erythromycin tablets. Using the DoFH therapeutic classification, Ventolin, whose active component is salbutamol a respiratory stimulant, was coded 052 and Erythromycin, being an antibiotic, 088. Each prescribed item was linked to three categories of advice, 'What was prescribed' (1), 'What to do with it' (2) and 'Special problems' (3). These are illustrated in the example above in bold type with the aforementioned numbering. In addition, the customer was noted to have initiated discussion for both items concerning what was prescribed but the CP independently advised for both items what to do with them. Finally, the special problem of drinking concerning both items was initiated by the customer. In total the customer initiated two out of three categories of advice for each prescribed item. Clearly, a preparation event can be linked with up to four categories of advice, any number of which may be customer initiated. Table 47, page 256, illustrated by figure 17, page 120, concerns a level three analysis of preparation events and both CPs' advisory activity and customers' requests

for information. The effect of the poster on preparation events is also considered. Table 48, page 257, lists the 6817 preparation events by therapeutic class with a variety of level three analyses. Table 49, page 259, lists categories of advice by therapeutic class and details the level four analysis. This data is illustrated in figure 21, page 128, which also provides a comparison with the distribution of preparation events (level 3). Finally, table 50, page 260, details the analysis of category of advice and display of the poster (level 4).

The following hypotheses are considered in the analyses of data presented in tables at the end of this section:

- H₁ for preparation events, advice does not depend on the CP involved;
- H₂ that dispensing by observational study CPs may be generalised to a wider sample frame in terms of therapeutic class.
- H₃ for preparation events grouped by therapeutic class, advice does not depend on the category of medication involved;
- H₄ that the category of advice discussed did not depend on the therapeutic class of the medicine involved.
- H₅ that the above hypotheses H₁, H₃ and H₄ do not hold for customer initiated requests for advice;
- H₆ that hypothesis H₃ holds for both proactive and reactive CPs;
- H₇ that display of the poster was not associated with changes in the frequency of CPs' advisory activity;
- H₈ that display of the poster was not associated with changes in the therapeutic classification of medicines for which advice was provided;
- H₉ that the category of advice discussed did not depend on display of the poster;
- H₁₀ that the above hypotheses H₈ and H₉ hold for customer initiated requests for advice;
- H₁₁ that the category of advice discussed did not depend on the type of CP; and
- H₁₂ that the category of advice sought did not depend on the type of CP.

Taking each of the above hypotheses in turn. First, it is clear from table 47, page 256, that the frequency of advice for preparation events is dependent on individual CPs. Only five of the 20 observational study CPs had adjusted residuals for advice which were not significant ($<\pm 1.96$) at the 95% confidence interval. In this case we are able to reject the null hypothesis and state that for the CPs in the study, the relative frequency of advice POIs received for each prescribed item is very significantly dependent on the CP involved.

Second, table 48, page 257, columns three and four provide evidence that in the observational study, the distribution of preparation events by therapeutic class is not statistically different to that of dispensed prescriptions. In turn, columns four and five demonstrate a similar finding for prescriptions dispensed by observational study CPs when compared with dispensing in Great Britain for the same period. Therefore, the null hypothesis that the distributions by therapeutic class of preparation events, dispensed

medicines observed in this study and those dispensed in Great Britain are statistically similar can not be rejected. In this analysis, the 20 randomly chosen CPs are considered representative of CPs in Southern Derbyshire. Evidence to support such a stance is also presented in section A2.2.1, page 187. It is shown that attitudinally and in terms of structural variables, the 20 observed CPs are comparable with the 95 of the first survey of CPs in Southern Derbyshire. It is considered justifiable, therefore, to generalise the results of analysis based on categories of therapeutic class to the larger sample frame of Southern Derbyshire.

Third, table 48, page 257, columns 12, 13 and 14 reveal that advisory activity is dependent on therapeutic classification. Adjusted residuals locate the significance to a lack of information on preparations acting on the cardiovascular system (therapeutic class 4) and preparations used in diagnosis (therapeutic class 17) and dressings (therapeutic class 20). In contrast, significantly greater than expected frequencies of advice for; preparations acting systemically on infections (therapeutic class 8), preparations acting on the eye (therapeutic class 15), and, preparations for immunology (therapeutic class 16) were observed. It should be noted that implied confidence intervals for lack of information on preparations acting on the cardiovascular system (adjusted residual -6.1) and preparations acting systemically on infections (adjusted residual +12.8) indicate dramatic deviations from expected advisory activity. The null hypothesis is rejected and it is possible to state that for the CPs in the study, the relative frequency of advice POIs received for each prescribed item is very significantly dependent on the therapeutic class of the medication involved. In this respect, seven of the 20 therapeutic classes in the analysis were significant contributors to this finding and two were outstanding.

Fourth, table 49, page 259, provides a comparison of advisory activity for prescribed items in therapeutic classes at level three analysis, where medicine is a case (column 2), with that of a level four analysis where advice itself is a case (column 3). The mean of the ratios for observed activity of 1.43 and the standard deviation of 0.305 provide an indication of the average multiplication factor between the two levels and the small variation between therapeutic classes. Table 49 columns four to 15 provide additional details of the relationship between advice in the four previously defined categories and the therapeutic class of prescribed medication. It is shown that category of advice is very significantly dependent on therapeutic class of medication. Significantly greater than expected frequencies were found for discussion on the side effects of preparations acting on the nervous system (column 6, therapeutic class 2) and to an even greater extent the side effects of preparations with hormone or anti-hormone activity (column 6, therapeutic class 9). Preparations acting on the gastro-intestinal system (therapeutic class 3) were associated with significantly greater than expected frequencies of discussion concerning specific problems and preparations acting systemically on infections were similarly associated with discussion on what to do with it. The results of this analysis lead to the rejection of the null hypothesis and it is shown that category of advice is dependent on therapeutic class of medication. Significantly greater

than expected frequencies of discussion were noted for four combinations of advice and therapeutic class of medication.

Fifth, table 47, page 256, indicates that, for preparation events, the frequency of requests for advice is dependent on individual CPs. Although the association was significant, the individual adjusted residuals reached significance for only three of the 20 observational study CPs. This is in agreement with the general finding that POI's requests for advice mirror the study sample population more closely than the total of advisory activity. Again, the null hypothesis is rejected, thus, for preparation events, customer initiated requests for advice are found to be very significantly dependent on CP. Table 48, page 257, columns 15, 16 and 17 follow a similar pattern to columns 12, 13 and 14 and the null hypothesis is again rejected. It can therefore be stated that, for preparation events, customer initiated requests for advice are found to be very significantly dependent on therapeutic class of medicine. In a further analysis, customer initiated requests for advice were tested for association with the therapeutic classes of medicines for which advice was provided (columns 15, 18, 19). In other words, of the preparation events which included advice the therapeutic classes of medications for which discussion was customer initiation were investigated. Considering the results of the analysis by comparing column 19 with 14, a significant reversal was noted for preparations acting systemically on infections. Further, POIs requested significantly more information on preparations with hormone or anti-hormone activity than expected, however, requested relatively less than expected information on preparations acting on the cardiovascular system and preparations affecting allergic reactions (therapeutic class 13). These results may be interpreted as follows. Community pharmacists are significantly the main initiators of discussion concerning preparations acting systemically on infections and preparations affecting allergic reactions, but are also responsible for the lack of advice on preparations acting on the cardiovascular system. POIs are significantly responsible for initiating advice on preparations with hormone or anti-hormone activity. This interpretation is totally consistent with the results of the level four analysis of advice in table 48 columns 16 to 18. The hypothesis H_4 is rejected and it can be stated that for advice, the category of customer initiated advice is dependent on the therapeutic class of the medicine involved.

Sixth, it can be seen from table 48, page 257, columns 20 to 25 that, of prescription events, observed advice was dependent on therapeutic class for both proactive and reactive CPs. From the adjusted residuals (columns 22, 15) it can be seen that the overall lack of information on preparations acting on the cardiovascular system and the greater than expected frequencies of advice for preparations acting systemically on infections are due to both types of CPs. However, reactive CPs are responsible for the greater than expected proportion of advice for preparations with hormone or anti-hormone activity. This is a likely finding given that advice provided by reactive CPs generally is customer initiated. Such findings are consistent with a constant level of requests for advice on this topic irrespective of type of CP. The hypothesis that for preparation events grouped by therapeutic class, advice depends on the type of medication does not hold for both proactive and reactive CPs

is rejected. Evidence is provided for a constant and unexpectedly high frequency of customer initiated requests for information on preparations with hormone or anti-hormone activity.

Seventh, table 47, page 256, shows that the quantity of advice provided by individual CPs is not dependent on display of the poster. A lack of statistical significance leads to rejection of the hypothesis and it can be said that display of the poster was not associated with statistically significant changes in the quantity of preparation events involving advice.

Eighth, table 48, page 257, columns six and seven indicates that the distributions of prescription events in therapeutic class were the same whether or not the poster was displayed. This being the case, the lack of statistical significance for columns eight and nine leads to acceptance of the hypothesis that display of the poster was not associated with changes in the therapeutic classification of medicines for which prescription medication was provided.

Ninth, the analysis presented in table 50, page 260, columns one and two indicates that display of the poster was very significantly associated with changes in the distribution of categories of advice. Examination of the adjusted residuals for display of the poster shows significantly greater frequencies of discussion for side effects and specific problems and significantly less for what is prescribed. The null hypothesis is rejected and category of advice is shown to depend very significantly on display of the poster.

Tenth, following on from the findings for hypothesis H_8 , the lack of statistical significance for columns 10 and 11 of table 48 indicates that the null hypothesis can not be rejected. Thus, when the poster was displayed the therapeutic classification of medicines about which customers initiated advice did not alter. In contrast, for H_9 , it is shown in table 50 columns three and four that for customer initiated discussion category of advice was significantly dependent on display of the poster. In this case the null hypothesis is rejected.

Eleventh, Consider the following findings; customer initiated category of advice is dependent on therapeutic class of medicine and reactive CP are customer lead with respect to the advice provided. As proactive and reactive CPs are likely to dispense similar quantities of therapeutic classes of medicines and significant differences have been found for therapeutic class between customer initiated and overall advice, then it is reasonable to suspect a significant difference between the categories of advice provided by the two groups. Specifically, it was noted that proactive CPs are responsible for the unexpectedly high quantity of advice concerning preparations acting systemically on infections (table 48) and that this was specifically advice on what to do with it (table 51, page 260). Thus, it would be reasonable to expect that any differences between types of CPs would include a significantly greater than expected quantity of advice for the category 'What to do with it'. Table 51 confirms these suppositions and summarises the differences between types of CPs with

respect to their advisory activity. The null hypothesis is rejected and it is shown that category of advice is dependent on type of CP.

Twelfth, following on from the discussion of the previous hypothesis and with hindsight that customer initiated advice appears quantitatively to be consistent across both types of community pharmacies, it might be expected that category of advice would be independent of type. Table 52, page 261, provides a level four analysis which confirms this suspicion. However, it is noted that customer initiated advice on side effects is significantly more associated with proactive CPs. Advice on side effects was also related to specific therapeutic classes of drug, namely preparations acting on the nervous system and preparations with hormone or anti-hormone activity. Consistent with the expected result, the null hypothesis is not rejected and of customer initiated requests for information, category of advice is not dependent on type of CP. Specific significance was noted for greater than expected requests for advice on side effects from proactive CPs.

In summary, this section considers the relationship between the total possible medicines CPs were aware of and both the provision of and requests for, advice. Categories previously defined were used to qualify the types of advice and medicines were grouped by recognised therapeutic classification. Evidence based on analyses presented at the end of the section was presented to determine the statistical justification for a series of hypotheses. Each of these was considered in turn and the findings summarised at the end of the paragraph.

Table 47

Frequency of preparation events including advice and customer initiated advice

Dependent variable	Pharmacy*																			Row total	DF	f cells <5	Chi-Square	Probability	
	8	20	14	5	4	18	11	15	6	7	16	12	13	1	9	19	10	17	2						3
Prescription events	275	175	230	287	216	482	394	303	401	470	369	605	405	220	268	274	419	312	319	393	6817				
Prescription medication advice	106	44	41	46	28	57	38	24	27	29	21	30	19	10	10	9	11	8	4	0	562	19	0	595.6256	0.0000
Percentage of events Expected†	38.5	25.1	17.8	16.0	13.0	11.8	9.6	7.9	6.7	6.2	5.7	5.0	4.7	4.5	3.7	3.3	2.6	2.6	1.3	0					
Adjusted residuals‡	22.7	14.4	19.0	23.7	17.8	39.7	32.5	25.0	33.1	38.7	30.4	49.9	33.4	18.1	22.1	22.6	34.5	25.7	26.3	32.4					
Customer initiated advice	19	5	7	16	5	7	8	4	7	16	13	19	11	7	2	5	7	8	4	0	170	19	2.5%	60.673	0.0000
Percentage of events Expected†	17.9	11.4	17.1	34.8	17.9	12.3	21.1	16.7	25.9	55.2	61.9	63.3	57.9	70.0	20.0	55.6	63.6	100.0	100.0	0					
Adjusted residuals‡	6.9	4.4	5.7	7.2	5.4	12.0	9.8	7.6	10.0	11.7	9.2	15.1	10.1	5.5	6.7	6.8	10.4	7.8	8.0	9.8					
PMA poster displayed†	48	19	23	20	13	24	18	16	13	15	6	12	12	5	5	4	7	3	1	0	264	18	21.1%	14.35914	0.70540
PMA no poster†	58	25	18	26	15	33	20	8	14	14	15	18	7	5	5	5	4	5	3	0	298				

Note

* = Pharmacies in order of prescription medication advisory activity relative to prescription events. Listed by randomisation alphabetical number from one to 20.

† = Sum of PMA poster display and no poster display = 562.

‡ = In only two pharmacies were the numbers of customers' requests significantly different from the overall distribution. Neither of these had areas which could be likened to 'counselling rooms'.

Table 48

Associations of preparation events, initiation of advice, display of poster, and type with therapeutic class*

Class	Events %	Events %	Dispensed %	Dispensed % 1988	Poster events		Postert PMA		Poster§ PMA CI		Observed PMA	Observed PMA CI of PMA	Observed PMA Proactive of events	Observed PMA Reactive of events										
					Yes	No	Yes	No	Yes	No														
t⇒1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1.00	982	14.41	14.38	16.38	459	523	26	38	7	14	64	80.9	-2.1	21	24.0	-0.7	19.5	+0.4	49	57.1	-1.2	15	20.6	-1.4
2.00	241	3.54	3.44	3.31	131	110	12	10	4	3	22	19.9	+0.5	7	5.9	+0.5	6.7	+0.1	17	13.9	+0.9	5	5.1	0.0
3.00	476	6.89	6.79	7.68	214	262	10	18	1	6	28	39.2	-1.9	7	11.6	-1.4	8.5	-0.6	20	32.9	-2.5	8	8.6	-0.2
4.00	1292	18.95	18.43	17.27	681	611	28	24	8	7	52	106.4	-6.1	15	31.6	-3.3	15.8	-0.3	35	76.9	-5.7	17	26.7	-2.1
5.00	605	8.87	9.09	9.03	278	327	19	21	7	5	40	49.8	-1.5	12	14.8	-0.8	12.2	-0.1	34	37.6	-0.7	6	12.1	-1.9
6.00	407	5.97	6.03	5.72	211	196	20	20	5	7	40	33.5	+1.2	12	10.0	+0.7	12.2	-0.1	27	25.5	+0.3	13	8.1	+1.8
7.00	13	0.19	0.18	0.20	9	4	2	0	1	0	2	1.1	+0.9	1	0.3	-	0.6	-	2	1.4	+0.6	0	0.1	-
8.00	821	12.04	12.60	12.69	381	440	75	87	18	17	162	67.6	+12.8	35	20.1	+3.6	49.3	-2.9	130	51.4	+12.6	32	16.3	+4.2
9.00	387	5.68	5.78	5.56	181	206	15	14	9	6	29	31.9	-0.5	15	9.5	+1.9	8.8	+2.6	22	22.4	-0.1	7	8.2	-0.4
10.00	129	1.89	1.98	1.77	60	69	2	4	2	2	6	10.6	-1.5	4	3.2	+0.5	1.8	+1.9	5	7.1	-0.8	1	2.8	-1.1
11.00	5	0.07	0.05	0.23	3	2	0	1	0	0	1	0.4	-	0	0.1	-	0.3	-	0	0.3	-	1	0.1	-
12.00	90	1.32	1.32	1.61	43	47	0	5	0	2	5	7.4	-0.9	2	2.2	-0.1	1.5	-	3	6.4	-1.5	2	1.6	+0.3
13.00	98	1.44	1.47	2.10	51	47	5	4	0	0	9	8.1	+0.3	0	2.4	-1.6	2.7	-2.0	8	6.9	+0.4	1	1.7	-0.6
14.00	762	11.18	11.40	9.42	357	405	27	32	11	13	59	62.8	-0.5	24	18.6	1.3	17.9	+1.8	43	46.5	-0.6	16	15.4	+0.2
15.00	230	3.37	3.31	2.46	119	111	13	17	3	8	30	18.9	+2.7	11	5.6	+2.3	9.1	+0.8	18	15.6	+0.7	12	4.3	+3.9
16.00	24	0.35	0.26	0.32	1	11	6	2	4	0	8	2.0	+4.5	4	0.6	-	2.4	+1.2	4	2.2	+1.3	4	0.3	-
17.00	48	0.70	0.69	0.44	25	24	0	0	0	0	0	4.0	-2.1	0	1.2	-1.1	-	-	0	3.6	-2.1	0	0.8	-
18.00	3	0.04	0.05	0.13	1	2	0	0	0	0	0	0.2	-	0	0.1	-	-	-	0	0.3	-	0	0.0	-
19.00	12	0.18	0.16	1.00	4	8	1	1	0	0	2	1.0	1.1	0	0.3	-	0.6	-	1	0.3	-	1	0.4	-
20.00	109	1.60	1.55	1.69	54	55	0	0	0	0	0	9.0	-3.2	0	2.7	-1.7	-	-	0	6.8	-2.8	0	2.2	-1.5
21.00	68	1.00	0.82	1.12	29	39	3	0	0	0	3	5.6	-1.2	0	1.7	-1.3	0.9	-	3	4.6	-0.8	0	1.3	-1.2
25.00	15	0.22	0.23	0.001	7	8	0	0	0	0	0	1.2	-1.2	0	0.4	-	-	-	0	1.2	-1.2	0	0.2	-
Total	6817	99.90	100.01	100.13	3310	3507	264	298	80	90	562	170		170			421		421			141		
Testn					3310	3507	256	287	79	88	561	167		167			420		420			135		
DF					21		11		11		19	12		12			18		18			14		
fcalls <5					9.1%		16.7%		33.3%		12.5%	15.4%		13.3%			20.0%		20.0%			20.0%		
Chi-square					29.11524		7.37100		13.40281		234.35085	25.41005		194.68070			47.22240		47.22240					
Wilcoxon test		Z value	-0.3409	-0.0162			0.76829		0.26781		0.00000	0.01299		0.00000			0.00000		0.00000					
Probability			0.7332	0.9870	0.11126	0.76829	0.76829	0.76829	0.26781	0.00000	0.00020	0.01299	0.00000	0.00000	0.00020	0.01299	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Notes for table 48

- * = Drugs are cases. Each drug may be associated with more than one category of advice. Due to imitations imposed by format, the independent variable therapeutic class is given the y axis.
- † = Column 1 lists the categories of therapeutic class. Column 2 lists the frequency of prescription events in each therapeutic class. Columns 3 to 5 are the percentages of preparation events, dispensed prescription items (n=6072) and dispensed prescription items for Great Britain in 1988 based on a 1 in 200 sample from England and Wales plus a 1 in 100 sample from Scotland.⁹⁵ These columns do not total 100% due to rounding errors, however, calculations were based on more accurate data. Columns 13, 16, 18, 21, and 24 are the expected frequencies for each cell of the chi-square test. Columns 14, 17, 19, 22, and 25 are the adjusted residuals. Where adjusted residuals are shown they are calculated on the basis of contingency tables which meet the thesis restrictions for analysis. Analysis excluded therapeutic classes 7, 11, 19 with expected frequencies less than unity, 10, 12, 19 with the lowest expected frequencies between unity and 5 and those with no cases.
- § = Analysis excluded therapeutic classes 7,12. Expected frequencies were considered evenly distributed. Also excluded were therapeutic classes with no cases.
- ¶ = Exclusion of data to meet thesis requirements for analysis did not result in more than a 4.4% loss of data as seen in column 20 (141-135/135x100).
- ¶¶ = Wilcoxon matched-pairs, signed-ranks test comparing the distributions of matched pairs of data. Prescription events is matched with dispensed prescriptions (column 3) then the latter with figures for Great Britain (column 4).

Table 49

Associations of advice, initiation of advice by therapeutic class*

Class	PMA Drug PMA advice = case		Side effect		Specific problems		What prescribed		What to do with it			Customer initiated advice of PMA advice						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1.00	64	86		7	5.9	0.5	17	12.0	1.7	20	18.9	0.3	42	49.2	-1.7	23	22.6	0.1
2.00	22	36		6	2.5	2.4	6	5.0	0.5	9	7.9	0.5	15	20.6	-1.9	10	9.5	0.2
3.00	28	36		0	2.5	-1.7	9	5.0	2.0	4	7.9	-1.6	23	20.6	0.8	10	9.5	0.2
4.00	52	63		3	4.3	-0.7	11	8.8	0.8	19	13.8	1.6	30	36.0	-1.6	19	16.6	0.7
5.00	40	51		2	3.5	-0.9	7	7.1	-0.1	13	11.2	0.6	29	29.2	-0.1	14	13.4	0.2
6.00	40	65		5	4.5	0.3	11	9.1	0.7	15	14.3	0.2	34	37.2	-0.8	13	17.1	-1.2
7.00	2	4		1	0.3	-	1	0.6	-	0	0.9	-	2	2.3	-	1	1.0	-
8.00	162	209		10	14.3	-1.4	22	29.2	-1.7	43	45.9	-0.6	134	119.6	2.4	36	55.9	-3.5
9.00	29	44		9	3.0	3.7	3	6.2	-1.4	9	9.7	-0.3	23	25.2	-0.7	19	11.6	2.6
10.00	6	8		1	0.6	-	2	1.1	-	2	1.8	-	3	4.5	-	4	2.1	1.5
11.00	1	1		0	0.1	-	1	0.1	-	0	0.2	-	0	0.6	-	0	0.3	-
12.00	5	7		0	0.5	-	0	1.0	-	3	1.5	-	4	4.0	-	2	1.8	0.1
13.00	9	12		4	0.9	-	0	1.7	-	0	2.6	-	8	6.8	-	0	3.2	-2.1
14.00	59	77		4	5.3	-0.6	10	10.8	-0.3	16	16.9	-0.3	47	44.0	0.7	29	20.3	2.4
15.00	30	34		2	2.3	-0.2	2	4.8	-1.4	6	7.5	-0.6	24	19.4	1.6	11	8.9	0.8
16.00	8	9		0	0.6	-	1	1.3	-	3	2.0	-	5	5.1	-	4	2.4	1.2
17.00	0	0		0	-	-	0	-	-	0	-	-	0	-	-	0	-	-
18.00	0	0		0	-	-	0	-	-	0	-	-	0	-	-	0	-	-
19.00	2	4		0	0.3	-	2	0.6	-	0	0.9	-	2	2.3	-	0	1.0	-
20.00	0	0		0	-	-	0	-	-	0	-	-	0	-	-	0	-	-
21.00	3	6		0	0.4	-	2	0.9	-	3	1.3	-	1	3.4	-	0	1.6	-1.6
25.00	0	0		0	-	-	0	-	-	0	-	-	0	-	-	0	-	-
Total	562	752		54			107			165			426			195		

Test n

DF

fcells <5

Chi-square

Probability

Notes

* = Individual categories of advice are cases. Each drug may be associated with more than one category of advice. Due to imitations imposed by format, the independent variable therapeutic class is given the y axis.

† = Column 1 lists the categories of therapeutic class. Column 2 lists the frequency of advice based on prescription events where drugs are cases. This may be compared with column 3 which lists individual episodes of advice and the therapeutic class of the associated drug. Analysis of the distribution of observed ratios (n=18) for column 3 divided by column 2 gave a mean of 1.43 and a standard deviation of 0.305. Columns 4, 7, 10, 13 sum to 752. Columns 6, 9, 12, 15, 18 are the adjusted residuals. Where adjusted residuals are shown they are calculated on the basis of contingency tables which meet the thesis restrictions for analysis.

701
27
20.0%
46.06774
0.01251

194
13
14.3%
31.19083
0.00316

Table 50

Associations of category of advice, initiation of advice and display of poster

Category of advice Column⇒	Variable analysed for independence*			
	Prescription medication advice		Customer initiated advice	
	Poster displayed Yes 1	Poster displayed No 2	Poster displayed Yes 3	Poster displayed No 4
'Side effect'	33	21	18	12
Expectedf	25.9	28.1	14.2	15.8
Adjusted residual	+2.0	-2.0	+1.5	-1.5
'Specific problems'	62	45	25	15
Expectedf	51.4	55.6	18.9	21.1
Adjusted residual	+2.2	-2.2	+2.2	-2.2
'What is prescribed'	68	97	26	41
Expectedf	79.2	85.8	31.6	35.4
Adjusted residual	-2.0	+2.0	-1.7	+1.7
'What to do with it'	198	228	23	35
Expectedf	204.5	221.5	27.4	30.6
Adjusted residual	-1.0	+1.0	-1.4	+1.4
Totals	361	391	92	103
test n	752		195	
DF	3		3	
Chi-square	11.39858		8.94893	
Probability	0.00975		0.02998	

Notes

* = Individual categories of advice are cases.

Table 51

Associations of category of advice and type of community pharmacist*

Category of advice Column⇒	Type of community pharmacist†	
	Proactive 1	Reactive 2
'Side effect'	38	16
Expectedf	40.4	13.6
Adjusted residual	-0.8	+0.8
'Specific problems'	68	39
Expectedf	80.1	26.9
Adjusted residual	-2.9	+2.9
'What is prescribed'	111	54
Expectedf	123.5	41.5
Adjusted residual	-2.5	+2.5
'What to do with it'	346	80
Expectedf	318.9	107.1
Adjusted residual	+4.6	-4.6
Totals	563	189
test n	752	
DF	3	
Chi-square	22.05834	
Probability	0.00006	

Notes

* = Individual categories of advice are cases.

† = Proactive includes pharmacy number nine.

Table 52

Associations of category of advice sought and type of community pharmacist*

Category of advice Column⇒	Type of community pharmacist†	
	Proactive 1	Reactive 2
'Side effect'	20	10
Expectedf	14.5	15.5
Adjusted residual	+2.2	-2.2
'Specific problems'	19	21
Expectedf	19.3	20.7
Adjusted residual	-0.1	+0.1
'What is prescribed'	31	36
Expectedf	32.3	34.7
Adjusted residual	-0.4	+0.4
'What to do with it'	24	34
Expectedf	28.0	30.0
Adjusted residual	-1.2	-1.2
Totals	94	101
test n	195	
DF	3	
Chi-square	5.28614	
Probability	0.15200	

Notes

- * = Individual categories of advice are cases.
† = Proactive includes pharmacy number nine.

A3.1.3.2 Specific problems

This section deals with the coding of the special problems advisory category. Table 53 below lists the total discrete topics of advice categorised under this heading. This detail is provided to demonstrate the variety and extent of CPs' advisory role. Further quantitative analysis was considered unlikely to be of use as many case frequencies were unique. It should be noted that the observed discussion between POIs and CPs may have included several areas of advice coded as specific problems, however, the individual was only counted once even when advice was a case.

Table 53

Algorithm for allocation of specific problems as a category of advice*

Specific Problems					
Specific Problems	Problem implying judgement	Appropriate prescribing			
		Interaction			
		Referral			
		Concern			
	Problems concerning supply	Prescription altered			
		Method of communication			
	Miscellaneous				
	Appropriate prescribing	Appropriate use of prescribed medication	Code †	Frequency‡	
		Medical use	1	24‡	
		Pharmaceutical use	2	7‡	
Advice on what to prescribe		Direct	3	3‡	
		Indirect	4	2‡	
Interaction		Prescription related	Ƴmed interacts with Ƴmed	5	7‡
	Ƴmed interacts with OTC item		6	22‡	
	Ƴmed or OTC item interacts with Alcohol		7	18‡	
	Over-the-Counter	OTC item interacts with OTC item	8	1	
		OTC item inappropriate with medical condition	9	4	
		OTC item interferes with driving	10	1	
	Referral	Referral to GP	relates to prescribed medication	11	11‡
			relates to minor medical advice +/- product	12	2
			relates to sale of product	13	1
		Referral to Chiroprapist	14	1	
Concern	Enquiry and advice "have you had these before" Answer, "yes"	Further information given	15	10‡	
		No further information given	16	18	
		Enquiry and advice "have you had these before" Answer, "No"	17	4	
	Check implying concern	Check other tablets prescribed/medication taken	18	5	
		Check how Ƴmed is being taken	19	4	
		Check on PMA given by staff	20	1	
		Check for missing item	21	2	
		Advice implying concern	Change in appearance of Ƴmed	22	6‡
			Take Ƴmed straight home/to surgery	23	1
			Hypertensive to quit alcohol and smoking	24	1‡
Leaflet (implying information) with item			25	7‡	

		Code †	Frequency ‡
Concern	Details of drug not specified on R		
	Judgement on form (cr/oint, tab/cap, sol/insol)	26	9
	Judgement on dose	27	47
Concern	Details of prescribed item not specified on R		
	Judgement on size, type of stockings/shoes	28	5
	Details of drug specified but altered		
	Judgement on form, dose, content	29	7
Method communication	Discussion by phone	30	14

Miscellaneous	General practitioner advises customer		
	To obtain OTC item from pharmacy	31	1
	To ask pharmacy to stock specific POM	32	1
	Research		
	Opinion of poster and pharmacist's role	33	1
	Radio microphone noticed	34	1
	Over-the-Counter		
	Pharmacist notices OTC sale	35	1
	Pharmacist fails to notice OTC sale	36	1
	Pharmaceutical opinion sought		
	Stability of dispensed item	37	2‡
	preferable brand of item	38	1
	Correctly dispensed by another pharmacy	39	1
On the appropriateness of blister packing	40	1	

New code= Combination of previous codes Frequency

41 =	1 +11	3‡
42 =	1 +11 +30	1‡
43 =	1 +12	2‡
44 =	1 +27	2‡
45 =	1 +28	1‡
46 =	1 +29	1‡
47 =	1 +30	1‡
48 =	3 +12	2‡
49 =	4 +12	1‡
50 =	6 +12	2
51 =	8 +13	1
52 =	9 +12	1
53 =	9 +30	1
54 =	11 +27	
55 =	11 +30	1‡
56 =	12 +14 +18	1
57 =	12 +18	1
58 =	12 +26	1
59 =	16 +27	1
60 =	16 +29	1
61 =	17 +25	1‡
62 =	17 +27	
63 =	19 +34	1
64 =	26 +27	1
65 =	29 +30	1

Notes

- * = Specific problems used to denote all medication advice which is not categorised using the headings 'Side effects', 'What is prescribed' or 'What to do with it'.
- † = Code used to identify specific problems as topics of discussion. This was necessary as discussion coded as ≥41 included more than one topic. For each code the matching frequency of observed discussion is listed.
- ‡ = Frequency of individual topics of specific problems. Only direct or indirect conversations between CPs and POIs are included. A total of 137 topics or combinations of topics were noted during discussions with CPs. This number may be reduced in analysis if, for example, advice did not coincide with ward data.
- § = Excludes one case of discussion concerning OTC medicine and alcohol.

A3.1.3.3 What to do with it

This section deals with additional quantitative and qualitative data on the category of advice, 'What to do with it'. Table 54 lists the various roles identified with such advice.

Table 54

Roles for community pharmacists identified from verbal discussion categorised under the label 'What to do with it'

Role		Comment and verbatim examples
1.	Reiteration of prescribers' labelling instructions	Community pharmacist verbal reiteration of the prescribers' dosage and frequency directions. eg P-S There you are one, one a night.
2.	Reiteration of additional labelling instruction	Community pharmacist verbal reiteration of British National Formulary additional labelling instructions. eg P-S You just have to swallow them whole and umm don't take indigestion medicines same time as you swallow them. Thank you bye bye.
3a.	Unique pharmacy advice	Advice concerning pharmaceutical aspects of administration which include, for example, details on storage or physical management of the dosage method. eg* P-S No, just spread it on don't be too heavy handed with it.
3b.	Unique pharmacy advice	Advice which includes judgement by the CP. This includes information which is; provided in the absence of any officially sanctioned direction, neither an exact reiteration of the prescribers instruction nor a variation of the additional labelling recommendations. eg P-S Can you drink plenty of fluid.

Notes

* = This advice is a version of the BNF ³⁷⁶ recommendation that topical steroid preparations are "to be applied sparingly". That the wording is changed is the responsibility of the CP which altered the appropriate role from 2 to 3a.

To help place the identified roles in context the following verbatim transcript is presented.

The customer (C) was a female Caucasian who presented to the CP (P) one prescription for herself and one for her husband. At no stage was she observed to have noticed the poster. Both were of pensionable age and the customer signed each prescription appropriately. The CP handed the dispensed items to the customer saying:

P-C One four times a day about an hour before food (Penicillin - V capsules)
 C-P Before food
 P-C Yes and that's for Mr G (p ≠ S, person accompanying customer) one three times a day (Propranolol tablets 10mg)
 C-P Yes
 P-C It's best if you can space these (Penicillin - V) out about every six hours around the clock
 C-P About six hours
 P-C Yes
 C-P And I have 'em before me meals?
 P-C About an hour before your meals on an empty stomach
 C-P Alright thank you
 P-C Thank you

In the first sentence the CP reiterates the label instructions then adds information sanctioned by the BNF ³⁷⁶ advisory label instructions. The customer provides verbal confirmation of understanding then the CP reiterates label instructions for the second prescription. Following this the CP provides a value judgement as to the appropriate administration of the antibiotic penicillin - V, an understanding of which the customer subsequently confirms. This case exemplifies three identified verbal advisory roles (table 54, page 264, 1, 2 and 3b) which CPs undertake. In this case the customer was identified with all three roles but only once for one of the four categories of advice. There was not considered to be a great variation in discussion content categorised under this heading. Between CPs, a consistent policy of activity was found. As further qualitative evaluation was considered unlikely to greatly improve the depth or understanding of the advisory process concerning this category of advice and sufficient data had been collected, it was decided to limit further analysis to an elaboration of quantitative differences between types of CPs. The following two hypotheses were considered in the analyses presented in table 55, page 267:

- H₁ that the frequency of advice identified as discrete roles for the advisory category 'What to do with it' is not dependent on type of CP; and,
- H₂ that unique pharmacy advice which includes judgement is not dependent on the type of CP.

It can be seen from the analysis presented in table 55 [A], that half of the 348 POIs received advice identified by role one (table 54). Further, that proactive CPs provided a very significant proportion of such advice. No similar dependencies were found for CPs' roles in reiteration of advisory labelling (table 55 [B]) or the total of unique pharmacy advice (table 55 [C]). The first hypothesis is rejected only for the specific role of reiteration of prescribers' instructions.

In table 54, page 264, the third role was split into two parts. It is interesting to note that 119 POIs received advice which was neither sanctioned by the prescribers written instruction or the BNF ³⁷⁶ additional labelling nor concerned pharmaceutical administration or storage. The second hypothesis contends that this most judgmental of CPs advice is not dependent on type of CP. Table 55 [D] details a level four analysis, where advice is a case, which compares the 119 with the remaining 341 cases of advice in this category and the distributions of each for proactive and reactive CPs. A trend was shown for advice of an unsanctioned, uniquely pharmacy nature to be dependent on the type of CP. Reactive CPs appear to be proportionally more involved in role 3b activities. The second hypothesis is not rejected. It should be noted that details of customer initiation of advice in specific roles was not coded in the original data and no statement regarding this can be made.

In summary, three primary roles were identified for CPs in providing advice under the category 'What to do with it'. Of these, unique CP advice was further divided to identify a role

which was essentially judgmental in nature where specific guidelines were not available for direction. An example was presented to demonstrate the roles which exist and the coding structure. Analysis of the coded data lead to partial rejection of the hypothesis that the frequency of advice in each role was not dependent on type of CP. It was found that proactive CP were significantly responsible for the frequency of reiteration of prescribers' directions. Of the advice provided, that of a judgmental nature was found to be more prominent for reactive CPs than for their proactive colleagues.

Overall, proactive CPs provide the lions share of advice concerning 'What to do with it' but it is mainly of a reiterative nature. Where unique and judgmental CP advice is provided there is less of a distinction between the two types.

Table 55

Independence of advice and type of community pharmacist

Dependent variable	Type of community pharmacist*		n	Chi-square	probability
	Proactive	Reactive			
(A) Role 1.					
Reiteration of prescribers' labelling instructions					
Yes	152	22	348	6.91175	0.00856
Expected f	142.0	32.0			
No	132	42			
Expected f	142.0	32.0			
(B) Role 2.					
Reiteration of additional labelling					
Yes	89	15	348	1.20165	0.27299
No	195	49			
(C) Role 3.					
Unique pharmacy advice					
Yes	139	35	348	0.47865	0.48903
No	145	29			
(D) Role 3b.					
Unique pharmacy advice†					
Yes	93	26	460	3.08887	0.07883
Expected f	99.6	19.4			
No	292	49			
Expected f	285.4	55.6			

Notes

* = Type includes pharmacy number nine as proactive.

† = For contingency tables A, B and C POIs are cases. In the case of D, advice is a case for analysis.

A3.1.4 Qualitative

A3.1.4.1 Side effects

This section details a qualitative assessment of discussion between CPs and POIs concerning side effects of prescribed medication.

Following published guidelines as to methods of data reduction,³⁸⁷ relevant transcripts of discussion were first ordered by case number and printed in one large single list. This was inspected for patterns or trends then rearranged in cells as to whether the CP was proactive or reactive and whether the poster was displayed or not. The qualitative matrix of poster and type was intentionally designed to mimic a 2x2 contingency table as follows;

Poster⇒ Type	Displayed	Not displayed
Proactive CP	CELL A	CELL B
Reactive CP	CELL C	CELL D

In the next stage of data reduction common themes in each cell were extracted with examples. These were listed in context together with postulated explanations (table 56, page 270). Having described the common themes in the four cells, unique themes in each cell were collated (table 57, page 271). These provided a qualitative evaluation of any differences between proactive and reactive CPs' advisory activities and relationships with the poster. The results may be summarised as follows. More complicated interactions concerning side effects appear to be entered into when the poster is displayed although this could be an artefact of the limited numbers of interactions without the poster. Reactive CP, as expected, are asked for specific details on side effects rather than volunteering advice. They appear not to get involved in discussion on steroids. Reactive CP dispensed 17 steroid items, proactive 26. Overall, discussion on side effects appears to be incorporated in general discussion on medication, rarely is it the main topic unless as part of the additional labelling recommendations for the drug. Community pharmacists volunteer limited information on prescription medication side effects, sedation and gastric effects are prominent areas of discussion but are keen to recommend the general practitioner if patient compliance is an issue or they perceive anxiety over possible side effects. POIs appear to react to 'cues' in requesting advice on side effects of prescribed medication as predicted in figure 15, page 95, but the cue appears based more on the medication than the type of CP (section A3.1.3.1, page 249).

In summary, the following four common roles were identified for both proactive and reactive CPs discussing side effects with POIs:

1. **educational/informative:** short "robot-like" monologues by the CP informing of possible side effect, usually drowsiness or gastric upset as part of the additional labelling recommendation for the drug;
2. **confirmatory:** confirmation by the CP of a link between medication and side effects;
3. **compliance:** use by the CP of side effects, usually gastric, to increase the likelihood of compliance with directions; and,
4. **socialising:** CP possibly responsible for socialising customers to be wary of specific side effects of drugs which have implications on everyday activity.

Table 56

Four common themes for discussions concerning the side effects of medicines between community pharmacists and prescription orientated individuals*

(1) Educational/informative

Short "robot-like" monologues by the CP informing of possible side effect, usually drowsiness or gastric upset as part of the additional labelling recommendation for the drug.

<u>Examples</u>	<u>Circumstances</u>	<u>Rationale</u>
Cell A: .they, they will cause drowsiness, so no alcohol and be careful driving Cell B: "they might make her feel a little bit sleepy" Cell C: "It um.. might make him a bit dopey" Cell D: No cases recorded.	Monologue	Community pharmacist initiates discussion to allay fears, prevent litigation, as a 'safe bet or automatic, 'robot-like'.

(2) Confirmatory

Confirmation by the CP of a link between medication and side effects

<u>Examples</u>	<u>Circumstances</u>	<u>Rationale</u>
Cell A: "Yeah, it does say it can make you a bit sleepy" Cell B: "Yeah, they can have that effect" Cell C: "Drowsiness is quite likely....yes" Cell D: "It's harmless, yes...won't do you any harm"	Customer states side effect, CP confirms link. Part of complicated dialogue.	Allay fears, forms a part of the discussion, rarely central to discussion. Informative rather than directive.

(3) Compliance

Use by the CP of side effects, usually gastric, to increase the likelihood of compliance with directions

<u>Examples</u>	<u>Circumstances</u>	<u>Rationale</u>
Cell A: "sip it otherwise you might feel sick" Cell B: "Sometimes people have trouble with them irritating the stomach then...then they space them out" Cell C: "after food otherwise they'll give you a very bad er ... indigestion" Cell D: "if you take them on an empty stomach, they do tend to make you a bit sickly"	Dialogue with discussion on "how to takeit" followed by the consequences.	Informing of side effects to promote compliance with medication. Discussion of the form 'do it or else!' Also, to indicate why medication is taken in a specific manner

(4) Socialising

Community pharmacist possibly responsible for socialising customers to be wary of specific side effects of drugs which have implications on everyday activity.

<u>Examples</u>	<u>Circumstances</u>	<u>Rationale</u>
Cell A: "He's not fit to drive really" Cell B: "Be alright driving won't you?" Cell C: "Driving isn't affected is it" Cell D: No examples of customer initiated discussion.	Customer initiated, relates to dispensed medication	Implication that CPs' constant reiteration and labelling of medicines as having a sedative side effect has socialised customers o consider this aspect of medication.

Note

* = The data has been arranged in a qualitative matrix of poster and type of CPs designed to mimic a 2x2 contingency table. Cell A includes discussion by proactive CP when the poster was on display, cell B with no poster. Similarly, cell C considers discussion between reactive community with the poster displayed and cell D without the poster.

Table 57

Unique themes in discussions between community pharmacists and customers concerning side effects of medicines

	Poster Displayed	No Poster
Proactive CP	CELL A	CELL B
	<p>Complicated scenarios usually involving steroids where the customer's fear of the consequences of side effects is obvious "they (steroids) won't hurt him will they", specific details of the side effects are not given.</p> <p>Relationship to GP</p> <p>Customer's anxiety over side effects is referred to GP, "let him (GP) know your little bit worried" rather than details on incidence of side effects provided. Side effects considered sufficient to warrant contacting GP over appropriate prescribing.</p>	<p>Discussion on steroids related to informing CP of medication rationalé or justification of dosage change. Advice seeking activity "cued" from previous interactions involving side effects. Fear of drug dependence "don't want to get addicted"</p> <p>Relationship to GP</p> <p>Community pharmacist indicates appropriate activity of GP, "I don't think he intends you to" (become addicted)</p>
Reactive CP	CELL C	CELL D
	<p>Direct requests for information on side effects "any side effects with these?" leads to lengthy discussion. Advice seeking activity "cued" from; poster, "I'm just looking at that (poster), are there any side effects..." and CP's activity "I saw you looking in the book you see".</p> <p>Relationship to GP</p> <p>Discussion on side effects reveals a lack of compliance, CP refers customer to GP.</p>	<p>Direct requests for information on side effects "is there any side effects?" Discussion initiated by dosage problem or product palatability. Discussion on side effects linked to supply aspect of dispensing. Possibly as this forces an interaction and the CP includes information on side effects as compensation for inconvenience or justification of dosage.</p>

A3.1.4.2 What is prescribed

This section details the results of a qualitative analysis of discussion categorised under the heading of 'what is prescribed'. Using the analytical method described in the previous section, three roles were found to be consistent across both types of CPs whether or not the poster was on display. The results are summarised in table 58 below.

Table 58

Roles identified for discussions between community pharmacists and prescription orientated individuals concerning the category of advice 'what is prescribed'

Role	Description	Example*
EDUCATIONAL/ INFORMATIVE	Identification of prescribed preparations other than reiteration of brand or generic name.	P-S "Then your antibiotics, two three times a day for the first two days, then reduce it to one three times a day 'till they're all gone"
	Identification of a pharmacological class or a specific example within a class.	P-S "Just antibiotics there for a week, OK?" P-S "That's the penicillin for J...."
	Identification of a prescribed preparation by is therapeutic use.	P-S "This is the one for nausea"
	Identification of the active constituents of a prescribed preparation.	P-S "It's a very well balanced er (laughs) and tried formula, you've got two ingredients in one capsule which you would normally have separately"
CONFIRMATORY†	Confirmation of possible uses for prescribed preparations	P-S Yes, it's a special type of penicillin for skin infection this one (flucloxicillin)
INTENT	Explanation of what a preparation is prescribed for and/or "how it works". The main theme to describe what the preparation does not to merely associate the preparation with a therapeutic action	S-P What are Brufen (Brand name) for? P-S Joint pain

Notes

- * = Included as examples are excerpts from discussions where the main theme is identification of the prescribed item. Examples may exemplify more than one role.
- † = Implies prior knowledge which requires ratification.

An assumption is made in the first two roles that POIs are able, or have been educated, to link descriptive terms such as 'antibiotics' with therapeutic intent, in this case treatment of infection, thus information on what the prescribed preparation is for may be relayed by reiteration of the pharmacological grouping of the medication. This is not the case for the latter role of 'intent'. A total of 32 cases of 3519 POIs were recorded where discussion

included 'intent'. Of these 19 involved proactive CPs and 13 reactive. It is considered from empirical assessment of table 58 that, of the three roles, 'intent' is the one which implies the greatest unique judgmental contribution by CPs to POI drug therapy. It is this role where the information content provided is not clearly defined by the prescribed item.

In summary, a qualitative evaluation of CPs 'controlling' for type and display of the poster identified three common roles for CPs concerning advice on 'what is prescribed'. Of the three roles advice including the 'intent' of prescribed medication was considered to contain the largest degree of judgement on the part of the CP.

A3.1.5 Effect of the poster

This section considers two further aspects of the poster in the observational study, first, difficulties of observation and second, validation of a possible relationship of poster efficacy with POIs' age.

First, it has been shown in previous sections that overall the poster had no statistically significant effect on the prescription handling activities of CPs (section A3.1.2, page 227) or the total quantity of advice provided, but, that the pattern of advice was significantly changed (section A3.1.3.1, page 249). In these analyses the poster on display was the criteria for dividing the data. It can be argued that for the poster to have a wider use in promoting interactions between POIs and CPs then it must succeed or fail on the basis of its presence. There is, however, a fundamental problem that the poster requires to be seen prior to discussion concerning advice in order to have had an influence. In collecting the data, an attempt was made to record if POIs noticed the poster and exactly when such inspection took place relative to presentation of prescriptions and advisory activities of CPs. In this way it was hoped to collect data equal in content to that proposed in section A1.2, page 168, but directly observed and, therefore, valid. The criteria adopted for positive internalisation of the information presented was that individuals' eyes were observed to at least scan the content of the poster. It is acknowledged that *"differences in eye movement characteristics between goal-relevant and incidental text are not simple predictors of differences in learning between goal-relevant and incidental information"*⁵⁶¹ and it is an assumption in this study that observation of scanning eye movements implies understanding of the information. The following hypothesis was tested for using the available data:

H₁ that display of the poster had no effect on the numbers of POIs initiating discussion on a prescription medication.

Table 59[A], page 276, presents results of a level one analysis of the data for customer initiated discussion and display of the poster. On the basis of this result the null hypothesis would not be rejected and it was felt that data could be legitimately aggregated. If, however, the distribution of those individuals observed to scan the poster and the proportion who subsequently requested advice is compared to the remaining POIs in the study and their information seeking activity, then customer initiation becomes very significantly dependent on display of the poster (table 59[B]). Of the 1724 POIs who had the opportunity to scan the poster, 668 (38.7%) were observed doing so and of these, 51 (7.6%) initiated discussion on one or more of the four categories of advice. In comparison with the remaining data, which included 234 individuals who glanced at the poster without clearly scanning the content, only 28.7 of the 668 were expected to initiate discussion. In short, there is an addendum to the above hypothesis that, although display of the poster had no statistically significant effect on the overall numbers of individuals initiating discussion on a prescription medication, those who were observed to scan the poster were more likely to request advice than those who did not. Clearly, the additional 22 whole individuals (51-28.7 approximately) was not sufficient to

produce an overall statistical significance in the global analysis. That the category of advice was associated earlier with significant change, testifies to a relatively great effect of the poster on a few individuals.

A major shortfall in the realisation of the potential of the poster to effect POIs' activities may simply have been that it was not seen. This limitation was, in part, forced by the observational study methodology which allowed CPs freedom to position the poster as they felt appropriate and their choice may not have been ideal from a potential readers perspective. Of the 1724 POIs who entered community pharmacies during the observational period with the display in place, 1436 had the opportunity to scan an A2 size poster displayed on a purpose build stand, 200 may have seen an A3 size poster used as the surface upon which prescriptions were written and 88 may have noticed an A3 size poster on the side of the dispensary till.

Second, it will be remembered from section A2.3.3, page 220, that age was related to choice of poster. Respondents less than or equal to 55 years of age responded more favourably than those older in choosing poster C, although, the difference was not statistically significant as measured by the adjusted residual of 1.6 (table 33, page 219). A potential validation of this finding would be if customer initiated requests for advice from prescription medication orientated individuals who scanned the poster were observed occurring significantly more often from younger persons. The relevant hypothesis is that:

H_2 customer initiated requests for advice are independent of age.

Using the same age split as described in section A3.1.2, page 227, males ≥ 65 with females ≥ 60 and males < 65 with females < 60 , table 60[A], page 276, indicates that, of the 3516 POIs for whom data was available, there was no dependence for noticing the poster on age; however, of those who scanned the poster, initiation was very significantly dependent on age (table 60[B]). Moreover, the older age group were observed asking for information more frequently than expected which is in direct contrast to the expected result. This result fails to confirm a bias for younger people to react to the poster, however, indicates that age is associated with reacting to the poster's message. A practical limitation of this analysis is that different age groups were compared. Results of this analysis lead to rejection of the null hypothesis. It can be stated that, for those who scanned the poster, customer initiated requests for advice was dependent on age. Caveats for this statement are that the poster was scanned and that age groups were specifically defined. It is also noted that the effect of the poster in increasing customer initiated advice for the total data was not significant. In summary, overall the poster has been shown to have had a limited effect on advisory activity. The current analysis points to a specific effect of promoting older POIs to seek advice and to a greater than realised potential for the poster.

table 59

Independence of customer initiated requests for advice on display of the poster

Customer initiated requests for advice	Independent variable			
	[A] Display of the poster		[B] Scanning of the poster	
	Yes	No	Yes	No
No	1646	1722	617	2751
Expectedf	1650.0	1718.0	639.3	2728.7
Yes	78	73	51	100
Expectedf	74.0	77.0	28.7	122.3
n	3519		3519	
Chi-square value	0.34372		21.45301	
Significance	0.55769		0.00000	

table 60

Independence of scanning the poster or customer initiated requests for advice and age

Independent variable	Dependent variable*			
	[A] Scanned the poster		[B] Initiated advice	
	Yes	No	Yes	No
Age				
Age males <65, females <60	474	2095	28	446
Expectedf			36.2	437.87
Age males ≥65, females ≥60	194	753	23	171
Expectedf			14.8	179.2
n	3516†		474	
Chi-square value	1.73207		6.089631	
Significance	0.18815		0.00858	

Notes

* = The dependent variables noticing the poster and initiating advice are given the y axis for ease of presentation.

† = Three missing values for age.

A3.2 Labelling

This section considers the non-verbal advisory activity related to labelling of prescribed items.

As part of the observational study, a time was identified during the morning dispensing period when at least 25 items were dispensed and waiting to be collected. Details of a selection of 25 consecutively dispensed items were recorded. It was noted whether additional labelling was advised²⁹⁴ for each prescribed medication and whether one or more appropriate additional directions were included with the label. Further, the labelling machinery was noted as to whether such information was automatically printed when the medication was entered into the word processing system or whether additional labelling required the physical adherence of separate labels. This was confirmed by asking the CP at the end of the final observational period to print labels for four items. These were selected because at least one unique additional label is advised²⁹⁴ for each and they were a legitimate combination having been previously prescribed and dispensed by the researcher during early piloting of the research method. It was observed that each CPs made a point of preparing the labels and in each case the BNF²⁹⁴ was consulted for the appropriate advisory labelling information. The four items were:

1. metronidazole tables 200mg, 1 tds x 30.
2. propranolol tables 10mg, 1 tds x 100;
3. pondocillin tables, 1 tds x 30; and,
4. diazepam tables 2mg, 1 tds x 30;

Each item was indicated for administration three times a day (1 tds) and the results are provided in table 61, page 279, column six. In a separate study, individual CPs' labelling policies were determined using the ratio of the number of items out of 25 for which the BNF recommended one or more advisory labels²⁹⁴ and the number of dispensed items bearing at least one such label (table 61, column 5). The distribution of ratios was examined and found to be bimodal with a median of 33.33. Community pharmacists with ratios equal or less than this figure were designated as having 'low' rates of labelling. The remainder were considered to have 'high' rates. Two hypotheses central to this data were:

- H₁. that CPs' verbal advisory activity is not related to their use of written additional labelling; and,
- H₂. that the use of non-verbal additional labelling was not related to the use of automatic printing systems.

Empirical assessment of table 61 columns two and seven indicates that CPs' policies for labelling are unlikely to be related to verbal advisory activity. The rate of verbal advice was divided as in section A3.1.3.1, page 249. Analysis presented in table 62, page 279, confirms this expectation. It was not possible to reject the null hypothesis and, for the observational study CPs', verbal advisory activity was not found to be statistically related to labelling rate.

In contrast, no CP whose labelling policy was considered 'high' used a machine that did not automatically produce appropriate labelling information. In other words, if the prescription label was not automatically printed with the additional information, CPs did not adhere sticky labels to provide the recommended non-verbal advice. Analysis (table 62, page 279) revealed a statistical significance for 'low' and 'high' labelling policy and whether the labelling machine automatically printed additional information. In this case the null hypothesis is rejected and it is possible to state that CPs' rate of additional labelling of prescribed medication is significantly different and related to the capacity of the labelling system to automatically produce such information. Further analysis of the distribution of ratios revealed a mean of 40.7 and a standard error of 7.42 - 500 possible items (25 items x 20 CPs), 110 items of 270 (40.7%).

In summary, CPs' rates of appropriate use of advisory labels was investigated. It was found that their policies for including advisory labelling with dispensed medication was not related to their verbal advisory activity but was related to the capability of labelling devices to automatically include such information.

Table 61

Community pharmacists' additional labelling activity*

	Pharmacy	Rate	Label	Item with	Ratio	label	Label
	of	of	advised	≥1 label	Advise/	machine	policy
	PMA	PMA	by BNF	present	observed	automatic	
Column*†	1	2	3‡	4	5	6	7
	4	13.0	15	0	0	Yes	Low
	9	3.7	18	0	0	No	Low
	12	5.0	9	0	0	Yes	Low
	19	3.3	15	0	0	No	Low
	20	25.1	13	0	0	No	Low
	13	4.7	16	1	6.25	No	Low
	15	7.9	13	2	15.38	Yes	Low
	18	11.8	13	4	30.77	No	Low
	2	1.3	15	5	33.33	Yes	Low
	3	0.0	9	3	33.33	Yes	Low
	17	2.6	15	5	33.33	Yes	Low
	11	9.6	12	7	58.33	Yes	High
	10	2.6	8	5	62.50	Yes	High
	16	5.7	11	7	63.64	Yes	High
	1	4.5	11	8	72.73	Yes	High
	5	16.0	8	6	75.00	Yes	High
	6	6.7	14	11	78.57	Yes	High
	7	6.2	20	16	80.00	Yes	High
	8	38.6	17	14	82.35	Yes	High
	14	17.8	18	16	88.89	Yes	High

Notes

* = Based on a sample of 25 consecutive dispensed items. One or more written labels were recommended for 54% of dispensed medication.

† = For column 1 pharmacies are identified by their alphabetical order but are listed in order of the ratio in column 5. The latter value is calculated by dividing the number of items for which the BNF²⁹⁴ advised one or more additional labels by the number of labels observed to have such information. Column 7 identifies the 'low' and 'high' adherers to additional labelling directives based on those 11 less than or equal to the median value of 33.33 for column 5 compared to those nine over this value.

‡ = Column three sums to 270 with an average of 13.5

Table 62

Independence of community pharmacists' labelling policy and selected variables

Policy of pharmacist	Independent variable*			
	Labeller automatically produces additional information		Type of community pharmacist	
	Yes	No	Proactive	Reactive
'Low' labellers	6	5	4	7
'High' labellers	9	0	5	4
Fisher's exact test†	0.03793		0.65342	

Notes * = Type of CP includes pharmacy number nine as proactive.

† = Two-tailed test.

A3.3 Time based analyses

This section contains three separate parts. First, in a study of reliability, researcher effects on CPs is investigated based on an analysis of their advisory activity and time. Second, information is presented for a consistent pattern of external influence, other than display of the poster, on POIs to ask CPs for advice. Finally, the time when POIs request information is related to the number of individuals requesting alternative services.

First, as described in the observational study method (section 4.5, page 107) the first day of data collection was randomly chosen for the working days Monday to Friday. Of the 3519 POIs, the percentage of cases for each day Monday to Friday was 15.7, 17.2, 21.9, 22.3, 20.4. In addition, two CPs were observed on Saturday contributing 2.6 percent of cases. If the first day, whatever day of the week, is designated day one of period one and subsequent days labelled consecutively then the first day of the second visit given the title day one of period two and following days again labelled consecutively, then, an analysis for study reliability concerning advice may be performed by comparing the two periods for any statistically significant variation in the quantity of advice provided. For example, CP number 20 was seen for the first observational period, first day on Friday the 16th September, 1988 when the poster was displayed (table 63, page 284). As 74 customers were not observed a second day was necessary, day two of the first observational period. The second period of observation commenced without the poster on Friday one week after the first day of the first period, however, it was not possible to complete the study on the following day as the CP was not available. In this case, the last day of observation was the Saturday two weeks after the second day of the first period. Consistency of day of the week was maintained and the study data was collected within two weeks. Data for analysis in this case included days one and two of the first observational period and days one and two for the second. If CPs reacted to the presence of the researcher, then it might be expected that there would be an initial effect on their actions but that any change would be transient. Having provided the CP with the study protocol it would be clear that the study concerned advice. If CPs were prompted by the researcher and the study implications to change their normal activities then it is reasonable to expect that this would be reflected in their prescription medication advisory activity with time. The relevant hypothesis is:

H_1 that the presence of the researcher had no demonstrable effect on the prescription medication activities of CPs.

Table 64, page 286, presents an analysis of the dependence of prescription medication advisory activity on the period of observation. Time periods considered are; the total distribution [A], the first and the second observational periods [B], the first day of the first period and the first day of the second period [C], the first day of the first period compared with the second day of the first period [D] and the same analyses limited to the first 120 minutes of opening. From the results of the analysis presented in table 64, page 286, there is

no statistically significant reason to reject the null hypothesis and it is possible to state that the frequency of advice was not associated with the presence of the researcher.

Other factors which may influence the reliability of the results may have come from the effect of the recording equipment and display of the advisory notice. It was the researcher's experience that his presence and that of the recording equipment was soon ignored as the normal activities of the pharmacy commenced. The following factors tend to verify this observation:

1. one CP went to lunch with the radio microphone attached;
2. one CP attempted to drive home while wearing the radio microphone;
3. only two POIs made verbal note of the presence of the radio microphone and neither asked for or were provided with relevant advice;
4. three POIs presented their prescriptions to the researcher who was mistaken for a member of staff;
5. only one POI made note of the advisory notice (section A1.2.3, page 173);
6. only 1.9% (67) cases were noted where the microphone was not operational. In only one case was this a conscious decision made on the part of the CP to switch the system off. The remainder were cases which were observed while the CP was being set up for recording. Two of the 67 cases included discussion on prescription medication and both were within hearing range of the researcher who noted relevant details verbatim; and,
7. four cases (0.001%) occurred where epidemiological details of POIs were asked of the CPs.

Clearly the impact of the study method on POIs and CPs was relatively minimal.

Second, the poster was designed as an instrument to test the customer initiating activities of POIs. Coincident with the display of the poster two major advertising campaigns promoting the CP as an appropriate source of advice were being conducted throughout England. Both these schemes are referred to in the discussion. Critical to the reliability of the present study is that both of their effects are considered constant. Taking the campaign currently known as "Pharmacy Healthcare", a list has been published of the leaflets which have been sent to CPs. Ten were distributed in 1986, nine in 1987, seven in 1988 and three up to march 1989. It is noted that not one leaflet is specific for PMA and that leaflets have been consistently distributed at the rate of over the period.⁵⁶² The National Pharmaceutical Association has run a second campaign with the slogan 'Ask you pharmacist - You'll be taking good advice' using poster and advertising in newspapers and magazines since 1983. An enquiry to the NPA indicated that it was impossible to detail the exact nature of all advertisements as they had been commissioned and several advertising companies were involved, therefore, it is impossible to state whether any have been specifically orientated towards advice prior to the observational period; However, during this period CPs' role in advising on prescription medication was not the subject of any advertising in any of the 14 sources published at the start of the campaign.⁵⁶³ In addition to national advertising, local initiatives were also

conducted. During the observational period, Express Woman of the 13th October carried an article on how to get rid of head lice in which the 'chemist' was noted as a source of a suitable product. The Belper News carried inserts on the 13th and 27th of October and 17th November 1988, by the NPA with the title 'Ask you local pharmacist: What? Why? When? On medicines, minor ailments and other problems - from the National Pharmaceutical Association'. Each was based on a question and answer format and on the 17th November one such question asked 'My doctor said that I must take some tables three times a day. Does this mean I take them with my meals?' The response did not directly mention the CP as the person who could interpret this direction. No other mention was made of the CPs' prescription medication advisory role in any of the other questions and answers. However, on January 11th 1989, the Long Eaton Trader carried an article on page 20 entitled 'Medicines warning'. Specific advice on interactions was mention yet the CPs as a source of advice was not. Finally, during Central Television's 'Getting on' programme transmitted on the 20th July 1988 at 11.30am the "Ask your pharmacist" campaign was discussed for seven minutes. Mention was made of the CPs use of patient medication records to verify the general practitioners' prescribing, monitoring of possible prescription drug interactions and a specific example shown of advice on 'what to do with it'. As prescription medication roles for CPs' were described, special attention was made during observations made on that day at pharmacy number five as to whether any POIs mentioned viewing the programme. No such discussion was noted. With this one exception and as far as is known by the author, advertising of CPs advisory role on medicines was consistent for the observational period and specific acknowledgement of the CPs prescription medication advisory activities was local and insignificant. It is the considered assessment of the researcher that any effect on POIs ascribed to the poster was unlikely to be erratically influenced by external advertising.

As part of the observational study, data collection included the exact time when customers presented prescriptions at community pharmacies or POIs initiated discussion with CPs. This is a direct measure of the 'business' of community pharmacies. The hypothesis under consideration was whether customer initiated discussion was related to the 'business' of community pharmacies. The hypothesis is that:

H_1 The advice seeking behaviour of POIs is not related to the number of individuals who concurrently ask for pharmacy services.

The earliest recorded time of possible interaction between the CP and a patient orientated individual was 8.30am and the latest 7.18pm. For analysis, the number of minutes after 8.30am when a possible interaction may have commenced was identified for each POI. For display purposes, table 65, page 287 and figure 16, page 118, list and display respectively numbers of customers and POIs observed in the pharmacy for time bands of 12 minutes. Inspection of figure 16 identifies three periods, first a morning peak of activity which ceases at lunch time (0 to 312 minutes) followed by an much smaller, more constant period of activity during early afternoon (313 to 468 minutes) which slowly builds to a second peak during late afternoon (469 to 648 minutes). Figure 16 also displays the corresponding

numbers of POIs who are provided with advice by CPs and those who seek advice. From observation the distribution of the former appears to follow that of the overall distribution. In contrast, the relative numbers of POIs who initiate discussion seem to progressively increase as time increases. Table 66, page 288, an analysis of the unbanded data, confirms these observations. Group A of table 66 compares the ranking and distribution of those POIs given advice with those who were not. No statistical significance was found. This was not the case for group B. Results of a Mann-Whitney test indicated a mean rank of 1919.57 for those who initiated advice compared with 1752.84 for those who did not. The difference was significant and may be interpreted as showing that advice seeking activity is more likely to occur later in the day which is the time when comparatively less individuals are seeking alternative pharmacy services. That there is a statistical trend for a change in advice seeking behaviour is demonstrated by the results of the Kolmogorov-Smirnov test. Given such findings differences in timing between those who received advice and those who initiated advice would be expected. This was confirmed by analysis of group C (table 66). In order add clarity to this explanation the data was banded into the three periods referred to previously and shown in figure 16. Table 67, page 288, details a chi-square analysis and the readers attention is drawn to the adjusted residuals for the three periods, morning, mid and late afternoon, -1.3, +0.4 and +1.1 respectively. Such results provides clear evidence of a changing pattern of advice seeking behaviour where more than expected number of POIs seek advice during the latter periods of the day. These periods also correspond to lower levels of pharmacy activity. The weight of evidence point to rejection of the null hypothesis and it is shown that the advice seeking behaviour of POIs is related to the number of individuals who concurrently ask for pharmacy services.

Table 63

Observational study data collection*

	Pharmacy	Date	Time	Total	Number	Case No	Poster	Cell
	1	2	3	4	5	6	7	8
†⇒	5	880608	494		31	180-232	1	A
Proactive	5	880609	518			233-277	1	A
↓	5	880610	72			278-286	1	A
	5	880720	517			287-335	0	B
	5	880721	533	2134		336-377	0	B
	14	880708	525		65	378-421	1	A
	14	880715	510			422-459	0	B
	14	880726	185			460-473	0	B
	14	880729	455	1675		474-508	1	A
	15	880711	475		67	509-548	0	B
	15	880712	493			549-572	0	B
	15	880713	165			573-595	0	B
	15	880719	455			596-628	1	A
	15	880725	485			629-655	1	A
	15	880727	153	2226		656-678	1	A
	6	880817	515		34	1030-1085	1	A
	6	880818	561			1086-1126	1	A
	6	880824	560			1127-1197	0	B
	6	880825	550	2186		1198-1251	0	B
	11	880823	515		50	1252-1298	1	A
	11	880921	501			1299-1338	1	A
	11	881004	530			1339-1396	0	B
	11	881012	430	1976		1397-1430	0	B
	18	880906	575		91	1431-1495	0	B
	18	880907	505			1496-1552	0	B
	18	880913	531			1553-1617	1	A
	18	880914	529	2140		1618-1674	1	A
	9	880926	448		45	2358-2406	0	B
	9	880928	146			2407-2435	0	B
	9	881003	414			2436-2479	1	A
	9	881005	177	1185		2480-2496	1	A
	4	881115	453		29	3230-3271	1	A
	4	881116	180			3272-3297	1	A
	4	881122	451			3298-3338	0	B
	4	881123	170	1254		3339-3363	0	B
	20	880916	515		97	3590-3622	1	A
	20	880917	399			3623-3637	1	A
	20	880923	522			3638-3674	0	B
	20	881001	376	1812		3675-3699	0	B
	8	890206	562		41	3700-3781	0	B
	8	890213	563	1125		3782-3840	1	A

Table 63 continued

Pharmacy	Date	Time	Total	Number	Case No	Poster	Cell
Reactive	2	880607	590	04	1-90	0	D
↓	2	880705	555	1145	91-179	1	C
	12	880812	520	61	679-844	1	C
	12	880819	515	1035	845-1029	0	D
	17	880908	543	78	1675-1769	1	C
	17	880915	551	1094	1770-1855	0	D
	3	880810	220	05	1856-1961	1	†
	3	880831	245	465	1962-2054	0	†
	19	880902	495	93	2055-2115	1	C
	19	880903	425		2116-2150	1	C
	19	880909	515		2151-2197	0	D
	19	880910	232	1667	2198-2225	0	D
	1	880919	541	03	2226-2299	0	D
	1	881017	552	1093	2300-2357	1	C
	7	880929	558	39	2497-2549	0	D
	7	880930	540		2550-2616	0	D
	7	881006	586		2617-2678	1	C
	7	881007	586	2270	2679-2741	1	C
	10	881010	544	49	2742-2804	0	D
	10	881011	550		2805-2853	0	D
	10	881024	556		2854-2912	1	C
	10	881025	574	2224	2913-2960	1	C
	16	881026	545	69	2961-3020	1	C
	16	881027	535		3021-3084	1	C
	16	881109	572		3085-3143	0	D
	16	881110	570	2131	3144-3229	0	D
	13	881117	570	63	3364-3482	1	C
	13	881124	562	1132	3483-3589	0	D

Notes

* = Data is arranged in chronological order of case number for proactive and reactive CPs.

† = Column 1 is the order from one to 20 of community pharmacy based on the alphabetical order from one to 105 provided in column 5. Column 2 lists the precise days spent at each community pharmacy and columns 3 and 4 the time period in minutes spent recording activity. Column 6 lists the case number. Readers will note that the maximum of 3840 is greater than the 3519 for POIs. The difference was made up of OTC advice which was recorded in case advice on prescription medication was mentioned. Column 7 indicates whether the poster was displayed (1) or not (0) and column 8 which cell the data was assigned for qualitative evaluation, table 57 page 271.

Table 64 Dependence of advice on observational study period

PMA† ↓	Period*						DF	Chi -square	Significance
	First observational period			Second observational period					
	One	Two	Three	One	Two	Three			
[A]									
No	1097	418	72	1037	405	17			
Expectedf	1101.0	414.6	73.6	1034.4	403.4	19.0			
Yes	175	61	13	158	61	5			
Expectedf	171.0	64.4	11.4	160.6	62.6	3.0	5	2.29524	0.80697
[B]									
No			1587	1459					
Expectedf			1589.2	1456.8					
Yes			249	224					
Expectedf			246.8	226.2			1	0.02887	0.86508
[C]									
No	1097			1037					
Expectedf	1100.3			1033.7					
Yes	175			158					
Expectedf	171.7			161.3			1	0.10923	0.74103
[D]									
No	1097	418							
Expectedf	1100.0	414.4							
Yes	175	61							
Expectedf	171.4	64.6					1	0.23071	0.63100
[E]									
No	298	113	25	276	104	7			
Expectedf	299.6	113.6	25.8	275.5	100.7	7.7			
Yes	50	19	5	44	13	2			
Expectedf	48.4	18.4	4.2	44.5	16.3	1.3	5	1.56839	0.90505
[F]									
No			436	387					
Expectedf			439.0	384.0					
Yes			74	59					
Expectedf			71.0	62.0			1	0.22785	0.63312
[G]									
No	298			276					
Expectedf	299.0			275.0					
Yes	50			44					
Expectedf	49.0			45.0			1	0.01393	0.90604
[H]									
No	298	113							
Expectedf	298.0	113.0							
Yes	50	19							
Expectedf	50.0	19.0					1	0.00000	1.00000

Notes

* = Periods are the day of observation.

† = The following associations of advice and period are presented: A = the total data n=3519; B = first observational period (days 1,2 and 3) compared with the second (days 4,5 and 6); C = the first day of the first period compared with the first day of the second period; D = the first day of the first period compared with the second day of the first period; E,F,G and H are the same as A,B,C and D respectively only limited to the first 120 minutes of opening.

Table 65

The number in specific time bands of prescription orientated individuals requesting services from community pharmacists*

Time band*	Number of prescription orientated individuals		
	Total	Prescription medication advice	Customer initiated advice
6	4	0	0
18	7	0	0
30	33	1	0
42	73	9	2
54	77	17	2
66	142	23	6
78	138	17	3
90	157	23	7
102	151	24	7
114	138	16	4
126	155	17	6
138	116	14	2
150	147	19	4
163	102	18	6
174	94	11	7
186	113	13	6
198	84	13	3
210	90	9	2
222	52	3	2
234	44	2	2
246	59	3	2
258	38	5	2
270	23	2	2
282	15	2	1
294	24	3	0
306	19	3	0
318	20	4	2
330	27	2	1
342	49	3	2
354	36	6	3
366	49	4	3
378	37	3	0
390	48	10	3
402	40	3	1
414	36	7	4
426	45	8	2
438	38	7	3
450	46	5	2
462	41	5	2
474	51	9	4
486	72	11	2
498	77	4	2
510	92	14	5
522	93	16	7
534	104	15	5
546	127	28	10
558	92	12	4
570	75	6	1
582	50	12	2
594	37	10	3
606	22	1	0
618	12	1	0
630	6	0	0
642	2	0	0
654	0	0	0
Total	3519	473	151

Note

* = Time bands are measured in 12 minute intervals after 8.30am. The midpoint of the band is given in this table.

Table 66

Relationship of time of possible discussion with observed time of advice and customer initiated advice

Statistical relationship of group with time*

Group	Mean Rank	Cases n=3458	Mann-Whitney Z	Kolmogorov-Smirnov Z	2-tailed probability
[A]					
Receiving no advice	1754.78	3046	-0.7734		0.4393
Receiving advice	1793.62	473			
Receiving no advice		3046		1.082	0.192
Receiving advice		473			
.....					
[B]					
Receiving no advice	1752.84	3368	-1.9750		0.0483
Customers initiating advice	1919.75	151			
Receiving no advice		3368		1.278	0.078
Customers initiating advice		151			
.....					
[C]					
Receiving advice	229.55	322	-1.7318		0.0833
Customers initiating advice	252.89	151			
Receiving advice		322		1.458	0.028
Customers initiating advice		151			

Note

* = Analysis based on the original unbanded data. Students t-test was considered inappropriate as the population distributions appeared to be bimodal rather than normal.

Table 67

Independence of customer initiated advice and time in bands

Customer initiated	Time*		
	0 to 306	318 to 462	472 to 654
No	2157	326	885
Yes	89	16	46
Expectedf	96.4	14.7	39.9
Adjusted residuals	-1.3	+0.4	+1.1
Chi-square value	1.67231		
Significance	0.43337		

Note

* = Time is banded from 0 to 312 minutes, 313 to 468 and 469 to 660 minutes. The labels in the table relate to the midpoint values in table 83. This is done to enable more direct comparison.

3.4 Supply

Table 68, page 290, lists the advisory activities of CPs which include aspects of supply for prescription medication. Data has been grouped in a similar manner to that of advice on specific problems (section A3.1.3.2, page 262, table 53, page 262). A central question addressed in this thesis is whether advice is associated with information on the supply aspects of prescription medication. The hypothesis is that:

H_1 Prescription medication advice is not dependent on whether advice on supply aspects of medication is provided.

Table 69[A], page 292, shows that advice is very significantly associated with concurrent advice on the supply aspects of prescribed medicines. Of the 473 POIs provided with advice 114 were given information on supply aspects of medicines when only 61 were expected. This relationship held when the data was controlled for type of CP, proactive (table 69[B]) and reactive (table 69[C]). These results lead to rejection of the null hypothesis and it is stated that advice shows dependence on concurrent information concerning supply.

There is, however, a separate issue of duplication of cases which should be addressed. It will be remembered from the definition of case (section 4.6, page 113) that an individual may leave the pharmacy and upon return any time afterwards be counted a second, third... time. This was considered appropriate as CPs had more than one opportunity to initiate or respond to requests for, advice. Such cases occurred when, for example, customers dropped off their prescriptions, went shopping and returned or were asked to return as prescribed items were not readily available for dispensing. In the most extreme example, one prescription was linked to five separate customer enquiries before the item was dispensed. On occasions a prescription would be presented and a second customer would subsequently collect the dispensed item. Although the latter case is not strictly duplication of an individual rather of a prescription, it was included. In each case the function of supply was involved, either dispensing was not quick enough to satisfy the customer, the prescribed item was not readily available or for whatever reason supply was to a customer other than the one who originally presented. Table 87[D] considers whether duplication is associated with advice. The negative result indicates that there is no reason to doubt the above statement concerning the hypothesis. However, in the case where supply was the reason for duplication, it was the researchers impression from field notes that such customers were more likely to receive advice. Table 87[E] is a contingency table of the 102 customers who were recorded on two or more occasions where supply of prescribed medication was at issue. The impression was confirmed by a trend for such customers to receive advice.

In summary, advice does appear to be associated with concurrent discussion on supply. This relationship is not altered due to the duplication of cases, however, a trend was noted for duplication of cases linked to supply to be associated with advice.

Table 68

Algorithm for allocation of supply as a category of advice*

Supply	Pure Supply				
	Supply	Financial orientation			
		Dispensing act			
		Information on supply			
	Supply implying judgement	Prescription altered			
		Information for dispensing			
		Miscellaneous			
	Pure Supply	Inability to supply	Code †	Frequency ‡	
		₹ kept	1	148	
			₹ given back	2	6
Location of ₹ not at pharmacy		3	7		
Ability to supply		Whether all items have been dispensed	4	4	
		Supply specific items on ₹	5	1	
		Supply specific items on ₹	6	6	
Financial orientation		OTC	Can you purchase item(s) OTC	7	4
			Sale of item OTC-Not POM	8	10
			Sale of item OTC- POM	9	1
	Payment	Cost of dispensing	10	5	
		Exemption from ₹ charge	11	17	
		Money owing from a previous ₹	12	1	
		Item blacklisted	13	1	
		Item dispensed for part of fee	14	1	
		Item not dispensed without fee	₹ returned	15	1
			₹ kept	16	1
Dispensing act	Help signing the ₹ form	17	31		
	Details of item on ₹ incomplete	Sent to surgery	18	3	
		Patients' personal details sought	Patients' name	19	19
			Patients' address	20	8
	Form dispensed	Several brands in a single container	21	2	
		Packaging	Split into two containers	22	6
			Normal screw cap required	23	4
			Single container overfilled	24	1
	Incorrectly supplied	Given to the wrong customer	25	2	
		Incorrectly dispensed	26	11	
Information on supply	Name of item prescribed	27	30		
	How long ₹ forms are valid/legal requirements	28	3		
	Availability of quantities/strengths	29	1		
	How long the quantity of item will last	30	2		

	Item correctly prescribed	Code †	Frequency‡
Prescription altered	Pharmaceutical form of item altered	31	3
	Dose altered due to supply problem	32	8
	Attempted dose alteration	33	1
	Item/℞ inappropriately prescribed		
	Item does not exist, wrong name or address	34	4
	Dose altered and item dispensed	35	2
Information for dispensing	Interaction, alternative item dispensed or dosing schedule altered, GP contacted	36	2
	Check to verify appropriate dispensing		
	With customer	37	34
	With surgery/general practitioner	38	6
	With home	39	§
	Check to verify appropriate prescribing		
	Age of child	40	6
	Check on the type of item required		
	Specific flavour of item	41	2
	Specific brand of item	42	5
Miscellaneous	General practitioner		
	How they prescribe an item	43	1
	How to recognise their signature	44	
	Supply of medicine spoon	45	1
	℞ med receipt	46	1
	Physical help removing the top from a bottle	47	§
	Emergency prescriptions	48	3

New code	=	Combination of previous codes	Frequency
49	=	1 + 7	2
50	=	1 + 8	1
51	=	1 + 10	2
52	=	1 + 17	1
53	=	1 + 20	1
54	=	1 + 26	1
55	=	1 + 26 + 48	1
56	=	1 + 31	1
57	=	1 + 32	2
58	=	1 + 37	8
59	=	2 + 37	1
60	=	3 + 37 + 40	1
61	=	5 + 17	1
62	=	5 + 28	1
63	=	6 + 38	1
64	=	7 + 19	1
65	=	8 + 37	1
66	=	11 + 17	1
67	=	11 + 19	2
68	=	13 + 37	1
69	=	17 + 27	2
70	=	17 + 37	2
71	=	22 + 37	1
72	=	32 + 37 + 38	1
73	=	34 + 37	1

Notes

- * = Algorithm for supply for the 3519 POIs.
- † = Code used to identify supply as topics of discussion. This was necessary as discussion coded as ≥49 included more than one topic.
- ‡ = Matching frequency of individual topics of supply for each code. Only direct or indirect conversation between CPs and POIs are included. A total of 454 topics were noted during discussions with CPs.
- § = Two cases excluded, the first was where the CP attempted to contact a home to verify the accuracy of dispensing but was unsuccessful, the second was physical help rather than advice, verbal or non-verbal.

Table 69

Dependence of advice on supply

Independent variable†	Variable analysed for dependence*			Chi-Square	Significance
	PMA	No PMA	n		
(A) Total Supply	114	340			
Expected value	61.0	393.0			
No supply	359	2706			
Expected value	412.0	2653.0	3519	59.85614	0.00000
(B) Proactive Supply	83	178			
Expected value	61.4	199.6			
No supply	276	988			
Expected value	297.6	966.4	1525	11.38845	0.00074
(C) Reactive Supply	31	162			
Expected value	11.0	182.0			
No supply	83	1718			
Expected value	103.0	1698.0	1994	40.32651	0.00000
(D) Duplication	56	399			
Expected value	61.2	393.8			
No duplication	417	2647			
Expected value	441.8	2652.2	3519	0.47072	0.49265
(E) Duplication	20	82			
Expected value	13.7	88.3			
No duplication	453	2964			
Expected value	459.3	2957.7	3519	2.90909	0.08808

Notes

- * = The dependent variable, advice is given the x axis for ease of display.
† = Table [A] is an overview of associations of the 473 cases of prescription medication and the proportion which included information on supply. Tables [B] and [C] control for type. Table [D] considers the possible influence of duplication on the first association. Finally, table [E] considers the 102 cases where duplication was linked to supply and associations with advice.

APPENDIX 4 SUBMISSIONS AND PAPERS

A4.1 Submission on the future role of community pharmaceutical services

**SUBMISSION TO THE JOINT WORKING PARTY ON THE FUTURE ROLE OF
COMMUNITY PHARMACEUTICAL SERVICES**

From

Mr David Gerrett - Assistant Director, Medicines Research Unit

of the

**Southern Derbyshire Health Authority working in collaboration with the Derbyshire College of
Higher Education and the
Nottingham University, Department of Administrative Science and Social Policy.**

SUBMISSION OF EVIDENCE TO CORROBORATE A PROPOSAL ON THE FUTURE ROLE OF COMMUNITY PHARMACEUTICAL SERVICES

The information contained in this submission will be presented as part of a Doctoral thesis and later papers. It is copyright protected for the Southern Derbyshire Health Authority, Medicines Research Unit and Nottingham University and is provided for confidential consideration only by the Joint Working Party.

PROPOSAL

It is proposed that NHS community pharmaceutical services might be developed by additionally remunerating "proactive" pharmacist who actively seek to provide prescription medication advice.

INTRODUCTION

The Joint Working Party (JWP) have been given the remit of "considering ways in which the NHS community Pharmaceutical services might be developed to increase their contribution to health care; and to make recommendations".¹

This submission provides information on the activities of 20 community pharmacists concerning prescription medication advice (PMA). Fundamentally, the results of the study indicate community pharmacists can be considered either "proactive" seeking to advise on prescription medication or "reactive" responding to requests for information from customers.

It may be helpful in examining the above proposal and the original research in this submission for the JWP to consider whether prescription medication advice (PMA) provided by community pharmacist is an appropriately remunerated "core activity" or an expanded role. This has an implication on the implementation of the proposal.

A portion of the remuneration for community pharmacies is based on surveys which determine the professional fee. The calculation includes the time taken advising customers on prescription medication as part of dispensing activity. Although, the exact contribution of PMA activity to remuneration is unknown, this implies that the Government considers such advice to be a "core activity" for which remuneration is forthcoming. The JWP should consider whether changes in the present structure are warranted if a proportion of pharmacists are providing significantly greater service without specific remuneration.

On the other hand, considering PMA as an expanded role activity may:

- (1) Require altering the remuneration survey methodology to 'free' resources;
- (2) Imply that community pharmacy, being historically linked to traders without a specific mandate to provide PMA, has developed an "extended role" including the provision of advice on prescription medication which should be openly recognised and suitably remunerated; and,
- (3) Enable use of the precedent set by the remuneration of community pharmacist for providing advice to residential homes to be used in negotiating payment for PMA.

In summary, community pharmacists may be identified as "proactive" or "reactive" and differentially remunerated. The following pages provide evidence for the existence of two 'types' of pharmacists. Also, that both 'types' of pharmacists appear to have a similar role in providing PMA; thus, the debate is not about quality or content but quantity of activity and whether to differentially remunerate.

EVIDENCE FOR THE ROLE OF THE COMMUNITY PHARMACIST AS ADVISORS ON PRESCRIPTION MEDICATION.

Methodology

The technique of simultaneously recording the subject-pharmacist interactions concerning prescription medication both on tape and on paper was piloted. A radio-microphone and transmitter were attached to the pharmacist and appropriate discussions recorded on tape from the receiver which was situated with the researcher. The researcher was discreetly positioned to observe the interaction without becoming involved. A form for recording details of the interaction was developed and experience gained in collecting the required information with minimal disruption of the normal activities of the pharmacy.

Twenty-seven pharmacies were randomly chosen from the 105 listed with the Derbyshire Family Practitioner Committee on the 11th April, 1988. Three 'Boots' pharmacies were chosen, however, use of the chosen methodology was not permitted by their superintendent management and they were excluded from the study. The twenty four remaining pharmacies were approached individually by the researcher, given a protocol and a verbal summary of the study objectives and methodology. Twenty pharmacies agreed to participate. The experimental design required two periods of research, each of up to three days, on the same days of the week and, where possible, not more than two weeks apart. Pharmacies were randomly chosen to display a poster advertising their services as advisors on prescription medication on the first or second visit. The pharmacist and dispensary staff were the same on both occasions. The protocol required, where possible, for 74 potential pharmacy-subject interactions during each visit. Patients were notified about the study by the display of a self-explanatory poster, no attempt being made by the pharmacist to conceal the microphone. The names and addresses of patients were noted only for the purpose of identifying duplication, earmarking conversations and assigning social status indicators. Prescription details were noted and both a written account and recording taken of every discussion concerning prescription medication. Specific details on the pharmacy premises and labelling practices and non-pharmacy staff were recorded on a separate sheet. Pharmacist participating in the study will remain anonymous.

A case was a possible interaction between pharmacist and subject. The subject was the individual presenting the prescription. Prescription medication advice was related to prescriptions, subjects and individual drugs.

Results Quantitative Evaluation

A total of 3,519 cases over 69 days between June 1988 and February 1989 were recorded. Each day of the week was equally represented. Graph G1* indicates the similarity of the 6072 dispensed preparations in therapeutic class to National figures. Appendix 1† gives definitions of the therapeutic classes involved.

There was no significant difference ($p > 0.05$) in the provision or request for prescription medication advice relating to display of the poster. Combining the data for both visits, prescription medication advice was associated with 473 cases.

Graph G2‡ indicates the frequency that a dispensed preparation is associated with PMA in four previously validated categories by therapeutic class. A dispensed preparation may be associated with more than one category of PMA; thus G2 indicates the extent to which a therapeutic class of dispensed preparation is associated with a particular category. Graph G3§ highlights frequencies of the specific categories shown in graph G2.

Considering the 6817 "preparation events" recorded, 562 occasions included PMA activity, graph G4. || A 'preparation event' refers to discussion on one or more categories of PMA whether dispensed or not and including over-the-counter advice on prescribed medication. A subject may discuss several preparations, each discussion recorded as an event; thus, the graph represents the extent to which individual pharmacist discuss prescribed preparations no matter what the category of PMA and provides an index of PMA activity.

This same order was then applied to graph 5, ¶ dispensed prescriptions whose addresses were within the boundary of the Southern Derbyshire Health Authority and which were associated with any category of PMA. The total activity is related to whether any category of PMA for individual prescriptions was subject initiated. Subjects may initiate discussion on more than one prescription; thus, the graph is indicative of subject initiating activity for prescriptions between pharmacists ordered as providers of PMA. The graph indicates the existence of two 'types' of pharmacist 'proactive' and 'reactive' and that 'reactive' pharmacist (with one exception) are associated with less PMA activity. However, this is valid only if the fraction of PMA initiated by subjects is constant between the two 'types'.

The chi-square test for independence found no significant difference for the frequency of subject initiated discussion between the two types of pharmacists (chi-square 0.09937, DF=1, n=171/3151, p=0.7526, Yates correction applied). As subjects initiate a similar percentage of requests for PMA the difference in frequency of provision of PMA between the two types must be due to pharmacists actively providing unrequested advice.

Results Qualitative Evaluation

Introduction

Having provided quantitative evidence for the two 'types' of pharmacists, the question remains whether there are differences in the content of PMA.

Evaluation of the role of the community pharmacist as providers of PMA was undertaken using matrix analysis of the two 'types'. The methodology relies on progressively refining the context and content of discussion using a matrix pattern to derive overall patterns of activity.²

Although analysis of the four categories of discussion describes the complete role of the study community pharmacist as advisors on prescription medication, it may be sufficient to provide one category in detail to indicate the depth and range of interactions concerning PMA. The full analysis would be made available if requested. If the JWP considers the qualitative evaluation of the activities or roles of community pharmacists concerning the "side-effects", this will serve to exemplify the range of interaction between pharmacist and subject. It will provide evidence of consistent features of discussion between the two 'types' and a basis for discussion concerning the remuneration of this service in terms of quantity not quality.

Qualitative evaluation of discussion concerning "side-effects".

Cases of interactions concerning "side-effects" of drugs, may be placed in a qualitative matrix of poster and type, figure 1. Appendix 2 lists the data after the first stage of reduction and is provided for confirmation of the methodology and conclusions.

Figure 1.

Design of qualitative matrix for 'type' of pharmacist and whether the poster advertising a PMA service was displayed.

Poster⇒ Type ↓	Displayed	Not displayed
Proactive Pharmacist	CELL A	CELL B
Reactive Pharmacist	CELL C	CELL D

From these cells common themes of discussion emerge which represent overall activity for community pharmacist in a particular area.

For the cells A-D. common themes included:

Short "robot-like" monologues by the pharmacist informing of possible side-effect, usually drowsiness or gastric upset as part of the additional labelling recommendation for the drug;

Examples

- Cell A: Case number 413 "...they, they will cause drowsiness, so no alcohol and be careful driving"
- Cell B: Case number 1345 "they might make her feel a little bit sleepy"
- Cell C: Case number 832 "It um.. might make him a bit dopey"

Cell D: No cases recorded.

Use by the pharmacist of side-effects, usually gastric, to increase the likelihood of compliance with direction;

Examples

- Cell A: Case number 3789 "sip it otherwise you might feel sick"
- Cell B: Case number 349 "Sometimes people have trouble with them irritating the stomach then...then they space them out"
- Cell C: Case number 787 "after food otherwise they'll give you a very bad er indigestion"
- Cell D: Case number 870 "if you take them on an empty stomach, they do tend to make you a bit sickly"

Confirmation by the pharmacist of a link between medication and side-effects; and,

Examples

- Cell A: Case number 193 "Yeah, it does say it can make you a bit sleepy"
- Cell B: Case number 3649 "Yeah, they can have that effect"
- Cell C: Case number 2899 "Drowsiness is quite likely....yes"
- Cell D: Case number 2510 "It's harmless, yes...won't do you any harm"

Pharmacists socialising subjects to be wary of specific side-effects of drugs which have implications on everyday activity.

Examples (subjects statements)

- Cell A: Case number 193 "He's not fit to drive really!"
- Cell B: Case number 1387 "Be alright driving won't you?"
- Cell C: Case number 3467 "Driving isn't affected is it?".

Cell D: No examples of subject initiated discussion

Having identified commoner themes for the cells a qualitative matrix of poster and type for unique discussion on "side-effects" is constructed, figure 2**. By reading down rows and across columns statements concerning the qualitative differences of discussion on PMA between 'types' of pharmacist and the display of the poster can be made.

For example, 'reactive' pharmacist, as expected, are asked for specific details on side effects rather than volunteer advice. They often provide PMA on "side-effects" in a supply setting and appear not to get involved in discussion on steroids (reactive pharmacist dispensed 17 steroid items, proactive 26). However, both 'types' are keen to recommend the general medical practitioner if patient compliance is an issue or the subject shows anxiety over possible "side-effects".

Although not quantitatively significant, the frequency of discussion on side-effects was greater when the poster was displayed. It appeared that more complicated interactions concerning side-effects were entered into with the poster displayed although this could be an artifact of the limited numbers of interactions.

In summary, cases of interactions between the community pharmacist and the subject were recorded in 1988/89. Graph G1* indicates that similar numbers and therapeutic classes of drugs were dispensed. As no significant difference was found in the frequency of PMA between a baseline and when a poster was displayed the data was aggregated to 477 cases of PMA. The frequency that a dispensed preparation is associated with PMA is shown in graph G2‡ and the specific categories of PMA highlighted in graph G3§. The extent to which individual pharmacist discuss prescribed preparations no matter what the category of PMA is provided in graph G4‡ which gives an index of PMA activity. The same order of activity when graphed as the percentage of PMA which was subject initiated, graph G5¶ reveals two "types" of community pharmacist which are labelled 'proactive' and 'reactive'.

In order to describe the variety of PMA activity undertaken by different 'types' of community pharmacists, qualitative evaluation of their respective roles for one category, "side-effects" is provided. It was demonstrated that pharmacists appear to have common themes of PMA concerning "side-effects". Although some differences are noted, these may be due to the limited numbers of cases. Analysis of the remaining three categories revealed little difference in the PMA role undertaken by the two 'types' of pharmacist.

From the evidence submitted, or requested, it can be shown that community pharmacists' role in providing PMA is essentially consistent; however, some are 'proactive' and seek to educate subjects about prescription medication without prompting while others respond to requests for advice.

THE FUTURE ROLE OF THE COMMUNITY PHARMACIST AS ADVISORS ON PRESCRIPTION MEDICATION.

This submission contains evidence developed using social science techniques which may appear, at first, "non-scientific". The validity of such methods is part of a continuing academic debate in which "The caricature of qualitative research is that it is "soft" whereas quantitative research is "hard"; qualitative researcher call quantitative researchers "number-crunchers", and the riposte of the latter is that the former are mere "navel-gazers".³

However, if the JWP were only to consider graphs G2‡ and G3§, the "hard" data, the inexorable conclusion would be that, compared to the number of preparations dispensed, a small almost insignificant proportion are associated with PMA and then with reiterating the directions concerning antibiotics. Discussion might then introduce complicating factors for which figures are simply not available; such as as the proportion of repeat prescriptions and the number of dispensed preparations which actually require a pharmacists' intervention. This would serve to cloud the central issue of whether community pharmacist are providing a PMA service to the community and what, if any, remuneration should be forthcoming. Thus, in order to fully appreciate the nature of the PMA role of community pharmacists, a combination of quantitative and qualitative methodologies is useful.

In this necessarily short report I have concentrated on providing evidence for the role of community pharmacists as advisors on prescription medication. The essence of this role appears consistent, but may be divided quantitatively into two sections based on who initiates the discussion, pharmacist or subject. Pharmacists always respond to requests for PMA; however, it seems an anomaly that all are similarly remunerated when clearly certain individuals are more actively promoting prescription medication education. By additionally remunerating "proactive" pharmacists it may be possible to increase the overall activity in this area, the remit of the Joint Working Party.

It is my considered opinion that differential remuneration is appropriate given that community pharmacists currently receive payment for providing PMA. If changes are envisaged then the following questions and comments might be born in mind:

- (1) Can a universal method for determining 'types' of pharmacist be developed?
 - (1.1) Community pharmacists might be surveyed to indicate their perceived activity in providing PMA. Those that purport to be 'prospective' advisors on PMA could be additionally remunerated on the understanding that their activity would be subject to evaluation by administration of test problems.
- (2) What would be the effect on the community pharmacist, the profession and the general public of such changes?
 - (2.1) The Social Science literature on the professions is instructive in highlighting issues which the JWP may consider debating.

Considering the trait theory of the professions Pharmacy is indeed a profession.⁴

One of the major tenants is that the 'professional' is not money orientated "and will put the client's interests before his own" also that "standard are homogeneous throughout the profession."⁵ If it were common knowledge that pharmacists were paid for providing PMA and that there were two 'types' of community pharmacist, this would be incompatible with the concept of pharmacy as a profession. In addition, the professional label and societies expectations of a professional may be one of the major forces influencing community pharmacists to resist all temptations to ethical or technical lapses. In other words, professional status is important as a motivator for individuals, by paying them for a service you could in fact insult their ideals which may have a detrementory effect overall. If the JWP consider it viable to appropriately remunerate community pharmacists for providing PMA then the views of the profession should be sought to ascertain the level of support for this approach.

- (3) Would differential remuneration increase PMA activity?

- (3.1) There is an underlying assumption in the proposal that remuneration will prompt conversion of community pharmacist from being 'reactive' to 'proactive'. It would be incumbent on the management of such a scheme to monitor this aspect.

Submitted 21st February, 1991

Mr David Gerrett - Assistant Director, Medicines Research Unit
(Social Sciences / Drug Abuse /
Community Research)

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- 4 Millerson G. The qualifying associations: A study in professionalization. London: Routledge & Kegan Paul 1964.
- 5 Friedson E. Professional Dominance: the social structure of medical care. New York: Atherton Press 1970; 93, 96.

Notes

- * = Figure 11, page 38, related to table 48 columns 4 and 5.
† = Table, Drug Master Index⁹⁴ reproduced.
‡ = A graph of the frequency of prescription medication in categories of advice by therapeutic class. Similar to figure 20, page 127.
§ = The frequency of prescription medication in categories. Similar to figure 21 page 128.
|| = The frequency of preparation events and those including PMA by community pharmacist. Similar to figure 17, page 120.
¶ = The same as the previous graph only using ward data including a graphical representation of the proactive and reactive divide based on subject requests for advice.
** = Table 57, page 271 reproduced.

A4.2 Patients' advisory requirements for prescribed medication

Presented as an oral communication at the 7th Social Pharmacy Workshop, Egham, Surrey 1992 (26-27 July). Published in the Workshop abstracts page 30.¹⁴⁷

Perceived advisory requirements for prescribed medication

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Published research consistently supports patients' perceived need for a broad range of information on prescribed medication, However, either the data collection method was not stated or findings have been based on respondents' selections from predetermined categories. This study was conducted with the aim of developing categories of prescription related information individuals who present prescriptions at a dispensary feel they should be aware of. The following question was asked on a prepiloted form; "Please describe what you feel you should know about prescription medication by writing short concise sentences or words in the five spaces below". Potential respondents were randomly selected from those presenting to the Derbyshire Royal Infirmary's Pharmacy Department from the 25th to the 27th April, 1988 inclusive. The author gave a brief verbal account of the objectives of the study to each potential respondent. Of the 102 respondents, 13 were physically unable to write or were illiterate, but could understand and respond to questions when given a verbal presentation. Seventeen respondents were excluded as they; asked probing questions (2), could not understand the questions (2), had no thoughts on the matter (5), couldn't see and were unwilling to respond verbally (4), were illiterate and could not understand English (3), or were under 16 years of age (1). Exclusion was independent of gender, age, city or country address, or prescription ownership. analysis of the 166 responses from the remaining 85 respondents revealed the following four discrete non-supply categories of advice when responses were allowed to group themselves into general topics or themes: 'side effects', including advice on potential harm (40 respondents); 'what is prescribed', the drug's identification intended purpose and mechanism of action (35); 'what to do with it', directions, and pharmaceutical requirements (28); and, 'specific problems', interactions where alcohol was identified, and other interactions, precautions and contraindications (18). Trends (chi-square test, Yates' correction, $p < 0.1$) were shown for females to have responses categorised under 'side effects' and 'what is prescribed'. Also for younger respondents to include 'side effects' as a desired category of advice (Mann-Whitney test, $p < 0.1$). Clearly many individuals, who pharmacists have the opportunity of advising, perceive a need for information on 'side effects'. No previous study had noted such high levels of perceived need. This may reflect the unique open method of data collection used. Further research is required to substantiate these results on a larger and more representative sample.

A4.3 Pharmacists' advisory requirements for prescribed medication

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An investigation of the information on prescribed medication pharmacists perceive patients should be told

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Introduction

Researchers considering the role patients perceive for community pharmacists as advisors on prescription medication consistently conclude, first, that such a role exists and, second, that advising on side effects should be more of a priority (1 2). Community pharmacists have been observed providing such information and being asked for advice (3). In addition, they have been mandated by General Medical Practitioners as advisors on prescription medication with specific note of their role informing patients on side effects (4). Clearly, community pharmacists are seen as legitimate sources of prescription medication information for patients. Their active involvement is increasingly necessary given the unsatisfactory state of knowledge about prescription medicines by the general public (5) and patients (2). Two problems exist with the current state of research in this area. First, researchers, rather than patients or pharmacists, have themselves predetermined the categories which represent topics for advice. Second, pharmacists have not been asked what topics of advice they feel should be given to patients. The aim of this study was to develop and quantify categories of prescription related information pharmacists feel patients should be aware of.

Method

The sample frame included the 229 pharmacists known on the 26th February 1988 to be members of The Derbyshire Branch of the RPSGB (The Branch). A pack consisting of a covering letter, pre-piloted questionnaire and a return stamped self-addressed envelope was distributed by The Branch in the April 1988 mailing to each of its members. The form was confidential and anonymous. Pharmacists responded to the question "Please describe what you feel patients should know about prescriptions or prescription medication by writing short concise sentences or words in the five spaces below". It is assumed that there is a common understanding between pharmacists for the use of words and sentences submitted.

Simple content analysis was used to associate like words and sentences into discrete topics. These were then aggregated to produce distinct categories for advice. The numbers of pharmacists providing responses in each category formed the basis of subsequent quantitative analysis.

Results

Fifteen respondents were excluded, seven involved in piloting, four who responded but were undergraduates and four who provided incomplete details. Of

the remaining 214 pharmacists, 81 (38%) replied with the single mailing. The response rate was high for a single mailing but limits generalisation of the results to those pharmacists who were motivated to provide their perceptions of appropriate advice.

Excluding information on supply, three discrete areas of prescription medication advice could be identified. Use of the words "interactions", "precautions" "contraindications" or sentences providing examples of such advice were aggregated under the title of 'specific problems'. The number of unique responses with the sole descriptor of "side effects" singled out this topic from 'specific problems' and lead to related sub category 'side effects'. Words and sentences describing drug identification or intended purpose and mechanism of action as topics of advice were grouped under the heading of 'what is prescribed'. Finally, directions for physically taking, using or storing prescribed drug therapy were listed under the title 'what to do with it'. A further category, comprising 10% of the total response, contained statements implying an attitude to medication rather topics of advice pharmacist felt should be provided to patients. The number of respondents with responses in the above discrete categories is shown in the table below.

Category of response	Sub category	Number respondents (n=81)
'Specific problems' (excluding side effects)		32 (39.5%)
	'Side effects'	55 (67.9%)
'What is Prescribed'		47 (58.0%)
'What to do with it'		75 (92.6%)

Respondents' experience in community, hospital, industry and academic branches of pharmacy summed to 1377 years of which 72% was in community practice. The number of pharmacists who gave responses in the above categories were tested for relationships with the demographic variables age, gender, pharmacy experience, and the branch of pharmacy in which respondents currently practised. The only significant relationship was a dependence for inclusion of 'side effects' as a topic for advice by younger respondents (Mann-Whitney test, mean rank 49.96 for 26 cases, 36.76 for 55 cases, n=81, Z=-2.3571, 2-tailed p=0.0184).

Discussion

Using an open question, pharmacists have identified three major categories of advice which they felt should be provided to patients. This study validates these three categories as variables for further research. Clearly, a case may be made for incorporation of 'side effects' as a topic into the generic category 'specific problems'. However, this may be an oversimplification.

In summary, there is a consensus for motivated pharmacists in varying branches of practice to feel patients should be advised of topics which may be described by the headings 'what to do with it', 'what is prescribed' and 'specific problems'. That relatively large numbers of patients and younger pharmacists perceive the provision of information on side effects to be a necessary element of drug therapy advice highlights this topic as a necessary sub category for investigation.

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