

**SERVICES PROVIDED**  
**by**  
**COMMUNITY PHARMACIES**  
**in**  
**QUEENSLAND**

by  
**Kay Stewart**

B.Pharm., University of Queensland, 1966

B.Pharm.(Hons.), University of Queensland, 1968

A thesis submitted in fulfilment of the requirements for the  
**Degree of Doctor of Philosophy**  
in the Department of Pharmacy, University of Queensland,  
February 1989

## DECLARATION

I hereby declare that the work presented in this thesis is, to the best of my knowledge and belief, original, except as acknowledged in the text. The material has not been submitted, either in whole or in part, for a degree at this or any other University.

*K. Stewart*

Kay Stewart,

February, 1989

## ABSTRACT

The expansion of pharmaceutical knowledge, coupled with consumer demand to participate in health care, has created a need for extension of the variety and quality of pharmacists' expertise in health maintenance. In response, some practitioners have diversified their practices into the provision of specialized health related services.

The aims of the thesis were, firstly, to determine the nature and extent of services being provided from community pharmacies in Queensland, to identify practices providing specific services, and to examine relationships between service provision and demographic and business factors. Secondly, an area of innovative service provision (diabetic services) was selected as a case study into specialization within community pharmacy practice. The aims of the case study were to document the services being offered, the types of diabetic stock held, and the degree of counselling involvement with diabetic patients. Historical, educational and motivational aspects were also investigated. To aid understanding of the developmental process, active pharmacies were classified into levels of service provision.

A "Survey of Services from Community Pharmacies in Queensland, 1984" confirmed that pharmacists were performing duties related to dispensing of prescription medications and to provision of primary health care, and that many were offering other health-related services of a specialized nature. The major health related services offered were hire of invalid or health care aids (53.2%), sports medicine services

(37.3%), pregnancy testing (35.6%), diabetic services (15.2%), and hypertensive services (8.3%). Seventy percent of pharmacies were providing at least one of these services.

The "Survey of Diabetic Services from Community Pharmacies in Queensland, 1986-87" found that activities were broadly divided into three groups: services, supply and counselling. Services included provision of information to diabetic patients, and blood glucose monitoring. All pharmacies reported keeping ranges of stock of a wide variety of constantly needed goods associated with diabetic care. Only about half of them kept less frequently demanded items. Pharmacists were involved in counselling diabetic patients about a diverse range of topics. The areas of major involvement were counselling purchasers of blood glucose monitors about their use, and counselling about oral hypoglycaemic therapy.

Pharmacists involved mostly did not have qualifications beyond the basic requirements of Ph.C. or B.Pharm. They tended to be members of professional and merchandising groups. Over 70% of pharmacists reported regular readership of journals, and journal reading was identified as a major source of information about diabetes. Only about a quarter of the pharmacies appeared to have specific diabetes reference texts available.

Presence of Diabetic Association Support Group did not appear to inhibit the development of diabetic services in community pharmacies. The trend was for higher proportions of city centre and regional shopping centre pharmacies to be providing diabetic services. The physical size of the pharmacy

and the annual turnover also differed significantly between providers and nonproviders, with greater proportions of larger pharmacies with higher turnovers being involved.

Professional and altruistic reasons were cited as the major influences on the decision to provide a diabetic service. Pharmacists saw the service as a way to increase professional satisfaction, had a personal interest in diabetes, had a number of diabetic customers, and recognized the need of their diabetic customers for assistance. The prospect of making a profit was a less important factor. Support from external sources was apparently minor. The great majority of pharmacies had begun their involvement since 1980, probably due to the advent of blood glucose monitoring and the sale of monitors through pharmacies. Provision of specialized diabetic services from community pharmacies in Queensland appears to have been the result of the efforts of motivated practitioners.

Grouping of pharmacies specializing in diabetic services resulted in the formation of two clusters providing lower and higher levels of service. The features distinguishing between the groups were that higher service level providers were more likely to be providing information to patients by sophisticated means, more likely to be performing blood glucose monitoring, more likely to assist clients with alternative means of monitoring during repair times, and more involved in counselling on wider aspects of diabetic care.

A plan was suggested for the controlled development of the trend towards specialization in community pharmacy.

## ACKNOWLEDGEMENTS

I wish to express my sincere thanks to:

my supervisor, Dr Charlie Benrimoj, for his advice, patience and sense of humour during the course of this thesis,

the Queensland Pharmacy Research Trust for grants which enabled the conduction of the surveys involved,

Mr Alan Wright for assistance with production of the major questionnaire and with computing,

Dr Jake Najman for advice on questionnaire construction,

Mrs Robyn Leggat and Mrs Bernadette Gillan for secretarial services,

Miss Elizabeth Harris and Miss Maree Machin for clerical assistance with receipt of questionnaires and data entry

Dr Steven Bealer for stationery

Mrs Gail Williams for statistical consultation,

Mr Peter Crothers, Mr John Gibson and Mr Nelson Hunt Sharp for provision of certain reference materials,

Mr John Jerrard and Mr Richard Harvey for providing an insight into specialized diabetic practice in the community pharmacy environment, and for permission to use photographs taken on their premises in presentation of this thesis,

Dr Ross Kennedy for his expert photographic services,

the community pharmacists of Queensland who so willingly responded to my enquiries,

my fellow post-graduate students for their camaraderie,

my husband, Peter, for his understanding, having been through it himself,

my daughters, Kristin and Susan, for their encouragement,

and last, but far from least,

my mother, Kath Smelt, for keeping the home fires burning.

## PUBLICATIONS

### A. Publications Resulting from Thesis

Stewart, K., Benrimoj, S.I. and Wright, A.H. (Apr.1986).  
"Pharmaceutical Benefits Dispensing - Views on Remuneration."  
Aust.J.Pharm., 67:435-436.

Stewart, K. and Benrimoj, S.I. (Dec.13,1986). "Diabetic  
Services from Community Pharmacy." Pharm.J., 237:805.

Stewart, K. and Benrimoj, S.I. (Fall,1987). "Specialized  
Services from Community Pharmacy." Journal of Pharmaceutical  
Marketing and Management, 2(1):147-158.

### B. Publications in Related Areas

Benrimoj, S.I., Stewart, K. and Smith, M.C. (1985).  
"Pharmacy-Only Medications: Experience in England and  
Australia." Pharmaceutical Executive, 5(2):40,42.

Stewart, K., Benrimoj, S.I. and Garde, T.W. (Dec.1985).  
"Over-the-Counter Medication Sales in Community Pharmacy. A.  
Direct Product Requests and Symptom Presentation."  
Aust.J.Pharm., 66:979-982.

Stewart, K., Benrimoj, S.I. and Garde, T.W. (Feb.1986).  
"Over-the-Counter Medication Sales in Community Pharmacy. B.  
Consumer Aspects." Aust.J. Pharm., 67:270-274.

## TABLE of CONTENTS

### Chapter 1

#### COMMUNITY PHARMACY PRACTICE IN AUSTRALIA

1.1	HISTORICAL DEVELOPMENT	Page 18
1.1.1	The Early Nineteenth Century	18
1.1.2	The Late Nineteenth Century	20
1.1.3	The Early Twentieth Century	22
1.1.4	The 1940s to the 1960s	26
1.1.4.1	Dispensing	26
1.1.4.2	Education	28
1.1.5	The 1970s to the Present Day	29
1.1.5.1	The Need for a Clinical Role in Community Pharmacy	29
1.1.5.2	The Development of a Community Pharmacy Clinical Role	33
1.1.5.3	The Nature of the Clinical Role	35
1.1.5.4	Reward for Involvement in the Clinical Role	39
1.1.5.5	Statement of the Professional Role of the Pharmacist	42
1.2	APPLICATION OF THE CLINICAL ROLE	47
1.2.1	Prescription Related Activities	47
1.2.1.1	Extent of Dispensing	47
1.2.1.2	Nature of Dispensing	48
1.2.1.3	Counselling	49
1.2.1.4	Computerization	51
1.2.1.5	Labelling	52
1.2.1.6	Patient Records	54
1.2.1.7	Remuneration	57
1.2.2	Primary Health Care	59
1.2.2.1	Extent of Primary Care	59
1.2.2.2	Recognition of the Primary Care Role	60
1.2.2.3	Availability of Nonprescription Medications	62
1.2.2.4	Remuneration	64
1.2.3	Health Promotion	66
1.2.3.1	Nature of Health Promotion	66
1.2.3.2	Extent of Involvement	67
1.2.3.3	Areas of Involvement	68
1.3	REFERENCES	71



TABLE of CONTENTS cont.

Page

## Chapter 2

SPECIALIZATION IN COMMUNITY PHARMACY PRACTICE

2.1	SPECIALTY PRACTICE	86
2.1.1	Process of Specialization	86
2.1.2	Criteria for Specialization	87
2.1.3	Specialization in Australia	90
2.2	SPECIALIZED HEALTH SERVICES	93
2.2.1	Classification	93
2.2.2	Services for Specific Patient Groups	94
2.2.2.1	Geriatric Patients	94
2.2.2.2	Domiciliary Care Patients	97
2.2.2.3	Paediatric Patients	99
2.2.3	Services Related to Specific Conditions	100
2.2.3.1	Asthma and Allergy	100
2.2.3.2	Diabetes	101
2.2.3.3	Hypertension	107
2.2.3.4	Oncology	112
2.2.3.5	Ophthalmology	114
2.2.3.6	Ostomy	115
2.2.3.7	Pregnancy Testing	116
2.2.4	Services Related to Product Ranges	118
2.2.4.1	Alternative Medicine	118
2.2.4.2	Dentistry	119
2.2.4.3	Family Planning	119
2.2.4.4	Home Health Care Equipment	123
2.2.4.5	Nutrition	126
2.2.4.6	Sports Medicine	127
2.2.4.7	Veterinary Medicine	128
2.2.5	General Clinical Involvement	129
2.2.5.1	Biological Testing	129
2.2.5.2	Pharmacokinetic Evaluation	130
2.2.5.3	Office-Based Practice	131
2.3	STATEMENT OF THE PROBLEM	133
2.4	AIMS OF THE THESIS	134
2.5	REFERENCES	136

<u>TABLE of CONTENTS</u> cont.	Page
Chapter 3	
<u>SURVEY OF SERVICES PROVIDED FROM COMMUNITY PHARMACIES IN QUEENSLAND, 1984</u>	
3.1 AIMS	157
3.2 METHODOLOGY	157
3.2.1 The Sample	157
3.2.1.1 Sample Type	157
3.2.1.2 Sampling Frame	158
3.2.1.3 Respondents	159
3.2.2 Survey Type	159
3.2.3 Survey Instrument	160
3.2.3.1 Length	160
3.2.3.2 Appearance	161
3.2.3.3 Confidentiality	162
3.2.3.4 Question Sequence	163
3.2.3.5 Question Structure	164
3.2.4 Pilot Studies	166
3.2.5 Administration and Collection	166
3.2.5.1 Preliminary Contact	166
3.2.5.2 Covering Letter	167
3.2.5.3 Distribution	168
3.2.5.4 Follow-up	168
3.2.6 Data Management and Analysis	170
3.2.6.1 Data Coding	170
3.2.6.2 Data Entry	170
3.2.6.3 Data Cleaning	170
3.2.6.4 Analysis	171
3.3 VALIDATION OF RESPONSE	171
3.3.1 Nonresponse Bias by Response Time	173
3.3.2 Nonresponse Bias of Pharmacist Sample	174
3.3.3 Nonresponse Bias of Pharmacy Sample	176
3.4 RESULTS	178
3.4.1 Pharmacist Characteristics	178
3.4.2 Pharmacy Characteristics	184
3.4.3 Dispensing Services	189
3.4.3.1 Physical Services	189
3.4.3.2 Counselling Services	193
3.4.3.3 Drug Surveillance	195
3.4.4 Other Health-Related Services	197
3.4.5 Over-the-Counter Medication Services	199
3.4.6 Commercial Services	200
3.5 DISCUSSION	202
3.5.1 Community Pharmacy Services	202
3.5.2 Pharmacist Characteristics	204
3.5.3 Pharmacy Characteristics	205
3.5.4 Factors Involved in Provision of Specialized Services	206
3.5.4.1 Invalid or Health Care Aids Hire Service	207
3.5.4.2 Sports Medicine Services	210
3.5.4.3 Pregnancy Testing Service	211
3.5.4.4 Diabetic Services	213
3.5.4.5 Hypertensive Services	216
3.5.5 Selection of a Specialized Pharmacy Practice Area	217
3.6 REFERENCES	218

TABLE of CONTENTS cont.

Page

## Chapter 4

SURVEY OF DIABETIC SERVICES FROM COMMUNITY  
PHARMACIES IN QUEENSLAND, 1986-87

4.1	INTRODUCTION	221
4.1.1	Services	222
4.1.2	Supply	222
4.1.3	Counselling	224
4.2	AIMS	225
4.3	METHODOLOGY	226
4.3.1	The Sample	226
4.3.1.1	Sample Type	226
4.3.1.2	Sampling Frame	226
4.3.2	Survey Type	228
4.3.3	Preliminary Pilot Study	229
4.3.4	Data Management and Analysis	230
4.3.4.1	Data Coding	230
4.3.4.2	Data Entry and Cleaning	231
4.3.4.3	Analysis	231
4.4	TELEPHONE INTERVIEW	232
4.4.1	Aims	232
4.4.2	Respondents	232
4.4.3	Survey Instrument	232
4.4.3.1	Length	232
4.4.3.2	Appearance	233
4.4.3.3	Confidentiality	233
4.4.3.4	Question Sequence	234
4.4.3.5	Question Structure	234
4.4.4	Pilot Study	235
4.4.5	Administration	236
4.4.5.1	Introduction to the Interview	236
4.4.5.2	Interviewer Training	236
4.4.5.3	Timing and Follow-Up	236
4.4.6	Response	237
4.4.7	Validation	238
4.4.8	Results	239
4.4.8.1	Demographics	239
4.4.8.2	Services	242
4.4.8.3	Supply	246
4.4.8.4	Counselling	250
4.4.9	Discussion	257
4.4.9.1	Services	257
4.4.9.2	Supply	260
4.4.9.3	Counselling	262
4.5	MAIL SURVEY	266
4.5.1	Aims	266
4.5.2	Survey Instrument	266
4.5.3	Respondents	267
4.5.4	Pilot Study	267

<u>TABLE of CONTENTS</u> cont.	Page
4.5.5 Administration and Collection	268
4.5.6 Response	268
4.5.7 Validation	268
4.5.8 Results	269
4.5.8.1 Pharmacist Characteristics	269
4.5.8.2 Pharmacy Characteristics	271
4.5.8.3 Service Development	272
4.5.9 Discussion	275
4.5.9.1 Educational Background	275
4.5.9.2 Historical Development	276
4.5.9.3 Motivation	277
4.6 COMBINED DIABETIC SURVEY	279
4.6.1 Aims	279
4.6.2 Classification into Service Levels	279
4.6.2.1 Introduction to Cluster Analysis	279
4.6.2.2 Selecting and Coding Attributes	281
4.6.2.3 Estimation of Similarity	285
4.6.2.4 Clustering	285
4.6.2.5 Validation	288
4.6.3 Results	291
4.6.3.1 Cluster Solution	291
4.6.3.2 Cluster Validation	294
4.6.3.3 Differences in Service Provision Between Clusters	295
4.6.3.4 Differences in Pharmacist Characteristics	297
4.6.3.5 Differences in Pharmacy Characteristics	297
4.6.5 Discussion	301
4.6.4.1 Classification of Pharmacies	301
4.6.4.2 Service Levels	301
4.6.4.2 Demographics	303
4.7 FUTURE APPLICATIONS OF THE METHODOLOGY	304
4.8 REFERENCES	307

## Chapter 5

### COMMUNITY PHARMACY PRACTICE IN QUEENSLAND - PAST, PRESENT AND FUTURE

5.1 THE PAST	312
5.2 THE PRESENT	315
5.2.1 Dispensing Services	315
5.2.2 Primary Health Care Services	317
5.2.3 Specialized Health-Related Services	318
5.2.4 Diabetic Services	320
5.2.4.1 Services Provided	320
5.2.4.2 Factors Relating to Involvement	321
5.2.4.3 Levels of Service Provision	324
5.3 THE FUTURE	325
5.4 A BLUEPRINT FOR THE ESTABLISHMENT OF SPECIALIZED SERVICES	332
5.5 REFERENCES	338

LIST of TABLES

<u>Survey of Services Provided from Community Pharmacies in Queensland, 1984</u>		Page
Table 1	Check for Non-Response Bias by Response Time	173
Table 2	Check for Non-Response Bias of Pharmacist Sample by Comparison with Manpower Survey, 1985	175
Table 3	Check for Non-Response Bias of Pharmacy Sample by Comparison with Guild Digest, 1986	177
Table 4	Pharmacist Information for Total Sample	179
Table 5	Pharmacist Information for Pharmacists in Charge	182
Table 6	Pharmacy Information	186
Table 7	Physical Dispensing Services	192
Table 8	Counselling Services	194
Table 9	Drug Surveillance	196
Table 10	Other Health-Related Services	198
Table 11	Over-the-Counter Medication Services	200
Table 12	Commercial Services	201
Table 13	Specialized Services	203
Table 14	Demographic and Business Factors	207

LIST OF TABLES cont.

Page

Survey of Diabetic Services from Community Pharmacies in Queensland, 1986-87

Table 15	Identification of Pharmacies Offering Diabetic Services	227
Table 16	Pharmacies Offering Diabetic Services - Demographic Details	240
Table 17	Diabetic Information and Monitoring Services	245
Table 18	Diabetic Supply	249
Table 19	Diabetic Counselling	253
Table 20	Referral Scores	255
Table 21	Referral Patterns	256
Table 22	Pharmacist Demographics	269
Table 23	Pharmacist Information	270
Table 24	Pharmacy Demographics	271
Table 25	Influences on Service Provision	272
Table 26	Economic Factors in Service Provision	273
Table 27	Levels of Success	274
Table 28	Respondent Information	274
Table 29	Service Attributes	282
Table 30	Supply Attributes	283
Table 31	Counselling Attributes	284
Table 32	Cluster Solution	294
Table 33	Validation of Cluster Solution	295
Table 34	Services Differing Between Clusters	296
Table 35	Pharmacist Characteristics Between Clusters	298
Table 36	Pharmacy Characteristics Between Clusters	300

LIST of FIGURES

	Page
<u>Survey of Services Provided from Community Pharmacies in Queensland, 1984</u>	
Graph 1     Response Rate	169
Figure 1    Business Factors vs. Invalid Aids Hire Service	208
Figure 2    Business Factors vs. Pregnancy Testing Service	212
Figure 3    Business Factors vs. Diabetic Service	214
<u>Survey of Diabetic Services from Community Pharmacies in Queensland, 1986-87</u>	
Figure 4    Dendrogram of Diabetic Pharmacies	292
Graph 2     Cluster Solution	293

LIST of PHOTOGRAPHS

	Page
Photograph 1     Diabetes Information Leaflets	258
Photograph 2     Blood Glucose Monitoring	259
Photograph 3     Diabetic Stock Display	261
Photograph 4     Insulin Therapy Counselling	264
Photograph 5     Diabetes Management Counselling	265

LIST of APPENDICES

		Page
<u>Survey of Services Provided from Community Pharmacies in Queensland, 1984</u>		
Appendix 1	Press Release - March 1984	339
Appendix 2	Press Release - September 1984	340
Appendix 3	Covering Letter	341
Appendix 4	Survey Instrument	342
Appendix 5	Additional Pharmacist Supplement	348
Appendix 6	Reminder Card	349
Appendix 7	Covering Letter For Remail	350
 <u>Survey of Diabetic Services from Community Pharmacies in Queensland, 1986-87</u>		
Appendix 8	Telephone Survey Instrument	351
Appendix 9	Covering Letter	363
Appendix 10	Explanatory Notes	364
Appendix 11	Pharmacy Mail Survey Instrument	365
Appendix 12	Stock List	371
Appendix 13	Chief Pharmacist Mail Survey Instrument	373
Appendix 14	Additional Pharmacist Mail Survey Instrument	376



LIST of ABBREVIATIONS

<u>Abbreviation</u>	<u>Meaning</u>
AACP	American Association of Colleges of Pharmacy
ACT	Australian Capital Territory
ADEA	Australian Diabetes Educators Association
ADRAC	Adverse Drug Reactions Advisory Committee
AJP	Australian Journal of Pharmacy
AMA	Australian Medical Association
APF	Australian Pharmaceutical Formulary
APhA	American Pharmaceutical Association
B.Pharm.	Bachelor of Pharmacy
CE	Continuing Education
DAQ	Diabetic Association of Queensland
DHP	Division of Health Promotion
DICP	Drug Intelligence and Clinical Pharmacy
FDA	Food and Drug Administration
FPA	Family Planning Association
FSHP	Fellow, Society of Hospital Pharmacists
GSL	General Sales List
HPMC	Handbook for Patient Medication Counselling
IDD	Insulin Dependent Diabetes
MIMS	Monthly Index of Medical Specialties
NARD	National Association of Retail Druggists
NHS	National Health Service
NIDD	Non-insulin Dependent Diabetes
NPA	National Pharmaceutical Association
NSW	New South Wales
NZ	New Zealand
OTC	Over-the-Counter (Nonprescription) Medicine
P	Pharmacy Only Medication
PBS	Pharmaceutical Benefits Scheme
PGA	Pharmacy Guild of Australia
Ph.C.	Pharmaceutical Chemist
POM	Prescription Only Medication
PP Guide	Prescription Proprieties Guide
PSA	Pharmaceutical Society of Australia
PSGB	Pharmaceutical Society of Great Britain
Qld.	Queensland
SA	South Australia
SHPA	Society of Hospital Pharmacists of Australia
Tas.	Tasmania
TPN	Total Parenteral Nutrition
UK	United Kingdom
USA	United States of America
Vic.	Victoria
WA	Western Australia

## Chapter 1.

**COMMUNITY PHARMACY PRACTICE IN AUSTRALIA****1.1 HISTORICAL DEVELOPMENT****1.1.1 The Early Nineteenth Century**

Just as the early history of Australia, or more correctly the Colony of New South Wales, is inexorably linked to that of England, so too the early direction of pharmacy in this country was influenced by events affecting pharmacy in England (1,2). Gregory Haines, in his book on the history of pharmacy in New South Wales (NSW) (1), cited the Apothecaries Act passed in England in 1815 as the critical point in the development of pharmacy as separate from medicine. Prior to this time, there existed several branches within the medical profession, each of which were permitted to dispense. Entry to the prestigious group known as the London Physicians was based on theoretical training and examination. Surgeons, having finally separated from barbers in 1800, qualified by serving an apprenticeship. They were permitted to prescribe external remedies, but medicines to be taken by mouth could only be prescribed by the physicians. The lowest rung of the medical ladder was occupied by the apothecaries, who had gained their independence from the London Company of Grocers in 1617. By the eighteenth century, their role was chiefly in caring for the sick, with dispensing being only a part-time occupation often performed by an assistant. They were not permitted to perform any type of surgery and could only charge their

patients for medicines, not for services.

As the apothecaries' involvement with dispensing decreased, a group known as "chemists and druggists", also an offshoot of the Grocers' Guild (2) and having associations with alchemists and herbalists (1), began to compete with them in this area. Because members of this group were not specifically trained and had no traditional reputation to fall back on, their success depended on financial aspects and they were seen as businessmen rather than professionals. The Act of 1815 resulted in the recognition of the London Apothecaries as medical practitioners, but did not grant them a monopoly on dispensing. The chemists and druggists attempted to take over this function, as they were free to deal in drugs, medicines and medicinal compounds. However, the giving of advice was interpreted as "practising medicine" and was therefore an illegal function for this group, who were thus forced to supply their professional advice free of charge (3).

As the 1815 legislation was in force prior to the establishment of chemist shops in New South Wales, its effect there was to ensure a place for pharmacists as the settlement progressed, but also to have them seen not as members of a profession, but as retail traders earning their living from sales of goods rather than fees for service (1,4).

The pharmacist's skills in the first half of the nineteenth century were concerned with discerning good specimens of plant materials and the preparation of galenicals from these materials, the preparation of family and veterinary remedies for a wide variety of household uses from these galenicals, the mixing of medicinals such as lotions,

draughts, powders, ointments and mixtures to relieve minor ailments, and the dispensing of doctors' prescriptions (1,2). There are numerous examples of involvement by pharmacists in Australia in other commercial activities at this time, such as "spice-dealer and grocer" (5), "purveyor of groceries and chemicals" (6), and importing and distributing of both pharmaceutical and other goods (6,7).

Because transport of extemporaneous preparations was difficult, and patients could not be expected to travel long distances, a system of distribution from independent retail pharmacy businesses was established offering ready accessibility to the public in both urban and rural Australia. This accessibility led to pharmacists being used by the public as the first contact for advice in medical and health matters in general (4). In the country, pharmacy maintained even stronger links with grocery than in the city, but also had stronger links with medicine, with many country pharmacies also offering dental and veterinary services (5,7).

By the middle of the nineteenth century, pharmacy had established itself in New South Wales as an occupation separate from medicine (5).

### **1.1.2 The Late Nineteenth Century**

Manning (8) stated that "In Australia in the mid-nineteenth century, pharmacists prescribed and doctors dispensed". Both activities were accepted and considered "normal". He described the pharmacist's specialty, however, as being distinguished by three areas: drugs, treatment, and business. The pharmacist's drug expertise at this time

involved him in such activities as solving problems related to storage, safe-keeping, dosage, strength, stability, and adulteration of drugs by suppliers, or ensuring that drugs be extracted and prepared in such a way as to maximize their therapeutic properties. According to Manning, the pharmacist was not operating in his expert field when treating the sick, but he was operating in a field where he could provide a cheaper service than the expert. An important aspect of this role continued to be the treatment of minor ailments which could be cured by self-medication prescribed and provided by the pharmacist.

Impressions from advertising, and evidence given at an inquiry held by the Pharmacy Board of Victoria in 1927 (6), showed that pharmacists in the 1860s and 1870s were involved in considerable prescribing for common ailments. At this time, dispensing from doctors' prescriptions was less common, as many doctors did their own dispensing. The findings of the Board from this inquiry were that the "rights and privileges hitherto enjoyed by chemists and druggists in their open shops" ie prior to the passing of the Poisons Act of 1876, were as follows (9,10):

1. To attend and advise patients in their open shops or pharmacies in ailments of common occurrence and to judge of their complaints by the symptoms;
2. To prescribe medical as distinguished from surgical treatment for such patients;
3. To supply, and if necessary, compound the medicines so prescribed;

4. To administer an antidote in cases of acute poisoning and to apply first-aid in cases of accident or injury.

These findings placed a strong emphasis on the counselling and prescribing role of the pharmacist in addition to his functions as a compounder and supplier.

The proliferation of patent nonprescription medicines in the middle and late nineteenth century jeopardized the pharmacist's role in the compounding of medications for the treatment of minor ailments, as their availability bypassed the need for his manipulative skills. As these remedies were able to be sold by any retailer and the formulae were not disclosed, there was also no place for a knowledge of doses or a judgement of efficacy (11). Pharmacists attempted to retaliate by concocting their own secret remedies (7,11).

### 1.1.3 The Early Twentieth Century

Archambault (12) has described the early phase in the history of American pharmacy, lasting from colonial days until about 1930, as the "compounding and dispensing period". The description applies equally to pharmacy practice in Australia at that time. Pharmacists up to the 1930s were trained in coping with physical, chemical, and physiological incompatibilities related to the items they dispensed. Their work involved the compounding of such dosage forms as tablet triturates, capsules, powders, pills, cachets, ointments, plasters, suppositories, solutions, mixtures, liniments, and syrups. The production of a "pharmaceutically elegant" product

was cause for professional pride. They were also called upon to supply raw materials and to advise on preparation of folk remedies, as well as to provide advice on health matters to the community (4,12). Early this century, simple inorganic medicines also began to be used, requiring pharmacists to be concerned with purity, strength, standards, and stability of these as well as the traditional plant materials (2).

The continuing increase in ready-made galenicals and factory produced medicines resulted in a change in the front shop section of pharmacies from a service area to a sales area, and the movement of professional and ethical matters to the dispensary (13). As the variety of medicinal compounds increased, prescribing by chemists began to incur risks, as their education in this area had not kept pace with that of doctors (13). Rather than prevent people from consulting them for treatment of minor ailments, the solution proposed to the Commonwealth Royal Commission for Food and Drugs in 1913, and later passed, was to restrict some drugs for use only on doctors' prescription. Pharmacy bodies saw this as a way to reduce conflict between pharmacists and doctors (10). Concern was shown by Queensland (Qld.) pharmacists about this time that proposed amendments to the Health Act may have forced them to divulge the composition of their over-the counter preparations, or "nostrums" (9). Action by the Pharmaceutical Society of Queensland managed to circumvent such legislation in 1911. While such a policy was considered ethically correct at the time, it also provided obvious economic advantages to the pharmacist. Secrecy about the contents of medicines persisted until the 1960s, even in

relation to prescription medication (13).

Concerns about the spread of venereal disease in the early years of the twentieth century gave rise to possibly the first instance of the use of the pharmacist as a community health educator. In 1912, the journal Chemist and Druggist published a series of articles to enable pharmacists to accurately inform the public of the seriousness of these conditions (13).

After World War I, agreement was reached between pharmacists and the federal government Repatriation Department regarding provision of pharmaceutical benefits for returned servicemen (9,14). Haines (14) felt that this agreement established the precedent that doctors should prescribe and pharmacists dispense, and that pharmacists were entitled to a professional fee for dispensing.

By the 1920s, the professional role and responsibilities of the pharmacist were being questioned, as demand for his expertise in compounding continued to abate. Pharmacists continued to consider their professional role to be that of a dispenser rather than an expert in drugs (13). However, they had shown concern for public health and safety by proffering suggestions for control of drug usage. Legislation for the control of dangerous drugs, however, in the form of the Police Offences (Amendment) Drug Act of 1927, implicitly defined the pharmacist as a distributor only (13). In contrast to the situation in Europe, where customs and consequent laws had distinguished pharmacy as a separate profession from medicine, the course of evolution of pharmacy in England, and therefore in Australia, left it without such



tradition to follow (15). Pharmacists were told that they must realize that pharmacy was "a business as well as a profession" (16) and editorials on the future of pharmacy published by the Australian Journal of Pharmacy (AJP) in 1927 predicted its possible division into two extreme groups, the professional and the commercial (16).

In 1931, B.S. Berry of the Guild Committee commented on pharmacists' contributions to public health through the range of gratuitous services offered and their ability to refer serious complaints for medical attention. He cited the pharmacist as the most readily accessible health-care professional (15). Because of the long-standing practice of making no charge for advice, and probably in response to their customers' expectations, pharmacists considered it prudent to recommend a product for purchase in conjunction with giving advice (15).

Some pharmacists felt that their professional status could be protected by extending the range of community health services they offered and suggested such areas as child welfare, gas defence, air-raid precautions, dietetics, bacteriology, and urinology (15). While such areas would have expanded the pharmacist's role as a health educator, most were only remotely related to his drug expertise. Although there appeared to be agreement on the need to find job satisfaction, there was a division of opinion as to whether the emphasis should be placed on the financial aspects of exploiting the business potential of pharmacy, or on the personal and professional aspects of an expanded medical role (15).

#### 1.1.4 The 1940s to the 1960s

The major change to the face of pharmacy during these three decades was the continuing decline in extemporaneous compounding due to the proliferation of drugs which could only be prepared industrially. Changes to pharmaceutical education were essential to keep pace with the changing face of drug treatment.

##### 1.1.4.1 Dispensing

In the 1940s, most prescriptions presented still required extemporaneous dispensing (17). During World War II, however, the drug manufacturing industry had increased in size and number as had the complexity and efficacy of products being marketed. The chemical entities and dosage forms being manufactured were such that they could not be duplicated in the dispensary (4,15,18).

As research and development in the pharmaceutical industry continued at a remarkable pace in the 1950s and 1960s, simple extemporaneously prepared medicines were increasingly replaced by new and potent drugs which advanced the prevention and treatment of disease (2,17,19,20). The pharmacist's role became centred on aspects of distribution of manufactured products, such as availability, repackaging, price, storage, stability, and forensic issues (16). This change in emphasis of the pharmacist's role towards commercial aspects led to both practitioners and the public losing sight of the professional role of the pharmacist (21,22).

Archambault (12) defined the period of pharmacy history from the early 1930s through the 1960s in the United States as the "count and pour" period, during which

pharmacists activities were directed to repacking (counting or pouring) bulk stocks of prescription items into the quantities required by the patient. Such was also the case in Australia. Archambault described that time as a "wandering and floundering" period during which pharmacy was attempting to justify a place within the health care professions (12). Advances in drug technology also resulted in the removal of suspect nonprescription medicines from the United States market by the Food and Drug Administration (FDA), and the restriction of certain medications to physician control (12). Legislation in Canada in the 1950s also made the distinction between prescription and nonprescription drugs (24).

Attempts had been made to establish a contributory National Health Service (NHS) in Australia in 1938, but due to the intervention of war, it was 1948 before a revised scheme was introduced (9,14). Pharmaceuticals were supplied through the Pharmaceutical Benefits Scheme (PBS) under a cost plus mark-up plus dispensing fee pricing structure. The list of drugs available under the scheme was substantially increased in 1953, although there was concern among pharmacists at the reduction by the Government in the number of compounded preparations (9,14). The overall effect, however, was to increase the number of prescriptions being written. The comprehensiveness of the range of drugs available on the PBS in the 1960s, including many over-the-counter medicines, forced pharmacists increasingly into prescription supply activities (9). However, Haines (14) felt that the economics of the PBS were a disincentive to the development of professional skills and thus prompted pharmacists to venture

into the development of more profitable commercial channels (9,14).

#### 1.1.4.2 Education

The advances in new drug discoveries that have already been alluded to resulted in a reshaping of pharmaceutical education in the late 1950s. Until this time, the training of pharmacists in Australia had been carried out under an apprenticeship system in conjunction with part-time study (21). As the need for teaching technical compounding skills decreased, pharmacy schools, both in Australia and overseas, began to move into the scientific fields of pharmaceutical chemistry, pharmaceuticals, pharmaceutical technology, and pharmacology (12,17,26). Expertise was needed in these fields to enable graduates to understand the advances in new drug discovery, including the site and mode of action of the new drugs and the best way to administer them to obtain the most efficient action with minimum hazards (15,27).

In most Australian states, the early 1960s saw a change to full-time tertiary academic study for a period of three years, followed by a period of one year training under the supervision of a pharmacist prior to registration being granted (9,28). In Queensland, the Pharmacy Act was amended in 1957 to provide for the training of all future pharmacists at the University from 1960 (9). The scientific education being provided to pharmacy students at this time was important to the understanding of new drug development, formulation, and pharmaceutical manufacturing, and was thus essential for those pharmacists taking up careers in the pharmaceutical industry. However, professional satisfaction was elusive to the highly

trained graduates entering community or hospital practice, who often felt disillusioned by the lack of opportunity to apply their considerable knowledge in the practice setting. This problem persisted into the 1970s (22,29,30).

#### 1.1.5 The 1970s to the Present Day

Following the "compounding and dispensing period" and the "count and pour period", pharmacy entered the "clinical" era.

##### 1.1.5.1 The Need for a Clinical Role in Community

###### Pharmacy

Although the rate of influx of new drugs onto the market began to decrease in the late 1960s, the amount of knowledge about them continued to increase. With increasing knowledge came a growing awareness of the hazards involved with the use of these highly potent substances, especially adverse reactions and interactions with other drugs (2). Pharmacists began to question whether their role should be merely distributive, or clinically orientated (16,31). Reports and textbooks describing adverse reactions and interactions became available in the very late 1960s and early 1970s, and the need for experts in drug therapy began to be recognized. From this recognition, the concept of "patient orientated" pharmacy practice developed, widening the pharmacist's traditional concerns to include individual patients and their total drug therapy (2,32).

By the 1980s it was estimated that fewer than 1% of prescriptions dispensed in the United States of America (USA) required compounding (23), and that the information needed by

patients to maximize the effectiveness of the new drugs, and to minimize their potential for adverse effects, was becoming more important than their mere supply. The British National Pharmaceutical Association (NPA) report to the Nuffield Inquiry committee pointed out that modern pharmacists were required for their "knowledge of the properties of the materials that are being supplied and the ability to ensure that patients receive the correct medicine, in the correct quantity, in the correct form and with sufficient information to enable them to use it with maximum benefit and minimum risk of harm" (33). Burnet (34) estimated that, even though the volume of extemporaneous dispensing in Australia had similarly decreased, the increased need for advice and counselling in relation to drugs required about 65 percent of the pharmacist's time to be spent in dispensing prescriptions and dealing with sales of nonprescription medication. He advocated fewer and larger pharmacies and the use of technology to allow pharmacists to increase the time spent with patients in counselling, and in co-operation with other health professionals.

The Guidance Notes to the Pharmaceutical Society of Great Britain (PSGB) Code of Ethics (35) explained the interpretation of the term "professional services" to include dispensing of prescriptions; sale or supply of medicinal products, surgical dressings and appliances, poisons and chemicals, aids to mobility; response to symptoms described in pharmacies; facilities for sale or supply of hearing aids; pregnancy testing; and sale of goods, supply of services or provision of advice where the pharmacist uses his scientific

and pharmaceutical knowledge. The clinical approach to community practice, thus, was not seen as being restricted to dispensed medicines, but also as applicable to such activities as the diagnosis and treatment or referral of minor ailments; early recognition and referral of other disease states; supply of devices for treatment or management of illness; provision of drug information and health education. Many of these activities are not dissimilar to those attributed to pharmacists of a century before, as evidenced by the statement of the Pharmacy Board of Victoria inquiry of 1927 regarding the "rights and privileges (of) chemists and druggists" prior to 1876, which has been quoted earlier in this chapter (1.1.2, 9,10).

In addition to the changing nature of medication, external factors have also altered the nature of the patient, increasing both the demand and the need for health care information. These factors include the trend towards individuals accepting the responsibility for their own health, and the aging population.

Since the 1960s, consumerism has become a major influence in the market place, including the community pharmacy market (20,36-40). The effects of this movement have been to alert the increasingly educated population to the need for information not only on the use of prescribed drugs, but also about other areas of health care, to enable people to take the responsibility for management of their own health (26,36,38,41-45). This move towards "self care" involves management of chronic disease states, self-treatment of minor ailments, and health maintenance by disease prevention. The

general concept of the "self-help" society has been seen by Naisbitt (39) as among the major trends for the future.

The marked increase in the birth rate after World War II, followed by the move towards zero population growth, has resulted in a steadily increasing proportion of population in the over-65 group in Western countries (44-51). This trend has been assisted by advances in medicine prolonging life expectancy. The correlation between age and illness is inescapable, however, so that the nett result will be an increasing proportion of the population requiring long term medication (37,46,47,50,52,53). Because of increasing patient numbers and increasing hospitalization costs, as well as the advances in patient care techniques, it has been predicted that many of these patients will remain ambulatory, or will be cared for at home rather than in institutions (37,44,45,48,51-56). Gosselin (37) stated in 1976 that about 70 to 80 percent of the ill population in the USA, even then, were ambulatory, living at home, and being treated by drugs. By 1984, the proportion was estimated to be 90 percent (48).

The need for counselling has been stated to be greater for elderly patients than for the general population. Individuals in this group are likely to be taking a larger number of medications and may become confused with their regimens because of this, and also because of deteriorating comprehension and memory (46).



### 1.1.5.2 The Development of a Community Pharmacy

#### Clinical Role

Hospital pharmacy in the USA began to attract graduates interested in patient care from about the mid-1960s (12). The 1965 report of the Commission on Pharmaceutical Services to Ambulant Patients by Hospitals and Related Facilities stated the main function of pharmacy as "clinical in nature.....drug-use control" (57). The inclusion of clinical components in pharmacy courses in the USA and later in Australia, encouraged the development of new roles for hospital pharmacists such as poisons adviser, ward pharmacist, clinical drug consultant, and duties including recording and reviewing patient drug histories, reviewing overall drug therapy patterns in the hospital, and collecting data on adverse drug reactions (21).

Clinical involvement in the community setting was a more complicated matter, as patients were free to use more than one doctor and/or pharmacist (21), but during the 1970s there was evidence that community pharmacists were beginning to fulfil this role by use of patient medication records, additional labelling, explanatory leaflets, and provision of drug information services to local doctors (21,57,58). The term "patient counselling", discussing treatment with patients to ensure correct use of their medication, became part of the pharmacist's vocabulary around this time (21,58). Bloomfield, a past-president of PSGB, speaking at the NSW Pharmaceutical Society centenary in 1976 (58), expressed the opinion that "a clinical role is the only acceptable professional future for pharmacy". However, the "Professional Report 1978"

commissioned by the Australian Hospitals and Health Services Commission, found that the incidence of counter-prescribing, patient counselling, and patient medication records was, at that time, limited (59).

Through the 1970s and into the 1980s, community pharmacists were constantly being reminded of their abilities and obligations to become involved in the clinical aspects of practice. Reminders came from leaders in the academic (48,60-63) and practice (22,23,26,55,56,64-69) areas of the profession, both in Australia and overseas. Leaders emphasized the application of clinical involvement to the major professional areas of prescription-related, primary care, and health promotion activities, and provision of drug information to other health professionals (10). In a review of the Australian literature, Berbatis (70) attempted to quantify the contribution of pharmacists within the health care system from the limited data available. He estimated that approximately 4.8 million persons per fortnight (average 820 per pharmacy) were receiving health services in community pharmacies, two-thirds of which were prescription-related contacts and one-third other health-related activities. He emphasized the need for education and assessment to equip pharmacists to fulfil the clinical role effectively.

Fevang (24) observed that, as society came to recognize that it is information dependent rather than industry dependent, a concept endorsed by Naisbitt (71), the social value of the pharmacist would be restored from that of the "pill counter" by clinical pharmacists providing information to patients.

### 1.1.5.3 The Nature of the Clinical Role

The main purposes of involvement by pharmacists in clinical aspects of medical treatment have thus been shown to be ensuring correct use and therefore optimal effect of prescribed and nonprescribed medication with minimal adverse reactions, and assisting the public with health care decisions. In order to achieve this aim, pharmacists are required to provide information to both patients and prescribers. Verbal communication, "counselling", is the basic means of transferring this information, reinforced by written aids such as labelling, ancillary labelling, leaflets, and audio-visual programmes.

While the merits of counselling have been extolled and encouragement frequently given to pharmacists to participate in this activity, few studies of counselling in Australian community pharmacies have been undertaken. The major study of patient counselling by community pharmacists in Australia was conducted by Ortiz in response to the lack of research data on the way in which counselling was being conducted, the range of counselling activities, and the time taken for counselling (72-77). Counselling in this study was considered to cover general health matters as well as medication information. A 1982 mail survey of pharmacies in New South Wales (NSW) and the Australian Capital Territory (ACT) elicited a response rate of 68% (72). An average of 32 customers per pharmacy per day were estimated to receive counselling by a pharmacist, but the estimates varied widely between pharmacies. The categories identified by pharmacists as being the most frequent targets for counselling were advice

about prescribed and nonprescribed medications. A second study using a random stratified sample of pharmacies (52% response) was carried out, using a self-reported diary method (75). This method found an average of 12.2 counselling episodes per pharmacy per day. Approximately 60% of interactions were reported to have been initiated by the patient.

Written support to verbal counselling, in addition to labelling, has been disseminated to pharmacy patrons by means of leaflets and health education books. Systems have been developed to make advisory leaflets and health education books available for use by Australian pharmacists (78-80). Twenty-six per cent of respondents to the survey by Ortiz et al (72) indicated that they used aids to assist their counselling such as reference books, leaflets, advisory labels, charts, and demonstration units.

In the USA, a national study was undertaken by the FDA in 1983 to determine the use of written materials in the pharmacy (81). Twenty-nine percent of the 241 pharmacies surveyed had some type of free leaflets relating to prescription medicines, 22% offered books about prescription drugs for sale, and 44% had drug information materials available for customers to consult without payment, either patient-orientated or professional sources of information.

General suggestions have been made regarding the use of audio-visual programmes as educational aids in community pharmacies (82,83). Pharmaceutical manufacturers have used audio-visual programmes for both education of consumers and training of pharmacy staff (84).

Lloyd, addressing the Pharmacy Guild of Australia (PGA) Conference in 1978, predicted an increase in dedication of specific areas within Australian community pharmacies to be used for counselling, diagnosis and treatment of minor ailments, health education, and health screening in an atmosphere of relative seclusion (85). Bowden (86), addressing another conference in the same year, listed the advantages of counselling rooms as convenience, privacy, and facilitation for the charging of a counselling fee because of the changed environment. Johnston (87), outlining a programme for provision of health care services in pharmacy, recommended locating a counselling room of at least 60 sq.ft. in area adjacent to the dispensary and with easy access from both the dispensary and the front shop.

In a paper delivered at the Federation Internationale Pharmaceutique conference in 1983, Bickle (88) described the usual counselling site in Australian pharmacies as being over-the-counter or near the dispensary, and said that less than 8% of NSW pharmacies had an area specifically for counselling although the concept had the support of the Pharmacy Guild. The figure quoted was a result of the survey conducted by Ortiz (72). The survey also noted that there was a significantly more positive attitude towards professionalism in pharmacies with a counselling area. This was reflected by the fact that 25% of pharmacies which kept patient medication records also had counselling areas. John Ware (89), Executive Councillor of the Pharmaceutical Society of Australia (PSA), supported the concept of adapting the pharmacy environment to provide counselling areas which maintained privacy within the

front shop rather than isolating counselling episodes in a separate room and risking the loss of accessibility of the pharmacist to the public.

While by no means being the usual site for patient counselling, there have been reports of pharmacies incorporating counselling rooms or counselling areas allowing private or semi-private consultation (88,90-92).

The British NPA planning department has for some time included a "consultation point" in its pharmacy designs (93). In its report to the Nuffield Inquiry Committee, the NPA stated that their market research and the results of other studies indicated that people felt more relaxed in the surroundings of the community pharmacy than the doctor's surgery (33). A consumer survey by Miller in South Africa (94) found that 54% of respondents felt that they would prefer to consult a pharmacist in a private consulting area rather than in the open pharmacy if a need arose to seek the pharmacist's advice.

The Nuffield Report recommended the provision of accommodation for confidential counselling in pharmacies contracting to provide advisory services to consumers (95), but the NPA urged the interpretation of this recommendation to include counselling areas within the pharmacy ("consultation points") as well as isolated counselling rooms (96). Both the Nuffield Report and PSGB were in favour of financial encouragement for the setting up of confidential counselling facilities (97).

#### 1.1.5.4 Reward for Involvement in the Clinical Role

From the early 1970s, concern was expressed in Australia that pharmacists, as a result of the historical development of pharmacy practice, were not receiving direct remuneration for the provision of clinical professional services. While comment from within the profession was generally of the opinion that financial reward was appropriate (3,98), warnings were sounded regarding the increased prospect of liability unless advice was soundly based (99,100). Pharmacists were seen as the only health professionals not receiving a fee for their professional advice (3,101).

Different approaches were suggested for establishing a system of payment. One school of thought was that payment for the services, either by the consumer or by the Government, would not be possible until the profession had demonstrated that members were indeed providing the service, and that the service was of benefit to the receivers (21,22,98,102-107). The opposing view was that these professional services would not be recognized as such by the public until a fee was charged (98,108,109). Johnston (87) noted that counselling would occur in conjunction with most health care services, with the cost usually included in the total cost of the service. To assist recognition of the professional role of the pharmacist, he recommended that the fee for counselling should be defined separately where possible, including counselling associated with dispensing services. He cautioned pharmacists that commitment to counselling was essential before attempting to charge a fee,

as otherwise clients would be unable to see value for their money (110). Manning and Feehan (98), in recommending that a fee be charged for all pharmaceutical consultations, stressed that for such a move to be accepted, it would have to be introduced nationwide following an educational campaign among pharmacists and a publicity campaign to consumers. Pharmacy leaders in the USA have also recommended educating the public to appreciate the value of pharmaceutical services and encouraging their willingness to pay (66,111).

The opinion was expressed that, as the public has traditionally expected to receive free advice from pharmacist on a number of matters, it was questionable how many would continue to seek those services if a fee was involved regardless of whether goods were supplied (21). Manning and Feehan (98) expressed the opinion that charging for advisory services would not be likely to result in greatly decreased demand. However, there appeared to have been no research into the opinion of Australian consumers regarding the acceptability of pharmacists charging for consultative services, or their willingness to pay, although the need for this knowledge was recognized within the profession (98,106,110).

Several American studies have explored customers' willingness to pay for various specific professional services. A survey of 934 (32% response) pharmacy customers in Iowa by Gagnon (112) found that 47% of respondents would probably or definitely pay 25-50 cents more per prescription for pharmaceutical services they rated as important. When questioned specifically about medication profiles, 91% said



they would probably or definitely accept an offer by a pharmacist to maintain such records if there were no added costs involved, but only 21% would accept at a cost of 25 cents per prescription. A national cross-sectional stratified telephone survey of consumers by the American Pharmaceutical Association (APhA) in 1983 (113) found the public to be "surprisingly receptive" to the idea of using the pharmacist for provision of clinical services, and also to paying for services. This preliminary survey covered five types of clinical services: private consultations about correct use of prescription drugs, maintenance of medication records and monitoring drug therapy, refusal to dispense inappropriate prescriptions, home consultations, and consultations about treatment of minor ailments. Willingness to pay for these specific services was expressed by 31% to 57% of consumers.

Other more restricted surveys have been conducted into consumers' willingness to pay for particular services such as prescription counselling (114) and medication reminder systems (115). Schondelmeyer and Trinca (114) concluded that a "substantial proportion" of consumers were willing to pay for prescription counselling, and also that pricing the service too low may have the effect of making consumers question the quality and value of the service. Brown et al (115) found 40% of patients willing to pay for a service which incorporated a refill reminder system for long-term medications, specifically cardiovascular medications.

Few examples of individual pharmacists charging specifically for counselling have been published (86,110,116). A community pharmacist in Texas (USA) reported acceptance by

both patients and doctors of a three-tiered system of fees for counselling which distinguished between evaluating single and multiple symptoms and making a recommendation for their treatment, and reviewing the patient's complete prescription and nonprescription medications (117).

#### 1.1.5.5 Statement of the Professional Role of the Pharmacist

In addition to comment from pharmacy leaders, professional organizations in Australia and overseas during the 1970s and 1980s addressed themselves to the formulation of statements to define the emerging roles of pharmacists.

##### AUSTRALIA

A statement of the professional role of the pharmacist was unanimously adopted by the conference of Pharmacy Boards of Australia and New Zealand in March, 1973 (118,119). The overall role of the pharmacist was described as "to ensure optimal drug therapy both by his actions in the supply of medicines and associated products, and by the information and advice he provides to those who prescribe or use drug products". The explanatory clauses related to all aspects of drug therapy: drug stability, storage, formulation, administration, actions, interactions, dosage, compounding, and information. According to Lloyd (2), the statement affirmed the role of the pharmacist as the "drug authority" in the provision of professional pharmacy services and not merely a distributor. He described the services as including the provision of all medical information about drugs; the monitoring, and advising on the safety and efficacy of that part of the treatment of a patient that is associated with the

use of drugs; and the provision of services to ensure that all medicines are administered properly and correctly.

A "Think Tank" on professional development conducted by the Victorian Branch of PSA in 1982 agreed that the primary role of the pharmacist was that of drug manager in the community, including control of the distribution, use and information about drugs to the individual in particular and also to the community at large (120,121). Opportunities for professional development in accordance with this premise were seen as:

1. Expansion of counselling, including  
counter-prescribing with further deregulation  
from prescription only to pharmacist  
supervised sale; pharmacist authorization of  
continuation of supply of prescribed  
medicines for chronic conditions;  
inter-professional involvement; sessional  
hospital practice and home visits to  
non-ambulatory patients;
2. Preventive medicine including health advice;  
social counselling; well person screening;  
home nursing/invalid care; minor pathology  
tests;
3. Animal health;
4. Sports and leisure medicines.

In 1986, PSA adopted a definition of pharmacy practice which clearly illustrated professional health care activities as well as the supply function of pharmacists (122). The official statement defined pharmacy practice as:

1. The preparation and supply of medications and the provision of systems and information to optimize their use;
2. The provision of primary health care services within the ambit of the pharmacists' competence. Such services include:
  - a. supply of therapeutic goods and appliances,
  - b. assisting the public with identification and treatment of minor ailments,
  - c. referral to other health care practitioners where warranted,
  - d. education to prevent illness, and
  - e. promotion of good health.

#### UNITED STATES

The Millis Report (123) published in 1975, was commissioned by the American Association of Colleges of Pharmacy (AACP) to investigate the nature of current pharmacy practice in the USA, factors affecting its development, and educational needs for the pharmacists of the future. The Commission, in defining pharmacy as a health service, recognized it as a knowledge system. It recommended that, in order to fulfil the need for provision of adequate information about drugs to consumers and health professionals, pharmacy education should be aimed at producing practitioners capable of developing, organizing and distributing knowledge and information about drugs in addition to the more accepted

skills of developing, manufacturing and distributing drug products.

The APhA Policy Committee on Professional Affairs recommended a definition of pharmacy practice as "a patient-oriented health service that applies a scientific body of knowledge to improve and promote health through assurances of safety and efficacy in drug use and drug-related therapy" (124). Other recommendations of that Committee included those related to pharmacists' roles in health care and drug information, and the establishment of criteria for the dispensing of both prescription and nonprescription drugs. In 1979, APhA presented a comprehensive statement on standards of practice for pharmacy (125) covering responsibilities in general management and administration of the pharmacy, processing of prescriptions, patient care, and education of health care professionals and patients.

#### UNITED KINGDOM

In 1982, PSGB released a policy statement on clinical pharmacy in community practice which it defined as "the application of pharmaceutical knowledge directly to the care of individual patients" (126). The professional clinical activities highlighted were dispensing, including patient counselling; sale of medicines; sale of surgical appliances, medical aids and sick room requisites; family planning and pregnancy testing; and blood pressure monitoring.

In 1984, the Pharmaceutical Services Negotiating Committee published a Charter which set out the professions' aims for pharmaceutical services under the National Health

Service (127). Among its recommendations were several relating to recognition of the clinical role: provision of information and advice to prescribers and patients, use of counselling areas and health education materials within community pharmacies, and provision of domiciliary services to the elderly, mentally ill, and physically disabled.

The Nuffield Report (95) published in 1986, made a number of proposals for the future of pharmacy, many of which were in line with those of the Pharmacists' Charter (127). Specifically, the section of the Nuffield Report devoted to community pharmacy recommended the welcoming of new technology including computers, greater collaboration with other health care professionals, greater personal involvement with members of the public in giving advice on the taking of medicines, provision of domiciliary services to patients at home or in institutions, and the provision of health education (95,128,129). The Council of PSGB welcomed the recognition by the Nuffield Report of the indispensable role of the pharmacist in health care, the change of emphasis from supply of medicines to the provision of a wider range of services, and the potential for pharmacists to contribute further to the development of health services (129). The British Government document "Primary Health Care - An Agenda for Discussion" recommended a wider role for pharmacists in advising patients, and proposed that more professional time could be made available for dealing with the public by relaxing the requirements for supervision of dispensing (130).

## 1.2 APPLICATION OF THE CLINICAL ROLE

Clinical involvement by pharmacists has been shown to have relevance in the areas of dispensing of prescription medications, primary care and recommendation of nonprescription medications, and health promotion.

### 1.2.1 Prescription Related Activities

#### 1.2.1.1 Extent of Dispensing

Drugs provided under the Commonwealth PBS have continued to comprise an ever increasing proportion of those dispensed in Australia. In summarizing aspects of prescription drug usage in Australia to mid-1980, Berbatis and Kailis (131) stated that expenditure on all drugs distributed through community pharmacy was \$680 million or 52% of total turnover, and involved over 70% of pharmacists' working time. PBS items for 1979-80 accounted for 80% of expenditure on prescription drugs and 84% of all prescriptions. Figures compiled by Webb (132) show the decline in extemporaneously-prepared items dispensed. In the year 1960-61, approximately 8.3 million of the 31.2 million prescriptions dispensed under the PBS were for extemporaneous items. By 1975-76 the number had declined to 4.3 million of 101 million prescriptions, and by 1979-80 to only 2.5 million, 56.5% of which were for standard formulae preparations. However, Kerr et al (133) pointed out that, even as late as 1985, there was still considerable variety in the types of extemporaneous products pharmacists were required to prepare.

Blythe and Armstrong (134) found that 41% of customers in the Western Australian (WA) pharmacies surveyed by them in 1977 purchased a prescription, and 35% made no

other purchases. Forty percent of pharmacy customers interviewed in a national study by Darby in 1981 (135) stated that their main reason for entering the pharmacy was to have a prescription dispensed.

#### 1.2.1.2 Nature of Dispensing

In the Guide to the Self-Assessment of Professional Practice Activities, PSGB described dispensing as including "all of the activities which occur from the pharmacist's initial scrutiny of a prescription to the collection of the dispensed medicine by the patient or agent" (35). As in Great Britain (95), the growth of the PBS in Australia was seen as responsible for the role of the pharmacist remaining primarily that of a dispenser of doctors' prescriptions (14,136). Haines (14) felt that, despite continual expansion of the scheme, costs were controlled in such a way that there was no opportunity or encouragement for pharmacists to increase the quality of services provided to correspond with the increasing quantity of dispensing. Crothers (136) also commented that the pharmacist has been largely recognized as simply a distributor of drugs, financial reward under the PBS being the greatest to those who dispensed most frequently, in effect penalising those attempting to spend more time with patients.

While the decline in average time for dispensing a prescription through the 1970s was seen by some as a measure of improved efficiency, others saw it as an indication of inadequate professional attention to aspects of the dispensing process other than supply (28,131). These aspects were described as prescription review (examination of prescriptions before dispensing to ensure that they conform with legal



requirements and are appropriate to the patient), patient counselling to ensure compliance and correct drug usage, and therapeutic drug monitoring (follow-up) of compliance and drug effects (131,137).

Despite the apparent retardation of the development of the clinical role associated with dispensing in community practice due to lack of remuneration for such activities, practitioners and professional organizations have taken the initiative in encouraging its development. Recognising the public need for assistance in taking responsibility for their medication, methods for providing information and monitoring drug use began to be used, including descriptive labelling and patient medication records, in addition to counselling.

#### 1.2.1.3 Counselling

Expectation of Australian consumers with regard to counselling in pharmacies does not appear to have been investigated. A 1980 survey of households in rural Mississippi (138), conducted by personal interview with a stratified random sample, found that 67% of respondents expected pharmacists to counsel them on side effects of prescription drugs, and 65% expected counselling related to the dosage regimen. However, only 29% reported ever having received information about side effects from a pharmacist.

A survey of customer inquiries in 35 pharmacies in Sydney (NSW) in 1970 (139) found that 15.2% related to prescribed medication. Over one third of these were medical inquiries relating to the item being dispensed, about 30% were requests for information about medication currently being taken, 12% were seeking clarification of dosage instructions,

and 9% were reports of possible adverse reactions. A similar study in five pharmacies in the Canberra area (ACT) in 1978 (140) found that 19% of all inquiries were related to prescriptions, mostly seeking further explanation of the directions, information about side effects or incompatibilities, or advice on storage and when to discard.

In the USA, Kirking (141), surveying a random sample of community pharmacists in Ohio in 1982 (77% response rate), found that they provided counselling on approximately 40% of new prescriptions, although there was large variation between respondents. The most common topics discussed were medication name and general purpose, timing and frequency of administration, and common side effects and precautions. About two-thirds of the episodes were estimated to be initiated by the pharmacists, and differences were found in frequency of counselling between classes of drugs and types of patients. In further analysis (142), Kirking found attitude to counselling to be the major explanatory variable in a model for explaining counselling activity, but also that situational and demographic variables were involved.

Garde and Benrimoj (143) investigating prescription counselling in a selected sample of community pharmacies in Brisbane (Qld.) in 1982, reported that verbal counselling occurred in conjunction with about one third of prescriptions dispensed. The NSW counselling study by Ortiz in 1984 (72) found that 54% of all types of counselling episodes were in connection with PBS prescriptions.

In a study by Olsen and Ortiz (144) of the impact of computers in community pharmacy in NSW, 89% of respondents

reported a decrease in the time devoted to filling prescriptions and 70% reported a decrease in the time required for clerical aspects. A consequent increase in time available to work in the front shop was reported by 84% of respondents. Thus, 82% reported an increase in the number of patients counselled after installation of a dispensing computer system and 92% claimed that the computer made patient consultation easier.

#### 1.2.1.4 Computerization

Unboubtedly, the most obvious recent change to the nature of dispensing in community pharmacy practice has been the introduction of computerized dispensing techniques (47,144-146). The survey conducted by Olsen and Ortiz (144,145) in NSW found that over 15% of pharmacies were computerized prior to 1985. Although their sample was not random, they quoted computer marketing companies as estimating the proportion to be about 17% at that time. By late 1985, companies estimated penetration at over 30% (145,147). A national study conducted as part of an Australian Journal of Pharmacy (AJP) readership survey (response rate 13%) in late 1986 found the figure to be about 60%, with wide interstate variations (146). Projections have been made estimating 80% computerization of Australian pharmacies by 1990 (148). Similar trends have been seen in the USA. American Druggist published estimates of 23% penetration in American pharmacies by the end of 1984, and a projection of 62% by the end of 1986 (147). The United States National Association of Retail Druggists (NARD) has estimated penetration of computerization to 75% of its members by the end of the 1980s (47).

Respondents to the 1984 survey by Olsen and Ortiz (145) used their computer systems mainly for prescription processing, including the keeping of prescription records and patient medication profiles, and as a prompt for advisory label information. Drug interaction and contra-indication monitoring were claimed to be mostly used if available, but the authors were of the opinion that these facilities were also often ignored. A few pharmacies utilized foreign language labels or nursing home packages, and many expressed an intention to use patient advice leaflets, which were not routinely available at that time.

Optimal use of such systems can allow more efficient drug surveillance through patient medication records and automatic alerting of possible drug interactions, as well as simplifying counselling by the provision of drug information reminders which can then be communicated to the patient verbally and/or by means of leaflets and labels (20,26,149-152).

#### 1.2.1.5 Labelling

Laws requiring that dispensed medicines be labelled with the name of the active ingredients or the proprietary name, and instructions for use were introduced in Australia in the 1960s and 1970s. In Queensland, this legislation was embodied in The Poisons Regulations of 1973 (153).

The concept of Australian pharmacists using ancillary cautionary instructions on dispensed medicines was broached by Lloyd in 1972 (154), and subsequently a list of suggested additional instructions was included as an Appendix to the Australian Pharmaceutical Formulary (APF) of 1974

(155). The list has been expanded in later editions (156). In a survey of the use of the APF conducted in 1984, community pharmacists in Western Australia (WA) ranked this section second highest, both as "Most Used" and "Most Useful" (157). Trevena (90) described a system of ancillary labelling which he developed to fulfil perceived needs in his practice.

The organized use of advisory labels was introduced in South Australia (SA) in 1974 (158-160), and in WA in 1975 (161), both with apparent success (162,163). A study of their use in Tasmania (Tas.) in 1979 showed at least 77% of pharmacies to be involved, assuming non-respondents to be non-users (164). The study of prescription counselling in Queensland by Garde and Benrimoj (143) observed the use of ancillary labels with about two thirds of prescriptions dispensed. In 1986, a mail survey of the use of ancillary labels and additional instructions sent to 457 pharmacies in WA achieved a response rate of 39% (165). The findings of the survey were that 91% used ancillary labels and additional instructions to some extent, both on original and repeat prescriptions, but that the rate of use varied for specific labels. The response rate was not unusual for a mail survey, but precluded the drawing of reliable conclusions. Assuming non-respondents to be non-users in this study reduced the frequency of use to below 20%.

In their study of the impact of computers in community pharmacy practice in 1985, Olsen and Ortiz (144) found that 53% of pharmacists surveyed claimed to have increased their use of ancillary labels as a result of prompting by computer software.

Personal interviews of a stratified random sample of Newcastle (NSW) residents in a study by Ortiz et al (77) found that 96% of those interviewed thought that pharmacists should use advisory/precautionary labels.

While the use of advisory labels has been encouraged in Australia by professional bodies (156,166), the first mandate for their use in Queensland has only recently appeared (153). Cook et al (165) described similar limited mandates in NSW and WA in 1986.

A USA national study by the FDA in 1983 found that almost all (97%) pharmacists questioned said they used auxiliary labels (81). Another American study around this time confirmed auxiliary labels to be effective in providing pertinent information (167).

#### 1.2.1.6 Patient Records

Patient medication record card systems have been used in the USA since the early 1960s (116,149), and by 1973 were reported to be in use by about 60% of pharmacies, with their use being mandatory on request in some States (168). In Australia, they were reported to be in use in a number of pharmacies in NSW, Victoria, SA and Tasmania by the early 1970s (169,170). In 1979, Pharmacy Boards in Australia and New Zealand were asked to consider making the keeping of patient medication records by pharmacists compulsory, as the introduction of dispensing computers was seen to facilitate this activity, but such action has not been taken (171).

The usefulness of these records in enabling detection of potential adverse reactions and drug interactions has been illustrated both in Australia and overseas

(169,170,172-174), and their use has been encouraged (26,175). PSGB, in its Guidance Notes to the Code of Ethics stated that "patient records....are particularly helpful....in ensuring that the correct medication regimen is followed by the patient" (35). Arguments against their use have been centred on the time involved in maintaining and accessing the records and the difficulties associated with recording nonprescription medications (149,174,176), but these objections have been countered by practitioners successfully operating systems (90,149,173,177), and by computerization facilitating the clerical process of record keeping.

Methods for establishing and operating patient record card systems have been suggested (173,178,179). To overcome some of their limitations, Hunt Sharp (149) suggested their use in conjunction with cautionary and advisory labels, shelf card reminders of interactions and side effects, and patient package inserts. The "Professional Report 1978" (59), based on a survey of fifty pharmacies in Victoria, found that although about 20% of country pharmacies surveyed had introduced patient records, the proportion of metropolitan pharmacies involved was much less. Lloyd (85) predicted in 1978 that electronic data processing equipment would be used to maintain patient records. With the increasing penetration of dispensing computer systems into community pharmacies in Australia (144-146,148), this method of maintaining patient records seems capable of overcoming former objections to their use (26). Training may be required to ensure optimal application by pharmacists of computer generated information such as patient records and drug interactions.

Interviews with Newcastle (NSW) residents in 1982 (77) showed them to be largely unaware of patient medication record systems, but about 75% believed they would be useful after having the system explained to them. No other Australian consumer data appears to be available. A survey conducted for APhA by the Dichter Institute for Motivational Research in 1973 (180) showed that 70% of consumers felt that patient medication profiles should be maintained, but that only 30% believed that they were receiving the service. The survey by Banahan et al (138) in rural Mississippi found that 71% of respondents expected pharmacists to maintain and refer to patient medication profiles, but about one third of them did not know if their pharmacist kept such records. Of those who knew that their pharmacist offered the service, only 59% reported the service to be in use. A South African survey (181) showed that 51% of a large sample of pharmacy customers thought that the maintenance of individual patient medication records by pharmacists was very important, and a further 28% considered it reasonably important. As the same survey also found that only 15% of customers thought that their pharmacist was aware of all their allergies to medicines, the importance of keeping such records may have been underestimated.

A suggestion in Great Britain that patients register with a particular pharmacy has been applauded, particularly for elderly patients, as keeping of complete patient records would be facilitated (152).

An alternative to keeping patient medication records in the pharmacy has been trialed in France and the United Kingdom (UK), where the individual retains his own



medical record in a form similar to a credit card ("smart card"), allowing access by the medical practitioner to all information, and access by the pharmacist to medication records (127,152).

Use of patient medication records by individual pharmacists has been reported (90,169,182,183), and has been encouraged (150,184).

#### 1.2.1.7 Remuneration

As the Commonwealth Government has continued to be the major payer for prescribed medicines, action was taken by pharmacy organizations to have a counselling component included in the PBS dispensing fee. This is the only aspect of clinical service which has received any official attention in relation to remuneration. Haines (21) felt that the Government was likely to resist payment of a true professional fee. He saw the challenge as being to provide clinical services on a free basis until their worth was established, and then introduce a fee, but feared that this may act as a delaying tactic retarding development of such services.

The National Health Act of 1953-1975 (Pharmaceutical Benefits) included a "professional fee" component in the basis for payment of pharmaceutical benefits, but the fee was based only on the labour costs of dispensing a prescription, and included no specific payment for the provision of professional advisory services (3). A discussion paper produced by the professional development committee of PSA in 1979 (101) recommended payment by the Government to pharmacists for the supply of pharmaceutical benefits and also for the supply of associated professional pharmaceutical

services. Following the 1977/78 Pharmacy Enquiry (185), it was apparent that time involved in professional counselling was included in the dispensing time used for calculation of the professional fee. However, no specific proportion of the fee was allocated for counselling, as the Government took the position that payment for counselling would not be justified until there was sufficient proof that pharmacists generally were providing it, since their evidence showed that only 1% of time spent on PBS dispensing was involved in counselling (107). The first fee decision of the Pharmaceutical Benefits Remuneration Tribunal (186,187) deferred consideration of specific payment for counselling for consideration by the second enquiry. The second decision (188) continued to recognize counselling only within the dispensing fee, despite submissions from PSA, PGA and individual pharmacists advocating an across-the-board payment identified as being for counselling, or payment for specific counselling episodes. Subsequent enquiries by the Tribunal do not appear to have addressed the issue, as further studies have not been undertaken to provide evidence of an increased proportion of dispensing time being devoted to counselling.

The British Pharmaceutical Services Negotiating Committee (127) recommended that payment to pharmacists under the United Kingdom NHS should be adapted to allow specific remuneration for certain professional activities. The suggested activities included provision of advice in response to symptoms, services to individual patients on long term or complicated medication regimens, domiciliary and clinic attendance, and health education.

### 1.2.2 Primary Health Care

The involvement of pharmacists in primary health care activities has historically been a part of their role and thus is not generally disputed in pharmacy professional circles, although changes in its nature and extent have occurred over the years. Treatment with nonprescription medication has been shown to frequently be the first line of action taken in health care (189-194). The outcome of a primary health interaction between pharmacist and patient may be referral to another health care professional, sale of a nonprescription medication or other health care aid, and/or recommendation of other means for management of the condition in question.

#### 1.2.2.1 Extent of Primary Care

Australian surveys have shown that about 12-15% of customers request advice in pharmacies (134,195), although other studies have reported levels of around only 3-5% (139,140). These anomalies may be attributable to methodological differences. The Australian Health Survey of 1983 (196) revealed that 2.5% of the population had consulted a pharmacist for medical advice at least once during the four weeks prior to interview. Lord and Dewdney's 1971 NSW survey (139) showed that 30% of pharmacy customers purchased a nonprescription medicine, and that this was the only type of purchase for 24% of customers. Fourteen percent of customers in a later survey by Darby in Sydney (NSW) (135) stated the purchase of a nonprescription medicine as being their main reason for entering the pharmacy. Lord and Dewdney (139) found that nonprescription medicine sales were the result of

requests for advice in 38% of cases, (although they also stated that selection of products was made approximately equally by customers and by pharmacy staff), whereas a 1982 Brisbane (Qld.) study showed that 28% of sales of nonprescription medicines were accompanied by advice from the pharmacy staff, initiated by either the staff or the customer (197). About 75% of patients presenting symptoms were apparently using the pharmacy as a primary health care source (134,198). A review of studies of self-treatment and primary care in Australia and overseas has been compiled by Berbatis and Sunderland (10), showing high usage of nonprescription medications, and considerable involvement by pharmacists in their selection.

#### **1.2.2.2 Recognition of the Primary Care Role**

A study by Darby (135) in which a stratified sample of 174 pharmacy customers was interviewed in 30 Sydney pharmacies, found that while 14% said that they had entered the pharmacy to buy a nonprescription medicine, only one respondent had entered with the intention of seeking advice of health matters. These figures contrast with those collected by self-reporting or observation of inquiries in pharmacies in Australia (134,139,197), New Zealand (NZ) (199), and the United Kingdom (200-202) which showed that between 15% and one third of customers purchasing nonprescription medications also received advice. A study in Dunedin (NZ) in which 24 pharmacists (65% response rate) recorded patient-initiated inquiries over one week, found an average inquiry rate of 5.5%, excluding those related to prescriptions (203). Interviews with a random sample of 100 women from the same

area found that, of the 86% who had visited a pharmacy in the previous month, 18% had done so to buy a nonprescription medicine, but only 1% mentioned the pharmacist as an alternative source of advice to the doctor for treatment of minor ailments (204). Although limited by methodological problems, this result exhibits the same trend as Darby's study (135). The study of households in rural Mississippi by Banahan et al (138) found that 64% of consumers expected counselling from their pharmacists about nonprescription medicines, but only 51% expected the pharmacist to answer questions about health matters other than drugs. When questioned about their behaviour, about one third said that they had asked their pharmacist about the use of nonprescription medicines, but only about one fifth had asked for other health information.

From these results, it is apparent that customers perceive their motives as purchase of a product for self-care purposes rather than consultation of a health care professional for advice when entering the pharmacy. However, customers appeared to value the advice of pharmacists. Twenty-one percent of people interviewed by Christopher et al (205) in five pharmacies in Dundee, Scotland, said that they chose their nonprescription medicine as a result of advice received from the pharmacist. Darby (206), commenting that people did not appear to regard the pharmacist as directly relevant to their health activities, advocated the promotion of pharmacy in a way which would demonstrate the value of the pharmacist's skills.

This approach has been adopted by PSA in promotion of the current "Self Care" Programme (207). The aim of the

programme is to provide community pharmacists with health information in a suitable form for the consumer. Publicity associated with the campaign has been prepared to alert members of the public to the availability and accessibility of the information and to inform them of the role of the pharmacist in assisting them to maintain optimum levels of health. The programme aims to help people achieve this by adoption of healthy life-styles, prevention of illness or minimization of severity when illness occurs, self-management of minor illness, participation in treatment of major illness, coping with chronic illness in the ambulatory setting, and assisting dependents such as the young and the elderly in these areas (80). Its applications are thus both to primary health care and to health promotion activities through community pharmacies. The pharmacists' role in the programme is to provide a source of information about health, to provide primary care for minor illness, to act as a referral agent to other health care resources when appropriate, and to supplement the advice given by other health care practitioners (79). The "Self Care Programme" was launched in NSW and the ACT in April 1986 (79) and the first year of operation was reported to have been highly successful (208). The scheme was launched in Tasmania in July 1987, and in Queensland, Victoria and South Australia in October 1987, and is planned to commence in Western Australia in early 1988 (207,209).

#### 1.2.2.3 Availability of Nonprescription Medications

Regulation of supply of medication in Australia is governed by a system of scheduling in which Schedule 4 (S4) drugs are restricted to supply on prescription only, Schedule

3 (S3) drugs are restricted to sale through pharmacies by pharmacists only, and Schedule 2 (S2) drugs are restricted to sale through pharmacies by responsible persons under the supervision of a pharmacist (153). In addition, unscheduled items are available for unrestricted sale through pharmacies and other retail outlets. A similar situation exists in the United Kingdom, where drugs are supplied on prescription-only (POM), through pharmacies under the supervision of a pharmacist (P), or under an unrestricted General Sales List (GSL) (33). In Canada, some provinces have established a "third class" of drugs, in addition to prescription-only and over-the-counter groups, which are available only through pharmacies with pharmacist intervention in the sale (210). Despite efforts by pharmacists in the USA since 1868 to establish a similar "third class" of drugs (211-214), pharmacists in Florida are the only ones with access to prescribing a wider range of substances than those recommended by the FDA for general over-the-counter status (211).

Products purchased by 263 Brisbane (Qld.) pharmacy customers in a survey by Stewart et al (198) were scheduled for sale in pharmacies only (ie S2 or S3) in 52% of cases. Forty-five percent of customers requesting products by name purchased S2 or S3 items, while 62% of products recommended by pharmacy staff were so scheduled. A similar distribution was found in a survey by Hardisty (202) in 225 pharmacies in the UK. The division of products between the GSL and the P lists was found to be such that 61.2% of the 2340 products demanded by customers were on the GSL, whereas only 40.0% of products recommended by pharmacy staff were on that list. A national

survey of 180 pharmacists in the UK in 1982 found that 90% of respondents agreed or strongly agreed that all over-the-counter medicines should be sold only through pharmacies, and 87% believed that pharmacists were sufficiently qualified to give advice to patients about minor conditions (215).

The rationale behind having a group of drugs under the control of pharmacists is that such a scheme allows easier access by patients to a wider range of therapeutically active medications for treatment of minor ailments, whilst still affording them protection against the consequences of inappropriate or incorrect use by ensuring consultation with a health professional (206,211,216-218). If such a system is to operate effectively from the consumer's point of view, supervision of sales must be conscientiously provided by pharmacists trained in this area of practice (211,218). Advantages from the pharmacist's point of view are increased professional satisfaction by being able to recommend more effective treatments as well as economic benefits (206,211). Action by pharmacists and pharmacy bodies has been advocated in Australia to expand the range of substances available for prescribing by pharmacists (10,206,211,216) and also to protect the existence of the pharmacy-only group of drugs (219).

#### **1.2.2.4 Remuneration**

Scheduling changes in South Australia, which resulted in release of drugs from prescription-only (S4) to pharmacy-only (S3) status, were seen by some as providing an ideal opportunity for pharmacists to provide necessary



counselling to consumers at an appropriate price (220). These items had previously attracted a dispensing fee, and new S3 legislations imposed similar requirements on pharmacists to those involved in dispensing. However, in SA, the transfer of items from S4 to S3 seemed to leave pharmacists apologetic about charging a fee for their sale, even though recording, labelling and counselling were required (28).

Similar changes in Queensland in 1983 led to PGA Queensland Branch committee adopting a policy of adding a professional fee equal to the private dispensing fee to the retail price of S3 items which had previously only been available on prescription (221). Unfortunately, the changes of substances from S4 to S3 were also accompanied by changes of some products from S2 to S3. Although these products were then subject to the same restrictions and responsibilities, the Guild felt that it would have been difficult to expect patients to pay the professional fee for substances they could previously buy without prescription. The willingness of patients to pay for the extra professional services, however, was not investigated. Parker (210), quoting a consumer study conducted in Canada, claimed that 55% of Canadians desired private consultation with the pharmacist, and that only 45% of this group thought that the service should be free. The somewhat false distinction between products in S3 in Queensland according to the route by which they attained the classification, apparently caused some confusion among the public and pharmacists alike. As a result of this confusion, the professional role of the pharmacist in dealing with nonprescription medicines was unlikely to be able to be

clearly demonstrated to the public. It was again apparent that pharmacists were reluctant to take the initiative to charge for services related to the provision of nonprescription medicines, even though provision of services was mandatory, perhaps through fear of having to justify the level of the fee (222).

Berbatis and Sunderland (10) made several recommendations for increasing the remuneration to pharmacists for primary health care activities. They suggested:

1. Introduction of a consulting fee;
2. Enlarging the range of pharmacist-only medicines and products;
3. Incorporating a professional fee into each health care item;
4. Increasing the market for established items.

However, they felt that the introduction of a consulting fee would be too controversial in the 1980s. Such a move was thought to be unlikely to be accepted by the public or by pharmacists in the short term, and its achievement would require prolonged educational efforts by pharmacy bodies and educators.

### **1.2.3 Health Promotion**

#### **1.2.3.1 Nature of Health Promotion**

Health promotion has been defined by the Commonwealth Health Department as including "those methods by which individuals and populations can be influenced in the direction of preserving their health (and) involves informing people of the benefits and risks of lifestyles and practices,

and devising strategies to motivate them towards positive change in those practices" (223). Their report includes aspects of practice such as self-care and screening under the umbrella of health promotion as well as preventive medicine and health education (223).

Fry (224) reminded pharmacists that hopes for better community health lie in promotion of health maintenance, and also in disease prevention and control by adoption of better life styles and early diagnosis of manageable diseases. Berbatis and Sunderland (10) outlined a rationale for pharmacists' involvement in health promotion, emphasizing the advantages to overall community health of such activities, and the advantages of siting the activities in the pharmacy, including cost savings, accessibility, and the knowledge base of the pharmacist. Gilbert (225) pointed out that, not only is the pharmacist accessible to members of the public seeking advice, but also the pharmacist is in regular contact with a number of sections of the community such as the elderly and young families and is therefore in a position to monitor community health. Similar advantages were listed by Smith and Gibson in the United States in 1975 (226) and Miller in South Africa in 1981 (94).

#### **1.2.3.2 Extent of Involvement**

The activities of Australian pharmacists in the field of health promotion have been historically much less obvious than their activities in the field of primary health care (10), and do not appear to have been specifically researched.

In a survey of South African consumers, Miller (94)

found that nearly 40% of respondents said that they were afforded the opportunity to be counselled by their pharmacist in relation to daily personal health needs and general health education. A survey conducted by mail in the UK in 1980 was sent to a random sample of one in twenty registered premises and resulted in a 78% response (227). The results were validated by observation in a stratified sample of pharmacies. Seventy-nine percent of pharmacists agreed with the principle that health education should form part of the practice of community pharmacy. Respondents claimed that, on average, thirty-seven minutes per day were being spent on this task. Seventy-three percent felt that their customers expected to receive advice as part of normal pharmacy service, and 95% felt that the public had easy access to pharmacists. Sixty-seven percent thought that it would be possible to expand the health education activities in their pharmacy. A later survey of the general public (71% response) showed that consumers placed a relatively high degree of trust on health information received from pharmacists (184).

#### **1.2.3.3 Areas of Involvement**

A large number of health promotion areas appropriate for participation by pharmacists have been suggested, including limiting of drug abuse and drug misuse, safety of medicines, sexually transmitted disease control, family planning, child abuse and neglect prevention, screening and diagnostic testing, immunization, nutrition including areas such as low-fat and low-salt diets, automobile accident prevention, alcohol abuse, and smoking cessation (225,226,228-230). Jinks et al (228) saw the pharmacist's role

with individuals in primary disease prevention as providing education on behavioural topics such as smoking, alcohol use, nutrition, exercise and stress reduction.

Using smoking as an example of the activity of pharmacists in health promotion, campaigns have been implemented through pharmacies in several countries to discourage smoking (231-234), and the ethics of selling tobacco through pharmacies discussed (235). Ninety-five percent of pharmacists questioned about participation in a campaign in Scotland in 1980 said that they would take part again if the exercise were repeated, and only 23% thought that the campaign had not been very effective in terms of changing the smoking habits of their customers (231). The success of a pilot programme in the West Midlands of England in 1982 (232) led to expansion of the programme in 1983 (234). Pharmacies were involved at one of three levels: displaying posters and leaflets; also showing a visual slide programme for children; and additionally employing a carbon monoxide analyser to measure concentrations in expired air. Eighty-two percent of pharmacists and 69% of their staff counselled customers about giving up smoking during the campaign, and 60% of pharmacists considered the campaign to have been quite effective (234). A programme conducted in Winnipeg, Canada, in 1983 (233) involved 82% of pharmacies in the city. Of available smoking cessation booklets, 93.5% were distributed to the public from these pharmacy sources as a result of extensive media advertising about the programme.

McKenney et al (236) listed instances of United States pharmacists' participation in health promotion at a

community level in their pharmacies or to school or community groups on such topics as poison prevention, drug abuse, venereal disease, family planning, diabetes, high blood pressure, cancer, mental illness, and dental health. A national study by the FDA (81) found that 22% of pharmacists questioned were engaged in speaking to community groups and 21% gave time on a voluntary basis for health screening or participation in health fairs.

Reports of individual Australian pharmacies involved in health promotion as such have not been found, but pharmacists were reported to have been involved with a NSW Health Commission project in Lismore in 1980, providing counselling on prescribed medicines and other health information (237). Gibson, in a submission to the Better Health Commission (195), expressed the view that pharmacists are in a key position to support the Commission's health promotion activities, but cautioned that there would be a limit to the extent to which community pharmacies could provide services free of charge.

The diversity of topics suggested as being suitable for health promotion programmes through pharmacies would create difficulties if every pharmacy were to attempt to cover each topic with a high degree of expertise. Specialization may provide a solution.

## 1.3 REFERENCES

1. Haines, G. (1976). "The Grains and Threepenn'orths of Pharmacy - Pharmacy in N.S.W. 1788-1976." Chapter 1. "John Tawell, Apothecary and Druggist." Kilmore, Australia:Lowden Publishing Company, pp5-18.
2. Lloyd, A. (Jun.1973). "The Future of Pharmacy." Aust.J.Pharm., 54:387-388,398-399.
3. Hutcheson, D.R. (Nov.1975). "Professional Service and the N.H.S." Aust.J.Pharm., 56:622-624.
4. Thomas, J. (Jun.1974). "The Clinical Basis of Pharmacy." Aust.J.Pharm., 55:364-366,373.
5. Haines, G. Ibid. Chapter 2. "Escape from the Medical Shadow." pp.19-41.
6. Manning, A. (Apr.1974). "The Development of Pharmacy in Australia. A Victorian Case Study. I: Practitioners and Practice." Aust.J.Pharm., 55:233-234,251.
7. Green, N. (1959). "Retail Pharmacy in Brisbane From About 1887 to 1905." Introspect, Aug.1980, 1(8):13-17.
8. Manning, A. (May 1974). "The Development of Pharmacy in Australia. A Victorian Case Study. II: The Division of Labour." Aust.J.Pharm., 55:306,309-310.
9. Pharmaceutical Society of Queensland. (1980). "A Centennial History of the Pharmaceutical Society of Queensland."
10. Berbatis, C.G. and Sunderland, V.B. (Mar.,Apr.,May 1985). "Professional Activities of Australian Community Pharmacists. Part 2. The Current Status of Primary Health Care and Health Promotion." Aust.J.Pharm., 66:169-174,251-254,337-340,349.
11. Haines, G. Ibid. Chapter 3. "Not Merely a Matter of Trade." pp.42-66.
12. Archambault, G.F. (1981). "Changes and Trends in Pharmacy. Part I: Professional and Legal Trends in Pharmacy Practice." in Wertheimer, A.I. and Smith, M.C. (eds.) "Pharmacy Practice. Social and Behavioural Aspects." 2nd Ed. Baltimore:University Park Press, pp77-90.
13. Haines, G. Ibid. Chapter 5. "Ethics and Commerce." pp.97-130.
14. Haines, G. Ibid. Chapter 9. "The Biggest Customer." pp.235-263.
15. Haines, G. Ibid. Chapter 7. "Professional Culture and Shopkeeping." pp.165-198.

16. Haines, G. Ibid. Chapter 6. "Commercial Gloom and a Pharmacy Guild." pp.131-164.
17. Hunt, G.G. (Jun.1970). "Changing Patterns of Pharmacy." Aust.J.Pharm., 51:377-378.
18. Haines, G. and Lawrie, R. (Jan.1975). "Whither Pharmacy? Part I - Introduction." Aust.J.Pharm., 56:16.
19. Stock, B. (Sep.1982). "The Role of the Pharmacist in the Provision of Health Care." Australian Pharmacist, 1(5):7-8.
20. Parish, P.A. (Feb.16,1985). "What Future for Pharmacy Practice?" Pharm.J., 234:209-211.
21. Haines, G. Ibid. Chapter 10. "Scholars or Shopkeepers?" pp.264-310.
22. Wallace, B. (Feb.1982). "The New Professionalism: How Pharmacists Can Restore Their Image and Their Profits." Aust.J.Pharm., 63:107-110.
23. Halperin, J.A. (Aug.1981). "Pharmacy: Profession in Transition." Am.Pharm., NS21(8):446-449.
24. Fevang, L. (Sep.1983). "Options for the Future: Will You Survive?" Can.Pharm.J., 116:371-374.
25. Davies, R. (Dec.1979). "Options for Private Practice Pharmacy." Aust.J.Pharm., 60:906-910.
26. Teeling Smith, G. (Feb.6,1982). "The Next 30 Years: A Golden Age for Pharmacy." Pharm.J., 228:149-153.
27. Manning, N. (Nov.1971). "The Role of Pharmacy." Aust.J.Pharm., 52:793-794.
28. Quintrell, N. (Sep.1981). "Pharmacy: The Push to Professionalisation." Aust.J.Pharm., 62:680-681.
29. Haines, G. and Lawrie, R. (Feb.1975). "Whither Pharmacy? Part II - Manpower." Aust.J.Pharm., 56:68-69.
30. Haines, G. and Lawrie, R. (Feb.1975). "Whither Pharmacy? Part III - Changes in Practice?" Aust.J.Pharm., 56:69-70.
31. Brodie, D.C., Knoblen, J.E. and Wertheimer, A.I. (1973). "Expanded Roles for Pharmacists." Am.J.Pharm.Educ., 37:591-600.
32. Penna, R.P. (Dec.1983). "Expanded Roles for Pharmacists: Have We Gone Too Far?" Am.Pharm., NS23(12):624-627.
33. Anon. (Jul.21,1984). "Pharmacy a Greatly Under-Utilised Resource - N.P.A." Pharm.J., 233:70-73.



34. Burnet, R. (Mar.1981). "Once Again: The Future Role of the Pharmacist." Aust.J.Pharm., 62:186-189.
35. Pharmaceutical Society of Great Britain. (Feb.25,1984). "Code of Ethics and Guidance Notes and Appendices." Pharm.J., 232:221-224.
36. Dichter, E. (Jul.1972). "Today's Patient - Friend or Foe?" J.Am.Pharm.Assoc., NS12(7):354-355,364.
37. Gosselin, R.A. (Aug.1976). "The Future of Pharmacy." Am.J.Pharm.Educ., 40(3):223-227.
38. Welsh, J.S. (Jun.1980). "Stepping Up to Positive Health - Consumers and Professionals Take the Lead." Am.Pharm., NS20(6):312-314.
39. Naisbitt, J. (1984). "Megatrends: Ten New Directions Transforming Our Lives." Chapter 6. "Institutional Help - Self Help." London & Sydney: Macdonald & Co.
40. Kalman, S.H. (Jan.1984). "Managing Change: Marketing and Pharmacy." Am.Pharm., NS24(1):41-43.
41. Cohen, M.N. (Mar.1977). "What Drug Information Should the Consumer Have? - A Consumer Perspective." Drug Inf.J., 11:34-38.
42. Ferguson, T. (Jun.1980). "The Self Care Revolution." Am.Pharm., NS20(6):308-311.
43. Cohen, E. (Jul.1981). "What I Expect - What I Get: A Consumer's View." Am.Pharm., NS21(7):388-389.
44. Matthews, J. (Jan.1986). "Pharmacies to Divide Into Three Broad Streams." Aust.J.Pharm., 67:78-79.
45. Thomas, J. (Jan.1986). "Community Pharmacy Will Remain the Domain of Small Business." Aust.J.Pharm., 67:108,116.
46. Hetherington, M. (Aug.1984). "Seniors and Self-Medication: Synergistic Impact on Pharmacy in the 80s and 90s." Can.Pharm.J., 117:377-379.
47. Dickinson, J.G. (Sep.1984). "Pharmaceutical Megatrends." Aust.J.Pharm., 65:741-742,744.
48. Fedder, D.O. (Jun.1984). "Expanding Pharmacy Roles: An Issue of Priorities." Am.Pharm., NS24(6):324-326.
49. Kailis, S.G., Benzie, J.L. and Jellett, L.B. (Sep.1980). "Disease Presentation and Drug Use in the Elderly." Aust.J.Pharm., 61:573-580.
50. D'Arcy, P.F. (Dec.22&29,1984). "Drugs and the Elderly: An Aging Problem." Pharm.J., 233:784-786.

51. Lamy, P.P. (May 1985). "New Dimensions and Opportunities." Drug Intell.Clin.Pharm., 19:399-402.
52. Davies, R. (Jun.1985). "The Future of Pharmacy in Australia." Aust.J.Pharm., 66:456-457.
53. Simonson, W. and Pratt, C.C. (Feb.1983). "Pharmacists' Perceptions of Geriatric Pharmacy Practice." Drug Intell.Clin.Pharm., 17:134-138.
54. Gosselin, R.A. (Jun./Jul./Aug.1984). "Pharmacy's Potential." Apothecary, 96:19-20,22.
55. Schlegel, J.F. (Dec.1984). "Extending Clinical Pharmacy Practice." Am.Pharm., NS24(12):808-809.
56. Anon. (Mar.16,1985). "Facing the Challenge of 2000 AD." Pharm.J., 234:342-343.
57. Lloyd, A.I.K. (1975). "Community Pharmaceutical Services." Aust.J.Hosp.Pharm., 5(1):24-26.
58. Anon. (Nov.1976). "Clinical Role Only Acceptable Future For Corner Chemist." Aust.J.Pharm., 57:649-650.
59. Feehan, H.V. (Aug.1978). "Report Reveals Gaps in Pharmacy Service - And a Decline in Counter-Prescribing." Aust.J.Pharm., 59:543-547.
60. Brodie, D.C. (Dec.1981). "Pharmacy's Societal Purpose." Am.J.Hosp.Pharm., 38:1893-1896.
61. Witte, K.W. and Bober, K.F. (Oct.1982). "Developing a Patient Education Programme in the Community Pharmacy." Am.Pharm., NS22(10):540-544.
62. Bernadi, W. (Jun./Jul./Aug.1984). "How to Get Your Piece of the P.I.E. - Patient Information and Education." Apothecary, 96:7-16.
63. Swarbrick, J. (Sep.1981). "The Next 100 Years." Aust.J.Pharm., 62:676-677.
64. Kalman, S.H. (Dec.1978). "Patient Education: It's Straightforward." Am.Pharm., NS18(13):714-716.
65. Smith, D.L. (Jul.1981). "Patient Education - Its Time Has Come." Am.Pharm., NS21(7):382-386.
66. Apple, W.S. (Feb.1981). "Introspection and Challenge: Anticipating Pharmacy's Future." Am.Pharm., NS21(2):86-94.
67. Dolusio, J. (Jul.1982). "The Best of Times ... " Am.Pharm., NS22(7):358-363.
68. Matthews, J. (Apr.1982). "Clinical-Type Pharmacy Forecast as Evolutionary Change." Aust.J.Pharm., 63:192,255.

69. Darling,, B. (Aug.1986). "The Future of Pharmacy Practice. Part 1." Australian Pharmacist, 5(4):23-25.
70. Berbatis, C.G. (Feb.1986). "Community Pharmacists' Contributions to Health Care in Australia: A Quantative Approach." Australian Pharmacist, 5(1):3-4.
71. Naisbitt, J. Ibid. Chapter 1. "Industrial Society - Information Society."
72. Ortiz, M., Thomas, R., Walker, W-L. and Beed, T.W. (Jun.1984). "Patient Counselling by Community Pharmacists: Findings of a Pharmacy Practice Foundation Survey. (Part 1)" Aust.J.Pharm., 65:498-503.
73. Ortiz, M., Thomas, R., Walker, W-L. and Beed, T.W. (Aug.1984). "Attitudes of Pharmacists Towards Patient Counselling: Findings of a Pharmacy Practice Foundation Survey. (Part 2)" Aust.J.Pharm., 65:658-663.
74. Ortiz, M., Thomas, R. and Walker, W-L. (Oct.1985). "Attitudes of Medical Practitioners to Community Pharmacists Giving Medication Advice to Patients: Findings of a Pharmacy Practice Foundation Survey. (Part 3)" Aust.J.Pharm., 66:803-810.
75. Ortiz, M., Thomas, R. and Walker, W-L. (Nov.1985). "Diaries of Patient Counselling by Community Pharmacists: Findings of a Pharmacy Practice Foundation Survey. (Part 4)" Aust.J.Pharm., 66:890-896,898.
76. Ortiz, M., Thomas, R., Ledlin, D., Morland, R. and Morgan, G. (Dec.1985). "Public Opinion of Community Pharmacy: Findings of a Pharmacy Practice Foundation Survey. (Part 5)" Aust.J.Pharm., 968-973.
77. Ortiz, M., Ledlin, D., Thomas, R., Morgan, G. and Morland, R. (Mar.1987). "The Impact of Professional Services on Pharmacy Patronage: Findings of a Pharmacy Practice Foundation Survey. (Part 6)" Aust.J.Pharm., 68:207-214.
78. Anon. (Jun.1985). "Displaying Health Books in Pharmacy." Aust.J.Pharm., 66:436.
79. Thomas, R. (Jun.1986). "Self Care: An Idea Whose Time Has Come." Your Pharmacy, pp2,8.
80. Thomas, R. (Apr.1987). "Self Care - The Concept." Australian Pharmacist, 6(2):13-14.
81. Morris, L.A. and Moore, S,R. (Nov.1983). "Patient Education Materials Provided by Community Pharmacies." Am.Pharm., NS23(11):569-572.
82. Anon. (Jul.1981). "Tele-Patient: Audio-Visual Aids in the Pharmacy." Am.Pharm., NS21(7):422.

83. Anon. (Oct.1983). "Pharmacists Should be Promoters of Good Health - Vic. President." Aust.J.Pharm., 64:733-734.
84. Anon. (May 1984). "Upjohn Opts for Audio-Visual Pharmacy Consumer Education." Aust.J.Pharm., 65:345.
85. Anon. (Jun.1978). "Traditional Pharmacy Will Continue - With Changes." Aust.J.Pharm., 59:375-376.
86. Anon. (Jul.1978). "Charge for Counselling Advocated." Aust.J.Pharm., 59:442.
87. Johnston, N. (Dec.1977). "The Programming of Health Care Services in Pharmacy." Aust.J.Pharm., 58:717-718.
88. Bickle, M. (Mar.1984). "The Use of Pharmacy Counselling Areas." Aust.J.Pharm., 65:223-225,230.
89. Ware, J. (Dec.1986). "Information to the Patient - A Community Pharmacist's View." Australian Pharmacist, 5(6):30-32.
90. Trevena, C.R. (Aug.1976). "Community Pharmacy - A Role Model for Community Practice." Aust.J.Pharm., 57:461-466.
91. Anon. (Mar.1979). "New Perth Pharmacy Offers Extra Professional Services." Aust.J.Pharm., 60:153,156.
92. Anon. (Feb.19,1983). "Model Pharmacy Spearheads New Shopfitting Strategy." Pharm.J., 230:206.
93. Astill, T.P. (Nov.19,1983). "Developing the Pharmacist's Advisory Role." Pharm.J.(Suppl.), 231:3-6.
94. Miller, E.R. (Jun.1983). "The Pharmacist as a Health Educator." S.Afr.Pharm.J., 48:266-267.
95. Committee of Inquiry Appointed by the Nuffield Foundation. (1986). "Pharmacy: A Report to the Nuffield Foundation." London: The Nuffield Foundation.
96. Anon. (Jun.7,1986). "Where to Counsel Patients." Pharm.J., 236:719-720.
97. Anon. (Jun.7,1986). "Provision for Counselling Sought." Pharm.J., 236:733.
98. Manning, N. and Feehan, V. (Aug.1977). "Reform Practice by Charging for Consultations." Aust.J.Pharm., 58:493-496.
99. Anon. (Apr.1976). "Warning on Pharmacists' Liability if Charge Made for Advice." Aust.J.Pharm., 57:222,224.
100. Anon. (Apr.1979). "Qld. View: Charging for Counselling Next Step." Aust.J.Pharm., 60:235.

101. Hutcheson, D.R. (Oct.1979). "Payment for Professional Services." Aust.J.Pharm., 60:747-750.
102. Anon. (May 1976). "Warning to Pharmacists: Other Groups May Take Over Roles." Aust.J.Pharm., 57:244-246,248,250.
103. Anon. (May 1977). "Little Expansion Seen for Pharmacists' Professional Role." Aust.J.Pharm., 58:288-289.
104. Anon. (Jun.1977). "Pharmacists' Duty is to Give More Time to Consumers." Aust.J.Pharm., 58:318,321.
105. Anon. (Jun.1978). "Pharmacists Must Demonstrate Their Professional Competence - Economist." Aust.J.Pharm., 59:372.
106. Anon. (Nov.1978). "Pharmacists Must Find Services for Which Consumers Will Pay." Aust.J.Pharm., 59:739.
107. Anon. (Sep.1980). "Govt. Will Pay for Counselling if Pharmacists Prove They Do It." Aust.J.Pharm., 61:558.
108. Anon. (Aug.1973). "Payment for Advice?" Aust.J.Pharm., 54:531.
109. Anon. (Oct.1975). "Time to Stop Giving Free Professional Services." Aust.J.Pharm., 56:560.
110. Johnston, N. (Aug.1979). "Counselling for a Fee." Aust.J.Pharm., 60:584-589.
111. Grossman, L. (May 1981). "New Directions for Pharmacy Charted by Board Chairman Leonard Grossman." Am.Pharm., NS21(5):277-280.
112. Gagnon, J.P. (Mar.1976). "Pharmaceutical Services - Consumer Perceptions." J.Am.Pharm.Assoc., NS16(3): 137-142, 162.
113. Smith, D.L. (Jun.1983). "APhA National Survey: Willingness of Consumers to Pay for Pharmacist's Clinical Services." Am.Pharm., NS23(6):314-320.
114. Schondelmeyer, S.W. and Trinca, C.E. (Jun.1983). "Consumer Demand for a Pharmacist-Conducted Prescription Counselling Service." Am.Pharm., NS23(6):321-324.
115. Brown, G.G., Kirking, D.M. and Ascione, F.J. (Jun.1983). "Patient Willingness to Pay for a Community Pharmacy Based Medication Reminder System." Am.Pharm., NS23(6):325-327.
116. Catizone, C. and Mrtek, R.G. (Feb.1984). "Office-Based Pharmacy in the United States. The Development of a Practice Alternative." Am.Pharm., NS24(2):76-84.
117. Anon. (Mar.1986). "For-Fee R.Ph. Consulting: Patients (and M.D.s) Like It." Am.Druggist, p138.

118. Pharmacy Boards of Australia and New Zealand. (1973). "The Professional Role of the Pharmacist." Policy Statement.
119. Anon. (May 1973). "The Professional Role of the Pharmacist." Aust.J.Pharm., 54:310.
120. Pharmaceutical Society of Australia (Victorian Branch) Ltd. (Aug.1982). "Report on the Professional Development Think Tank."
121. Anon. (Nov.1982). "Vic. Think Tank Announces Its Conclusions on Pharmacy's Role." Aust.J.Pharm., 63:704,707.
122. Pharmaceutical Society of Australia. (Aug.1986). "Definition of Pharmacy Practice." Australian Pharmacist, 5(4):7.
123. Study Commission on Pharmacy. (1975). "Pharmacists For The Future: The Report of the Study Commission on Pharmacy." Commissioned by the American Association of Colleges of Pharmacy. Ann Arbor, Michigan: Health Administration Press.
124. American Pharmaceutical Association. (Jul.15,1978). "Report of the Policy Committee on Professional Affairs." Am.Pharm., NS18(8):413-417.
125. Kalman, S.H. and Schlegel, J.F. (Mar.1979). "Standards of Practice for the Profession of Pharmacy." Am.Pharm.:133-145.
126. Pharmaceutical Society of Great Britain. (Sep.4,1982). "Clinical Pharmacy in Community Practice." Pharm.J., 229:228-229.
127. Smith, A. (Jul.1986). "Recent Developments in British Pharmacy." Aust.J.Pharm., 67:692-693,696,698.
128. Anon. (Mar.29,1986). "Nuffield Report: Powerful Advocacy for the Profession." Pharm.J., 236:387-388.
129. Anon. (May 1986). "U.K. Pharmacy Welcomes Nuffield Report." Aust.J.Pharm., 67:498-499,502.
130. Anon. (Apr.26,1986). "Importance of Pharmacy Acknowledged." Pharm.J., 236:508.
131. Berbatis, C.G. and Kailis, S.G. (Mar.1982). "Foundations of Community Pharmacy Practice. Prescription Drug Usage in Australia." Aust.J.Pharm., 63:139-141.
132. Webb, R.C. (Mar.1982). "Foundations of Community Pharmacy Practice. Extemporaneous Preparations Prescribing in Australia." Aust.J.Pharm., 63:142-143.
133. Kerr, R., Wooller, J., Finnin, B. and Pitman, I. (Jan.1986). "Extemporaneous Dispensing in Victorian Pharmacies." Aust.J.Pharm., 67:8-9.

134. Blythe, T. and Armstrong, B. (Sep.1977). "Clinical Pharmacy in Retail Pharmacies: A Survey of Requests Made by Retail Pharmacy Clients." Aust.J.Pharm.Sci., 6(3):91-95.
135. Darby, D.N. (Dec.1982). "Community Pharmacy Consumer Perceptions." Aust.J.Pharm., 63:810-820.
136. Crothers, P. (May 1985). Why Not Abolish Community Pharmacy?" Australian Pharmacist, 4(2):28-31.
137. Berbatis, C.G. and Sunderland, V.B. (May 1982). "Professional Activities of Australian Community Pharmacists. Part 1. Evaluation of Prescription Related Activities." Aust.J.Pharm., 63:283-289.
138. Banahan, B.F., Sharpe, T.R. and Smith, M.C. (Spring 1980). "Consumer Expectations Compared to the Reported Use of Pharmacy Services in Rural Areas." Contemp.Pharm.Pract., 3(2):90-94.
139. Hellier, C. (Feb.1971). "Survey Findings from 30,000 Pharmacy Customers." Aust.J.Pharm., 52:76-79,82,84.
140. Lord, T. and Lord, R. (Sep.1978). "Report on Weston Creek Pharmacy Study." Aust.J.Pharm., 59:627-629.
141. Kirking, D.M. (Fall,1982). "Pharmacists' Perceptions of Their Counselling Activities." Contemp.Pharm.Pract., 5(4):230-238.
142. Kirking, D.M. (1984). "Evaluation of an Explanatory Model of Pharmacists' Patient Counselling Activities." J.Soc.Admin.Pharm., 2(2):50-56.
143. Garde, T.W. and Benrimoj, S.I. (Aug.1982). "A Study of Counselling Events Associated with the Dispensing Service in Four Selected Community Pharmacies." Aust.J.Pharm., 63:497-500.
144. Olsen, W. and Ortiz, M. (Oct.1986). "The Impact of Computers in Community Pharmacy." Aust.J.Pharm., 67:958-962.
145. Olsen, W. and Ortiz, M. (Jan.1986). "The Use of Computers in Community Pharmacy." Aust.J.Pharm., 67:65-68.
146. Anon. (Mar.1987). "Survey Shows 60 p.c. Penetration by Computers; Amfac-Chemdata Leader." Aust.J.Pharm., 68:148.
147. Anon. (Mar.1986). "Sharp Rise in Computer Penetration of Pharmacy; Suppliers Rationalise." Aust.J.Pharm., 67:286.
148. Anon. (Mar.1987). "Computer Penetration 80 per cent by 1990." Aust.J.Pharm., 67:150.
149. Hunt Sharp, N.A. (Jun,1979). "Patient Medication Records." Aust.J.Pharm., 60:397-400.

150. George, J. (Feb.1983). "Community Pharmacy and Professional Survival: Issues of Training and Practice." Aust.J.Pharm., 64:150-152.
151. Newcastle Retail Pharmacy Research Group. (Mar.1986). "Post-Marketing Surveillance of Drugs: A Role for Retail Pharmacists with Microcomputers." Aust.J.Pharm., 67:294-295,348.
152. Darling, B. (Oct.1986). "The Future of Pharmacy Practice. Part 2." Australian Pharmacist, 5(5):28-32.
153. The Poisons Regulations of 1973. incl.Amendments to 1986. (1986). Queensland:Government Printer.
154. Lloyd, A. (1972). "Cautionary Labels on Dispensed Medicines." Aust.J.Pharm., 53:529-530.
155. Anderson, R.A. (Ed.) (1974). "Australian Pharmaceutical Formulary and Handbook, 11th Ed." Pharmaceutical Association of Australia and New Zealand, pp152-156.
156. Anderson, R.A. (Ed.) (1893). "Australian Pharmaceutical Formulary and Handbook, 13th Ed." Canberra:Pharmaceutical Society of Australia, pp14-20.
157. Haley, A-M., Ukich, P. and McDonald, C. (Feb.1985). "A Survey of the Use of The A.P.F. by Community Pharmacists in W.A." Aust.J.Pharm., 66:132-134.
158. Hailstone, B. (Mar.1973). "S.A. Moves on Warning Labels." Aust.J.Pharm., 54:142-143.
159. Hailstone, B. (Feb.1974). "Warning Labels Accepted in S.A. Pharmacies." Aust.J.Pharm., 55:73.
160. Hailstone, B. (May 1974). "S.A.'s Cautionary Labels Start on July 1." Aust.J.Pharm., 55:266,324.
161. Anon. (Jan.1975). "Labels." Aust.J.Pharm., 56:57.
162. Hailstone, B. (Aug.1974). "Good Response to S.A. Advisory Labels." Aust.J.Pharm., 55:497.
163. Stock, B. (1975). "Medicine Warning Labels: Overwhelming Support by S.A. Pharmacists Claimed." Aust.J.Pharm., 56:305-307.
164. Anon. (Nov.1979). "Warning Labels Widely Used in Tasmania." Aust.J.Pharm., 60:770.
165. Cook, R., Meshgin, D. and Sunderland, B. (Dec.1986). "A Survey of the Use of APF Ancillary Labels and Additional Instructions in Western Australian Pharmacies." Australian Pharmacist, 5(6):27-29.



166. Warden-Flood, J. (1980). "Handbook for Patient Medication Counselling." Second Edition. Pharmaceutical Society of Australia. Netley, S.A.: Griffin Press.
167. Wiederholt, J.B., Kotzan J.A. and Cooper, J.W. (Mar.1983). "The Effectiveness of Auxiliary Prescription Labels: A Pilot Study." Drug Intell.Clin.Pharm., 17:216-221.
168. Fairfax, J. (Nov.1979). "Community Pharmacists' Elusive Pot of Gold." Aust.J.Pharm., 60:842-842.
169. Berry, M. (Apr.1973). "Patient Records in Retail Practice." Aust.J.Pharm., 54:246,250.
170. Hailstone, B. (Nov.1971). "First Medical Centre Pharmacy." Aust.J.Pharm., 52:759,797.
171. Anon. (Oct.1979). "Boards Asked to Consider Making Patient Profiles Compulsory." Aust.J.Pharm., 60:680-681.
172. Trevena, C. (Nov.1976). "Big Response to Article on Professional Practice Role for Retail Pharmacy." Aust.J.Pharm., 57:687-689.
173. Lloyd, A.I.K. (Dec.1977). "Patient Medication Records: Why and How." Aust.J.Pharm., 58:733-735.
174. Poston, J.W. and Shulman, W. (Apr.6,1985). "Patient Medication Records in Community Pharmacy." Pharm.J., 234:442-443.
175. Anon. (Feb.1984). "Vic. Guild Presses for Greater Pharmacy Role." Aust.J.Pharm., 65:134.
176. Anon. (May 1976). "Laziness, Ignorance Reasons for Opposition to Patient Profiles." Aust.J.Pharm., 57: 256-259.
177. Thomas, J. (Dec.1977). "Patient Medication Record Systems." Aust.J.Pharm., 58:736.
178. Welsh, J.S. (Apr.1980). "Pharmacy Health Questionnaire." Am.Pharm., NS20(4):219-221.
179. Shulman, J.I. (1979). Pharm.J., 222:554.
180. Dichter Institute for Motivational Research.
181. Miller, E.R. (Nov.1981). "Innovative Pharmaceutical Services." S.Afr.Pharm.J., 48:532-534.
182. Anon. (Nov.1975). "Lively Discussion on Doctor-Pharmacist Relationship." Aust.J.Pharm., 56: 616-617.
183. Bradbury, D. (Feb.1980). "How Pharmacists Are Pushing Customers Into Supermarkets." Aust.J.Pharm., 61:116-117.

184. Harris, J.W. (Aug.4,1984). "Is the Pharmacist a Credible Source of Health Information." Pharm.J., 233:143-144.
185. Lord, R. (1980). "1977/78 Pharmacy Enquiry. Methodology and Results." Joint Committee of Public Accounts.
186. Anon. (Jul.1981). "New Tribunal Grants Pharmacists Biggest Ever N.H.S. Fees Increase." Aust.J.Pharm., 62:452-453.
187. Pharmaceutical Benefits Remuneration Tribunal. (Jul.1981). "Tribunal's Decision." Aust.J.Pharm., 62:515-519.
188. Pharmaceutical Benefits Remuneration Tribunal. (Feb.1982). "Full Text of Tribunal's Second Fee Decision." Aust.J.Pharm., 63:98-103,110.
189. Bridges-Webb, C. (1972). "Drug Medication in the Community." Med.J.Aust., 1:675-679.
190. Knapp, D.A. and Knapp, D.E. (Dec.1972). "Decision Making and Self-Medication, Preliminary Findings." Am.J.Hosp.Pharm., 29:1004-1012.
191. Elliott-Binns, C.P. (1973). "An Analysis of Lay Medicine." J.R.Coll.Gen.Pract., 23:255-264.
192. Harper, J.D. (Oct.-Dec.1977). "Patient Drug Information - The Last Word." Drug Inf.J., 11:183-186.
193. Anon. (Dec.1979). "Results Announced of \$50,000 Survey on Use of O.T.C. Medicines." Aust.J.Pharm., 60:900-902.
194. Darby, D.N., Glaser, S. and Wilkinson, I.F. (1981). "Health Care and Lifestyle - A Study of Self-Medication in Australia." N.S.W. University Press.
195. Gibson, J.L. (May 1985). "A Study of the Contribution to Primary Health Care by Community Pharmacists." Submission to the Better Health Commission.
196. Australian Bureau of Statistics. (1983). "Australian Health Survey."
197. Stewart, K., Garde, T.W. and Benrimoj S.I. (Dec.1985). "Over-the-Counter Medication Sales in Community Pharmacy. A. Direct Requests and Symptom Presentation." Aust.J.Pharm., 66:979-982.
198. Stewart, K., Garde, T.W. and Benrimoj, S.I. (Feb.1986). "Over-the-Counter Medication Sales in Community Pharmacy. B. Consumer Aspects." Aust.J.Pharm., 67:270-274.

199. Shaw, J.P. and Trevean, M.A. (1983). "Advisory Role of the Community Pharmacist in Self-Medication." N.Z.Pharmacy, 3(3):49-51.
200. D'Arcy, P.F., Irwin, W.G., Clarke, D., Kerr, J., Gorman, W. and O'Sullivan, D. (May 10, 1980). "Role of the General Practice Pharmacist in Primary Health Care." Pharm.J., 224:539-542.
201. Phelan, M.J. and Jepson, M.H. (May 24, 1980). "The Advisory Role of the General Practice Pharmacist." Pharm.J., 224:584-588.
202. Hardisty, B. (1982). "The Role of the Pharmacist in Counter-Prescribing Medicines." Presented at the 18th Annual Conference of the Institute of Pharmacy Management International, Malta, 23-31 Oct. 1982.
203. Johnston, S.V. (Sep. 1977). "General Practice Survey." Pharm.J. N.Z., pp17-18.
204. Johnston, S.V. (Oct. 1977). "General Practice Survey - Part II." Pharm.J. N.Z., pp20-21.
205. Christopher, L.J., Crooks, G. and Kilgallon, B. (Aug. 18, 1979). "A Pharmacy-Based Survey of Self-Medication." Pharm.J., 223:152-153.
206. Darby, D.N. (Feb, 1982). "Self Care: Implications for Pharmacy." Aust.J.Pharm., 63:104-107.
207. Anon. (Oct. 1987). "Self Care is on the Move Throughout Australia." Pharmacy Leader, 4:1-2.
208. Anon. (Apr. 1987). "Self Care a Winner in N.S.W." Australian Pharmacist, 6(2):16.
209. Anon. (Apr. 1987). "Self Care Gears up to go National." Australian Pharmacist, 6(2):17-18.
210. Parker, W.A. (Oct. 1985). "The Canadian Experience in Patient Self-Care - Extending the Role of the Pharmacist in Community Medicine." Aust.J.Pharm., 66:816-817.
211. Gibson, J.L. (Aug. 1986). "A Report on a Study Tour Investigating the Status of Primary Health Care in Community Pharmacy in the United States." Kodak Fellowship for the Advancement of Pharmacy.
212. Bicket, W.J. (Sep. 1971). "Statement of the American Pharmaceutical Association to the Monopoly Subcommittee of the United States Senate." J.Am.Pharm.Assoc., NS11(9):468-473.
213. Bicket, W.J. (Nov. 1972). "Autotherapy - The Time is Now." J.Am.Pharm.Assoc., NS12(11):560-562, 564.

214. Benrimoj, S.I., Stewart, K. and Smith, M.C. (1985). "Pharmacy-Only Medications: Experience in England and Australia." Pharmaceutical Executive, 5(2):40,42.
215. Anon. (Mar.19,1983). "More People Seek Pharmacists' Advice - Survey." Pharm.J., 230:315.
216. Thomas, J. (Nov.1982). "O.T.C. Medication and the Pharmacist." Aust.J.Pharm., 63:715-716.
217. Hardisty, B. (Oct.15,1983). "Future Role of the Community Pharmacist." Pharm.J., 231:436-438.
218. Edwards, C. (Nov.19,1983). "The Pharmacist's Armamentarium and How He Should Use It." Pharm.J. (Suppl.), 231:7-8,13.
219. Gibson, J.L. (Dec.1985). "A Submission to the Industries Assistance Commission on the Draft Report on Pharmaceutical Products." Submission to the Industries Assistance Commission.
220. Anon. (Jan.1978). "S.A. Society Looks Ahead to Fees for Counselling." Aust.J.Pharm., 59:14-15.
221. Anon. (Jun.1983). "Qld. Branch Gives Fee Guidelines on New Schedules." Aust.J.Pharm., 64:402.
222. Elliott, B. (Aug.1985). "Schedule 3 Remuneration and the Lemming Phenomenon." Australian Pharmacist, 4(3):12-13,32.
223. Commonwealth Department of Health. (1979). "Health Promotion in Australia 1978-79." Canberra: Australian Government Publishing Service.
224. Fry, J. (Jan.1982). "What Roles for the New Community Pharmacists?" Aust.J.Pharm., 63:45-46.
225. Gilbert, A. (Nov.1985). "Pharmacy and Community Health." Aust.J.Pharm., 66:899-901.
226. Smith, M.C. and Gibson, J.T. (Feb.1975). "The Pharmacist and Preventive Medicine." J.Am.Pharm.Assoc., NS15(2):79-83.
227. Harris, J.W. (Oct.1,1983). "Health Education and Preventive Medicine in Community Pharmacy." Pharm.J., 231:381-382.
228. Jinks, M., Cornely, P.B. and Mayer, F.S. (Jul.1983), "The Pharmacist's Role in Individual Preventive Health Care." Am.Pharm., NS23(7):342-349.
229. Panton, R.S. (Nov.20,1982). "Health Education. Is There a Role for the Community Pharmacist?" Pharm.J., 229:582-585.
230. Anon. (Mar.1984). "U.S. Use of Pharmacists as Advisors." Aust.J.Pharm., 65:220-221.

231. Sneader, W. (Jan.23,1982). "Stop-Smoking Campaign in West of Scotland Pharmacies." Pharm.J., 228:105.
232. Anon. (Nov.20,1982). Pharm.J., 229:582.
233. Wilson, E.E. and Tweed, W.A. (Apr.1984). "Pharmacists' Role in Smoking Cessation." Can.Pharm.J., 117:156-157,162.
234. Panton, R.S. (Jun.9,1984). "Can the Pharmacist Help the Smoker?" Pharm.J., 232:698-700.
235. Rappaport, H.M. (Oct.1984). "Tobacco - For Sale or not For Sale in Pharmacies - That is the Question." Louisiana Pharmacist, 43(10):4-5,8.
236. McKenney, J., Rabin, D.L. and Heltzer, N.E. (Aug.1983). "The Pharmacist's Role in Community Preventive Health Care." Am.Pharm., NS23(8):396-402.
237. Anon. (Jun.1980). "Important Role for Pharmacists in Preventive Medicine, Says Scientist." Aust.J.Pharm., 61:407.

## Chapter 2

**SPECIALIZATION IN COMMUNITY  
PHARMACY PRACTICE****2.1 SPECIALTY PRACTICE**

A major issue facing pharmacy in the 1980s and beyond, which has already occupied the attention of other health professions, is the development of practice specialties (1). With continued acceptance by individuals of the responsibility for their own health, including management of chronic conditions, a need is envisaged for increased variety and quality of expertise of pharmacists involved in health maintenance activities. A trend towards concentration on specialized areas of practice has been observed.

**2.1.1 Process of Specialization**

The economic theory of specialization has been discussed by Manning (2): constant practice at a specialized process results in increased dexterity and acquisition of greater skills, allowing savings of time and labour and stimulus of invention resulting from concentration on a single task. The division of labour into specialized areas is limited by the extent of the market. With a limited market, a firm is required to perform a number of functions, some subject to increasing returns, and others to diminishing returns. With expansion in the size of the market, some of the functions with increasing returns split off and their expansion in output allows a decrease in costs. This is the process of

specialization. In applying the theory to pharmacy, Manning explained that its development has been a slow and continuous process because the development of the market has also been slow and continuous, and that it has been influenced by economic growth because it is dependent not only on numbers but also on the affluence of the people. An early example of the specialization process in pharmacy was the "split off" of the dispensing function from the tasks of the doctor, and later the take-over of manufacturing by the industrial pharmacist and the multi-national drug companies.

#### 2.1.2 Criteria for Specialization

In 1974, APhA, through a Task Force on Specialties in Pharmacy, recommended the creation of a Board of Pharmaceutical Specialties with authority to recognize, approve qualifications of, and certify specialists in pharmacy. In presenting the report of the Task Force to the membership of APhA, the Journal of the American Pharmaceutical Association urged pharmacists to review the development of specialties in the other health professions of medicine (3), dentistry (4) and nursing (5), and to consider whether pharmacy specialties should develop the degree of complexity of recognition and certification structure existing in medicine, should be allowed to develop with little control or input from the profession as in nursing, or should follow the example of dentistry in providing a limited number of well-defined specialties under the control of the profession (6). Seven criteria were established for specialty recognition (7):

Criterion 1 - The area of specialization in the practice of pharmacy rests on a specialized knowledge of pharmaceutical sciences, which have their basis in the biological, physical, and behavioural sciences, and not on the basis of managerial, procedural, or technical services, nor on the basis of the environment in which pharmacy is practised.

Criterion 2 - The area of specialization shall be one for which specially trained practitioners are needed to fulfil the responsibilities of the profession of pharmacy in improving the health and welfare of the public, which responsibilities may not otherwise be effectively fulfilled.

Criterion 3 - The area of specialization shall represent an identifiable and distinct field of practice that calls for special knowledge and skills acquired by education and training and/or experience beyond the basic pharmaceutical education and training.

Criterion 4 - The area of specialization shall be one in which schools of pharmacy and/or other organizations offer recognized education training programs to those seeking advanced knowledge and skills in the area of specialty practice so that they may perform more competently.

Criterion 5 - The area of specialization shall be one in which there is an adequate educational and scientific base to warrant transmission of knowledge through teaching clinics and scientific and technical publications immediately related to the specialty.

Criterion 6 - The area of specialization shall be one in which there exists a significant and clear health care demand to provide the necessary public reason for



certification.

Criterion 7 - The area of specialization shall be comprised of a reasonable number of individuals who devote most of the time of their practice to the specialty area. While the task force felt that specialization would provide professional and economic advantages to specific professional groups, it was aware of the potential economic and health care risks to the public (8).

The first area of pharmacy practice to achieve recognition via these criteria was Nuclear Pharmacy, which came into being as a specialty in 1978 (8,9), and came of age in 1982 with the certification by the Board of Pharmaceutical Specialties of 63 pharmacists who were successful in completing its examination and also provided evidence of at least 4,000 hours of experience in nuclear pharmacy practice (10).

Other areas of practice which have been suggested as specialties include general clinical pharmacy, paediatric clinical pharmacy, geriatric clinical pharmacy, total parenteral nutrition pharmacy, family practice pharmacy, psychopharmacy, drug information, analytical pharmacy, manufacturing pharmacy, and research (10-13).

Views on the recognition of Clinical Pharmacy as a specialty were discussed at the 1980 APhA meeting (14-16). Subsequently, a Committee on Clinical Pharmacy as a Specialty was established to compile a submission to the Board of Pharmaceutical Specialties. The Committee defined clinical pharmacy as "a pharmacy practice specialty, whose responsibility it is to assure the safe and appropriate use of

drugs in patients through the application of specialized knowledge and functions in patient care, and which necessitates specialized education and/or structured training. It requires use of judgment in the collection and interpretation of data, patient-specific involvement, and direct interprofessional interaction." (17). The petition requesting recognition, which detailed the claims of clinical pharmacy in each of the previously listed criteria, was submitted to the Board in mid-1986 (18,19).

Opinions on the issue of specialization expressed in Drug Intelligence and Clinical Pharmacy (DICP) over a number of years were collected in the April 1986 edition (12,13,20-25).

The Guidance Notes to the PSGB Code of Ethics (26) used the term "specialized services", explaining that the use of the term required provision of a "comprehensive service in that specialization".

### **2.1.3 Specialization in Australia**

In Australia, where no certification processes have as yet been established, arguments have been put as to the validity of use of the term "specialist". A judgement in the High Court against a doctor claiming to be a specialist, while not bearing directly upon the pharmacy situation, was cited in 1977 as implying that specialist status could not be claimed unless a practitioner had an academic qualification or had been granted fellowship or membership of a specialist society subsequent to passing certain examinations and fulfilling certain requirements (27). Despite this restriction, it was

considered that the development of specialties would be a positive step in the development of a sound professional structure for pharmacy (28).

The fact that hospital pharmacists in particular were increasingly involved in specialized tasks such as clinical ward pharmacy, paediatric pharmacy, radio-pharmaceuticals, drug information, oncology, and parenteral services was recognized and interpreted as possibly being the beginning of a trend towards specialization (29-32). There are currently thirteen Committees of Specialty Practice operating within the Society of Hospital Pharmacists of Australia (SHPA) to develop standards of practice in the fields of oncology, drug information, radiopharmacy, clinical pharmacy, outpatients, parenteral services, drug distribution, pharmacokinetics, computerization, extended care, quality assurance, patient counselling, and poisons information (33).

Jim Matthews of PGA thought it inevitable that specialists would appear in pharmacy as they had in all other professions, and that the increasing specialization of medical services would require parallel specialization in pharmaceutical services. He envisaged these services being provided by private practice pharmacists in health centres, and that these pharmacists would require further academic degrees in order to practice their specialties (34,35).

Beresford Stock, then president of PSA, proposed a case for recognition of specialist or consultant pharmacists competent to provide therapeutic services in the area of symptomatic treatment (36).

Frank Ryan, Advisor in Pharmacy to the Queensland

Government, speaking at a seminar on Pharmacy Education in 1985, also raised the issue of specialization. He felt that there was a need for the profession of pharmacy to develop areas of specialty practice, and that the profession should be addressing itself to designing various subsets of specialty practice as has been done in medicine and dentistry and to some extent in nursing. He cited the success of such approaches overseas, particularly in the United States, and foresaw specialties paralleling many of the medical specialties, so that pharmacists would become integral parts of clinical teams directly associated with patient care and would function as the drug consultants to these teams (37).

The development of initiatives such as minor pathology testing, disease screening, home parenteral nutrition, family planning, and private hospital and nursing home services in community pharmacy practice was encouraged by the president of the national Pharmaceutical Society of Australia in 1984, Nelson Hunt Sharp (38). He emphasized that the provision of such services through pharmacies would help people to identify pharmacists as part of the health care team, but he cautioned practitioners against claiming specialist status for providing these services without having obtained appropriate post-graduate qualifications, believing that many of them could be adequately provided by pharmacists as a result of their basic training without the need to claim specialist status (38).

Although there have as yet been no structured moves towards specialization in community pharmacy practice in Australia, there are numerous examples of practitioners

developing specialized services in a wide variety of areas. Professional specialization has been described as a response to the needs of clients, and its development and official recognition in pharmacy seen as likely to have a positive effect on the strength and relevance of the profession in the provision of total health care (32,39).

## 2.2 SPECIALIZED HEALTH SERVICES

Specialized health services in community pharmacy, both in Australia and overseas, have developed in several major areas. They have been established to cater for the needs of specific groups within the pharmacy clientele such as the young and the elderly, for those suffering from particular disease states such as diabetes, cancer, or hypertension, and as an adjunct to the sale of particular stock ranges such as family planning and sports medicine needs.

### 2.2.1 Classification

No generally accepted means of classification of services has been developed, but for ease of discussion they have here been grouped as:

#### Services for Specific Patient Groups

Geriatric Patients

Domiciliary Care Patients

Paediatric Patients

#### Services Related to Specific Conditions

Asthma and Allergy

Diabetes

Hypertension

Oncology

Ophthalmology

Ostomy

Pregnancy Testing

Services Related to Product Ranges

Alternative Medicine

Dentistry

Family Planning

Home Health Care Equipment

Nutrition

Sports Medicine

Veterinary Medicine.

In addition, some initiatives for general clinical involvement through community pharmacies will be discussed, including biological testing, pharmacokinetic evaluation, and office-based practice.

The volume of information should not necessarily be taken as an indicator of the importance of an area or of the extent of specialization, but merely reflects the amount of international literature available on the topic. Similarly, no attempt has been made to rank the services under each heading. They have been arranged alphabetically.

## **2.2.2 Services for Specific Patient Groups**

### **2.2.2.1 Geriatric Patients**

The increasing numbers and proportion of elderly people in the community have been identified as among the major current influences on the provision of health care

services. Patients in this group are more likely to suffer multiple disease states and thus be on multiple medication regimens (40-42). Special problems of the elderly associated with their medications include difficulties in opening containers, in reading labels and package inserts, in hearing verbal instructions, and in comprehending and remembering administration details, especially for multiple therapy (40,43-49). In addition, multiple therapy (prescribed and nonprescribed) may increase the risk of side effects and drug interactions, and body changes due to aging may result in a different response to medication than in other age groups (40,41,47-52). Shimp et al (52) in a study of fifty-three elderly patients with multiple chronic disease states and multiple drug therapy, found that the number of prescription medications taken by a patient was a strong predictor of the number of potential medication-related problems. Socio-economic factors have also been implicated in contributing to noncompliance with medication regimens (40,42). Studies of medication compliance by the elderly have reported administration errors ranging from 25-59% (40,44,49).

Functions for the pharmacist in the care of the elderly in various settings were suggested by Lamy (49). Primary care functions to the well, ambulatory elderly were described as provision of drugs, education, monitoring, preventive services, nutritional advice, and referrals. Long-term care functions to the chronic patient with multiple diseases and disabilities were described as provision of home health care services including total parenteral nutrition and

oxygen, and provision of pharmacotherapeutic consultant services to the physician, patient, and family. For institutionalized long-term care patients, similiar services would be provided to the patient and to the institution. Some of these functions are considered as specialized services in their own right (49).

A survey of 432 American pharmacists associated with geriatric practice (response rate 64.4%) (50) identified the most difficult areas as inadequate geriatric knowledge, patient compliance, overprescribing, communication with the elderly, and lack of professional and/or financial recognition. Interviews with 300 elderly persons in a Mississippi county revealed limited communication between them and their pharmacists about prescription and nonprescription drugs (47).

While papers have been published offering information to pharmacists for effective communication with geriatric patients (40,44,45,50,54,55), prescription and nonprescription drug monitoring (40,56), and improvement of compliance (40,51), little evidence was found of individual community pharmacists concentrating on this area of practice. Pharmacies employing paramedical personnel, such as a chiropodist (57), and a nurse to administer free 'flu vaccinations to elderly patients (58), have been reported.

However, many nursing homes and other institutions not having a pharmacist on staff are serviced by community pharmacists in Australia, either through their pharmacies or on a "sessional practice" basis at the institution concerned. The provision of otherwise unavailable clinical services has



been cited as advantageous to both the institutions and the pharmacists involved (59,60). These services are, of course, not restricted to geriatric patients. In 1984, PSA (Qld. Branch) established guidelines for practitioners providing services to nursing homes and private hospitals to ensure the quality of those services. The statement of professional practice covered dispensing, drug therapy monitoring, quality control, counselling, clinical and drug administration services (61).

#### 2.2.2.2 Domiciliary Care Patients

Care of patients in the home setting has been recognized as an acceptable alternative to hospitalization (62). The increasing costs of medical care, the aging population, and public demand for health care have been cited as major factors in this trend (63). Advantages listed have included less disruption and more convenience to the patient, a closer to normal lifestyle, and cost savings. Because of the trend towards domiciliary care for ambulatory patients, both the elderly and the handicapped, predictions have been made of the need for greater involvement by pharmacists in helping patients manage their medication (64-67). The 1984 President of PSA (Qld. Branch) foresaw an extension of in-home services beyond delivery of medication to include counselling, removal of out-of-date or no longer used medicines, and advice on diet and patient aids (60,68). Domiciliary care services from hospital pharmacies in Australia have concentrated mainly on haemodialysis and peritoneal dialysis until recently, but are likely to be expanded to include parenteral nutrition,

cytotoxic therapy, intravenous antibiotic treatment, and continuous infusion of analgesics, and to involve community pharmacists in provision of services (69).

Although the trend may be only in its infancy in Australia, various agents including home care companies, manufacturers of parenteral nutrition fluids, district nurses, and both hospital and community pharmacists have been involved in the provision of both therapy and equipment in the United States and Great Britain (63,70). British pharmacists have been providing domiciliary oxygen services for some time (71). Discussion of the home health care role has been proceeding in the United States since the early 1970s, initially through hospital-based pharmacists, and later through home health agencies (72-76). Additional aspects suggested by Wertheimer (72) included monitoring drug therapy, documenting allergies, reviewing contraindications to newly prescribed drugs, and educating the patient's family as well as the patient. Zage (63) listed potential areas for involvement as including antibiotic therapy, chronic ambulatory peritoneal dialysis, continuous infusion diabetes therapy, chronic pain therapy, and cardiac monitoring. The Academy of Pharmacy Practice within APhA adopted a Statement on Pharmaceutical Service in Home Health Care in 1979 to clarify their role (77).

A survey of Canadian consumers, reported by Parker (62), found that 23% of respondents thought that pharmacists should provide private consultations and services in the home. Of those desiring such a service, 56% were prepared to pay a separate fee for its receipt.

### 2.2.2.3 Paediatric Patients

Although community pharmacies serve as a source of baby care needs and trade magazines have been involved in the promotion of baby products, little attention has been given to the possibility of pharmacists concentrating their attention on child health. Suggestions have been made regarding roles for the pharmacist in encouraging compliance with medication regimens, especially for children with chronic conditions (78); in paediatric health education in areas such as nutrition, fluoridation, immunization, and poisoning (79); and in specific disease states (80). Thirty-three percent of respondents interviewed in pharmacies by Darby (81) supported the concept of a baby care section in pharmacies, with a trained clinic sister in attendance. Use of a professionally orientated counselling area for a visiting clinic sister has been reported (57).

An example of an American pharmacist establishing a practice focussed on paediatrics has been reported (82). The services offered by the practice were a 24-hour emergency prescription and consultation service, counselling of parents and children, and supply of equipment such as compressors, nebulizers, and bed-wetting alarms. Another pharmacy, while not concentrating so specifically on the paediatric area, was reported to supply a folder of useful paediatric information to pregnant women and new parents entering the pharmacy as a means of making them aware of the availability of paediatric advice (83). Information supplied included paediatric drug dosing, immunization schedules, and suggested items for a paediatric medicine cabinet.

### 2.2.3 Services Related to Specific Conditions

#### 2.2.3.1 Asthma and Allergy

Pharmacists have become involved in the alleviation of asthma and allergies through the marketing of aids such as impermeable mattress casings and anti-dust surface sprays (85,86), sale or hire of nebulizers (87,88), and through counselling patients on the use of inhalation devices for the administration of medications. The importance of counselling on the use of these devices has been illustrated by research studies (89-92) which showed the effectiveness of personal or videotape demonstration in promoting correct technique.

A possible growth area has been seen as the sale of peak flow meters (93), or in performing peak flow measurements in the pharmacy, as this technique of measuring lung function has been predicted to become as much a part of asthmatic control as blood glucose monitoring is in diabetic control (94). In 1977, some pharmacies in the USA expressed their intention of offering lung testing using carbon dioxide measurements (95). A report from California described an elective course within the pharmacy curriculum which provided training in physical assessment, one aspect of which was asthma monitoring (96). An American survey, quoted by Huston (97) in 1985, found 4% of pharmacies to be involved in allergy screening programmes, and 5% in lung function testing.

Individual Australian pharmacists have been reported as having special involvement in the treatment of asthma and allergy patients (86,87,98). A newspaper, Breathing Space, distributed to the public through pharmacies, aimed to assist in the education of asthma sufferers (94,99).

### 2.2.3.2 Diabetes

#### UNITED STATES

Encouragement was given to American community pharmacists to participate in Diabetes Week efforts to detect undiagnosed diabetics, using blood glucose testing techniques, as early as 1969 (100,101). However, mass screening programmes relying on less precise urine testing were still being conducted and evaluated as late as 1977 (102). Prior to Diabetes Week in 1971, Pharmacy Times (103) published a list of suggestions as to how pharmacists could help diabetic patients. The list was compiled from responses to a letter sent to a random sample of pharmacists and included ideas such as maintaining lists of diabetic patients for informational purposes, maintaining patient profiles, advising on aspects of care including use of equipment and mixing of insulins, and establishing a diabetic department in the pharmacy.

The ready accessibility of the pharmacist to patients, coupled with the facts that diabetic patients are frequent visitors to the pharmacy for insulin and other needs and could benefit from extra support, have frequently been cited as an important reasons for improving the services to diabetics from this source (104-108). Suggestions for ways to augment the supply role of pharmacies to diabetic patients with a service component, including patient education, have been documented (106,109-114). A study by Zelnio et al (105) showed that both diabetic patients and physicians were favourably disposed to pharmacy based diabetes informational services, but less so to screening and monitoring activities.

Pharmacists have been urged to advise diabetic patients in the areas of insulin use (104,108,110,115,116), choice and care of syringes (110), oral hypoglycaemics (108,110,115), hypoglycaemia (108,115), urine glucose monitoring (104,110,115,117), blood glucose monitoring (104,110,116,118), diet (110,115), foot care (110,115,116), eye care (119), general hygiene (115), and choice of nonprescription medication (120). Maintenance of detailed patient profiles for diabetic patients has been advocated (104,110). A range of special aids for visually impaired diabetic patients has been described (119). Campbell described the pharmacist's health education role in diabetes as being mainly supportive of that of other health professionals, and aimed at helping patients to accept responsibility for self-care by their availability for consultation and their knowledge of nonprescription drugs (108,110). Leichter (118) also described the pharmacist's role as being part of the health care team.

The American Pharmaceutical Association (APhA), in co-operation with various pharmaceutical companies, has developed a self-study continuing education programme to motivate and educate pharmacists to take greater responsibility in assisting diabetic patients with management of their condition (114,121-123). APhA has also developed aids for counselling including a drug monitoring checklist (124) and a self-assessment programme for pharmacists (125). The importance of tailoring education to the needs of the specific patient has been addressed by Torre and Sause (126), who prepared a questionnaire to assess the needs of patients.

Individual pharmacies in America active in diabetes have been profiled (95,96,106,127). "Medicine Shoppe" pharmacies expressed their intention of offering a foot pathology screening service, which would be of particular benefit to diabetic patients (95). George (128) reported that some pharmacists provided training in blood glucose monitoring technique without charge when patients purchased meters from them, while others charged \$15 - \$20 per half hour for the time taken in training. Some pharmacists also charged for blood glucose measurements performed in the pharmacy (127). A survey quoted by Huston (97) in 1985 found that 30% of pharmacies were involved in diabetes screening programmes, and a 1984 Drug Topics survey showed that 87% of pharmacies stocked diabetes diagnostic aids, but only 4% stocked glucometers (97). No methodological details of either survey were provided. It was estimated in 1986 that about 5% of Californian pharmacies performed blood glucose measurements (66). A survey of a nationwide sample of pharmacists in 1986 showed that 59% of pharmacists believed that they played an active or very active role in advising patients about insulin therapy, and that 75% would like their role in advising patients with diabetes to increase (129).

#### CANADA

Roles suggested to Canadian pharmacists for participation in diabetic services have included assisting diabetic patients with their choice of nonprescription medications and with dietary advice, and alerting physicians to medications that may alter blood sugar levels (130).

## UNITED KINGDOM

Pharmacists in the UK have been reminded of the needs of diabetics for advice regarding insulin (131), syringe care (132), oral hypoglycaemic drugs (131), hypoglycaemia (132), monitoring (131,132), diet (132,133), foot care (131,132), eye care (134), and giving up smoking (131,132).

Cantrill and Wright (132) found that, although all patients obtained their repeat prescriptions from their general practitioners, only about one third of them saw the doctor at this time. As contact with the pharmacist was likely to be more frequent, they advocated the pharmacy as the appropriate site for diabetic health education.

Despite the demonstrated superiority of blood glucose measurements over urine glucose tests, the consequent improvement in control, and the resultant likelihood of decreased incidence of long-term complications, economic debate continues in the UK over the inclusion of blood glucose monitoring strips in the Drug Tariff (135,136).

## SOUTH AFRICA

Miller (137) reminded South African pharmacists of their responsibilities to diabetic patients and to the community, encouraging participation in advising, educating, screening and monitoring. He felt that the assistance of pharmacists would be beneficial to patients responsible for control of their disease state, especially in the areas of urine and blood glucose monitoring. Blood glucose levels as referral criteria were suggested.



## AUSTRALIA

The potential for increased involvement by pharmacists in the management of diabetic patients was recognized in the 1970s in conjunction with their developing clinical role (138). Reporting on a Scottish study of urine glucose testing by patients, Thomas (138) observed that, in view of the poor results of patient measurements, pharmacists could assist by instructing patients in correct assay techniques or by offering an assay service. Later studies elsewhere continued to highlight problems with patient urine testing techniques (117).

The introduction of U-100 insulins into the PBS in 1980 required extra counselling of insulin dependent diabetic patients during the changeover period (139). It was observed at that time that diabetics could also be expected to play an increasing part in self-management of their condition by regular blood glucose monitoring and home treatment of diabetic emergencies, and would benefit by assistance from pharmacists taking an interest in diabetes (140).

Pharmaceutical companies have played a large part in encouraging the development of diabetic centres in community pharmacies in Australia (141-144). The Ames Division of Miles Laboratories set up a system of diabetes self-care centres in selected community pharmacies which was based on a scheme developed in the United States, but modified as a result of research into the needs of Australian diabetics. A major aspect of the centres was the provision of advice on the use of blood glucose monitors at the point of sale, in line with the growing use of blood glucose monitoring techniques by

Australian diabetics. Ames reported the existence of 100 such centres throughout Australia in 1983 (142) and 200 in 1984 (143). In 1984, they announced plans for a major expansion of the scheme to assist all interested pharmacists by introducing special services, product sections, counselling routines and educational programmes for both pharmacists and patients, and by promotion of the centres (143-145). Follow-up services and advertising assistance were provided to participating pharmacies (146). Pharmaceutical companies have also assisted in the education of diabetics and health practitioners through the production of booklets and video tapes (147,148).

Anecdotal accounts have been published of diabetic activities, including blood glucose measurement, in individual pharmacies in Australia (146,149-154). A survey conducted in NSW and ACT in 1982 by Ortiz et al (155) found 0.6% of pharmacies to be involved in blood sugar testing and 0.7% in urine testing. Sissian (154) reported an average of 3% abnormal glucose readings during a period of four years of screening in his pharmacy. A company marketing various health care machines reported about twenty pharmacies in Australia using their equipment for diabetic screening in 1983 (156).

Approval of provision of diabetic services through community pharmacies has been expressed (157,158), but Gibson (66) felt that greater emphasis should be placed on diabetic screening and monitoring in Australian pharmacies.

### 2.2.3.3 Hypertension

#### UNITED STATES

In the USA, the impetus for pharmacist involvement with hypertensive patients was provided by the Task Force Report for the National High Blood Pressure Education Program in 1973 (159). Pharmacists were encouraged to participate in National High Blood Pressure Month in May 1974 and provided with the information to assist them to do so by a series of articles published in J.Am.Pharm.Assoc. which covered such topics as counselling, screening, and monitoring (160-166). A National Pharmacy Symposium on High Blood Pressure held at that time formulated recommendations on the role of the pharmacist in hypertension and on education of pharmacy students, pharmacists, patients and the public (167). Pharmacy continued to be involved in the National High Blood Pressure Education Program in later years (168-171).

Evaluation of a twelve pharmacy screening programme in the New Orleans area, published in 1978, showed a 24% referral to physicians due to readings above 160/95. Follow-up of this group (52% response) showed that 84% of them had visited their physicians, who confirmed 70% of those to be hypertensive, but only 6% were newly-diagnosed. Encouragingly, 97.5% of respondents felt that the screening programme had been beneficial and would participate in later pharmacy screening programmes (172). Another study, published in 1976, using one pharmacy drawing on the population of a Virginia county, showed the advantage of recalling patients for repeated measurements in the pharmacy prior to referral. By recording blood pressure on three visits, 5% of those screened

were referred for medical assessment due to readings above 160/95, whereas 16% would have been referred on the initial reading. All of the referred patients were subsequently confirmed as hypertensive. A disadvantage of this approach was identified as the time involvement required by the pharmacist (173). These studies confirm the effectiveness of pharmacy screening programmes in detecting hypertensive patients. A 1976 study by Zelnio and Gagnon (174) attempted to evaluate consumer attitudes towards blood pressure screening by pharmacists, but failed to produce conclusive results.

McKenney et al (175) demonstrated the success of pharmacists in improving blood pressure control by medication monitoring and patient education. They felt that the improvement observed could be primarily attributed to improved medication compliance.

A 1985 survey quoted by Huston (97) found 64% of pharmacies to be involved in blood pressure screening, and a Drug Topics survey was quoted as finding that 90% of pharmacies stocked home blood pressure monitoring devices (97). No details of either survey were provided. It has been estimated (66) that 8-10% of pharmacies in California were involved in blood pressure measurement in 1986, a level similar to that found in NSW and ACT by Ortiz et al (155).

Monitoring of blood pressure and medication compliance by individual pharmacies in the United States have been reported (58,84,95,176-178). In at least one instance, the monitoring service was only offered at certain times during the week. Patients could make appointments or report during the designated hours (58). Baker (176) found that

charging a small service fee was acceptable to his patients. George (128) also reported charges of 50c to \$5 being applied. A discussion of the liability aspects of blood pressure monitoring by pharmacists concluded that legal issues should not deter pharmacists from offering extended professional services, as long as those performing them were adequately trained, and that charging a fee did not imply a greater need for care than would have otherwise existed (179).

Advice on setting up monitoring services, including guidelines for physician referral, has been provided (84,173,176), as have suggestions for effective counselling on medication (180,181) and home monitoring (182). APhA has a source book on hypertension for the use of pharmacists (183).

#### UNITED KINGDOM

An examination of the feasibility of blood pressure measurement by community pharmacists in the UK, carried out in nine pharmacies in 1981, showed that pharmacists were capable of measuring blood pressure within acceptable limits, that 5% of people screened were later confirmed as being hypertensive, and that 98% of the lay public sampled approved of pharmacist in such a role (184). It was concluded that, in collaboration with medical practitioners, pharmacists could provide a valuable community service in this field.

A pilot study aimed at promotion of health education in pharmacies was conducted in the West Midlands in 1982, and included blood pressure monitoring (185). Public acceptance was encouraging. In a national survey of 180 pharmacies in the UK in 1982, blood pressure testing in pharmacies was suggested as an appropriate activity by 11% of

respondents (186). Teeling Smith (187) advocated extension of the availability of the service in community pharmacies. Former President of PSGB, David Sharpe (188), saw blood pressure measurement as a purely technical manipulative skill well within the ability of the pharmacist to perform, and recommended that if automatic equipment were used it should be sited near the dispensary to ensure that the pharmacist would be on hand for interpretation and counselling.

The Pharmaceutical Society of Great Britain formulated guidelines in 1979 for the measurement of blood pressure in pharmacies (189).

Individual providers have been reported (190).

#### SOUTH AFRICA

The need for pharmacists to become involved in hypertensive screening has also been raised in South Africa (137). Pharmacists were advised that, to give an effective service, they would need knowledge of the disease state and its symptoms, rationale for the use of antihypertensive drugs, dietary measures, treatment of hypertensive emergencies, and techniques of blood pressure measurement. They were also advised to set criteria for referral purposes.

#### NEW ZEALAND

A survey of 101 pharmacies (72% response) in Wellington, New Zealand, found only two pharmacies offering blood pressure testing (191).

#### AUSTRALIA

Recognition of the potential of the pharmacist to assist in the monitoring of chronic conditions, specifically hypertension, apparently occurred in Australia in the

mid-1970s. Thomas (192) suggested that measurement of blood pressure by pharmacists could encourage patients to have more regular checks without the responsibility of home measurement, enable better supervision of both prescribed and nonprescribed medicine use, and alleviate the load of general practitioners. In a subsequent article (193), he reported on two American studies which appeared to support his premise, showing improvement in the patients' knowledge, compliance and control as a result of pharmacist involvement, and the detection of adverse drug reactions and potential interactions with nonprescription medications.

Pharmaceutical companies also appeared to recognize the potential of pharmacists to encourage compliance with medication regimens (194). Manufacturers of blood pressure monitors and pulse rate measuring machines have encouraged their installation in pharmacies (156,195-197), but cautions have been issued regarding use of patient-operated machines (198). For patients electing to monitor their own blood pressure, concern was expressed that professional advice should be given on the correct use of home monitors to ensure accurate readings, and that pharmacy was thus a suitable outlet for sale of such devices (199).

A pilot study of hypertensive screening in seven Sydney pharmacies during three months in 1977 showed a 13% referral for medical assessment, and an increase in use of the service with increasing public awareness of its availability (200,201). Although Robertson concluded that pharmacists would be justified in charging a fee for blood pressure measurement, doubts were expressed about the legal position (202). A later

more comprehensive study of 45 pharmacies by Robertson in 1983 (203) found that the use of automated blood pressure monitoring machines in pharmacies contributed to the detection of undiagnosed hypertensives in the community, and to hypertensive management in conjunction with physicians. Interviews with pharmacy customers by Darby (82) in 1982 found that 43% of respondents supported the provision of heart and blood pressure testing by pharmacists. Ortiz et al (155) reported 11% of pharmacies to be performing blood pressure measurement and 2% to be performing pulse rate measurement in a 1982 survey of pharmacies in NSW and ACT. Sissian (154), in 1987, reported an average of 16% abnormal readings over a period of three years screening in a community pharmacy.

Activity by individual Australian community pharmacists in hypertensive screening and monitoring has been reported (149,153,154,195,197,204-207). The assessment of blood pressure in pharmacies has been encouraged (157), and guidelines for measurement formulated by PSA (208).

#### 2.2.3.4 Oncology

The main role of the community pharmacist with regard to cancer is an educative one. Pharmacists as a group have participated in specific programmes about breast self-examination (209), skin cancer prevention (210), smoking cessation (211-214), and in general education on prevention and early detection of cancer (215-217).

Home test kits for detection of colorectal cancer have been made available to the public through pharmacies (218,219). Such tests could also be performed in the pharmacy (157). Aa American survey quoted by Huston (97) found 17% of



pharmacies to be involved in colorectal cancer screening programmes, and a 1984 Drug Topics survey found that 29% stocked home detection kits (97). No methodological details of either survey were provided. "Medicine Shoppe" pharmacies in the USA expressed their intention of offering oral cancer screening (95).

The importance of the counselling role, not only in respect to medication, has been stressed (220,221) and pharmacists encouraged not to avoid interaction with patients in difficult situations. A pharmacist in California was reported to have employed a psychologist to counsel patients on the many problems presented in the pharmacy which he felt unable to deal with (128). Better communication between patient, pharmacist and oncology team has also been advocated, especially in relation to pain control (222).

Other suggested ways for community pharmacists to help cancer patients have included monitoring toxic effects of chemotherapy, supplying appropriate nonprescription medication or referral advice, supplying narcotics, encouraging compliance, and offering support (223). A possible role for pharmacists in drug monitoring for cancer patients has been noted (128).

Ong (224) outlined a potential role for community pharmacists involving prevention, detection and care aspects:

#### A. Prevention

- (i) Improve the impact of public health education.
- (ii) Encourage practice of avoiding cancer causing agents.
- (iii) Modification of behaviour.

(iv) Participation in cancer screening programmes.

#### B. Detection

(i) Screen for early warning symptoms.

(ii) Encourage regular medical examinations.

#### C. Care

(i) Supply medications and allied products.

(ii) Patient counselling.

(iii) Psychological support.

At least one medical centre pharmacy in the USA has established a practice almost exclusively dealing in cancer chemotherapy, even to the extent of dispensing investigational new drugs (225), and the supply of home health care aids and special nutritional needs to cancer patients (220). While the role of hospital pharmacists has been recognized (226), Australian community pharmacists having special involvement with cancer patients have not been reported.

#### 2.2.3.5 Ophthalmology

Participation by pharmacists in aspects of eye care has been mainly directed towards the care of contact lenses. The increasing popularity of contact lenses has led to increased sales of after-care products through pharmacies. Educational articles have attempted to provide pharmacists with the necessary information to offer advice in this area (227,228). Increased co-operation between optometrists and pharmacists has been advocated, especially in regard to contact lens care (229).

Some pharmacies in the USA, particularly a number of larger pharmacy chains, have expanded their optical departments to include supply of spectacles since 1976 (230).

APhA, in conjunction with the National Society to Prevent Blindness, launched a pharmacy Glaucoma Alert Program in 1980 to help pharmacists train patients to protect their eyes. The programme drew attention to the early warning signs of glaucoma, the leading cause of irreversible blindness, and encouraged biennial testing. Pharmacies were used as sites for screening as well as education (231). A survey quoted by Huston (97) in 1985 showed 5% of pharmacies to be involved in eyesight screening programmes. Also, 8% were involved in hearing testing. No details of the survey were available. A group of small pharmacies, "Medicine Shoppes", were reported as offering both vision and hearing tests, and expressed their intention of offering glaucoma screening (95).

Pharmacists in the United Kingdom were also asked to encourage testing, especially of relatives of known glaucoma sufferers, and to be alert to the possibility of glaucoma when counselling patients with eye complaints (232).

#### 2.2.3.6 Ostomy

Considerable distribution of ostomy aids through pharmacies has been reported in the United States (77,96,233). The market for ostomy products in the USA was estimated in 1982 to be growing at 4-5% annually (234), and to include pouches, skin products, adhesives, barriers, deodorants, and items for irrigation and night drainage. A study quoted in NARD Journal (234) found that successful pharmacies involved in ostomy care committed at least twelve feet of floor space to ostomy products, and stocked a range consisting of at least fifteen lines. However, White (233) warned that the field was not one to be entered lightly, as considerable knowledge and

training would be required in order to provide counselling in ostomy management. In California, some pharmacists received training through companies supplying equipment, and some pharmacies employed qualified enterostomal therapists (96,234). Advice for pharmacists on colostomy management has been offered (235).

The British NPA has encouraged pharmacists' attendance at its courses on stoma care (236).

Although a number of items are available to ostomy patients on the PBS, the major means of supply in Australia is through ostomy support groups (237). The scope for involvement by pharmacists in this field has therefore been limited, although advice for helping these patients has been offered to Australian pharmacists (158,238).

#### **2.2.3.7 Pregnancy Testing**

Conducting of pregnancy tests by pharmacists began in Australia in the early 1970s (239), but not in all States (240). Although such an activity was seen by some as appropriate for pharmacists, it was approached with caution by others (239,241), and caused varied reactions from medical practitioners (241-244) and consumer groups (245). Despite the introduction of home test kits, and later improved home test kits (246), there appears to have been a continued demand for in-pharmacy testing services.

The trend in Australia appeared to follow that of Canada, where most pregnancy testing was also done in pharmacies rather than at home, and not that of the United States and Europe, where pharmacy pregnancy testing was less usual (247). An American survey quoted by Huston (97) in 1985

showed that 95% of pharmacies stocked home pregnancy test kits. No details of the survey were provided. An indication of the acceptability of the service in the United Kingdom may be gauged by the inclusion in a 1970 PSGB Statement upon Matters of Professional Conduct of a clause allowing "a discreet notice relating to Pregnancy Testing Services" to be displayed in any pharmacy (248), and by its specific mention in the Society's 1982 policy statement on Clinical Pharmacy in Community Practice (249). At that time it was estimated that about one third of British pharmacies were offering a pregnancy testing service (188). A national survey of 180 UK pharmacies in 1982 found 61% to be in favour of playing a greater role in conducting pregnancy tests (186).

Provision of pregnancy testing services in Australian pharmacies was recommended in 1982 by a visiting British physician (157) and supported by 26% of consumers interviewed in Sydney (NSW) pharmacies by Darby around that time (82). In 1983, 27% of pharmacies in New South Wales and 13% of pharmacies in Victoria were said to be involved in pregnancy testing on the premises (246), although a 1982 study by Ortiz et al (155) had found the figure to be much higher - 64% of pharmacies in NSW and ACT. In 1984, about half of all in-pharmacy pregnancy testing in Australia was being performed in NSW, 10% in Western Australia and 4% in Queensland, but virtually none in South Australia (250).

A centre for pregnancy testing, established by a pharmacist and a nursing sister, was reported (251) as an offshoot of pharmacy testing services.

## 2.2.4 Services Related to Product Ranges

### 2.2.4.1 Alternative Medicine

The growing scepticism by the public of the infallibility of conventional medicine and concern about the toxicity of modern medications have resulted in an increasing interest in holistic medicine, nutrition, herbalism, acupuncture, and alternative medical services such as homeopathy, osteopathy, naturopathy and chiropracty (252). Wiesner (252) felt that the scientific background of pharmacists should enable them to evaluate the claims being made for unconventional forms of medicine and to provide advice to the public on vitamins, dietary supplements, and orthomolecular nutrition, especially if post-graduate courses were made available to them. Advantages would be apparent in both professional and commercial aspects. However, PSA (253) cautioned that, until clinical trials have demonstrated the efficacy of alternative treatments in man, pharmacists should adopt a "defensible" position, and "not one based purely on financial considerations".

Pharmacists in the USA have also expressed differing opinions as to the appropriate position for pharmacists to take in this regard (254,255). In 1984, Gardner (256) reviewed a number of alternative therapy methods including naturopathy, homeopathy, herbalism and orthomolecular medicine, in an attempt to provide an insight into the legal position of both the practices and the products involved. Definitive conclusions were not able to be drawn.

Reports of individual pharmacists venturing into fields of alternative medicine have included homoepathy

(190,257,258), and suggestions for employing therapists, such as a naturopath (149), within the pharmacy.

#### 2.2.4.2 Dentistry

Community pharmacy was formerly the usual place to buy tooth brushes and tooth paste. Although this distribution was largely transferred to supermarkets, many dental products for prevention of caries and for treatment of sensitivity problems have continued to be sold through pharmacies (259,260). A case has been put forward for increased inter-professional contact between dentists and pharmacists (260-264) in these areas, and for participation by pharmacists in counselling on the importance of fluoride (265) and on the correct use of dental products (260-262,266).

Courses in aspects of dentistry have been offered by various pharmacy colleges in the USA (266,267), and a dental formulary has been prepared by the Memphis Chapter of the National Pharmaceutical Association in order to help practitioners to provide optimal dental care (268). Suggestions have been made for the establishment of an oral hygiene centre in the pharmacy (266).

In the UK, a call for better dental education of pharmacists was sounded as the result of a survey indicating that pharmacists' knowledge of dental health education was weak, and that they were keen to improve it (269).

#### 2.2.4.3 Family Planning

##### UNITED STATES

Surveys of pharmacists in Washington (270) and Pennsylvania (271) in the early 1970s found that pharmacists were rarely asked for contraceptive advice, that spermicidal

preparations were openly displayed for sale, but condoms and diaphragms much less frequently as this had previously been illegal. Nearly one third of the Pennsylvania respondents felt that contraceptives should be restricted to pharmacy sale only. A review by Smith et al (272) noted that the New York State Pharmaceutical Association also approved of this approach, citing the pharmacist's counselling role as the reason. However, such restriction did not occur. Other studies around this time, reported by Smith et al (272), were conducted in Hawaii, Utah and Maryland where there also appeared to be limited use of the pharmacist as a source of information on contraception. Pharmacists in these studies generally appeared to feel that family planning would be an appropriate part of their practice, but that they would require further education for effective involvement. A study of pharmacists in Mississippi in 1978, with a 97% response rate, found that 92% thought involvement in family planning counselling to be appropriate for pharmacists. A need was recognized by 82% for more of these services in their community, but one third felt that they were not adequately prepared to provide such counselling. A willingness to expand their role was expressed by 84%, with 90% willing to participate in continuing education programmes (272).

By the late 1970s, advice on counselling and display of condoms and other contraceptives was being provided to American pharmacists via journals and film (273,274). A potential role was also seen for pharmacists to educate the public about sexually transmitted diseases as well as contraception (275,276). The use of condoms as a preventive



measure had been promoted by Californian pharmacists for some time (272).

#### CANADA

In Canada, from the 1970s, family planning groups and others were active in educating pharmacists as counsellors (277-279) and advising on display of contraceptives, which was legalized in 1969 (279,280). A 1975 study of Canadian pharmacists revealed that 54% were involved in the provision of family planning information to patients, but that 96% would have liked to have been involved (272).

#### UNITED KINGDOM

PSGB wished to encourage the involvement of pharmacists in family planning, and also attempted to encourage the public to regard pharmacies as the logical source of such advice (281). In conjunction with the Family Planning Association (FPA), the Society surveyed pharmacies in 1981 about their role in the provision of family planning information and advice, and their opinions on its future development. The survey, with an 89% response rate, found that over 99% of pharmacies stocked contraceptives, about half of the pharmacists had been asked for advice on contraception in the previous year, and three quarters of the respondents were keen to increase their role in this sphere (282,283). Following a pilot scheme in 1983, aimed at extending the pharmacists' role (284), PSGB and FPA recommended the establishment of a national family planning service through pharmacies (285).

## AUSTRALIA

The introduction of the oral contraceptive appeared to prompt comment in the 1970s on the appropriateness of the pharmacist as a counsellor on the use of other family planning methods as well as the pill. The President of FPA said in 1974 that "pharmacists had a tremendous responsibility to be well informed about contraception and to dispel ignorance on the subject wherever possible" (286). A contraceptive manufacturer, observing that the pharmacy was the logical and most frequent place to obtain contraceptives, prepared a teaching kit about this time to aid pharmacists in accepting a counselling role (287). PSA began to examine the potential for participation by pharmacists, and the professional and ethical aspects in 1976 (288), and by October 1977, the South Australian Branch had established a training course in conjunction with the FPA of South Australia (289). Porter encouraged the education of both pharmacists and assistants to enable them to provide accurate contraceptive information in a non-threatening way (290), and support was expressed for family planning services in pharmacies (60).

A 1983 survey conducted in Western Australia by the Department of Social and Preventive Medicine, University of Western Australia, found that community pharmacists were active in giving family planning advice, and that the range, display and accessibility of contraceptives were good. However, the survey, which attracted an 80% response rate, found deficiencies in several aspects of the pharmacists' knowledge, and 80% of pharmacists said they had gained their knowledge in contraception from sources other than formal

pharmacy or continuing education courses (291).

Experiences in several countries since the early 1970s indicate that, as most contraceptives are obtained from pharmacies, and since the pharmacist is easily accessible to the public, community pharmacy is an appropriate source of family planning advice. The need for adequate education of pharmacists to fulfil this role has been emphasized. The potential for action by pharmacists in educating the public about sexually transmitted diseases is sure to be increased by the current anxiety about A.I.D.S. and publicity about the use of condoms (292,293).

#### **2.2.4.4 Home Health Care Equipment**

A wide variety of equipment has been suggested as suitable for hire and/or sale through pharmacies: walking canes, crutches, walking frames, wheelchairs and appliances, air cushions, commodes, elevated toilet seats, bath seats, bath safety rails, Sitz baths, bedpans, urinals, waterproof sheets, nocturnal enuresis alarms, incontinence pads and liners, catheters, supports such as elastic bandages, elastic hosiery, braces, belts etc., cervical collars, traction kits, heat lamps, mastectomy prostheses, hospital beds and accessories (72,97,294-302).

As the tendency towards home care rather than hospital care has expanded, the need for ready availability of home health care equipment, also referred to as durable medical equipment, has expanded (77). By 1981, an affiliation of independent pharmacies had established a network known as "Sickroom Services", covering 175 cities in 35 states of the USA, which specialized in hire and sales of home health care

equipment (296). Supply of surgical appliances, invalid aids, and sick room requisites was described as a clinical activity in the policy statement of PSGB regarding clinical pharmacy in community practice (249). A 1982 study of Australian pharmacy patrons by Darby (82) found that 19% of interviewees felt that surgical supplies should be available in pharmacies. A survey conducted by American Druggist in 1983 found that 63% of chain pharmacies and 60% of independents had departments primarily devoted to home health care needs (303).

Eigen, president of "Sickroom Services", offered suggestions regarding choice of equipment, establishment of good inter-professional relations to encourage referral, and taking advantage of educational opportunities for pharmacists intending to enter or build up this area of their practices. He stressed that success was dependent on efficiency, expertise and commitment (296). The importance of expertise was well recognized, and a number of pharmacists have taken the initiative to become certified as orthotic fitters (297,304), or have employed orthotic fitters or protheses specialists in their businesses (96). Burroughs (305) described the essentials of a suitable fitting room. Spenlau (306) saw the requirements for running a successful health care practice as a desire to help people, product knowledge, an intelligent approach to business, and carefully chosen and trained staff. Other authors have also proffered advice to practitioners, including the importance of analysing and assessing the needs of the patient, and not relying solely on a prepackaged display of goods from one manufacturer to establish a successful business in this field (297,306-308).

Huston (97) saw space limitations and capital investment commitment as the greatest problems in setting up a home health care needs centre. The necessity to develop selling and publicity skills to assist sales has also been discussed (309,310).

Because many reusable pieces of durable medical equipment may only be needed for short periods, or larger equipment may be too expensive for patients to buy, hire services have been offered in addition to sale of such items (300,306). Requirements for success have been listed as willingness to commit the necessary capital, appropriate physical facilities for its storage and display, adequate product range, marketing knowledge, and trained staff (300). For a well-established department, a guideline of 50% of business from rental has been suggested, with a monthly rental rate of 10% of the list price, or an aim to recoup the wholesale cost after eight months of rental (306).

Individual pharmacies or pharmacists involved in the home health equipment field have been profiled in the United States (297,308,311,312), Canada (313), and Australia (294,314,315). A 1987 survey showed a 30% increase over two years in the number of Western Australian pharmacies hiring health care equipment (302).

Suggestions have been given to Australian pharmacists interested in becoming involved, with emphasis on the importance of displaying goods in a separate department, use of adequate space, effective marketing, and knowledgeable staff (295,301,315-317). Predictions have been expressed that Australian pharmacists may eventually fit convalescent

supplies and health supports, and may charge consultation fees for these health care services (295). Pharmacists have been advised to make preparations for future demand in this area, and the development of separate, pharmacy-owned patient aid outlets has been seen as likely (67). This trend has already occurred in the United States, with stores owned by pharmacy chains and by manufacturing companies (97,303,318).

#### 2.2.4.5 Nutrition

The positive emphasis placed on health as being more than just the absence of disease has contributed to the increasing use of nutritional supplements and so called health foods. To enable pharmacies to compete with health food shops for the sale of these items, pharmacists have been encouraged to seek specialist knowledge to assist customers with their choice of appropriate nutrients through consultation (158,137,319-323). In a 1982 statement on health foods and herbal remedies, the Pharmaceutical Society of New Zealand emphasized that the stocking of a medicine or health-related product in a pharmacy conferred on it special status in the eye of the public, and that pharmacists had an obligation to employ knowledge and judgement in their selection and recommendation of products (322).

As well as the supply of nutritional supplements, pharmacists may be called upon for advice on specialized diets such as diabetic, low sodium, low fat/low cholesterol, low kilojoule, high bulk/high fibre, and prenatal diets (137). Twenty-nine per cent of respondents interviewed in pharmacies in a study by Darby (82) felt that diet supplements and advice should be available in pharmacies.

In the USA, some community pharmacists have extended their interest in nutrition into the of provision of hyperalimentation, or total parenteral nutrition (TPN), and enteral nutrition supplies for home management, and suggestions have been offered for the benefit of those wishing to establish such services (324-327). Graves (325) outlined the pharmacist's responsibilities as preparation, delivery and administration of the TPN solutions, and counselling the patient in catheter care and equipment operation. As a result of this type of involvement, the sales of nutritional products in community pharmacies was quoted to have increased by 20% during 1983 (63). A Drug Topics survey in 1984 found that 4% of pharmacies stocked nutritional feeding systems (97).

Many individual pharmacists have expressed special interest in the various fields of nutrition (58,96,206,258,321,324,327-329). Wallace (206) recommended the use of a computerized system for dietary analysis in pharmacies. Pharmacists in a Sydney business were reported to be considering employing a dietician in the pharmacy (149).

#### **2.2.4.6 Sports Medicine**

Since the early 1980s, companies marketing ranges of sports medicine goods have encouraged the setting-up of specific areas in pharmacies to cater for the therapeutic and prophylactic needs of the ever increasing number of people involved in participatory sports (141,330-334). Suggestions of product categories required for a sports medicine supply centre have included: foot products, hot and cold packs, knee, ankle and elbow elastic supports, bandages, antiseptics, liniments, and vitamins (335).

Evidence of involvement by pharmacists in the field of sports medicine in Australia has largely been limited to discussion of the supply of articles and advice for treatment or prevention of minor sports injuries. No published reports were found of the provision of services such as pre-game strapping for sporting teams, although pharmacists in partnership in a Sydney business were reported to be considering employing an exercise physiologist on the premises (149).

#### 2.2.4.7 Veterinary Medicine

While almost all Australian community pharmacies would be expected to stock some items for veterinary use, the extent of involvement, both in terms of product variety and advice, is likely to vary considerably. No reports of individual specialization by Australian pharmacists in this field have been found. The "Professional Report 1978" (336) reported sales of veterinary medicines to be less than 1% of the total medication sales in pharmacy, and considered this to be considerably below the potential level, even in country areas. An increased involvement in animal health by Australian community pharmacists has been encouraged (158).

Fillingim (337), while discussing the role of specialist pharmacists in veterinary teaching hospitals in the USA, also recognized the potential for community pharmacists to take a greater part in animal care, and encouraged the building of professional relationships with veterinarians. APhA and the American Veterinary Medicine Association developed a Code of Interprofessional Relations in 1966 which recommended rules of conduct consistent with the ethics and



practice of the two professions (338).

In 1980, PSGB established a post-graduate diploma course in veterinary and agricultural pharmacy to assist practitioners in those areas (339). The results of a pilot survey of pet owners in England in 1984 suggested that community pharmacists, because of their ready accessibility and because they could supply anthelmintics and insecticides, could play a role in educating pet owners about control of parasites such as worms and fleas (340).

## **2.2.5 General Clinical Involvement**

### **2.2.5.1 Biological Testing**

Predictions were made in 1973 that the range of biological tests in pharmacies would expand beyond the pregnancy testing then being performed, to include screening for such conditions as kidney and liver ailments, as well as diabetes (242).

A computerized, automated health screening service installed in a Sydney pharmacy was reported in 1983 to have the ability to measure not only blood pressure and blood glucose levels, but also to read routine urine tests using reagent strips, providing measurements of pH, blood protein, ketone, bilirubin nitrite and urobilinogen levels (149). Gibson (66) commented on the use of machines for in-pharmacy testing for glucose, uric acid, cholesterol, bilirubin, haemoglobin, creatinine, blood urea, nitrogen, and triglycerides. Sissian (154), reporting on six months of screening for cholesterol in a Sydney pharmacy, using a capillary testing meter, disclosed that 57% of males and 63%

of females tested had readings higher than the National Heart Foundation acceptable level of 5.5 mmol/l.

It has also been suggested that pharmacists could be authorized to take throat cultures from self-medicating patients to assist in determining need for referral (341).

In addition to in-pharmacy testing, home kits for pregnancy testing, detection of occult blood in the stools, and monitors for measurement of blood pressure and blood glucose have already been mentioned as being available through pharmacies. Gibson (66) noted the likelihood of other in vitro kits appearing on the Australian market to test for ovulation, urinary tract infection, Streptococcal throat, and venereal disease. Reports from the USA have listed the availability of home testing kits for pregnancy; blood and urine glucose levels; colorectal cancer; high blood pressure; gonorrhoea; sodium, calcium and vitamin C levels; urinary tract infections; vision; breast diseases; cellulite; and ovulation (342,343). Pharmacies have been recommended as the best place to market the test kits because of the availability of the pharmacist to make recommendations, explain how to use the tests, and interpret the results (342).

#### **2.2.5.2 Pharmacokinetic Evaluation**

A study by Edwards (344), reported in 1984, looked at the effect of a pharmacy-based pharmacokinetic service in the primary care of epileptic patients and concluded that there was potential for pharmacists to be involved with monitoring of blood levels for chronic therapy and advising on consequent changes to dosage levels. However, it was admitted that such an activity would not be possible in every community

pharmacy. Gibson (66) saw a future for the use of machines in the pharmacy which could provide rapid determination of drug levels for long-term patients such as epileptics (phenobarbitone, phenytoin) and asthmatics (theophylline).

### 2.2.5.3 Office-Based Practice

In pursuit of the goal of satisfying professional practice, some pharmacists have attempted to restrict their businesses to dispensing only, or dispensing combined with sale of health related items only. Early reports of establishment of such practices in Australia appeared in 1971 with the setting up of pharmacies within private medical centres in South Australia (345) and Western Australia (346). The South Australian pharmacy was reported to include a laminar flow unit for the preparation of sterile products (345).

A more recent practice reported in England has preserved the expected appearance of a pharmacy, but has restricted its merchandise to health related products (347). The services offered in the pharmacy were described as dispensing and a general health care service, both with an emphasis on patient counselling. The design of the pharmacy incorporated a private area to be used for surgical fittings, and counselling if needed.

"Office-based" practices have been described in the United States (177,348-351). Office practices attempted to eliminate commercialism by removing all merchandise from display, even though nonprescription drugs and other health related items were available for purchase. The atmosphere was designed to be professional, yet warm and inviting.

The history of the development of this practice alternative has been explored by Catizone and Mrtek (349). Eugene White developed his office practice setting in Virginia in the early 1960s, although he had been advocating the patient-oriented role for some years before (348,349). He described the principle of office practice simply as "a patient and pharmaco-therapy orientated pharmacist practising in a private office setting". The emphasis was on educating patients and monitoring their continuing therapy regimens. Family prescription records were an important basis for success of this service. The other major departure from traditional pharmacy practice advocated by White was the principle of fee for service, similar to the system of charging used by other professions. He also advocated extension of the pharmacist's responsibilities to include prescribing (352). A former associate of White, Carl Emswiler, also established an office practice in Virginia in the early 1970s (353). His premises comprised waiting area, consulting room, private office/library, administrative office, and laboratory. Emil Baker's practice was begun in Kentucky in 1972 and was described by Dolan (177) as consisting of dispensing, including a nursing home contract, and the provision of selected medical services such as high blood pressure screening, hypertension and diabetes monitoring, and parenteral medicine administration by a registered nurse on the premises. Fees were charged for these services. It has been estimated that about 1000 office-practice pharmacies were in existence in the United States by 1984 (349).

A comparative study of patrons expectation for and satisfaction with pharmaceutical services from office practice and traditional pharmacy was conducted in 1980 (350). The mail survey, using a controlled research design, was administered to 25% of households in a small rural city serviced by one pharmacy of each type, with comparable prescription volumes. A useable response of 62% was achieved. The most significant findings were that patrons of the office practice had higher expectation and satisfaction scores than patrons of the traditional pharmacy, and that they also consulted with a pharmacist more frequently about drugs and health matters. The researchers speculated from these findings that pharmacists may be able to create a demand for clinical services by offering them on a consistent long-term basis.

### 2.3 STATEMENT OF THE PROBLEM

The preceding review of the international literature relating to community pharmacy services has shown that marked changes in practice have occurred and are continuing to occur in response to the clinical needs of patients. The development of clinical approaches has been particularly evident over the past two decades in relation to dispensing of prescriptions and to establishment of specialized health-related services for specific patient groups. Much of the information about community pharmacy services, however, has been in the form of isolated anecdotal accounts. Comprehensive surveys of the nature and extent of services do not appear to have been conducted in Australia or overseas.

In an attempt to redress this lack, it was decided to collect information on the nature and extent of services being provided by community pharmacies in Queensland, and to select one area thus identified for further investigation as a case study into development of innovative specialized practice.

#### 2.4 AIMS OF THE RESEARCH

The specific aims of the study were:

##### PART ONE

1. To determine the nature and extent of services being provided through community pharmacies in Queensland.

2. To collect demographic data about pharmacists engaged in community pharmacy practice in Queensland.

3. To collect business characteristic data about community pharmacies in Queensland.

4. To determine the relationships between demographic and business factors and the provision of innovative specialized services.

5. To select an area for in depth investigation of the development of innovative specialized practice.

##### PART TWO

The aims of the study into specialized service provision in Queensland were:

1. To document the services offered to patients by pharmacies involved in the selected area of specialized practice.

2. To document the types of stock held by community pharmacies relevant to the selected area of practice.

3. To estimate the degree of counselling involvement which community pharmacists perceive themselves to have with patients in the selected area of practice.

4. To document the historical development of provision of the selected service from community pharmacies in Queensland.

5. To document the educational background of service providers.

6. To determine the motivation for practitioners to become involved in the field.

7. To classify pharmacies involved in the selected area of specialized practice into levels of service provision.

8. To describe the services provided at each level of specialization.

9. To describe the characteristics of pharmacists and pharmacies at each level of specialization.

#### OVERALL

10. To develop a methodology suitable for application to future studies.

11. To suggest a plan to aid the controlled development of specialized services in community pharmacy practice.

## 2.5 REFERENCES

1. Smith, M.C. and Knapp, D.A. (1981). "Pharmacy Settings and Types of Practice." in "Pharmacy, Drugs and Medical Care", 3rd Ed. Baltimore:Williams and Wilkins, p38-60.
2. Manning, A. (May 1974). "The Development of Pharmacy in Australia. A Victorian Case Study. II: The Division of Labour." Aust.J.Pharm., 55:306,309-310.
3. Nunemaker, J.C. (Nov.1974). "The Specialty Certification Process in Medicine." J.Am.Pharm.Assoc., NS14(11):611-613,616.
4. Coady, J.M. (Nov.1974). "Dental Specialties - Past, Present and Future." J.Am.Pharm.Assoc., NS14(11):614-616.
5. Cumbie, C. (Nov.1974). "Specialization in Nursing or Tic Tac Toe." J.Am.Pharm.Assoc., NS14(11):617,623.
6. Penna, R.P. (Nov.1974). "Specialties in Pharmacy." J.Am.Pharm.Assoc., NS14(11):607.
7. APhA Task Force on Specialties in Pharmacy. (Nov.1974). "APhA Task Force on Specialties in Pharmacy." J.Am.Pharm.Assoc., NS14():618-621.
8. Penna, R.P. (Oct.1979). "Pharmacy Under Siege. Ensuring Our Professionalism." Am.Pharm., NS19(11):604-608.
9. Shaw, S.M. (Jun.1979). "Emergence of the Specialty." Am.Pharm., NS19(6):304-306.
10. Penna, R.P. (Nov.1982). "Pharmacy's First Specialty." Am.Pharm., NS22(11):612-615.
11. Halperin, J.A. (Aug.1981). "Pharmacy: Profession in Transition." Am.Pharm., NS21(8):446-449.
12. Francke, D.E. (Apr.1986). "Specialization in Pharmacy." Drug Intell.Clin.Pharm., 20:275.
13. Walton, C.A. (Apr.1986). "Education and Training of the Drug Information Specialist." Drug Intell.Clin.Pharm., 20:276-277.
14. Gerbino, P.P. (Oct.1980). "Special Recognition for Clinical Pharmacy - As a Collection of Subspecialties." Am.Pharm., NS20(10):558-563.
15. Stimmel, G.L. (Oct.1980). "Special Recognition for Clinical Pharmacy - As a General Specialty." Am.Pharm., NS20(10):558-563.
16. Anderson, L.J. (Oct.1980). "Special Recognition for Clinical Pharmacy - As an Extension of Pharmacy Practice." Am.Pharm., NS20(10):558-563.



17. Committee on Clinical Pharmacy as a Specialty. (Feb.1985). "Definition of Clinical Pharmacy as a Specialty in Clinical Practice." Drug Intell.Clin.Pharm., 19:149-150.
18. Anon. (Jun.1986). "Board of Pharmaceutical Specialties Receives Clinical Pharmacy Petition." Am.Pharm., NS26(6):391-392.
19. Committee on Clinical Pharmacy as a Specialty. (Jul.1986). "Requesting Recognition of Clinical Pharmacy as a Specialty." Am.Pharm., NS26(7):523-532.
20. Schondelmeyer, S.W. and Kirking, D.M. (Apr.1986). "Perspectives on Medical Specialization." Drug Intell.Clin.Pharm., 20:274.
21. Francke, D.E. (Apr.1986). "Specialization Within Hospital Pharmacy." Drug Intell.Clin.Pharm., 20:274-275.
22. Francke, D.E. (Apr.1986). "Levels of Pharmacy Practice." Drug Intell Clin.Pharm., 20:277.
23. Thompson, G.A. (Apr.1986). "Board Certification for Clinical Pharmacy." Drug Intell.Clin.Pharm., 20:277-278.
24. Stimmel, G.L. (Apr.1986). "Clinical Pharmacy and Specialization." Drug Intell.Clin.Pharm., 20:278-279.
25. Walton, C.A. (Apr.1986). "Specialization in Pharmacy Practice: Relevant and Irrelevant Criteria for the Assessment of Clinical Competence." Drug Intell.Clin.Pharm., 20:279-280.
26. Pharmaceutical Society of Great Britain. (Feb.25,1984). "Code of Ethics and Guidance Notes and Appendices." Pharm.J., 232:221-224.
27. Feehan, H.V. (Apr.1977). "High Court Judgement Has Bearing on Pharmacists as Specialists." Aust.J.Pharm., 58:196.
28. Manning, N. and Feehan, V. (Aug.1977). "Reform Practice by Charging for Consultations." Aust.J.Pharm., 5:493-496.
29. Ryan, F. (Jul.1980). "Pharmacist Specialists Appearing." Aust.J.Pharm., 61:421.
30. Ryan, F. (Jun.1981). "Interest Grows in Hospital Radiopharmacy." Aust.J.Pharm., 62:362.
31. Ryan, F. (Mar.1982). "Oncology Pharmacists Recognised." Aust.J.Pharm., 63:116.
32. Anon. (Feb.1983). "Establishing Specialist Pharmacists?" Aust.J.Pharm., 64:84.
33. Society of Hospital Pharmacists of Australia. (Aug.1987). "Specialty Practice Committee Report." S.H.P.A. Newsletter.

34. Anon. (Apr.1982). "Clinical-Type Community Pharmacy Forecast as Evolutionary Change." Aust.J.Pharm., 63:192,255.
35. Matthews, J. (Jan.1986). "Pharmacies to Divide into Three Broad Streams." Aust.J.Pharm., 68:78-79.
36. Stock, B. (Apr.1982). "The Pharmacist's Role in Symptomatic Treatment." Aust.J.Pharm., 63:204,206-209.
37. Anon. (Dec.1985). "Tertiary Education: The B.Pharm. Degree Course." Introspect, 1(27):24.
38. Anon. (Apr.1984). "PSA President Warns of Nutrition Hocus Pocus; Attacks Federal Govt." Aust.J.Pharm., 65:266-267,300.
39. Crothers, P. (Jun.1986). "Editorial: CE Study Asks Interesting Questions." Australian Pharmacist, 5(3):2-3.
40. Stanaszek, W.F. and Baker, D. (Jul.1983). "Drug Monitoring in the Geriatric Patient." Am.Pharm., NS23(7):364-369.
41. Fedder, D.O. (Feb.1984). "Drug Use in the Elderly: Issues of Noncompliance." Drug Intell. Clin.Pharm., 18:158-162.
42. Anon. (Oct.1984). "Survey Finds Elderly Ambivalent About Use of Prescription Drugs." Am.Pharm., NS24(10):644.
43. Dickinson, J. (Feb.1983). "Aging of the U.S. Population is Good News for Pharmacy." Aust.J.Pharm., 64:84-85.
44. Hobman, D. (Sep.24,1983). "Meeting the Needs of Old People." Pharm.J., 231:348-350.
45. Moore, S.R. (Nov.1983). "Cognitive Variants in the Elderly: An Integral Part of Medication Counselling." Drug Intell.Clin.Pharm., 17:840-842.
46. Moore, S.R., Kalu, M. and Yavaprabbas, S. (Dec.1983). "Receipt of Prescription Drug Information by the Elderly." Drug Intell.Clin.Pharm., 17:920-923.
47. Smith, M.C. and Sharpe, T. (Jun.1984). "A Study of Pharmacists' Involvement in Drug Use by the Elderly." Drug Intell.Clin.Pharm., 18:525-529.
48. D'Arcy, P.F. (Sep.22&29,1984). "Drugs and the Elderly: An Aging Problem." Pharm.J., 233:784-786.
49. Lamy, P.P. (May 1985). "New Dimensions and Opportunities." Drug Intell.Clin.Pharm., 19:399-402.
50. Simonson, W. and Pratt, C.C. (Feb.1983). "Pharmacists' Perceptions of Geriatric Pharmacy Practice." Drug Intell.Clin.Pharm., 17:134-138.

51. Ascione, F.J. and Shimp, L.A. (Nov.1984). "The Effectiveness of Four Education Strategies in the Elderly." Drug Intell.Clin.Pharm., 18:926-931.
52. Shimp, L.A., Ascione, F.J., Glazer, H.M. and Atwood, B.F. (Oct.1985). "Potential Medication-Related Problems in the Noninstitutionalized Elderly." Drug Intell.Clin.Pharm., 19:766-772.
53. Lamy, P.P. (Jul./Aug.1982). "For Us, the Time is Now - But What is the Other Fellow Doing?" Drug Intell.Clin.Pharm., 16:605-606.
54. Chermak, G. and Jinks, M. (May 1981). "Counselling the Older Hearing-Impaired Adult." Drug Intell.Clin.Pharm., 15:377-382.
55. Galizia, V.J. and Sause, R.B. (Oct.1982). "Communicating with the Geriatric Patient." Am.Pharm., NS22(10):547-548.
56. Anon. (Nov.26,1983). "Pharmacists Should Help Elderly Patients With Their Drugs." Pharm.J., 231:651.
57. Bradbury, D. (Feb.1980). "How Pharmacists Are Pushing Customers into Supermarkets." Aust.J.Pharm., 61:116-117.
58. George, L. (Nov.1985). "Recent Trends in Community Pharmacy Practice in the United States. Part 1." Australian Pharmacist, 4(4):20-22.
59. Feehan, V., Hookey, N. and Naismith, N. (Sep.1976). "Sessional Practice - A New Professional Outlook." Aust.J.Pharm., 57:546-549.
60. Anon. (Feb.1984). "Vic. Guild Presses for Greater Pharmacy Role." Aust.J.Pharm., 65:134.
61. Pharmaceutical Society of Australia (Queensland Branch). (Mar.1984). "Pharmaceutical Services to Private Hospitals and Nursing Homes." Introspect, 1(21):6-9.
62. Parker, W.A. (Oct.1985). "The Canadian Experience in Patient Self-Care - Extending the Role of the Pharmacist in Community Medicine." Aust.J.Pharm., 66:816-817.
63. Zage, G.J. (Feb.1985). "An Overview of Home Health Services." Illinois Pharmacist, 47:13-15,21.
64. Fedder, D.O. and Lamy, P.P. (Dec.1983). "Are we missing the Boat? The elderly, the Pharmacist, and Home Health Care." Am.Pharm., NS23(12):633-634.
65. Anon. (Feb.1984). "Need for Pharmacist Management of Elderly Patients." Aust.J.Pharm., 65:142.

66. Gibson, J.L. (Aug.1986). "A Report on a Study Tour Investigating the Status of Primary Health Care in Community Pharmacy in the United States." Kodak Fellowship for the Advancement of Pharmacy.
67. Anon. (Nov.1986). "Aging of Population Means Growth in Demand." Aust.J.Pharm., 67:1011.
68. Elliott, R.A. (Jun.1984). "A Role for the Pharmacist in Domiciliary Care." Introspect, 1(22):5-9.
69. Sunderland, V.B. and Jones, A.N. (Apr.1986). "Home Health Care Patients: Is There a Role For Community Pharmacists?" Australian Pharmacist, 5(2):25-27.
70. Anon. (Mar.30,1985). "Should Community Pharmacists be Involved in New Home Treatments?" Pharm.J., 234:419.
71. Darling, B. (Aug.1986). "The Future of Pharmacy Practice. Part 1." Australian Pharmacist, 5(4):23-25.
72. Wertheimer, A.I. (Oct.-Dec.1982). "The Pharmacist and Home Health Care." Am.J.Pharm., 154:128-133.
73. Gerson, C.K. (Oct.1978). "The Team Approach to Home Health Care." Am.Pharm., NS18(11):621-625.
74. Gerson, C.K. (Oct.1979). "How Practitioners Perform in the Field." Am.Pharm., NS19(11):612-613.
75. Gerson, C.K. (Aug.1980). "Pharmaceutical Service in Home Health Care." Am.Pharm., NS20(8):474-475.
76. Katzoff, J. (Aug.1980). "A Pharmacist in a Home Health Agency." Am.Pharm., NS20(8):476-478.
77. Anon. (Jul.1982). "Demand for Home Health Care Products, Services Heats Up." Am.Druggist, p72,74.
78. Academy of Pharmacy Practice. (Oct.1979). "Statement on Pharmaceutical Service in Home Health Care." Am.Pharm., NS19(11):610-611.
79. Munzenberger, P.J. (Oct.1976). "The Pharmacist as a Consultant to Children With Chronic Diseases." J.Am.Pharm.Assoc., NS16(10):560-561.
80. Syme, J. (Oct.9,1982). "Preventive Paediatrics." Pharm.J., 229:424-426.
81. Spencer, R. and Buchanan, N. (Mar.1985). "Pharmacists and Paediatric Health Education." Aust.J.Pharm., 66:212,214.
82. Darby, D.N. (Dec.1982). "Community Pharmacy Consumer Perceptions." Aust.J.Pharm., 63:810-820.

83. Sample, R. (May 1986). "Starting a Paediatric Pharmacy Practice." Am.Pharm., NS26(5):364-368.
84. Murphy, D. (Oct.1984). "Visibility for Your Pharmacy. How to Stand Out in a Crowd." Am.Pharm., NS24(10):674-681.
85. Anon. (Feb.1980). "Pharmacy-Developed Anti-Asthma, Anti-Allergy Program Marketed." Aust.J.Pharm., 61:103,115.
86. Anon. (Oct.1983). "Pharmacists Specialise in Helping Allergy Sufferers." Aust.J.Pharm., 64:746.
87. Anon. (Jun.1983). "200 Pharmacists Take Part in Pilot Nebuliser Program." Aust.J.Pharm., 64:423.
88. Anon. (Nov.1984). "Allersearch Seeks Big Expansion of Aids Programme in Pharmacy." Aust.J.Pharm., 65:840-841.
89. Darr, M.S., Self, T.H., Ryan, M.R., Vanderbush, R.E. and Boswell, R.L. (May 1981). "Content and Retention Evaluation of an Audiovisual Patient Education Program on Bronchodilators." Am.J.Hosp.Pharm., 38:672-675.
90. Roberts, R.J., Robinson, J.D., Doering, P.L., Dallman, J.J. and Steeves, R.A. (Jan.1982). "A Comparison of Various Types of Patient Instruction in the Proper Administration of Metered Inhalers." Drug Intell.Clin.Pharm., 16:53-55,59.
91. Self, T.H., Brooks, J.B., Lieberman, P. and Ryan, M.R. (Jan.15, 1983). "The Value of Demonstration and Role of the Pharmacist in Teaching the Correct Use of Pressurised Bronchodilators." Can.Med.Assoc.J., 128:129-131.
92. Watman, G.P. and Harris, N.D. (Nov.1,1986). "The Influence of Pharmacist Counselling on the Management of Asthma Patients in the Community." Pharm.J., 237:560,563.
93. Anon. (Sep.1986). "Peak Flow Monitors - Help for Asthmatics." Pharmacy Trade, p10.
94. Anon. (Jun.1986). "Asthma Newspaper Received Well." Aust.J.Pharm., 67:590.
95. Swartz, P. (May 1977). "Medicine Shoppe: Forging a Chain Out of 180 Little Apothecaries." Am.Druggist, 175:56,59-60.
96. George, L. (Apr.1986). "Recent Trends in Community Pharmacy Practice in the United States. Part 3." Australian Pharmacist, 5(2):23-24.
97. Huston, P. (Jul.1985). "The Pharmacist: Key Player in the Home Health Market." Medical Marketing & Media, pp11-12,14-16,18,20-21.
98. Anon. (May 1985). "Tasmanian Pharmacist Specialises in Allergy Control." Australian Pharmacist, 4(2):6.

99. Anon. (Sep.1985). "Glaxo Launches Newspaper in Pharmacy for Asthma Patients." Aust.J.Pharm.:660-661.
100. Anon. (Sep.1969). "How You Can Play the Key Role in Diabetes Detection." Pharmacy Times, 35:38-41.
101. Stone, M.D. (Jun.1970). "Why Wait? - The Role of the Community Pharmacist in Diabetes Detection Programs." Wisconsin Pharmacist, 39:223-227.
102. Solomon, A.C., Hoag, S.G. and Kloesel, W.A. (Mar.1977). "A Community Pharmacist-Sponsored Diabetes Detection Program." J.Am.Pharm.Assoc., NS17(3):161-163.
103. Anon. (Oct.1971). "How Pharmacists Help Their Diabetic Patients." Pharmacy Times, 37:62-66.
104. Martin, F. (Mar.3,1980). "The Diabetes Patient - A Better Tomorrow." Drug Topics, 124:41-44,66.
105. Zelnio, R.N., Cisneros, R.M. and Owen, J.W. (Summer 1980). "Pharmacy Services for Diabetic Patients in South Carolina: A Survey of Physician and Patient Attitudes." Contemp.Pharm.Pract., 3(3):141-146.
106. Chi, J. (Nov.20,1981). "Are You Taking the Diabetic for Granted?" Drug Topics, 125:36-41.
107. Oed, M.L. and Beardsley, R.S. (Jun.1984). "Pharmacy and Diabetes, The Challenge - The Opportunity." Maryland Pharmacist, 60:18-21.
108. Campbell, R.K. (Dec.1984). "Treating Diabetes: In the 1980s and Beyond." Am.Pharm., NS24(12):52-55,57-60,62,65.
109. Anon. (Oct.30,1972). "How to Set Up a Diabetic Needs Center." American Druggist, 166:43,45.
110. Campbell, R.K. (Jul.1979). "The Pharmacist's Role in the Treatment of Diabetes." Am.Pharm., NS19(8):36-43.
111. Campbell, R.K. (Feb.1982). "How You Can Make Your Pharmacy an Education and Care Center for Diabetics." Pharmacy Times, 48:23-25.
112. Davis, R.E. (Dec.1984). "Setting Up a Diabetic Patient Education Program." Am.Pharm., NS24(12):61.
113. Garrelts, L. (Dec.1984). "Helping the Diabetic With a Full Service Pharmacy." Am.Pharm., NS24(12):63.
114. Yarborough, M. and Campbell, R.K. (Mar.1986). "Pharmaceutical Services for Patients with Diabetes. Module 2: Developing a Diabetes Program for Your Pharmacy." Am.Pharm., NS26(3):Supplement.

115. Babcock, P.A. and Colaizzi, J.L. (Dec.1979). "Discussing Diabetes: A Review of Today's Therapy. The Pharmacist's Role in Counselling Diabetic Patients." NARD Journal, 101:65-70.
116. Wrobleski, J.J. (Oct17,1983). "Diabetics Enter the Age of Self-Management." Drug Topics, 127:44,46-48.
117. Zelnio, R.N., Cisneros, R.M. and Owen, J.W. (Apr.1981). "Diabetic Urine Testing in South Carolina." Drug Intell.Clin.Pharm., 15:292-294.
118. Leichter, S. (Nov.1984). "The Team Approach to Diabetes Care." NARD Journal, 106:57-58.
119. Campbell, R.K. (Jan.1981). Special Devices and Equipment for the Visually Impaired Diabetic." Am.Pharm., NS21(1):30-35.
120. Ramsay, R. (Jul.1984). "Helping Diabetics Select Correct O.T.C. Medications." American Druggist, 190:114-115.
121. Campbell, R.K. (Jan.1986). "Pharmaceutical Services for Patients with Diabetes. Module 1: Professional and Economic Impact of Diabetes on Pharmacy Practice." Am.Pharm., NS26(1):Supplement.
122. Koda-Kimble, M.A. (Apr.1986). "Pharmaceutical Services for Patients with Diabetes. Module 3: Current Concepts in Diabetes Therapy." Am.Pharm., NS26(4):Supplement.
123. Campbell, R.K. (May 1986). "Pharmaceutical Services for Patients with Diabetes. Module 4: Understanding, Monitoring, and Preventing Long-Term Complications of Diabetes." Am.Pharm., NS26(5):Supplement.
124. APhA. "The Diabetic Patient Drug Monitoring Checklist."
125. APhA. "Measuring Up: Counselling the Diabetic Patient. A Self-Assessment Program for Pharmacists."
126. Torre, M.S. and Sause, R.B. (Oct.1982). "Counselling the Diabetic Patient." Am.Pharm., NS22(10):45-46.
127. Dolan, M. (May 1978). "Emil Baker Emphasizes Services Instead of Salesmanship." Am.Pharm., NS18(5):22-26,41.
128. George, L. (Feb.1986). "Recent Trends in Community Pharmacy Practice in the United States. Part 2." Australian Pharmacist, 5(1):27-28.
129. Anon. (Aug.1986). "Pharmacists Welcome Expanded Role in Patient Care, Survey Shows." Am.Pharm., NS26(8):552.
130. Birken, B. (1984). "The Community Pharmacist and the Diabetic." On Contin.Pract., 11(3):23-27.

131. Cantrill, J. (May 24, 1986). "Advice Pharmacists Can Give to Diabetic Patients." Pharm.J., 236:668-669.
132. Cantrill, J.A. and Wright, C. (Oct.5, 1985). "Community Pharmacists and the Health Education of Diabetic Patients." Pharm.J., 235:449.
133. Stephens, W.P. (May 24, 1986). "Nutritional Advice for Patients with Diabetes Mellitus." Pharm.J., 236:670.
134. Ward, J.D. (May 24, 1986). "Eye Screening and Diabetes." Pharm.J., 236:673.
135. Foy, J.M. (Apr.19, 1986). "Would Blood Glucose Monitoring in Diabetes Give a Better Q.A.L.Y.?" Pharm.J., 236:491-492.
136. Anon. (Aug.2, 1986). "M.P.s Call for Blood Glucose Strips." Pharm.J., 237:130.
137. Miller, E.R. (Dec.1981). "Patient Accountability - The Role of the Pharmacist in Diabetes and Hypertension Screening and Monitoring Programmes and Nutrition Information Services." S.Afr.Pharm.J., 48:578-579.
138. Thomas, J. (Jul.1977). "A Possible Role for Pharmacists in the Management of Diabetic Patients." Aust.J.Pharm., 58:401-402.
139. Decker, N. and Blizzard, J. (Jun.1980). "U-100 Insulin and the Retail Pharmacist." Aust.J.Pharm., 61:368,370.
140. Anon. (Jul.1980). "Retail Pharmacists' Role in Diabetes Health Team." Aust.J.Pharm., 61:427,463.
141. Anon. (Mar.1983). "Problems for Diabetics if Big Reductions in Pharmacy Numbers." Aust.J.Pharm., 64:160-161.
142. Anon. (Aug.1983). "Ames Sells Visidex Through Pharmacy." Aust.J.Pharm., 64:536.
143. Anon. (Dec.1984). "Major New Diabetic Self Care Centre Scheme for Pharmacy." Aust.J.Pharm., 65:948.
144. Anon. (Jun.1985). "Pharmacies Support Ames Diabetic Self-Care Centre In-Store Scheme." Aust.J.Pharm., 66:406-407.
145. Miles Laboratories Australia Pty.Ltd., Ames Division. (Jul.1985). "Procedure Manual for Ames Diabetes Self Care Centres."
146. Anon. (Jun.1986). "Ames Advertising Subsidy for Diabetes Centres." Aust.J.Pharm., 67:596-597.
147. Anon. (Nov.1983). "In-Pharmacy Diabetes Program." Aust.J.Pharm., 64:811.



148. Anon. (Jun.1985). "Awareness of Diabetes Increasing." Aust.J.Pharm., 66:412.
149. Anon. (Mar.1983). "N.S.W. Pharmacy Offers Health Screening." Aust.J.Pharm., 64:170.
150. Anon. (Aug.1983). "Melbourne Pharmacist Caters for Diabetics." Aust.J.Pharm., 64:534.
151. Anon. (Aug.1983). "Pharmacist Involvement is Urged." Aust.J.Pharm., 64:536.
152. Anon. (Jun.1984). "Diabetes Area Ideally Suits Pharmacists." Aust.J.Pharm., 65:452.
153. Anon. (Jun.1985). "Sydney Pharmacy Became Local Diabetic Centre." Aust.J.Pharm., 66:407.
154. Sissian, T. (Aug.1987). "Letter: Public Screening in Pharmacy." Aust.J.Pharm., 68:529.
155. Ortiz, M., Thomas, R. Walker, W-L. and Beed, T.W. (Jun.1984). "Patient Counselling by Community Pharmacists: Findings of a Pharmacy Practice Foundation Survey. (Part 1)." Aust.J.Pharm., 65:498-503.
156. Anon. (Jun.1983). "Amfac Blood Pressure Monitors in Pharmacies." Aust.J.Pharm., 64:427.
157. Fry, J. (Jan.1982). "What Roles for the New Community Pharmacists?" Aust.J.Pharm., 63:45-46.
158. Anon. (Oct.1983). "Pharmacists Should be Promoters of Good Health - Vic. President." Aust.J.Pharm., 64:733-734.
159. Griffenhagen, G.B. (Apr.1974). "Let's Diffuse This Time Bomb." J.Am.Pharm.Assoc., NS14(4):171.
160. Stokes, J.B. (Apr.1974). "The National High Blood Pressure Education Programme." J.Am.Pharm.Assoc., NS14(4):172-176.
161. Thwaites, J.K. (Apr.1974). "The Community Pharmacist as a Community Resource." J.Am.Pharm.Assoc., NS14(4):177,185.
162. Williams, R.L. (Apr.1974). "How to Participate in National High Blood Pressure Month." J.Am.Pharm.Assoc., NS14(4):179-180,185.
163. Mattei, T.J., Balmer, J.A. and Duffy, M.G. (Apr.1974). "A Hypertensive Patient Needs "?"." J.Am.Pharm.Assoc., NS14(4):186-189.
164. McKenney, J.M. (Apr.1974). "Pharmacy Management of Hypertensive Patients." J.Am.Pharm.Assoc., NS14(4):190-195.

165. Hammel, M.I. and Kabat, H.F. (Apr.1974). "Blood Pressure Screening in the Community Pharmacy." J.Am.Pharm.Assoc., NS14(4):196-197.
166. Williams, R.L. (Apr.1974). "Should the Pharmacist Take the Patient's Blood Pressure?" J.Am.Pharm.Assoc., NS14(4):202-203,220.
167. Anon. (Apr.1975). "Recommendations of the National Pharmacy Symposium on High Blood Pressure." J.Am.Pharm.Assoc., NS15(4):176-180.
168. Anon. (Apr.1977). "National High Blood Pressure Month: Focus on the Uncontrolled Hypertensive." J.Am.Pharm.Assoc., NS17(4):240-241.
169. Eastman, M. and Flavin T. (May 1978). "High Blood Pressure Testing Should Start at Age Three." Am.Pharm., NS18(5):27-31.
170. Williams,R.L. (May 1978). "Needed: Pharmacists in High Blood Pressure Control." Am.Pharm., NS18(5):32-33,40.
171. Williams, R.L. (Feb.1980). "Keeping High Blood Pressure on the Run." Am.Pharm., NS20(2):26-27,30-31,33.
172. Grace, M. (Apr.1978). "How to Evaluate the Actual Effectiveness of Hypertension Screening." Pharmacy Times, 44:84-90.
173. McKenney, J.M., Jennings, W.B. and White, E.V. (Apr.1976). "Blood Pressure Screening in a Community Pharmacy." J.Am.Pharm.Assoc., NS16(4):187-193.
174. Zelnio, R.N. and Gagnon, J.P. (May 1976). "Consumer Attitudes on Hypertension Screening by Pharmacists." Drug Intell.Clin.Pharm., 10:283-287.
175. McKenney, J.M., Brown, E.D., Neccary, R. and Reavis, H.L. (Fall,1978). "Effect of Pharmacist Drug Monitoring and Patient Education on Hypertensive Patients." Contemp.Pharm.Pract., 1(2):50-56.
176. Baker, E.W. (Mar.1978). "How We Screen and Monitor Hypertension Patients in Our Community Pharmacy." Pharmacy Times, 44:50-58.
177. Dolan, M. (May 1978). "Emil Baker Emphasizes Services Instead of Salesmanship." Am.Pharm., NS18(5):22-26,41.
178. Gorman, T. (May 9,1978). "Beyond Awareness to Control." Drug Topics, 122:60-61.
179. Fink, J.L. and Downs, G.E. (Fall,1978). "Liability Aspects of Hypertension Screening and Blood Pressure Monitoring." Contemp.Pharm.Pract., 1(2):43-46.

180. Ward, G. (May 1977). "How the Pharmacist Can Help in Long-Term Maintenance of Antihypertensive Therapy." J.Am.Pharm.Assoc., NS17(5):301-302.
181. MacCosbe, P.E. (Oct.1979). "The Pharmacist's Role in Counselling Patients with Hypertension." NARD J., 101(10):49-55.
182. Smith, M. (Mar.1985). "Home Blood Pressure Monitoring." Am.Pharm., NS25(3):46-48.
183. APhA. "Detecting and Controlling Hypertension."
184. Edwards, C. (Nov.1981). "Blood Pressure Measurement by Pharmacists." J.R.Coll.Gen.Pract., 31:674-676.
185. Panton, R.S. (Nov.20,1982). "Is There a Role for the Community Pharmacist?" Pharm.J., 229:582-585.
186. Anon. (Mar.19,1983). "More People Seek Pharmacists Advice - Survey." Pharm.J., 230:315.
187. Teeling Smith, G. (Feb.6,1982). "The Next 30 Years: A Golden Age for Pharmacy." Pharm.J., 228:149-153.
188. Sharpe, D. (May 1981). "Pharmacy is the Place for Blood Pressure, Pregnancy Testing Services." N.Z.Pharmacy, 1(3):46-47.
189. PSGB. (Jul.19,1986). "Guidelines on Blood Pressure Measurement in the Pharmacy." Pharm.J., 237:71-72.
190. Anon. (Jun.29,1985). "Frontline Pharmacy in the Heart of England." Pharm.J., 234:837.
191. Shaw, J.P. and Trevean, M.A. (1983). "A Survey of Pharmaceutical Activities and Staffing in Community Pharmacy." N.Z.Pharmacy, 3:55-57.
192. Thomas, J. (Jan 1976). "Possible Developments in Pharmacy Practice Monitoring Chronic Illness." Aust.J.Pharm., 57:27.
193. Thomas, J. (Jun.1976). "Evaluation of the Use of Pharmacists in the Treatment of Patients With Essential Hypertension." Aust.J.Pharm., 57:329-332.
194. Anon. (Jul.1976). "M.S.D. Program Seeks Co-operation Between Pharmacists and Doctors." Aust.J.Pharm., 57:391-392.
195. Anon. (Nov.1979). "Blood Pressure Machine Saved Customer's Life." Aust.J.Pharm., 60:828.
196. Anon. (May 1982). "Coin-operated Pulse Taker." Aust.J.Pharm., 63:269.
197. Anon. (Jun.1984). "Advanced Blood Pressure Testing." Aust.J.Pharm., 65:488.

198. Anon. (Aug.1979). "P.S.A. Urges Caution on Blood Pressure Testing." Aust.J.Pharm., 60:570.
199. Anon. (Jan.1980). "W.A.Pharmacy Concern at Open Sale of Blood Pressure Kits." Aust.J.Pharm., 61:48.
200. Anon. (Dec.1977). "Results of N.S.W. Pilot Study on Pharmacy Blood Pressure Tests." Aust.J.Pharm., 58:748.
201. Robertson, J. (Sep.1978). "Blood Pressure Testing by Community Pharmacists: A Pilot Study." Aust.J.Pharm., 59:621,623-624.
202. Anon. (Oct.1978). "Blood Pressure Testing Probably Illegal." Aust.J.Pharm., 59:654.
203. Anon. (Feb.1984) "Blood Pressure Monitoring by Pharmacists." Australian Pharmacist, 3(1):4.
204. Trevena, C.R. (Nov.1976). "Big Response to Article on Professional Practice Role for Retail Pharmacy." Aust.J.Pharm., 57:687-689.
205. Anon. (Jul.1978). "Charge for Counselling Advocated." Aust.J.Pharm., 59:442.
206. Wallace, B. (Feb.1982). "The New Professionalism: How Pharmacists Can Restore Their Image and Their Profits." Aust.J.Pharm., 63:107-110.
207. Anon. (Nov.1984). "Free Screening for High Blood Pressure in S.A." Aust.J.Pharm., 65:891.
208. PSA. (Feb.1985). "Guidelines on Blood Pressure Measurement in Pharmacies." Australian Pharmacist, 4(1):8,10.
209. Anon. (Oct.1982). "Pharmacists in Breast Cancer Program." Aust.J.Pharm., 63:662.
210. Anon. (Oct.1984). "Guild Members Join 1984 Hat Promotion." Cancer News.
211. Sneader, W. (Jan.23,1982). "Stop-Smoking Campaign in West of Scotland Pharmacies." Pharm.J., 228:105.
212. Anon. (Nov.20,1982). Pharm.J., 229:582.
213. Wilson, E.E. and Tweed, W.A. (Apr.1984). "Pharmacists' Role in Smoking Cessation." Can.Pharm.J., 117:156-157,162.
214. Panton, R.S. (Jun.9,1984). "Can the Pharmacist Help the Smoker?" Pharm.J., 232:698-700.
215. Thynne, G. (Feb.1983). "The Role of the Pharmacist in Cancer Prevention." PSA (Qld.Branch), Continuing Education Lecture (Unpublished).

216. Anon. (Aug.1984). "Qld. Pharmacy Seminar on Cancer Treatment." Aust.J.Pharm., 65:654.
217. Anon. (Oct.1984). "Pharmacists Meet." Cancer News.
218. Anon. (Aug.1983). "Canscreen Doubts." Australian Pharmacist, 2(3):9.
219. Anon. (Feb.1984). "Canscreen and Pharmacists." Australian Pharmacist, 3(1):3.
220. Small, W.E. (Apr.1980). "Community Pharmacist Specializes in Cancer Chemotherapy." Am.Pharm., NS20(4):213-216.
221. Du Vall, E. and Lash, S.D. (Sep.1984). "Counselling the Oncology Patient." Drug Intell.Clin.Pharm., 18:743-744.
222. Anon. (Jun.1986). "Pharmacist Role in Cancer Pain." Aust.J.Pharm., 67:600.
223. White, J.P. (May 21,1984). "Pharmacists Expand Role in Cancer Chemotherapy." Drug Topics, 128:40-42,44.
224. Ong, M.M.K. (Jun.1983). "The Role of Community Pharmacists in Cancer Control." Project Report, M.Pharm.Stud. (Unpublished).
225. Small, W.E. (Apr.1980). "An Unusual Service - Dispensing I.N.D. Drugs." Am.Pharm., NS20(4):217.
226. Ryan, F. (Mar.1982). "Oncology Pharmacists Recognised." Aust.J.Pharm., 63:116.
227. Zuccaro, V.S. (Mar.1981). "Contact Lenses: Pharmacists Have an Educational Role." Aust.J.Pharm., 62:149-151.
228. PSA. (1978). "The Pharmacist and Contact Lenses." in "Continuing Education by Correspondence", Vol.1.No.6.
229. Anon. (May 1984). "Optometrist, Pharmacist Co-operation is Urged." Aust.J.Pharm., 65:358.
230. Hawkins, J.D. (Jul.1984). "Eye on Optical Departments in Drug Stores Today." Am.Druggist, 190:68,70.
231. Emigh, J.F. (Nov.1980). "Pharmacy's Glaucoma Alert." Am.Pharm., NS20(11):651-652.
232. Anon. (Apr.20,1985). "Glaucoma - How Pharmacists Might Help Prevent Blindness." Pharm.J., 234:507.
233. White, J.P. (Feb.21,1983). "Ostomy Counselling: Look Before You Leap." Drug Topics, 127:37-41.
234. Anon. (Jul.1982). "Ostomy Products: Independents Can Make a Real Impact Here." NARD Journal, 104:24,26.

235. Yahle, M-E. (Jul.1982). "Managing the Abdominal Colostomy." NARD Journal, 104:26-29.
236. Anon. (Jul.21,1984). "Pharmacy a Greatly Under-Utilised Resource - NPA." Pharm.J., 233:70-73.
237. Anon. (Nov.1986). "Ostomy Appliances Recommendation." Aust.J.Pharm., 67:1014.
238. Lewis, E. (Aug.1986). "The Stoma Patient." Australian Pharmacist, 5(4):26.
239. Hellier, C. (Sep.1972). "Pregnancy Tests Start in N.S.W." Aust.J.Pharm., 53:632,684.
240. Anon. (Jul.1974). "No Pregnancy Tests For Tasmania." Aust.J.Pharm., 55:441.
241. Anon. (Nov.1973). "To Test - Or Not to Test?" Aust.J.Pharm., 54:816,862.
242. Hellier, C. (Feb.1973). "Biological Testing: Pharmacy's Next Role?" Aust.J.Pharm., 54:69.
243. Anon. (May 1974). "Pregnancy Tests Under Fire." Aust.J.Pharm., 55:270.
244. Anon. (Jul.1974). "Doctor Praises Pregnancy Tests in Pharmacies." Aust.J.Pharm., 55:440.
245. Anon. (Feb.1975). "Pregnancy Testing Again." Aust.J.Pharm., 56:81.
246. Anon. (Jun.1983). "Two New Products for Pregnancy Test Market." Aust.J.Pharm., 64:426.
247. Anon. (May 1982). "Many Failed Products in Pregnancy Test Market." Aust.J.Pharm., 63:308.
248. PSGB. (May 1970). "Statement upon Matters of Professional Conduct." Guidance Statement.
249. PSGB. (Sep.4,1982). "Clinical Pharmacy in Community Practice." Pharm.J., 229:228-229.
250. Anon. (Jun.1984). "Pharmacists Show Preference for Own Pregnancy Tests." Aust.J.Pharm., 65:488.
251. Anon. (Apr.1977). "Pharmacist, Nurse Open Pregnancy Test Centre." Aust.J.Pharm., 58:206.
252. Wiesner, D.M. (Oct.1982). "Alternative Medicine: A Role For Pharmacy?" Aust.J.Pharm., 63:678-679.
253. Anon. (May 1982). "Pharmacy and Alternative Remedies: A Real Dilemma." Australian Pharmacist, 1(3):2.

254. Yasgur, J. (Dec.1984). "On Homeopathy: A Modern-Day Perspective." Am.Pharm., NS24(12):780-783.
255. Boyd, J.R. (Apr.1985). "On Homeopathy: Another Modern-Day Perspective." Am.Pharm., NS25(4):213.
256. Gardner, A.L. (Jan.1984). "Alternative Therapy: A Review." Aust.J.Pharm., 65:58-60,62-63.
257. Anon. (May 1983). "S.A. Pharmacist Diversifies Into Homeopathy." Aust.J.Pharm., 64:362.
258. Anon. (1983). "14 Years in Health Foods." N.Z.Pharmacy, 3(4):24.
259. Anon. (May 1976). "Dentistry - Pharmacy Link Boosts New Market." Aust.J.Pharm., 57:278-279.
260. Anon. (Oct.1977). "More Co-operation Urged Between Pharmacists, Dentists." Aust.J.Pharm., 58:586.
261. Thomas, J. (Oct.1976). "Preventive Dentistry and the Pharmacist." Aust.J.Pharm., 57:596-597.
262. Anon. (Jun.1979). "Pharmacists Can Counsel on Preventive Dentistry." Aust.J.Pharm., 60:376.
263. Penna, R.P. (Apr.1983). "Sticking Together For Professional Survival." Am.Pharm., NS23(4):184-185.
264. Lee, M.B. (Apr.1983). "Do Pharmacists Practice Dentistry?" Am.Pharm., NS23(4):186.
265. Vivian, A.S., Vivian, J.C. and Margolis, F.J. (Aug.1981). "Fluorides - And the Pharmacist's Role in the Prevention of Dental Caries." Am.Pharm., NS21(8):465-469.
266. McGregor, T. (Apr.1983). "A Pharmacy Oral Hygeine Centre." Am.Pharm., NS23(4):187,190-191.
267. Yanchick, V.A. and Olds, G.E. (Feb.1978). "Preventive Dentistry Forms Part of Elective O.T.C. Course at Pharmacy College." Pharmacy Times, 44:48-51.
268. Champion, C.A. and Glenn, H. (Jul.1979). "Our Dental Formulary is Increasing the Interest of Dentists in Rxs and O.T.C.s." Pharmacy Times, 45:30-33.
269. Green, P.E. and Griffiths, C.S. (Sep.8,1984). "Pharmacists and Dental Advice." Pharm.J., 223:265-266.
270. Wagner, N.N., Millard, P.R. and Pion, R.J. (May 1970). "The Role of the Pharmacist in Family Planning." J.Am.Pharm.Assoc., NS10(5):258-260.

271. Chez, R.A. (Sep.1972). "The Role of the Pharmacist in Family Planning. A Pennsylvania Survey." J.Am.Pharm.Assoc., NS12(9):464-466.
272. Smith, M.C., Wetherbee, H. and Sharpe, T.R. (Sep.-Oct.1978). "The Pharmacist and Family Planning: Review and Report of a Study." Am.J.Pharm., 150:152-159.
273. Small, W.E. (Ed). (Jul.1979). "Conception Control - A Growing Awareness." Am.Pharm., NS19(8):422-423.
274. Smith, M.C. and McDaniel, P.A. (Jul.1979). "The Contraception Consultant." Am.Pharm., NS19(8):431-432.
275. Mirsky, H. (Aug.1980). "Pharmacists and V.D. Control." Am.Pharm., NS20(8):460-462.
276. Breen, K.F. (Nov.21,1980). "Pharmacists on the Front Line in Expanding S.T.D. War." Drug Topics, 124:50-52,54.
277. Lommel, J. and Young, C. (May 1975). "The Pharmacist's Role in Family Planning." Can.Pharm.J., 108:165-167.
278. Biggs, D.F., Delanger, P. and Krewski, B. (1976). "Counselling Techniques in Family Planning." Can.Pharm.J., 109:341-344.
279. Fagan, S.C. and Chandler, R.F. (Aug.1980). "The Family Planning Challenge." Can.Pharm.J., 113:276-279.
280. Dranchuk, W.P. (May 1975). "How to Set Up an Effective Contraceptives Display." Can.Pharm.J., 108:168-169.
281. Anon. (Dec.13,1980). "Pharmacist's Role Due For Expansion?" Chem.Drug., 214:938-940.
282. Howarth, H. (Sep.18,1982). "Advancing the Image of Pharmacy." Pharm.J., 229:282-284.
283. Anon. (Jan.22,1983). "Family Planning and the Pharmacist." Pharm.J., 230:75.
284. Anon. (Oct.9,1982). "Pilot Scheme for Extending Pharmacists' Advisory Role." Pharm.J., 229:409.
285. Anon. (Apr.27,1985). "National Pharmacy Family Planning Information Service Proposed." Pharm.J., 234:521-522.
286. Anon. (Jul.1974). "Contraception: Chemists Have Tremendous Responsibility." Aust.J.Pharm., 55:440-441.
287. Anon. (Dec.1974). "Contraceptive Kit For Community Counselling." Aust.J.Pharm., 55:795.
288. Anon. (Feb.1977). "Pharmacy Role in Family Planning." Aust.J.Pharm., 58:94.



289. Anon. (Sep.1977). "S.A. Pharmacy Role in Family Planning." Aust.J.Pharm., 58:544.
290. Porter, J. (Feb.1984). "Expanding the Role of the Pharmacist in Family Planning." Australian Pharmacist, 3(1):5.
291. Anon. (May 1984). " W.A.Study of Pharmacists' Family Planning Advice." Aust.J.Pharm., 65:396-397.
292. Anon. (Mar.1987). "W.A. Pharmacists Urged to Promote Condoms." Aust.J.Pharm., 68:204.
293. Anon. (Apr.1987). "Pharmacists Seen as Key A.I.D.S. Information Sources to Public." Aust.J.Pharm., 68:276.
294. Anon. (Oct.1978). "Qld. Pharmacist Finds Patient Aids Bigger Than Cosmetics." Aust.J.Pharm., 59:661,664.
295. Anon. (Nov.1980). "Patient Aids Important Part of Pharmacy Health Care." Aust.J.Pharm., 61:730,732.
296. Eigen, B.N. (Jan.1981). "Building a Successful Home Care Practice." Am.Pharm., NS21(1):14-18.
297. Samuel, R. (Jan.1981). "A Pharmacist Fitter Outlines Supportive Care." Am.Pharm., NS21(1):25-27.
298. Bagley, J.L. (Sep.1983). "Incontinents Need Special Services and Products." Am.Druggist, 188:87,90,92.
299. Fevang, L. (Sep.1983). "Options for the Future - Will You Survive?" Can.Pharm.J., 116:371-374.
300. Woolard, J. (Sep.1984). "In the D.M.E. Business Renting Can be Rewarding." Am.Druggist, 190:40,45,46,50.
301. Anon. (Nov.1986). "Pharmacies Need More Space to Stock Patient Aids." Aust.J.Pharm., 67:1015.
302. Anon. (Aug.1987). "More W.A. Pharmacists Selling Aids for Disabled." Aust.J.Pharm., 68:586,594.
303. Anon. (Apr.1984). "Home Health Care Depts Are Found in 61% of Pharmacies; Chains Show Biggest Growth." Am.Druggist, 189:30,34,39.
304. Fedder, D.O. (Jan.1981). "Certifying the Pharmacist Orthotic Fitter." Am.Pharm., NS21(1):19-21.
305. Burroughs, T. (Jul.1982). "Your Fitting Room." NARD Journal, 104:29-30.
306. Spenlau, P. (Jul.1982). "D.M.E.: Managing the Department Wisely." NARD Journal, 104:21,23-24.

307. Swartz, H.S. (Jan.1981). "Serving the Disabled Patient's Needs." Am.Pharm., NS21(1):22-24.
308. Eigen, B.N. (Sep.-Oct.1982). "Getting Into Home Health Care - What It Takes." Apothecary, 94:44-48.
309. Bull, R. (Apr.1984). "The Essentials of H.H.C. Selling." NARD Journal, 106:30-33.
310. Knueppel, R.W. (Jul.1982). "The Details of Detailing." NARD Journal, 104:31-32,37.
311. Glaser, M. (Aug.2,1982). "Peppertree Pharmacy: Model of Co-Operation." Drug Topics, 126:44,47.
312. Smith, M. (Jun.1986). "Redirecting Pharmacy Expertise From Rubber Ducks to Home Health Care." Pharmacy Trade, pp8,10,25.
313. Rolfe, E. and Cyr,J-G. (Mar.1983). "C.P.J. Speaks with Pharmacists Who Have Taken Innovative Action in Their Practices." Can.Pharm.J., 116:83-88.
314. Anon. (Mar.1979). "New Perth Pharmacy Offers Extra Professional Services." Aust.J.Pharm., 60:153,156.
315. Fox, B. (Nov.1979). "Patient Aids Twice as Profitable as Cosmetics." Aust.J.Pharm., 60:786.
316. Anon. (Nov.1986). "Pharmacists Need to Continually Update Patient Aid Knowledge." Aust.J.Pharm., 67:1012.
317. Anon. (Nov.1986). "Identification Problem in Pharmacy Display." Aust.J.Pharm., 67:1014.
318. Bagley, J.L. (Nov.1984). "Home Health Care Seen as Possible Growth Area." Am.Druggist, 190:37-38,45.
319. Anon. (Aug.1981). "Nutrition Seen as New Area for Pharmacists." Aust.J.Pharm., 62:588.
320. Anon. (1983). "Into a New Health Era." N.Z.Pharmacy, 3(4):18-19.
321. Anon. (1983). "Market Growing Fast." N.Z.Pharmacy, 3(4):21.
322. Anon. (1983). "Special Status." N.Z.Pharmacy, 3(4):21.
323. Anon. (Apr.1984). "P.S.A. President Warns of Nutrition Hocus Pocus; Attacks Federal Govt." Aust.J.Pharm., 65:266-267,300.
324. Hendershot, D. (Jun.1982). "How Community Pharmacists Help the Patient Prepare for Home Hyperalimentation." Pharmacy Times, 48:70-73.

325. Graves, G. (Jan.1983). "Hyperalimentation Service." NARD Journal, 105:39.
326. Anon. (Apr.1984). "Cost Effectiveness is Key to Home Health Care Growth." Am.Druggist, 189:70,72,74.
327. Anon. (Apr.1984). "Community Pharmacists Find Careers in Home Nutrition." Am.Druggist, 18:72,74,77.
328. Anon. (1983). "Preventive Health Care Rewarding." N.Z.Pharm., 3(4):25.
329. Anon. (1983). "Nutrition Market is Right for Pharmacy." N.Z.Pharm., 3(4):25.
330. Anon. (May 1982). "Huge Role for Pharmacy Seen in Sports Medicine." Aust.J.Pharm., 63:268.
331. Anon. (Mar.1983). "Amateur Sports Participants Susceptible to Injury." Aust.J.Pharm., 64:172-173.
332. Anon. (Mar.1985). "Pharmacies First Point of Contact for Sports Injuries Needing Support." Aust.J.Pharm., 66:156.
333. Anon. (Mar.1986). "Sports Medicine Growth." Aust.J.Pharm., 67:339.
334. Anon. (Mar.1987). "Pharmacy Product Knowledge Vital in Sports Medicine Market." Aust.J.Pharm., 68:197.
335. Spence, W.R. (Jul.1982). "Sports Injuries: Revolution in Sports Participation Means More Profits for You." NARD Journal, 104:18-20.
336. Feehan, H.V. (Aug.1978). "Report Reveals Gaps in Pharmacy Service - And a Decline in Counter-Prescribing." Aust.J.Pharm., 59:543-547.
337. Fillingim, D. (Jun.1982). "Veterinary Pharmacy: An Overview." Am.Pharm., NS22(6):294-296.
338. Anon. (Jun.1982). "Pharmacist - Veterinarian Code of Interprofessional Relations." Am.Pharm., NS22(6):296.
339. Jepson, M.H. and Best, R. (Nov.26,1983). "Diploma in Agricultural and Veterinary Pharmacy." Pharm.J., 231:632.
340. Garner-Patel, M.G.M. and Jepson, M.H. (Oct.6,1984). "Risk of Infection From Domestic Pets - Can the Pharmacist Help?" Pharm.J., 233:419.
341. Penna, R.P. (Dec.1983). "Expanded Roles for Pharmacists. Have We Gone Too Far?" Am.Pharm., NS23(12):624-627.
342. Raven, M. (Jan.7,1985). "In-Home Test Kits - Solid New Territory for Drug Stores." Drug Topics, 129:58,60,62,64.

343. Anon. (Mar.1985). "The Pharmacist's Guide to Marketing and Merchansising Consumer Healthcare Products. Vol.2. Home Diagnostics." Am.Druggist, 191:69,71-74.
344. Edwards, C. (Apr.21,1984). "Feasibility of a Pharmacy-Based Kinetics Service in Primary Care." Pharm.J., 232:479-482.
345. Hailstone, B. (Nov.1971). "First Medical Centre Pharmacy." Aust.J.Pharm., 52:759,797.
346. Martin, C. (Dec.1971). "From Self-Service to Ethicals-Only." Aust.J.Pharm., 52:844-845.
347. Anon. (Apr.19,1986). "Nuffield Report Anticipated in Woking." Pharm.J, 236:483.
348. Anon. (Nov.19,1983). "Patient Counselling - the American Challenge." Pharm.J.(Suppl.), 231:25-26.
349. Catizone, C. and Mrtek, R.G. (Feb.1984). "Office Based-Pharmacy in the United States. The Development of a Practice Alternative." Am.Pharm., NS24(2):76-84.
350. Mackowiak, J.I. and Manasse, H.R.Jr. (Jun.1984). "Expectations for Ambulatory Services in Traditional and Office-Practice Pharmacies." Am.J.Hosp.Pharm., 41:1140-1146.
351. Brislin, J.M. (Nov.1985). "The Most Rewarding Practice." Am.Pharm., NS25(11):655-656.
352. White, E.V. (Mar.1979). "Prescription for Family Practice." Am.Pharm., NS19(3):124-127.
353. Welsh, J.S. (Mar.1979). "The Office-Based Pharmacy in Practice. White Disciple Tells How it Works for Him." Am.Pharm., NS19(3):128-129.

## Chapter 3

**SURVEY OF SERVICES PROVIDED  
FROM COMMUNITY PHARMACIES IN  
QUEENSLAND, 1984**

**3.1 AIMS**

1. To determine the nature and extent of services being provided through community pharmacies in Queensland.

2. To document demographic details of pharmacists engaged in community pharmacy practice in Queensland.

3. To document business characteristics of community pharmacies in Queensland.

4. To determine the relationships between demographic and business factors and the provision of innovative specialized services.

5. To select an area of practice and identify pharmacies involved, to allow an in depth investigation of the development of specialized pharmaceutical service.

**3.2 METHODOLOGY****3.2.1 The Sample****3.2.1.1 Sample Type**

Review of the contemporary literature revealed limited surveys only of specific services offered by Australian community pharmacies eg aspects of dispensing, counselling, and over-the-counter consultation. Many of these surveys were performed using restricted samples, and none examined the spectrum of pharmaceutical services. In view of

the shortcomings of the available comparative information, a census was deemed to be the appropriate sampling approach to ensure accuracy (1-3). Other important considerations in choosing to take a census are cost, time, and destruction or alteration of the sample by measurement (1-5). As the population of community pharmacies in Queensland was known to be about 1000 at the time of planning the survey, cost and time factors were not prohibitive. Measurement by means of a questionnaire would not be destructive to the sample, and the nature of the proposed questions were considered unlikely to produce a change in the respondents.

#### 3.2.1.2 Sampling Frame

An element list (6) of names and addresses of Queensland pharmacies approved by the Commonwealth Health Department to dispense prescriptions under the Pharmaceutical Benefits Scheme was obtained by application to the Deputy Director (Pharmaceutical Benefits) of the Commonwealth Health Department's Queensland Office (7). Although this information is not freely available, an explanation of the proposed use of the list for research purposes and an assurance of confidentiality of information resulted in its release. The success of a census is dependent upon the accuracy and completeness of listing of the population (8-13). While use of the above list does not guarantee completeness of the census, it is unlikely that community pharmacies exist outside the list apart from subsequent new approvals. The information supplied included amendments to August 1984, and listed 955 pharmacies. The Guild Digest 1985 (14) quotes the number of approved pharmacies in Queensland at 30 June 1984 as 952.

### 3.2.1.3 Respondents

To determine the nature and extent of pharmaceutical services and document business characteristics of community pharmacies, the respondent was defined as the pharmacist usually in charge of the day to day operation of each community pharmacy in Queensland (Appendix 4).

To document demographic details about community pharmacists, the respondent population was defined as full-time registered pharmacists and pre-registration trainees employed in community pharmacies in Queensland (Appendices 4&5).

### 3.2.2 Survey Type

A mail questionnaire was chosen as the most suitable means of performing a survey of the length needed to fulfil the objectives outlined, and of reaching the selected population, which was widely scattered geographically (15). The mail survey method offered advantages in both administrative and manpower costs over personal interview or telephone survey methods (9,12,15-17). As the survey instrument was necessarily lengthy, personal approach may have resulted in a higher refusal rate due to respondents having to be contacted during working hours, whereas the mail technique allowed respondents the flexibility of completing the questionnaire at a time or times convenient to themselves. Opportunity to consult other sources of information such as business records, bestowed a further advantage in improving validity of responses (12,15). The absence of an interviewer and assurance of confidentiality may have proved less

inhibitory to the answering of questions dealing with personal or business details (12,13,15,16). The population being surveyed was unlikely to encounter difficulties of language or interpretation which can otherwise hamper response to self-administered questionnaires (12,13,15,16).

Completion rates for mail surveys are generally low in comparison to personal or telephone interviews (9,13,15,16,18). Also, lag time in receipt of responses not only increases completion time of the survey, but also may introduce extraneous variables into measurements (12). Response has been shown to be improved by intrinsic interest of subject matter to respondents (16), as would be the case in this study, but surveys of more specific populations than the general public have still shown wide variation in response (13). Attention to detail in aspects of the construction and administration of the survey instrument has been shown to improve response rates (12,16).

### **3.2.3 Survey Instrument**

The questionnaire was developed comprising six sections to collect information relevant to the stated aims: Pharmacist Information (46 variables), Pharmacy Information (34 variables), Dispensing Services (73 variables), Other Health-Related Services (36 variables), Over-the-Counter Services (8 variables) and Commercial Services (24 variables). See Appendix 4.

#### **3.2.3.1 Length**

The length of the questionnaire (six pages comprising 220 items) and the time required for completion



(about half an hour) were recognized as possible inhibitory factors to obtaining a high response rate. Dillman (9) reported no difference in response rates up to 125 items or twelve pages, but observed declining response rates for questionnaires beyond twelve pages in length. However, other research has shown length to have less influence on response rates than the image created by the questionnaire or the respondents' interest in the research topic (12).

As this survey was considered to be instrumental in providing baseline data on provision of services from community pharmacy in Queensland, it was decided not to compromise the content but to concentrate on design aspects and follow-up techniques to encourage response.

#### 3.2.3.2 Appearance

Appearance of the questionnaire has been shown to affect response rates (12,19,20). The survey instrument can be presented to appear professional, important, or serious, and suggestions for presentation have included booklet format, white or coloured paper, photoreduction and offset printing (12,16,19,20). However, resulting differences in response were doubtful (12).

The questionnaire was designed to be business-like and attractive in appearance, with an easily followed format (16,19). Preparation was by computerized type-setting using a Compugraphic 8400 Typesetter. Size of type was selected to minimize the physical length of the questionnaire while maintaining legibility (19). Setting out was arranged so that sections began on a new page without leaving large spaces (19).

### 3.2.3.3 Confidentiality

The individual respondent's right to privacy must be protected by assurance of confidentiality (21).

As one purpose of the questionnaire was to identify pharmacies providing specific services of interest for follow-up studies, a code number was added to the upper left hand corner of the front page of each form, using a hand numbering machine (22). A code was used rather than the name of the pharmacy to allow confidentiality to be maintained, even though workers other than the main researcher had access to the completed forms (16,21). The code list was stored separately from the completed questionnaires, and was accessed only by the chief researcher. As visible codes have been shown to reduce response rates (12), a post-script to the survey form advised respondents of the purpose of the code number and assured confidentiality. An option was offered for removal of the code number by those respondents desiring anonymity. This could be easily done without risking loss of answers (22). Although removal of the code precluded tracing of these respondents, the measure was a compromise between exclusion of some pharmacies from follow-up studies and reduction of validity of this survey by inhibition of response (21). An explanation of the reason for the code number was given to discourage removal (20).

The code was also used to account for returned questionnaires, thereby excluding identified respondents from reminder and follow-up mailings for cost saving purposes and so as not to intrude upon respondents unnecessarily.

#### 3.2.3.4 Question Sequence

Question sequence has been shown to affect response rates and the validity and quality of responses (Zelnio). It has been suggested that early questions should be either be general and easy to answer or of importance to the respondent, and that potentially objectionable questions be placed later in the questionnaire (12,16,19,20,23). Demographic questions have usually been placed towards the end as they may be seen as personal or sensitive (19), but other research has shown that their location does not affect response (12). As the respondent has access to all questions in a mail questionnaire and can answer at random, the researcher has no control over the order of answering. This could create validity problems if later posed questions affect responses to earlier questions (9,15,16).

The questionnaire consisted of two distinct sections seeking information about pharmacists and about pharmacies. Within each section, questions of similar content were grouped together (19) and ordered in a logical progression (16,23). Because the pharmacist section was required to be answered by all full-time pharmacists, it was decided to place this section first in the overall survey instrument (Appendix 4) to encourage the chief respondent to distribute the extra copies (Appendix 5) to other relevant pharmacists. As the personal information required was not thought likely to be considered sensitive by the respondent population, it was placed first as being easy to answer without requiring reference to other sources.

Because of the length of the pharmacy section, the business demographic questions were placed at the beginning in case questionnaires were not followed through to the end. Items of topical interest to the respondents were included in the appropriate subject areas to maintain interest and thus encourage response (15,20).

Respondents were thanked for their co-operation at the end of the questionnaire (19,20).

### 3.2.3.5 Question Structure

In contrast to interviews, there is no opportunity to clarify questions or answers in a mail questionnaire (16). Standardization of questions and response categories provides ease of interpretation by respondents and facilitates data entry and tabulation of results in mail questionnaires (12,17,20). The closed question format is also easier to provide written answers to than are open ended questions (17). Closed-ended questions require response categories to be exhaustive and mutually exclusive (12,23).

To simplify completion, questions were restricted to three main types: closed-ended questions seeking attribute information eg year of qualification, place of qualification; closed-ended questions requiring circling of a number for choice of answer eg 1 or 2 for "Yes" or "No" or one number from a list of mutually exclusive answers; and closed-ended questions allowing the respondent to provide information outside the set framework eg membership of professional organizations not listed (12,16,20,24). Questions of the third type, being more difficult to process, were kept to a minimum but were included where necessary to ensure completeness of

lists or to allow respondents to clarify or expand on listed options. The option to comment may not only allow for more accurate interpretation of answers when coding but also encourage responses which may otherwise be inhibited by too rigid a structure.

Some open-ended "Comment" questions allowing free response (12,16) were included specifically at the request of professional pharmacy organizations whose presidents were consulted during the preparation of the questionnaire. These discussions were undertaken to inform the organizations of the existence of the survey and to offer them an opportunity to seek information related to the aims of the survey but of more specific application to their own purposes eg comments on provision of continuing education programmes. While attitude questions were not required for fulfilment of the main aims of the survey, Likert scales were used to assess pharmacist opinion in some areas of interest to the professional organizations (16,20).

Clear, concise instructions for answering questions were frequently repeated in parenthesis throughout the questionnaire, with use of bold type for emphasis (19,20). Consistency of answering procedures was maintained (19).

Wording of questions was chosen to avoid leading, loaded or double questions and to be non-objectionable (12,16,20). When attribute information requiring measurement was sought, the question was posed in units appropriate to the knowledge of the respondent eg options of sq.ft. or sq.m. were provided for quotation of shop areas (12).

### 3.2.4 Pilot Studies

The Australian Bureau of Statistics recommends that at least two pilot studies be performed when conducting a survey, a preliminary pilot in the early planning stages, and a formal pilot study to confirm sample size requirements, test the survey instrument, and test field work procedures (13).

The preliminary pilot was conducted by informal discussions with community pharmacists (16,25). In an attempt to locate pharmacists involved in innovative services to take part in these discussions, a press release was sent in March 1984 to PSA (Qld.Branch), PGA (Qld.Branch) and the Australian Journal of Pharmacy, seeking input from progressive pharmacists (Appendix 1).

After development of the survey instrument, the questionnaire was administered to ten pharmacies (1% of the population) by hand delivery and collection. Respondents were interviewed at the time of collection to ascertain any problems (12,16,19,20,23). As only minor clerical difficulties were encountered at this juncture, the pilot was extended to cover 5% of the population, choosing pharmacies in different site categories and pharmacists of both sexes and a variety of ages. No major changes were required.

### 3.2.5 Administration and Collection

#### 3.2.5.1 Preliminary Contact

Precontact advising participants of a forthcoming questionnaire has been shown to be effective in producing higher and faster response (12). Telephone has been shown to be better than mail contact (12), but both methods were

considered too expensive for the probable benefits to this study.

A second press release was sent to PSA (Qld.Branch) and PGA (Qld.Branch) in September 1984 for distribution to members via their regular mailings (Supplement to Introspect, Sept.1984; Guild Bulletin, Sept.1984). The notice advised that all pharmacies would soon be receiving a questionnaire, outlined the purpose of the survey and its benefits to the profession, and encouraged response (Appendix 2).

#### 3.2.5.2 Covering Letter

Letter, visit or telephone have been suggested as methods of initial contact with respondents to convince them to participate in surveys, any being suitable as long as the approach is uniform (12,21).

A covering letter included with the questionnaire was chosen because of cost advantages (Appendix 3). The letter introduced the researcher, the educational institution, and the topic of the survey; explained its importance to the future of pharmacy and the importance of the individual respondent to its success; and offered a guarantee of confidentiality (12,15,18,21,22). Personalization was conveyed by use of letterhead stationery and by signing the letter (12,16,22). The letterhead also provided an address and telephone number to allow contact for information or assistance (18). Mention was made of consultation with both PSA and PGA, as sponsorship of surveys by official bodies recognized by the proposed respondents has been shown to improve response rates (15,16). The letter was kept short to avoid introducing bias by provision of too much detail (20).

### 3.2.5.3 Distribution

The survey (Appendices 4&5) was released on 26th October 1984, accompanied by the covering letter (Appendix 3) and postage-paid pre-addressed return envelope to improve response (16,22). Timing of the survey was planned so that collection would be largely completed by early December, as December was not thought to be conducive to achievement of high response rates (12,22).

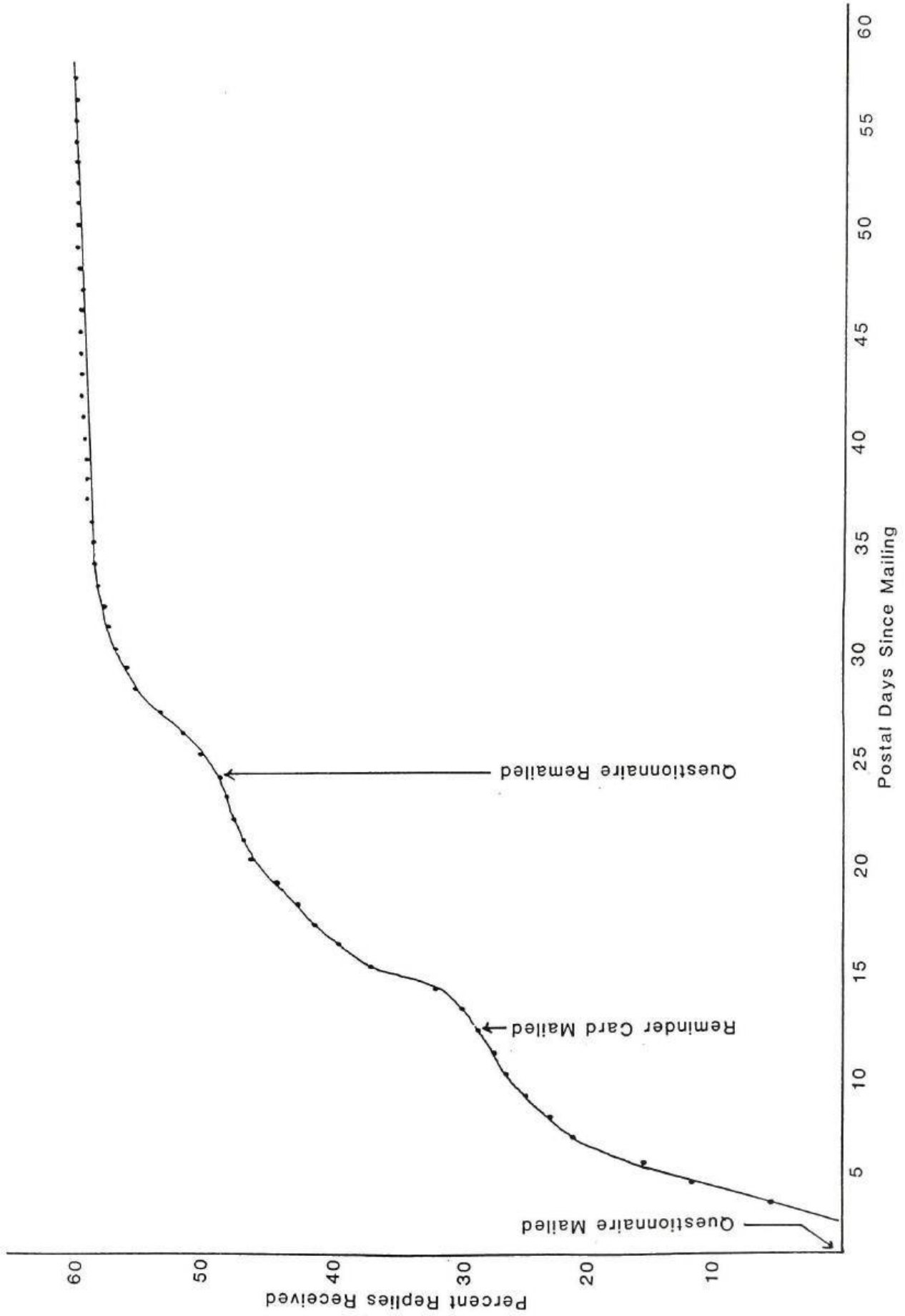
### 3.2.5.4 Follow-Up

Use of postcard, letter or telephone reminders, and re-mailing of questionnaires have been shown to improve response (12,15,16,17,21). It has been suggested that the reminder be sent two weeks after the initial mailing or when the return rate begins to slacken (18). Alternative recommendations have included sending a reminder letter after one week, and another copy of the survey after two weeks (15). Dillman (22) recommended the sending of a reminder/thank-you after one week, a reminder letter with replacement questionnaire after three weeks, and a further replacement questionnaire after seven weeks. A reminder card (Appendix 6) was sent on 12th November 1984 to all pharmacies which could not be identified by code number as having replied to the original mailing (15,18). The card was a brief reminder of the survey questionnaire, and encouraged prompt reply (18,22). Finally, a follow-up mailing of similar content to the original was distributed to non-responding pharmacies on 27th November 1984 (Appendix 7). Timing of both the reminder card and the follow-up mailing was based on slackening of response (Figure 1). A response rate of 61% was achieved.



GRAPH 1

Response Rate to "Survey of Services Provided from Community Pharmacies in Queensland, 1984".



### 3.2.6 Data Management and Analysis

#### 3.2.6.1 Data Coding

Numerical codes were used for both numerical and categorical data. Consistency across codes was established by use of "." for missing numerical values, " " for missing categorical values, "0" for not applicables, "8" for unknowns and "9" for refusals (19,26-28). Where possible, codes were included on the right hand side of the columns of the questionnaire to reduce intermediate coding steps and consequent chances of error (28). Codes not built into the survey instrument were later written directly onto the right hand side of the columns of the questionnaire forms to ease data entry and avoid transcription errors (27,28). Open-ended questions were assessed and coded by the chief researcher to maintain consistency (28).

The data coding key was set up as a library using the software package Statistical Analysis System (29) to allowing output to be readily checked and interpreted (28).

#### 3.2.6.2 Data Entry

The data were entered onto the computer as five separate data bases, divided in accordance with the sections of the survey instrument: Pharmacist Information, Pharmacy Information, Dispensing Services, Other Health-Related Services, and Over-the-Counter and Commercial Services.

#### 3.2.6.3 Data Cleaning

Each data base was entered in duplicate using fixed format, and the computer used to cross check for discrepancies, including field length (27,28). Corrections were made after reference to the original questionnaires.

On completion of each data base, frequency tables were computed and checked for inconsistencies such as uniqueness of record identifiers, and values outside the range for each variable (27,28). The data coding key was arranged to designate miscodes outside the allowable ranges.

#### 3.2.6.4 Analysis

Analysis of the results was performed using the University of Queensland Prentice Computer Centre mainframe IBM 3083 E24 computer with VMS/CMS operating system, and the Statistical Analysis System, SAS (29).

Nonparametric statistical procedures were employed, as data for most variables were of the nominal type (30-32). Chi square tests were used to test hypotheses, using a critical significance level of  $P=0.05$  (31-33). The chi square statistic was accepted as reliable if the expected cell count was not below five for at least 80% of cells (29,33).

The specialized services identified were correlated with demographic and business characteristics for hypothesis testing. Demographic details were those of the "pharmacist in charge" only. It must be emphasized that the questions about Health-Related Services were aimed at identifying services and the pharmacies involved, and not at establishing the causative factors for participation in such activities.

### 3.3 VALIDATION OF RESPONSE

Survey results may be biased due to nonresponse (9,12,17,34), although it has been stated that most biases tend to disappear when a response rate of 70% or more is achieved (12). Approaches to minimize the effect of

nonresponse have been suggested, including estimation of the extent of bias from this source, and methods of construction and administration of questionnaires to encourage response (9,12,15,19,22). The aim is to elicit a response from most of the sample and show that those who do not respond are not significantly different from those who do (13,17). One way of doing this is by comparison of respondents' answers with data from other sources, although such comparisons may not be related to the comparability of the variables being studied (9,15,35,36).

Opinions on the acceptable levels of response for different types of surveys vary. Response rates to mail surveys of the general public have been quoted to be generally accepted at 20-40%, but ranging from 10-90% (13). Dillman (9) has stated that a response between 60-75% may be expected from a carefully constructed survey, even if it is lengthy. However, a population with an interest in the subject matter would be expected to produce a greater response (16,37). Forty or fifty percent response may be considered acceptable for mail surveys, with sixty percent rated as high (16,35), whereas 75% may be the minimum acceptable response for interview methods (16). Kerlinger (35) has recommended that, if the response is less than 80-90%, an attempt should be made to learn something of the characteristics of nonresponders eg by comparison with other evidence.

From a population of 955 pharmacies in Queensland, 582 useable replies were received (Response rate = 60.9%). Pharmacist Information was provided by 764 pharmacists working in Queensland community pharmacies at the time of survey.

### 3.3.1 Check for Nonresponse Bias by Response Time

Receipt time of responses was coded according to return after the initial mailing, after prompting by reminder card, or after the second mailing of the survey material. Non-response bias was tested by comparing demographic and business variables for "initial", "reminder" and "re-mail" respondents and found not to be significant, except that higher proportions of PSA members had answered before the second mailing than had nonmembers (Table 1).

TABLE 1  
CHECK FOR NON-RESPONSE BIAS  
by RESPONSE TIME

Total number of responses = 582

VARIABLE	CHI-SQUARE	DEGREES OF FREEDOM	PROBABILITY
<u>PHARMACISTS IN CHARGE</u>			
Sex	1.517	2	0.468
Year of Birth	6.885	8	0.549
Pharmacy Qualification	3.000	2	0.223
Year of Qualification	5.544	6	0.476
Place of Qualification	4.466	4	0.347
Pharmacist Status	6.151	6	0.407
PSA Membership	6.865	2	0.032*
PGA Membership	1.703	2	0.427
ACPP Membership	5.940	2	0.051
<u>PHARMACIES</u>			
Site	3.836	8	0.872
Location	5.951	2	0.051
Hours	1.001	4	0.910
Size	22.028	18	0.231
Group Membership	1.157	2	0.561

\*Significantly different at the 95% confidence level.

Higher proportions of ACPP members than nonmembers and higher proportions of country than Brisbane respondents also had answered after the initial mailing, but these differences were just beyond the 95% significance level chosen. Of the population of 955 pharmacies in Queensland, 48.3% (461) were located in the Brisbane metropolitan area. Responses received were 47.5% from Brisbane pharmacies.

If the assumption were made that respondents to the second mailing were a random sample of nonrespondents to the first mailing, then, if there are no differences between the characteristics of these groups, it may be assumed that there are no differences between the characteristics of respondents and the remaining nonrespondents (15). However, Moser and Kalton (15) have stated that it is likely that nonrespondents would be closer in characteristics to those responding to follow-ups than those responding to the initial mailing.

As the characteristics of pharmacists and pharmacies were consistent regardless of the response time, it was concluded that the characteristics of nonrespondents would also be likely not to differ greatly.

### 3.3.2 Check for Nonresponse Bias of Pharmacist Sample

Data collected from 733 (excluding 31 pre-registration trainees from 764 respondents) registered pharmacists working in community pharmacies in Queensland were compared with data collected from registered pharmacists by the Division of Research and Planning of the Queensland Department of Health via the 1985 Pharmacy Manpower Statistics Return (38). The Manpower questionnaire was distributed by the

Pharmacy Board of Queensland in conjunction with annual registration renewal notices, and responses were collected between 1 January and 30 April 1985. Nonresponse to the 1985 Manpower survey was 15%. Comparison was made with Manpower information from pharmacists working in Queensland only, which increased the nonresponse rate to 28% of pharmacists registered in Queensland, since a further 15% of respondents did not answer the work status question.

Statistical tests could not be performed on these comparisons as the samples have been differently defined. However, evident close similarities indicated that respondents were most likely to be an unbiased subset of the population (Table 2).

TABLE 2

CHECK FOR NONRESPONSE BIAS of PHARMACIST SAMPLEby COMPARISON with MANPOWER SURVEY, 1985

Total number of responses = 733

VARIABLE	VALUE	SURVEY %	MANPOWER %
Sex	Male	74.6	64.4
	Female	25.4	35.6
Age	20-29	25.5	19.9
	30-39	22.7	21.9
	40-49	31.7	32.4
	50-59	16.3	20.5
	60 & over	3.8	5.3
Place of Qualif'n.	Queensland	80.5	81.9
	Interstate	14.0	13.1
	Overseas	5.5	5.0
Pharmacist Status	Owner/Partner	64.8	66.0
	Manag/Assist	35.3	34.0
Location of Work	Brisbane	47.3	45.8
	Country	52.7	38.4
	Not Stated	-	15.9

### 3.3.3 Check for Nonresponse Bias of Pharmacy Sample

Data collected from 582 community pharmacies in Queensland were compared with information for the financial year 1984-85 reported in the Guild Digest, 1986 (39). Response to the Digest survey was received from 99 Queensland pharmacies, representing 13.0% of PGA membership and 10.2% of the 974 approved pharmacies in Queensland listed by the Commonwealth Health Department at 30 June 1985. This response rate limits the reliability of the data presented. Owing to different methods of collecting and presenting the data, results for many variables cannot be directly compared between the two surveys. Some comparisons are shown in Table 3.

The Guild Digest (39) reported an average of 53 hours open per week for Queensland pharmacies. This result appears consistent with the finding of the 1984 survey that 69.4% of pharmacies were open five days per week plus Saturday mornings or five days per week plus Saturday mornings and once a week for late-night shopping ie 48-54 hours per week. Tabulated results also show comparability within the methodological limitations.



TABLE 3

CHECK FOR NONRESPONSE BIAS of PHARMACY SAMPLEby COMPARISON with GUILD DIGEST, 1986

Total number of responses = 582

VARIABLE	VALUE	SURVEY %	GUILD DIGEST % or Av.
Site	Regional Centre	8.0	19.2
	Non-regional	92.0	80.8
Location (Sample)	Brisbane	47.5	35.4
	Country	52.2	64.6
Location (Total population)	Brisbane		49.1
	Country		50.9
Merch. Group	Member	53.1	55.6
	Non-member	46.9	44.4
Size (Sq.Ft.)	Less than 700	24.5	
	700-1099	31.4	119 Sq.M.
	1100-1499	20.2	or
	1500 or more	24.0	1280 Sq.Ft.
Turnover (\$x1000)	Less than 200	28.6	
	200-299	23.6	
	300-399	18.6	\$406 543
	400-599	17.8	
	600 or more	11.4	
Prescript. Proportion	Less than 25%	14.3	
	25-34%	23.5	
	35-54%	35.6	46%
	55-74%	23.6	
	75% or more	5.1	
Prescript. per Month	Less than 1000	14.7	28,526/yr
	1000-1999	42.5	or
	2000-2999	26.6	2377/month
	3000 or more	16.2	

### 3.4 RESULTS

#### 3.4.1 Pharmacist Characteristics

Replies to the Pharmacist Information section of the survey were received from 764 pharmacists working in 582 community pharmacies in Queensland. Replies were received from two pharmacists in 129 of the pharmacies, from three in twenty-two pharmacies, and from four in three pharmacies. Demographic details of the sample, collected by Questions 3-45 (Appendices 4&5) are shown in Table 4.

In Queensland, where 81.4% of respondents had received their pharmacy qualification, the degree of Bachelor of Pharmacy (B.Pharm.) was first awarded in 1962. The previous qualification of Pharmaceutical Chemist (Ph.C.) was phased out around the same time. Changeovers in other Australian States occurred similarly in the early 1960s.

A total of thirty-nine respondents had qualifications in addition to Ph.C. or B.Pharm. Thirteen had post-graduate pharmacy qualifications such as Honours or Masters degrees; twelve had degrees in other disciplines; nine had diplomas; three had other types of qualifications; two had more than one extra qualification.

Although the supplementary Pharmacist Information questionnaire (Appendix 5) requested information from full-time pharmacists and pre-registration trainees, 3.6% of respondents were employed for an average of less than twenty hours per week. These respondents were not excluded from the sample, as some pharmacists responding as "pharmacist in charge" (Appendix 4) were also working below twenty hours in the pharmacies for which they provided information.

TABLE 4

PHARMACIST INFORMATION for TOTAL SAMPLE

Total number of responses = 764

Results not tabulated if valid responses below 50%

VARIABLE	NUMBER OF VALID RESPONSES	VALUE	NUMBER OF POSITIVE RESPONSES	PERCENT
Sex	759	Male	556	73.3
		Female	203	26.7
Year of Birth	741	Before 1920	10	1.4
		1920-1929	62	8.4
		1930-1939	197	26.6
		1940-1949	197	26.6
		1950-1959	176	23.8
		1960s	99	13.4
Pharmacy Qualification	761	Ph.C.	337	44.3
		B.Pharm.	424	55.7
Year of Qualification	739	Before 1940	8	1.1
		1940-1949	29	3.9
		1950-195	158	21.4
		1960-1969	228	30.9
		1970-1979	186	25.2
		1980s	130	17.6
Place of Qualification	598	Qld.	487	81.4
		NSW	40	6.7
		Vic.	26	4.4
		Tas.	3	0.5
		SA	7	1.2
		WA	4	0.7
		NZ	14	2.3
		UK	12	2.0
		Other	5	0.8
Average Hours/Week	752	Less than 20	27	3.6
		20-39	88	11.7
		40-49	343	45.6
		50-59	251	33.4
		60 or more	43	5.7
Years in This Pharmacy	729	Up to 1	178	24.4
		>1 to 5	190	26.1
		>5 to 10	131	18.0
		>10 to 20	128	17.6
		More than 20	102	14.0

VARIABLE	NUMBER OF VALID RESPONSES	VALUE	NUMBER OF POSITIVE RESPONSES	PERCENT
Pharmacist Status	760	Sole owner	305	40.1
		Partner	167	22.0
		Manager	174	22.9
		Assistant	83	10.9
		Pre-registrant	31	4.1
PSA Member	714		599	83.9
PGA Member	618		441	71.4
<b>CE Attendance:</b>				
Evening Lect.	655		279	42.6
W-end Seminars	622		192	30.9
Conferences	579		115	19.9
<b>Reader of:</b>				
AJP	722		668	92.5
Aust.P'cist.	543		363	66.9
Introspect	642		561	87.4
Pharm.Review	492		298	60.6
Pharm.Trade	675		598	88.6
Aust.Prescrib.	581		447	76.9
ADRAC Bulletin	454		264	58.2
Curr.Therapeut.	469		206	43.9
Patient Manag.	384		48	12.5
<b>Education:</b>				
Hospitals	671		29	4.3
Illness Gps.	664		22	3.3
C'ty. Groups	691		73	10.6
Schools	675		36	5.3
Other	567		17	3.0
Willing to Educate	701		359	51.2
Personal Special Interests	725		379	52.3

Although not tabulated due to a low response rate to the question (324 valid replies), 28 respondents stated that they were members of the Australian College of Pharmacy Practice (ACCP).

Personal special interest areas related to pharmacy practice were claimed by 379 (52.3%) respondents. While some named more than one area of interest, others did not elaborate. Interests nominated included nutrition (72.3%), diabetes (19.4%) and sports medicine (7.4%).

Demographics for the group identifying themselves as pharmacists in charge of the usual day to day operation of the pharmacy are shown in Table 5.

TABLE 5

PHARMACIST INFORMATION for PHARMACISTS IN CHARGE

Total number of responses = 582

Results not tabulated if valid responses below 50%

VARIABLE	NUMBER OF VALID RESPONSES	VALUE	NUMBER OF POSITIVE RESPONSES	PERCENT
Sex	578	Male	481	83.2
		Female	97	16.8
Year of Birth	560	Before 1920	7	1.3
		1920-1929	51	9.1
		1930-1939	172	30.7
		1940-1949	171	30.5
		1950-1959	121	21.6
		1960s	38	6.8
Pharmacy Qualification	580	Ph.C.	288	49.7
		B.Pharm.	292	50.3
Year of Qualification	561	Before 1940	6	1.1
		1940-1949	22	3.9
		1950-1959	137	24.4
		1960-1969	202	36.0
		1970-1979	134	23.9
		1980s	60	10.7
Place of Qualification	454	Qld.	363	80.0
		NSW	28	6.2
		Vic.	23	5.1
		Tas.	3	0.7
		SA	7	1.5
		WA	4	0.9
		NZ	12	2.6
		UK	9	2.0
		Other	5	1.1
Average Hours/Week	574	Less than 20	8	1.4
		20-39	46	8.0
		40-49	243	42.3
		50-59	236	41.1
		60 or more	41	7.1
Years in This Pharmacy	566	Up to 1	105	18.6
		>1 to 5	144	25.4
		>5 to 10	110	19.4
		>10 to 20	115	20.3
		More than 20	92	16.3

VARIABLE	NUMBER OF VALID RESPONSES	VALUE	NUMBER OF POSITIVE RESPONSES	PERCENT
Pharmacist Status	580	Sole owner	302	52.1
		Partner	129	22.2
		Manager	146	25.2
		Assistant	3	0.5
PSA Member	545		474	87.0
PGA Member	497		396	79.7
<b>CE Attendance:</b>				
Evening Lect.	497		198	39.8
W-end Seminars	480		152	31.7
Conferences	449		98	21.8
<b>Reader of:</b>				
AJP	546		508	93.0
Aust.P'cist	405		275	68.0
Introspect	483		421	87.2
Pharm.Review	369		237	64.2
Pharm.Trade	516		470	91.1
Aust.Prescrib.	437		335	76.7
ADRAC Bulletin	340		202	59.4
Curr.Therapeut.	342		146	42.7
<b>Education:</b>				
Hospitals	509		22	4.3
Illness Gps.	502		15	3.0
C'ty. Groups	526		62	11.8
Schools	512		31	6.1
Other	432		15	3.5
Willing to Educate	535		274	51.2
Personal Special Interests	551		296	53.7

### 3.4.2 Pharmacy Characteristics

Replies to the Pharmacy Information section were received for 582 community pharmacies in Queensland (60.9% response). Information about the businesses, collected by Questions 46-79 (Appendix 4) is shown in Table 6.

Pharmacy site was defined for respondents by the survey instrument (Question 46, Appendix 4). Pharmacies classified as "Other" included those described by respondents as being within medical centres or private hospitals.

Location was tabulated broadly as "Brisbane" or "Country". The data were entered as Postcodes, to allow recoding into other groups eg regional, by Postcode Division.

A wide variety of normal weekly trading hours was described by respondents, the most common (45.7%) being five week days (up to 6pm) and Saturday morning (up to 12 noon). For coding purposes, night trading was defined as any open hours beyond 6pm on week days, and week-end trading as open hours after 12 noon on Saturday and/or any open hours on Sunday. In the summarized results (Table 6) "Day and Night" included all pharmacies which were regularly open any night and week-end hours in addition to five week days and Saturday morning. Pharmacies classified as "Other" were mostly country pharmacies which were occasionally open at week-ends on a roster or on-call basis only.

The questionnaire provided the option to express the pharmacy size in either square feet or square metres. Results have been tabulated in square feet, the units chosen by the majority of respondents, even though square metres were the official Australian units at the time of the survey.



Merchandising groups are groups of pharmacies which voluntarily integrate to enjoy the advantages of bulk buying and corporate image promotion. Chain pharmacies are virtually non-existent in Queensland, as pharmacy owners must be registered pharmacists, and pecuniary interest is limited to a maximum of four pharmacies (40).

Pre-registration trainees were employed in 45 of the responding pharmacies, 38 of them for forty or more hours per week.

In addition to registered pharmacists working forty hours or more, 63 pharmacies employed one pharmacist for between twenty and forty hours per week, eleven employed two, and three employed three. Pharmacists working less than twenty hours per week were employed by 162 pharmacies, 124 employing one, twenty employing two, ten employing three, and eight employing four or more.

Pharmacy assistants working between twenty and forty hours per week were employed by 206 pharmacies, 113 employing one, 53 employing two, 29 employing three, and eleven employing four or more. Assistants working less than twenty hours per week were employed by 263 pharmacies, 142 employing one, 65 employing two, thirty employing three, and 26 employing four or more.

Reference books required to be held on the premises of Queensland pharmacies in 1984 in accordance with the Dispensary Regulations of 1973 (41) were current copies of the British Pharmaceutical Codex, the APF, Martindale's Extra Pharmacopoeia and the Poisons Regulations. Legal obligations were well adhered to, with each of the mandatory books being

held in over 90% of pharmacies, and all but the Codex being held by about 99%. Amendments to the Regulations in early 1985 (42) dropped the Codex from the mandated schedule and added either the Prescription Proprieties Guide (PP Guide) or the Monthly Index of Medical Specialties Annual (MIMS Annual), and the Handbook for Patient Medication Counselling (HPMC).

TABLE 6

PHARMACY INFORMATION

Total number of responses = 582

Results not tabulated if valid responses below 50%

VARIABLE	NUMBER OF VALID RESPONSES	VALUE	NUMBER OF POSITIVE RESPONSES	PERCENT
Site	572	City Centre	176	30.8
		Regional Centre	46	8.0
		Suburban Centre	98	17.1
		Suburban Strip	220	38.5
		Other	32	5.6
Location	575	Brisbane	273	47.5
		Country	302	52.5
Trading Hours	573	Five Days	12	2.1
		Five Days/Sat.	262	45.7
		Five Days/Sat. am/Night(s)	136	23.7
		Five Days/Sat. am/Week-end	44	7.7
		Day and Night	63	11.0
		Other	56	9.8
Years under Present Owner	548	Less than 10	314	57.3
		10-19	124	22.6
		20-29	79	14.4
		30 or more	31	5.7
Years of Trading	546	Less than 10	167	30.6
		10-19	124	22.7
		20-29	104	19.1
		30-49	61	11.2
		50 or more	90	16.5

VARIABLE	NUMBER OF VALID RESPONSES	VALUE	NUMBER OF POSITIVE RESPONSES	PERCENT
Size (Sq.Ft.)	502	Less than 500	46	9.2
		500- 699	77	15.3
		700- 899	71	14.1
		900-1099	87	17.3
		1100-1299	66	13.2
		1300-1499	35	7.0
		1500-1699	32	6.4
		1700-1999	30	6.0
		2000 or more	58	11.6
Merch. Group	572	No group	268	46.9
		Amcal	43	7.5
		Green Spot	71	12.4
		Pharmacare	29	5.1
		Soul Pattinson	15	2.6
		Sunshine	39	6.8
		Tri-Pharm	40	7.0
		Chemway	23	4.0
		Other/multiple	44	7.7
Turnover (\$ x 1000)	500	Less than 200	143	28.6
		200-299	118	23.6
		300-399	93	18.6
		400-499	52	10.4
		500-599	37	7.4
		600-799	28	5.6
		800-999	12	2.4
		1000 or more	17	3.4
Prescription Proportion (%)	533	Less than 25	76	14.3
		25-34	125	23.5
		35-44	86	16.1
		45-54	93	17.5
		55-64	80	15.0
		65-74	46	8.6
		75 or more	27	5.1
Staff:				
Full-Time Pharmacists (40 hrs or more)	545	None	5	0.9
		One	463	85.0
		Two	69	12.7
		Three	5	0.9
		Four	3	0.6
Full-Time Assistants (40 hrs or more)	468	None	23	4.9
		One	157	33.6
		Two	126	26.9
		Three	79	16.9
		Four	33	7.1
		Five	22	4.7
Six or more	28	6.0		

VARIABLE	NUMBER OF VALID RESPONSES	VALUE	NUMBER OF POSITIVE RESPONSES	PERCENT
<b>References:</b>				
Pharmaceutical Codex	542		490	90.4
APF	576		570	99.0
Martindale	573		566	98.8
Poisons Regs	575		570	99.1
HPMC	406		297	73.2
Merck Manual	430		294	68.4
MIMS Annual	385		204	53.0
PP Guide	524		449	85.7
<b>Counselling Aids:</b>				
Audio-Visual	449		16	3.6
Books	490		161	32.9
DHP Leaflets	526		301	57.2
<b>Education:</b>				
Groups	443		9	2.0
Other	400		61	15.3

### 3.4.3 Dispensing Services

Replies to the Dispensing Services section of the survey were received from 582 community pharmacies in Queensland. Information relating to dispensing services, collected by Questions 80-152 (Appendix 4) is presented in Tables 7 to 9.

#### 3.4.3.1 Physical Services (Table 7)

Respondents from 400 pharmacies (69.2%, N=578) indicated that they provided a pick-up and delivery service for prescriptions. When asked later in the questionnaire about provision of a delivery service (Question 166), 455 (82.7%, N=550) answered positively. However, the re-test question did not mention the pick-up aspect of the service.

Of the 79 pharmacies involved in private hospital dispensing, 57 (72.2% response) estimated the number of prescriptions per week. Of this 57, 50.9% dispensed less than twenty, 22.8% between twenty and fifty, and 26.3% fifty or more prescriptions per week for private hospitals.

Of the 174 pharmacies involved in nursing home dispensing, 121 (69.5% response) estimated the number of prescriptions per week. Of this 121, 26.5% dispensed less than twenty, 36.4% between twenty and fifty, and 37.2% fifty or more prescriptions per week for nursing homes.

Of the 54 pharmacies involved in medical centre dispensing, 32 (59.3% response) estimated the number of prescriptions per week. Of this 32, 65.5% dispensed less than twenty, 31.3% between twenty and fifty, and only one pharmacy fifty or more prescriptions per week for medical centres.

Of the 54 pharmacies involved in public hospital dispensing, 38 (70.4% response) estimated the number of prescriptions per week. Of this 38, 81.6% dispensed less than twenty, 15.8% between twenty and fifty, and only one pharmacy fifty or more prescriptions per week for public hospitals.

Of the forty pharmacies involved in dispensing for other institutions, 26 (65.0% response) estimated the number of prescriptions per week. Of this 26, 26.9% dispensed less than twenty, 50.0% between twenty and fifty, and 23.1% fifty or more prescriptions per week for other institutions.

Thirty-seven pharmacies claimed to be normally involved in dispensing requiring unusual extemporaneous techniques. Techniques listed included preparation of eye drops, injectables, dermatological and paediatric products.

Forty-four pharmacies claimed to be normally involved in dispensing requiring unusual ranges of proprietary lines, mainly injectables.

Computers were used for dispensing in 69 pharmacies. On reposing the question later in the questionnaire (Question 161) 68 positive replies were received (N=516). Amfac Chemdata and Foundation were the most commonly used systems (26.1% each), followed by Vision Management (21.8%) and Faulding System 351 (17.4%). Most systems had been installed during 1984 (56.5%), with only 11.3% having been in use prior to 1982. Additional services nominated as being provided since installation of a computer included patient medication records (23 respondents) and drug information print-outs (22 respondents).

Because of the rapidly increasing penetration of computers into pharmacy, negative respondents were questioned about the future likelihood of computerization of their businesses. Valid responses were received from 507 respondents, 31.4% of whom thought it likely or very likely that a computer would be installed within two years, 48.5% thought it unlikely or very unlikely, and 20.1% were undecided. Of the 159 respondents who considered computerization of their businesses likely or very likely within two years, 77 (48.4%) felt that installation would be within the following twelve months.

Over ninety percent of respondents claimed to be users of ancillary labels.

While 23 respondents said that the keeping of patient medication records was an additional service they had been able to provide since installing a computer, 62 (89.9%) computer users said that they stored such records on their computer system, including five respondents who used a combination of computer and card record systems. A total of 203 respondents (35.5%, N=572) claimed to keep patient medication records but, among the 10% describing systems other than card or computer systems, there were a number of respondents who named prescription books as their recording method. Regular use of records stored in this way may be doubtful due to difficulties in retrieval of information. The question of patient medication records was posed again later in the questionnaire (Question 174) and 152 respondents (29.7%, N=512) responded positively.

TABLE 7

PHYSICAL DISPENSING SERVICES

Total number of responses = 582

Results not tabulated if valid responses below 50%

VARIABLE	NUMBER OF VALID RESPONSES	VALUE	NUMBER OF POSITIVE RESPONSES	PERCENT
Prescriptions per Month	553	Below 1000	81	14.7
		1000-1999	235	42.5
		2000-2999	147	26.6
		3000-3999	61	11.0
		4000 or more	29	5.2
Waiting Chairs	551		535	97.1
Delivery Service	578		400	69.2
After-Hours Telephone	580		271	46.7
<b>Dispensing to:</b>				
Private Hospital	490		79	16.1
Nursing Home	537		174	32.4
Medical Centre	459		54	11.8
Public Hospital	464		54	11.6
Other Institution	337		40	11.9
Unusual Extemp- oraneous Items	573		37	6.5
Unusual Ready- Prepared Items	564		44	7.8
Dispensing Computer	580		69	11.9
Ancillary Label Use	572	Never	47	8.2
		Occasional	122	21.3
		Routine	403	70.5
Patient Medic- ation Records	572	No records	369	64.5
		Card system	84	14.7
		Computer	57	10.0
		Combination	5	0.9
		Other	57	10.0



### 3.4.3.2 Counselling Services (Table 8)

A large majority of respondents (83.7%) nominated the front counter as the usual site for patient counselling within the pharmacy. Although 28 pharmacies had separate counselling rooms, only two respondents nominated the room as being the usual counselling site. Of 22 pharmacies with a specially set up counselling areas, the special area was considered to be the usual counselling site in fourteen.

The most commonly used aids to counselling were ancillary labels (87.5%) manufacturers leaflets (71.6%) and Department of Health Promotion Leaflets (66.8%). Use of computer handouts was mentioned by 43 (62.3%) of computer users. Counselling with aids other than those listed was claimed by 33 respondents.

When questioned about the proportion of the professional fee which should be designated for counselling, higher levels of counselling remuneration were generally considered appropriate for ready-prepared items than for extemporaneous items. Sixty-four respondents were undecided about either.

TABLE 8

COUNSELLING SERVICES

Total Number of Responses = 582

Results not tabulated if valid responses below 50%

VARIABLE	NUMBER OF VALID RESPONSES	VALUE	NUMBER OF POSITIVE RESPONSES	PERCENT
Counselling Room	561		28	5.0
Counselling Area	533		22	4.1
Usual Site of Counselling	558	No counselling	6	1.1
		Room	2	0.4
		Area	14	2.5
		Counter	467	83.7
		Other	69	12.4
Counselling with Ancillary Labels	538		471	87.5
Counselling with Audio-Visual Aids	352		11	3.1
Counselling with Computer Leaflets	366		43	11.8
Counselling with DHP Leaflets	458		306	66.8
Counselling with Manuf. Leaflets	450		322	71.6
Proportion of Ready-Prep. Fee for Counselling	537	Less than 10	29	5.4
		10-19	82	15.3
		20-29	164	30.5
		30-39	87	16.2
		40-49	36	6.7
		50 or more	75	14.0
		Undecided	64	11.9
Proportion of Extemp. Fee for Counselling	523	Less than 10	45	8.6
		10-19	112	21.4
		20-29	141	27.0
		30-39	71	13.6
		40-49	29	5.6
		50 or more	61	11.7
		Undecided	64	12.2

### 3.4.3.3 Drug Surveillance (Table 9)

In an attempt to measure the drug surveillance activities of community pharmacists, respondents were questioned about the frequency of reporting of suspected adverse drug reactions from their pharmacies and the extent of patient referral and contact with medical practitioners in relation to drug interactions, side effects, aspects of prescription and nonprescription medications, disease states and other professional matters.

Official reports of adverse drug reactions to ADRAC using the "blue form", were low. In the preceding six months, 28 respondents (5.2%, N=537) had filed a total of 57 reports. Only six respondents had submitted more than two reports in the six-month period. Reports to medical practitioners were more common, with 134 respondents (27.6%, N=486) having done so in the preceding six months, a total of about 400 reports.

Assuming that pharmacists would be referring patients and contacting doctors more regularly on matters other than adverse drug reactions, they were questioned on their activities in this regard during the preceding week (Table 9). Apart from matters relating to prescription drugs, more issues were dealt with by referring patients to medical practitioners than by direct contact with doctors. Respondents were also asked to estimate whether activity during that week had been normal or more or less than usual in regard to patient referrals and doctor contacts. Most respondents felt that the activity had been about normal for both patient referrals (78.6%, N=494) and doctor contacts (72.6%, N=463). Fewer than twenty respondents considered that referrals and

contacts had been more frequent than usual during the period. Eighteen percent felt that they had made fewer referrals than usual, and 23.3% that they had had fewer contacts with doctors than usual. When questioned about interprofessional relations with medical practitioners, 42 pharmacists (7.4%, N=570) found medical practitioners to be co-operative only about half the time or less, while 61.9% found them co-operative most of the time, and 30.7% always experienced co-operation.

TABLE 9

DRUG SURVEILLANCEPatient Referral and Doctor Contacts for a One Week Period

Total Number of Responses = 582

REPORT TYPE	VALUE	POSITIVE RESPONSES and (PERCENT)	PATIENT	DOCTOR
<u>Drug Interactions</u>	None	396(90.2)	370(90.7)	
Patient (439)	Once	23 (5.2)	20 (4.9)	
Doctor (408)	Twice	14 (3.2)	14 (3.4)	
	3 or more	6 (1.4)	4 (1.0)	
<u>Side Effects</u>	None	306(70.0)	337(85.3)	
Patient (437)	Once	85(19.5)	47(11.9)	
Doctor (395)	Twice	32 (7.3)	8 (2.0)	
	3 or more	14 (3.2)	3 (0.8)	
<u>Prescription Drugs</u>	None	290(75.1)	163(37.5)	
Patient (386)	Once	38 (9.9)	80(18.4)	
Doctor (435)	Twice	26 (6.7)	67(15.4)	
	3 or more	32 (8.3)	125(28.7)	
<u>Nonprescription Drugs</u>	None	311(74.8)	340(91.6)	
Patient (416)	Once	30 (7.2)	18(4.9)	
Doctor (371)	Twice	17 (4.1)	7 (1.9)	
	3 or more	58(13.9)	6 (1.6)	
<u>Disease State</u>	None	170(37.1)	311(81.6)	
Patient (458)	Once	51(11.1)	42(11.0)	
Doctor (381)	Twice	62(13.5)	14 (3.7)	
	3 or more	175(38.2)	14 (3.7)	
<u>Other Matters</u>	None	299(86.9)	243(71.7)	
Patient (344)	Once	16 (4.7)	37(10.9)	
Doctor (339)	Twice	9 (2.6)	26 (7.7)	
	3 or more	20 (5.8)	33 (9.7)	

#### 3.4.4 Other Health-Related Services (Table 10)

To identify specialized stock ranges and services, respondents were asked if their pharmacies provided specific goods and/or services.

Stock ranges most commonly advertised by providers were nutritional supplements (48.3%) and invalid or health care aids (42.4%). Sports medicine supplies, asthma pumps, blood pressure monitors and blood glucose monitors were also advertised by greater than 35% of stockists. Only 10.0% of those providing ostomy supplies advertised the fact, perhaps because these items may have been supplied by prescription.

Services most commonly advertised by providers were beauty treatment, ear-piercing, and make-up demonstrations (59-74%). Among specialized health-related services, the most commonly advertised were diabetic centres (47.9%) and blood glucose monitoring (42.3%), pregnancy testing (46.0%), and hire of invalid or health care aids (45.9%). Services related to blood pressure and pulse rate measurement were advertised by about one third of providers. Only 24.0% of those providing sports medicine services, such as strapping, advertised the service.

Sixty-two respondents (12.6%, N=494) nominated other facilities provided by their pharmacies, including participation in the methadone programme, and provision of hearing tests and appliances.

Seventy-three respondents (13.9%, N=524) expressed the intention of commencing special facilities or services, including computerized dispensing, diabetic centres, and nutritional supplies and/or services.

TABLE 10

OTHER HEALTH-RELATED SERVICES

Total number of responses = 582

Results not tabulated if valid responses below 50%

VARIABLE	VALID RESPONSES	POSITIVE RESPONSES	PERCENT
GOODS			
Asthma Pumps	546	356	65.2
Blood Glucose Monitors	527	172	32.6
Blood Pressure Monitors	535	292	54.6
Health Care Aids (Sale)	532	347	65.2
Homeopathic Medicines	504	74	14.7
Naturopathic Medicines	505	109	21.6
Nutritional Supplements	537	377	70.2
Ostomy Aids	502	59	11.8
Sports Medicine Goods	509	244	47.9
Veterinary Medicines	514	227	44.2
SERVICES			
Acupuncture	517	4	0.8
Blood Glucose Monitoring	518	26	5.0
Blood Pressure Monitoring	509	42	8.3
Self-Op. B.P. Measurement	515	49	9.5
Pulse Rate Measurement	518	73	14.1
Beauty Treatment	492	162	32.9
Make-up Demonstrations	512	245	47.9
Ear-Piercing	511	140	27.4
Diabetic Centre	509	71	14.0
Health Care Aids (Hire)	524	279	53.2
Pregnancy Testing	531	189	35.6
Sports Medicine Services	515	192	37.3

### 3.4.5 Over-the-Counter Medication Services (Table 11)

Review of the Australian and international literature did not reveal any innovative services from community pharmacy in relation to the provision of nonprescription medications. However, it was evident that differing estimates of community pharmacy involvement in primary health care services had resulted from studies employing various methodologies. Observational methods appeared to provide more reliable results than those depending on self-reporting or estimation. In this mail survey, investigation into the nonprescription drug area of practice was therefore restricted to eliciting opinions on the need for a class of drugs to be available from pharmacies only (Schedules 2 and 3), whether more drugs should be released into this category from prescription-only status (Schedule 4), and what level of professional fee was being charged for supply of drugs in this category (Schedule 3). Considerable changes of this nature had occurred in Queensland shortly before the survey was conducted.

Although the vast majority of respondents (98.6%) thought that a pharmacy-only class of drugs should continue to exist, only 47.7% thought that more drugs should be released into this category for pharmacist prescribing, with 15.1% of respondents undecided on the issue.

Despite recommendations from PGA (Qld.Branch) that a dispensing fee of \$3.60 should be charged on S3 medications, only 38.7% of respondents indicated that they were acting on this recommendation, with 22.7% not charging any fee despite requirements to supervise the sale and label the product.

TABLE 11

OVER-THE-COUNTER MEDICATION SERVICES

Total number of responses = 582

Results not tabulated if valid responses below 50%

VARIABLE	NUMBER OF VALID RESPONSES	VALUE	NUMBER OF POSITIVE RESPONSES	PERCENT
Need for Pharmacy-Only Schedule	576	Yes	568	98.6
		No	1	0.2
		Undecided	7	1.2
Need More Pharmacy-Only Medicines	570	Yes	272	47.7
		No	212	37.2
		Undecided	86	15.1
Fee Charged on Pharmacy-Only Medicines	543	No fee	123	22.7
		Less than \$1	2	0.4
		\$1.00-\$1.99	94	17.3
		\$2.00-\$2.99	74	13.6
		\$3.00-\$3.99	23	4.2
		Guild (\$3.60)	210	38.7
		\$4.00 or more	3	0.6
Various	14	2.6		

3.4.6 Commercial Services (Table 12)

Results relating to provision of commercial services have been included for completeness, even though not directly related to the aims of the study. In addition to the agencies listed, respondents were also acting as agents for various other groups including funeral plans, insurance, dry cleaning, hearing aids, post office and ambulance. Other services nominated by respondents included photo-copying and making appointments for clients with other health workers.



TABLE 12

COMMERCIAL SERVICES

Total number of responses = 582

Results not tabulated if valid responses below 50%

VARIABLE	NUMBER OF VALID RESPONSES	NUMBER OF POSITIVE RESPONSES	PERCENT
Customer Accounts	572	523	91.4
Bankcard	571	494	86.5
Other Credit Cards	538	343	63.8
Tax Cards	573	532	92.8
Discounts	541	345	63.8
Bank Agency	479	107	22.3
Building Society Agency	479	125	26.1
Credit Union Agency	452	47	10.4
Medibank Agency	499	206	41.3
Medical Benefits Fund Agency	560	515	92.0
Payment Agency for Gas	503	7	1.4
Payment Agency for Electricity	513	29	5.7
Payment Agency for Rates	508	24	4.7
Justice of the Peace	522	161	30.8
Film Processing Agent	576	566	98.3
Passport Photos	496	62	12.5
Adult Scales	553	437	79.0
Baby Scales	550	474	86.2

### 3.5 DISCUSSION

#### 3.5.1 Community Pharmacy Services

Objective 1 - To determine the nature and extent of services being provided through community pharmacies in Queensland.

Objective 1 has been fulfilled by 3.4.3 to 3.4.6 and summarized in Tables 7 to 12. Services related to dispensing have been presented as physical aspects (Table 7), counselling (Table 8) and drug surveillance (Table 9). Other health-related services identified were either involved mainly with the sale of specialized stock ranges, or combined services including monitoring and testing with the stocking of such ranges of goods (specialized services) (Table 10). The mail survey methodology was considered inappropriate for measurement of extent of services related to nonprescription medication, but opinions on controversial issues in this field at the time were presented in Table 11. Commercial services were listed in Table 12.

The range and extent of innovative specialized services being provided by at least five percent of community pharmacies in Queensland at the end of 1984 are shown in Table 13. Pharmacies offering diabetic services were classified by a positive response to operation of a "diabetic centre" and/or provision of a staff-operated blood glucose monitoring service. Pharmacies offering hypertensive services were identified by positive response to the provision of a staff-operated blood pressure monitoring service. It is interesting to note that 70% (408) of the pharmacies were involved in one or more of the listed non-traditional service

areas. Fifty percent of these were providing one service only, 35.8% were providing two, 11.0% were providing three, and the remaining 3.2% were providing four or five of the listed services.

TABLE 13

SPECIALIZED SERVICES

SERVICES	No. of RESPONSES	No. PROVIDING SERVICE	% PROVIDING SERVICE
Invalid or Health Care Aids Hire	524	279	53.2
Sports Medicine Services	515	192	37.3
Pregnancy Testing in Pharmacy	531	189	35.6
Diabetic Services	526	80	15.2
Hypertensive Services	509	42	8.3

NOTE: Frequencies below 5% not tabulated.

The 1982 study of pharmacies in NSW and ACT by Ortiz et al (43) found that pharmacies dispensed an average of 520 prescriptions per week, which translates to a figure of 2253 per month. Patient medication records were kept by 17% of pharmacies. Although this figure is lower than that found by the 1984 Queensland survey, it may be attributable to the increased penetration of computerized dispensing systems during the period: 7% recorded in NSW/ACT in 1982 and 12% in Queensland in 1984. (Compare Table 7). Ortiz et al (43) found that 8% of pharmacies had a counselling area separated from

the normal trading environment, and that 26% of respondents used aids to assist counselling, including special reference books, patient leaflets, advisory labels, charts, and demonstration units. (Compare Table 8). Services identified in pharmacies in NSW and ACT by Ortiz et al (43) in 1982 were pregnancy testing (64%), blood pressure testing (11%), pulse rate measurement (1.7%), urine testing (0.7%) and blood glucose testing (0.6%). (Compare Table 10). Although pregnancy testing was offered by a much lower proportion of pharmacies in the Queensland study, a higher proportion indicated involvement in diabetic services. This may have been due to pharmaceutical company participation in the setting up of diabetic centres in community pharmacies during this period.

### 3.5.2 Pharmacist Characteristics

Objective 2 - To collect demographic data about pharmacists engaged in community pharmacy practice in Queensland.

Objective 2 has been fulfilled by 3.4.1 and summarized in Table 4. Demographic details of pharmacists in charge were presented in Table 5.

Interstate comparisons of pharmacist demographics were not readily available for the period under study, but figures prepared from the data collected by Pharmacy Boards in 1982 (44) indicated that extrapolation to the Australian situation would not be possible. For example, the proportion of female registrants varied between States from 29.0% in WA to 47.3% in ACT. Respondents to the 1982 surveys employed in community pharmacies varied from 63.9% in Tas. to 88.0% in WA,

with the proportion of females employed in community pharmacy varying from 22.9% in SA to 43.6% in ACT. Age distribution also varied between States from 25.5% of employed pharmacists in SA aged between 40-49 years to 46.2% in ACT. However, wide variations in response rates were also evident, ranging from a low of 58.4% of NSW registrants to a high of 88.6% of Tasmanian registrants.

The only comparable Australian study was a survey conducted in NSW and ACT in 1982 (43), which received replies from 68% of pharmacies. The survey found that the pharmacists in charge were 87% male, aged between 21 and 77 years with a mean of 44 years, 64% with Ph.C. and 36% with B.Pharm. qualifications. Most respondents (79%) worked more than forty hours per week. Pharmacists in charge were the sole owners of 55% of pharmacies, partners in 28%, and employees in 18%. Membership of PSA was claimed by 85%, and of PGA by 80%. One third of respondents had attended an educational function in the preceding twelve months. The AJP was cited as the most commonly received journal. (Compare Table 5).

### 3.5.3 Pharmacy Characteristics

Objective 3 - To collect business characteristic data about community pharmacies in Queensland.

Objective 3 has been fulfilled by 3.4.2 and summarized in Table 6.

The 1982 survey by Ortiz et al (43) found that 17% of NSW and ACT pharmacies were located in central business districts or small country towns, 8% in regional shopping centres, 36% in local neighbourhood shops, 36% in suburban

shopping strips, and 4% in other locations. Only 33% of pharmacies opened for normal trading hours, with the remainder open for longer hours. Sixty percent were members of a marketing group. The average turnover was in the vicinity of \$320,000 per annum. The respondent was the only full-time pharmacist employed in 69% of pharmacies. (Compare Table 6).

Interstate variations in community pharmacy business characteristics have been reported in the Guild Digest, 1986 (39).

#### **3.5.4 Factors Involved in Provision of Specialized Services**

Objective 4 - To determine the relationships between demographic and business factors and the provision of innovative specialized services.

A series of null hypotheses of the general form "There is no difference in (variable) between providers and nonproviders of (service)." were tested by the chi square statistic, using a critical significance level of  $P=0.05$ .

The demographic and business information variables listed in Table 14 were correlated against the specialized services shown in Table 13. The analysis was intended as a screening procedure to facilitate further investigation of factors affecting the establishment and operation of specialized services.

Only demographic and business variables significantly related to the provision of each specialized service have been discussed.

TABLE 14

DEMOGRAPHIC and BUSINESS FACTORS

## DEMOGRAPHIC VARIABLES

Sex  
 Age  
 Year and type of pharmacy qualification  
 Pharmacist Status ie owner, partner, manager  
 Membership of professional organizations  
 Attendance at continuing education activities

## BUSINESS VARIABLES

Site  
 Location ie city or country  
 \*Trading Hours  
 Size  
 Marketing Group membership  
 Turnover  
 Prescription proportion  
 Availability of reference texts

\*For comparative purposes, trading hours were grouped into normal, extended and other, defined as follows:

Normal Trading Hours	- Mon. to Fri. to 6 p.m. or Mon. to Fri. to 6 p.m. and Sat. to 12 noon
Extended Trading Hours	- Regularly extending beyond 6 p.m. one or more nights per week, and/or after 12 noon Sat., and/or Sun.
Other Trading Hours	- Less than five days per week or irregular extended hours on call or rostered.

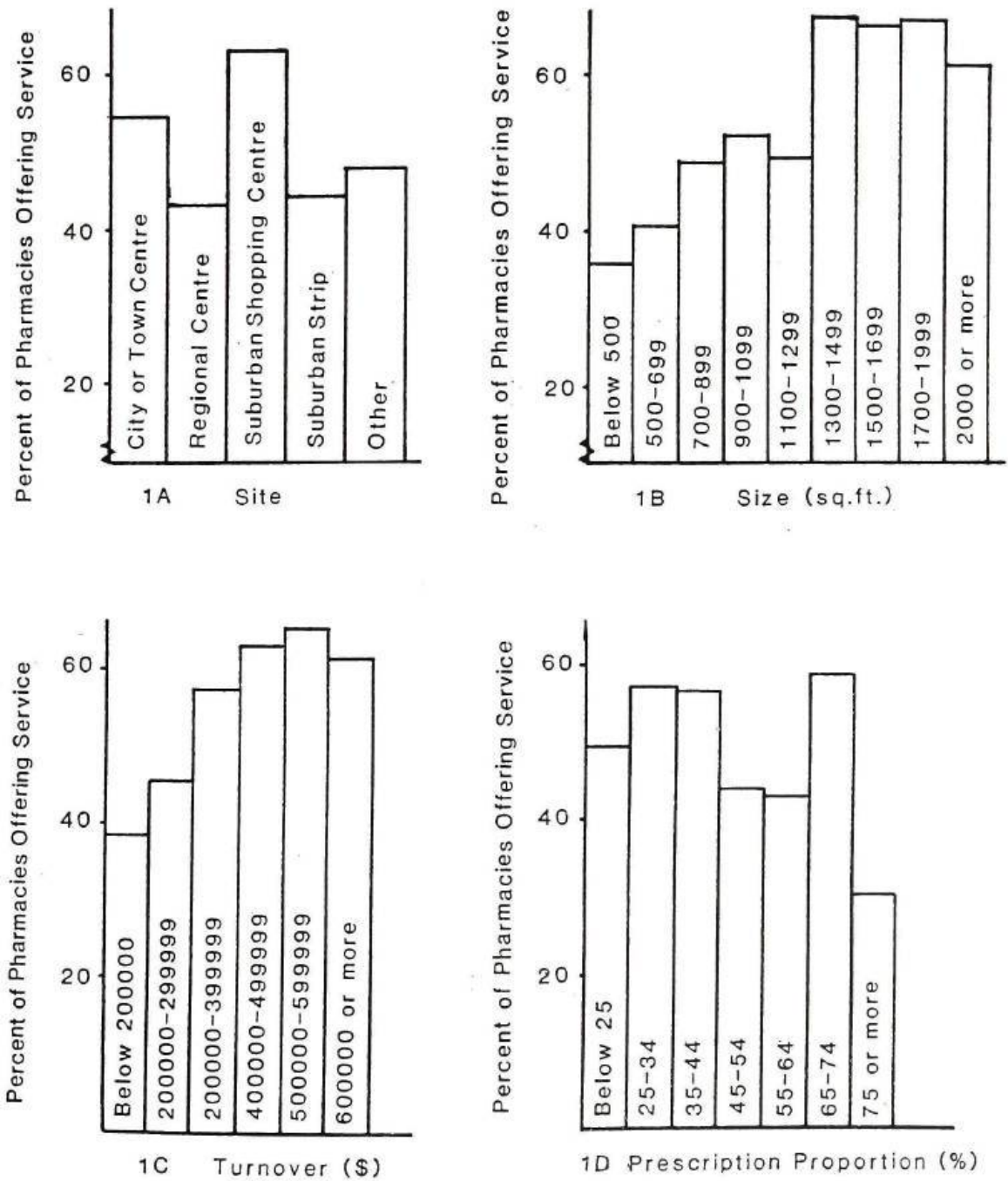
3.5.4.1 Invalid or Health Care Aids Hire Service

Sex of the pharmacist was the only demographic factor showing significant differences between providers and non-providers of a hire service ( $\chi^2 = 8.25$  DF=1 P=0.004). A larger proportion of male respondent pharmacists (56%) than female (39%) were involved in the provision of this service. The reason for this difference has not been elucidated, but it is possible that the heavy and cumbersome nature of aids such as wheelchairs may be an influencing factor in the decision to implement such a service.

Significant business factors (Figure 1) in provision of an invalid aids hire service were site and size of the pharmacy, turnover, proportion of turnover resulting from prescription trade, and marketing group membership.

FIGURE 1

Business Factors Related to Provision of Invalid Aids Hire Services





Higher proportions of responding suburban shopping centre pharmacies and city or town centre pharmacies were involved in hiring ( $\chi^2 = 12.58$  DF=4  $P=0.014$ , Fig 1A). Less involvement was seen in regional shopping centres and neighbourhood shopping strips. The contribution by pharmacies classified as "other" is numerically small, as this group comprised less than 10% of the total sample. Definitions of sites were provided by the survey instrument (Appendix 4).

A greater proportion of larger pharmacies ( $\chi^2 = 20.85$  DF=8  $P=0.008$ , Fig 1B) was involved. Lack of physical space may indeed be a limiting factor in the decision to provide such a service.

A greater proportion of pharmacies with higher turnover was providing a hire service ( $\chi^2 = 20.00$  DF=5  $P=0.001$ , Fig 1C). However, the relationship between provision of this service and the prescription proportion of the business appears to be more complex ( $\chi^2 = 13.20$  DF=6  $P=0.040$ , Fig 1D).

Strong inter-relationships were found to exist between business factors. The correlation between size and turnover ( $\chi^2 = 228.16$  DF=24  $P=0.0001$ ) appeared to be the only comparison showing a pattern consistent with the relationship to provision of invalid or health care aids hire service. It may be postulated, although a causal relationship cannot be established, that the convenience of a suburban shopping centre pharmacy in terms of distance and off-road parking, combined with an area sufficient for storage of required stock, and a turnover sufficient to allow investment in the required equipment may provide a set of conditions optimal for

the development of invalid and health care aids services.

A greater proportion of merchandising group members (59%) was providing the service than of non-members (47%) ( $\chi^2=7.80$  DF=1 P=0.005). Further investigation of this factor showed that the group with major involvement had invested in a Home Health Care company the previous year and had offered training nights to pharmacy staff in this area of business during 1984.

#### 3.5.4.2 Sports Medicine Services

Sports medicine services eg strapping, were offered by a higher proportion of pharmacists who had attended general continuing education programmes during 1984 (42%) than of those not attending (32%) ( $\chi^2=5.35$  DF=1 P=0.021). Further investigation showed that evening lectures were the major type of continuing education (CE) involved. The principal CE provider in Queensland, PSA (Qld.Branch), had offered evening lectures on the topic of Sports Medicine at several centres throughout the State during 1984. Although this may appear to be an influence in the provision of this service, the methodology of the survey was not designed to test such a relationship. It may be that pharmacists already involved in sports medicine were those motivated to attend lectures on the subject, or that innovative practitioners in general are those more likely to attend continuing education courses.

No business factors were found to be significant to the provision of this service.

### 3.5.4.3 Pregnancy Testing Service

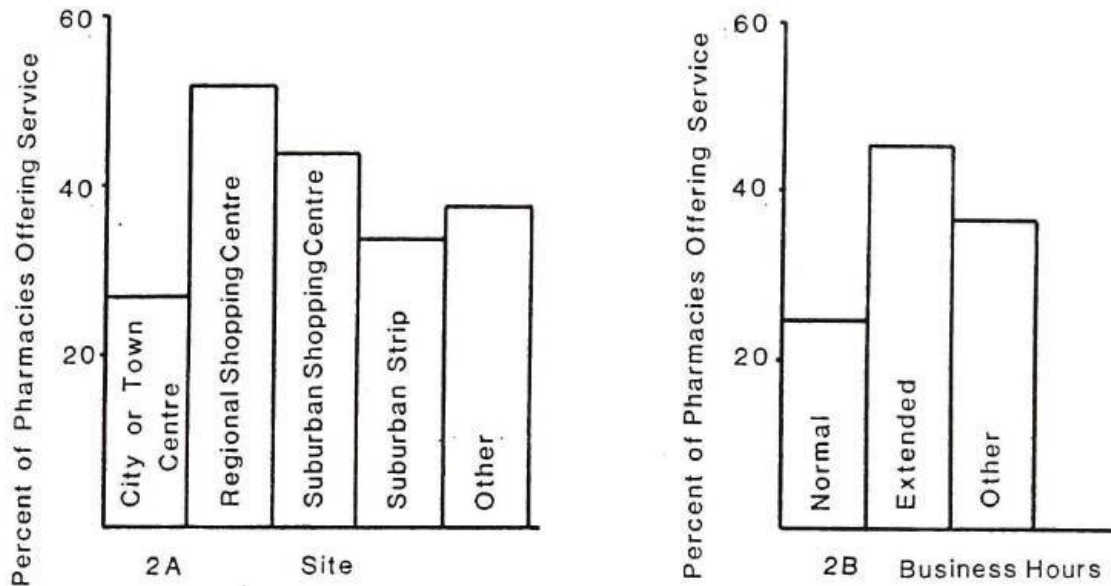
Age of the pharmacist ( $x = 11.65$   $DF=4$   $P=0.020$ ) type of pharmacy qualification ( $x = 15.01$   $DF=1$   $P=0.001$ ) and year of qualification ( $x = 9.528$   $DF=3$   $P=0.023$ ) were significantly different demographic features between providers and non-providers of a pregnancy testing service. Since respondents had predominantly qualified in Queensland, where pharmaceutical education underwent a transition from an apprenticeship system conferring the qualification of Pharmaceutical Chemist (Ph.C.) to a university course conferring the degree of Bachelor of Pharmacy (B.Pharm.) in the early 1960's, and as the vast majority of students proceed directly from school to pharmacy education, strong correlations exist among these three factors eg for comparison of age and year of qualification,  $R=0.89$ . Provision of the service was predominantly by young, more recent B.Pharm. graduates. Pregnancy testing techniques have been covered in the undergraduate course in Queensland since the mid-1970s. The development of easily performed, reliable in vitro tests may have accelerated the provision of pregnancy testing services in community pharmacies.

Business factors (Figure 2) significantly related to the provision of a pregnancy testing service were site, location, and opening hours of the pharmacy.

The service was offered by a higher proportion of pharmacies in regional shopping centres than other sites ( $x = 13.97$   $DF=4$   $P=0.007$ , Fig 2A) and a higher proportion of pharmacies in the Brisbane metropolitan area (47%) than pharmacies outside Brisbane (25%) ( $x = 25.93$   $DF=1$   $P=0.0001$ ).

FIGURE 2

## Business Factors Related to Provision of Pregnancy Testing Services



A higher proportion of pharmacies with extended trading hours ( $\chi^2 = 21.32$  DF=2  $P=0.0001$ , Fig 2B) were offering the service.

Significant relationships were found to exist between site and trading hours ( $\chi^2 = 66.22$  DF=8  $P=0.0001$ ), location and trading hours ( $\chi^2 = 24.13$  DF=2  $P=0.0001$ ), and site and location ( $\chi^2 = 28.43$  DF=5  $P=0.0001$ ). It cannot be determined from the current study whether any or all of the factors are causal to the provision of pregnancy testing facilities.

#### 3.5.4.4 Diabetic Services

Pharmacies offering diabetic services were classified by a positive response to operation of a "diabetic centre" and/or provision of a staff-operated blood glucose monitoring service.

Diabetic services were offered by a higher proportion of male pharmacist providers (17%) than females (8%) ( $\chi^2 = 4.40$  DF=1 P=0.036) and by a higher proportion of pharmacists in partnership situations (22%) than by sole owners (16%) or managers (7%) ( $\chi^2 = 11.83$  DF=2 P=0.003). A significant relationship was found between the sex and status of the pharmacist ( $\chi^2 = 123.28$  DF=4 P=0.0001) such that around 85% of responding pharmacists of owner or partner status were male. As well as the influence of ownership, other questions which arise for follow-up studies of the factors affecting the provision of these services include issues such as the likelihood of providers of the service or members of their family being diabetic.

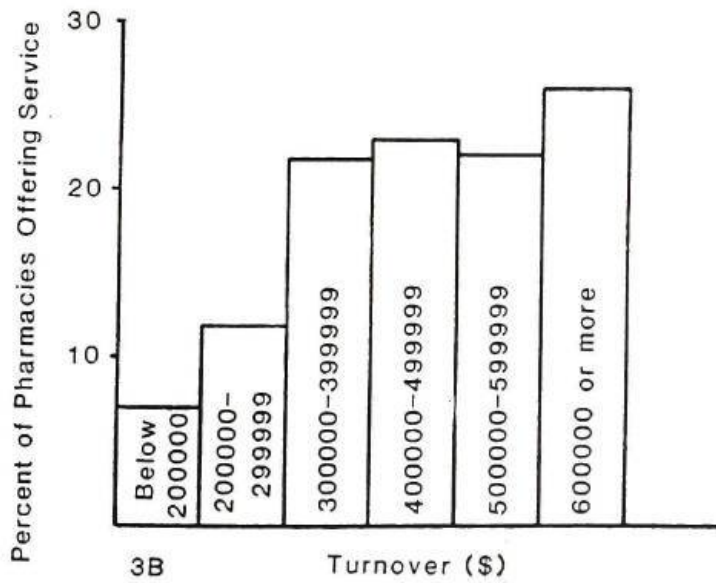
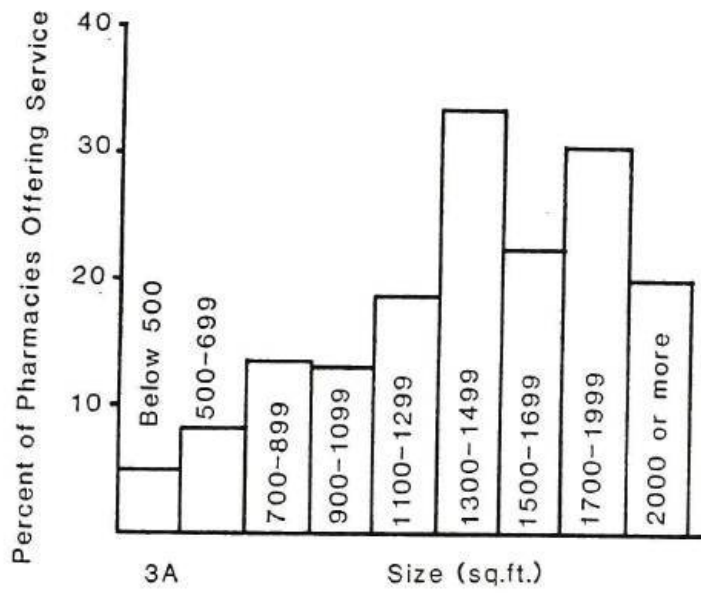
Some pharmacies identifying themselves as "diabetic centres" may have been functioning only in a supply capacity and not in a service role. A pharmaceutical firm specializing in diabetic goods identifies selected pharmacies handling their products as Diabetic Self-Care Centres. The survey instrument was designed to identify suppliers of diabetic goods and/or services for inclusion in follow-up studies.

Members of the PGA, an organization for pharmacy owners, were offering services in greater proportions (18%) than non-members (7%) ( $\chi^2 = 6.16$  DF=1 P=0.013). The Guild policy was not actively promoting diabetic services in 1984.

Business factors (Figure 3) related to provision of diabetic services were pharmacy location, size, turnover, and marketing group membership.

FIGURE 3

Business Factors Related to Provision of Diabetic Services



A higher proportion of pharmacies outside the Brisbane metropolitan area (19%) was involved in the provision of these services than Brisbane pharmacies (11%) ( $\chi^2 = 7.49$  DF=1 P=0.006).

Smaller pharmacies were involved in lower proportions ( $\chi^2 = 19.85$  DF=8 P=0.011, Fig 3A), as were pharmacies with lower turnovers ( $\chi^2 = 17.56$  DF=5 P=0.004, Fig 3B). As previously mentioned, size and turnover were found to be inter-related (P=0.0001).

Relationships were also found to be significant between size and location ( $\chi^2 = 18.93$  DF=8 P=0.015) and between location and turnover ( $\chi^2 = 28.43$  DF=5 P=0.0001) such that Brisbane pharmacies were generally smaller than country pharmacies, and 61% of pharmacies in Brisbane reported an annual turnover below \$300 000 compared to 45% of country pharmacies. It may be that metropolitan diabetics are more likely to obtain their needs through illness support groups such as the Diabetic Association of Queensland, or it may be that expansion into diabetic services is not a viable exercise for the smaller pharmacy, both in terms of physical size and turnover.

Marketing group members were involved in diabetic services in a higher proportion (18%) than non-members (12%) ( $\chi^2 = 4.10$  DF=1 P=0.043), but the contribution of individual groups was found not to vary significantly (P=0.215).

#### 3.5.4.5 Hypertensive Services

Pharmacies offering hypertensive services were identified by positive response to the provision of a staff-operated blood pressure monitoring service.

No demographic factors were found to be significantly related to the provision of hypertensive services.

Site was the only business factor which varied between providers and non-providers ( $\chi^2 = 9.61$  DF=4 P=0.048). The service was offered by higher proportions of pharmacies in regional shopping centres (16%), and city or town centres (12%). Possible interpretation could be that pharmacies in these situations have a larger, more varied customer flow providing a larger potential pool of candidates for screening.



### 3.5.5 Selection of a Specialized Pharmacy Practice Area

Objective 5 - To select an area for in depth investigation of the development of innovative specialized practice.

From the innovative specialized services listed in Table 13, diabetic service was chosen for follow-up studies to elucidate the precise nature of the service, the extent of use, and causal factors in service development. The selection was based on the diversity of possible services which could be provided to diabetic patients through community pharmacies indicated by international literature review, and the variety of demographic factors (sex, pharmacist status, PGA membership) and business factors (location, size, turnover, merchandising group membership) which were shown experimentally to differ between providers and nonproviders of diabetic services. Also, the identified sample (80 pharmacies) was large enough for further study, especially as means were available for expanding the sampling frame (Ames list etc).

## 3.6 REFERENCES

1. Warwick, D.P. and Lininger, C.A. (1975). The Sample Survey: Theory and Practice. Chapter 1. "Introduction." New York:McGraw-Hill, pp12-14.
2. Churchill, G.A. (1979). Marketing Research. Methodological Foundations. 2nd Ed. Chapter 9. "Sampling Procedures." Hinsdale, Illinois:The Dryden Press, pp298-299.
3. Tull, D.S. and Hawkins, D.I. (1980). Marketing Research: Measurement and Method. A Text with Cases. 2nd Ed. Chapter 11. "Sampling and Research: The Sampling Process." New York:Macmillan Publishing Co.,Inc., pp378-381.
4. Pathak, D.S., Meinhold, J.M. and Fisher, D.J. (Jul.1980). "Research Design: Sampling Techniques." Am.J.Hosp.Pharm., 37:998-1005.
5. Moser, C.A. and Kalton, G. (1971). Survey Methods in Social Investigation. 2nd Ed. Chapter 3. "The Coverage of Surveys." London:Heinemann Educational Books, pp54-56.
6. Warwick, D.P. and Lininger, C.A. Ibid. Chapter 4. "Sampling and Estimation." pp69-110.
7. Commonwealth Department of Health. (1984). Private Communication.
8. Moser, C.A. and Kalton, G. Ibid. Chapter 7. "Other Aspects of Sampling." pp146-186.
9. Dillman, D.A. (1978). Mail and Telephone Surveys. The Total Design Method. Chapter 2. "Which is Best: The Advantages and Disadvantages of Mail, Telephone, and Face-to-Face Surveys." New York:Wiley-Interscience, John Wiley and Sons, pp39-76.
10. Churchill, G.A. Ibid. Chapter 3. "Research Design." pp46-65.
11. Tull, D.S. and Hawkins, D.I. Ibid. Chapter 2. "Research Design." pp28-58.
12. Zelnio, R.N. (Aug.1980) "Data Collection Techniques: Mail Questionnaires." Am.J.Hosp.Pharm., 37:1113-1119.
13. Commonwealth Department of Health. (1985). Community Surveys. A Practical Guide. Chapter 1. "Getting Started." Canberra:Australian Government Publishing Service, pp6-14.
14. Pharmacy Guild of Australia, (1985). The Pharmacy Guild Digest, 1985.
15. Moser, C.A. and Kalton, G. Ibid. Chapter 11. "Methods of Collecting Information II - Mail Questionnaires." pp256-269.

16. Warwick, D.P. and Lininger, C.A. Ibid. Chapter 6. "Questionnaire Design." pp128-132.
17. Manasse, H.R. and Lambert, R.L. (May 1980). "Types of Research: A Synopsis of the Major Categories and Data Collection Methods." Am.J.Hosp.Pharm., 37:694-701.
18. Commonwealth Department of Health. Ibid. Chapter 5. "Survey Management." pp44-46.
19. Dillman, D.A. Ibid. Chapter 4. "Constructing Mail Questionnaires." pp119-159.
20. Commonwealth Department of Health. Ibid. Chapter 3. "The Questionnaire." pp22-31.
21. Commonwealth Department of Health. Ibid. Chapter 2. "The Sample." pp15-21.
22. Dillman, D.A. Ibid. Chapter 5. "Implementing Mail Surveys." pp160-198.
23. Moser, C.A. and Kalton G. Ibid. Chapter 13. "Questionnaires." pp303-349.
24. Dillman, D.A. Ibid. Chapter 3. "Writing Questions: Some General Principles." pp79-118.
25. Moser, C.A. and Kalton, G. Ibid. Chapter 17. "Analysis, Interpretation and Presentation." pp439-478.
26. Warwick, D.P. and Lininger, C.A. Ibid. Chapter 9. "Editing and Coding." pp234-255.
27. Dickson, W.M. (1981). Chapter 19. "Use of Computers in Research." in Nelson, A.A.(ed.), Research in Pharmacy Practice: Principles and Methods. Bethesda (MD):American Society of Hospital Pharmacists, pp129-135.
28. Commonwealth Department of Health. Ibid. Chapter 6. "Data Management." pp49-64.
29. SAS Institute Inc. (1985). SAS User's Guide: Basics. and SAS User's Guide: Statistics. Version 5 Edition. Cary, NC:SAS Institute Inc.
30. Young, W.W. (Oct.1980). "Interpretation of Research Data: Exploratory Data Analysis." Am.J.Hosp.Pharm., 37:1394-1398.
31. Stolar, M.H. (Nov.1980). "Interpretation of Research Data: Hypothesis Testing." Am.J.Hosp.Pharm., 37:1539-1545.
32. Jackson, R.A. (Dec.1980). "Interpretation of Research Data: Selected Statistical Procedures." Am.J.Hosp.Pharm., 37:1673-1680.

33. Reynolds, H.T. (1984). Analysis of Nominal Data. Chapter 2. "Chi Square Test." Sage University Papers, Series: Quantitative Applications in the Social Sciences, 07-007. Beverly Hills:Sage Publications, pp15-30.
34. Kerlinger, F.N. (1973). Foundations of Behavioural Research. 2nd.Ed. Chapter 23. "Laboratory Experiments, Field Experiments, and Field Studies." Tokyo:Holt-Saunders International Editions, pp395-488.
35. Kerlinger, F.N. Ibid. Chapter 24. "Survey Research." pp410-423.
36. Warwick, D.P. and Lininger, C.A. Ibid. Chapter 11. "Analysis and Reporting." pp292-327.
37. Dillman, D.A. Ibid. Chapter 1. "The Total Design Method (TDM): A New Approach to Mail and Telephone Surveys." pp1-33.
38. Department of Health, Division of Research and Planning, Central Statistical Unit, (Sept.1987). Health Care Professionals Data Collection, 1985. Demographic, Training and Workforce Characteristics of Health Care Professionals Registered in Queensland in 1985. Information Paper: Pharmacists. Brisbane:Department of Health.
39. Pharmacy Guild of Australia, (1986). The Pharmacy Guild Digest, 1986.
40. The Pharmacy Act of 1976-1987. (1987). Queensland:Government Printer.
41. The Dispensary Regulations of 1973. (1973). Queensland:Government Printer.
42. The Dispensary Regulations of 1973 - Amendments. (1985). Queensland:Government Printer.
43. Ortiz, M., Thomas, R., Walker, W-L. and Beed, T.W. (Jun.1984). "Patient Counselling by Community Pharmacists: Findings of a Pharmacy Practice Foundation Survey. (Part 1)." Aust.J.Pharm., 65:498-503.
44. Anon. (Apr.1984). "Student Intake is Just Right, but Trend is to Feminisation." Aust.J.Pharm., 65:240,242-243,331.

## Chapter 4

**SURVEY OF DIABETIC SERVICES  
FROM COMMUNITY PHARMACIES IN  
QUEENSLAND, 1986-87**

## 4.1 INTRODUCTION

Provision of diabetic services was chosen as the specialized area of practice for further investigation because of the size of the identified sample, the variety of demographic and business variables significant to its supply, and the scope for involvement in various aspects of service.

Review of the international literature showed that reasons given by practitioners for becoming involved in the provision of diabetic services included perceiving the needs of a large number of diabetics in the local community (1,2) and having a diabetic in the family (3,4). Rewards for involvement were seen as both professional and financial (2,5,6).

An Australian pharmacist active in the field (7) was of the opinion that, while all pharmacies needed to have some involvement with diabetic patients, not all were required to be specialized outlets. However, these outlets needed to be strategically placed demographically to ensure efficient service for patients.

Suggestions have been made and reports published, both in Australia and overseas, regarding potential community pharmacy involvement in aspects of diabetic care including service provision, supply functions and counselling.

#### 4.1.1 Services

Services suggested or reported have included:

1. patient and pharmacy staff education via leaflets, booklets, and audio-visual means (2,5,6,8-23),
2. blood or urine glucose screening and/or monitoring either on a regular basis or as part of a promotion such as Diabetes Week (1,3,5,7,9,12,22-29),
3. assistance in the case of blood glucose monitoring equipment problems (1),
4. maintenance of patient profiles (5,6,8,10,11,30,31).

A study by Zelnio et al (32) found that both patients and medical practitioners reacted favourably to pharmacists providing informational services such as educational pamphlets, keeping patient profiles, and teaching testing techniques. However, their attitude was less favourable towards pharmacists performing urine tests, taking blood samples, checking injection sites or teaching insulin injection techniques.

#### 4.1.2 Supply

The establishment of a specific area of the pharmacy for storage and display of diabetic goods has been advocated and reported (1,4,6,8,9,14,20,22), with some authors recommending that such an area should also provide facilities for training patients in techniques (5,6,22,29).

Among the wide range of diabetic goods suggested for stock have been:

1. prescription-only items such as oral hypoglycaemics (5,10,14,33),
2. a range of insulin types (5,6,9,10,14,33,34),
3. disposable syringes (1,5-7,14,15,34), glass syringes and disposable needles (5,9,34), automatic injectors (4,34) and other injection aids including scale magnifiers (14,15), devices for destroying needles (15,34) and alcohol swabs (5,8,14,29,34),
4. blood glucose monitors (1,5-7,14,22,34) and ancillary items such as blood glucose testing strips (5-7,14,22,29,34) and blood letting devices (6,14,22,29,34),
5. urine testing equipment, strips and tablets (5-7,9,10,14,22,29,34,35),
6. diabetic sweets (1,9) and diabetic foods (5,6,14),
7. sugar substitutes (5,9,29),
8. identification cards, bracelets and/or tags (6,8,10,14,36),
9. glucagon injection (10,34),
10. oral glucose (5,10,15,34),
11. books on diabetic diet and/or diabetes and its management (6,9,10,14).

#### 4.1.3 Counselling

Areas in which pharmacists were suggested to be of potential assistance in counselling diabetic patients included:

1. storage, administration and other aspects of insulin therapy (6,8,10,11,16-18,33-40),

2. methods of measuring blood glucose, including care of monitors, blood sampling techniques, and record keeping (1,6,15,17-19,20,29,33,37-39),

3. measuring and recording urine glucose (6,10,18,27,33,35-37),

4. oral hypoglycaemic therapy including dosage and drug interactions, and advice about other prescription drugs which may affect blood glucose levels (5,6,10,14,17,29,31,33,36,39),

5. selection of nonprescription medications, including advice on sugar content of medicines (5,6,9-11,14,22,31,36,37,41),

6. aspects of diabetic management including dietary advice (10,18,35-38,42), coping with diabetic emergencies (6,17,18,33,34,36-38), foot care (6,9,10,14,15,18,31,35,36,38,39) and eye care (31,35,43).

The role of the pharmacist in referral of diabetic patients to other health care professionals was also emphasized (3,12,14,22,23,28). For effective counselling to occur, Cohen (14) stressed the need for knowledgeable staff. A pharmacist involved in the field (4) noted that considerable time was spent advising patients, and that pharmacists and staff could add to their knowledge by taking an interest in



the subject, talking and listening to diabetics, and reading. Other suggested methods for improving knowledge were attending diabetes education programmes (5,6,22), reading diabetes journals (22), and joining local Diabetic Associations (5,6,22) or Diabetic Educators' Associations (5,6,29).

#### 4.2 AIMS

The aims of the study into specialized diabetic practice were:

1. To document the services offered to patients by pharmacies involved in the provision of diabetic services.
2. To document the types of stock held by community pharmacies relevant to diabetes.
3. To estimate the degree of counselling involvement which community pharmacists perceive themselves to have with diabetic patients.
4. To document the educational background of diabetic service providers.
5. To document the historical development of provision of diabetic services from community pharmacies in Queensland.
6. To determine the motivation for practitioners to become involved in provision of diabetic services.
7. To classify pharmacies involved in specialized diabetic practice into levels of service provision.
8. To describe the services provided at each level of specialization.
9. To describe the characteristics of pharmacists and pharmacies at each level of specialization.

## 4.3 METHODOLOGY

### 4.3.1 The Sample

#### 4.3.1.1 Sample Type

Review of the contemporary literature failed to reveal specific surveys of diabetic service provision from Australian community pharmacies. Because of the lack of comparative information, a census was again selected as the appropriate sampling approach. As the population of community pharmacies providing diabetic services was estimated to be less than 20% of the total population of community pharmacies in Queensland, cost and time factors posed few problems.

#### 4.3.1.2 Sampling Frame

The group of pharmacies to be surveyed was intended to include all pharmacies in Queensland with an interest and involvement in diabetic services. Several means of identification were employed in order to achieve this aim, and pharmacies were included in the sample on the basis of one or more of the following:

1. a positive response to the mail Survey of Pharmaceutical Services Provided by Community Pharmacies in Queensland, 1984 in the areas of provision of a staff-operated blood glucose monitoring service and/or the operation of a diabetic centre in the pharmacy,
2. the appearance of the name of the pharmacy in the Ames Self-Care Centres Directory, April 1986,
3. the appearance of an advertisement regarding diabetic services by the pharmacy in the relevant district edition of the Yellow Pages, Telecom Australia, 1986,

4. the appearance of an advertisement by the pharmacy in recent editions of diabetic publications such as Diabetes Conquest (Australian Diabetes Foundation), Control (Diabetic Association of Queensland) or Diabetes in the News (Miles Laboratories, Aust.),

5. other indications such as ownership by a pharmacist also owning a pharmacy identified by the previous means, known interest by the owner at a previous address, referral by a pharmacist from an identified pharmacy, and recent letters on diabetic issues to the editors of pharmacy publications such as the Australian Journal of Pharmacy and the Australian Pharmacist. (These means of identification were only recorded if the pharmacy had not already been identified by one or more of the previous means.)

A total of one hundred and forty-two pharmacies were identified through these sources, as shown in Table 15.

TABLE 15

## IDENTIFICATION OF PHARMACIES OFFERING DIABETIC SERVICES

Sample Size = 142

SOURCE	NUMBER	PERCENT
1984 Survey	74	52.1
Ames Self-Care	77	54.2
Yellow Pages	5	3.5
Advertisements	2	1.4

NOTE: As pharmacies may have been identified from more than one of these sources, percentages sum to greater than 100%.

Total Other	24	26.9
<u>Composed of:</u>		
Same Owner	5	3.5
Interested Owner	5	3.5
Referred	13	9.2
Letter	1	0.7

#### 4.3.2 Survey Type

It was decided to collect information from pharmacies involved in diabetic services by two methods. The two methods were applied to the same population to provide different information (44). A telephone interview was conducted regarding aspects of service provision, followed by a mail questionnaire designed to collect information about both the businesses and the pharmacists involved. Combining various methods for use in a single survey has been advocated, the advantages of this approach being that each method could complement the other methods used, thereby compensating for each other's inadequacies (44-46).

The main advantages of the telephone interview in this specific instance were that it would be likely to result in a higher response rate and allow faster collection of information than would a mail survey. Also, by conducting the telephone interview first, an opportunity would be provided to establish rapport with respondents prior to their receiving the mail questionnaire, thus being likely to increase the response rate to that section also (44,47-50). Other advantages of using a telephone interview component are that it can be used for questions that are difficult to answer on a mail questionnaire, such as open-ended questions, those needing to be answered in sequence, or those requiring a series of screen questions (44,48). The facility for discussion increases the likelihood of receiving complete and accurate answers to open-ended questions and decreases the chance of misinterpretation of the questions (49,51). While these advantages are shared by face-to-face interviews, the

telephone method is less expensive (49,51). This consideration was of particular concern because of the wide geographic distribution of pharmacies in Queensland. The main disadvantage of the telephone method is that respondents may be less inclined to answer sensitive or personal questions (49,51).

The mail technique allowed respondents the flexibility of completing the questionnaire at a convenient time, with the opportunity to consult other sources of information without incurring the expenses which would be involved in a prolonged telephone interview (44,50). Mail questionnaires also have the advantages of being able to be used for questions which may be difficult to handle by phone, such as personal or sensitive items, long questions, items needing to be ranked, or questions needing diagrams or pictures (44).

#### 4.3.3 Preliminary Pilot Study

As with the previous survey, the preliminary pilot study was conducted by informal discussions with community pharmacists. Pharmacists selected for interview at the preliminary stage were those known, either by reputation or by advertising, to be involved in the provision of diabetic services.

#### 4.3.4 Data Management and Analysis

##### 4.3.4.1 Data Coding

Numerical codes were used for both numerical and categorical data, applying the same rules as were used in the previous survey. In addition, for questions using Likert-type scales offering gradation of response, '1' was used for the most negative response (48). The data coding key was set up as a library within the analytical package Statistical Analysis System (52) to allow output to be readily checked and interpreted (53).

For the telephone interview section of the survey, answers were recorded in full or marked on the survey form and codes later written on the right hand side of the questionnaire to reduce intermediate coding steps and consequent chances of error, and to facilitate data entry (48,53,54).

For the mail survey, where possible, codes were included on the questionnaire (53). Codes not built into the survey instrument were later written directly onto the right hand side of the questionnaire forms.

Responses to attitudinal questions were recorded directly as numerical codes. Open-ended questions were assessed and coded by the chief researcher to maintain consistency (53).

#### 4.3.4.2 Data Entry and Cleaning

Information was entered into the computer in three data bases, Telephone Interview, Mail Survey Pharmacy Information and Mail Survey Pharmacist Information. As the number of cases was fewer than for the previous survey, data was entered once only into the computer and checked manually for accuracy against the original survey forms (53).

On completion of each data base, frequency tables were computed and checked for inconsistencies such as uniqueness of record identifiers, and values outside the range for each variable (53,54). The data coding key was arranged to designate miscodes outside the allowable ranges.

#### 4.3.4.3 Analysis

Analysis of the results was performed using the University of Queensland Prentice Computer Centre mainframe IBM 3083 E24 computer with VMS/CMS operating system and the Statistical Analysis System, SAS (52).

Nonparametric statistical procedures were employed for variables of the nominal type (55-57). Ordinal data, such as that collected by Likert scales, were analysed by summation, and a mean score for each variable calculated (58).

#### 4.4 TELEPHONE INTERVIEW

##### 4.4.1 Aims

The aims of the telephone interview were:

1. To document the services offered to patients by pharmacies involved in the provision of diabetic services.
2. To document the types of stock held by community pharmacies relevant to diabetes.
3. To estimate the degree of counselling involvement which community pharmacists perceive themselves to have with diabetic patients.

##### 4.4.2 Respondents

The respondent was defined as the pharmacist most involved in dealing with diabetic customers (Appendix 8).

##### 4.4.3 Survey Instrument

The questionnaire (Appendix 8) was composed of six sections: an introduction (8 variables); three sections to collect information relevant to the stated aims regarding Services (20 variables), Supply (24 variables) and Counselling (56 variables); Business Information (13 variables); and Demographic Details (4 variables).

###### 4.4.3.1 Length

It was estimated that the questionnaire would take fifteen to twenty minutes to administer. Although this was recognized as possibly inhibitory to response, it was hoped that this problem would be overcome by the respondents' interest in the topic (50). In practice, many interviews extended up to thirty minutes. If the duration of the



questionnaire or external interruptions posed a problem to individual respondents, the design of the survey instrument allowed the interview to be suspended after the 'Supply' section and resumed at a later time without disruption. Dillman (47) stated that, once begun, the length of the interview did not seem to affect completion rates.

#### 4.4.3.2 Appearance

As the survey instrument was not seen by the respondents, appearance was important only to allow consistency and ease of administration by the interviewer (48). Considerations in this regard included clarity of type, using lower case for all sections to be read by the interviewer to the respondent, and upper case for interviewer instructions included on the survey instrument (48,49). Page turns were placed at intervals suitable to the interviewer rather than based on the length of the page. In this way, the interviewer was not required to turn the page in the middle of posing a question, and partially blank pages did not distract the respondent (48). In accounting for the needs of the respondent, attention was paid more to the sound than the appearance of the survey instrument (48).

#### 4.4.3.3 Confidentiality

The respondents' individual right to privacy must be protected by assurance of confidentiality (59). This assurance was offered in the introductory section of the survey instrument, immediately after the respondent's consent to participate had been received.

#### 4.4.3.4 Question Sequence

Screening questions to determine the eligibility of respondents were included at the beginning of the survey instrument for time and cost reasons (60). Screens are easy to manage in a telephone questionnaire format (47).

The questions were ordered to maximize respondent participation (48). As discussed in relation to the previous survey, early questions were general, relevant to the topic and easy to answer, and potentially objectionable questions such as personal or sensitive demographic details were placed towards the end. Dillman (48) has suggested that if respondents answer the first few questions, they are likely to complete the interview. To facilitate the opening of the interview and overcome respondents' doubts about lack of knowledge of the topic, the first question was closed-ended and simple to answer, followed by an open-ended question to allow respondents to express their opinions and establish rapport with the interviewer (48, Appendix 8). The order and format were designed with a logical flow and to keep the attention of the respondent (48,60). Transitional statements were included to minimize confusion on the part of respondents when changes in topic occurred (47,48,60). Questions were ordered according to topic and so that, within that framework, questions of the same format were posed together (48).

#### 4.4.3.5 Question Structure

Because of the length of the questionnaire, and to facilitate coding and analysis, open questions were limited. The question types mainly used were closed-ended questions seeking attribute information, closed-ended questions offering

specific options for answers, and scales assessing respondents' attitudes, beliefs, or behaviour (50). The Likert-type rating scales used required the respondent to place the object being rated one of a series of numerically ordered categories (61). Where answer options were provided, an explanation of the options was included in the wording of the question (48). Care was taken to make the questions easily readable by the interviewer (47,48). An attempt was made to keep the questions short and simple (47), but where this was likely to adversely affect the quality of the response, an explanation was included and the question concluded with a summary (48, Appendix 8). Response categories offered were limited to a maximum of five (48), which was shown to be manageable by respondents in the pilot survey. It was suggested to respondents that they make a note of the descriptions of the numerical response categories offered to the Likert-type questions (48). This approach also allowed abbreviation of following questions using the same response options by posing all questions of a similar type in series in a consistent manner (48).

#### 4.4.4 Pilot Study

A pilot study was performed by telephone after compilation of the survey instrument (48,50,60). Pharmacists in thirteen pharmacies, approximately ten percent of the identified population, were interviewed to test the survey instrument and interview procedures. Feedback was used to make adjustments during the pilot phase (48,60). As only minor changes were necessary, results from the pilot study were included with results from the main survey.

#### 4.4.5 Administration

##### 4.4.5.1 Introduction to the Interview

While advance letters have been shown to improve response to surveys of the general public, surveys of specialized populations, such as the one in question, have been shown generally to attract such high response rates that this approach cannot significantly improve response (48). Instead, the introduction to the interview was used to introduce the interviewer and the research institution, to inform respondents briefly of the topic of the interview and of how they were selected for participation, to convince them that their participation would be worthwhile, to give an indication of the time involved, and to assure them of confidentiality (48,60). Consistency of delivery of the introduction was maintained to avoid bias (59,60).

##### 4.4.5.2 Interviewer Training

Problems of training interviewers (47,48,62) were avoided by the designer of the survey instrument conducting all interviews. This approach also had the advantage that the interviewer was easily able to respond to any questions asked by respondents (48).

##### 4.4.5.3 Timing and Follow-Up

Interviews were conducted during the period December 1986 to January 1987. Because the contact telephone numbers were business numbers, calls were made during business hours on Monday to Friday. Dillman (48) observed that people being surveyed on a work-related topic are more receptive to being interviewed during working hours.

The cover sheet of the survey instrument was designed for keeping a record of calls to the the respondent, including the time and date of each call, the outcome of the call, and recall information indicating whether the interviewer had already spoken with the chosen respondent or not (48). A record was also kept of suggested times for call-backs. It was decided that unavailable respondents should be contacted at least three times (59), but if an interest in participation was expressed, a further call or calls were made in an attempt to complete the interview.

#### 4.4.6 Response

Pharmacists in ninety-one of the one hundred and forty-two pharmacies listed considered the pharmacies to be actively involved in the provision of services for diabetic patients, and were thus suitable for interviewing. Interviews were successfully completed with eighty-three pharmacists and partially completed with another two pharmacists; three expressed willingness to participate in the survey but were unable to be interviewed in spite of several call-backs, due to time constraints; hearing difficulties prevented the participation of another; two did not wish to be interviewed further. Willingness to participate was thus expressed by pharmacists in 97.8% of eligible pharmacies, ie those self-identified as offering diabetic services, with the final response rate being 93.4%. Dillman (47) stated that response rates of over 90% can be expected from properly conducted surveys of specialized groups.

Four pharmacies on the list had closed; one owner

had only recently taken over the pharmacy and was uncertain of the depth of involvement. Pharmacists in the remaining forty-six pharmacies did not consider themselves or the pharmacies to be currently providing any services directed to diabetic patients beyond those offered to all clients. Pharmacists in nine of these said that the pharmacy had never had any special involvement in the area. One had no involvement beyond supply of blood glucose monitors, and another retailed monitors through a health equipment outlet rather than the pharmacy. Twenty-three felt that, despite their attempts to provide a service in the past, there appeared to be little call for the services in their area, four attributing that to the establishment or increased activity of local diabetic groups, and one to improved diabetic clinic services at the local hospital. Five had ceased their involvement due to aspects of Ames Laboratories policies, four due to new ownership, two due to new managership, and one country pharmacy due to restricted hours during which the pharmacist was in attendance at the particular branch.

#### 4.4.7 Validation

Zelnio (50) stated that most biases due to nonresponse tend to disappear when a response rate of 70% or more is achieved. Kerlinger (58) recommended that an attempt be made to learn something of the characteristics of nonrespondents if the response rate is below 80-90%. As response to the telephone interview was 93.4%, sample validation was considered unnecessary.

#### 4.4.8 Results

##### 4.4.8.1 Demographics

Of the total sample of 142 pharmacies identified as likely to be providing diabetic services in Queensland, 105 (73.9%) were located within 25Km of a Diabetic Association of Queensland Support Group, as listed in Control, October, 1986. Fifty-six pharmacies (39.4%) were located in the Brisbane metropolitan area. The ownership of fourteen pharmacies (9.9%) had changed since the 1984 survey.

Seventy of the ninety-one active pharmacies (76.9%) were located within twenty-five kilometres of a Support Group. Within the Brisbane telephone district 85.7% of active pharmacies were within twenty-five kilometres of a Support Group centre, while in country areas 66.3% were within that distance.

Within the 85 active pharmacies responding to the survey, more than one pharmacist was providing diabetic services in 37.7%, and assistants were involved in service provision in 25.3%.

Other demographic details are shown in Table 16.

TABLE 16

PHARMACIES OFFERING DIABETIC SERVICESDEMOGRAPHIC DETAILS

Total number of responses = 85

VARIABLE	NUMBER OF VALID RESPONSES	VALUE	NUMBER OF POSITIVE RESPONSES	PERCENT
<u>Pharmacist Information</u>				
Sex	85	Male	68	80.0
		Female	17	20.0
Pharmacy Qualification	84	Ph.C.	26	30.9
		B.Pharm.	52	61.9
		B.Pharm.Hons.	2	2.4
		Other	4	4.8
Pharmacist Status	85	Sole owner	29	34.1
		Partner	27	31.8
		Manager	21	24.7
		Assistant	8	9.4
Average Working Hours/Week	83	20-39	7	8.4
		40-49	47	56.7
		50-59	25	30.1
		60 or more	4	4.8
<u>Pharmacy Information</u>				
Other Pharmacists Active in Diabetic Service	85	One	25	29.4
		Two	6	7.1
		Three	1	1.2
Assistants Active in Diabetic Service	83	One	16	19.3
		Two	2	2.4
		Three	2	2.4
		Four	1	1.2
Hours Open per Week	85	Less than 50	34	40.0
		50 to 59	30	35.3
		60 or more	21	24.7
Location	85	Brisbane	31	36.5
		Country	54	63.5



VARIABLE	NUMBER OF VALID RESPONSES	VALUE	NUMBER OF POSITIVE RESPONSES	PERCENT
Site	85	City Centre	32	37.6
		Regional Centre	13	15.3
		Suburban Centre	7	8.2
		Suburban Strip	23	27.1
		Medical Centre	5	5.9
		Private Hospital	2	2.4
		Other	3	3.5
Turnover (\$ x 1000)	80	Less than 200	3	3.8
		200-399	13	16.3
		400-599	28	35.0
		600-799	15	18.8
		800 or more	20	25.0
		Not applic	1	1.2
Prescription Proportion (%)	81	Less than 20	4	4.9
		20-39	30	37.0
		40-59	36	44.4
		60-79	10	12.4
		80 or more	1	1.2
Prescriptions per Month	84	Less than 1000	4	4.8
		1000-1999	22	26.2
		2000-2999	24	28.6
		3000-3999	21	25.0
		4000 or more	13	15.5
Proportion of Customers Using Diabetic Service (Estimated)	85	Below 5%	64	75.3
		5-9%	19	22.3
		10-14%	1	1.2
		15-19%	1	1.2

#### 4.4.8.2 Services

Practical services provided to diabetic patients from community pharmacies were provision of prepared information in such forms as leaflets, newspapers, posters, audio and video tapes etc by various means, measurement of blood and/or urine glucose in a number of circumstances, and assistance with maintenance of home blood glucose monitoring (Table 17).

Only six pharmacies (7.1%) did not claim to have either leaflets or any other materials available for provision of information to diabetic patients, whereas 17 (20.0%) had other materials in addition to the common leaflets and newspapers. Types of materials volunteered in addition to those specifically mentioned in the questionnaire included Diabetic Association catalogues, photocopied articles, and a file of items of interest for access by patients. Alternative means of distribution of information included direct mailing to diabetic patients via a list kept in the pharmacy, and delivery of newspapers to diabetics in retirement/nursing homes. Information was also circulated to local doctors.

The twenty-one pharmacists (24.7%) who were involved in the provision of diabetic education outside the pharmacy setting did so for the Blue Nurses (a home nursing service), for staff at the local hospital, at the local community health centre, on the local radio station, and for the local Diabetic Association branch. Some pharmacists who were not involved explained that this function was performed in their area by others, such as the Blue Nurses, Community Health Service, Diabetic Association, and hospital staff.

Reservations about the legal implications of blood glucose measurement in the pharmacy were expressed by several pharmacists. Some chose not to do so for these reasons, and others either measured their own blood glucose when demonstrating monitoring techniques, or instructed and supervised the patient in performing the test on themselves. A number of pharmacists who were involved in diabetes screening did so in association with groups such as Lions' Clubs, Diabetic Association, Blue Nurses, or a local Aboriginal Community Health organization. Pharmacies were not involved because of geographic reasons sometimes, such as proximity to a medical centre or pathology laboratory. Measurement of blood glucose for diagnosed diabetics was usually only performed if the patient presented with problem readings, or occasionally on referral. Several pharmacists said that the Blue Nurses performed this function in their locality. Of the fifty-seven pharmacies (67.1%) who performed any type of blood-glucose monitoring, only two charged a fee (\$1) and none applied a charge for measurements associated with demonstration of the use of a blood glucose monitor.

In addition to acting as agents for manufacturers when repairs to blood glucose monitors were required, over one third of pharmacists attempted some repairs and/or maintenance procedures in their pharmacies. They reported that problems were often solved by such simple means as cleaning monitors or replacing batteries. If patients were to be without their monitors during repair, alternatives such as visual monitoring using blood glucose measurement strips were suggested, and about one fifth of pharmacies lent monitors to customers.

Eight pharmacies (9.4%) were involved in the hiring of blood glucose monitors. Several pharmacists said that they had hired blood glucose monitors from their pharmacies in the past, but had ceased to do so because of lack of demand, or because they were not looked after properly.

Only three pharmacies (3.5%) claimed to perform urine glucose tests, one specifying that the method was used as a crude screen only, and patients referred if any problem was suspected. Urine glucose tests were performed routinely in some pharmacies in association with pregnancy tests, but otherwise pharmacists felt that the better reliability of blood glucose tests made them more appropriate. Some pharmacists stated that urine ketone tests were more likely to be performed in their pharmacies than urine glucose tests.

TABLE 17

DIABETIC INFORMATION AND MONITORING SERVICES

Total number of responses = 85

VARIABLE	NUMBER OF VALID RESPONSES	VALUE	NUMBER OF POSITIVE RESPONSES	PERCENT
<u>Information</u>				
Leaflets	85		64	75.3
Leaflet Distribution Method	64	Selected Given out With counselling Selected/given Combinations	20 9 3 18 14	31.3 14.1 4.7 28.1 21.9
Other Aids*	85	Diabetic papers Posters Tapes/other No other aids	60 6 12 17	70.6 7.2 14.1 20.0
* Multiple answers cause sum to be > 100%				
<u>Blood/Urine Glucose Measurement</u>				
B.G. Measurement as Demonstration	85		57	67.1
B.G. Screening on Request	85		12	14.1
B.G. Screening as Promotion	85		6	7.1
B.G. Measurement for Diabetics	85		27	31.8
B.G. Operator	59	Pharmacist Assistant Either Customer	47 3 7 2	79.7 5.1 11.9 3.4
Repair of B.G. Monitors	82	Act as agent On premises Both Other Don't know	48 2 28 2 2	58.5 2.4 34.2 2.4 2.4
Alternative Monitoring	79	Pharmacy loans Manufac loans Manufac replaces Visual method More than one Other Don't know	16 2 22 6 20 9 4	20.3 2.5 27.9 7.6 25.3 11.4 5.1

#### 4.4.8.3 Supply

Of the 85 active pharmacies responding to the survey, 29 (34.1%) stated that they attempted to keep a full range of diabetic requirements to meet all the possible needs of their diabetic patients. A further 54 (63.5%) stated that they kept a reasonable range to cover the most frequent needs, and two pharmacies (2.4%) ordered most items only on the specific request of customers. Specific items stocked by pharmacies active in diabetic services are shown in Table 18.

An area was specifically allocated to the display of diabetic goods in 42 (49.4%) pharmacies. In twenty pharmacies, the length of shelving was less than ten feet, in eighteen pharmacies it measured between ten and twenty feet, and four pharmacies reported displays of twenty feet or more in length. Space constraints were cited as a problem by several pharmacists, some of whom compromised by using periodical displays.

Because of the cost involved, not all pharmacies maintained stocks of a range of insulins. The twenty-eight pharmacies (32.9%) not doing so stated that they ordered insulin on the request of customers and/or kept supplies for specific patients. Several stated that they had fast access to supplies if called for.

While all pharmacies reported stocking boxes of disposable insulin syringes, the quantities kept showed wide variation:

<u>No. of Boxes (100s)</u>	<u>No. of Pharmacies</u>	<u>Percent</u>
Less than 5	18	21.2
5 to 9	27	31.8
10 to 19	18	21.2
20 to 29	9	10.6
30 to 49	5	5.9
50 or more	8	9.4

The average number of boxes of 100 disposable syringes usually held in stock in any one pharmacy varied from 1 to over 100. Forty-five pharmacies (53.0%) had usual stock levels below ten boxes, eighteen (21.7%) between ten and nineteen boxes, and the remaining twenty-two (25.3%) usually kept twenty or more boxes in stock. Low stock levels were explained in some cases by patients usually acquiring supplies through the local hospital clinic or Diabetic Association. The prices charged for a box of 100 syringes, to the nearest dollar, varied from \$15 to \$34. Twenty-one pharmacies (24.7%) were supplying boxes of syringes at \$18 or less, forty-four (51.8%) at \$20 or less, and sixty-seven (78.8%) at \$25 or less. Three pharmacies declined to reveal their usual charge, and the remaining fifteen (15.7%) were charging from \$26 to \$34. One pharmacy supplied syringes at cost price to customers collecting insulin prescriptions. A significant ( $P=0.008$ ) negative trend was found to exist in the relationship between stock level and usual price charged. Pharmacies holding high stocks of syringes were more likely to be charging lower prices and

those with low stocks higher prices, although the spread of prices was much broader in the low stock group. Sixty-six pharmacies (79.5% of the 83 giving valid answers) stated that they also sold syringes in quantities less than a complete box of 100.

In addition to the pharmacies which regularly stocked blood glucose monitors, the remaining fifteen (17.9%) indicated that they ordered monitors on the request of customers.

Opinions on stocking diabetic foodstuffs, including diabetic chocolates and sweets, varied widely. Some pharmacies appeared to keep a wide range, sometimes in the health food section of larger pharmacies. Others felt that such lines were not in accord with current thinking on dietary guidelines for diabetic patients, and were therefore not appropriate to stock. Changes in dietary recommendations also appeared to have resulted in a lower demand. Many also stated that confectionery lines were either difficult to obtain, or tended to go out of date on the shelf.

Lack of suitable items was given by various pharmacists as the reason for not stocking identity tags, log books, or books about diabetes.



TABLE 18

DIABETIC SUPPLY

Total number of responses = 85

VARIABLE	NUMBER OF VALID RESPONSES	POSITIVE RESPONSES	PERCENT
B.G. Test Strips	85	85	100.0
U.G. Test Materials	85	85	100.0
Oral Hypoglycaemics	85	85	100.0
Insulins (Range)	85	57	67.1
Disposable Syringes	85	85	100.0
Glass Syringes	85	48	56.5
B.G. Monitors	84	69	82.1
Injection Aids	85	45	52.9
Urine Test Equipment	85	70	82.4
Blood Test Aids	85	85	100.0
Foodstuffs	85	48	56.5
Sweeteners	85	85	100.0
Identity Tags	85	69	81.2
Glucagon	85	56	65.9
Glucose Tablets	85	83	97.7
Log Books	85	77	90.6
Diet Books	85	74	87.1
Diabetes Books	85	45	52.9

#### 4.4.8.4 Counselling

Involvement of pharmacists in counselling of diabetics was investigated under the headings of insulin, blood glucose monitoring, urine glucose monitoring, oral hypoglycaemics, over-the-counter medication, and management. A rating scale of 1-5 was used to estimate the extent of involvement. The higher the mean score, the greater the frequency of counselling by pharmacists in relation to the specific topic (Table 19). It was apparent from discussion that the degree of counselling for a particular topic varied with circumstances, eg a new development would be likely to cause high involvement with that topic until most patients had been informed, and then decline to its former level.

Twenty-three (27.4%) of the 84 pharmacists giving valid responses said that discussions relating to insulin were more often initiated by the pharmacist, twenty-one (25.0%) that they were more often initiated by the customer, and twenty-seven (32.1%) that they were started about equally from each side. The remaining thirteen respondents (15.5%) indicated minimal involvement in this area of counselling. Reasons given for low involvement were that other sources such as medical practitioners, hospital diabetic clinics or Blue Nurses were the usual suppliers of information relating to insulin therapy.

Pharmacists' involvement in counselling about blood glucose monitoring with patients buying or discussing a monitor for the first time was generally of a high degree, and comments indicated that considerable staff time was involved without direct remuneration. Several pharmacists stated that

specifics such as frequency of monitoring and recording of results were more often dealt with by other agents such as medical practitioners or nurses.

Eleven pharmacists (12.9%) of the sample of 85 said that discussions about blood glucose monitoring with patients already doing their own measurements were more often initiated by the pharmacist, thirty-one (36.5%) that they were more often initiated by the customer, and forty-one (48.2%) that they were started about equally from each side. Two pharmacies (2.4%) were minimally involved in counselling in this field as they were branches of more active pharmacies and tended to refer patients with problems in the area of monitoring to the major branch.

Fifteen (17.9%) of the 84 pharmacists giving valid responses said that discussions about urine glucose monitoring were more often initiated by the pharmacist. A number of these commented that their reason for initiating the discussion was frequently in order to inform the patients about the advantages of blood glucose monitoring. Nineteen pharmacists (22.6%) said that these discussions were more often initiated by the customer, and seven (8.3%) said that they were started about equally from each side. Forty-three pharmacies (51.2%) indicated minimal counselling involvement in relation to urine glucose monitoring, mainly due to decreasing numbers of patients, especially new patients, using this method.

Fifty-eight (69.9%) of the 83 pharmacists giving valid responses said that prescription drug counselling discussions were more often initiated by the pharmacist, only seven (8.4%) that they were more often initiated by the

customer, and seventeen (20.5%) that they were started about equally by each side. Only one pharmacist was not involved in this area, due to the situation of the pharmacy within a private hospital. Methods of counselling specified included reference to patients' medication profiles for details of previous treatment and compliance, reference to computerized drug interaction programmes, and use of ancillary labels and computer information leaflets as well as verbal counselling.

Eighteen (21.4%) of the 84 pharmacists giving valid responses said that discussions about nonprescription medications were more often initiated by the pharmacist, thirty-one (36.9%) that they were more often initiated by the customer, and thirty-five (41.7%) that they were started about equally by either side. All pharmacists replying indicated involvement in this area of counselling. One pharmacist specified a preference for recommending single ingredient products to diabetic patients to minimize problems.

Eighteen (21.7%) of the 83 pharmacists giving valid responses said that discussions related to management of diabetes were more often initiated by the pharmacist, twenty-six (31.3%) that they were more often initiated by the customer, and thirty-four (41.0%) that they were started about equally by either side. Five pharmacists (6.0%) indicated minimal involvement in counselling of these topics. It was again stated that other sources such as medical practitioners, hospital diabetic clinics or Blue Nurses were more frequently consulted about these matters. One pharmacy had a podiatrist and an optometrist operating on site once a month, and another employed a pharmacist who was also a trained nutritionist.

TABLE 19

DIABETIC COUNSELLING

Total number of responses = 85

VARIABLE	NUMBER OF VALID RESPONSES	MEAN SCORE	STANDARD DEVIATION
<u>Insulin</u>			
Storage	84	2.76	1.09
Drawing Up	84	1.80	0.79
Mixing	84	1.80	0.82
Site Selection	84	1.93	1.06
Site Preparation	84	2.16	1.07
Dose Adjustment	84	2.04	1.16
Duration of Action	84	2.32	1.09
<u>Blood Glucose Monitoring</u>			
<u>Buyers</u>			
Use of Monitor	83	4.99	0.11
Care of Monitor	82	4.79	0.70
Sample Collection	82	4.74	0.77
Freq of Monitoring	82	3.94	1.55
Recording Results	82	4.15	1.41
<u>Users</u>			
Use of Monitor	84	3.21	0.97
Care of Monitor	84	3.19	1.08
Sample Collection	84	2.41	0.95
Freq of Monitoring	84	2.43	1.19
Recording Results	84	2.31	1.12
<u>Urine Glucose Monitoring</u>			
Sample Collection	84	1.44	0.55
Testing Procedure	84	1.67	0.81
Recording Results	84	2.31	0.81
<u>Oral Hypoglycaemics</u>			
Dose Instructions	84	3.52	1.15
Compliance	84	3.35	1.19
Adverse Reactions	84	2.83	0.97
Drug Interactions	84	3.36	1.14

VARIABLE	NUMBER OF VALID RESPONSES	MEAN SCORE	STANDARD DEVIATION
----------	---------------------------------	------------	-----------------------

Nonprescription Medication

Sweeteners	85	2.45	0.91
Sugar Free Products	85	3.37	0.90
Cough/Cold	85	3.91	0.97
Foot Care	84	2.18	1.01

Management

Insulin Dependent Diabetics

Dietary Advice	83	3.06	1.13
Symptoms of Hypoglycaemia	83	2.72	1.15
Treatment of Hypoglycaemia	83	2.45	1.10
Sick Days	83	2.07	1.01
Symptoms of Hyperglycaemia	83	2.33	1.01
Action for Hyperglycaemia	83	2.68	1.16
Foot Care	83	2.16	1.02
Complications	83	2.35	1.10

Non-Insulin Dependent Diabetics

Dietary Advice	83	3.02	1.15
Symptoms of Hypoglycaemia	83	2.46	0.98
Treatment of Hypoglycaemia	83	2.21	0.92
Sick Days	83	1.93	0.87
Symptoms of Hyperglycaemia	83	2.22	0.95
Action for Hyperglycaemia	83	2.59	1.12
Foot Care	83	2.08	0.98
Complications	83	2.27	1.11

All of the pharmacists interviewed referred diabetic patients to one or more of the listed practitioners (Tables 20 & 21). Several stated that referrals to other than general medical practitioners were done only through the patients' general practitioners. Many country pharmacists were unable to refer patients other than to a general practitioner because no other expertise was available locally. These limitations are reflected by the high referral score for general practitioners in comparison with other health professionals shown in Table 20. Diabetes educators were usually described as specialist nursing staff at hospital clinics, or Blue Nurses. Referral to other pharmacists was, not unexpectedly, the least used route of referral, but the general impression from discussion was that pharmacists using this route appeared to be those more highly committed to the welfare of their diabetic patients. The overall pattern of referrals is shown in Table 21.

TABLE 20

REFERRAL SCORES

VARIABLE	NUMBER OF VALID RESPONSES	MEAN SCORE	STANDARD DEVIATION
General Practitioner	85	2.46	0.67
Specialist	85	1.47	0.77
Dietician	85	1.39	0.93
Podiatrist	85	1.37	0.81
Diabetes Educator	85	1.67	0.91
Other Pharmacist	85	1.25	0.51

TABLE 21

REFERRAL PATTERNS

Total number of responses = 85

VARIABLE	NUMBER OF VALID RESPONSES	VALUE	NUMBER OF POSITIVE RESPONSES	PERCENT
General Practitioner	85	Frequently	47	55.3
		Sometimes	30	35.3
		Never	8	9.4
Specialist	85	Frequently	10	11.8
		Sometimes	24	28.2
		Never	47	55.3
		Not applic	4	4.7
Dietician	85	Frequently	9	10.6
		Sometimes	32	37.6
		Never	27	31.8
		Not applic	17	20.0
Podiatrist	85	Frequently	7	8.2
		Sometimes	28	32.9
		Never	39	45.9
		Not applic	11	12.9
Diabetes Educator	85	Frequently	18	21.2
		Sometimes	28	32.9
		Never	32	37.7
		Not applic	7	8.2
Other Pharmacist	85	Frequently	1	1.2
		Sometimes	21	24.7
		Never	61	71.8
		Not applic	2	2.3



#### 4.4.9 Discussion

##### 4.4.9.1 Services

Objective 1 - To document the services offered to patients by pharmacies involved in the provision of diabetic services.

Objective 1 has been fulfilled by 4.4.8.2 and summarized in Table 17. The services investigated were related to provision of written information and to blood and urine glucose monitoring (Photographs 1 & 2).

As no other investigations of Australian community pharmacies offering specialized diabetic services appear to have been carried out, no figures are available for comparison. However, the types of services identified by the survey as being offered by Queensland community pharmacies are similar to what was expected from the international literature review.

At the time of the survey, about two-thirds of pharmacist respondents claimed that blood glucose measurements were being performed in their pharmacies. However, subsequent amendments to the Health Act 1937-86, known as the Skin Penetration Regulations 1987 (63), may have resulted in a decrease in numbers. The Regulations require registration of establishments carrying out a process of skin penetration, and do not exclude pharmacists in the conduct of their profession, although exemptions have been made in these terms for most other health professionals.

PHOTOGRAPH 1  
DIABETES INFORMATION LEAFLETS



PHOTOGRAPH 2  
BLOOD GLUCOSE MONITORING



#### 4.4.9.2 Supply

Objective 2 - To document the types of stock held by community pharmacies relevant to diabetes.

Objective 2 has been fulfilled by 4.4.8.3 and summarized in Table 18.

No other studies are available for comparison of stock levels, but the types of goods carried are again those expected from the literature review (Photograph 3).

All pharmacies reported keeping ranges of stock of blood glucose testing strips, urine glucose testing strips and/or tablets, and oral hypoglycaemic drugs. This result was to be expected, as all of these items were usually provided on prescription at the time of the survey. Although insulin was also usually provided on prescription, only two-thirds kept a range of insulins, probably due to the limited shelf life and high costs involved. However, most appeared to have fast access to supplies when required, or arrangements with their patients to order repeat supplies prior to needing them.

PHOTOGRAPH 3  
DIABETIC STOCK DISPLAY



#### 4.4.9.3 Counselling

Objective 3 - To estimate the degree of counselling involvement which community pharmacists perceive themselves to have with diabetic patients.

Objective 3 has been fulfilled by 4.4.8.4 and summarized in Tables 19 - 21. Counselling topics included insulin therapy, blood glucose monitoring, urine glucose monitoring, oral hypoglycaemics, nonprescription medications, and management (Photographs 4 & 5), as well as referral to other health care practitioners.

Examination of calculated counselling scores shows that pharmacists were more involved in some aspects of counselling than others. The areas showing greatest involvement were blood glucose monitoring, oral hypoglycaemic therapy, and nonprescription medication. Diabetes management topics showed intermediate involvement. Least involvement was shown in regard to insulin therapy and urine glucose monitoring. No figures are available for comparison with these findings.

Counselling about blood glucose monitoring was greater with patients purchasing a monitor, but substantial involvement was still evident with those already using monitors. Purchase of a monitor is an occasion obviously requiring intensive counselling by the vendor. Transfer of information at the time of purchase apparently also leaves both parties open to follow-up counselling opportunities. The low degree of involvement in counselling about urine glucose monitoring was explained by pharmacists as being due to progressively fewer patients using these methods of

monitoring, and to the fact that those who were doing so had been using the methods for a considerable time.

Provision of prescription and nonprescription medication being the traditional realm of the pharmacist, high counselling scores associated with oral hypoglycaemics and nonprescription products were not unexpected. However, because of the complicated administration regimens associated with insulin therapy, many pharmacists commented that counselling in that area was more often conducted in hospital situations, by trained diabetic educators, or by groups such as the Blue Nurses than by pharmacists.

Pharmacists were involved in counselling both insulin dependent (IDD) and non-insulin dependent diabetics (NIDD) about aspects of management. For all topics, scores were slightly lower for non-insulin dependent patients. It may be that there is less recognition by pharmacists of the consequences of poor control for this group of diabetic patients.

An important feature of counselling is referral of patients to other health professionals when appropriate. General practitioners were the most frequently named referral points. Many country pharmacists had no facilities apart from the general practitioner at their disposal. Where they were available, other health professionals were suggested in the order of diabetes educators, specialist endocrinologists, dieticians, and podiatrists.

## PHOTOGRAPH 4

INSULIN THERAPY COUNSELLING



PHOTOGRAPH 5

DIABETIC MANAGEMENT COUNSELLING



## 4.5 MAIL SURVEY

### 4.5.1 Aims

4. To document the educational background of diabetic service providers.

5. To document the historical development of provision of diabetic services from community pharmacies in Queensland.

6. To determine the motivation for practitioners to become involved in provision of diabetic services.

### 4.5.2 Survey Instrument

The survey instrument consisted of three questionnaires. Part 1 was designed to collect information about the pharmacies providing diabetic services in Queensland. A stock list of diabetic items was included to assist in the answering of some questions. Parts 2 and 3 were designed to collect information about pharmacists involved in the provision of those services.

Factors considered in the preparation of the survey instrument used for the Survey of Services from Community Pharmacies in Queensland, 1984 were again taken into account. Some steps previously taken in order to improve response rates, such as reducing the physical length of the questionnaire and presenting an attractive appearance, were considered less important for this questionnaire because the respondents were already known to be likely to co-operate.

An explanation of the reason for a sample number on the questionnaire and an assurance of confidentiality were given with each section of the survey instrument.

#### 4.5.3 Respondents

Respondents to Part 1 and Part 2 were defined as the pharmacist responsible for deciding to establish or continue the provision of diabetic services in each pharmacy. An allowance was made that, in the case of the decision maker not working regularly in the pharmacy in question, reference to the pharmacist providing the service in that pharmacy may be needed to complete some questions. Respondents to Part 3 were defined as all pharmacists regularly involved in the provision of diabetic services who had not replied to Parts 1 and 2 of the survey.

#### 4.5.4 Pilot Study

A random sample of approximately ten percent (9 pharmacies) of the sample was selected using a Random Numbers Table (64). Two of those selected were owned by pharmacists who owned a second pharmacy involved in provision of diabetic services. These pharmacies were also included in the pilot sample. It was decided to include pharmacies which had been used in the pilot of the telephone survey as well. Of the thirteen pharmacies used in that pilot, two were rejected due to low levels of involvement, and three had already been selected by the random sampling technique. The survey instrument was mailed to the nineteen selected pharmacies on 27th April, 1987. Replies to various sections were received from ten pharmacies within the following two weeks and showed only minor problems in relation to explaining who was to answer which section. Care was taken to clarify details of required respondents prior to the main mailing.

#### 4.5.5 Administration and Collection

The main survey was mailed to the remainder of the eighty-five pharmacies on 11th May, 1987. The mailing included a covering letter (Appendix 9), explanatory notes for pharmacists owning more than one pharmacy involved in the provision of diabetic services (Appendix 10), a copy of Part 1 of the questionnaire (Appendix 11), a Stock List (Appendix 12), a copy of Part 2 of the questionnaire (Appendix 13), the required number of Part 3 of the questionnaire (Appendix 14) as ascertained from the telephone survey, and sufficient pre-addressed postage-paid return envelopes to allow privacy for all respondents.

Telephone follow-up of nonresponding pharmacies in the Brisbane telephone district was commenced on 25th May, at which stage 37 (43.5%) pharmacies had replied. Postcard reminders were sent to nonrespondent country pharmacies on 29th May, by which time 47 (55.3%) had replied. Further reminders, and re-mails were conducted as needed.

#### 4.5.6 Response

A final response rate of 95.3% (81 pharmacies) was achieved by mid-July. Two nonresponding pharmacies were from the Brisbane metropolitan area, and two from outside Brisbane. Within the responding pharmacies, responses were received from 109 pharmacists claiming to be actively involved in the provision of diabetic services.

#### 4.5.7 Validation

As with the mail survey of diabetic pharmacies, the high response negated the need for sample nonresponse validation. Item nonresponse was also negligible.

## 4.5.8 Results

## 4.5.8.1 Pharmacist Characteristics

TABLE 22

PHARMACIST DEMOGRAPHICS

Total number of responses = 109

VARIABLE	NUMBER OF VALID RESPONSES	VALUE	NUMBER OF POSITIVE RESPONSES	PERCENT
Sex	109	Male	85	78.0
		Female	24	22.0
Year of Birth	108	Before 1930	1	0.9
		1930-1939	28	26.0
		1940-1949	31	28.7
		1950-1959	29	26.8
		1960s	19	17.6
Pharmacy Qualification	109	Ph.C.	39	35.8
		B.Pharm.	67	61.5
		Other	3	2.7
Pharmacist Status	109	Sole owner	35	32.1
		Partner	32	29.4
		Manager	26	23.8
		Assistant	16	14.7
Pharmacist Position	109	In-charge	71	65.1
		Assistant	38	34.9
Average Hours/Week	109	Less than 20	3	1.8
		20-39	13	11.9
		40-49	53	48.7
		50-59	31	28.4
		60 or more	10	9.2

NOTE: Of the 109 respondent pharmacists active in the provision of diabetic services, 76 (69.7%) had been respondents to the previous telephone survey.

TABLE 23

PHARMACIST INFORMATION

Total number of responses = 109

VARIABLE	NUMBER OF VALID RESPONSES	POSITIVE RESPONSES	PERCENT
<u>Memberships</u>			
PSA Member	101	75	74.3
ACPP Member	64	8	12.5
SHPA Member	60	5	8.3
DAQ Member	65	18	27.7
ADEA Member	59	2	3.4
<u>Reading Habits</u>			
AJP	102	87	85.3
Aust. Pharmacist	94	71	75.5
Aust. Prescriber	94	76	80.9
Current Therapeutics	81	52	64.2
Patient Management	63	16	25.4
The Pharmacy Journal	71	30	42.3
Control	61	14	23.0
Diabetes Conquest	64	25	39.1
Diabetes in the News	88	64	72.7
<u>Education Sources</u>			
Pharmacy Lectures	64	37	57.8
Pharmacy Materials	71	50	70.4
Diabetes Lectures	62	23	37.1
Diabetes Materials	64	37	57.8
Industry Materials	80	65	81.3
Books	77	56	72.7
Journals	94	86	91.5

4.5.8.2 Pharmacy Characteristics

TABLE 24

PHARMACY DEMOGRAPHICS

Total number of responses = 81

VARIABLE	NUMBER OF VALID RESPONSES	VALUE	NUMBER OF POSITIVE RESPONSES	PERCENT
Establishment of Service	81	Before 1960	1	1.2
		1960-1979	11	13.6
		1980-1984	35	43.2
		1985/1986	23	28.4
		Don't know	11	13.6
Role in Service Provision	81	Established	61	75.3
		Continued	20	24.7
Year of Takeover	77	Before 1980	3	3.9
		1980-1984	5	6.5
		1985-1987	8	10.4
		Not applic	61	79.2
Type of Reference Texts Available	80	Patient	17	21.2
		Diabetic	6	7.5
		General medical	1	1.2
		Various	8	10.0
		Not specified	5	6.2
Estimated Degree of Involvement	80	Minor	22	27.5
		Moderate	48	60.0
		Major	10	12.5
Total Area of Pharmacy (sq ft)	79	Less than 1000	22	
		1000 to 1999	27	
		2000 to 2999	18	
		3000 to 4999	10	
		5000 or more	2	
Area of Front Shop (sq ft)	79	Less than 1000	36	
		1000 to 1999	23	
		2000 to 2999	12	
		3000 to 4999	6	
		5000 or more	2	
PGA Membership	81		68	84.0
Marketing Group Membership	81	Amcal	1	13.6
		Chemway	3	3.7
		Greenspot		9.9
		Soul Pattinson	6	7.4
		Sunshine	9	11.1
		Tri-pharm	8	9.9
		Other/multiple	11	13.6

4.5.8.3 Service Development

TABLE 25

INFLUENCES ON SERVICE PROVISION

Total number of responses = 81

VARIABLE	NUMBER OF VALID RESPONSES	MEAN SCORE	STANDARD DEVIATION
Interest	81	3.58	1.06
Satisfaction	80	3.93	0.88
Profit	80	2.95	1.10
Previous Diabetic Pharmacy	79	1.71	1.41
Diabetic Clinic Proximity	80	1.29	0.94
Number of Diabetic Customers	81	3.48	1.14
Need of Diabetic Customers	80	3.49	1.18
Pharmacist is a Diabetic	77	1.19	0.84
Diabetic in Family	80	1.53	1.18
Diabetic Friend	78	1.23	0.72
Diabetic on Staff	79	1.11	0.60
Approached by Ames	77	2.16	1.54
Approached Ames	76	2.57	1.70
PSA Influence	80	1.55	0.91
PGA Influence	79	1.34	0.70
Group Influence	79	1.14	0.50



TABLE 26

ECONOMIC FACTORS IN SERVICE PROVISION

Total number of responses = 81

VARIABLE	NUMBER OF VALID RESPONSES	VALUE	NUMBER OF POSITIVE RESPONSES	PERCENT
Number of Types of Insulin Stocked	81	Less than 5	18	22.2
		5-9	27	33.4
		10-14	18	22.2
		15 or more	18	22.2
Value of Insulin (\$)	76	Less than 250	18	23.7
		250-499	15	19.7
		500-749	15	19.7
		750-999	9	11.8
		1000-1999	12	15.8
		2000 or more	7	9.2
Value of Diabetic Stock (\$)	75	Less than 1000	24	32.0
		1000-1999	23	30.7
		2000-2999	13	17.3
		3000-3999	7	9.3
		4000 or more	8	10.7
Total Stock Value (\$ x 1000)	72	Less than 50	11	15.3
		50 to 99	31	43.1
		100 to 199	25	34.7
		200 or more	5	6.9
Estimated Diabetic Stock Proportion (%)	69	Less than 1.0	13	18.8
		1.0 to 1.9	22	31.9
		2.0 to 2.9	11	15.9
		3.0 to 4.9	18	26.1
		5.0 to 9.9	3	4.4
		10.0 or more	2	2.9
Calculated Diabetic Stock Proportion (%)	69	Less than 1.0	18	26.1
		1.0 to 1.9	21	30.4
		2.0 to 2.9	9	13.0
		3.0 to 4.9	18	26.1
		5.0 to 9.9	1	1.5
		10.0 or more	2	2.9

TABLE 27

LEVELS OF SUCCESS

Total number of responses = 81

VARIABLE	NUMBER OF VALID RESPONSES	MEAN SCORE	STANDARD DEVIATION
Financial	79	2.75	0.82
Professional	79	3.86	0.80
Customer Satisfaction	80	3.90	0.70
Customer Increase	80	2.86	0.88
Interprofessional Relations	78	2.91	1.03

TABLE 28

RESPONDENT INFORMATION

Total number of responses = 81

VARIABLE	NUMBER OF VALID RESPONSES	VALUE	NUMBER OF POSITIVE RESPONSES	PERCENT
Service Provider	81		75	92.6
Telephone Respondent	81		69	85.2
Pharmacist Status	81	Sole Owner	36	44.4
		Partner	27	33.3
		Manager	16	19.8
		Assistant	2	2.5
Average Hours/Week	81	Less than 20	5	6.2
		20-39	5	6.2
		40-49	30	37.0
		50-59	31	38.3
		60 or more	10	12.3

#### 4.5.9 Discussion

##### 4.5.9.1 Educational Background

Objective 4 - To document the educational background of diabetic service providers.

Objective 4 has been fulfilled by 4.5.8.1 and 4.5.8.2 and summarized in Tables 22 - 24.

Of the 109 pharmacists providing diabetic services in 81 pharmacies, only three pharmacists indicated that they held pharmacy qualifications higher than Ph.C. or B.Pharm., two holding a post-graduate honours degree, B.Pharm.(Hons.), and one a Fellowship of the Society of Hospital Pharmacists (FSHP). Qualifications beyond the basic requirements for registration as a pharmacist were evidently not seen as an essential prerequisite to specialization in diabetic services.

Of 101 responding, 75 pharmacists (74.3%) reported membership of the Pharmaceutical Society (PSA). Membership of other listed professional organizations was incompletely answered, but 18 pharmacists reported membership of the Diabetic Association of Queensland (DAQ). Only two claimed membership of the Australian Diabetes Educators Association (ADEA). Of the 81 pharmacies, 68 (84.0%) were members of the Pharmacy Guild (PGA).

Readership of the pharmacy journals Australian Journal of Pharmacy, Australian Pharmacist and Australian Prescriber was claimed by over 75% of respondents. Ames newspaper for diabetics, Diabetes in the News, was also widely read. In comparison with the general pharmacist population (Table 4), readership levels of other professional journals

such as Current Therapeutics and Patient Management was higher among pharmacists providing diabetic services. Journal reading was cited by over 90% of those responding as being a source from which they had built up their expertise in the diabetic area. Other major sources (above 70%), in descending order of frequency of mentions, were tapes or written information from pharmaceutical companies, books on diabetes, and continuing education tapes and/or booklets from pharmacy sources.

Fewer than half of the pharmacies were reported to have diabetic reference texts available, and almost half of those specified patient-oriented material only.

#### 4.5.9.2 Historical Development

Objective 5 - To document the historical development of provision of diabetic services from community pharmacies in Queensland.

Objective 5 has been fulfilled by 4.5.8.2 and 4.5.8.3 and summarized in Tables 24 & 25.

A proliferation of pharmacies involved in provision of diabetic services appears to have occurred since 1980. Only twelve pharmacies (14.8%) were claimed to have been in operation prior to 1980. Respondents in eleven pharmacies (13.6%) did not know when the service had been established.

The introduction of U-100 insulins into the PBS in 1980 may have been one catalyst for increasing interest in this area of practice, as this event required the provision of extra information to diabetic patients (65). Comment was also made at the time that diabetics could be expected to play an ever increasing role in self-management with the introduction of blood glucose monitoring techniques, and would require

assistance from interested pharmacists with monitoring and home treatment of diabetic emergencies (34).

Also in the period since 1980, pharmaceutical companies have been active in encouraging the development of diabetic centres in community pharmacies (15,19,20,66). The Ames Division of Miles Laboratories was particularly involved in promoting the provision of advice on the use of blood glucose monitors at the point of sale, and reported the existence of about 100 diabetic care centres under their auspices in pharmacies in Australia in 1983 (66) and 200 by 1984 (19). The scheme was subsequently further expanded (19,20,23).

The survey showed that 35 pharmacies (43.2%) active in the provision of diabetic services in Queensland had commenced their activities in the period 1980-1984, and 23 (28.4%) subsequent to that date. Respondents were the initiators of diabetic service provision in 61 pharmacies (75.3%), and the remainder had decided to continue already established services. Half of these had taken control of the businesses prior to 1985 and half after that date.

#### 4.5.9.3 Motivation

Objective 6 - To determine the motivation for practitioners to become involved in provision of diabetic services.

Objective 6 has been fulfilled by 4.5.8.3 and summarized in Table 25.

The pharmacists responsible for establishing or continuing diabetic services within the 81 pharmacies cited professional and altruistic reasons as the major influences on

their decision to do so. In descending order, they saw the provision of diabetic services as a way to increase their professional satisfaction, they had a personal interest in the subject, they had a number of diabetic customers, and they perceived their diabetic customers to be in need of help. The prospect of profitability and the influence of Ames were also strong factors in service provision. Interestingly, nineteen pharmacists reported that an approach by Ames had had a large or major effect on their decision to provide a service, whereas twenty-six said that they had approached Ames about establishing diabetic centres and rated this as having a large or major effect on their decision to do so.

Although other factors were less important to the overall picture of influence, several showed strong effects within the limited groups to which they were applicable. For example, ten of the nineteen pharmacists who had set up diabetic services in other pharmacies saw this as a major influence on the decision to do so in the pharmacy in question. Four of the nine pharmacies mentioning proximity to a diabetic clinic cited it as a major influence. All four pharmacists who said that they were diabetics felt that the fact had a large or major influence in their involvement in the provision of diabetic services in their pharmacies, as did nine of the sixteen who had diabetics in their families.

External influences from professional organizations or marketing groups appeared to be of minor importance, but this may have been due to little encouragement having been provided from these sources rather than to that which was provided having little effect.

## 4.6 COMBINED DIABETIC SURVEY

### 4.6.1 Aims

7. To classify pharmacies involved in specialized diabetic practice into levels of service provision.

8. To describe the differences in services provided at each level of specialization.

9. To describe the differences in characteristics of pharmacies and pharmacists at each level of specialization.

### 4.6.2 Classification into Service Levels

#### 4.6.2.1 Introduction to Cluster Analysis

Cluster analysis was selected an appropriate statistical technique for grouping pharmacies with similar levels of service provision, the program used for analysis being the SAS CLUSTER procedure (67).

Cluster analysis has been described by Tull and Hawkins (68) as a technique to separate objects into groups such that the groups are relatively homogeneous. The technique can be applied to nominal, ordinal, interval or ratio data, depending on the method employed.

Churchill (69) defined cluster analysis as a body of techniques concerned with developing natural groupings of objects based on the relationships of the "p" variables describing the objects. He further explained that the technique assigns objects to groups so that there will be as much similarity within groups and as much difference among groups as possible (70).

Aldenderfer and Blashfield (71) stated that a clustering method is a multivariate statistical procedure that starts with a data set containing information about a sample of entities and attempts to reorganize these entities into relatively homogeneous groups. They also cautioned that most clustering methods are relatively simple procedures providing, at best, plausible algorithms for creation of clusters, that different methods will generate different clusters from the same data set, and that, although the strategy is to seek a structure, its method of operation imposes a structure.

Zelnio and Simmons (72) similarly defined the purpose of the procedure as identifying groups or clusters so that there is homogeneity within and heterogeneity between clusters. The clusters are formed based on the similarity of relevant measurements. Zelnio and Simmons (72) suggested that a possible application of the technique in pharmacy research may be clustering of pharmacists based on the level of service provided.

Four suggested stages have been listed for the operation of cluster analysis (70,71):

1. selection and coding of attributes  
(variables) with which to measure the  
entities in the sample,
2. estimation of similarity (resemblance)  
among the entities,
3. use of a clustering method to create  
groups of similar entities,
4. validation of the resulting cluster solution.



#### 4.6.2.2 Selecting and Coding Attributes

The literature does not provide definite guidance with regard to selecting attributes (70,72,73), but it has been advised that a large number of attributes should be used, that they should be of equal importance (unweighted) when generating estimates of similarity, and should be standardized to avoid the influence of scale of measurement (70,72). Aldenderfer and Blashfield (73) advised that, ideally, the attributes should be selected on the basis of a stated theory used to support the classification, but noted that this approach was seldom possible in practice as such theories were often implicit. The attributes may be measured on continuous or categorical scales, and, if categorical, may be dichotomous or multichotomous (70).

The variables selected as attributes for clustering were independent variables or groupings of variables relating to diabetic service provision in the three previously discussed areas of services, supply and counselling. Where attributes were described by more than one variable, data were recoded in binary form with participation ('1') or nonparticipation ('0') in regard to the attribute being based on a combined score of 50% or more of the possible total for the variables concerned for 'participation', and less than 50% for 'nonparticipation'.

The attributes used for analysis were related to services provided (Table 29), supply of diabetic goods (Table 30), and diabetic counselling topics (Table 31).

TABLE 29

SERVICE ATTRIBUTES**INFORMATION** (Appendix 8, p4)

Availability of information leaflets,  
Method of distribution of leaflets,  
Availability of diabetic newspapers,  
Availability of diabetic posters etc.,  
Other educational materials including  
audio/video tapes in the pharmacy,  
Provision of diabetic education  
outside the pharmacy setting.

**GLUCOSE MONITORING** (Appendix 8, p5)

When demonstrating monitors,  
As a screening service on demand,  
As a screening promotion,  
For diagnosed diabetics,  
Repair of monitors,  
Help with alternative monitoring,  
Hire of monitors,  
Urine glucose measurement.

TABLE 30

SUPPLY ATTRIBUTES

## REGULAR STOCK RANGE (Appendix 8, pp6-7)

- \* Blood glucose testing strips,
- \* Urine glucose testing strips/tablets,
- \* Oral hypoglycaemics,
- Insulins,
- \* Disposable insulin syringes,
- Glass syringes,
- Blood glucose monitors,
- Injection aids (automatic injectors,  
scale magnifiers, devices for  
destroying needles etc.),
- Urine testing equipment (testing sets,  
test tubes etc.),
- \* Blood testing aids (blood letting  
devices, calibration aids etc.),
- Dietetic foodstuffs including diabetic  
chocolates/sweets,
- \* Artificial sweeteners,
- Identification bracelets/tags,
- Glucagon injection,
- Glucose tablets,
- Log books,
- Books on diabetic diet/recipes,
- Books on diabetes and its management.

\* These attributes were subsequently discarded from the analysis as all pharmacies scored positively on supply of these items.

TABLE 31

COUNSELLING ATTRIBUTES

Insulin Therapy (Appendix 8, p7)

based on counselling in relation to use of insulin.

Blood Glucose Monitoring - Purchasers (Appendix 8, p8)

based on counselling in relation to blood glucose monitoring with customers buying or discussing a monitor for the first time.

Blood Glucose Monitoring - Users (Appendix 8, p8)

based on counselling in relation to blood glucose monitoring with customers who are already doing blood glucose monitoring.

Urine Glucose Monitoring (Appendix 8, p8)

based on counselling in relation to urine glucose monitoring.

Oral Hypoglycaemic Therapy (Appendix 8, p8)

based on counselling in relation to taking oral hypoglycaemic medications.

Nonprescription Medications (Appendix 8, p9)

based on counselling in relation to choice and use of OTC products.

Management of Insulin Dependent Diabetes (Appendix 8, p9)

based on counselling of insulin dependent patients in relation to diabetic management.

Management of Non-Insulin Dependent Diabetes (App.8, p9)

based of counselling of non-insulin dependent patients in relation to diabetic management.

#### 4.6.2.3 Estimation of Similarity

There are four types of similarity measures available (73):

1. correlation coefficients,
2. distance measures,
3. association coefficients,
4. probabilistic similarity coefficients.

The first two types have been most commonly employed in social science research.

When nominal or ordinal data are being used, various matching coefficients have been proposed (70,72). The coefficients generally measure the number of characteristics on which two entities are matched in relation to the number of comparisons being made (72).

The SAS CLUSTER procedure uses distance measures of similarity (67).

#### 4.6.2.4 Clustering

Seven major types of clustering methods have been listed (74):

1. hierarchical agglomerative,
2. hierarchical divisive,
3. iterative partitioning,
4. density search,
5. factor analytic,
6. clumping,
7. graph theoretic.

The most commonly used methods in the social sciences have been hierarchical agglomerative, iterative partitioning, and factor analytic.

The SAS CLUSTER procedure (67) produces hierarchical agglomerative clusters. With this method, each entity begins in a cluster by itself; the two closest clusters, as calculated by the similarity measure chosen, are merged to form a new cluster; clusters (or entities) are sequentially merged until only one cluster remains (67,72,74). Once a measure of similarity has been chosen, a method of comparison must be considered (72). The general methods of comparison are linkage (eg single linkage, complete linkage, average linkage) nodal, and factor analytic (70,72,74). Hierarchical clustering methods employ linkage methods of comparison (70). The algorithms available in SAS CLUSTER are the centroid method, Ward's minimum variance method, and the average linkage method (67).

Ward's minimum variance method was chosen because of its tendency to join clusters with a small number of observations (67). In Ward's method, the distance between two clusters is the sum of squares between two clusters summed over all the variables. At each cluster generation, the within-cluster sum of squares is minimized over all partitions obtainable by merging two clusters from the previous generation (67) ie the method is designed to optimize the variance within clusters (74). The method tends to produce tight hyperspherical clusters of approximately the same size, and is sensitive to outliers (67,74).

When the clustering procedure has been executed, a decision must be made as to the optimal number of clusters formed (74). However, Aldenderfer and Blashfield (74) have remarked that this decision is usually far from clear cut due

to the lack of suitable null hypotheses and to the complexities of multivariate sampling distributions. The approaches usually adopted in social science research are heuristic procedures (74).

A dendrogram is a "tree" diagram which indicates the the groups of entities forming at various similarity (distance) levels (70). A common heuristic procedure involves subjective inspection of different levels of the dendrogram (74). Aldenderfer and Blashfield (74) have pointed out that this approach may be biased by the needs and opinions of the researcher. A second heuristic approach is to plot the number of clusters implied by the dendrogram against the fusion or amalgamation coefficient (the numerical value at which various entities merge to form a cluster). In the SAS CLUSTER procedure, the value used in the Semipartial R-Squared (squared semi-partial correlation) which is the sum of the squares between the clusters just joined divided by the corrected total sum of squares. A flattening of the graph would indicate that further mergers of clusters would provide no more information (74). Another subjective method is to examine the values of the fusion coefficients for a significant jump in value which would imply the merger of two relatively dissimilar clusters. The number of clusters prior to the jump would thus be the most likely solution (74). Aldenderfer and Blashfield (74) have cautioned that it is often difficult to isolate the "correct" jump in fusion values.

#### 4.6.2.5 Validation

Evaluation of a cluster analysis solution should focus on whether or not the clusters are of sufficient homogeneity and whether or not the solution accurately describes the original data (70,72). Some measure of average similarity is useful in regard to testing homogeneity of clusters (70). The solution can be evaluated by gauging its predictive validity with respect to variables not used in defining the clusters (72). A common approach is to determine the extent to which cluster membership is associated with some attribute of interest (72).

Other commonly used methods of validation include significance tests on the attributes used to create the clusters; replication of the clustering, either by means of holdout sample or by use of a different clustering method; or comparison of cophonetic values (true levels at which entities are linked) with input similarity values for each pair of entities (72,75). Cophenetic correlation is restricted to use with hierarchical agglomerative clustering methods (75). Aldenderfer and Blashfield (75) have commented that:

1. significance tests on the attributes used to create the clusters are misleading, if not useless, due to inappropriate statistical application,

2. while failure of a replication would be reason for rejecting a clustering solution, success of a replication does not guarantee validity of a solution, and

3. cophonetic correlation is generally a misleading indicator of the quality of a cluster solution.



It was decided, therefore, to test the validity of the clustering solution by significance tests on external variables, ie variables not used in creation of the clusters. The variables chosen for validation were those considered likely to be dependent on the provision of diabetic services:

Stock Policy - based on whether the pharmacy policy in relation to stocking items for supply to diabetic patients was to keep a full range of requirements to meet all possible needs, or to keep a reasonable range and/or order stock to supply requirements (Appendix 8, p5),

Display - based on whether or not there was an area in the pharmacy specifically allocated to the display of diabetic goods, and the length of display (Appendix 8 p6),

Syringe Stock - based on the number of boxes of disposable insulin syringes (100s) normally kept in stock (Appendix 8, p6),

Diabetic Customer Proportion - based on the estimated proportion of customers who are diabetic and/or would require diabetic services (Appendix 8, p11).

Insulin Range - based on the number of types of insulin regularly kept in stock (Appendix 11, p4),

Estimated Diabetic Stock Proportion - the estimated proportion of total stock value invested in diabetic stock (Appendix 11, p4),

Calculated Diabetic Stock Proportion - the proportion of total stock value invested in diabetic stock, calculated from the estimated total value of current diabetic stock and the current total stock value including diabetic stock (Appendix 11 pp4 and 6),

Degree of Involvement - the respondent's subjective opinion of whether the involvement in provision of diabetic services was minor, moderate or major (Appendix 11, p4).

Kendall's rank correlation coefficient, tau-b, was used to test the validity of the cluster solution. Kendall's tau is a nonparametric measure of association which is appropriate for analysis of rank-order data (76). In using tau to measure the association between two ordinal variables, the cases are first placed in the natural order of rank according to one of the variables. It may then be determined how many pairs of ranks of the second variable are in their natural order with respect to each other for each case. The tau coefficient is based on the number of concordant and discordant pairs of observations (77), ie it is a function of the number of interchanges between neighbours required to transform one ranking into another (76). Tau-b incorporates a correction for tied pairs (77) and was therefore the appropriate measure to use in this case, where the cluster variable consisted of two values only.

Tau-b was used to test the set of null hypotheses that "there is no relationship between cluster membership and each of the dependent variables listed". When the sample size is greater than 10, as in this case, tau can be considered normally distributed with a mean,  $\mu$  ( $\mu=0$ ), and a standard deviation,  $\sigma$ . The significance of tau (T) can be determined by reference to a table of normal deviates, z, (78) where:

$$z = (T-\mu)/\sigma$$

An alpha level of 0.05 was selected for rejection of the null hypotheses.

### 4.6.3 Results

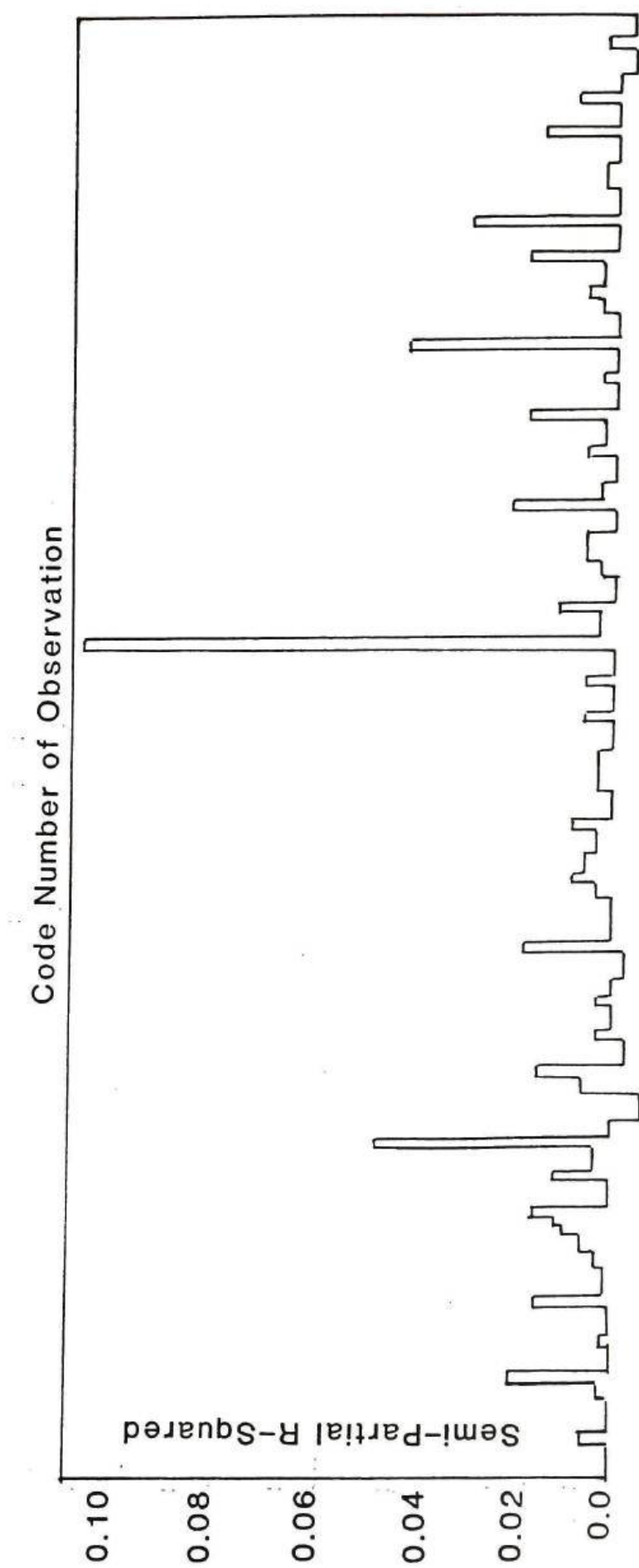
#### 4.6.3.1 Cluster Solution

Visual inspection of the dendrogram produced by SAS CLUSTER Ward's method suggested a two cluster solution as being the most likely (Figure 4). This solution is evident at a semipartial R-squared value of 0.1. At a similarity level of 0.05, three clusters were evident, at 0.04, four clusters, and at 0.03, six clusters.

A plot of the number of clusters against the semipartial R-squared values for cluster formation showed the curve to be essentially flat at the two cluster solution, again implying this to be the most likely grouping (Graph 2).

Changes in the value of the semipartial R-squared were inspected to detect significant 'jumps' in value. Prior to the formation of six clusters, jumps were all less than 0.002 (Table 32). Small jumps were seen between the six- and five-cluster solutions and between the four- and three-cluster solutions, indicating that six clusters or four clusters may possibly be appropriate solutions. However the much larger jump between the two- and one-cluster solutions led to the acceptance of the two cluster solution as being most likely.

FIGURE 4

DENDROGRAM OF DIABETIC PHARMACIES

GRAPH 2  
CLUSTER SOLUTION

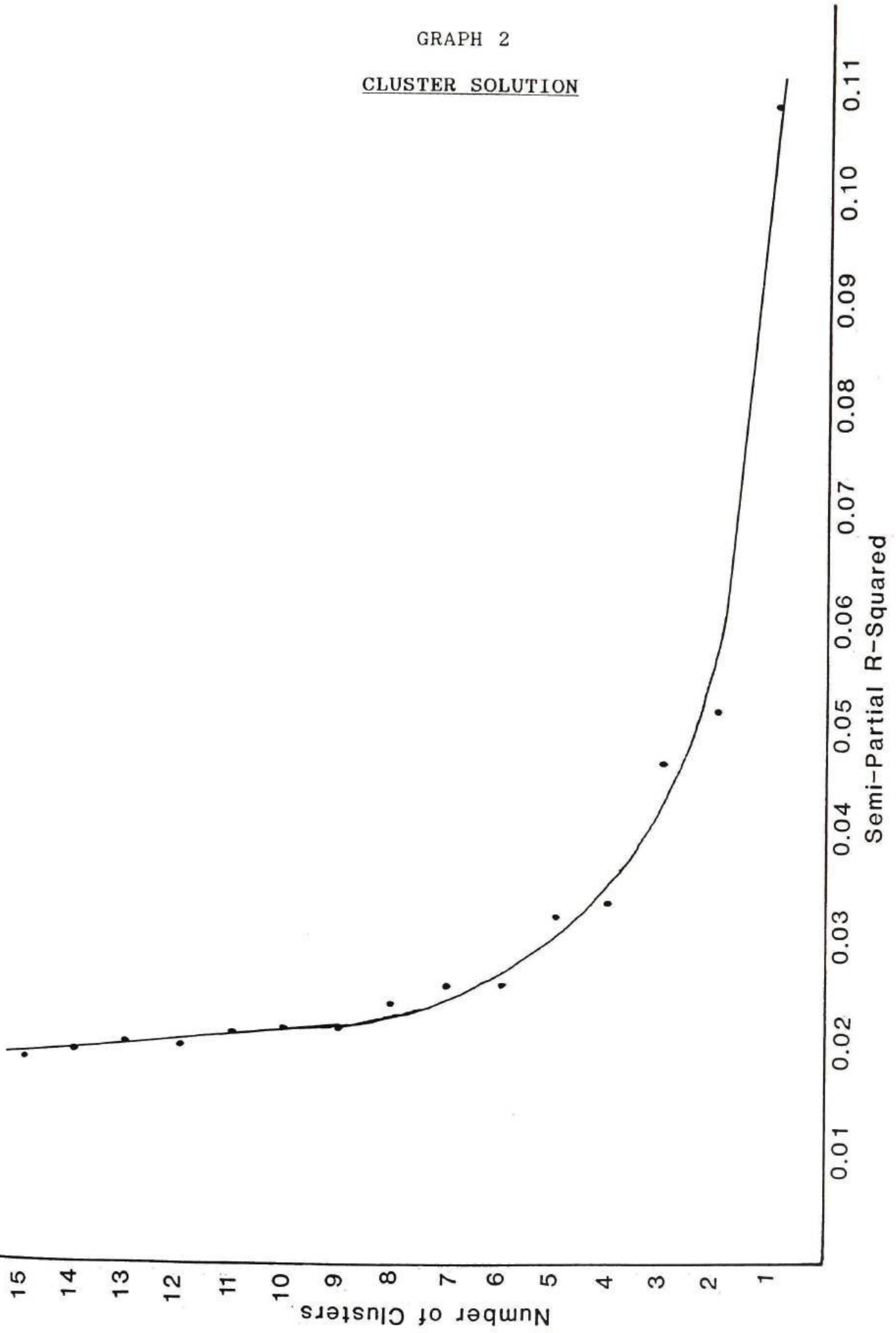


TABLE 32

CLUSTER SOLUTION

<u>Number of</u> <u>Clusters</u>	<u>Semipartial</u> <u>R-Squared</u>	<u>Change</u> <u>in Value</u>
6	0.0256	0.0001
5	0.0317	0.0061
4	0.0334	0.0017
3	0.0467	0.0133
2	0.0511	0.0044
1	0.1084	0.0573

4.6.3.2 Cluster Validation

Kendall's rank correlation coefficient, Tau-B, was used to determine whether the cluster solution imposed by SAS CLUSTER Ward's method was valid for selected variables external to the creation of the clusters.

Results of these analyses are shown in Table 33. Using  $P=0.05$  as the critical probability (alpha level) for rejection of the null hypotheses, relationships are evident between cluster membership and stock policy, diabetic customer proportion, and perceived degree of involvement in diabetic services. Using a one-tailed test, significance would also be observed for display size and calculated diabetic stock proportion. These relationships provide confirmatory evidence for the cluster solution.

TABLE 33  
VALIDATION OF CLUSTER SOLUTION

<u>Variable</u>	<u>Kendall's Tau-B</u>	<u>z</u>	<u>Probability</u>
Stock Policy	0.382	3.82	<0.0002
Display	0.161	1.66	0.097
Syringe Stock	0.133	1.40	0.162
Diabetic Customers	0.361	3.68	0.0002
Insulin Stock	0.087	0.09	0.928
Estim. Diabetic Stock	0.213	1.03	0.303
Calc. Diabetic Stock	0.123	1.26	0.107
Degree of Involvement	0.238	2.38	0.017

#### 4.6.3.3 Differences in Service Provision Between Clusters

Because the variables relating to diabetic service provision in the areas of service, supply and counselling were used in the formation of the clusters, it is not appropriate to test for significant differences in those variables between the clusters. Instead, Cramer's Contingency Coefficient (Cramer's V) was used to measure the degree of separation of pharmacies into the two clusters. Cramer's V, a measure of association for nominal data, does not depend on the order in which the categories are listed, and is a measure based on the chi-square statistic (79). Its value ranges from 0 in the case of independence to 1 in the case of perfect association (79). Therefore, variables with a higher value of Cramer's V, greater than 0.2 with one degree of freedom, were identified as characterizing differences between clusters (Table 34). Variables tested were those listed in Tables 29-31. Only those variables exhibiting differences are shown in Table 34.

TABLE 34

SERVICES DIFFERING BETWEEN CLUSTERS

<u>Service</u>	<u>Cramer's V</u>
<b><u>Services:</u> INFORMATION</b>	
Other educational materials including audio/video tapes in the pharmacy	0.331
<b>GLUCOSE MONITORING</b>	
When demonstrating monitors	0.244
For diagnosed diabetics	0.326
Help with alternative monitoring	0.254
Hire of monitors	-0.208
<b><u>Supply:</u></b>	
Glass syringes	0.198
Log books	0.203
<b><u>Counselling:</u></b>	
Insulin Therapy	0.521
Blood Glucose Monitoring (Users)	0.434
Urine Glucose Monitoring	0.291
Nonprescription Medications	0.243
Management of IDD	0.904
Management of NIDD	0.803



#### 4.6.3.4 Differences in Pharmacist Characteristics

Chi-square tests were used with nominal variables and Kendall's tau-b with ordinal variables to identify which characteristics of the pharmacists providing diabetic services differed significantly between the clusters of pharmacies. Null hypotheses of the general form "there is no difference in (variable) between clusters" were tested using  $P=0.05$  as the critical probability (alpha level) for rejection. Variables tested were those listed in Table 35. Due to the small numbers of positive responses, chi-square was not a valid test for the membership variables ACPP, SHPA and ADEA as expected counts were less than 5 for 20% or more of the cells. Inspection of Cramer's V for these variables revealed low values for ACPP and SHPA membership, suggesting that differences between clusters were unlikely. However, for ADEA membership, Cramer's  $V = 0.253$  with  $DF = 1$ , suggesting that there was possibly a relationship between ADEA membership and pharmacy cluster.

#### 4.6.3.5 Differences in Pharmacy Characteristics

Chi-square and Kendall's tau-b were similarly used to determine pharmacy characteristics differing significantly between the clusters. Null hypotheses of the general form "there is no difference in (variable) between clusters" were tested, again using the 5% level of significance. Chi-square was not a valid test for 'Pharmacy Site', as more than 20% of cells had expected counts of less than 5. However, a low value of Cramer's V indicated that a significant relationship was unlikely. Variables tested were those listed in Table 36.

TABLE 35

PHARMACIST CHARACTERISTICS DIFFERING BETWEEN CLUSTERS

## DEMOGRAPHICS

<u>Variable</u>	<u>DF</u>	<u>Chi-Square</u>	<u>Probability</u>
Qualification	1	0.73	NS
Sex	1	1.01	NS
Pharmacist status	3	3.93	NS

<u>Variable</u>	<u>Kendall's Tau-B</u>	<u>z</u>	<u>Probability</u>
Working hours/week	0.076	0.88	NS

## MEMBERSHIPS

<u>Variable</u>	<u>DF</u>	<u>Chi-Square</u>	<u>Probability</u>
PSA membership	1	3.52	NS
DAQ	1	3.56	NS

## JOURNAL READING

<u>AJP</u>	1	1.38	NS
<u>Aust.Pharmacist</u>	1	0.21	NS
<u>Aust.Prescriber</u>	1	0.008	NS
<u>Curr.Therapeutics</u>	1	3.11	NS
<u>Patient Management</u>	1	1.65	NS
<u>Pharm.J.</u>	1	0.82	NS
<u>Control</u>	1	5.85	0.016
<u>Conquest</u>	1	4.32	0.038
<u>Diabetes in the News</u>	1	1.68	NS

## CONTINUING EDUCATION

<u>Variable</u>	<u>DF</u>	<u>Chi-Square</u>	<u>Probability</u>
Pharmacy lectures	1	2.58	NS
Pharmacy materials	1	0.50	NS
Diabetes lectures	1	10.28	0.001
Diabetes materials	1	8.87	0.003
Industry materials	1	7.90	0.005
Books on diabetes	1	11.47	0.001
Journal reading	1	1.80	NS

## MOTIVATION

<u>Variable</u>	<u>Kendall's Tau-B</u>	<u>z</u>	<u>Probability</u>
Interest in diabetes	0.308	3.28	0.001
Prof.satisfaction	0.252	2.55	0.011
Profitable	0.035	0.34	NS
Previous experience	-0.109	1.02	NS
Clinic Proximity	0.096	0.86	NS
Diabetic customers	0.079	0.78	NS
Customers needed help	0.226	2.38	0.017
Diabetic pharmacist	0.093	0.82	NS
Diabetic in family	0.180	1.67	NS
Diabetic friend	0.126	1.14	NS
Diabetic staff member	0.094	0.86	NS
Approached by Ames	-0.034	0.32	NS
Approached Ames	-0.028	0.26	NS
PSA influence	-0.061	0.57	NS
PGA influence	-0.060	0.55	NS
Merch. group infl.	0.038	0.33	NS

TABLE 36

PHARMACY CHARACTERISTICS DIFFERING BETWEEN CLUSTERS

<u>Variable</u>	<u>DF</u>	<u>Chi-Square</u>	<u>Probability</u>
Location	1	1.37	NS
PGA Membership	1	0.13	NS
Merch.group	1	0.11	NS

<u>Variable</u>	<u>Kendall's Tau-B</u>	<u>z</u>	<u>Probability</u>
Trading Hours	0.056	0.60	NS
Turnover	-0.135	1.39	NS
Script Proportion	-0.062	0.61	NS
Scripts/Month	-0.062	0.62	NS
Year of Establishment	0.060	0.63	NS
Insulin Stock Value	-0.035	0.37	NS
Diabetic Stock Value	0.150	1.60	NS
No.Reference Texts	0.072	0.67	NS
Pharmacy Size	0.097	1.02	NS
Front Shop Area	0.097	1.04	NS
Total Stock Value	0.011	0.11	NS

#### 4.6.4 Discussion

##### 4.6.4.1 Classification of Pharmacies

Objective 7 - To classify pharmacies involved in specialized diabetic practice into levels of service provision.

Objective 7 has been fulfilled by 4.6.3.1 and 4.3.6.2.

Using attributes related to diabetic service provision, the most likely pattern imposed upon the group of specialized pharmacies by Ward's clustering method was a two cluster solution. The clusters could therefore be considered to comprise pharmacies providing diabetic services at a lower or higher level respectively.

##### 4.6.4.2 Service Levels

Objective 8 - To describe the differences in services provided at each level of specialization.

Objective 8 has been fulfilled by 4.6.3.3 and summarized in Table 34.

The service attributes which did not differ significantly between the lower and higher level providers were general means of providing information, diabetic screening, assistance with repair of monitors, and urine glucose testing. It was expected that less usual means of providing information, such as audio and/or video tapes, may have been in use only among higher level service providers, but somewhat surprising that there was no difference observed in provision of information outside the pharmacy setting by pharmacists in either group. Although there were differences in blood glucose monitoring services between lower and higher level service providers, concordance with regard to screening

for diabetes may be attributable to the fact that external agents were often involved in screening programmes, and were frequently the instigators. Although both groups were equally involved in assisting clients with repair of blood glucose monitors, higher level providers were more involved in offering alternative means of monitoring while repairs were being carried out, such as lending a monitor or advising on visual testing. Lower level providers were more likely to have monitors for hire. Generally minor involvement in urine glucose measurement precluded observation of differences between clusters.

Differences in supply attributes did not contribute greatly to the cluster separation, as even those which were possibly significant were of marginal importance only.

Various aspects of counselling appeared to be the major factors distinguishing between clusters, with six of the eight sets of topics showing significant differences. No differences were found in counselling about blood glucose monitors with customers buying or discussing a monitor for the first time. High counselling scores were evident for this activity in both clusters, presumably due to customers need for information about how to use the monitors at the time of purchase. Counselling patients about oral hypoglycaemic therapy also did not differ between lower and higher level service providers. This may be because counselling on oral prescription medications is increasingly being considered an integral part of the dispensing process and oral hypoglycaemics were receiving the same counselling attention from pharmacists as were other drug groups. Topics exhibiting

differences between clusters were those which either required specialized knowledge about aspects of diabetes eg insulin therapy, management of IDD and NIDD; or required pharmacists to recognize special needs of diabetic patients eg successful continuation of blood glucose monitoring, advantages of blood glucose monitoring over urine glucose monitoring, and selection of appropriate nonprescription medications.

#### 4.6.4.3 Demographics

Objective 9 - To describe the differences in characteristics of pharmacists and pharmacies at each level of specialization.

Objective 9 has been fulfilled by 4.6.3.4 and 4.6.3.5 and summarized in Tables 35-36.

Demographic characteristics of pharmacists providing diabetic services did not differ between pharmacy clusters. Although significance was not proved statistically, greater proportions of pharmacists in higher service level pharmacies claimed membership of some professional organizations. The trend was observed for membership of PSA ( $P = 0.061$ , Cramer's  $V = 0.189$ ), DAQ ( $P = 0.059$ , Cramer's  $V = 0.238$ ) and ADEA (Cramer's  $V = 0.250$ ). Differences in journal reading habits of pharmacists between the two clusters were observed for Control and Conquest, both of which would be received by members of DAQ. Use of easily accessible means of acquiring expertise in the area of diabetes, such as continuing education meetings or materials from pharmacy professional organizations and journal reading, was consistent between groups. However, greater proportions of pharmacists in higher service level pharmacies took recourse to meetings or

materials from diabetic organizations, information from pharmaceutical companies, and books on diabetes to improve their knowledge. Use of these sources would require greater motivation and effort from pharmacists.

Some differences in motivation of pharmacists deciding to establish or continue diabetic services were observed between clusters, with greater proportions of pharmacists in higher service level pharmacies citing such altruistic reasons as personal interest in diabetes, a desire to increase professional satisfaction, and recognition of their diabetic customers' need for help.

No significant differences were found in the business characteristics of pharmacies between clusters.

#### 4.7 FUTURE APPLICATIONS OF THE METHODOLOGY

Objective 10 - To develop a methodology suitable for application to future studies.

The methodology employed in this thesis to investigate the provision of services from community pharmacy comprised three major steps.

The initial "Survey of Services from Community Pharmacy in Queensland, 1984" identified and quantified services associated with the dispensing process, primary health care, and specialized health-related areas. It also allowed identification of the pharmacies involved. From this information, diabetic service was selected as a case study for further investigation into the development of specialized services in community pharmacy.

The combined mail and telephone "Survey of Diabetic



Services from Community Pharmacies in Queensland, 1986-87" was designed to elicit information about the diabetic services being provided, and the pharmacies and pharmacists providing the services. Although the sample detected by the first survey was expanded by other means prior to the second survey, sampling problems were still apparent. In the initial survey, practitioners identified themselves as being providers of a particular service. In the second survey, interviews were not completed with pharmacists who did not consider themselves to be providing diabetic services beyond those expected in the average pharmacy, as many of the questions would have been irrelevant and the financial and temporal costs difficult to justify. While this self-selection aspect of the sampling may have resulted in bias, the absence of researched information about specialized diabetic services meant that no accurate measure could be applied at that stage to justify inclusion or exclusion of pharmacies from the sample.

Cluster analysis was used to determine parameters for identifying specialists. The purpose of dividing specialized diabetic pharmacies into groups on the basis of service provision was twofold. Firstly, the parameters separating the groups may be used as criteria for future identification of pharmacies as high level diabetic service providers. Secondly, the information could be used to make recommendations to assist practitioners wishing to become involved in the provision of diabetic services eg specialized diabetic practice could perhaps be initiated by offering services similar to those of lower service level providers and later expanded to include services offered by the higher level

providers. Higher level service providers were here distinguished by offering monitoring services, and by providing information in novel ways and about aspects of health care beyond those related to prescription medications and the sale of goods related to the condition. Validation of the clustering procedure also showed that higher level providers had a comprehensive stock policy, estimated their diabetic customer ratio to be greater than the diabetic ratio of the general population, and placed a high estimate on their degree of involvement in the provision of diabetic services.

The methodology employed could be used with minor modifications to investigate other areas of specialized practice related to specific disease states. Sample determination for other areas may be even more limited than for diabetic pharmacies due to a lack of sources of identification. However, using the principles established by the survey of diabetic pharmacies, decisions to exclude from or include in the sample could be based on provision of monitoring/screening services, counselling topics addressed, and business characteristics such as stock policy for goods related to the specific disease state, estimated proportion of customers suffering from the disease state, and the pharmacist's estimate of the degree of involvement by the pharmacy in relation to that disease state. The methodology could also easily be applied to a wider geographic sample, allowing extrapolation to the national community pharmacy arena, and possibly international comparisons.

## 4.8 REFERENCES

1. Anon. (Aug.1983). "Melbourne Pharmacist Caters for Diabetics." Aust.J.Pharm., 64:534.
2. Campbell, R.K. (Jan.1986). "Pharmaceutical Services for Patients with Diabetes. Module 1: Professional and Economic Impact of Diabetes on Pharmacy Practice." Am.Pharm., NS26(1):Supplement.
3. Dolan, M. (May 1978). "Emil Baker Emphasizes Services Instead of Salesmanship." Am.Pharm., NS18(5):22-26,41.
4. Anon. (Jun.1984). "Diabetes Area Ideally Suits Pharmacists." Aust.J.Pharm., 65:452.
5. Chi, J. (Nov.20,1981). "Are You Taking the Diabetic for Granted?" Drug Topics, 125:36-41.
6. Campbell, R.K. (Feb.1982). "How You Can Make Your Pharmacy an Education and Care Center for Diabetics." Pharmacy Times, 48:23-25.
7. Anon. (Jun.1985). "Sydney Pharmacy Became Local Diabetic Centre." Aust.J.Pharm., 66:407.
8. Anon. (Oct.1971). "How Pharmacists Help Their Diabetic Patients." Pharmacy Times, 37:38-41.
9. Anon. (Oct.30,1972). "How to Set Up a Diabetic Needs Center." American Druggist, 166:43,45
10. Campbell, R.K. (Jul.1979). "The Pharmacist's Role in the Treatment of Diabetes." Am.Pharm., NS19(8):36-43.
11. Martin, F. (Mar.3,1980). "The Diabetes Patient - A Better Tomorrow." Drug Topics, 124:41-44,66.
12. Miller, E.R. (Dec.1981). "Patient Accountability - The Role of the Pharmacist in Diabetes and Hypertension Monitoring and Nutrition Information Services." S.Afr.Pharm.J., 48:578-579.
13. Torre, M.S. and Sause, R.B. (Oct.1982). "Counselling the Diabetic Patient." Am.Pharm., NS22(10):45-46.
14. Cohen, M. (1983). "The Pharmacist and the Diabetic Patient." in Proceedings of the Seventh Annual Pharmacy Refresher Course. Sydney: P.S.A. (N.S.W. Branch).
15. Anon. (Mar.1983). "Problems for Diabetics if Big Reductions in Pharmacy Numbers." Aust.J.Pharm., 64:160-161.
16. Anon. (Nov.1983). "In-Pharmacy Diabetes Programme." Aust.J.Pharm., 64:811.

17. Campbell, R.K. (Dec.1984). "Treating Diabetes: In the 1980s and Beyond." Am.Pharm., NS24(12):52-55,57-60,62,65.
18. Davis, R.E. (Dec.1984). "Setting Up a Diabetic Patient Education Program." Am.Pharm., NS24(12):61.
19. Anon. (Dec.1984). "Major New Diabetic Self Care Centre Scheme for Pharmacy." Aust.J.Pharm., 65:948.
20. Anon. (Jun.1985). "Pharmacies Support Ames Diabetic Self-Care Centre In-Store Scheme." Aust.J.Pharm., 66:406-407.
21. Anon. (Jun.1985). "Awareness of Diabetes Increasing." Aust.J.Pharm., 66:412.
22. Yarborough, M. and Campbell, R.K. (Mar.1986). "Pharmaceutical Services for Patients with Diabetes. Module 2: Developing a Diabetes Program for Your Pharmacy." Am.Pharm., NS26(3):Supplement.
23. Anon. (Jun.1986). "Ames Advertising Subsidy for Diabetes Centres." Aust.J.Pharm., 67:596,598.
24. Anon. (Sep.1969). "How You Can Play the Key Role in Diabetes Detection." Pharmacy Times, 35:38-41.
25. Stone, M.D. (Jun.1970). "Why Wait? - The Role of the Community Pharmacist in Diabetes Detection Programs." Wisconsin Pharmacist, 39:223-227.
26. Solomon, A.C., Hoag, S.G. and Kloesel, W.A. (Mar.1977). "A Community Pharmacist-Sponsored Diabetes Detection Program." J.Am.Pharm.Assoc., NS17(3):161-163.
27. Thomas, J. (Jul.1977). "A Possible Role for Pharmacists in the Management of Diabetic Patients." Aust.J.Pharm., 58:401-402.
28. Anon. (Mar.1983). "N.S.W. Pharmacy Offers Health Screening." Aust.J.Pharm., 64:170.
29. Garrelts, L. (Dec.1984). "Helping the Diabetic With a Full Service Pharmacy." Am.Pharm., NS24(12):63.
30. APhA, (1977). The Diabetic Patient Drug Monitoring Checklist.
31. Campbell, R.K. (May 1986). "Pharmaceutical Services for Patients with Diabetes. Module 4: Understanding, Monitoring, and Preventing Long-Term Complications of Diabetes." Am.Pharm., NS26(5):Supplement.
32. Zelnio, R.N., Cisneros, R.M. and Owen, J.W. (Summer 1980). "Pharmacy Services for Diabetic Patients in South Carolina: A Survey of Physician and Patient Attitudes." Contemp.Pharm.Pract., 3(3):141-146.

33. Koda-Kimble, M.A. (Apr.1986). "Pharmaceutical Services for Patients with Diabetes. Module 3: Current Concepts in Diabetes Therapy." Am.Pharm., NS26(4):Supplement.
34. Anon. (Jul.1980). "Retail Pharmacists' Role in Diabetes Health Team." Aust.J.Pharm., 61:427,463.
35. Campbell, R.K. (Jan.1981). Special Devices and Equipment for the Visually Impaired Diabetic." Am.Pharm., NS21(1):30-35.
36. Babcock, P.A. and Colaizzi, J.L. (Dec.1979). "Discussing Diabetes: A Review of Today's Therapy. The Pharmacist's Role in Counselling Diabetic Patients." NARD Journal, 101:65-70.
37. Birken, B. (1984). "The Community Pharmacist and the Diabetic." On Contin.Pract., 11(3):23-27.
38. Cantrill, J.A. and Wright, C. (Oct.5,1985). "Community Pharmacists and the Health Education of Diabetic Patients." Pharm.J., 235:449.
39. Cantrill, J. (May 24,1986). "Advice Pharmacists Can Give to Diabetic Patients." Pharm.J., 236:668-669.
40. Anon. (Aug.1986). "Pharmacists Welcome Expanded Role in Patient Care, Survey Shows." Am.Pharm., NS26(8):552.
41. Ramsay, R. (Jul.1984). "Helping Diabetics Select Correct O.T.C. Medications." American Druggist, 190:114-115.
42. Stephens, W.P. (May 24,1986). "Nutritional Advice for Patients with Diabetes." Pharm.J., 236:670.
43. Ward, J.D. (May 24,1986). "Eye Screening and Diabetes." Pharm.J., 236:673.
44. Dillman, D.A. (1978). Mail and Telephone Surveys. The Total Design Method. Chapter 8. "Looking to the Future: Prospects and Concerns." New York:Wiley-Interscience, John Wiley and Sons, pp282-297.
45. Moser, C.A. and Kalton, G. (1971). Survey Methods in Social Investigation. 2nd Ed. Chapter 10. "Methods of Collecting the Information. 1-Documents and Observations." London:Heinemann Educational Books, pp238-254.
46. Churchill, G.A. (1979). Marketing Research. Methodological Foundations. 2nd Ed. Chapter 3. "Research Design." Hinsdale, Illinois:The Dryden Press, pp46-65.
47. Dillman, D.A. (1978). Ibid. Chapter 2. "Which is Best: The Advantages and Disadvantages of Mail, Telephone and Face-to-Face Surveys." pp39-76.
48. Dillman, D.A. (1978). Ibid. Chapter 6. "Constructing Telephone Questionnaires." pp200-231.

49. Warwick, D.P. and Lininger, C.A. (1975). The Sample Survey: Theory and Practice. Chapter 6. "Questionnaire Design." New York: McGraw-Hill, pp126-171.
50. Zelnio, R.N. (Aug.1980) "Data Collection Techniques: Mail Questionnaires." Am.J.Hosp.Pharm., 37:1113-1119.
51. Commonwealth Department of Health. (1985). Community Surveys. A Practical Guide. Chapter 1. "Getting Started." Canberra: Australian Government Publishing Service, pp6-14.
52. SAS Institute Inc. (1985). SAS User's Guide: Basics and SAS User's Guide: Statistics Version 5 Edition. Cary, NC: SAS Institute Inc.
53. Commonwealth Department of Health. Ibid. Chapter 6. "Data Management." pp49-64.
54. Dickson, W.M. (1981). Chapter 19. "Use of Computers in Research." in Nelson, A.A. (ed.), Research in Pharmacy Practice: Principles and Methods, Bethesda (MD): American Society of Hospital Pharmacists, pp129-135.
55. Young, W.W. (Oct.1980). "Interpretation of Research Data: Exploratory Data Analysis." Am.J.Hosp.Pharm., 37:1394-1398.
56. Stolar, M.H. (Nov.1980). "Interpretation of Research Data: Hypothesis Testing." Am.J.Hosp.Pharm., 37:1539-1545.
57. Jackson, R.A. (Dec.1980). "Interpretation of Research Data: Selected Statistical Procedures." Am.J.Hosp.Pharm., 37:1673-1680.
58. Kerlinger, F.N. (1973). Foundations of Behavioural Research. 2nd.Ed. Chapter 25. "Foundations of Measurement." Tokyo: Holt-Saunders International Editions, pp436-437.
59. Commonwealth Department of Health. Ibid. Chapter 2. "The Sample." pp15-21.
60. Commonwealth Department of Health. Ibid. Chapter 3. "The Questionnaire." pp22-31.
61. Tull, D.S. and Hawkins, D.I. Marketing Research: Measurement and Method. A Text with Cases. 2nd Ed. Chapter 9. "Measurement and Research: Attitude Scales." New York: Macmillan Publishing Co., Inc., pp302-334.
62. Commonwealth Department of Health. Ibid. Chapter 4. "Interviewers." pp32-39.
63. Health Act. (Jan.24,1987). "Skin Penetration Regulations." Queensland Government Gazette.
64. Paradine, C.G. and Rivett, B.H.P. (1966). Statistical Methods for Technologists. "Table 6 - Random Numbers." London: The English Universities Press Ltd. p277.

65. Decker, N. and Blizzard, J. (Jun.1980). "U-100 Insulin and the Retail Pharmacist." *Aust.J.Pharm.*, 61:368,370.
66. Anon. (Aug.1983). "Ames Sells Visidex Through Pharmacy." *Aust.J.Pharm.*, 64:536.
67. SAS Institute Inc. (1982). SAS User's Guide: Statistics, 1982 Edition. Chapter 29. "The Cluster Procedure." Cary, NC:SAS Institute Inc.
68. Tull, D.S. and Hawkins, D.I. Ibid. Chapter 14. "Analysis of Data: Statistical Techniques." pp438-463.
69. Churchill, G.A. Ibid. "Glossary." pp650-658.
70. Churchill, G.A. Ibid. Chapter 16. "Data Analysis: Discriminant, Factor, and Cluster Analysis." pp574-591.
71. Aldenderfer, M.S. and Blashfield, R.K. (1984). Cluster Analysis. Chapter 1. "Introduction." Sage University Papers, Series: Quantitative Applications in the Social Sciences, 07-044. Beverly Hills:Sage Publications, pp7-16.
72. Zelnio, R.N. and Simmons, S.A. (1981). Chapter 18. "Survey of Other Multivariate Techniques." in Nelson, A.A.(ed.), *Research in Pharmacy Practice: Principles and Methods.* Bethesda (MD):American Society of Hospital Pharmacists, pp121-127.
73. Aldenderfer, M.S. and Blashfield, R.K. Ibid. Chapter 2. "Similarity Measures." pp16-33.
74. Aldenderfer, M.S. and Blashfield, R.K. Ibid. Chapter 3. "A Review of Clustering Methods." pp33-62.
75. Aldenderfer, M.S. and Blashfield, R.K. Ibid. Chapter 4. "Validation Techniques." pp62-74.
76. Churchill, G.A. Ibid. Chapter 15. "Data Analysis: Investigation of Association." pp537-539.
77. SAS Institute Inc., (1985). Ibid. Chapter 32. "The CORR Procedure." p865.
78. Pagano, R.R. (1981). Understanding Statistics in the Behavioural Sciences. "Table A. Areas Under the Normal Curve." St.Paul, Minn.:West Publishing Co., pp524-529.
79. Liebetrau, A.M. (1983). Measures of Association. Chapter 3. "Measures of Association for Nominal Data." Sage University Papers, Series:Quantitative Applications in the Social Sciences, 07-032. Beverly Hills:Sage Publications, pp13-44.

## Chapter 5

COMMUNITY PHARMACY PRACTICE IN QUEENSLAND -  
PAST, PRESENT AND FUTURE

## 5.1 THE PAST

The roots of pharmacy practice in Australia can be found in the English system. The result of this background was that early pharmacists in Australia had the freedom to deal in medicaments, and their ready accessibility to the public meant that they were also involved in the provision of advice to the public in regard to health matters. However, because the giving of advice was considered to be part of the practice of medicine, they were unable to charge a fee for consultation. The image of the pharmacist was that of a trader earning a living from sale of goods rather than that of a professional rewarded by fee for service.

Later in the nineteenth century, the role of the pharmacist was described as giving advice on the treatment of common ailments from their symptoms, prescribing medical treatments for minor ailments, compounding and supplying the required medicines, and providing antidotes for poisoning and first aid for injuries (1). Their functions were seen not merely to involve compounding and supply of medicines, but also prescribing and counselling. Pharmacists did not have a monopoly on dispensing of doctors prescriptions at this time. The advent of patent medicines for self treatment threatened both the pharmacists' advisory and compounding roles.



During the first half of the twentieth century, pharmacists continued to be engaged in compounding and dispensing activities and the provision of health advice without a fee. The beginnings of pharmacists' involvement in community health education activities were seen. Restrictions began to be imposed to allow the supply of some medicinal compounds on doctors' prescriptions only. A distinction between the duties of doctors and pharmacists was made, so that doctors became the prescribers and pharmacists the dispensers. As the variety of patent medicines increased, the front shop area of pharmacies became more and more commercially orientated and professional activities such as compounding were moved to the seclusion of the dispensary.

The explosion of sophisticated new pharmaceuticals onto the market following the Second World War caused a marked decrease in extemporaneous dispensing in the decades following. Although the advent of the Pharmaceutical Benefits Scheme (PBS) resulted in more prescriptions being written, a growing proportion of them involved only simple counting or pouring techniques for their supply. The commercial aspects of supply became the major function of dispensing. Despite advances in the quality of pharmaceutical education, the professional role of the pharmacist in the 1950s and 1960s was increasingly overshadowed by the business role in the eyes of both the public and the profession.

The emphasis in the role of the pharmacist changed during the 1970s and 1980s from chiefly that of a preparer and supplier of medicines to place increasing importance on that of advisor in the optimal choice and use of prescription and

nonprescription medication. Changes in the nature of community pharmacy practice occurred in response to the clinical needs of patients. Involvement with individuals and their drug therapy was necessitated by recognition of the potential for adverse reactions and drug interactions with the complex array of new drug entities. It was acknowledged that patients needed not only to be prescribed the correct medicine, but also to be provided with the information to allow them to use it correctly. Patients began to demand the knowledge to enable them to participate in health care. Aspects of clinical involvement by pharmacists included the keeping of patient medication records; provision of drug information to patients by methods such as verbal counselling, ancillary labels and information leaflets; and the provision of drug information to doctors and other health professionals.

The expansion of knowledge, coupled with the demands of consumers to accept responsibility for their own health, created a need for expansion of the variety and quality of expertise of pharmacists in health maintenance. While there has been official acceptance of the principle of specialization and recognition of specialists in pharmacy in the United States (at least in hospital pharmacy), a more tentative approach has been adopted in Australia, especially in relation to specialization within community practice. Despite this reticence on the part of officialdom, some practitioners have diversified their role into specialized areas of health related services, including such activities as screening and monitoring of disease states, in addition to supply of medication and medication management advice.

## 5.2 THE PRESENT

By the mid-1980s, the role of the pharmacist in Australia was officially recognized as involving the preparation and supply of medications and the provision of systems and information to optimize their use; and the provision of primary health care services, including supply of therapeutic goods, advice on the management of minor ailments, recognition and referral of more serious conditions, disease prevention and health promotion education (2).

The "Survey of Services from Community Pharmacies in Queensland, 1984" set out to ascertain the nature and extent of the activities of community pharmacists in Queensland, and to allow identification of pharmacists involved in innovative areas of practice. The findings of the survey, summarized below, confirmed that pharmacists were performing duties related to the dispensing of prescription medications and to the provision of primary health care, and that many were offering other health-related services of a specialized nature.

### 5.2.1 Dispensing Services

The steps involved in the dispensing process have been described as prescription review, supply, counselling and monitoring.

Community pharmacists in Queensland were involved in dispensing for private hospitals (16.1%), nursing homes (32.4%), medical centres (11.8%), public hospitals (11.6%) and other institutions (11.9%) in addition to the general public. A few pharmacies claimed to be normally involved in dispensing

requiring unusual extemporaneous techniques (6.5%) or unusual ranges of proprietary items (7.8%).

Computers were used for dispensing purposes in 11.9% of pharmacies responding, and a further 31.4% considered it likely or very likely that a computer would be installed within two years. The major additional services nominated as being provided consequent on computerization were patient medication records and drug information print-outs. Computers were also said to be useful for providing reminders of appropriate ancillary labels and for detection of drug interactions.

Ancillary labels were claimed to be in use by 91.8% of respondents, 70.5% on a routine basis. Patient medication records were claimed to be kept by 35.5% of respondents, 10.9% involving the use of computers.

The front counter was nominated by 83.7% of respondents as the usual site for counselling to occur in the pharmacy. Although 5.0% of pharmacies had a separate counselling room, this was rarely considered to be the usual counselling site. In contrast, a specific counselling area within the main pharmacy, nominated by 4.1% of respondents, was stated to be the usual place for counselling by about two thirds of them. Only 1.1% of respondents claimed not to be involved in counselling. Counselling aids used were ancillary labels (87.5%), manufacturers leaflets (71.6%), and Division of Health Promotion (DHP) leaflets (66.8%). Also, 62.3% of computer users employed computer generated leaflets. While the Pharmaceutical Benefits Scheme (PBS) at the time appeared to regard pharmacists chiefly as suppliers, there seemed to be

general acceptance among pharmacists of the principle of designating a recognizable proportion of the dispensing fee for counselling.

Investigation of the drug surveillance activities of community pharmacists indicated that 5.2% had reported adverse drug reactions to ADRAC and 27.6% to medical practitioners during the preceding six months. Patients had been referred to medical practitioners because of suspected drug interactions from 9.8% of pharmacies during the preceding week, as a result of side effects from 30.0%, and about other clinical matters relating to prescription medication from 24.9% of pharmacies. In the same period, doctors had been contacted about drug interactions by 9.3% of pharmacies, side effects by 14.7%, and other prescription matters by 62.5%.

#### 5.2.2 Primary Health Care Services

The primary health care activities of community pharmacists have been defined as responding to symptoms and providing advice on self-medication. The outcome of a primary health care consultation may be sale of a nonprescription medication, advice on other means of management, or referral to another health practitioner. Primary health care may also be considered to include disease prevention and health promotion, screening for health problems, and encouragement of the principle of self-care.

Queensland pharmacists were overwhelmingly (98.6%) of the opinion that a pharmacy-only class of drugs should continue to exist; only 47.7% were in favour of the release of more drugs into this category from prescription-only status.

A reluctance was shown to the charging of a professional fee on supply of S3 medications, with only 38.7% applying fees at the recommended level and 22.7% charging no fee in spite of legislated professional obligations associated with the sale of these items.

Investigation of drug surveillance in areas other than those directly related to prescriptions showed that patients had been referred to medical practitioners about nonprescription medications from 25.2% of pharmacies during the preceding week, about disease states from 62.9%, and about other matters from 13.1% of pharmacies. In the same period, doctors had been contacted about nonprescription medications by 8.4% of pharmacies, disease states by 18.4%, and other matters by 18.3%.

### 5.2.3 Specialized Health Related Services

Specialized services being provided through community pharmacies in Queensland were identified and quantified by the survey, and service providers identified for follow-up study purposes.

Specialized services have been established to cater for the needs of specific demographic groups within the community, to provide support to sufferers of specific disease states, and to advise on specific product ranges.

While developments in one State of Australia cannot be extrapolated to the national or international scene, literature reviewed indicated that entrepreneurial, innovative community pharmacists elsewhere in the western world have also taken up the challenge of extending their professional

practices to the provision of similar services.

The findings were that asthma pumps, blood glucose monitors, blood pressure monitors, and extensive ranges of invalid or health care aids, nutritional supplements, sports medicine goods, and veterinary medicines were each stocked by at least 30% of pharmacies.

The major health related services offered were hire of invalid or health care aids (53.2%), sports medicine services (37.3%), pregnancy testing (35.6%), diabetic services (15.2%), and hypertensive services (8.3%). Seventy percent of the pharmacies responding were involved in provision of the listed innovative services, 50.0% offering one service, 35.8% two services, and the remaining 14.2% three or more.

The hypotheses tested allowed identification of **significant demographic and business variables associated with each service**. This analysis was used as a screening procedure to facilitate further investigation of the factors affecting the establishment and operation of specialized health-related services.

For the purposes of this further investigation, **provision of diabetic services was selected as a case study**. This area of innovative practice was selected for follow-up examination because of the diversity of services which could be offered to diabetic patients through community pharmacies, the variety of demographic and business factors highlighted by the screening analysis as differing between providers and nonproviders, the size of the identified sample, and the ease of expanding that sample through other means of identification.

#### 5.2.4 Specialized Diabetic Services

##### 5.2.4.1 Services Provided

The "Survey of Diabetic Services from Community Pharmacies in Queensland, 1986-86" was aimed firstly at documenting the details of diabetic services being offered by the community pharmacies involved. Activities, summarized below, were broadly divided into three groups: services, supply and counselling.

Services were related mainly to provision of information to diabetic patients and aspects of blood glucose monitoring. Over seventy percent of pharmacies were involved in provision of information via leaflets (75.3%), and via diabetic newspapers (70.6%). About one quarter of the chief pharmacist providers in active pharmacies were involved in provision of diabetic education services outside the pharmacy setting. At the time of the survey, about two-thirds of respondents claimed that blood glucose measurements were being performed in their pharmacies.

All pharmacies reported keeping ranges of stock of blood glucose testing strips, urine glucose testing strips and/or tablets, and oral hypoglycaemic drugs. Although only two-thirds kept a range of insulins, the remainder either kept limited stocks or had arrangements with their patients to order repeat supplies prior to needing them. Two-thirds regularly stocked glucagon injection. Disposable insulin syringes, blood testing aids and artificial sweeteners were stocked by all pharmacies. High proportions of pharmacies (over 80% for each) reported keeping stocks of blood glucose monitors, urine testing equipment, identity bracelets and/or



tags, glucose tablets, log books, and books on diabetic diet. Although many had urine testing equipment and/or glass syringes in stock, the comment was frequently made that they had not sold any of the items for some time. Only about half of the pharmacies kept injection aids such as automatic injectors, scale magnifiers, or devices for destroying needles. These items, being of a specialized nature, may only warrant stocking by more specialized outlets. Slightly more than half of the pharmacies stocked diabetic foodstuffs, chocolates or sweets.

Pharmacists were involved in counselling diabetic patients about such diverse topics as insulin therapy, blood glucose monitoring, urine glucose monitoring, oral hypoglycaemic therapy, nonprescription medicines, and diabetic management. The areas of major involvement were counselling purchasers of blood glucose monitors about their use, and counselling NIDD patients about oral hypoglycaemic drug therapy. Areas of least involvement were counselling IDD patients about insulin therapy, and counselling about urine glucose monitoring.

#### 5.2.4.2 Factors Relating to Involvement

Analysis of the "Survey of Services Provided From Community Pharmacies in Queensland, 1984", used as a screening procedure, indicated that there were significant differences in the sex ratios and work status of providers and nonproviders of diabetic services. However, chi square analyses performed using the expanded sample of diabetic service providers to test the hypotheses "that there were no significant difference between providers and nonproviders of

diabetic services" showed no significant differences in sex ratio or work status at the  $P = 0.05$  level.

Pharmacists involved did not generally have qualifications beyond the basic requirements of Ph.C. or B.Pharm. They tended to be members of PSA (74.3%) and the owners of the pharmacies involved tended to be members of PGA (84.0%). Eighteen pharmacists reported membership of DAQ. However, providers did not recognize support from professional organizations as motivation for the provision of diabetic services. Over 70% of pharmacists reported regular readership of Australian Journal of Pharmacy, Australian Pharmacist, Australian Prescriber, and Diabetes in the News. Journal reading was identified as a major source of information about diabetes (91.5%), as were information from pharmaceutical companies, books on diabetes, and CE information from pharmacy sources (each over 70%). Only about a quarter of the pharmacies appeared to have specific diabetes reference texts available.

Presence of Diabetic Association Support Group did not appear to inhibit the development of diabetic services in community pharmacies, as 76.9% were within 25Km of a Support Group. In the Brisbane area, this was the case for 87.5% of pharmacies, while 66.3% of country pharmacies providing diabetic services were within 25Km of a Support Group. There was a significant difference in the distribution of pharmacies providing diabetic services between the Brisbane area and the country, with greater proportions of country pharmacies offering the services. As many country centres lacked some of the facilities available in Brisbane and other larger

provincial centres (such as Diabetic Support Groups, hospital diabetic clinics, or health professionals other than general practitioners and pharmacists) pharmacists may have been filling a breach. Pharmacy site also became significant on examination of the expanded sample, although it had not appeared to be so previously. As the trend was for higher proportions of city centre and regional shopping centre pharmacies to be providing diabetic services, this may be explained as a function of the higher proportion of pharmacies in country areas being providers, since many pharmacies in country towns have been classified as being sited in the city centre. The physical size of the pharmacy and the annual turnover were also significantly different between providers and nonproviders, with greater proportions of larger pharmacies with higher turnovers being providers. Higher proportions of merchandising group members were providers of diabetic services, but the groups were not recognized by providers as having encouraged the development of diabetic services.

Professional and altruistic reasons were the major general influences on the decision to establish or continue a diabetic service in a community pharmacy. Pharmacists saw the service as a way to increase professional satisfaction, had a personal interest in diabetes, had a number of diabetic customers, and recognized the need of their diabetic customers for assistance. The prospect of making a profit, and the support of Ames were also important factors, but to a lesser degree. Some individuals cited specific highly motivational factors including already having set up a diabetic service in

another pharmacy, geographic factors such as proximity to a diabetic clinic, and being a diabetic or having a diabetic in the family. Support from external sources such as professional organizations or merchandising groups was apparently minor.

The great majority of pharmacies providing diabetic services (at least 70%) had begun their involvement since 1980, probably due to the advent of blood glucose monitoring and the sale of monitors through pharmacies.

In summary, the provision of specialized diabetic services from community pharmacies in Queensland has been the result of the efforts of motivated practitioners, with only minor influence from external sources.

#### 5.2.4.3 Levels of Service Provision

Grouping of pharmacies specializing in diabetic services, based on the services they provided, resulted in the formation of two clusters providing lower and higher levels of service. The distinguishing features between the two groups were that higher service level providers were more likely to be providing information to patients by less conventional means, such as audio and video tapes; more likely to be offering blood glucose monitoring services, beyond screening; more likely to assist clients with alternative means of blood glucose monitoring while monitors were being repaired; and more involved in counselling in aspects of diabetic care apart from oral hypoglycaemic therapy, and blood glucose monitoring on initial purchase of a monitor.

### 5.3 THE FUTURE

A look at the history, and a knowledge of the current status of community pharmacy practice in Queensland logically invite questions about its future development.

#### What is the future of community pharmacy practice in Queensland?

Community pharmacists have long had an active role in assisting people with the treatment and management of minor ailments. Their ready accessibility to the public has been responsible in the past for the development of the pharmacist's role in provision of primary health care.

Recent years have seen the expansion of personal health care into areas of health maintenance, including self management of chronic conditions formerly considered to be the responsibility of medical practitioners. Many types of patients previously confined to hospital, particularly the increasing proportion of elderly people in the community, are now being treated at home. These changes have been made possible partly through advances in technology. Pharmacies, again in part because of their ready accessibility, have become the logical retail outlets for technological developments such as blood pressure and blood glucose monitors and for health-related equipment such as invalid aids.

While the obvious role of the pharmacist has been to provide assistance in the management of medication, sale of health-related equipment has also involved them in assisting patients with the practical use of such equipment and the application of technology to the management of their

conditions. Advances in technology have also facilitated the development of screening services in community pharmacies aimed at detecting, and in some cases monitoring conditions such as diabetes, hypertension, high cholesterol levels, and pregnancy.

The fact that nearly three quarters of the pharmacies responding to the initial survey were involved in the provision of some form of health care not traditionally associated with pharmacy, suggests that community pharmacies are responding to and fulfilling a public need for such services.

Patients and home-care givers appear to require the support and assistance of readily accessible health care practitioners to enable them to fulfil the new self care roles expected of them. However, modern advances in medical treatment are associated with increasing complexity of information, technology, and drug therapy. It is therefore becoming increasingly difficult for community pharmacists to be experts in all areas. The diversity and complexity of possible service areas, coupled with the apparent needs of the public, would seem likely to provide a climate in which specialization would flourish.

#### Should specialization be encouraged?

Specialization has been officially recognized overseas, largely in relation to aspects of hospital pharmacy practice. At present it appears, at least in Queensland, that the specialization trend in community pharmacy is advancing in response to public needs at the instigation of motivated

practitioners with little influence or support from professional bodies or other external sources. The evidence suggests that, if the climate is right, some form of specialized practice is likely to continue to develop.

Not unexpectedly, opposition to specialization in community pharmacy has been encountered from both within and outside the profession. For example, in a recent statement on the role of the pharmacist, the Australian Medical Association (AMA) expressed the opinion that chemical or physical testing should not be performed by non-medically trained personnel because misdiagnosis would be likely in the absence of clinical expertise required for adequate interpretation of test results (3).

However, if the trend towards specialization in community pharmacy does continue to develop in response to perceived needs, it is essential that recognized specialist practitioners be established and maintained at a high level of competence. To ensure both adequate patient care and professional credibility, accreditation will be required as a guarantee of specialty practice standards.

#### How should specialization be encouraged?

If specialization within community pharmacy is recognized as economically viable, professionally rewarding and positively contributing to the health care of the community, encouragement of the development of specialization could conceivably come from a number of sources. At present, providers seem to be motivating and training themselves to varying degrees. While this has resulted in the provision of

useful services to the public, the variability in expertise offers little protection to the consumer, as no distinction is obvious regarding the quality of the practitioners involved. This problem could be addressed by combining the enthusiasm of innovative practitioners with guidance and support from other sources: the profession itself, educational institutions, the government, and disease state support groups.

In the United States, recognition of specialty practice in hospital pharmacy has come from within the profession, with APhA setting up criteria and approving acceptance as specialists of practitioners fulfilling pre-set education and practice requirements. In Australia, PSA, as guardian of the professional aspects of pharmacy practice, would be a logical organization to guide the development of specialization. Because of the importance of education in the achievement of adequate standards by specialist practitioners, this may be even more appropriately done through the Australian College of Pharmacy Practice (ACPP).

The educational expertise of Universities and Institutes of Technology granting pharmacy degrees would also make them logical sources of the training needed for specialization. This could be achieved variously, eg by electives within the under-graduate system, by formal post-graduate courses, or by structured continuing education courses for practising pharmacists.

As the Commonwealth Government is the major payer of medical costs in Australia, it would be in its interest to support specialization within pharmacy practice if it were shown that improved patient care and consequent reduction in



medical costs would result. That the Government supports medical specialization is evidenced by the current medical fee structure.

If specialization in pharmacy practice were to be based on a disease state/anatomical classification as is medical specialization, support may also be forthcoming from specific disease support groups such as the National Heart Foundation, Diabetes Australia, the Ileostomy Welfare Association and the Arthritis Foundation.

Involvement by the Commonwealth Government and by support organizations, however, was not forthcoming to diabetic pharmacies over recent months. In August 1986, the Government announced a budget decision to pay an annual grant to the Australian Diabetes Foundation (ADF - now Diabetes Australia) to enable it to provide diabetics with essential supplies including diagnostic testing agents, insulin syringes and needles (4). The decision was made as a result of submissions to the Government by the ADF, seeking to reduce the personal costs to diabetics. The intention was to introduce the scheme on 1st April, 1987. In the intervening period, PSA and PGA conducted negotiations with ADF to involve community pharmacies as convenient distribution points in return for a handling fee (5). As a result of these negotiations, PSA expressed confidence that pharmacies would be involved in the scheme and that co-operation between PSA and ADF would involve recognition by accreditation and special identification of pharmacists who fulfilled certain educational, professional and other commitments in the area of diabetes care (6,7). However, an announcement by the

Australian Minister for Health, the Hon. Neal Blewett, in May 1987 (8) made it clear that the scheme, rescheduled to begin on 1st September 1987, would operate only through ADF and its State Associations, effectively ignoring the past and potential role of community pharmacists in diabetic supply and management (9,10). The collapse of co-operation and the by-passing of pharmacy appeared to be the result of Government financial restraints, but the probable long-term financial benefits to the health budget resulting from frequent contact by diabetic patients with readily accessible specialist pharmacists does not appear to have been considered.

The most reliable driving force for the development of specialties in community pharmacy practice thus would appear to be the profession itself. The evidence that community pharmacists are moving into specialized areas of practice of their own volition needs to be addressed by the professional bodies and the potential future of this trend evaluated. Too often in the past, the profession and its representative bodies have been reactive rather than pro-active in the face of change.

#### What should the functions of specialist pharmacists be?

At this early stage in the development of specialization in community pharmacy practice, the role of involved practitioners is to provide goods, information, counselling, and if appropriate, screening and/or monitoring relevant to a specific patient group or a specific disease state.

The specialist pharmacist of the future would fill a logical place within the specialist medical team, assisting with drug information and clinical decision making with regard to drug therapy. The variety of drugs available and the extent of information required for their safe and effective use are making it increasingly difficult for pharmacists to maintain a depth of knowledge in all areas. As has occurred in other health professions, specialization would appear to be the answer to this problem.

In addition, technological developments in the future may provide more detailed data on patients' medication status, which would be appropriately reviewed by the specialist pharmacist who could then be consulted by the physician regarding changes in therapy. An example of this type of technology has been seen in the field of diabetes with the Memory Glucometer, a programmed blood glucose monitor which retains the patient's blood glucose readings over a period of time. These readings can later be processed by computer, either on site or by modem, to produce profiles of blood glucose control for the period in question from which informed decisions can be made regarding adjustment of insulin dosage, or other management strategies. Pharmacokinetic evaluation of therapy for epileptics and asthmatics has also been reported. The other function likely to expand with improved technology is that of preliminary screening for disease. Simplified procedures have already made this a practicality in the community pharmacy environment for hypertension, diabetes, and pregnancy.

Because there were no differences observed in the supply functions of lower and higher level diabetic service providers, it could be postulated that, at a later stage in the development of specialization, the supply element may be separated from the service provision, with specialists acting in a consultative capacity only. Payment would need to be on the basis of a fee for service. The beginnings of this trend have been seen in office-based practice settings in the United States.

Such a move would not be without its critics, notably other health professionals who may see their roles being usurped. In the area of diabetes, competition would certainly come from groups such as the Australian Diabetes Educators' Association (ADEA) who are in the process of establishing an accreditation course for diabetic educators.

#### 5.4 A BLUEPRINT FOR THE ESTABLISHMENT OF SPECIALIZED SERVICES

Objective 11 - To suggest a plan to aid the controlled development of specialized services in community pharmacy practice.

**What are the advantages of controlled development of specialization in community pharmacy practice?**

Pharmacists are already active in the provision of specialized health related services through community pharmacies. This type of service offers advantages to the public in terms of health care by its ready availability, to the government by reduction in health care costs, and to the pharmacist in terms of professional satisfaction.

The advantage of controlling the development of specialized services is the ability to ensure the quality of services being provided, through education of the pharmacist providers. Accreditation of providers would allow the public to identify practitioners with appropriate qualifications in specific fields.

**Which pharmacies will be suitable for the establishment of a specialized service?**

Any pharmacy may be an appropriate outlet for a specialized service. There were no differences in business characteristics observed between low and high level providers of diabetic services, indicating that these attributes are not determinants of the success of such a venture. A pharmacist interested in establishing a specialized service should assess the needs of the community which the business serves eg it would be unwise to set up a paediatric specialty practice in an area with a predominantly elderly population, even if the pharmacist is interested in that area of practice.

**Which pharmacists will be suitable as specialists?**

Any pharmacist is a likely candidate for development into a specialist. There were no differences in the sex, qualifications, status in the pharmacy, or working hours of pharmacists providing low or high level diabetic services. The main attribute required is motivation, and the main motivation a desire for professional satisfaction. Associated with this are an interest in the subject, and a recognition of the need by customers for the service.

Membership of professional groups was common amongst practitioners offering diabetic services, but did not differ greatly between low and high level providers. Because numbers of practitioners have set up specialized health related services through their own efforts, it seems likely that more pharmacists, who may not have had the entrepreneurial drive to "go it alone", could be motivated to do so with the support of professional organizations.

#### **How can pharmacists be trained as specialists?**

Journal reading was common among providers of diabetic services, the only differences between low and high level providers being that a greater proportion of higher level providers regularly read specific diabetic journals. Attendance at continuing education events was also common, with a greater proportion of higher level providers seeking education offered from diabetic sources. This may be in response to a need not currently catered for by pharmacy sources.

Pharmacy organizations, in conjunction with pharmacy educators, could establish courses to fit practitioners to specialize in various areas. Education will need to cover topics related to the physiology and management of the disease state, and the target population of the service in addition to medication aspects.

#### **What types of services should be provided initially?**

A complete stock range relevant to the chosen specialty should be invested in as early as is economically

feasible, so that patients will be well served when requiring products. A wide stock range also provides opportunity for setting up a display area devoted to the specialty service, which will then be easily identified by customers. Only minor differences were noted between lower and higher level providers in the variety of stock held.

Written information in the form of leaflets, books, papers and reference texts can be included in the specific display section. Low and high level providers of diabetic services did not differ in this respect.

Pharmacists should be capable of counselling patients on the use of prescription medications and choice and use of suitable nonprescription medications. The pharmacist offering a specialized service must be provided with the means to readily update his knowledge in these areas. It is important that the pharmacist recognizes the need for counselling in regard to continuing therapy with prescription medication, in order to encourage compliance and to detect any problems arising. Counselling is vital in assisting patients with choice of nonprescription medications, as they may be unaware of restrictions on the use of some readily available ingredients in certain circumstances eg sympathomimetic use by hypertensive and diabetic patients.

In those specialty areas which involve sale or hire of equipment, the pharmacist should advise the patient in detail on the use of such equipment eg blood pressure and blood glucose monitors, invalid aids. The pharmacist must be trained in use of equipment, and fitting of aids.

For some disease states, the technology is available to permit screening in the pharmacy. There were no differences in provision of diabetes screening services between low and high level service providers. When offering screening, the availability of the service should be announced to customers by a discreet sign which also advises of times of availability and any charges for the service. The pharmacist must be trained in screening procedures.

#### What types of services can be developed later?

Information can be provided to patients in novel ways, such as by the use of audio or video tapes in the pharmacy, or through lectures or discussion groups outside the pharmacy setting.

Greater proportions of higher level providers of diabetic services were offering blood glucose monitoring than were low level providers. Although the procedure itself does not differ, monitoring brings with it a commitment to assisting the patient with decision making consequent on the results of monitoring. The pharmacist requires an in depth knowledge of management of the disease state for this task. Interprofessional co-operation should be sought at this stage (if not before) so that the pharmacist may act as a member of the health care team.

Patients accepting responsibility for management of conditions may wish to consult the specialist pharmacist for help with decision making, even though performing their own monitoring. Surveillance of monitoring techniques is another task which could be performed by the specialist pharmacist.



What steps need to be taken for establishment of a specialized service?

1. Market research the business.
2. Motivate the pharmacist.
3. Educate the pharmacist.
4. Stock the pharmacy.
5. Pharmacist provides goods and information.
6. Set up a screening service (when applicable).
7. Seek cooperation of other health professionals.
8. Set up a monitoring service.
9. Pharmacist participates as a member of the health care team in disease state management.

## 5.5 REFERENCES

1. Pharmaceutical Society of Queensland. (1980). A Centennial History of the Pharmaceutical Society of Queensland.
2. Pharmaceutical Society of Australia. (Aug.1986). "Definition of Pharmacy Practice." Australian Pharmacist, 5(4):7.
3. Australian Medical Association. (Mar.1988). "AMA Defines Pharmacy." Aust.J.Pharm., 69:154,207.
4. Blewett, N. (Aug.19,1986). "Government Grant to Aid Diabetics." Health Budget Information 1986-87, 144/86.
5. Anon. (Feb.1987). "Pharmacy Pitches for Diabetes Account" Your Pharmacy, pp1,5.
6. Edit. (Apr.1987). "Diabetes Scheme to Recognise Specialist Service." Australian Pharmacist, 6(2):2.
7. Anon. (Apr.1987). "New Diabetes Scheme Sorts Itself Out." Australian Pharmacist, 6(2):5.
8. Blewett, N. (May 19,1987). "Government Announces Aid for Diabetics Through ADF." News Release.
9. Anon. (Jun.1987). "Diabetes Diagnostics to Stay on PBS in Second Best Diabetes Scheme." Australian Pharmacist, 6(3):4.
10. Anon. (Jul.1987). "Society Attacks Diabetic Scheme." Aust.J.Pharm., 68:462,464.

## APPENDIX 1

PRESS RELEASE - March, 1984

PROGRESSIVE PHARMACISTS REQUIRED

Research is currently being undertaken at the Pharmacy Department, University of Queensland, to determine the range and extent of services being provided by community pharmacy, and to predict future trends. It is apparent that a number of pharmacies offer extensions of those services usually considered to be available through pharmacy eg in the areas of nutrition, sports medicine, family planning, veterinary pharmacy, patient education and drug information. Still others offer specialized services beyond the normally accepted range eg blood pressure and/or diabetic monitoring and related services, health care equipment hire, patient medication records, nursing home services etc.

The research team is interested in contacting pharmacists who have established, or are considering establishing, extra services in these or any other areas, to assist in their investigations. If you are one of these progressive pharmacists, or are aware of a pharmacy in your area which offers expanded services, please contact Mrs. Kay Stewart, Pharmacy Department, University of Queensland, St. Lucia, 4066 or telephone 377-2107 (9am - 5pm) or 379-9395 (after hours). Name and address (eg pharmacy label) will be sufficient to enable us to return your contact, although an indication of the services being offered would also be helpful.

## APPENDIX 2

PRESS RELEASE - September, 1984

COMMUNITY PHARMACY SURVEY

Research is currently in progress at the Pharmacy Department, University of Queensland, to determine the range and extent of services being provided to the public by community pharmacy.

As part of that research, all pharmacies in Queensland will shortly be receiving a questionnaire on this topic in the mail.

The results of the survey will be of considerable assistance in planning for the educational and professional development of pharmacy in this State.

I am appealing to all pharmacy owners or managers to respond to the questionnaire, as its usefulness to policy makers depends on your input. The times you spend will be a valuable contribution to moulding the future of our profession.

Thanking you in anticipation of your co-operation,

Kay Stewart, B.Pharm. (Hons.),  
Tutorial Fellow,  
University of Queensland.

## APPENDIX 3

COVERING LETTER - October, 1984TELEPHONE: (07) 377-3191  
377-2017

## University of Queensland

PHARMACY DEPARTMENT  
STEELE BUILDING  
ST. LUCIA, QUEENSLAND, AUSTRALIA, 4067E. J. TRIGGS,  
B. PHARM., PH.D. (LONDON), M.P.S.  
PROFESSOR IN PHARMACY

October, 1984

Dear Colleague,

As part of a Doctor of Philosophy Degree, I am undertaking a survey of services provided by community pharmacy.

The enclosed questionnaire has been sent to all pharmacies in Queensland. The information collected will help University staff and those organizing professional and business programmes to plan for the future. The Pharmaceutical Society of Australia (Qld. Branch) and the Pharmacy Guild of Australia (Qld. Branch) have been consulted in the preparation of this questionnaire.

Your responses will contribute to the development of our profession.

Enclosed is a pre-paid envelope addressed personally to me. The information will therefore remain strictly confidential.

May I thank you in anticipation of your co-operation.

Yours sincerely,

A handwritten signature in cursive script that reads 'Kay Stewart'.

KAY STEWART, B.Pharm.(Hons)

## APPENDIX 4

SURVEY INSTRUMENT - October 1984

(1)

SURVEY OF SERVICES PROVIDED BY  
COMMUNITY PHARMACIES IN QUEENSLAND.

1984

This questionnaire is to be completed by the pharmacist usually in charge of the day to day operation of the pharmacy. Please ask EVERY OTHER FULL-TIME registered pharmacist and pre-registration trainee to complete the Pharmacist Information using the separate enclosed form. Material obtained will be used to provide aggregate statistics only. Individual answers will remain completely confidential. If you do not wish to answer a question, omit it and go on to the next question.

Please circle the appropriate number, or answer specific questions as requested.

## (2) Pharmacist Information

(3) Sex M F  
1 2

(4) Year of Birth 19\_\_

Qualifications (Pharmaceutical and other)	Year of Qualification	State of Qualification (or country if outside Australia)
---	--------------------------	--

(5) Ph.C. ....

(6) B.Pharm. ....

(7-8) Other (please specify)  
.....  
.....(9) On average, how many hours per week do you work in THIS pharmacy?  
\_\_\_\_\_ hours(10) How long have you been working FULL-TIME in THIS pharmacy to the nearest whole year?  
\_\_\_\_\_ years

(11) Are you - (circle ONE number only)

- The sole owner ..... 1  
A partner ..... 2  
An employed manager ..... 3  
An assistant pharmacist ..... 4  
A pre-registration trainee ..... 5

Are you a member of the following organisations? (circle appropriate number for EACH organisation)

	YES	NO
--	-----	----

(12) Pharmaceutical Society of Australia (Qld.Branch) 1 2

(13) Pharmacy Guild of Australia (Qld.Branch) 1 2

(14) Australian College of Pharmacy Practice 1 2

(15-16) Other professional organisations, including non-pharmaceutical. (please specify)  
.....  
.....

How many continuing education programmes have you attended THIS YEAR in each of the following categories? (if none, write 0)

	Number this year
(17) Evening lectures	_____
(18) Week-end seminars	_____
(19) Conferences	_____

(20) Have you any comments on the provision of continuing education programmes? (e.g. availability, frequency, relevance)

YES	NO
-----	----

1 2

If YES: .....

.....

.....

(21) Do you think that renewal of registration for community practice should be - (circle ONE number only)

Automatic, as at present ..... 1

Dependent on proof of continuing education activity 2

Dependent on proof of competence by assessment .. 3

A combination of 2 and 3 ..... 4

Other (please describe)..... 5  
.....  
.....

Undecided ..... 6

Do you currently READ - (circle appropriate number for EACH publication)

YES NO

(22) Australian Journal of Pharmacy ..... 1 2

(23) The Australian Pharmacist ..... 1 2

(24) Introspect ..... 1 2

(25) Pharmacy Review ..... 1 2

(26) Pharmacy Trade ..... 1 2

(27) Australian Prescriber ..... 1 2

(28) ADRAC Bulletins ..... 1 2

(29) Current Therapeutics ..... 1 2

(30) Patient Management ..... 1 2

(31) Drug Intelligence and Clinical Pharmacy ..... 1 2

(32-34) Other professional journals, including non-pharmaceutical. (please specify) .....  
.....  
.....

Are you PERSONALLY involved in the provision of health or drug education lectures through - (circle appropriate number for EACH group)

YES NO

(35) Hospitals ..... 1 2

(36) Specific Illness Support Groups ..... 1 2

(37) Community Organisations ..... 1 2

(38) Schools ..... 1 2

(39) Other (please specify) ..... 1 2  
.....  
.....

(40) Would you PERSONALLY be willing to be involved in the above activities?

YES NO

1 2

(41) Do you PERSONALLY have any special interest areas relating to pharmacy practice? (e.g. nutrition, diabetes, acupuncture etc.)

YES NO

1 2

(42-45) If YES, please list: .....

.....

**Pharmacy Information**

Please answer the following questions about THIS pharmacy.

- [46] Which description best fits the location of this pharmacy? (please read the COMPLETE list before circling the most appropriate number)
- City or Town Centre ..... 1  
(central business district)
  - Regional Shopping Centre ..... 2  
(a large multi-shop complex)
  - Suburban Shopping Centre ..... 3  
(a collection of shops under one roof, with off-road parking)
  - Neighbourhood Shopping Strip ..... 4  
(a collection of shops excluding Regional or Suburban Shopping Centres)
  - Other (please describe) ..... 5
- [47] Postcode of business address .....
- [48] Please list the normal trading hours of this pharmacy.
- |                 | OPEN  | CLOSE |
|-----------------|-------|-------|
| Monday          | _____ | _____ |
| Tuesday         | _____ | _____ |
| Wednesday       | _____ | _____ |
| Thursday        | _____ | _____ |
| Friday          | _____ | _____ |
| Saturday        | _____ | _____ |
| Sunday          | _____ | _____ |
| Public Holidays | _____ | _____ |
- [49] Approximately how long has this business been operating under its PRESENT ownership? \_\_\_\_\_ years
- [50] Approximately how long has this business been operating under ANY ownership? \_\_\_\_\_ years
- [51] Size of premises, excluding store rooms.
- |                 | SQ. FT | or    | SQ. M |
|-----------------|--------|-------|-------|
| Dispensary area | _____  | _____ | _____ |
| Front shop area | _____  | _____ | _____ |
| OR Total area   | _____  | _____ | _____ |
- [52] Merchandising group membership. (circle appropriate number)
- Not a group member ..... 1
  - Amcal ..... 2
  - Greenspot ..... 3
  - Pharmacare ..... 4
  - Soul Pattinson ..... 5
  - Sunshine ..... 6
  - Tri-pharm ..... 7
  - Other (please specify) ..... 8
- [53] Please indicate range in which the pharmacy's 1983-84 annual turnover falls. (circle appropriate number)
- Less than \$200 000 ..... 1
  - \$200 000 to \$299 999 ..... 2
  - \$300 000 to \$399 999 ..... 3
  - \$400 000 to \$499 999 ..... 4
  - \$500 000 to \$599 999 ..... 5
  - \$600 000 to \$799 999 ..... 6
  - \$800 000 to \$999 999 ..... 7
  - \$1 000 000 or more ..... 8
  - Don't know ..... 9

- [54] Approximately what proportion of this business is prescription trade, including NHS, Repat. and Private? (circle appropriate number)
- Less than 25% ..... 1
  - 25 to 34% ..... 2
  - 35 to 44% ..... 3
  - 45 to 54% ..... 4
  - 55 to 64% ..... 5
  - 65 to 74% ..... 6
  - 75% or more ..... 7
  - Don't know ..... 8
- [55] Does this pharmacy currently employ a pre-registration trainee?
- |  | YES | NO |
|--|-----|----|
|  | 1   | 2  |
- [56] If YES, how many hours per week do they work? \_\_\_\_\_ hours
- How many registered pharmacists, including yourself, work in this pharmacy -
- NUMBER
- [57] 40 or more hours per week ..... \_\_\_\_\_
- [58] 20 to 39 hours per week ..... \_\_\_\_\_
- [59] Less than 20 hours per week ..... \_\_\_\_\_
- How many shop assistants work in this pharmacy -
- NUMBER
- [60] 40 or more hours per week ..... \_\_\_\_\_
- [61] 20 to 39 hours per week ..... \_\_\_\_\_
- [62] Less than 20 hours per week ..... \_\_\_\_\_
- Are the following reference books currently on hand in this pharmacy? (circle appropriate number for EACH book)
- |   | YES | NO |
|---|-----|----|
| [63] Pharmaceutical Codex, 1973 or 1979     | 1   | 2  |
| [64] A. P. F., 12th or 13th Ed.             | 1   | 2  |
| [65] Martindale, 27th or 28th Ed.           | 1   | 2  |
| [66] The Poison's Regulations of 1973, Qld. | 1   | 2  |
| [67] Handbook for Patient Medication        |     |    |
| Counselling (Warden-Flood)                  | 1   | 2  |
| [68] Merck Manual of Diagnosis and Therapy  | 1   | 2  |
| [69] MIMS Annual, 1983 or 1984              | 1   | 2  |
| [70] Prescription Proprietaries Guide, 1984 | 1   | 2  |
- [71-74] Please list any other books which are regularly consulted in this pharmacy.
- .....
- .....
- .....
- .....
- .....
- Does this pharmacy provide health or drug education ON THE PREMISES by -
- |  | YES | NO |
|--|-----|----|
| [75] Audio-Visual programmes               | 1   | 2  |
| [76] Books                                 | 1   | 2  |
| [77] Division of Health Promotion leaflets | 1   | 2  |
| [78] Group lectures, discussions           | 1   | 2  |
| [79] Other (please specify)                | 1   | 2  |
- .....

**Dispensing Services**

[80-81] Do you think the present professional fees payable for NHS items are — (circle appropriate number for EACH type)

	READY PRE- PARED ITEM	EXTEMPOR- ANEOUS ITEM
Too Low .....	1	1
About Right .....	2	2
Too High .....	3	3
Undecided .....	4	4

[82-83] In what range do you think the professional fees should be? (circle appropriate number for EACH type)

	READY PRE- PARED ITEM	EXTEMPOR- ANEOUS ITEM
Below \$2.00 .....	1	1
\$2.00 to \$2.49 .....	2	2
\$2.50 to \$2.99 .....	3	3
\$3.00 to \$3.49 .....	4	4
\$3.50 to \$3.99 .....	5	5
\$4.00 or more .....	6	6
Undecided .....	7	7

If \$4.00 or more please state approximate amount. \$ \_\_\_\_\_ € \_\_\_\_\_

[84-85] What proportion of the professional fee do you think should be for counselling? (circle appropriate number for EACH type)

	READY PRE- PARED ITEM	EXTEMPOR- ANEOUS ITEM
Under 10% .....	1	1
10-19% .....	2	2
20-29% .....	3	3
30-39% .....	4	4
40-49% .....	5	5
50% or more .....	6	6
Undecided .....	7	7

Comment: .....

[86] Should the system of remuneration for NHS dispensing be in the form of — (circle ONE number only)

Mark-up on goods only .....	1
Mark-up and professional fee (current system) ...	2
Mainly by professional fee, but maintaining a small mark-up .....	3
Professional fee only .....	4
Other (please describe) .....	5
Undecided .....	6

[87-88] In principle, should the professional fee for private prescriptions be — (circle appropriate number for EACH type)

	READY PRE- PARED ITEM	EXTEMPOR- ANEOUS ITEM
Less than NHS fee .....	1	1
Same as NHS fee .....	2	2
More than NHS fee .....	3	3
Undecided .....	4	4

Comment: .....

[89] On average, how many prescriptions per month does this pharmacy dispense, including NHS, Repat. and Private prescriptions? (circle appropriate number)

Less than 1000 .....	1
1000-1999 .....	2
2000-2999 .....	3
3000-3999 .....	4
4000 or more .....	5
Don't know .....	6

[90] Are chairs available for customers waiting for prescriptions?

YES	NO
1	2

[91] Does this pharmacy provide a pick-up and delivery service for prescriptions (apart from service to institutions)?

YES	NO
1	2

[92] Does this pharmacy have a telephone number available for 24 hour service?

YES	NO
1	2

[93-102] Does this pharmacy regularly supply prescription items to — (circle appropriate number for EACH institution)

	YES	NO	APPROX. NUMBER/WEEK
Private Hospitals .....	1	2	_____
Nursing Homes .....	1	2	_____
Medical Centres .....	1	2	_____
Public Hospitals .....	1	2	_____
Other (please specify) .....	1	2	_____

[103] Does this pharmacy offer services to any of these institutions other than the supply of medication?

YES	NO	NOT APPLICABLE
1	2	3

[104-105] If YES, please list: .....

[106] Is this pharmacy normally involved in dispensing requiring UNUSUAL EXTEMPORANEOUS techniques?

YES	NO
1	2

[107-108] If YES, please list: .....

[109] Is this pharmacy normally involved in dispensing requiring UNUSUAL ranges of PROPRIETARY lines?

YES	NO
1	2

[110-111] If YES, please list: .....

[112] Does this pharmacy use a computer in dispensing?

YES	NO
1	2

If NO, Go to 120.

[113] If YES, from whom was the SYSTEM obtained? (circle appropriate number)

Aufac Chemdata .....	1
Faulding / System 351 .....	2
Foundation .....	3
Vision Management .....	4
Other (please specify) .....	5

[114] What brand of COMPUTER HARDWARE does your system use? (circle appropriate number)

IBM PC .....	1
NEC .....	2
System 351 (Altos) .....	3
Televideo .....	4
Other (please specify) .....	5



(115) When was the system installed? MONTH YEAR

What additional services have you been able to provide since installing the computer?

[116-119] Please list: .....

(120) What is the likelihood of a computer being installed in this pharmacy within the next two years? (circle appropriate number)

Already have a computer ..... 1  
 Very likely ..... 2  
 Likely ..... 3  
 Undecided ..... 4  
 Unlikely ..... 5  
 Very unlikely ..... 6

(121) If you have answered 'Very likely' or 'Likely', how soon would you expect a computer to be installed?

Within three months ..... 1  
 Between 3 and 6 months ..... 2  
 Between 6 and 12 months ..... 3  
 After one year ..... 4  
 Not applicable ..... 5

(122) Does this pharmacy use ancillary labels? (circle ONE number only)

Never ..... 1  
 Occasionally ..... 2  
 Routinely ..... 3

(123) Any comments? .....

(124) Does this pharmacy keep any patient medication records? (circle ONE number only)

No records ..... 1  
 Card system ..... 2  
 Computer system ..... 3  
 A combination of 2 and 3 ..... 4  
 Other [please specify] ..... 5

(125) Any comments? .....

Does this pharmacy have — YES NO

[126] A SEPARATE counselling room ..... 1 2  
 [127] A SPECIALLY SET-UP counselling area within the pharmacy ..... 1 2

(128) Where does patient counselling USUALLY occur in this pharmacy? (circle ONE number only)

No counselling activities ..... 1  
 Separate room ..... 2  
 Specially set up area ..... 3  
 At front counter ..... 4  
 Elsewhere (please describe) ..... 5

Are any of the following counselling aids used in this pharmacy? (circle appropriate number for EACH aid)

	YES	NO
(129) Ancillary labels .....	1	2
(130) Audio-visual programmes .....	1	2
(131) Computer handouts .....	1	2
(132) Division of Health Promotion leaflets .....	1	2
(133) Manufacturers leaflets .....	1	2
(134) Other (please describe) .....		

In the last SIX MONTHS, how many reports of suspected adverse drug reactions have been made from this pharmacy? (If none, write 0)

	NUMBER
(135) To the Adverse Drugs Reactions Committee .. [ADRAC blue form]	_____
(136) To medical practitioners .....	_____
(137) To other .....	_____
Please specify .....	

(138-149) In the last WEEK, approximately HOW MANY TIMES have patients been referred to medical practitioners, or medical practitioners contacted directly from this pharmacy on the following matters? (Fill in approx. number for EACH column. If none, write 0)

	PATIENT <sup>†</sup> REFERRALS	DOCTOR CONTACTS
Drug interaction .....	_____	_____
Adverse drug reaction/side effect .....	_____	_____
Other matters relating to prescription (excluding clerical matters) .....	_____	_____
Matters relating to OTC medication .....	_____	_____
Matters relating to disease state .....	_____	_____
Other professional matters .....	_____	_____

(150-151) In THIS pharmacy, would you consider this to be — (circle appropriate number for EACH column)

	PATIENT REFERRALS	DOCTOR CONTACTS
More often than usual .....	1	1
About normal .....	2	2
Less often than usual .....	3	3

(152) When contacting medical practitioners on professional matters, do you find them to be co-operative? (circle ONE number only)

All the time ..... 1  
 Most of the time ..... 2  
 About half the time ..... 3  
 Some of the time ..... 4  
 Rarely or never ..... 5

Other Health Related Services

Does this pharmacy provide any of the following GOODS and / or SERVICES, and if so, how are they ADVERTISED? (Please circle ALL appropriate numbers for EACH item listed. If goods / services NOT PROVIDED, please circle 1)

GOODS / SERVICES	NOT PROVIDED	PROVIDED BUT NOT ADVERTISED	ADVERTISING						
			IN-STORE	LETTER BOX DROP	LOCAL PAPER	YELLOW PAGES	ORGANIZATIONS	TO DOCTORS	OTHERS
(153) Acupuncture	1	2	3	4	5	6	7	8	9
(154) Asthma Pumps	1	2	3	4	5	6	7	8	9
(155) Blood Glucose Monitoring Equipment for sale	1	2	3	4	5	6	7	8	9
(156) Staff-Operated Blood Glucose Monitoring Service	1	2	3	4	5	6	7	8	9
(157) Blood Pressure Monitoring Equipment for sale	1	2	3	4	5	6	7	8	9
(158) Staff-Operated Blood Pressure Monitoring Service	1	2	3	4	5	6	7	8	9
(159) Patient-Operated Blood Pressure " "	1	2	3	4	5	6	7	8	9
(160) Pulse Rate Measurement	1	2	3	4	5	6	7	8	9
(161) Computerized Dispensing	1	2	3	4	5	6	7	8	9
Cosmetic Services (other than supply of goods)									
(162) Beauty Treatment	1	2	3	4	5	6	7	8	9
(163) Make-Up Demonstrations	1	2	3	4	5	6	7	8	9
(164) Ear Piercing	1	2	3	4	5	6	7	8	9
(165) Other (please specify)	1	2	3	4	5	6	7	8	9
(166) Delivery Service	1	2	3	4	5	6	7	8	9
(167) Diabetic Centre	1	2	3	4	5	6	7	8	9
(168) Invalid or Health Care Aids for sale	1	2	3	4	5	6	7	8	9
(169) Invalid or Health Care Aids for hire	1	2	3	4	5	6	7	8	9
(170) Homeopathic Medicines	1	2	3	4	5	6	7	8	9
(171) Neuroopathic Medicines	1	2	3	4	5	6	7	8	9
(172) Nutritional Supplements (extensive range)	1	2	3	4	5	6	7	8	9
(173) Ostomy Aids	1	2	3	4	5	6	7	8	9
(174) Patient Medication Records	1	2	3	4	5	6	7	8	9
(175) Pregnancy Testing in Pharmacy	1	2	3	4	5	6	7	8	9
(176) Sports Medicine Goods (extensive range)	1	2	3	4	5	6	7	8	9
(177) Sports Medicine Services (eg. strapping)	1	2	3	4	5	6	7	8	9
(178) Veterinary Medicines (extensive range)	1	2	3	4	5	6	7	8	9

- |   |   |
|---|---|
| <p>(179) Does this pharmacy provide ANY OTHER special facilities or services?</p> <p style="text-align: center;">YES NO<br/>1 2</p> <p>(180) If YES, please list: .....</p> <p>.....</p> <p>.....</p> <p>(181) Does this pharmacy anticipate COMMENCING any special facilities or services?</p> <p style="text-align: center;">YES NO<br/>1 2</p> <p>(182) If YES, please list: .....</p> <p>.....</p> <p>(183) Is this pharmacy anticipating growth in any specific facilities or services?</p> <p style="text-align: center;">YES NO<br/>1 2</p> <p>(184) If YES, please list: .....</p> <p>.....</p> | <p>(185) Do you think there should be corporate advertising to promote pharmacy services to the public?</p> <p style="text-align: center;">YES NO UNDECIDED<br/>1 2 3</p> <p>(186) Please comment: .....</p> <p>.....</p> <p>.....</p> <p>(187) Would this BUSINESS be willing to contribute financially to such a scheme?</p> <p style="text-align: center;">YES NO UNDECIDED<br/>1 2 3</p> <p>(188) Would you PERSONALLY be willing to contribute financially to such a scheme?</p> <p style="text-align: center;">YES NO UNDECIDED<br/>1 2 3</p> |
|---|---|

O.T.C. Services

- (189) Do you think there should continue to be provision for a class of drugs available for purchase from pharmacy only?
- |  |     |    |           |
|--|-----|----|-----------|
|  | YES | NO | UNDECIDED |
|  | 1   | 2  | 3         |
- (190) Give reasons: .....
- .....
- .....
- (191) Do you think more drugs should be released to this category from S4?
- |  |     |    |           |
|--|-----|----|-----------|
|  | YES | NO | UNDECIDED |
|  | 1   | 2  | 3         |
- (192) Give reasons: .....
- .....
- .....
- (193) What professional fee does this pharmacy charge on S3's at present?
- \$ \_\_\_\_\_
- (194) Please give details of any variations from this fee ....
- .....
- .....
- .....
- (195) Please give reasons for deciding upon the above charge/charges.
- .....
- .....
- .....
- (196) Please comment on the current labelling regulations for S3's (e.g. suitability, practicality)
- .....
- .....
- .....
- .....

Commercial Services

- Are the following commercial services offered by this pharmacy? (circle appropriate number for EACH service)
- |  |  |     |    |
|--|--|-----|----|
|  |  | YES | NO |
|  |  | 1   | 2  |
- (197) Customer Monthly Accounts ..... 1 2
- (198) Bankcard ..... 1 2
- (199) Other Credit Cards ..... 1 2
- (200) Customer Taxation Records ..... 1 2
- (201) Discount for special groups ..... 1 2
- (202) Agency for Bank ..... 1 2
- (203) Building Society ..... 1 2
- (204) Credit Union ..... 1 2
- (205) Medibank Private ..... 1 2
- (206) Medical Benefits Fund ..... 1 2
- (207-208) Other (please specify) .....
- .....
- .....
- (209) Payment Centre for Gas ..... 1 2
- (210) Electricity ..... 1 2
- (211) Council Rates ..... 1 2
- (212-214) Other (please specify) .....
- .....
- .....
- (215) Justice of the Peace ..... 1 2
- (216) Film Processing ..... 1 2
- (217) Passport Photos ..... 1 2
- (218) Weighing Scales - Adult ..... 1 2
- (219) - Baby ..... 1 2
- (220) Other (please specify) .....
- .....
- .....
- .....

Thank you for completing this questionnaire.

As we wish to learn from the experience of pharmacies providing certain services, this survey form carries an identification code number on the top left-hand corner of the first page. This number should ONLY be removed if you desire complete anonymity. Remember, ALL replies remain strictly confidential.

APPENDIX 5

**ADDITIONAL PHARMACIST SUPPLEMENT - October 1984**

(1)

**SURVEY OF SERVICES PROVIDED BY  
COMMUNITY PHARMACIES IN QUEENSLAND.**

1984

**SUPPLEMENT: ADDITIONAL PHARMACIST**

This supplementary questionnaire is to be completed by each full-time REGISTERED PHARMACIST and PRE-REGISTRATION TRAINEE employed in this pharmacy, other than the pharmacist usually in charge of the day to day operation of the pharmacy. Material obtained will be used to provide aggregate statistics only. Individual answers will remain completely confidential. If you do not wish to answer a question, omit it and go on to the next question.

Please circle the appropriate number, or answer specific questions as requested.

(2) **Pharmacist Information**

(3) Sex            M    F  
                  1    2

(4) Year of Birth                    19\_\_

	Qualifications (Pharmaceutical and other)	Year of Qualification	State of Qualification (or country if outside Australia)
(5)	Ph.C.	.....	.....
(6)	B.Pharm.	.....	.....
(7-8)	Other (please specify)	.....	.....

(9) On average, how many hours per week do you work in THIS pharmacy? \_\_\_\_\_ hours

(10) How long have you been working FULL-TIME in THIS pharmacy to the nearest whole year? \_\_\_\_\_ years

(11) Are you — (circle ONE number only)

The sole owner .....	1
A partner .....	2
An employed manager .....	3
An assistant pharmacist .....	4
A pre-registration trainee .....	5

Are you a member of the following organisations? (circle appropriate number for EACH organisation)

	YES	NO
(12) Pharmaceutical Society of Australia (Qld.Branch) .....	1	2
(13) Pharmacy Guild of Australia (Qld.Branch) .....	1	2
(14) Australian College of Pharmacy Practice .....	1	2
(15-16) Other professional organisations, including non-pharmaceutical. (please specify)	.....	.....

How many continuing education programmes have you attended THIS YEAR in each of the following categories? (if none, write 0)

	Number this year
(17) Evening lectures .....	_____
(18) Week-end seminars .....	_____
(19) Conferences .....	_____

(20) Have you any comments on the provision of continuing education programmes? (e.g. availability, frequency, relevance)

YES NO  
1 2

If YES: .....

(21) Do you think that renewal of registration for community practice should be — (circle ONE number only)

Automatic, as at present .....	1
Dependent on proof of continuing education activity .....	2
Dependent on proof of competence by assessment .....	3
A combination of 2 and 3 .....	4
Other (please describe) .....	5
.....	.....
Undecided .....	6

Do you currently READ — (circle appropriate number for EACH publication)

	YES	NO
(22) Australian Journal of Pharmacy .....	1	2
(23) The Australian Pharmacist .....	1	2
(24) Introspect .....	1	2
(25) Pharmacy Review .....	1	2
(26) Pharmacy Trade .....	1	2
(27) Australian Prescriber .....	1	2
(28) ADRAC Bulletins .....	1	2
(29) Current Therapeutics .....	1	2
(30) Patient Management .....	1	2
(31) Drug Intelligence and Clinical Pharmacy .....	1	2
(32-34) Other professional journals, including non-pharmaceutical. (please specify)	.....	.....

Are you PERSONALLY involved in the provision of health or drug education lectures through — (circle appropriate number for EACH group)

	YES	NO
(35) Hospitals .....	1	2
(36) Specific Illness Support Groups .....	1	2
(37) Community Organisations .....	1	2
(38) Schools .....	1	2
(39) Other (please specify) .....	1	2

(40) Would you PERSONALLY be willing to be involved in the above activities?

YES NO  
1 2

(41) Do you PERSONALLY have any special interest areas relating to pharmacy practice? (e.g. nutrition, diabetes, acupuncture etc.)

YES NO  
1 2

(42-45) If YES, please list: .....

NOTE: This form has been photo-reduced for binding purposes.

## APPENDIX 6

REMINDER CARD - November 1984

Department of Pharmacy  
University of Queensland  
ST. LUCIA, 4067

October, 1984

Dear Colleague,

You may recall a questionnaire entitled "Survey of Services Provided by Community Pharmacies in Queensland, 1984" which was sent to you earlier this month.

At the time of posting this reminder, a reply had not been received from your pharmacy. I would be most grateful if the survey could be completed and returned as soon as possible.

May I thank you in anticipation of your co-operation.

Yours sincerely,

KAY STEWART, B.Pharm.(Hons), M.P.S.

## APPENDIX 7

COVERING LETTER FOR REMAILTELEPHONE: (07) 377-3191  
377-2017

## University of Queensland

PHARMACY DEPARTMENT  
STEELE BUILDING  
ST. LUCIA, QUEENSLAND, AUSTRALIA. 4067E. J. TRIGGS,  
B. PHARM., PH.D. (LONDON), M.P.S.  
PROFESSOR IN PHARMACY

November, 1984

Dear Colleague,

You may recall a questionnaire entitled "Survey of Services Provided by Community Pharmacies in Queensland, 1984" which was sent to you last month.

At the time of writing this letter, I am not aware of having received a response from your pharmacy. If you have not replied, I would be grateful if the pharmacist usually in charge of the day to day operation of this pharmacy could complete and return the survey form. A second copy is enclosed for your convenience. As previously, a pre-paid envelope is enclosed, addressed personally to me. The information will therefore remain strictly confidential.

Your reply will be an important contribution to this research and to the development of our profession.

Thanking you for your co-operation,

Yours sincerely,

*Kay Stewart*

KAY STEWART, B.Pharm.(Hons)

## APPENDIX 8

TELEPHONE SURVEY INSTRUMENTDIABETIC SERVICES FROM COMMUNITY PHARMACY IN QUEENSLAND, 1986

November, 1986

Sample Number:

Pharmacy Name:

Phone:

Street:

City:

Owner:

Respondent:

DATE	TIME	RESULT	CODE FOR RECALLS
------	------	--------	------------------

Result Abbrev.	Recall Code
NA No Answer	A Respondent not chosen
RNA Desired respondent not available	B Respondent chosen only
REF Refused interview	C Respondent spoken with
IC Interview completed	
PIC Partially completed	
WN Wrong Number	
DIS Disconnected	
NI Not Involved	

LISTEN FOR PHARMACY NAME TO BE IDENTIFIED.

IF NOT STATED: Hello. Is this ----- Pharmacy?

IF NOT: The number I have is -----.

IF WRONG NUMBER: I am sorry to have bothered you.

## WHEN PHARMACY IDENTITY HAS BEEN CONFIRMED:

(Hello.) This is Kay Stewart from the Pharmacy Practice Group of the University of Queensland Pharmacy Department. Could I please speak to the pharmacist in charge?

## WHEN PHARMACIST IN CHARGE IS ON THE LINE:

(Hello. This is Kay Stewart from the Pharmacy Practice Group of the University of Queensland Pharmacy Department.) We are doing a study of pharmacies involved in the provision of diabetic services throughout Queensland, which has been sponsored by the Queensland Pharmacy Research Trust. This pharmacy has been included: (MARK)

as a result of a previous survey we conducted in 1984, in which this pharmacy expressed some interest in the diabetic area,

OR because its name appears on the current Ames list of Self-Care Centres

OR because of its advertisement in the Yellow Pages

OR because of its advertisement in Diabetes Conquest etc.

OR OTHER REASON:

Does this pharmacy currently have a special interest in diabetics?

IF NO, GO TO PAGE 3.

IF YES: I need to speak with the pharmacist most involved with dealing with diabetic customers. Would that be you?

IF NO: Who would be the best person for me to speak to?

NAME:

IF NOT AVAILABLE: When would it be convenient for me to call?

DATE:

TIME:

FILL IN CODE FOR RECALL.

IF YES: I will need about fifteen to twenty minutes of your time.

IF NOT CONVENIENT: When could I call back?

FILL IN CODE FOR RECALL.

DATE:

TIME:

Whom should I ask for?

NAME:

IF INTERVIEW AGREED TO, GO TO PAGE 4.



ASK QUESTIONS IN THIS SECTION ONLY IF PHARMACY NOT CONSIDERED TO BE CURRENTLY ACTIVE IN THE DIABETIC AREA.

IF NO: But the pharmacy has had some involvement in providing services for diabetics in the past?

IF NO: DELETE FROM SAMPLE.

In that case I will not take up any more of your time. Thank you for speaking with me.

IF YES: Has there been a change of policy or circumstances since then? REFER TO REASONS FOR INCLUSION IN SAMPLE.

RECORD REASONS:

IF NOT KNOWN: Whom could I speak to about that decision?

NAME:

Where could I contact them?

PHONE:

When would you suggest I call?

DATE:

TIME:

FILL IN CODE FOR RECALL.

Do you know of any pharmacies currently offering diabetic services?

IF YES: LIST:

As this pharmacy does not appear to be especially involved with diabetic services, I will not take up any more of your time. Thank you very much for speaking with me.

WAS THIS PHARMACY IDENTIFIED BY THE 1984 SURVEY?

HAS THERE BEEN A CHANGE OF OWNERSHIP SINCE THEN?

ASK QUESTIONS IN THIS SECTION ONLY IF PHARMACY CURRENTLY INVOLVED IN PROVISION OF DIABETIC SERVICES.

The purpose of this survey is to collect information about the services which community pharmacies offer to diabetic customers. All of your answers will be kept in the strictest confidence and used only to prepare aggregate statistics with the details collected from other pharmacies, so that no individual information will be divulged which could be traced to a particular source. If you cannot or do not wish to answer a question, please do not hesitate to say so. Firstly, I would like to ask you some questions about diabetic services in your pharmacy.

### SERVICES

Do you have educational leaflets on various aspects of diabetes available for your customers?

IF YES: How are they usually distributed? ALLOW TO LIST.

by self-selection  
handed out by staff  
in conjunction with counselling  
other (RECORD).

Do you have any other counselling or educational aids available?

IF YES: What sort of things are they? ALLOW TO LIST; PROMPT.

newspapers/newsletters  
posters/charts  
audio tapes  
videotapes  
other (RECORD).

How are they usually used? PROMPT.  
NOTE METHOD FOR EACH TYPE.

taken by customers  
bought by customers  
hired by customers  
handed out by staff  
in conjunction with counselling  
used in pharmacy  
other (RECORD).

Are you ever involved in providing education for diabetics outside the pharmacy setting?

**BLOOD GLUCOSE MONITORING**

Does this pharmacy measure blood glucose levels on the premises in any of the following circumstances:

when demonstrating monitors  
 as a screening service on demand  
 as a screening promotion eg diabetes week  
 for diagnosed diabetics?

IF YES: Who usually does it?

Is there a charge for any of these services?

IF YES: RECORD CHARGE FOR EACH TYPE.

Does this pharmacy offer a service for the repair of blood glucose monitoring machines:

as an agent for the makers  
 or on the premises?

What alternatives are available to the patient to continue monitoring while repairs are being carried out? ALLOW TO ANSWER.

pharmacy loans a monitor  
 pharmacy hires a monitor  
 manufacturer loans a monitor  
 manufacturer replaces monitor  
 other (RECORD).

Does this pharmacy hire monitoring equipment in other circumstances?

**URINE GLUCOSE MONITORING**

Does this pharmacy ever measure urine glucose levels on the premises?

IF YES: Under what circumstances?

**SUPPLY**

I am also interested in the role of pharmacists in supplying both the prescription and non-prescription needs of diabetics. Which of the following statements best describes the policy of this pharmacy in relation to stocking items in general, not just insulin, for supply to diabetics?

Do you attempt to keep a full range of diabetic requirements to meet all possible needs?

Do you stock a reasonable range to cover the most frequent requirements of diabetics?

or Do you order items only on the specific request of customers?

Is there an area in the pharmacy specifically allocated to the display of diabetic goods?

IF YES: What length of shelf space does it occupy?

#### PRESCRIPTION ITEMS

Which of the following groups of products do you keep a range of in stock regularly:

blood glucose testing strips  
urine glucose testing strips/tablets  
oral hypoglycaemics?

What is your policy specifically on stocking insulins:

ie do you keep a range in stock  
or do you keep or order supplies for specific customers only?

#### SYRINGES

Do you keep disposable insulin syringes in stock?

On average, and disregarding the proposed changes to syringe distribution, how many boxes of 100 would you normally keep in stock?

What price do you usually charge for a box of 100 syringes?

What price do you usually charge for single syringes?

Do you keep glass syringes in stock?

#### BLOOD GLUCOSE MONITORING EQUIPMENT

Do you keep blood glucose monitors:

in stock regularly  
or order them only on customer request?

#### ANCILLARY ITEMS

Which of the following diabetic items do you stock regularly?

Injection Aids eg automatic injectors, scale magnifiers, devices for destroying needles etc.

Urine Testing Equipment eg test sets, test tubes etc.

Blood Testing Aids eg blood letting devices, calibration aids etc.

Dietetic foodstuffs including diabetic chocolates/sweets

Artificial sweeteners

Identification bracelets/ tags etc.

Glucagon Injection

Glucose Tablets

Log Books

Books on diabetic diet/recipes

Books on diabetes and its management

### COUNSELLING

Next I would like to read you a list of potential opportunities for counselling diabetics. Could you please tell me to what extent you discuss the following topics with your diabetic customers? I would like you to attempt to rate the topics on a scale of 1 to 5, with 1 meaning that you never discuss the topic, and 5 meaning that you have considerable involvement in that area. If you have a pencil handy (PAUSE) you may find it helpful to jot down an idea of the 1 to 5 scale: 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Frequently, 5 = Always or very frequently.

### **INSULIN**

With your insulin dependent diabetic customers, how often do you discuss the following subjects, using the rating scale of 1 to 5?

Storage of insulin.

Administration of insulin:  
drawing up technique

mixing order and/or technique

selection of injection site

preparation of injection site.

Adjustment of insulin dosage.

Length of action of insulin types.

Are discussions related to insulin more often started by you or the customer or either one?

## BLOOD GLUCOSE MONITORING

The topics related to blood glucose monitoring are most easily answered by dividing customers into two groups, those buying or discussing a monitor for the first time, and those already doing blood glucose monitoring. For each of those groups separately, how often would you discuss the following topics? For each topic, I will need an answer on the 1 to 5 scale for buyers and also for users.

How to use a blood glucose monitoring machine.

Care and maintenance of machine.

Taking blood samples.

Frequency of monitoring.

Recording results.

Are discussions about blood glucose monitoring usually started by you or the customer, or by either?

## URINE GLUCOSE MONITORING

With patients who monitor their urine glucose, how often do you need to discuss:

Collection of urine samples.

How to perform the test/read the results.

Recording the results.

Are these discussions usually started by you or the customer or either one?

## ORAL HYPOGLYCAEMICS

With patients taking oral hypoglycaemics, how often do you tell them about:

Dose level and frequency. (EXPLAIN)

Importance of compliance.

Side effects/adverse reactions.

Precautions eg food/drug interactions.

Are these drug counselling discussions usually started by you or the customer, or by either?

## O.T.C. PRODUCTS

A number of groups of over-the-counter products are of particular concern to diabetic customers. How often do you advise these customers about:

Choice of artificial sweeteners.

Availability of sugar-free products.

Selection of appropriate cough/cold medications.

Selection of foot care products.

Are discussions of O.T.C. products usually as a result of:

customer enquiries about a problem,  
or your volunteering advice about a  
product they have selected,  
or either of those possibilities?

## MANAGEMENT

Questions related to diabetic management may be best answered for insulin dependent and non-insulin dependent diabetics separately, as some aspects may be seen as more relevant to one or the other group. How frequently do you discuss the following management topics with your insulin dependent diabetics and your non-insulin dependents? Estimate on the 1 to 5 scale for each group separately.

Dietary guidelines.

Symptoms of hypoglycaemia.

How to manage a hypoglycaemic attack.

How to cope with sick days.

Symptoms of hyperglycaemia.

Action to take with high blood or  
urine glucose levels.

Foot care.

Other complications eg sight problems.

Are discussions related to management usually started by you or the customer, or by either?

**REFERRAL**

In response to discussions with patients in the pharmacy, how often, as in Never, Sometimes, Frequently, do you refer patients to the following health-care professionals:

Never, sometimes or frequently to a

general practitioner  
 specialist diabetologist/endocrinologist  
 dietician/nutritionist  
 podiatrist/chiropracist  
 diabetes clinic/educator  
 another pharmacist.

**BUSINESS INFORMATION**

For comparative purposes, I need to know some details about the pharmacy and about yourself as the pharmacist providing diabetic services. All of these details will remain completely confidential. Please skip any questions which you cannot or do not wish to answer. Firstly, some information about the pharmacy.

Are any members of staff other than yourself regularly involved with diabetic customers?

IF YES: How many other pharmacists are involved?

On average, how many hours per week does each of them work in the pharmacy?

LIST:

Are any other staff members eg shop assistants especially involved with the diabetic services we have been discussing?

IF YES: How many?

On average, how many hours per week does each of them work in the pharmacy?

LIST:

What are the normal trading hours of this pharmacy? RECORD:



POSTCODE:

Which description best fits the situation of this pharmacy:

- City or Town Centre  
(central business district)
- Regional Shopping Centre  
(a large multi-shop complex)
- Suburban Shopping Centre  
(a collection of shops under one roof, with off road parking)
- Neighbourhood Shopping Strip  
(a collection of suburban shops excluding regional or suburban centres)
- Other (please describe).

In what range did the turnover fall for the year 1985-86?

- Below \$200 000
- \$200 000 to \$399 999
- \$400 000 to \$599 999
- \$600 000 to \$799 999
- \$800 000 or more

Approximately what proportion of the business is prescription trade?

- Less than 20%
- 20 to 39%
- 40 to 59%
- 60 to 79%
- 80% or more

Using average figures prior to the November 1st changes, approximately how many total prescriptions per month does this pharmacy dispense?

- Less than 1000
- 1000 - 1999
- 2000 - 2999
- 3000 - 3999
- 4000 or more

What proportion of your customers would you estimate to be diabetic, and/or to involve you in the diabetic services we have been discussing?

- Less than 5%
- 5 to 9%
- 10 to 14%
- 15 to 19%
- 20% or more

DEMOGRAPHIC DETAILS

And finally some details about yourself.

MALE/FEMALE

What is your position in the pharmacy:

the sole owner  
 a partner  
 an employed manager  
 an assistant pharmacist?

On average, how many hours per week do you work in the pharmacy?

What pharmacy qualification do you hold?

Do you know of any other pharmacies currently offering diabetic services?

LIST:

As an extension to this survey on diabetic services, in the near future I will be sending a mail survey to find out why pharmacies became involved in this field and their opinions on future development. Parts of this questionnaire would best be answered by the person responsible for making the decision to establish or continue the service in this pharmacy. How should I address the questionnaire so that the most appropriate person would receive it?

NAME:

ADDRESS:

NOTES:

The questionnaire from each pharmacy will be marked with a code number so that information from the same sources can be linked, but the code will not be used as a means of identifying individual pharmacies.

That covers all the questions I need to ask. Thank you very much for sparing the time to speak with me. The results of this survey will be published, but if there is anything in particular that you would like to know about, please do not hesitate to contact me at the Pharmacy Department. Thanks again for your help. Good-bye.

## APPENDIX 9

COVERING LETTER - May 1987

May 12, 1987

Dear.....,

The Queensland Pharmacy Research Trust has sponsored a study into the provision of diabetic services through community pharmacies in Queensland. In the climate of uncertainty regarding the distribution of syringes and blood testing materials, it is important that information about current pharmacy diabetic services is available to assist in policy formulation.

The first part of the study was conducted by telephone during December 1986 and January 1987, to collect information about the types of diabetic services being offered. This mail survey has been designed to collect information about the factors involved in the provision of these services. It is being sent to all pharmacies which responded to the telephone survey.

Because the two surveys form part of a single study, it is important that this mail questionnaire be answered for all pharmacies which participated in the telephone interview, to allow as complete a picture as possible to emerge.

The mail questionnaire consists of three sections. Please find enclosed:

1. .... copies of Part 1.
2. .... copies of Part 2.
3. .... copies of a Diabetic Stock List.
4. .... copies of Part 3.

You may be assured of complete confidentiality.

I would be happy to answer any questions that you might have about this questionnaire, or the overall study. Please do not hesitate to write, or telephone (07) 377 4294.

Your prompt response is important to the success and usefulness of this study. Thank you for your assistance.

Yours sincerely,

Kay Stewart, B.Pharm.(Hons.),M.P.S.  
Pharmacy Practice Group

Please see attached sheet for explanatory notes. YES/NO

APPENDIX 10  
MAIL SURVEY OF DIABETIC PHARMACIES  
EXPLANATORY NOTES

Part 1.: You have been sent copies of Part 1. for EACH pharmacy in which you have a decision making position. The questionnaires have been numbered as follows:

NUMBER	PHARMACY
.....	.....
.....	.....
.....	.....
.....	.....

Please ensure that you use the CORRECT FORM for the information for EACH specific pharmacy.

Part 2.: You need only answer Part 2. ONCE, even if you have replied to Part 1. on behalf of more than one pharmacy.

Part 3. seeks demographic information about OTHER pharmacists involved in the PROVISION of the diabetic services in your pharmacies. Copies of this section have been:

enclosed for you to distribute  
sent directly to the pharmacies.

A Stock List of diabetic items has been provided to assist with the answering of some questions. Sufficient copies have been included for all the pharmacies you are associated with, to allow staff from each pharmacy to assist you with those questions.

Please contact me by mail or telephone, (07) 377 4292, if you require further copies of any section.

DO NOT RETURN THIS PAGE WITH YOUR COMPLETED QUESTIONNAIRES.

## APPENDIX 11

MAIL SURVEY OF DIABETIC PHARMACIESDIABETIC SERVICES FROM COMMUNITY PHARMACY IN QUEENSLAND, 1987

Sample Number:

(This number will not be used to identify the pharmacy returning this questionnaire, but only to link information with that collected in the earlier telephone survey.)

The purpose of this survey is to collect information about factors involved in the provision of diabetic services from community pharmacies. All of your answers will be kept in the strictest confidence and used only to prepare aggregate statistics with the details collected from other pharmacies. If do not wish to answer a particular question, please omit it and go on to the next question.

PART 1DIABETIC SERVICES

This section of the questionnaire should be answered by the PHARMACIST RESPONSIBLE FOR DECIDING TO ESTABLISH OR CONTINUE THE PROVISION OF DIABETIC SERVICES in this pharmacy. If you do not work regularly in this pharmacy, some questions may require reference to the pharmacist PROVIDING the service.

1. Are you personally REGULARLY involved in the provision of diabetic services in this pharmacy?
  - a. Yes.
  - b. No.
2. Are you the pharmacist who responded to the recent telephone survey on diabetic services?
  - a. Yes.
  - b. No.
3. When was the service established in this pharmacy?
  - a. Year.....
  - OR b. Don't know.
4. Did YOU: (Please tick one only.)
  - a. Establish the diabetic service?
  - OR b. Continue an already established service?
5. If you have ticked 2.b, when did you take over?
  - Year.....

6.-21. How much influence (on a scale of 1-5) did each of the following factors have upon your decision to establish or continue a diabetic service in THIS pharmacy? Read all the questions on pages 2.and 3. before attempting to answer. (Please circle the number corresponding to the most appropriate answer for each statement.)

	NONE AT ALL	A SMALL AMOUNT	A MODERATE AMOUNT	A LARGE AMOUNT	MAJOR FACTOR
I had an interest in diabetes.	1	2	3	4	5
I saw it as a way to increase professional satisfaction.	1	2	3	4	5
I saw it as profitable.	1	2	3	4	5
I had set up diabetic services in another of my pharmacies.	1	2	3	4	5
The pharmacy is located near a diabetic clinic.	1	2	3	4	5
I had a number of diabetic customers.	1	2	3	4	5
My diabetic customers needed help.	1	2	3	4	5
I am a diabetic.	1	2	3	4	5
A member of my family is/was a diabetic.	1	2	3	4	5
A close friend is/was a diabetic.	1	2	3	4	5
A member of my staff is/was a diabetic.	1	2	3	4	5

	NONE AT ALL	A SMALL AMOUNT	A MODERATE AMOUNT	A LARGE AMOUNT	MAJOR FACTOR
Ames approached me to become a Self Care Centre.	1	2	3	4	5
I approached Ames to become a Self Care Centre.	1	2	3	4	5
I was influenced by the Pharmaceutical Society.	1	2	3	4	5
I was influenced by the Pharmacy Guild.	1	2	3	4	5
I was influenced by a marketing group.	1	2	3	4	5
If any other factors influenced your decision to establish or continue a diabetic service in this pharmacy, please list them below and rate them on the 1-5 scale.					
a.....					
.....					
.....	1	2	3	4	5
b.....					
.....					
.....	1	2	3	4	5
c.....					
.....					
.....	1	2	3	4	5
d.....					
.....					
.....	1	2	3	4	5
e.....					
.....					
.....	1	2	3	4	5

22. How many types of insulin do you REGULARLY KEEP in stock?  
(Refer to enclosed stock list.)

.....types

23. What is the approximate value of your USUAL holdings  
of insulins?

.....

24. Could you please estimate the total CURRENT value of your  
diabetic stock?

.....

(The enclosed list of diabetic goods may be  
of help in estimating your stock value.)

25. Does this pharmacy have any diabetic reference texts?

a. Yes.

b. No.

26. If YES, please list the diabetic reference texts  
available in the pharmacy:

.....  
.....  
.....  
.....

27. Could you please estimate what PROPORTION of your total  
stock value is invested in diabetic stock?

.....%

28. Do you consider the involvement of this pharmacy in  
diabetic services to be: (Tick one answer only.)

a. Minor?

b. Moderate?

c. Major?



29.-33. How successful (on a scale of 1-5) do you consider the diabetic area of your business to be in each of the following aspects? (Please circle the number corresponding to the most appropriate answer.)

	NOT AT ALL SUCCESSFUL	NOT VERY SUCCESSFUL	MODERATELY SUCCESSFUL	A GOOD SUCCESS	A GREAT SUCCESS
Financially.	1	2	3	4	5
Professional satisfaction.	1	2	3	4	5
Customer satisfaction.	1	2	3	4	5
Increase in customers.	1	2	3	4	5
Inter-profession- al relationships.	1	2	3	4	5

BUSINESS DETAILS

34. What is your position in this pharmacy? (Tick one only.)

- a. The sole owner.
- b. A partner.
- c. An employed manager.
- d. Other. (Please describe.)  
.....

35. On average, how many hours a week do you work in this pharmacy?

.....Hours/week.

36. What is the total area of the pharmacy, excluding store rooms?

.....Sq.ft.

37. What is the area of the front shop?

.....Sq.ft.

38. Could you please estimate CURRENT TOTAL stock value (INCLUDING diabetic stock)?

\$.....

39. Is the owner of this pharmacy a member of the Pharmacy Guild of Australia?

a. Yes.

b. No.

40. Is this pharmacy associated with any marketing groups?

a. Yes.

b. No.

41. IF YES: Which groups? (Tick all appropriate answers.)

Amcal

Chemway

Greenspot

Pharmacare

Soul Pattinson

Sunshine

Tri-pharm

Other (Please state.)

.....

Thank you for your co-operation in completing this section (Part 1.) of the questionnaire. Please complete Part 2. (DEMOGRAPHICS). Even if you have completed Part 1. for more than one pharmacy, you need only fill in Part 2. ONCE.

## APPENDIX 12

STOCK LIST

## INSULINS

<u>CSL-NOVO</u>	Insulin 2 (100u/ml)
	Insulin (300u/ml)
	Rapitard MC
	Protaphane HM
	Isotard MC
	Protaphane MC
	Actraphane HM
	Actraphane MC
	Actrapid HM
	Actrapid MC
	Protamine Zinc Insulin MC
	Monotard HM
	Lente MC
	Monotard MC
	Semilente MC
	Ultratard HM
	Ultralente MC
<u>BW-Nordisk</u>	Insulatard Nordisk
	Initard Nordisk
	Mixtard Nordisk
	Velosulin Nordisk
<u>Eli Lilly</u>	Humulin N
	Humulin R
<u>Weddel</u>	Hypurin Isophane
	Hypurin Neutral

## GLUCOSE TESTING MATERIALS

<b>BLOOD -</b>	Ames-BG
	BM-Test-BG
	BM-Test-Glycemie 20-800
	Glucostix
	Visidex
<b>URINE -</b>	Clinistix
	Clinitest Tablets
	Diastix
	Keto-Diastix
	Testape

## ORAL HYPOGLYCAEMICS

Daonil  
 Diabex  
 Diabinese  
 Diaformin  
 Diamicron  
 Diatol  
 Euglucon  
 Glucophage  
 Promide  
 Rastinon 500mg  
 Rastinon 1g

**SYRINGES**

Becton Dickinson 0.5ml  
 Becton Dickinson 1ml  
 Terumo  
 Other disposables  
 Glass syringes  
 Needles

**BLOOD GLUCOSE MONITORING EQUIPMENT**

Ames Glucometer I  
 Ames Glucometer II  
 Diatron Easytest  
 Glucochek II  
 Hypocount MX  
 Omniscan  
 Reflolux II

**INJECTION AIDS**

Automatic injectors  
 Click-count syringes  
 Scale magnifiers  
 Devices for destroying needles

**URINE TESTING EQUIPMENT**

Testing sets  
 Test tubes  
 Droppers

**BLOOD TESTING AIDS**

Visual reading kits  
 Blood letting kits  
 Blood letting devices e.g. Autolet  
 Lancets  
 Platforms  
 Calibration aids

**FOODSTUFFS**

Diabetic chocolates  
 Diabetic sweets  
 Dietetic jams  
 Dietetic drinks  
 Dietetic fruits etc.  
 Artificial sweeteners

**MISCELLANEOUS**

Identification bracelets/tags etc  
 Glucagon Injection  
 Glucose tablets  
 Swabs  
 Log books  
 Books on diabetic diet/recipes  
 Books on diabetes and its management  
 Other items

APPENDIX 13

CHIEF PHARMACIST MAIL SURVEY INSTRUMENT

DIABETIC SERVICES FROM COMMUNITY PHARMACY IN QUEENSLAND, 1987

This section of the questionnaire should be answered by the PHARMACIST who responded to Part 1. of this survey, ie the pharmacist responsible for deciding to establish or continue the provision of diabetic services.

Sample Number:

If you have answered Part 1. of this mail survey for more than one pharmacy, please indicate sample numbers of ALL pharmacies for which you have replied. You need only answer Part 2. ONCE.

(Numbers will not be used to identify the pharmacy/pharmacies returning this questionnaire, but only to link this information with that collected in the earlier telephone survey.)

PART 2.

DEMOGRAPHICS

42. What basic pharmacy qualification do you hold?  
(Tick one only.)

- a. Ph.C.
- b. B.Pharm.
- c. Other. (Please describe.)  
.....

43. Do you hold any further professional qualifications in either the pharmacy or diabetic field? (Please list.)

.....  
.....

44. Year of birth?

.....

45. Sex?

- a. Male
- b. Female

46.-51. Which pharmacy and/or diabetic organizations are you a member of?

YES NO

- Pharmaceutical Society of Australia?
- Australian College of Pharmacy Practice?
- Society of Hospital Practicists of Australia?
- Diabetic Association of Queensland?
- Australian Diabetic Educators' Assoc.?
- Other diabetic groups? (Please list.)
- .....
- .....
- .....

52.-61. Which of the following journals do you read regularly?

YES NO

- Australian Journal of Pharmacy?
- Australian Pharmacist?
- Australian Prescriber?
- Current Therapeutics?
- Patient Management?
- The Pharmaceutical Journal?
- Diabetes Control?
- Conquest (DAQ)?
- Diabetes in the News?
- Other journals providing information in the diabetic field? (Please list.)
- .....
- .....
- .....

62.-69. How did you build up your expertise in the diabetic area?

YES NO

- a. Pharmacy organized continuing education lectures, seminars or conferences.
- b. Continuing education tapes/booklets from pharmacy sources.
- c. Diabetic group organized lectures, seminars or conferences.
- d. Tapes or booklets from diabetic organizations.
- e. Tapes or written information from pharmaceutical companies.
- f. Books on diabetes.
- g. Journal reading.
- h. Other methods. (Please describe.)

.....

.....

.....

.....

.....

Thank you for your co-operation in completing this section of the questionnaire.

## APPENDIX 14

ADDITIONAL PHARMACIST MAIL SURVEY INSTRUMENTDIABETIC SERVICES FROM COMMUNITY PHARMACY IN QUEENSLAND, 1987

Sample Number:

(This number will not be used to identify the pharmacy answering this questionnaire, but only to link information with that collected in the earlier telephone survey.)

The purpose of this survey is to collect information about factors involved in the provision of diabetic services from community pharmacies. All of your answers will be kept in the strictest confidence and used only to prepare aggregate statistics with the details collected from other pharmacies. If do not wish to answer a particular question, please omit it and go on to the next question.

PART 3.

## DEMOGRAPHICS

This section is to be answered by all PHARMACISTS REGULARLY INVOLVED IN THE PROVISION OF DIABETIC SERVICES in this pharmacy, who have not answered Parts 1. and 2. of this mail survey.

1(2). Are you the pharmacist who responded to the recent telephone survey on diabetic services?

- a. Yes.
- b. No.

2(34). What is your position in the pharmacy?(Tick one only.)

- a. The sole owner.
- b. A partner.
- c. An employed manager.
- d. Other. (Please describe.)

3(35). On average, how many hours a week do you work in this pharmacy?

.....Hours/week.

4(42). What basic pharmacy qualification do you hold? (Tick one only.)

- a. Ph.C.
- b. B.Pharm.
- c. Other. (Please describe.)



5(43). Do you hold any further professional qualifications in either the pharmacy or diabetic field? (Please list.)

.....  
.....

6(44). Year of birth?

.....

7(45). Sex?

- a. Male
- b. Female

8-13(46.-51). Which pharmacy and/or diabetic organizations are you a member of?

YES NO

- Pharmaceutical Society of Australia?
- Australian College of Pharmacy Practice?
- Society of Hospital Practicists of Australia?
- Diabetic Association of Queensland?
- Australian Diabetic Educators' Assoc.?
- Other diabetic groups? (Please list.)
- .....
- .....
- .....

14-23(52-61). Which of the following journals do you read regularly?

YES NO

- Australian Journal of Pharmacy?
- Australian Pharmacist?
- Australian Prescriber?
- Current Therapeutics?
- Patient Management?
- The Pharmaceutical Journal?

YES NO

Diabetes Control?

Conquest (DAQ)?

Diabetes in the News?

Other journals providing information in the diabetic field? (Please list.)

.....  
.....  
.....

24-31(62.-69). How did you build up your expertise in the diabetic area?

YES NO

- a. Pharmacy organized continuing education lectures, seminars or conferences.
- b. Continuing education tapes/booklets from pharmacy sources.
- c. Diabetic group organized lectures, seminars or conferences.
- d. Tapes or booklets from diabetic organizations.
- e. Tapes or written information from pharmaceutical companies.
- f. Books on diabetes.
- g. Journal reading.
- h. Other methods. (Please describe.)

.....  
.....  
.....  
.....  
.....

Thank you for your co-operation in completing this section of the questionnaire.