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Community Pharmacy Type 2 Diabetes Care: Design and Evaluation of a Model to Support Continuous Professional Development

by

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A thesis presented in fulfilment of the requirements for the degree of Doctor of Philosophy

2008

THESIS CONTAINS CD

This thesis describes research conducted at the University of Strathclyde between 2002 and 2008 under supervision of Professor Steve Hudson and Mr Niall Coggans.

Signature  Date 11/09/08

Abstract

Aim: To develop a competency based continuous professional development (CPD) support package based on a workbook of competencies for community pharmacists working with patients with diabetes mellitus type 2 in primary care. To monitor the competencies attempted and evaluate by means of a pre and post measurement of views and attitudes to CPD.

Subjects and settings: (a) 19 health care team members in the model of care design. (b) 18 community pharmacists in consensus building. (c) 60 pharmacists in a controlled study to monitor and evaluate the package.

Main outcome measures: (a) Model of Care. (b) Measured consensus on pharmacist activities. (c) Uptake of elements of the Support Model; changes in pharmacist views and attitudes to CPD; investigation of pharmacists' CPD priorities.

Results: Findings established an agreed model of care and a set of activities (behavioural statements). These statements linked to nationally agreed multi-professional competencies producing a CPD diabetes workbook. This formed one element of a CPD Support Model. The three most used elements of this model were (in rank order); educational courses; use of published papers and CPD workbook. 295 CPD issues were identified. Of these, 93.9% were addressed. The majority of CPD issues were identified and addressed during 0- 6 months. Priority for their service development was the most cited reason for identifying and addressing CPD needs.

Conclusion: Scottish Community pharmacists are extending their role within a new renumeration contract. CPD is becoming formalised and is a necessary support to the development of new services. This study shows community pharmacists perceive themselves to be not yet competent in basic activities necessary to provide care to patients with diabetes and further education and CPD support is required. This project used a research approach in diabetes which may offer an exemplar for use in the management of other chronic diseases.

Acknowledgements

I would like to thank my supervisors, Professor Steve Hudson and Mr Niall Coggans for their direction and advice throughout this research. Gratitude must also go to my colleagues at NHS Education for Scotland and at the University of Strathclyde for their encouragement and support. Lastly I would like to thank my family, especially Hazel and Rebecca for their unwavering faith.

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List of Abbreviations

AMS- Acute Medication Services

CFD- Competency Framework for the Care of a Person with Diabetes

CMS- Chronic Medication Services

COREC- Central Office for Research Ethics Committees

CPCMS- Community Pharmaceutical Care Model Schemes

CPD- Continuing Professional Development

DVD- Digital Video Disk

eMAS- (electronic) Minor Ailments Service

ENA-Educational Needs Assessment

IQR-Inter-quartile range

NES- NHS Education for Scotland

NHS- National Health Service

NOS- National Occupational Standards

NWC- National Workforce Competencies

OSCE- Objective structured clinical examination

PGD- Patient Group Direction

RPSGB- Royal Pharmaceutical Society of Great Britain

SfH- Skills for Health

UKPDS- United Kingdom Prospective Diabetes Study

List of Accompanying Material

Some appendices have been submitted on CD-ROM due to their size. These are annotated below. The CD-ROM is available at the end of the appendices listing.

Chapter 1:

Summary of Main Research Findings

1.1 Main Research Findings

This initial chapter summaries the main research findings and views them in the context of their contribution to the field.

1.1.1 Research Focus One

This research focus used qualitative methodology to investigate a conceptual model of pharmaceutical care for patients in primary care with type 2 diabetes mellitus. The potential role of the community pharmacist within this model was explored with members of the healthcare team.

The development of the community pharmacist role in the care of the patient with type 2 diabetes mellitus requires extension through improved working in partnership with nurses and GPs. Methods of improved communication with other members of the healthcare team and attention to methods of referral, where appropriate, are important focal points. The targeting of this care and the care model that is best suited to particular settings will be subject to local variation.

The acknowledgement of changing roles within the delivery of patient care was a recurrent feature in this research, leading to a questioning of the relevance of who actually delivers particular aspects of care in the future. This finding from the qualitative research led to the replacement of the specification of profession in the revised model by the wider use of the more generic term 'clinician', which represents any appropriately trained professional.

Running diabetic clinics, delivering patient education, conducting near patient testing, patient monitoring, managing repeat dispensing and the identification of defaulters were all highlighted as potential areas for community pharmacists to become involved. The generation of a diabetes care model offers pharmacists a means of seeing that whatever their contribution to care, it requires to be made within a larger context, recognising that there are different ways pharmacists can contribute to the multidisciplinary service. Prescribing roles for pharmacists have been introduced in the UK since 2003 to recognise extensions to non-medical prescribing;

these developments in chronic disease management, affecting nurses and pharmacists, have introduced new possibilities for implementation of a care model in which service roles can be shared between disciplines.

This resultant Model of Care will allow matching of learning opportunities to meet well-defined educational needs that are linked to particular clinical functions. This initial work provides a step towards the design of CPD tools and systems to help community pharmacists perform newly defined roles within the healthcare team.

1.1.2 Research Focus Two

This research focus used a modified Delphi exercise to achieve consensus on activities which could be delivered by a community pharmacist to patients with type 2 diabetes mellitus.

The majority of suggested pharmaceutical care activities in the Delphi exercise reached consensus suggesting a desire to deliver a comprehensive pharmaceutical care service to patients with type 2 diabetes mellitus. There was early consensus that community pharmacists contribute to monitoring of blood glucose, HbA1c, ketones, blood pressure and body weight in the patient-held booklet and also for the process of referring patients to the GP if appropriate. These findings may demonstrate a developing confidence among community pharmacists in their ability to handle and interpret clinical data while accepting greater responsibility for basic clinical monitoring.

The two activities in which consensus was not reached involved sharing plans with the patients and other members of the diabetes team to ensure appropriate foot care and adjusting doses of insulin. Perhaps hesitancy to agree to these activities may be a lack of training in both these areas rather than an exclusion of their relevance to the pharmacy service. Research linked to continued professional development is indicated in order to help direct attention to the needs of service providers.

For service development and linked continued professional development a well-

defined service model for delivering pharmaceutical care to patients with type 2 diabetes is required. This thesis has proposed such a model based on a consensus among the leading edge community pharmacist practitioners in Scotland. These consensus agreed pharmacy activities or behavioural statements were then linked to multidisciplinary agreed competencies resulting in a competency based framework.

The Delphi participants felt there was a need for training in order to provide an intensive pharmaceutical care service to the patient with type 2 diabetes mellitus. Almost half the participants felt they needed some training away from the workplace although only a minority felt that they require substantial training away from the workplace.

Consensus was reached that all community pharmacists should be assessed and accredited as competent to deliver this service. Participation at courses was the only method of accreditation which reached consensus. This finding is in contrast to the educational philosophy that attendance at an educational event does not result in competence. Other methods of assessing their competency such as by Multiple choice question examinations or practical examinations (OSCE's ie. Objective structured clinical examination) did not prove popular with participants.

With regard to continuing CPD support, consensus was reached with peer support in the form of case discussions and reflections on good and poor practice, but only within the profession of pharmacy. These activities within a multiprofessional group did not reach consensus.

1.1.3 Research Focus Three

This final section of research involves the development, monitoring and evaluation of a competency based CPD Support Model for community pharmacists delivering pharmaceutical care to patients with type 2 diabetes mellitus.

The profession of Pharmacy in Scotland was developing rapidly at the time of the study with the imminent introduction of the Scottish Community Pharmacy Contract,

specifically on Chronic Medication Service, allowing the community pharmacists to deliver a more comprehensive pharmaceutical care service to the patient. From the work in Chapters 5, 6 and 7, a competency based CPD workbook was designed with five competency clusters, 54 competencies and 47 behavioural statements.

This workbook required modification following a pilot study to aid completion by the community pharmacist. From the work in this chapter it would appear the workbook is comprehensive with all common and more unusual pharmaceutical care issues in the pilot group linking with existing competencies within the workbook. All CPD linked pharmacy activities in the Competency-based CPD workbook were also identified as an issue by at least one participant during the 12 month study period. This strengthens the argument that the competency-based CPD workbook was fit for purpose and that all the CPD linked pharmacy activities within the five competency areas were relevant to this group of clinically active practitioners. Although pilot group participants suggested some modifications on the workbook, they felt that competency based CPD workbooks were probably a necessity for identifying learning needs and allowing development of new services.

Evaluation of the CPD Support Model was made by measuring study participants views and attitudes to CPD before and after using the model in the active group. This was compared to the views and attitudes of the control group at zero and twelve months who received no CPD support.

There are limited data on pharmacists' views, attitudes and participation in CPD; the information from our study contributes to informing the forward pathway for the profession. This research proposed an example of a CPD Support Model that resulted in an apparent increase in motivational and attitudinal scores (although not statistically significant) with no increase in CPD hours.

To establish which elements of the CPD Support Model are used most frequently is helpful for education providers in the production of future CPD support. While direct face-to-face courses are the favoured way of learning by study participants, there are

varied preferences for other elements which support pluralistic and customised approaches to the provision of CPD support. Within the CPD support model a competency-based CPD workbook has a definite place.

The total number of CPD issues being identified from the workbook during the 12 month field study was 295 with 270 (93%) of these issues being addressed during the study period. This rate of issues being addressed is very encouraging and shows that given an appropriate time period, practitioners can use this CPD tool effectively. Of CPD issues being identified, the majority were identified during the first six months of the study. The percentage of CPD issues identified and addressed within six months was 86%. The most popular reasons cited for identifying these CPD issues were that it was a service development priority.

This study identifies that community pharmacists were not yet competent in basic activities necessary to provide pharmaceutical care to patients with diabetes and further education and CPD support is required.

1.2 Implications of Research

1.2.1 Implications of Research for the Pharmacy Profession

1.2.1.1 Pharmaceutical Care Issues

This research delivers a number of positive messages to the pharmacy profession. From Research Focus One, this research has shown that the diabetes mellitus multidisciplinary team considers community pharmacists as important team members and capable of carrying out the majority of functions in the resultant model of care. Within Research Focus Two, another vital message for the pharmacy profession is that community pharmacists were keen to deliver a comprehensive pharmaceutical care service to this patient group.

The research findings show that community pharmacists still do not feel competent in providing basic pharmaceutical care skills. These findings will be of interest to the Schools of Pharmacy and NHS Education for Scotland whose function is to provide education and training to the NHS workforce. This lack of competency must be

addressed before the implementation of the CMS element of the new community pharmacy contract. In terms of clinical governance the community pharmacist must be trained and appropriately supported to deliver these extended services. Competency based CPD tools will aid delivery of these skills.

Within Scotland at this time there is no higher education institute or special health board with the facility to 'accredit' community pharmacists to deliver specialised services such as the pharmaceutical care of type 2 diabetes mellitus. This research would suggest that such facilities need to be created to meet the demands of frontline service providers.

A role of the community pharmacist that emerged as widely supported in our qualitative work was the encouragement of the patients to comply with their prescribed therapy. Suboptimal use of oral medication being one of the reasons for poor glycaemic control. Education to support patient self-monitoring of co-prescribed medicines (not just diabetic medicines) and over-the-counter medicines was also highlighted as an important role for community pharmacists in this work.

A new potential function identified for community pharmacists, was the initiation and 'fine-tuning' of insulin dosing. They conclude that as the prevalence of diabetes increases this demand will escalate and that more staff will require training to undertake this role. However throughout the thesis there was reluctance by Scottish community pharmacists to take on insulin-specific services.

1.2.1.2 CPD Issues

With community pharmacists in Scotland extending their role within a Strategy for Pharmaceutical Care in Scotland and a new community pharmacist contract, CPD is becoming formalised and is a necessary support to the development of new services. The monitoring of mandatory CPD for the pharmacy profession is almost a reality. Now is the time to research appropriate CPD support tools to allow easy documentation of continuous professional development activities to meet the competencies required to deliver pharmaceutical care. In this research in both the

Control and Active Groups an apparent increase (not statistically significant) in the use of RPSGB documentation was observed for the time period June 2006 to June 2007 as pharmacists prepare for mandatory CPD. This research offers to link practice with theory by allowing submissions on the e portfolio version of the CPD workbook to be electronically mapped directly onto the society's CPD pages from 2008. This is the first pilot of CPD mapping RPSGB has carried out.

This research highlights an important point to the profession of Pharmacy. No multiprofessional CPD activity achieved consensus in the Delphi exercise carried out in Research Focus Two. The hesitancy for this participation will need further research as if community pharmacists are to be accepted as a member of a multiprofessional team they will need to be involved in multiprofessional diabetes CPD sessions.

The concept of a community pharmacists' vocational training scheme is a possibility within Scotland. This study is using a research approach in diabetes which may offer an exemplar for use in the management of other chronic diseases. This Support Model with competency based CPD workbook could form one specialty within this vocational scheme.

Chapter 2:

Research Introduction and Background

2.1 Introduction

The aim of the following review of the field is to familiarise the reader with the issues relevant to the chosen field of research namely continuous professional development for community pharmacists providing pharmaceutical care of the patient with type 2 diabetes over the study period from 2002 till 2008.

The majority of the thesis concentrates on research directed towards care of patients with type 2 diabetes. This was a deliberate decision based on the greater prevalence of this condition compared to type 1 diabetes and the propensity for the former to receive care in primary rather than the secondary care setting.

The purpose of the following review is to inform the reader of the many developments in pharmaceutical care in Scotland; in the current treatment of diabetes mellitus; in the understanding of Continuing Professional Development (CPD) and the competencies required to deliver pharmaceutical care during the period of research. The end-point will be an overview of the research methodology used throughout the thesis and research data analysis and verification methods employed within the thesis

2.2 Developments in Pharmaceutical Care in Scotland (2002-2008)

In 1990, the concept of pharmaceutical care was first developed and defined as a type of health service by Hepler and Strand as

"the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life" [1].

Pharmaceutical care has been widely discussed in the literature and efforts have been made to educate and assist pharmacists in implementing pharmaceutical care into their practice. Pharmaceutical care was conceived as a new health service, delivered by health practitioners with expertise in clinical pharmacy who took responsibility for achieving defined outcomes from medication.

Over time the concept of pharmaceutical care has evolved and a philosophy and process of care has been developed. The patient care process in pharmaceutical care could be defined as:

- Establishment of a therapeutic relationship
- Assessment, including identification of medicine-related problems
- Development of a care plan
- Evaluation
- Continuous follow-up [2]

As pharmaceutical care practice has been relatively recently conceptualised, there have been various approaches to implementing the practice, including differences in the target groups, in the way the practice has been delivered and in the endpoints monitored. The outcomes of pharmaceutical care research have produced differing results with some trials finding benefits of practice [3-7] and others suggesting the practice does not improve patient outcomes [8,9]. This in turn has led to debate over the effectiveness of practice[10,11]. However a recent systematic review of published studies has concluded that pharmaceutical care services are effective in improving medication use and surrogate endpoints but improvement in other outcomes is less conclusive. This study suggests that the variability observed across studies particularly with multicentre trials, suggests future work needs to focus on common definitions and understandings of pharmacists' services and the targeting of delivery to those in need and for whom outcomes can be improved [12].

2.2.1 Pharmaceutical Care Model Schemes (PCMS)

The pharmaceutical care delivered by community pharmacists has changed enormously since the beginning of this thesis in 2002. At the initiation of this research the idea of structured pharmaceutical care for patients from a community pharmacy on specific chronic disease states such as diabetes mellitus type 2 was in its conceptual stage. At that time the community pharmacists' remuneration system was based on the number of prescriptions dispensed. They received no compensation for time spent counselling, giving public health advice or for any specialist services they may have offered.

'The Right Medicine: a Strategy for Pharmaceutical Care in Scotland' (2002)[13] represented a Scottish Government (formerly the Scottish Executive) commitment to develop pharmaceutical care for patients in primary care. Prior to that seminal document, earlier developments had started in 1999. At that time attempts to educate and train community pharmacists to deliver a better quality of pharmaceutical care to their patients resulted in a Pharmaceutical Care Model Scheme initiative (PCMS) on specific chronic disease states being introduced to certain areas within Scotland [14]. The work of this thesis aimed to inform and support the diabetes mellitus type 2 Pharmaceutical Care Model Scheme. This initiative enabled community pharmacists to be remunerated for assessing and documenting the pharmaceutical needs of patients. The community pharmacists were remunerated for this service on an individual patient basis.

2.2.2 Scottish Community Pharmacy Contract

The four elements of a new Community Pharmacy Contract in Scotland since 2002, have been implemented in a phase-like format. The first two elements introduced were Public Health Services and an (electronic) Minor Ailment Service (eMAS) [15]. These services have been available to patients in primary care since September 2005. There are plans to introduce the Acute Medication Services (AMS) and Chronic Medication Services (CMS) during 2008-2010.

The aim of PCMS was to prepare community pharmacists for the introduction of the Chronic Medication Scheme (CMS). The author worked in partnership with the Director of Pharmaceutical Care Model Schemes to ensure that the research carried out in this thesis would be useful to the Scottish Government. In the CMS the community pharmacist will be able to spend time with the patient providing structured, quality pharmaceutical care to those with a chronic medication. To ensure the pharmaceutical care delivered within the PCMS initiative was of a high quality and consistent throughout Scotland, educational programmes were prepared by NHS Education for Scotland (NES) [16]. This need for additional training to allow community pharmacies to be the key locus for the delivery of pharmaceutical care in

primary care had been previously highlighted by a qualitative study of Scottish community pharmacists [17]. These programmes were the minimum educational requirement to establish a model scheme in a certain disease state.

NES is a special Health Board, which was established in 2002 by the Scottish Government to provide education and training to all health care professionals in Scotland. The author is a member of staff at this institution.

Although initial education about disease topics was made available to all community pharmacists soon to deliver structured pharmaceutical care to patients, educational governance would suggest that long term CPD support would be required to assist community pharmacists in this new role [18].

The PCMS initiative continued nationally until April 2006 when funding ceased. There was then a period when there was no remuneration for pharmaceutical services from the community pharmacy until the advent of the Chronic Medication Service (launch expected 2010). This project used this time period to study continued services in this area and to encourage training and Continuing Professional Development (CPD) within type 2 diabetes mellitus.

2.2.3 Medicines Management

2.2.3.1 Patient Group Directions

Prior to non-medical prescribing becoming a reality, pharmacists could alter doses in line with a Patient Group Direction (PGD). For the past decade healthcare professionals have found it useful to be able to supply and/or administer medicines using group protocols. In 2000 secondary legislation was introduced throughout the UK, which provided the framework for the supply and administration of medicines without the need for an individual prescription [19]. This framework was that of Patient Group Directions (PGDs). A Patient Group Direction is a written direction relating to the supply and administration (or administration only) of a prescription only medicine (POM) by certain classes of healthcare professionals [20]. The direction must be signed by a doctor or dentist and by a pharmacist.

2.2.3.2 Supplementary Prescribing

Recently the roles and responsibilities of allied health care professionals in Great Britain have undergone a major shift. Initiatives were set in place to improve patient access to medicines and to reduce the workload of physicians by utilising the skills and competencies of allied health professionals, mainly pharmacists and nurses [21-25]. The final Crown report (issued March 1999) proposed that new groups of healthcare professionals be permitted to take on additional prescribing responsibilities [23]. This initiative allowed community pharmacists to further develop the quality of the patient care they could supply to patients. Supplementary prescribing is defined as:

'A voluntary prescribing partnership between the independent prescriber and a supplementary prescriber to implement a patient specific clinical management plan with the patient's agreement' [23]

This means that the professions are working together with the patient to enhance the level of care provided. This does not mean working competitively or suggesting that the current level of care is insufficient but is a scheme which will allow the patient more choice about care delivery.

With supplementary prescribing there is a requirement for a patient-specific clinical management plan, which although a quality assurance procedure, ultimately does lead to an administrative burden. A clinical management plan does limit the ability of the pharmacist to treat the patient as it defines the drugs which can be prescribed for each patient. This may lead to incomplete patient care with the patient being directed back to the independent prescriber.

Pharmacists can be supplementary prescribers if they are registered to practice with The Royal Pharmaceutical Society of Great Britain, have at least 2 years' experience since registration, have undertaken an appropriate course at a higher education institution and completed a period of learning in practice. During the designated period of learning in practice, a designated medical practitioner must provide the student with supervision, support and opportunities to develop competence in prescribing practice.

In a recent UK study (n= 518), only 3% of pharmacist supplementary prescribers in 2005 were actually prescribing within the endocrine speciality, of which diabetes mellitus is a major component [26]. Lack of time, inadequate support staff and insufficient awareness among other health care professionals and the general public about the pharmacists' skills and attributes are known to be the major obstacles to expanding the professional role of pharmacists, especially in the community setting [27].

2.2.3.3 Independent Prescribing

Crown defined independent prescribers as:

'those responsible for the initial assessment of patients with undiagnosed conditions and for decisions about clinical management including prescribing' [23]

Independent prescribing by pharmacists seems a natural extension of the role that has already been established by many supplementary prescribers. Courses for the conversion of pharmacy supplementary prescribers to independent prescribers will begin in Scotland in 2008. This will enable pharmacists to make autonomous decisions about the treatment of patients. With independent prescribing, pharmacists will be able to prescribe without the need of a clinical management plan. This can be a challenge sometimes for a community pharmacist supplementary prescriber working from a community pharmacy clinic.

Supplementary prescribing is also designed for continuing care programmes and is not efficient for prescribing one-off items such as in Minor Ailment Clinics run from community pharmacies.

2.3 Type 2 Diabetes Mellitus: Pharmaceutical Care in Scotland

The incidence of diabetes mellitus is increasing world-wide leading to an increase in estimated prevalence from 30 million people in 1985 to 135 million in 1995 [28]. Today throughout the world, diabetes affects one in 20 adults [29], and 333 million cases are projected by 2025 [30]. In particular, the number of patients with type 2

diabetes is continuing to rise due to the increasing number of elderly people, better recognition of prevalent undiagnosed diabetes and better care for and survival of people with clinically diagnosed diabetes [31,32]. Furthermore the adoption of a more affluent and westernised lifestyle, characterised by decreased physical activity, greater fat consumption and subsequent obesity is also contributing to an increase in the diabetic population.

The emergence of diabetes as a public health priority has led the Scottish Executive to signal its commitment to raising standards of care for this patient group [33], including the publication of a Scottish Diabetes Framework [34]. This document requires delivery of an integrated multidisciplinary service to people with diabetes to *'draw together existing guidance and best practice'*. This document states:
' An effective diabetes service requires all staff to be trained, competent and skilled in their components of diabetes care and able to work with other members of the multidisciplinary team needed to provide an integrated service to people with diabetes' [34]

On the need for the development of improved systems for chronic disease management, Wagner has stated that:
"The delivery of care in chronic disease management by a co-ordinated team of individuals has always been assumed to be a good thing. Patients reap the benefits of more eyes and ears, the insights of different bodies of knowledge, and a wider range of skills" [35].

The publication of the report *'A National Framework for Service Change in the NHS in Scotland' (2005) also supports the advantages of this team concept* [36]. The full breadth of the vision of this report requires that the management of chronic long term conditions be based in primary care; with the consequences that the communication links between the elements of the professional health service workforce in Scotland need to be developed. The community pharmacist must become recognised as an active member of the diabetes team in order for optimum pharmaceutical care to be delivered.

Studies have shown pharmacist-led medication review has the capacity to identify and resolve pharmaceutical care issues and may have some impact on the use of other health services [37-39] and on the patient in terms of short-term Health-Related Quality of Life measurements [40]. The HOMER study however showed an intervention of a home visit by a pharmacist was associated with a significantly higher rate of hospital admissions and did not significantly improve quality of life or reduce deaths [41]. One suggested explanation by the authors for this finding, was that pharmacists may have increased the patient's understand of their medical conditions. It was suggested that this increased understanding could have led patients to recognise warning signs earlier and promoted better help seeking behaviour, leading in more hospital admissions.

2.3.1 Models of Care

There are an unknown number of UK based Models of Care for patient with type 2 diabetes mellitus in existence. Some are available on the web [42,43] , a few are published [44,45] , but the majority are thought to be developed locally and not widely accessible. The research methodology that has been used to develop these models will vary in terms of styles and rigor. Some models do not involve pharmacists in the care of patients [43,44].

Phase one of the Scottish Diabetes Framework [34] was to develop a strategic Model of Care consisting of 22 building blocks under 6 broad headings as shown in Figure 2.1.

These headings are:

- Prevention and early detection
- Care monitoring and treatment
- Specific groups
- Planning and managing services
- Implementation
- Community issues

It is obvious that the profession of pharmacy is heavily involved in all 22 components of developing diabetes care within Scotland.

Figure 2.1: Building blocks of Diabetes Care in Scotland [34]

<table>
<tr><td colspan="4">Prevention and Early Detection</td></tr>
<tr><td>Health promotion</td><td colspan="2">Public Education</td><td>High Risk Groups</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td colspan="4">Care Monitoring and Treatment</td></tr>
<tr><td colspan="4">Information Education and Empowerment
Heart Disease
Eye Care
Initial and Continuing Care</td></tr>
<tr><td>Feet</td><td>Kidney and Nerve Problems</td><td>Psychology/Mental Health</td><td>Diabetic Emergencies and Elective Care</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td colspan="4">Specific Groups</td></tr>
<tr><td colspan="4">Children and Young People
Ethnic Minority Groups
Pregnancy and Sexual Health
Vulnerable Groups</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td colspan="4">Planning and Managing Services</td></tr>
<tr><td>Strategy, Leadership and Teamworking</td><td>Education and Training for Professionals</td><td colspan="2">IT and Diabetes Registers</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td colspan="4">Patient Support
Research and Development</td></tr>
<tr><td colspan="4">Implementation and Monitoring</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td colspan="4">Community Issues-Issues involving other agencies</td></tr>
</table>

Since the 1970s the responsibility for the routine review of patients with type 2 diabetes mellitus has shifted away from secondary to primary care [46,47]. Nowadays health professionals within community settings often play a key role in the care of patients with type 2 diabetes. The regular review of patients by a member of the diabetes team plays a very important part in delivering a good standard of diabetes care [48]. Nevertheless empirical data suggests that the care of these patients could be improved [34].

From published literature, there appeared to be no nationally approved practical model of care for the patient with type 2 diabetes mellitus in Scotland. This was perceived as a gap by the author and a basic foundation platform in order to identify areas of care which could be delivered by the community pharmacist. This work formed Research Focus One within the thesis.

2.4 Type 2 Diabetes Mellitus : Treatment

Diabetes mellitus is a progressive disease associated with severe complications for the patient in the long term. Achieving good glycaemic control is one of the most important goals in diabetes care. The United Kingdom Prospective Diabetes Study (UKPDS 1998) proved that good glycaemic control in patients with type 2 diabetes reduced the occurrence of retinopathy, nephropathy and neuropathy [49]. Furthermore patients reported a better functional status and greater well being. Many diabetic patients however have poor glycaemic control.

Cardiovascular disease is the major complication with patients of this disease type. Type 2 diabetes in particular is associated with a greater risk of heart disease and stroke [50,51]. Patients with type 2 diabetes have a two to three fold increased risk of microvascular disease [52]. Cardiovascular risk factors often go unrecognised and undertreated in patients with type 2 diabetes mellitus.

Other complications however are no less debilitating to the patient:

- The World Health Organisation estimates that diabetic retinopathy is the cause of blindness in 5% of blind people worldwide and that almost everyone with diabetes has some degree of retinopathy after 20 years [53].

- The rapid increase in the numbers of patients requiring renal replacement in Europe in recent years is mainly due to the rise in the number of patients with type 2 diabetes [54].

- Patients with diabetes have a 30-50% lifetime risk of developing chronic peripheral neuropathy and 10-20% of patients develop severe symptoms [55]. Peripheral neuropathy contributes to foot ulceration and amputation of lower limbs. Erectile dysfunction occurs in up to 50% of men over 50 years compared to 15-20% of men without diabetes.

There are now well defined targets to work towards in type 2 diabetes and the challenge is to achieve them within routine clinical practice. Despite the wide range of therapeutic options, the lack of clear 'best practice' treatment guidelines has meant that patients are often treated sub-optimally. There are now clear HbA1c targets ranging from 6.5% to 7.5% [56]. All healthcare professionals should work with patients to achieve this. In some patients such tight glycaemic control may not be appropriate, such as the elderly because of the risk of hypoglycaemia.

The first step in managing patients with type 2 diabetes mellitus is to assist with any necessary lifestyle changes. A multidisciplinary diabetes healthcare team must work in partnership with patients to develop individualised care plans that clearly define treatment objectives and targets; self monitoring of blood glucose, HbA1c, cholesterol, blood pressure, weight control and smoking cessation. It is now accepted that at diagnosis the patient should be advised that they will probably require insulin therapy within 10 years [57]. Patients need to view this as a logical step to maintaining optimal glycaemic control, rather than an indication that they have 'failed' with oral

treatment. This development may create specific opportunities for community pharmacists.

If, after 3 months, lifestyle modifications alone are insufficient to achieve the target HbA1c of <7%, an oral hypoglycaemic agent should be introduced. Newly diagnosed patients who are significantly symptomatic and/or whose blood glucose is high (or whose HbA1c >9%) should be prescribed oral monotherapy at diagnosis as dietary lifestyle changes alone are unlikely to reduce HbA1c by more than 1% initially [49].

Metformin should be considered as first-line oral monotherapy in type 2 diabetes mellitus because of its cardioprotective properties and low risk of hypoglycaemia [49,56] . It should be initiated at an initial low dose (500mg once or twice daily) with or just after food and increased to a therapeutic dose to maximise its glucose lowering effect while limiting any gastrointestinal side effects. Metformin should not be used in patients with an estimated GFR <30mL/min/1.7m^2. When metformin is contraindicated, a sulphonylurea or glitazone may be used. It may take up to six weeks for members of the glitazone family to show an effect on glycaemia (and up to 12-14 weeks for maximum effect). Patients on glitazones should be monitored for liver problems and also for worsening congestive heart failure since this drug type is associated with fluid retention.

Initiation of dual oral therapy upon diagnosis may be necessary for those with very high blood glucose concentrations and those who are symptomatic. When monotherapy has been initiated first line but, after 3 months patients remain above the target HbA1c of 7%, a second oral hypoglycaemic agent should be started. A combination of metformin and a sulphonylurea should be considered, but if there are contra indications or tolerability issues, a glitazone might be used.

If, after 3 months of dual oral therapy, patients have reached within 1% of their target HbA1c, a third oral hypoglycaemic agent may be appropriate, particularly for those averse to starting insulin or who wish to try an alternative approach first. Patients should be considered for insulin therapy if 3 months of dual or triple oral

hypoglycaemic therapy does not achieve an HbA1c <7%. Twice daily administration of pre-mixed insulins is a therapeutic option widely used in the UK for type 2 diabetes. Basal insulin regimens however are an alternative and have become more widely used with the advent of the new basal insulin analogue, insulin glargine. If after 6 months of adequately titrated basal insulin therapy, combined with oral hypoglycaemic agents, or 6 months of twice daily premixed insulin, patients are not achieving or maintaining target glycaemic control, then a basal-bolus insulin regimen is a treatment option. This may not be appropriate in certain elderly patients.

Exenatide is a new antidiabetic agent which may delay insulin treatment when metformin or a sulphonylurea or both has not achieved adequate glycaemic control. Exenatide is in a class of medications called incretin mimetics. It works by stimulating the pancreas to secrete insulin when blood sugar levels are high. Insulin helps move sugar from the blood into other body tissues where it is used for energy. Exenatide also slows the emptying of the stomach and causes a decrease in appetite.

2.5 Pharmaceutical Care for Patients with Type 2 Diabetes Mellitus Delivered from the Community Pharmacy

Community pharmacists are at the frontline of responding to improved control and management of associated complications of type 2 diabetes in particular. The new Scottish contract will expect pharmacists to provide chronic medication services to their patients within a changing model for chronic disease management that will provide opportunities for extended prescribing roles.

A limited literature base informs the concept of a pharmaceutical care model for the patient with type 2 diabetes mellitus in primary care. Most studies were carried out in the USA[58-64] and have demonstrated improvements in patient knowledge, glycaemic control and compliance after the introduction of new pharmacy services. Questions remain about translating those findings to practice in other European countries with different healthcare systems. Other studies have stated the feasibility and value of pharmacist led pharmaceutical care services to patients with diabetes mellitus [65-75] and one Australian study concludes that using a pharmacist for these services does

result in a saving to the healthcare system long term [75]. A recent meta-analysis however has concluded that pharmacist interventions can lead to reduced HbA1c levels for diabetes patients but other benefits are not clear. These other benefits include systolic blood pressure, fasting plasma glucose, lipid levels, adherence, knowledge and quality of life where the effect on patients was not significant [76].

One Scottish study [45] evaluated the feasibility and the impact of a structured approach for the community pharmacist in type 2 diabetes care, as a member of the multidisciplinary team, and has demonstrated that community pharmacists were both clinically effective in terms of a reduction in HbA1c, blood pressure and total cholesterol level, and well-accepted by general medical practitioners (GPs) and patients. A desire for community pharmacists to extend services to this patient group has been identified in Scotland. This was limited by their perceptions of a need for further training within their continued professional development [77].

Point of care clinical testing in diabetes is a rapidly growing area in the USA; where pharmacists test for HbA1c, glucose, lipid profiles, cholesterol and urinary microalbumin concentrations in the pharmacy [78,79]. Point of care testing can provide pharmacists with the opportunity to expand their services into new areas of patient care.

Some studies have identified healthcare professionals' barriers to change in the delivery of diabetes care. Reported barriers for clinicians were lack of acceptance by practitioners of guidelines, the complexity of the guidelines and the lack of information needed to incorporate them into practice, lack of knowledge of diabetology, poor co-operation of staff members and poor quality of documentation of provided care that leads to discontinuous care [80].

This thesis aimed to address these barriers by community pharmacists themselves agreeing what pharmaceutical care services could be delivered to patients; allowing the principal stakeholders to take ownership for future services. This work was developed in Research Focus Two within the thesis.

Looking outwith the pharmacy profession, postgraduate education of healthcare providers in combination with reminders, audit and feedback, educational outreach visits or combinations of these interventions improved the diabetes care provided in many studies [81-87]. The work of this thesis builds on these initial studies and looks at the use of CPD tools by community pharmacists to provide care to patients with type 2 diabetes mellitus. This work was developed in Research Focus Three within the thesis.

2.6 The Theoretical Basis for Learning Development

In order to understand how and why pharmacists learn and develop, the theory of adult learning must be understood. Compared to children and teens, adults have special needs and requirements as learners. Despite the apparent truth, adult learning is a relatively new area of study. A number of theoretical frameworks have been developed around adult learning principals- Knox's Proficiency Theory and Mc Clusky's Theory of Margin to name only two [88,89]. While these theoretical frameworks provide implications for practice, few have actually be applied widely in adult educational practice. Knowles's andragogy is the exception [90].

The field of adult learning was pioneered by Malcom Knowles who developed the concept of andragogy [91]. The term andragogy was originally formulated by a German teacher, Alexander Kapp, in 1833 [92]. For Knowles, andragogy was premised on at least four crucial assumptions about the characteristics of adult learners. A fifth assumption – motivation was added later [93]:

- **Self-concept:** As a person matures his self concept moves from one of being a dependent personality toward one of being a self-directed human being.
- **Experience:** As a person matures he accumulates a growing reservoir of experience that becomes an increasing resource for learning.
- **Readiness to learn:** As a person matures his readiness to learn becomes oriented increasingly to the developmental tasks of his social roles.
- **Orientation to learning:** As a person matures his time perspective changes from one of postponed application of knowledge to immediacy of

application, and accordingly his orientation toward learning shifts from one of subject-centeredness to one of problem centredness.

- **Motivation to learn:** As a person matures the motivation to learn is internal.

These five assumptions dovetail with the thoughts and theories of others [94,95]. Knowles' conception of andragogy was an attempt to build a comprehensive theory (or model) of adult learning that is anchored in the **characteristics of adult learners** [91]:

1. Adults are **autonomous and self-directed.** They need to be free to direct themselves. Their teachers must actively involve adult participants in the learning process and serve as facilitators for them. Therefore pharmacists must identify their learning needs, either themselves or with assistance, and be allowed to work on projects that reflect their interests. The pharmacist must understand how the CPD they are undertaking (in whatever form) will help them reach their goals.

2. Adults have accumulated a foundation of **life experiences and knowledge** that may include work-related activities, family responsibilities, and previous education. They need to connect any new learning to this knowledge/experience base. Therefore pharmacists must recognise the value of experience in learning.

3. Adults are **goal-oriented.** Upon enrolling in a course or area of CPD, they usually know what goal they want to attain. They, therefore, appreciate an educational program that has clearly defined aims and objectives that they can see will help them attain their goals.

4. Adults are **relevancy-oriented.** They must see a reason for learning something. Learning has to be applicable to their work or other responsibilities to be of value to them.

5. Adults are **practical,** focusing on the aspects of knowledge most useful to them in their work. They may not be interested in knowledge for its own sake.

6. As do all learners, adults need to be shown **respect.** Those assisting in postgraduate educational activities must thus acknowledge the wealth of experiences that adult participants may have already.

2.7 Continuing Professional Development (CPD)

Continuing professional development (CPD) has become an increasingly important feature of most professions, particularly those related to the health service, and is relevant to practitioners at all levels. CPD is a key component within a clinical governance framework of professional accountability, quality service provision, risk management and reduction, and the continuous improvement of standards. In Great Britain both the NHS [96] and the Royal Pharmaceutical Society (RPSGB) [97] have recognised the role of CPD in clinical governance. In a policy on quality, the NHS has stated that 'lifelong learning is an investment in quality'[96].

Clinical governance was one of the central ideas in a range of proposals to modernise the National Health Service (NHS) contained in the Department of Health Document, 'The New NHS: modern, dependable' in 1997 [98]. Clinical governance was first defined as:

'a framework through which NHS organizations are accountable for continuously improving the quality of their services and safeguarding high standards of care by creating an environment in which excellence in clinical care will flourish'

Continuing Professional Development (CPD) is central to the implementation of clinical governance. CPD is defined in A First Class Service as:

'A process of lifelong learning that all individuals and teams which meets the needs of patients and delivers the health outcomes and healthcare priorities of the NHS and which enables professionals to expand and fulfill their potential' [99]

In A First Class Service, the framework for a more coherent approach to CPD is highlighted as opposed to the old system of self chosen continuing education. With clinical governance comes the need to ensure that all aspects of a clinician's work, and the work of healthcare team, contribute towards a service of increasing quality of practice as the definition of clinical governance implies.

The professional climate has been triggered by the Kennedy Report (in response to the Bristol Royal Infirmary Inquiry into paediatric surgery) to insist that the quality

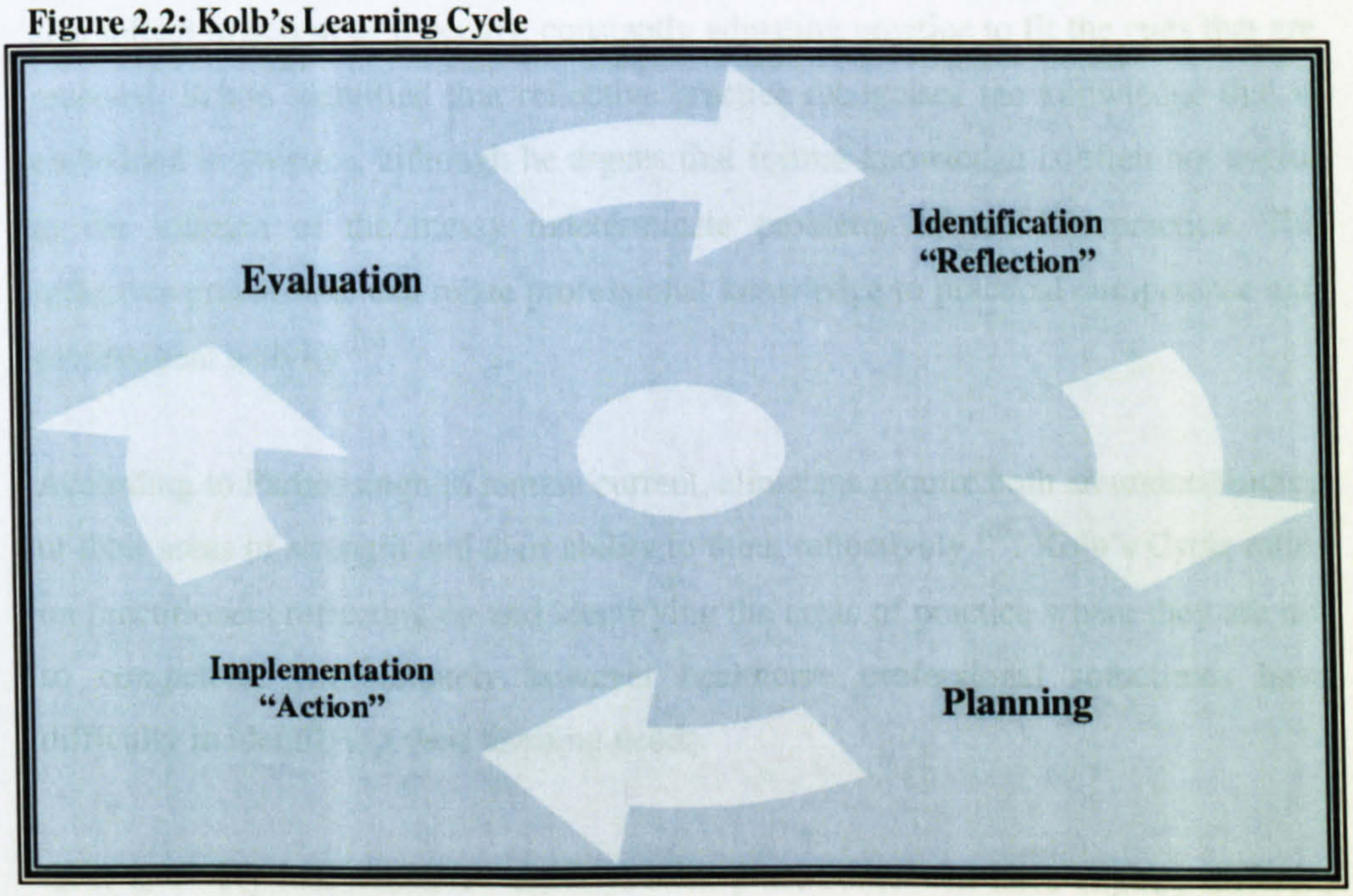
assurance of CPD participation be seriously addressed by all healthcare practitioner representative bodies. A summary of the Kennedy report, stated that:

'a patient is entitled to be cared for by healthcare professionals with relevant and up-to-date skills and experience' [100]

The report recommended that CPD *'must be compulsory'* for all healthcare professionals.

Continuing professional development compels professionals to take responsibility for their learning. The CPD cycle is based on the 4-stage Kolb Learning Cycle of identification/reflection, planning, implementation/action, evaluation [101].

Figure 2.2: Kolb's Learning Cycle



CPD is inclusive of any learning that is relevant to pharmacists' development of their capabilities, including any continuing education (workplace-based, distance learning, e-learning). It is the function of the CPD process to lead both to individual health professionals keeping pace with changes in practice and to public confidence in their services being retained and developed.

CPD is a self-directed learning process. This supports one of the principal characteristics of adult learning; adults and thus pharmacists are autonomous and self-directed [94]. Self-directed learning is an active process which encourages the adoption of the deep approach to learning [102]. Deep learning, as opposed to surface learning is described as an active search for understanding. Surface learning merely encourages the learner to reproduce what has been learned by rote. Moon views the reflection section of Kolb's cycle as the catalyst that moves surface learning to deep learning. Deep learning can be integrated with current experience and knowledge, resulting in rich cognitive networks that the individual can draw on in practice [103].

Kolb's Cycle encourages self-reflection of practice. Reflective practice acknowledges the way in which professionals reflect **on** action retrospectively and also reflect **in** action as it occurs, constantly adjusting practice to fit the cues that are received. Schon identified that reflective practice recognises the knowledge that is embedded in practice, although he argues that formal knowledge is often not useful to the solution of the messy indeterminate problems of real-life practice. The reflective practitioner can relate professional knowledge to practical competence and professional activity [104].

According to Parboosingh to remain current, clinicians require both an understanding of their areas of strength and their ability to think reflectively [105]. Kolb's Cycle relies on practitioners reflecting on and identifying the areas of practice where they are not so competent. Unfortunately however healthcare professional sometimes have difficulty in identifying their learning needs.

CPD is a very individualised activity. Each practitioner will have slightly different learning styles and as a result a single method of CPD support will not prove successful for all participants. To provide successful CPD, several modes of support must be available. Continuing Education (CE) or attending courses or formal teaching is only one aspect of CPD. There is however still some confusion amongst professionals regarding this fact [96-100].

Postgraduate education is one method which may improve the management of diabetes mellitus in primary care. Understandably, care providers first need the knowledge and skills to improve their performance. Moreover they must be convinced of the importance of changing their practice and motivated to do so.

2.8 Views and Attitudes of Pharmacists to CPD

To date, evidence has been limited about the views and attitudes of pharmacists towards CPD. A study carried out in 2001 aimed to discover perceptions of pharmacists in Northern Ireland on CPD. All pharmacists in Northern Ireland were sent a questionnaire (n=1689; response rate 24%) and factors such as lack of time, remuneration, shortage of locum cover and lack of understanding of CPD were all identified as barriers to participation [106]. A further study by questionnaire sent to all pharmacists in one English region (n=750; response rate 43%) evaluated the current practices of pharmacists with regard to their professional development and found that 90% of respondents had undertaken continuing education in the previous 12 months [107]. Another study, using a qualitative investigational approach, among a small number of English community pharmacists' (n=21) revealed attitudes to show that pharmacists were not fully engaging in CPD and needed further support [108].

The author was involved in a national study of the views and attitudes of registered pharmacists in Scotland [109]. This study identified community pharmacists as spending less time on CPD and to be the sector requiring most support to increase not only their motivation to CPD but also their confidence and ability to participate in CPD when compared to their colleagues in primary care and hospital pharmacy.

Knowles acknowledged that an important aspect of adult learning was motivation. He believed that at least six factors serve as sources of motivation for adult learning [91]:

- **Social relationships:** to make new friends, to meet a need for associations and friendships, to network within the pharmacy community.

- **External expectations:** to comply with instructions from someone else; to fulfill the expectations or recommendations of someone with formal authority. This may be the CPD requirements from the RPSGB or fulfill learning needs highlighted in a formal appraisal.

- **Social welfare:** to improve ability to serve mankind, prepare for service to the community, and improve ability to participate in community work or provide better patient care.

- **Personal advancement:** to achieve higher status in a job, secure professional advancement, and stay abreast of competitors.

- **Escape/Stimulation:** to relieve boredom, provide a break in the routine of home or work, and provide a contrast to other exacting details of life.

- **Cognitive interest:** to learn for the sake of learning, seek knowledge for its own sake, and to satisfy an inquiring mind.

To date there are no published studies that have used the views and attitudes of community pharmacists as an evaluation tool pre and post CPD support intervention. Further study of the factors affecting Scottish pharmacists' motivation to carry out CPD would be valuable. This is a gap in research which will be addressed in this thesis in Research Focus 3.

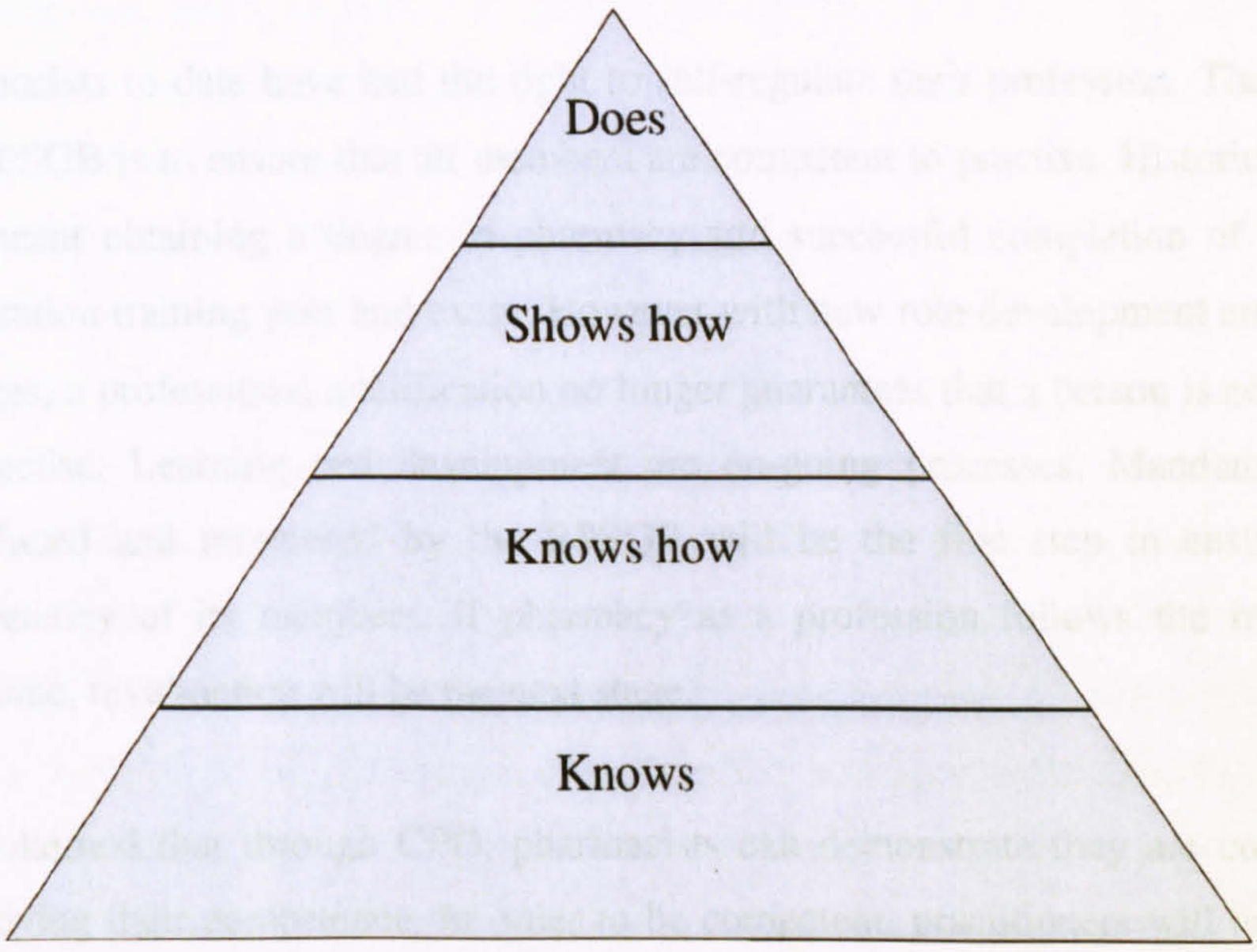
2.9 Pharmaceutical Care from Community Pharmacies: Ensuring High Levels of Competency

Clinical governance was introduced as a UK government initiative to assure and improve the quality of clinical services in the National Health Service. Clinical governance as a concept requires professional self regulation and demonstration of a commitment to lifelong learning.

Competence is defined as the ability to carry out a job or task, whereas ability based on behavioural trends is usually referred to as a competency. Miller's pyramid

description of competence (Figure 2.3) indicates that, in clinical practice, the ability to do the job is the key area to be assessed [110].

Figure 2.3: Miller's Pyramid of Competence [110]



Miller's pyramid of competency depicts the pharmacist's development, starting with the accumulation of knowledge ('Knows') and the gradual transition to practice ('Does'). Knowledge by itself does not lead to performance, which is the ability to show how knowledge is used. When the pharmacist progresses up the pyramid and shows how he or she uses knowledge for the benefit of the patient, he or she then reaches the apex of the pyramid and can practise his or her specialty. The pharmacist then has the ability to combine clinical judgment, problem solving and technical skills.

A competency framework is a collection of competencies thought to be essential for effective performance. In the business sector, organisations have been producing and implementing competencies for the past 20 years which are commonly used as performance review tools, in training and development and in skills analysis [111]. The

need for regulation aimed at maintaining the competence of healthcare professionals has been highlighted within the profession of pharmacists. Nowadays drivers of change apart from CPD include accountability, clinical risk management, remedy of poor performance and increasingly well informed skeptical public opinion. They all reinforce the need for all healthcare professionals to be 'fit for purpose'.

Pharmacists to date have had the right to self-regulate their profession. The role of the RPSGB is to ensure that all members are competent to practise. Historically this has meant obtaining a degree in pharmacy and successful completion of the pre-registration training year and exam. However with new role development and policy changes, a professional qualification no longer guarantees that a person is competent to practise. Learning and development are on-going processes. Mandatory CPD introduced and monitored by the RPSGB will be the first step in ensuring the competency of its members. If pharmacy as a profession follows the model for medicine, revalidation will be the next stage.

It is claimed that through CPD, pharmacists can demonstrate they are continually improving their competence. In order to be competent, practitioners will have to be able to identify their learning needs or competency gaps. A major barrier to the introduction of CPD is the lack of a framework to help pharmacists identify their learning needs; success in needs assessment is dependent on the knowledge and understanding of the competencies required to undertake a job effectively.

Many competency frameworks have been developed. Nationally, the Skills for Health (SfH) framework is perhaps the most important. National Workforce Competencies (NWCs) are statements of competence describing good practice which are written to measure performance outcomes. NWCs are developed by Skills for Health, the Sector Skills Council for the UK health sector. A Skills for Health Diabetes framework was not available throughout the work within this thesis but has recently become available [112].

Within pharmacy; Key Areas of Competency for all pharmacists listed in the RPSGB's CPD document [113] and Competencies for pharmacists working in Primary Care produced by the National Prescribing Centre [114] being two of the best known sets of competencies.

Research has been carried out on the design and evaluation of competency frameworks within hospital pharmacy; McRobbie et al in 2001 developed the General Level Framework for junior hospital pharmacists. In this research the individual's performance is evaluated using a rating scale, which provides a formative stimulus [115]. This may be used to identify areas of satisfactory and inadequate performance. Assessment of a pharmacist using competency-based methodology should provide them with an indication of the areas where they have demonstrated competence and areas where further development is required. The authors reported an improvement in individual performance when the framework was applied, which was sustained over a 12 month period [116]. The benefits were related directly to the framework's explicit and structured description of the key required competencies. A similar general framework for community pharmacists has been developed during the duration of this thesis, concentrating on patient care competency clusters, personal competency clusters, problem solving competency clusters and management and organisation competency clusters [117].

The research within the present thesis aims to build on this initial work and contribute to the competency knowledge base by investigating those competencies required by clinicians to provide overall pharmaceutical care, integrated within a disease state, rather than defined as generic competencies. This work is part of Research Focus 3 within the thesis.

Within Scotland, multidisciplinary competencies have been developed for the team providing care for the patient with diabetes mellitus [118] and for the patient with cardiovascular disease [119]. Diabetes mellitus is a condition that illustrates a need for multidisciplinary collaboration with the community pharmacist ideally placed to

make a unique contribution to this team. This research thus aimed to use these team-based competencies as a framework base.

2.10 Future Training Plans for Community Pharmacists

The job of a community pharmacist in Scotland has changed dramatically over the last five years with the introduction of the new contract and will continue to do so until all elements of the contract are in place. Within certain countries community pharmacy is considered a specialty. Pharmacies in the Netherlands and in Scandinavian countries are large, serving two to three times as many patients as pharmacies in Britain, France and Spain. These larger pharmacies employ more staff, including more pharmacists, and the people we describe in the UK as technicians are more highly trained and have more responsibility, so allowing pharmacists to spend more time on pharmaceutical care [120].

Within Scotland a Staged Vocational Training Scheme exists for junior hospital pharmacists where a competency based portfolio of evidence is completed [121]. A similar community pharmacy vocational training scheme would be beneficial in terms of a career structure within community practice. This would be helpful for recruitment and retention within this sector of pharmacy.

It is envisaged that certain chronic disease states such as type 2 diabetes mellitus would form a specialty within a Scottish Community Pharmacists Vocational Training Scheme. Such a scheme would be helpful if and when revalidation of pharmacists becomes a reality [122]. At present there is no funding available from the Scottish Government for this scheme.

This thesis looked at developing a competency based CPD workbook for community pharmacists delivering pharmaceutical care to patients with type 2 diabetes mellitus. The use, comprehensiveness and acceptability of the workbook were investigated and future improvements suggested. This research model could act as a template for other disease states.

2.11 NHS Action Research Approach

Throughout this thesis action research was a chosen research approach. Action research is a reflective process of progressive problem solving led by individuals working with others in teams or as part of a "community of practice" to improve the way the community address issues and solve problems. Action research can also be undertaken by larger organisations or institutions, assisted or guided by professional researchers, with the aim of improving their strategies, practices, and knowledge of the environments within which they practise. In 2003 Chandler and Torbert described Action Research as:

'An evaluation and extension of existing knowledge, an appreciation for the past and an assessment of potential futures'[123]

Action research is not a single method of knowledge acquisition and change. It can be described as a family of methods distinguished by having several identifiable objectives and characteristics [124]. Undoubtedly the most important distinction and advantage of Action Research is the validity test of action. Conventional research may produce statistically significant results but in most cases leaves it to others to see whether the findings work in practice. The action research in this thesis contained a mixture of qualitative and quantitative methodologies.

2.12 Research Methodology

2.12.1 Quantitative Research

Quantitative research is the systematic scientific investigation of properties and phenomena and their relationships. Quantitative research is widely used in both the natural sciences and social sciences, from physics and biology to sociology and journalism. Quantitative methods are research methods dealing with anything that is numerically measurable.

The objective of quantitative research is to develop and employ mathematical models, theories and hypotheses applied to natural phenomena. The process of measurement is central to quantitative research because it provides the fundamental

connection between observation or what is actually happening and the mathematical expression of quantitative relationships.

The quantitative research methodologies used in this thesis are the Delphi Questionnaire (Chapter 5) and Support Model Questionnaires (Chapter 7) and the Pre-intervention and Post-intervention Questionnaires (Chapters 7 and 8).

2.12.2 Qualitative Research

Qualitative research is often exploratory and attempts to answer what or why something is happening. Qualitative methodology allows the researcher to interpret phenomena according to the context and individuals being studied. The purpose of qualitative research is to explore issues from the perspective of respondents. While it can grasp wholeness, complexities and relationships, it is context-dependent [125] .

The qualitative research methodologies used in this thesis are face-to-face and telephone one-to-one interviews (Chapter 4 and 8) and focus group interviews (Chapter 4 and 7).

2.12.3 Validity of Research Methods

The validity of chosen research methods is a very important concept in research. Agar argued that in qualitative studies, the traditional concepts of reliability and validity do not apply and should be re-interpreted as credibility and accuracy of the way in which the material is presented [126]. However qualitative methods are often criticised for being less rigorous than quantitative methods. A model has been proposed which enables the critical appraisal of qualitative research. This model uses four concepts which reinforces trustworthiness; truth-value, applicability, consistency and neutrality [127]. Table 2.1 shows the Guba Table[127] of validity methods for qualitative and quantitative research.

Table 2.1 Validity Methods for Quantitative and Qualitative Research

Criteria	Quantitative Research	Qualitative Research
Truth-value	Internal Validity	Credibility
Applicability	External Validity	Fittingness
Consistency	Reliability	Auditability
Neutrality	Objectivity	Confirmability

2.12.3.1 Truth-value for Quantitative Research- Internal validity

The validity of the data refers to the extent to which they are an accurate reflection of what is happening. The validity of an instrument such as a questionnaire is the extent to which it actually measures what it is designed to measure. There are different types of validity. Face validity is generally the first test of validity of an instrument. This type of validity seeks to confirm that the range and form of items in the questionnaire is suitable for the purpose and the type of respondent. It is therefore a test to reveal threats to validity such as the identification of items in a questionnaire that respondents may be unable or reluctant to answer and questions that may be ambiguous or misinterpreted. To establish criterion validity, the results are compared with established methods of collecting the same information. Content validity is concerned with the extent to which an instrument is suitably comprehensive and covers all issues relevant to the study aim.

2.12.3.2 Applicability for Quantitative Research-External Validity

In quantitative research, the generalisability of findings is concerned with the extent to which the survey findings can be applied to individuals beyond the sample.

2.12.3.3 Consistency for Quantitative Research-Reliability

In quantitative research, reliability is concerned with repeatability or reproducibility of measurements.

2.12.3.4 Neutrality for Quantitative Research-Objectivity

In quantitative research, neutrality is the outcome of establishing internal and external validity and reliability. It is based on a relationship between the researcher and subjects that allows no bias. Protocol, theory, and instrumentation controls this relationship.

2.12.3.5 Truth-value for Qualitative Research-Credibility

This value is used in mathematics; however in the research world, the truth–value informs the reader that the researcher has a basis of confidence in the findings. Qualitative research relies on truth-value as an expression of the experience of the subjects under investigation. The data are therefore a product of the subject and the truth-value requires that the researcher be able to present the results in a credible way. This 'credibility' occurs when the participant involved in the study reads the results and immediately recognises the lived experiences to be their own. Truth-value may be compared to internal validity in quantitative research (Table 2.1). Methods that strengthen the truth-value include adequate field and time sampling, the use of a reflective journal, using several data collection groups such as focus groups and questionnaires to form a convergence of multiple perspectives (described as triangulation), re-examination of the analysed data by research participants (described as member checking) [124] or by peers, and ensuring that the researcher's reasoning follows established criteria so that there are no unexplained inconsistencies between the data and conclusions (structural coherence).

2.12.3.6 Applicability for Qualitative Research-Fittingness

Applicability in research describes whether the research can be used in a context other than its initial context. This can also be described as 'transferability' or 'fittingness' in quantitative research. Fittingness occurs when findings "fit" into contexts outside the study situation and when the reader views the findings as meaningful and applicable in terms of their own experience.

2.12.3.7 Consistency for Qualitative Research-Auditability

Consistency of qualitative research could also be described as 'dependability' or 'auditability'. As qualitative research is focused on observations, the consistency of research findings cannot rely on repeatable experiences. Consistency is therefore when another researcher can clearly follow the 'decision trail' used by the investigator. Furthermore consistency implies that another researcher could arrive at comparable or the same but not contradictory conclusions given the researcher's data, perspective, and situation.

2.12.3.8 Neutrality for Qualitative Research-Confirmability

Neutrality or freedom from bias is pivotal to validity in qualitative research. This type of research values subjectivity rather than objectivity in two ways: the subjective involvement of investigators with their subjects and the emphasis on subjective reality or the meanings subjects give to and derive from their life experiences. Engagement with, rather than detachment from, the things to be known is sought in the interests of truth. Qualitative researchers acknowledge the complexities of this kind of involvement with subjects but view the benefits of it as far outweighing the liabilities [128]. Methods to maintain neutrality include the use of a reflective diary, continual referral back to raw data and involving more than the principal researcher in the analysis.

Taking this validity methodology into account, a scheme of research data analysis and verification is displayed in the methods section of each piece of work throughout the thesis.

2.13 Summary Overview of the Research

In this final section, the three main strands of the literature review, namely the models of pharmaceutical care for patients with type 2 diabetes mellitus, pharmaceutical care activities in delivering care to patients with type 2 diabetes mellitus and provision of continuing professional development and the views and attitude of practitioners to CPD are drawn together.

The research covered by the thesis naturally falls into three main research themes, each of which are presented within the thesis as a research focus. These are:-

1. Multidisciplinary care for the patient with type 2 diabetes mellitus in primary care

2. The community pharmacists' role in the care of the patient with type 2 diabetes mellitus in primary care

3. A community pharmacy CPD support model for providing care to the patient with type 2 diabetes mellitus in primary care

2.13.1 Multidisciplinary Care for the Patient with Type 2 Diabetes Mellitus in Primary Care

Before initiating this research it was necessary to establish the ideal multidisciplinary model of care for the patient with type 2 diabetes in primary care in Scotland. This area traditionally was delivered in a shared care manner by primary and secondary care teams, however by 2003, the care had shifted almost entirely to the primary care sector. To establish a Model of Care, key members of the diabetes team needed to be consulted on what items of care were necessary to meet the patients' needs.

Whilst the shift to primary care has the potential to improve care to the patients with diabetes, pharmacists in the UK generally at the time of this thesis, had played a limited role in supporting patients and in the primary care multidisciplinary diabetes team. Consequently there was little published data to illustrate such a Model of Care for patients with this disease type in Scotland. This Research Focus explored the potential roles that community pharmacists could play in care delivery.

2.13.2 The Community Pharmacists' Role in the Care of the Patient with Type 2 Diabetes Mellitus in Primary Care

Whilst from Research Focus One, the model of multidisciplinary care for the patient with type 2 diabetes mellitus has been explored, what the community pharmacists believe they contribute to this care has not been agreed. When extending care in new areas it is important that the healthcare professional involved is included. Community pharmacists in this piece of research were invited to show their level of agreement with care activity statements in order that the degree of consensus be reached.

At this stage community pharmacists were also asked if they felt they required any further training or CPD support in order to be able to deliver these new services.

2.13.3 A Community Pharmacy CPD Support Model for Providing Care to the Patient with Type 2 Diabetes Mellitus in Primary Care

After establishing if CPD support was required for the community pharmacist to deliver pharmaceutical care to the patient with type 2 diabetes mellitus. This final section of research, linked multiprofessional agreed competencies with analysis of personal learning needs in the form of a workbook for self-identification of CPD needs in practice. Using this evidence-led approach, training needs were identified and action plans developed to improve performance; hence their contribution to the implementation of clinical governance within pharmaceutical care was defined.

This CPD workbook was then one element of a CPD Support Model offered to community pharmacists. This support model was evaluated in terms of the changes in pharmacists' views and attitudes to CPD.

The research questions for each of the three main research areas is explored in Chapter 3.

Chapter 3:

General Overview of the Research

3.1 Introduction

The research centred on the need for investigation into the community pharmacists provision of pharmaceutical care to the patient with type 2 diabetes in primary care in Scotland. This research aimed to detail the pharmaceutical care activities available from the community pharmacist and to link competencies to these activities. These competencies through clinical governance must also be supported by continuing professional development and appropriate CPD tools to facilitate this process.

3.2 Justification for Research

The potential and planned roles of the community pharmacist in Scotland have changed enormously due to the gradual introduction of the new Community Pharmacy Contract and the advent of supplementary and independent prescribing. The driver of clinical governance in the NHS requires these new opportunities within primary care to result in a high quality of pharmaceutical care being delivered to the patient. Community pharmacists must develop themselves and must be trained in these new roles; the NHS and the professional body must support that development. Agreed competencies need to be used as a minimum standard for these practitioners to allow them to identify weaknesses in their practice. Opportunities must also be available to allow those weaknesses in practice to be addressed. If no method of addressing weaknesses is available, this should be signalled to the appropriate authorities. The advent of mandatory CPD within Scotland will soon be an added strain on busy practitioners. Practice-based CPD tools which allow them to identify and document CPD while delivering care will be essential.

This research aims to establish such a model of CPD support from basic principles; establishing views of the multidisciplinary team, receiving consensus of community pharmacists on behavioural statements, designing suitable CPD tools and monitoring and evaluating the comprehensiveness and usefulness of the CPD tools in practice. This research was carried out in one disease state, diabetes mellitus type 2, however the principles and methodology provide a template for the development of care in other disease states.

3.3 Thesis Aims and Objectives

The themes developed in the thesis can be considered to form a circle of research activity in which work was conducted to explore areas of interest involving the main stakeholders involved in the management and care of patients with type 2 diabetes, namely those in the diabetes team. Reflection on the approach and results of one study was in turn exploited in the development of the next research theme.

Although there are three main research areas within the thesis, there are five primary objectives. Each objective has been assigned a chapter within the thesis (Chapters 4-8). Primary objectives for the research are detailed in Table 3.1.

Table 3.1 Primary Objectives for the Thesis

- To develop a multidisciplinary model of care for the patient with type 2 diabetes mellitus in primary care in Scotland
- To establish agreement on community pharmacist pharmaceutical care activities and determine if training is required to deliver this care
- To link the pharmaceutical care activities with agreed national competencies and develop a competency-based system for self identification of CPD needs in delivering pharmaceutical care to the patient with diabetes mellitus type 2
- To develop and evaluate a CPD Model of Support for community pharmacists providing pharmaceutical care to patients with type 2 diabetes mellitus
- To monitor the use of a CPD Model of Support for community pharmacists providing pharmaceutical care to the patients with type 2 diabetes mellitus in the primary care setting

3.4 Research Focus One- Aims and Objectives

3.4.1 Chapter 4- A Multi-disciplinary Model of Pharmaceutical Care for the Primary Care Patient with Type 2 Diabetes Mellitus

The aim of this chapter was to determine the views of members of the multi-disciplinary team on a proposed model of pharmaceutical care for the patient with type 2 diabetes mellitus.

From this primary aim, a number of secondary objectives emerged:

- To establish the opinion of members of the team on points missing, on points for correction or points needing greater emphasis in the model of care
- To establish the cycle order in which these services should be delivered to the patients
- To establish the perceived facilitating factors and barriers to the community pharmacy delivering services to patients with type 2 diabetes mellitus

3.5 Research Focus Two- Aims and Objectives

3.5.1 Chapter 5- Achieving Consensus on Community Pharmacist Activities in the Pharmaceutical Care of the Patient with Type 2 Diabetes Mellitus and Training and Support to Aid Delivery

The aim of this chapter was to achieve consensus on community pharmacy activities required to provide structured pharmaceutical care to the patient with type 2 diabetes mellitus and to determine any training and/or support required to deliver this service.

From this primary aim, a number of secondary objectives emerged, which were to:

- Develop a model of consensus agreed pharmaceutical care activities
- Identify potential types of training/support (if required) for community pharmacists to deliver this care to patients

3.6 Research Focus Three-Aims and Objectives

3.6.1 Chapter 6- Development and Piloting of a Competency Based CPD Workbook

The aim of this chapter was to develop a competency-based system for self identification of CPD needs when delivering comprehensive pharmaceutical care to the patient with type 2 diabetes mellitus.

From this primary aim, a number of secondary objectives emerged:-

- To draft a competency-based framework for community pharmacists providing pharmaceutical care to patients with type 2 diabetes mellitus using consensus agreed statements as activities
- To develop a Continuing Professional Development Workbook from this framework
- To identify areas of strengths and weaknesses in the CPD workbook
- To investigate the acceptability and the comprehensiveness of the Competency based CPD workbook via pilot group work

3.6.2 Chapter 7- Designing and Evaluating the CPD Model of Support in Terms of Pharmacists' Views and Attitudes Towards CPD

The aim of the research was to develop and evaluate a CPD Model of Support for community pharmacists providing pharmaceutical care to patients with type 2 diabetes mellitus.

From this primary aim, a number of secondary objectives emerged:

- To establish CPD support packages used in previous research
- To offer a variety of CPD options to practitioners delivering care
- To collate motivational and attitudinal data in both the control and active groups before and after the study period
- To compare the results obtained with previous work with community pharmacists in Scotland

3.6.3 Chapter 8- Monitoring the Use of the CPD Support Model for Providing Pharmaceutical Care to the Patient with Type 2 Diabetes Mellitus in Primary Care

This section of the thesis was the process element of the intervention study explained in Chapter 7. The primary aim of this part of the study was to monitor the use of a CPD Model of Support for community pharmacists providing pharmaceutical care to the patients with type 2 diabetes mellitus in the primary care setting.

From this primary aim, a number of secondary objectives emerged:

- To use the CPD workbook as a competency-based system for self identification of CPD needs in delivering a comprehensive model scheme to the patient with type 2 diabetes mellitus
- To establish the diabetes competency clusters and behavioural statements targeted as a CPD need by the practitioners during the 12 month period
- To use a structured questionnaire to explain the prioritisation at 6 months by study subjects of competency clusters, competencies and behavioural statements with a CPD need identified

3.7 The Main Research Areas

3.7.1 Development of a Multidisciplinary Model of Care for the Patient with Type 2 Diabetes Mellitus in Primary Care

This first step into the research area was qualitative and allowed the researcher to review the literature and propose a Model of Care for the patient with type 2 diabetes mellitus. This model was then used as a starting block for discussion with other members of the diabetes team. This work also highlighted potential barriers to community-pharmacist-led pharmaceutical care and areas of opportunity. From this initial piece of work, a new Model of Care was established.

3.7.2 Consensus of Agreement on Pharmaceutical Care Activities Delivered by Community Pharmacists

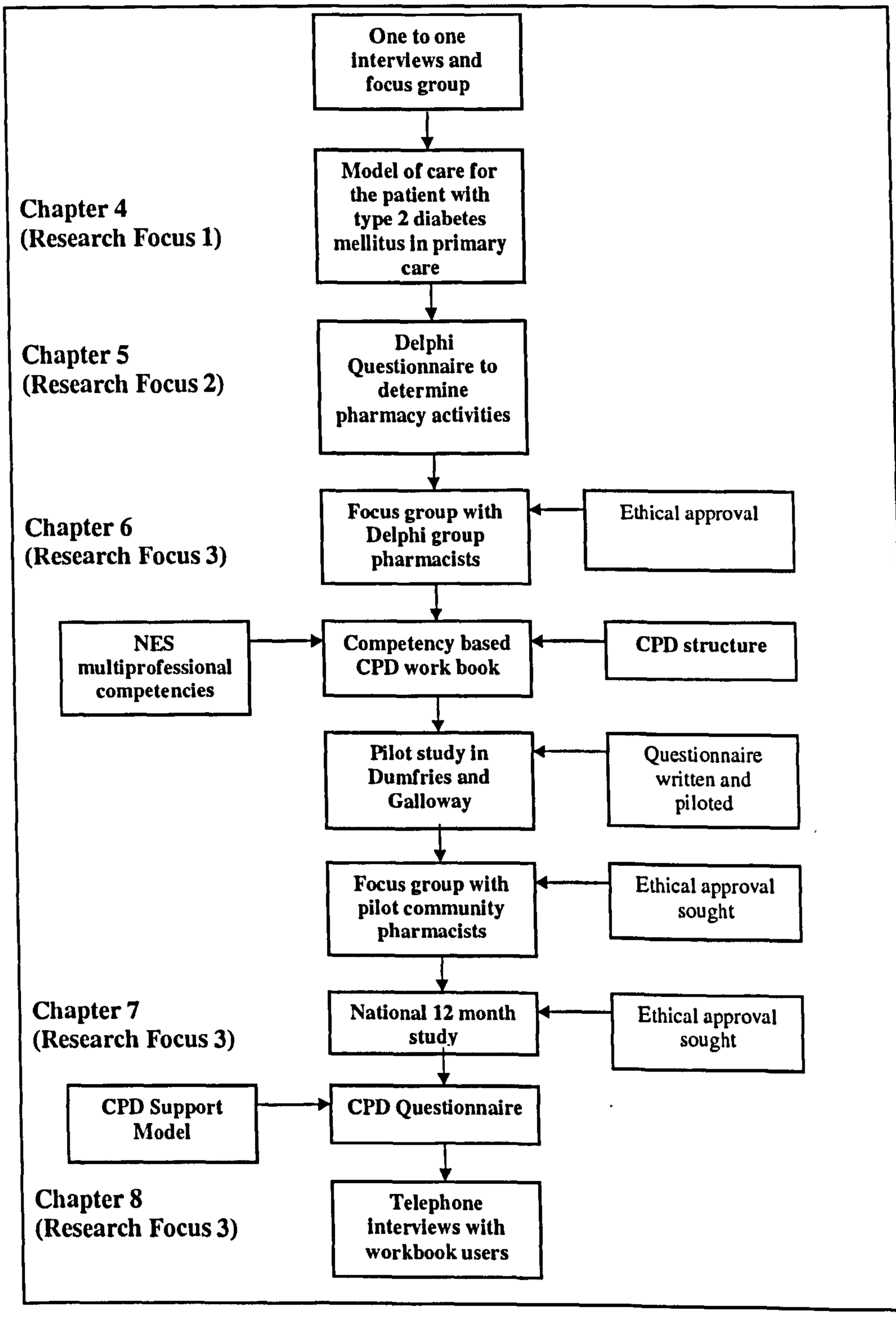
The Second Research Focus in the thesis builds on the first and allows detailing of the Model of Care. This research involved the Delphi technique to establish consensus on the activities offered to patients with type 2 diabetes mellitus from the community pharmacy.

3.7.3 A Community Pharmacy CPD Support Model for Providing Care to the Patient with Type 2 Diabetes Mellitus in Primary Care

The Third Research Focus of this thesis again builds on Focus One and Two. This research involves the development of a Competency-based CPD workbook using the consensus-agreed activities and linking these to multiprofessional agreed competencies in diabetes care. This workbook then became an element of a developed CPD Support Model for community pharmacists providing pharmaceutical care to patients with type 2 diabetes mellitus. The use of this Model was monitored and evaluated using a pre and post questionnaire to measure the participants' views and attitudes to CPD.

Figure 3.1 illustrates the sections of the thesis diagrammatically.

Figure 3.1: Thesis Overview



Chapter 9 will highlight the overall and chapter-specific limitations of the thesis.

3.8 Thesis Conclusions

Community pharmacists in Scotland are extending their role within a Strategy for Pharmaceutical Care in Scotland and a new community pharmacist contract. CPD is becoming formalised and is a necessary support to the development of new services. This project used a research approach in diabetes, which may offer a template for application to the management of other chronic diseases.

Chapter 4:

A Multi-disciplinary Model of Pharmaceutical Care for the Primary Care Patient

Research Focus 1:

Multidisciplinary Care for the Patient with Type 2 Diabetes Mellitus in Primary Care

4.1 Introduction

4.1.1 Background

In the last decade care for the patient with type 2 diabetes mellitus has shifted from secondary care to predominately a primary care managed chronic disease. With this shift in emphasis of care, primary care diabetes teams are emerging. Although diabetes is not one of the formal clinical priorities of NHS Scotland, in the Scottish policy document, Our National Health (2000) [129], the Scottish Executive has signalled its commitment to raising standards of diabetes care in Scotland [33]. This commitment included the publication of a Scottish Diabetes Framework to:

' draw together existing guidance and best practice'.

The framework document states:

' An effective diabetes service requires all staff to be trained, competent and skilled in their components of diabetes care and able to work with other members of the multidisciplinary team needed to provide an integrated service to people with diabetes' [34].

To date there is little published current literature on a pharmaceutical care model for the patient with type 2 diabetes mellitus in primary care. One Scottish pilot study evaluated the feasibility and the impact of a structured approach for community pharmacist input as a member of the multidisciplinary team [40]. In this, Wermeille et al demonstrated that community pharmacists were effective and well accepted by GPs and patients. Mostly studies have been carried out in the USA[58-64] and have demonstrated improvements in patient knowledge, glycaemic control and compliance after the introduction of new pharmacy services. Questions remain however about translating those findings to practice in other European countries with different healthcare systems and to community pharmacy in particular.

In Scotland during 2009/10, the further inclusion of the community pharmacist in the management of diabetes is planned to be extended to meet the opportunities provided by a new reimbursement NHS contract with community pharmacies. Models of pharmaceutical care in community pharmacy were being developed in Scotland

during this research and a pharmaceutical care model scheme (PCMS) initiative for patients with type 2 diabetes mellitus was planned. This new contract will expect pharmacists to provide chronic medication services to their patients within a changing model for chronic disease management that will provide opportunities for extended prescribing roles [130].

However as stated in the Scottish Diabetes Framework document, care for the patient with type 2 diabetes mellitus must be provided in a team-based manner [33], and community pharmacists cannot and should not try to provide care independently. On the need for the development of improved systems for chronic disease management, Wagner states that:

"the delivery of care in chronic disease management by a coordinated team of individuals has always been assumed to be a good thing. Patients reap the benefits of more eyes and ears, the insights of different bodies of knowledge, and a wider range of skills" [131]

The publication of the report 'A National Framework for Service Change in the NHS in Scotland' also supports the advantages of this team concept [36]. For the full breadth of the vision of this report to be realised and in order to meet the recommendation that the management of chronic long term conditions should take place at home or in local communities, the communication links between the professional workforce in Scotland need to develop.

4.1.2 Justification for Research

This research aimed to build on previous work, seeking opinions from key members of the primary care multidisciplinary team with a particular interest in diabetes care. The aims were to generate validation of a Model of Pharmaceutical Care for the patient with type 2 diabetes mellitus in Scottish primary care, and to identify the prospects for services by community pharmacists within the model.

The development of a detailed model offers community pharmacists a means of seeing their contribution to care within a larger context and will enable the matching

of learning opportunities to meet defined educational needs that are linked to particular clinical functions. The model is intended to provide a step towards designing CPD tools and systems to help community pharmacists perform newly defined roles within the healthcare team.

4.1.3 Study Aims and Objectives

The aim of the research was to determine the views of members of the multi-disciplinary team on a proposed model of pharmaceutical care for the patient with type 2 diabetes mellitus.

From this primary aim, a number of objectives emerged:

- To develop a proposed Model of Care for primary care
- To establish the opinion of members of the team on points missing, on points for correction or points needing greater emphasis in the model
- To establish the cycle order in which these services should be delivered to the patients
- To establish the perceived facilitating factors and barriers to the community pharmacy delivering services to patients with type 2 diabetes mellitus

4.2 Methods

4.2.1 Study Design

One to one interviews and group interviews using a semi-structured questionnaire approach, of the views held by 19 healthcare practitioners.

4.2.2 Subjects and Settings

In 2003-2004, invitations were sent to five hospital consultant medical diabetologists, five general medical practitioners (GPs) with an interest in diabetes care and five diabetic specialist nurse practitioners from primary and secondary care. No invited interviewee refused. Interviewees were selected from ten of a possible twelve Health Boards in Scotland to avoid a perspective distorted exclusively towards urban or rural settings. The remaining two Health Boards did not wish to be involved in the study.

The study population was characterised in terms of number of years qualified, whether the practitioner worked in primary or secondary care, whether they worked as an independent contractor or as part of a pharmacy multiple (≥ 5 pharmacy premises) and geographical area.

This research was carried out prior to changes in ethical regulations in the UK and on the basis of advice that ethical approval at that time (April 2004) was not required.

4.2.3 Study Procedure

From a systematic literature search carried out using the combined key word search "diabetes and pharmacist intervention", "diabetes and pharmacy practice" and "diabetes and model of pharmaceutical care" in the Embase and MEDLINE databases from 1994 to March 2004. The search yielded 31 published papers of which 19 were useful [35,45,58-74]. Using this published work, a care model to represent multidisciplinary care of the patient with type 2 diabetes mellitus was drafted by the research group (Figure 4.1) initially as a generic model for chronic diseases. The research group consisted of the Professor of Pharmaceutical Care, three Research Fellows and an Honorary Lecturer with special interest in diabetes mellitus.

The model was further defined in a linked table (Table 4.1) in an attempt to represent the overall care of the patient in the primary healthcare chronic disease management setting.

Figure 4.1: A Process Map of the Treatment Cycle, Disease Management in Primary care

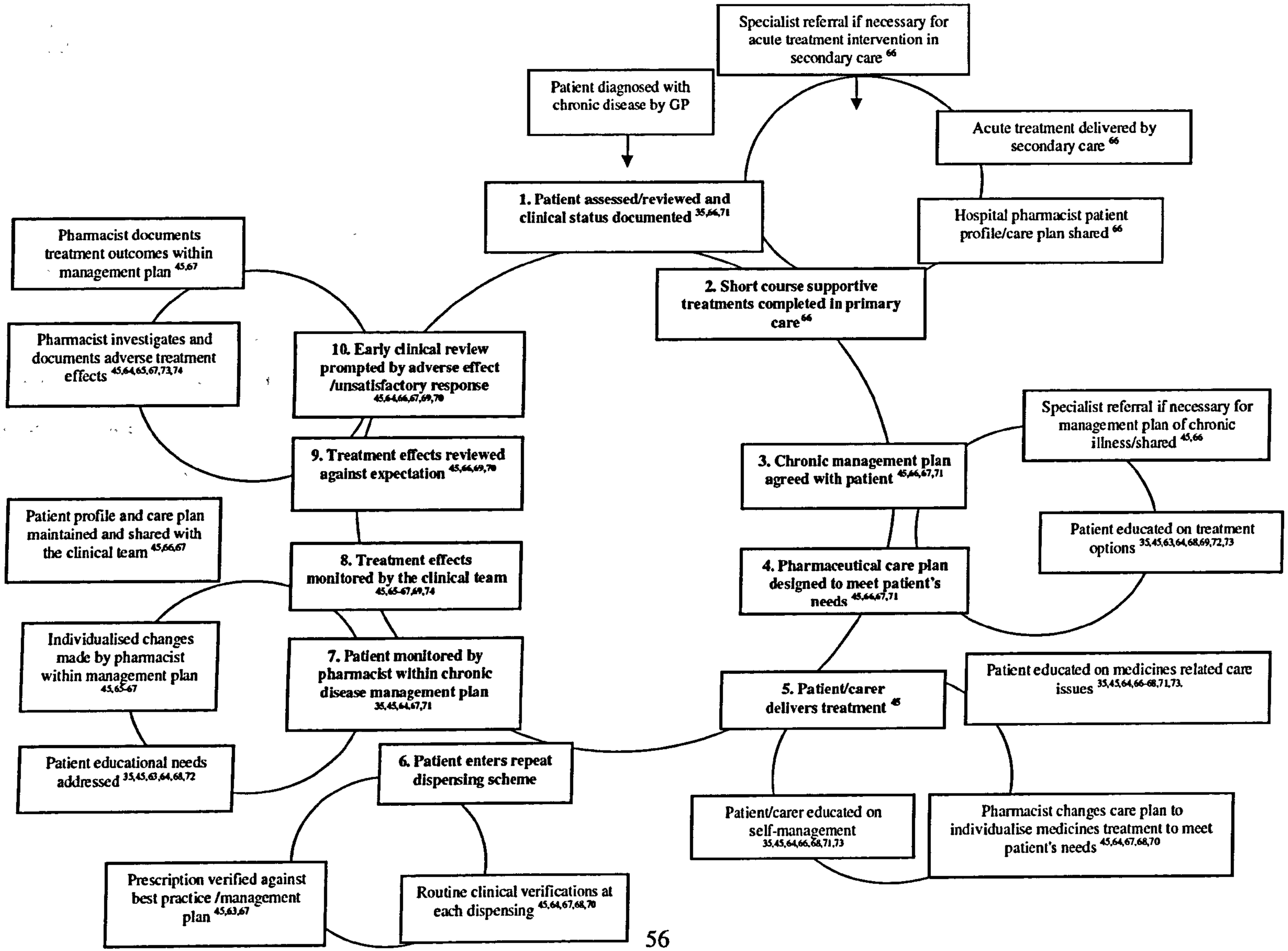


Table 4.1:Tabulation of definitions of the processes occurring in the model of care for diabetes mellitus in the treatment cycle

	Stage in Treatment cycle	Definition	Activity
1	**Patient assessed/ Reviewed and clinical status documented**	Specialist referral if necessary for acute treatment intervention in secondary care [66]	Full clinical assessment (including clinical laboratory tests, blood glucose, HbA1c, ketones, blood pressure at baseline) at physician or nurse led clinic [66] Glucagon or intravenous glucose infusion prescribed for severe hypoglycaemia. Soluble insulin regimen initiated for acute blood glucose control [66]. Treatment plan initiated with diet and/or oral antidiabetic agents [66] Individualised agreed targets set by patient and medical team. A pharmaceutical care plan given to the patient and transferred to GP and a nominated community pharmacist [66]
2	**Short course supportive treatments completed in primary care**	Acute treatment delivered by secondary care [66] Hospital pharmacist profile/care plan shared [66]	Examples include antimicobials, analgesics, and short-term changes in cardiovascular medication [65,66] The individualised targets that have been agreed with the patient and details of course lengths set by the medical team are transferred via a pharmaceutical care plan to GP and a nominated community pharmacist [66]
3	**Chronic management plan agreed with patient**	Specialist referral if necessary for management plan of chronic illness/shared care [45,66]	Patient attends hospital diabetic outpatient dept or GP clinic for initiation of multidisciplinary care and antidiabetic medication [66] Sulphonylureas as first line Metformin is drug of first choice in obese patients, a glitazone as a second line option Plans for prevention/management of complications (cardiovascular disease [65], neuropathy, foot-care, diabetic nephropathy and diabetes-induced visual impairment) [66]

Table 4.1: Tabulation of definitions of the processes occurring in the model of care for diabetes mellitus in the treatment cycle

	Stage in Treatment cycle	Definition	Activity
4.	**Pharmaceutical care plan designed to meet patient's needs**	Patient educated on treatment options [45,66,67,71]	Patient given dietary advice and/or patient educated on individualised treatment regimen. Patient given options and educated/trained on self-monitoring of glycaemic control [35,66,72]
		Patient profile/care plan communicated to GP/community pharmacist	Regimen and advice on monitoring and agreed individualised targets documented in a care plan and given to the patient [35,72]. Care plan transferred to GP and a nominated community pharmacist
5	**Patient/carer delivers treatment**	Patient educated on medicines-related care issues [35,45,64,66-68,71,72]	Education on treatment regimen, use of diabetes diary/card, effects and treatment of hypoglycaemia, contact telephone details [35,66,67,70,71] Education on self-monitoring of glycaemic control [66]. Discussion of individualised agreed targets [66,67]. Monitoring of co-prescribed medicines and OTC medicines purchased
		Pharmacist changes care plan to individualise medicines treatment to meet patients needs [45,64,67,68,70]	Adjustments to pharmaceutical care plan made with reference to agreed management plan[67]
		Patient/carer educated on self-management [35,45,63,64,66,68,71]	Education on how and when to adjust treatment/dietary regimen if necessary. What to do if the patient forgets to take their medicine. What to do if the patient becomes unwell. How to manage diabetes while travelling or whilst participating in exercise/sport. How to limit diabetic tissue damage-stop smoking, exercise, weight control. Ensure patient and carers know what to do in the event of a hypoglycaemic event [35,63,66,68,70,71]
6	**Patient enters repeat dispensing scheme**	Routine clinical verifications at each dispensing [45,63,64,67,70]	Pharmacist conducts opportunistic checks of patient-held records and pharmacy patient medication records at each dispensing Pharmacist conducts opportunistic check of individualised agreed targets set with the patient [63]
		Prescription verified against best practice/management plan [45,63,67]	Prescription checked for adherence to disease management guidelines and patient's individualised management plan [45,63,64,67]
		Patient educational needs assessed [35,45,63,68,72]	

Table 4.1: Tabulation of definitions of the processes occurring in the model of care for diabetes mellitus in the treatment cycle

	Stage in Treatment cycle	Definition	Activity
7	**Patient monitored by pharmacist within chronic disease management plan**	Individualised changes made by pharmacist within a management plan [45,65,66,72]	
8	**Treatment effects monitored by clinical team**	Patient profile and care plan maintained and shared with the clinical team [45,66,67]	Patient's self-management records and self-reporting of symptoms routinely monitored [66]
9	**Treatment effects reviewed against expectations**	Pharmacist investigates and documents adverse treatment effects [45,64,67,73,74]	Periods of hypoglycaemia should be documented [66,67] Clinical laboratory tests monitored for change eg anaemia, acidosis Metformin- Any lack of appetite, nausea, vomiting, diarrhoea, indigestion should be documented. Clinical laboratory tests monitored for change – anaemia, lactic acidosis Sulphonylureas- Any skin rashes and gastrointestinal disturbances should be documented. Clinical laboratory tests monitored for change - liver damage Acarbose- Skin rashes or gastrointestinal disturbances should be documented Thiazolidinediones- Gastrointestinal disturbances, visual disturbances, joint aching or dizziness should be documented Nateglinide/Repaglinide- Gastrointestinal disturbances should be documented
10	**Early clinical review prompted by adverse effect or unsatisfactory response**	Pharmacist documents treatment outcomes within management plan [45,67]	Confirmation of satisfactory achievement sought and documented [64,69,70] Failure to reach targets addressed by referral for clinical review [66,67]

4.2.4 Data Handling and Analysis

Figure 4.1 and Table 4.1 were given to the interviewees and focus group participants four days prior to the interview process taking place and reference was made to them during the interview to structure and stimulate discussion. The information in the model and table were used to design an interview schedule. Ten of the interviews were conducted by telephone, four professionals had face-to-face interviews, and one GP submitted written comments to the interview schedule, due to being unavailable for telephone interview. The researcher offered whatever method was most convenient to the interviewee in order to collect data. The views of the four community pharmacists were investigated using the same interview schedule but a group interview was deployed to allow the community pharmacists' perspectives on their potential new roles to emerge through debate within the group. Although this approach would have been useful with all the separate professional groups, this proved impossible to arrange due to the geographical challenges and time constraints of these busy practitioners. Three researchers were involved with this qualitative work; two final year pharmacy students initially carried out three face to face interviews (GP01, GP02 and GP05) and helped facilitate the focus group under the author's supervision. The author carried out the remainder of the study work.

Neutrality or freedom from bias is pivotal to validity in qualitative research. Researchers' experience, background and perspective will influence the data collection and analysis. A short biographical detail is thus presented for each of the researchers involved in the study.

Lead Researcher and Thesis Author (AP)-AP had been registered as a pharmacist for 14 years at the time of this research. She had spent 11 years in hospital pharmacy rotating through many clinical specialties and reaching the role of Clinical Pharmacy Manager at a large teaching hospital. She then left hospital pharmacy and became a research fellow at the University of Strathclyde for two years prior to beginning a PhD. During her time working as a research fellow, AP had assisted and participated

in many one-to-one interviews and focus groups. This was the first piece of qualitative research she had done independently.

This piece of qualitative research was on pharmaceutical care in primary care. Although AP had undergone an MSc in clinical pharmacy, all her working experience had taken place within the hospital sector.

Researchers 2 and 3(TA and PS) - Two Danish final year students carried out some of the qualitative research in this piece of research. Each was in the fourth year of their pharmacy course and had very limited experience of the clinical environment and of the Scottish healthcare system.

All fourteen interviews and the focus group were tape-recorded and transcribed (Appendix 4.2, 4.4, 4.6-4.17), except for the interview with GP02, where the taping failed and written notes were made (Appendix 4.3) and GP04 who submitted written notes (Appendix 4.5). The content of each was analysed. All transcripts/notes were confirmed as accurate by the interviewees themselves. Additional comments made by two interviewees after their receipt of the transcripts/notes were included in the findings. These are highlighted in the transcriptions in Appendix 4.7 (D01) and Appendix 4.16 (DN05). These however were minor comments and overall did not affect the interpretation of data.

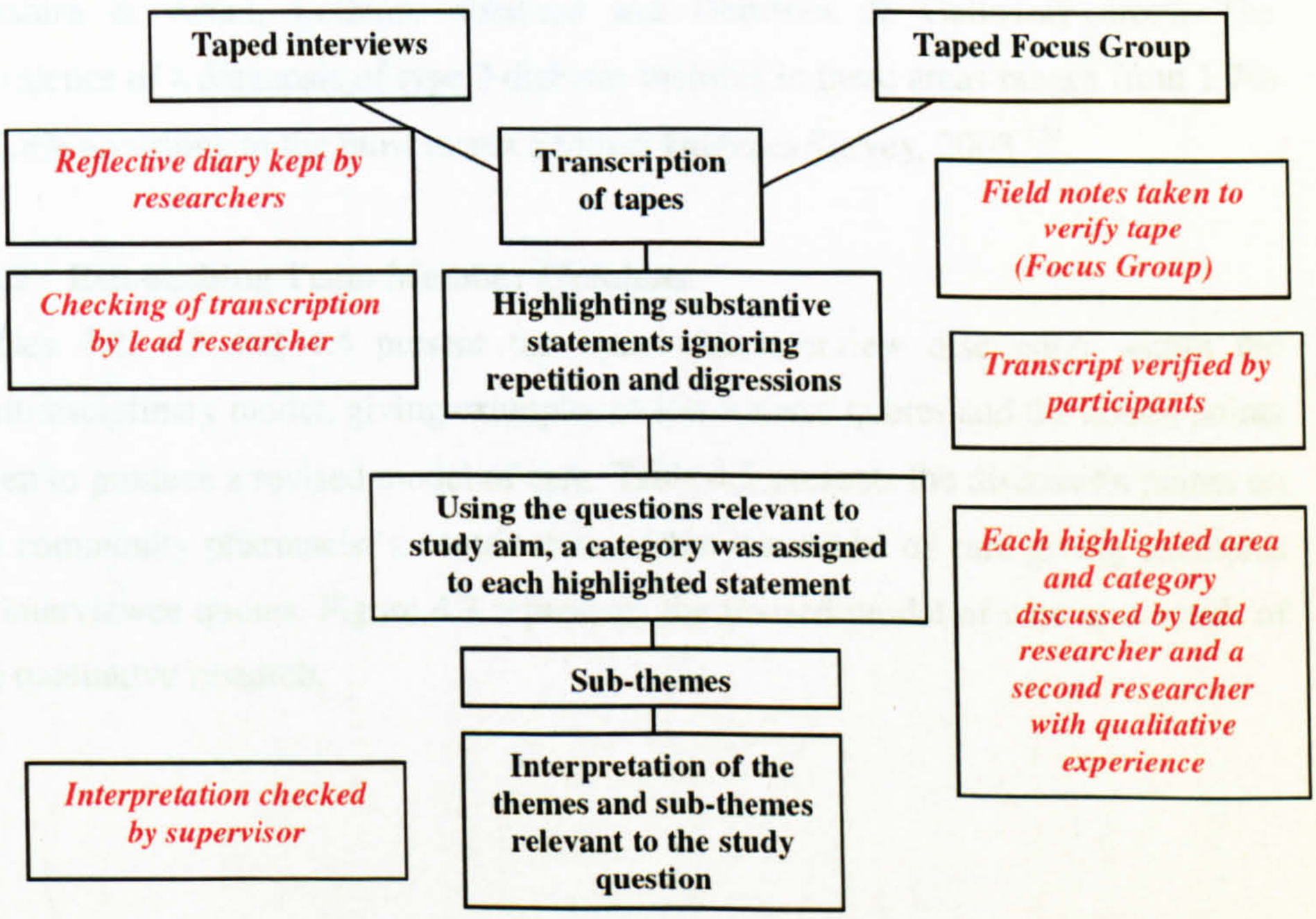
Content analysis of all transcriptions was performed and these were subsequently coded using a framework approach [132] and all coded data were discussed with a separate independent researcher (Researcher 4).

Researcher 4 (HH) - Researcher 4 had undertaken a PhD in qualitative research methodology and was working in the healthcare setting.

A reflective diary was maintained by the researchers to record problems areas in the process map that required to be clarified as the interviews proceeded or reflections on the qualitative methods used (Appendix 4.18).

The procedure for data analysis and verification steps throughout this research is illustrated in Figure 4.2.

Figure 4.2: Scheme of qualitative research data analysis and verification stages



The interviews and focus groups were themed into three subsections reflected by the main sections of the interview schedule namely:

- the structure of the model
- the items missing or needing greater emphasis in the model
- points for correction within the model

A revised Model of Care was produced when all the data had been collected and transcribed. Discussion points on the community pharmacist's contribution were collated and tabulated.

4.3 Results

4.3.1 Study Population Characteristics

There were 19 clinicians involved in the study; five diabetic specialist nurses (number of years qualified range 18-32 years), five general practitioners (number of years qualified range 15-29 years), five diabetologists (number of years qualified range 15-26 years). Four community pharmacists were involved in the focus group (number of years qualified range 9-24 years). The participants for the study were from Greater Glasgow, Argyll & Clyde, Lanarkshire, Tayside, Grampian, Highland, Ayrshire & Arran, Lothian, Shetland and Dumfries & Galloway areas. The prevalence of a diagnosis of type 2 diabetes mellitus in these areas ranges from 1.7% to 3.8% according to the most recent Scottish Diabetes Survey, 2003 [133].

4.3.2 Establishing Team Member Opinions

Tables 4.2, 4.3 and 4.4 present the issues for interview discussion within the multidisciplinary model, giving examples of interviewee quotes and the action points taken to produce a revised model of care. Table 4.5 presents the discussion points on the community pharmacist's contribution within the model of care giving examples of interviewee quotes. Figure 4.3 represents the revised model of care as a result of the qualitative research.

4.3.3 Data Resulting in Revision of the Model of Care

Table 4.2: Discussion points on the structure of the model of care and action points taken to produce revised model

Discussion point	Examples of Interviewee Quotes	Action taken to produce revised model
Simplifying the model	*'So what we're saying is let's have a plan, the patient goes away and does it, with a whole lot of education, is then monitored by clinician, who may change the plan'* [GP03] *'You are talking about the cycle of what the patient is going to do. They are going to be diagnosed and things explained to them, the treatment advised, reviewed and then see what is happening to them.'*[DN05]	**Introduced treatment plan, administration, monitoring, confirmation /review and assessment categories**
Direction of the model	*'Which way does it go? Is it clockwise?'*[D03] *'What might be helpful actually is if you put arrowheads in. It is not immediately apparent which way these cycles go. The logical thing would be to assume that they go clockwise, but arrowheads might be useful to indicate to the reader. (where to go) Because all of the cycles might not go the same way.'* [D04]	**Arrowheads introduced into simplified model**
The patients' pharmaceutical and chronic management plan	*'Patients enter repeat dispensing scheme. Well of course they do but that's very much a component of a management plan. They also enter a repeat eye check system or a repeat chiropodist system. Or a repeat attendance at GP or nurse system. You see what I mean there's a whole lot of things going on as part of the chronic management.'*[GP03] *'Would it not be better through all this just putting shared care plan here.'* [CP03] *'Would you get your chronic disease management plan agreed with the patient, and then pharmaceutical care plan, how would that differ?'*[DN04]	**Pharmaceutical care plan changed to 'chronic management plan'**
Naming of professional involved	*'I mean this is actually a treatment cycle for people with diabetes, it is irrelevant who actually delivers it.'*[D02] *'I guess who does what depends on local circumstances. You know, what's available.'' And it seems to me that if they who I call clinicians are trained to do the job, it doesn't really matter what they are called. If they are called a nurse, if they are called a pharmacist it doesn't really matter. What does matter is that they do a job of work professionally, that they evaluate that work'*[GP03]	**All professional titles replaced by 'clinicians'**

Key: GP-general practitioner, D-diabetologist, CP-community pharmacist, DN-diabetes specialist nurse

Table 4.3: Discussion points on items missing or needing greater emphasis in the model of care and action points taken to produce revised model

Discussion point	Examples of Interviewee Quotes	Action taken to produce revised model
Compliance	*'Nowhere do I see compliance. Compliance is a bigger issue than all this stuff'* [D02] *'It (Compliance) is really important'* [DN02] *'And that is where community pharmacists can come in, because if they are getting a prescription, they can check the compliance of what is going on.'* [DN03]	Added to the monitoring phase
Agreed protocols	*'I think it would be very helpful for people, all of us, all in this multidisciplinary team and if that's going to include the pharmacists that's great, to agree a protocol so we would agree a sort of prescribing cascade that we would use, the sort of insulin regime we would use, sort of gadgets.'* [GP03] *'I think we need some agreed protocols with some standards of which we can then evaluate this.'* [DN04]	Added into assessment phase
Clinical Details	*'I don't think that ketones are that important, but fair enough.'*[GP01] *'We would weigh the patient, weight diagnosis is quite helpful.'* [GP03] *'Urine analysis for ketones and microalbuminuria.'*[D01] *'We would also be looking at LFTs, TFTs (Thyroid Function Tests), urea and electrolytes and lipids. You have said ketones, which is obviously checking urine for ketones. But one of the big things, one that is missed out would be microalbuminuria, that needs to go in there, and obviously proteinurea too. Blood pressure baseline. Right. OK.'* [DN02] *'I don't usually check type 2 diabetics for ketones, that's not something we generally do.'*[GP05]	As practice seems to differ slightly, detail removed from assessment phase
Cardioprotective medication and prevention of long term complications	*'That really starts from the day of diagnosis.'* [DN02] *'Well yes, I think it is something I would, well certainly in anyone that I saw as a new patient, looking for complications would be one of the first things I would be doing.'* [D03]	Moved earlier in the cycle to treatment plan phase
Continuity of patient education	*'It is a sort of ongoing thing isn't it? Rather than all or nothing, I think that it should be seen more as a multiple frequent visitation to education'* [D05] *'I think that it is also about having structures for patients, so that there is such a thing as diabetes education, and support groups as part of that journey'*[DN04]. *'I think education is one of the things which is ongoing and has to be continually repeated.'* [DN05]	Introduced into each phase of the model

Key: GP-general practitioner, D-diabetologist, CP-community pharmacist, DN-diabetes specialist nurse

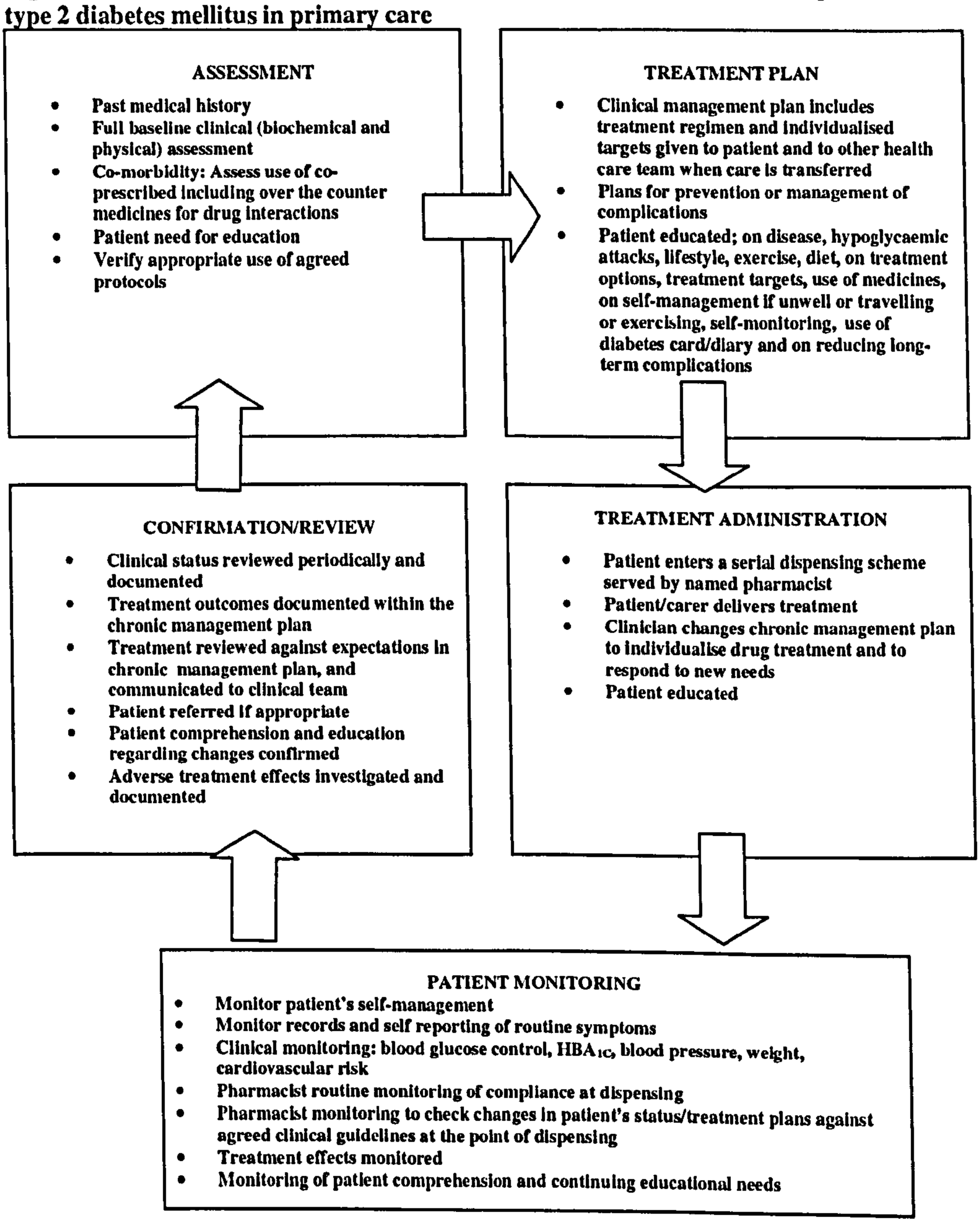
Table 4.4: Discussion points on points for correction within the model of care and action points taken to produce revised model

Discussion point	Examples of Interviewee Quotes	Action taken to produce revised model
Primary to secondary care referral	*'In a sense for most of our type 2 diabetes patients in this practice certainly over 70% are in GP care only so they are never anywhere near the hospital.'*[GP05] *'Yes. I would say three quarters if not 90% of the Type 2 diabetics are treated by primary care.'* [DN03] *'If they were seen solely in primary care then no they wouldn't be transferred to secondary care, because the secondary care side doesn't know the patient.'*[DN05]	Referral pathway removed
Severe hypoglycaemia	*'It would be unusual for glucagon or intravenous glucose infusion being prescribed for severe hypoglycaemia (in the type 2 patient).'*[GP04]	Removed
First line therapy	*'No, I think generally speaking metformin will be the treatment of choice in most circumstances taking an average situation. Obviously there is sometimes that sulphonylureas are the first choice, but as a general comment I would like to see metformin as the first thing that a GP would think about for starting.'* [D03] *'No. metformin is the first choice in obese and normal weight, so only the underweight would not use metformin.'*[DN04]	Treatment details simplified
Routine checking	*'Remove clinical laboratory tests monitored for change, we don't do that, and it is a waste of time anyway'* [D02] *'Well I think there is no reason to monitor for anaemia and you certainly wouldn't monitor for lactic acidosis.'* [D03]	Removed
Self-adjusting of oral therapy	*'We certainly don't encourage them to adjust their oral medication, be that metformin or a glitazide, willy nilly, (with disregard) that is not what we do.'* [DN02] *'Because you don't want your patients adjusting their medication themselves anyway. I mean you wouldn't want them to do it with blood pressure or whatever, and with oral hypoglycaemics you wouldn't tend to do that.'*[D01]	Not included in revised model

Key: GP-general practitioner, D-diabetologist, CP-community pharmacist, DN-diabetes specialist nurse

4.3.4 Revised Model of Care

Figure 4.3: The revised model of multidisciplinary care generated for the patient with type 2 diabetes mellitus in primary care



4.3.5 Table 4.5: Discussion points on the community pharmacist's contribution within the Model of Care

Discussion Point	Examples of Interviewee Quotes
Near patient testing	*'If a lot of people start checking the blood pressure, then that could cause confusion. Yes, and that is the worry, that every time you have a dodgy blood pressure taken somewhere else, they come into us to get it re-checked, and so all of this effort has just created more work rather than saving it'* [GP01] *'It may well be the nurses monitoring the blood glucose,HbA1c and BP whilst the pharmacist is guiding the patient on medication and side effects'* [GP04] *'I wonder instead of actually doing the tests, I wonder whether it would be better for pharmacist to look and see that the tests have actually been done, and if not inform them to go to their doctor to do it.'*[D05] *'What we need is access to some of the clinical measurements, that will come when we get electronic'*[CP02]
Running specialist clinics	*'I think it's perfectly reasonable that community pharmacists, given the money, time, opportunity, could run a diabetes management clinic' [*CP02] *'Some of our patients only want a dispensing, even repeat dispensing, but didn't want any pharmaceutical care as such. And other ones want the whole caboodle.'* [CP03]
Communication /referral paths	*'If you broaden it out you need good communication, because if you have bad communication, then you can cause confusion"* [GP01] *"There should be a referral path'*[CP03] *(SCI DC)'You could at least know the last time they had a cholesterol check. You could at least know when their U&Es and liver function had been done'* [CP03] *'it could be possible for the community pharmacy computer system to be plugged into this (SCI DC) system.'*[GP02] *'I think the way for pharmacy for example, is to plug into SCI DC and access the core accurate information that everyone has'*[D03].
Pharmacist prescribing	*'I think extended prescribing is too limited. I think more people could do more prescribing than the extended prescribing''I think it is what we need to work towards'*[D04] *'It just leads to confusion about who is doing what'*[GP01] *'Anyway they shouldn't be making managing decisions, it's my job.' 'it's difficult, I don't wanna sound like a primadonna, but in a sense of prescribing is what we do, what we do as doctors.'* [GP05] *'Analgesics are less of a problem, that is just a case of asking are you still sore and a pain killer, if not stop them and if so we could increase the strength or put you on a stronger analgesic. And ACE Inhibitors.....if it doesn't deteriorate(renal function)then have a step line and that could certainly be done by pharmacists'*[D04] *'The other big role is self monitoring, and all the equipment related to that, because GPs are often not 100% up to date with the strips and all the rest of it. And I don't see why GPs need to prescribe it anyway'* [D05]

Key: GP-general practitioner, D-diabetologist, CP-community pharmacist, DN-diabetes specialist nurse

Table 4.5: Discussion points on the community pharmacist's contribution within the model of care

Discussion Point	Examples of Interviewee Quotes
Encouraging compliance	*'There are bits we can obviously do around compliance'* [CP01] *'The next box would be then patient monitored by community pharmacist for compliance'* [GP05]
Repeat dispensing	*'I can see huge advantages in terms of waiting for lots of unnecessary prescribing and paperwork. I can't think of the disadvantages'*[D05] *'That sounds like one of the best ideas to be honest, because I have had a patient in who says when he tries to get a repeat prescription he now has to say at the beginning of the week if he needs a prescription, and it is the end of the week before he can get his prescription'*[DN01] *'Well they are not (seeing the GP), they are seeing the receptionist in most cases, so that is excellent. It would be an improvement for the patients.'*[DN04] *'but they are not getting a proper review of their diabetes in between times. Things can change quite dramatically in 6 months, and definitely in a year.'*[DN05]
Medicines education	*'How does education come into it because obviously you have a big role in education really haven't you? Which I think is better coming from pharmacy than from anyone else'*[DN04] *'Ask them if they know why they are taking their medication, providing the kind of medication to what their medication is doing'* [GP05] *'So they can be very, very useful. I think that they are probably underused for their advice.'*[DN03]
Lifestyle Advice	*'Every healthcare profession that the patient sees should reinforce smoking advice'* [CP02] *'Yes lifestyle, you're not just going to give them dietary advice, you are going to add on lifestyle advice as well.'*[CP04] *'And diet and exercise should probably be put on higher. Patient given dietary advice and I think you should emphasise that more, before tablets and things, because we do tend to forget about it and it is actually the most important course. Exercise is probably easier to do than diet actually. So exercise more than diet'* [D02] *'Yes, and I think that you should have exercise in there as well.'* [D03] *'Lifestyle advice is talked about at every visit. It should be talked about. It should be reiterated at every visit. Not perhaps formally, but it should be mentioned at every visit.'*[DN02]
Initiating insulin therapy and "fine tuning of insulin doses"	*'And pharmacy input would be helpful. It is the fine-tuning of insulin doses once and being able to give patients advice.'* [D04] *'Type 2's on insulin will then be referred into the secondary care set-up.'* [D01]
Identifying defaulters	*"The pharmacist could say, well I'm only going to give you a prescription for two weeks until you have seen someone"* [D05] *"You get other patients who rarely go to their GP to get reviewed. You are trying to target people who do not go to the hospital, do not go to the GP and they obviously need to get their medication dispensed somewhere so you're bringing them into the loop"* [CP01]

Key: GP-general practitioner, D-diabetologist, CP-community pharmacist, DN-diabetes specialist nurse

4.4 Discussion

4.4.1 Research Methodology Utilised in the Construction of a Model of Care

In this research three researchers undertook to interview the professionals, a team of two Danish final year students interviewed three GPs in face to face interviews and the principal researcher carried out the remainder of the interviews. Statistical representation of a profession is not normally sought in qualitative research [134,135], and sample sizes are often chosen depending on the depth and duration of each interview. In this study, each interview lasted 45-90 minutes and the researcher went through the entire cycle with the interviewee section by section using a semi-structured questionnaire as a guide in each section (Appendix 4.1).

In a qualitative research interview, the aim is to discover the interviewee's own framework of meanings and part of the research task is to avoid imposing the researcher's structures and assumptions on the interviewee's account as far as possible. The interview process should be regarded as an active process in which the respondent activates different aspects of her or his stock of knowledge, with the interviewee's help [124]. Holstein and Gubrium criticise the traditional view in which a passive respondent is accessing a "vessel of answers" that exists independently of the interview process [136]. The research needs to remain open to the possibility that the concepts and variables that emerge may be very different from those that may have been predicted [137].

A broad interview schedule was used in this study (Appendix 4.1) to structure each interview and the interviewer worked to develop a dialogue with the interviewee and to make them feel comfortable. In qualitative studies, where possible, the interviewee's own vocabulary should be used when framing supplementary questions as it is vital that interviewers check that they have understood respondents' meanings instead of relying on their own assumptions. Unlike quantitative interviews based on highly structured questionnaires, the order in which questions were asked varied as the interviewer strived to establish the interviewee's meanings. Also during the course of the interview additional questions were asked to clarify themes that have

developed from previous interviews. These themes were documented in the researchers' reflective diaries of qualitative work (Appendix 4.18).

The views of the four community pharmacists were investigated using the same interview schedule (Appendix 4.1) but conducted as a focus group. A focus group discussion was chosen to facilitate ideas and experiences that may have been left underdeveloped in an interview and to allow the community pharmacists' perspectives on their potential new roles to emerge through debate within the group.

With qualitative research, the appropriateness of the concept of inter-rater reliability is contested [138]. None the less reports have suggested that there is more merit in involving more than one analyst in situations where researcher bias may be present [139]. Taking account of these views, discussion with an independent researcher (Researcher 4)(HH) or the process of 'peer debriefing' was perceived to be important in enhancing the analysis of the results. During this process, an independent researcher reviewed and asked questions about the qualitative study so that the interpretation should resonate with people other than the main researcher [140]. Using 'member-checking' to determine the authenticity of the qualitative findings, through taking the transcripts back to the participants and determining whether they feel they are accurate, was also a primary strategy to ensure validity [140,141].

4.4.2 Structure of the Model of Care

A conceptual Model of Pharmaceutical Care for patients with type 2 diabetes has now been designed and validated through qualitative research methods. The acknowledgement of changing roles within the delivery of patient care was a recurrent feature in this research, leading to a questioning of the relevance of who actually delivers particular aspects of care in the future. This finding from the qualitative research led to the replacement of the specification of particular profession in the revised model by the wider use of the more generic term 'clinician', which represents any appropriately trained professional. This finding concurs with the view espoused by Walshe et al that definition of health care professions by title -

pharmacists, doctors, nurses - is outdated by the fact that many of the activities the professions undertake do, in practice, overlap[142].

4.4.3 Potential Role of the Community Pharmacist

From Table 4.5, it was clear, while the extension of the role of the community pharmacist in the care of the patient with type 2 diabetes mellitus was generally supported, the GPs were less clear than nurse/hospital doctor specialists about the community pharmacist's position in the team. This attitude mirrored the findings of a similar study by Younis et al who reported that primary care physicians were less supportive of a team approach to diabetes care than the diabetologists or nurse specialists [143]. The authors suggested that their findings might be explained by the fact that specialists in diabetes routinely meet and discuss care as a team. The diabetes team would be based on nurse specialists and diabetologists working in a way in which each team member contributes to the development and implementation of a therapeutic plan. GPs, on the other hand, have traditionally worked more independently. The GP volunteers in the published Scottish study [45] supported the work of the community pharmacists. Their recognition of the pharmacists' contributions to the care of patients with type 2 diabetes mellitus, was shown by a 97% acceptance by GPs of the identified pharmaceutical care issues necessitating dose alteration and/or medicines additions. This difference in findings may be due to the fact that in the Wermeille study the GP views were affected by the care being provided, and not by a theoretical concept.

The GP attitude might also include questioning whether patients would be comfortable with pharmacists participating in diabetes care. In the Wermeille study, the dropout rate for patients was only 4.8% in a 28 week study [45]. A diabetologist in our study supported the idea that the extension of the pharmacist's role would include the running of diabetic clinics. Among the community pharmacists, one expressed the opinion that community pharmacists should avoid becoming overspecialised in one chronic disease. This particular community pharmacist saw more satisfaction for a role that was based on addressing drug therapy problems in the patient with multiple disease states.

Point of care clinical testing in diabetes is a rapidly growing area in the USA; where pharmacists test for HbA1c, glucose, lipid profiles, cholesterol and urinary microalbumin concentrations in the pharmacy [78,79]. Testing at the point of care can provide pharmacists with the opportunity to expand their services into new areas of patient care. However, at present in the UK, it seems that community pharmacists are less inclined towards undertaking such near patient testing and favour a role interpreting the results that have been otherwise documented. That role relies on access to shared clinical test data. The sharing of patient record data is a fundamental requirement for such a pharmaceutical care model and the implications deserve wider debate.

The supplementary prescriber role has been introduced in the UK since 2003 [114] to recognise extensions to non-medical prescribing; these developments in chronic disease management, affecting nurses and pharmacists, have introduced new possibilities for implementation of a care model in which service roles can be shared between disciplines. While these roles are becoming legally recognised, research into the effects awaits wider implementation. In a UK study (n= 518), 3% of pharmacist supplementary prescribers in 2005 were actually prescribing within the endocrine speciality [26]. Some clinicians were supportive of the community pharmacist role being extended to prescribing; however the GPs were more cautious of the pharmacist taking on this role in primary care until interprofessional communications were improved. Suggestions of prescribing areas highlighted in the study were analgesics and ACE inhibitors being increased to appropriate levels.

Many professionals mentioned the computerised patient information system (Scottish Clinical Information Diabetes Collaboration - SCI DC) as a means of improving communication between clinicians (for instance by linking hospital out-patient care with GP care). Electronic data sharing will supersede the need for patient-held cards or diaries. Presently in Scotland, community pharmacists cannot routinely access core patient data except through patient mediated means such as patient-held cards. Several clinicians felt that community pharmacists should access this core data by having routine access onto the SCI DC network within the community pharmacy.

A role for the community pharmacist that emerged as widely supported was the encouragement of the patients to comply with their prescribed therapy. Suboptimal use of oral medication is one of the reasons for poor glycaemic control. Paes et al found that on average 50% of doses were not taken as prescribed in the patient with diabetes mellitus [70]. Encouraging adherence may require patient education. A system, in which community pharmacists universally provide serial (repeat) dispensing, would enable poor or erratic compliance to be more easily identified because the patient will be registered with one pharmacist for the duration of the prescription. A serial dispensing service, in which a patient is given, for example, a 6 month prescription that is dispensed from one community pharmacy on an aliquot basis, was generally supported by interviewees.

Education to support patient self-monitoring of co-prescribed medicines (not just diabetic medicines) and over-the-counter medicines was thought an important role by one diabetologist. A study by Mino-Leon found that 37% of patients with type 2 diabetes mellitus were receiving a drug with a potential for interaction with hypoglycaemic agents [144]. Another diabetologist spoke of the pharmacist "drip feeding" education at each of the patient's multiple visits to the pharmacy. The regular patient contact with community pharmacist provides an ideal opportunity. In 2003, it was reported that more than 80% of community pharmacists saw patients with type 2 diabetes "very often" or "often"; while as many as three quarters reported that they "never/rarely" or only "sometimes" advised patients on what to expect from their medication or gave patients information to help them have a better understanding of their disease [68]. Educating the public on lifestyle advice was also highlighted by all professions as an important role for the community pharmacist.

A new potential function highlighted for the community pharmacists, was the initiation and 'fine-tuning' of insulin dosing. Mulnier et al reports that in the UK the proportion of type 2 patients converting to insulin increased by 70% between 1993 and 2000 [145]. They conclude that as the prevalence of diabetes increases this demand will escalate and that more staff will require training to undertake this role.

One important role most clinicians felt that community pharmacists should have within the diabetic team is identifying 'defaulters', that is patients who no longer attend any clinic appointments but continue to pick up their prescription for their diabetic medicines. This behaviour can be explained by patients feeling that their condition is under control and are perhaps unaware it is a progressive disease.

4.4.4 Education, Training and CPD for Pharmacists Providing Extended Roles

The work of Younis et al in Arizona used the Diabetes Attitude Scale (DAS) to assess community pharmacists' attitudes towards diabetes and their involvement with diabetes education. Although pharmacists had positive attitudes towards diabetes, the study found that these attitudes did not correlate with their degree of involvement in diabetes patient education [143]. Another US study found that pharmacists believe that they require specialised training to provide primary care for these patients, requiring delivery through continuing education programs [146]. The development of a shared model of care for this patient type will facilitate appropriate educational support, which is education suitably fit for purpose, to be targeted at pharmacists as clinicians who are hoping to expand their knowledge and practice within Scotland.

4.5 Conclusion

The development of the community pharmacist role in the care of the patient with type 2 diabetes mellitus requires extension through improved working in partnership with nurses and GPs. Methods of improved communication with other members of the healthcare team and attention to methods of referral, where appropriate, are important focal points. The targeting of this care and the care model that is best suited to particular settings will be subject to local variation. Running diabetic clinics, delivering patient education, conducting near patient testing, patient monitoring, managing repeat dispensing and the identification of defaulters were all highlighted as potential areas for community pharmacists. The generation of a Diabetes Care Model offers pharmacists a means of seeing that whatever their contribution to care, it requires to be made within a larger context recognising that there are different ways pharmacists can contribute to the multidisciplinary service.

The model will allow matching of learning opportunities to meet well-defined educational needs that are linked to particular clinical functions. The work provides a step towards the design of CPD tools and systems to help community pharmacists perform newly defined roles within the healthcare team.

Chapter 5:

Achieving Consensus on Community Pharmacist Activities in the Pharmaceutical Care of the Patient with Type 2 Diabetes Mellitus and Training and Support to Aid Delivery

Research Focus 2:

The Community Pharmacists' Role in the Care of the Patient with Type 2 Diabetes Mellitus in Primary Care

5.1 Introduction

5.1.1 Background

In Chapter 4, a Model of Care for the patient with type 2 diabetes mellitus in primary care was established from qualitative research among multidisciplinary care providers [147]. In Chapter 5, consensus between community pharmacists on the activities they aim to offer from this model to the patient with type 2 diabetes mellitus, was obtained using a modified Delphi technique. The Model Schemes for Pharmaceutical Care initiative, run by the Scottish Executive Health Department from 1999 until 2006, provided an opportunity for community pharmacists to develop pharmaceutical care to patients from community pharmacies [148]. It was proposed that the work in this thesis should help inform the detail of a Model Scheme for patients with type 2 diabetes mellitus in Scotland.

The Delphi technique has been defined as:

'a series of sequential questionnaires or 'rounds', interspersed by controlled feedback, that seek to gain the most reliable consensus of opinion of an 'expert panel'' [149]

As a research methodology, the Delphi technique has been widely used in healthcare research literature. The main advantage of the technique is the achievement of consensus where there is uncertainty or a lack of evidence-based literature [150, 151]. The feedback between rounds can widen knowledge and stimulate ideas and be a motivational [152] and educational [153] factor for the participants. Through this technique, Delphi participants are able to bring a wide range of direct knowledge and experience to the decision-making processes with few geographical limitations [154]. The method also allows participants to express their views anonymously with perhaps less social influences than with a group discussion. Provision of feedback of questionnaire responses with the Delphi technique is via the researcher [155].

A classic Delphi survey follows a prescribed set of procedures that reflect both behavioural and statistical processes [154]. The first round questionnaire is usually unstructured and seeks open responses with open-ended questions however

alternative approaches are widely found in the Delphi literature. Duffield used a structured questionnaire that drew from previous published literature, [156] while Oranga and Norberg based their first round on information gleaned from a concurrent survey [157]. In this chapter a 'modified' Delphi technique was used as the first round was structured from the previous qualitative work (Chapter 4) [147] and with reference to other published research in this area [35,45,63-74,77].

There is some debate in the literature over the qualifications of a Delphi participant. Linstone and Turoff suggest that a Delphi sample of participants needs only to possess a diversity of viewpoints that span respectable controversy [158]. Although agreeing with this, Jairath and Weinstein propose that participants should be 'experts' who reflect current knowledge and perceptions, yet are relatively impartial to the findings [159]. All participants in this study were practising community pharmacists who were, or had been, taking part in a Pharmaceutical Care Model Scheme and had registered their interest in taking part in a scheme specifically focussed on diabetes mellitus.

In this chapter also investigated, was the need for education and CPD support to carry out enhanced services such as those suggested in the Delphi process, to patients with type 2 diabetes mellitus. Competence and fitness to practise at this level must be a consideration. A primary conclusion from the 'Making Pharmacy Education Fit for the Future' document of the RPSGB was, that in order to deliver lifelong learning, all NHS organisations need to develop and foster a learning culture [160]. In this document, it states a principle of lifelong learning in the NHS is that learning should be:

'valued, recognised, recorded and accredited wherever possible'

5.1.2 Justification For Research

Building on previous research, this study applied consensus building methods to identify agreed contributions of community pharmacists to patients in primary care with type 2 diabetes. The findings were used to produce a Scottish model that defines

the pharmaceutical care activities to be offered to those patients. The issue of training and support to provide this service was also investigated.

5.1.3 Study Aims and Objectives

The aims of the research were to achieve consensus on:

- Community pharmacy activities required to provide structured pharmaceutical care to the patient with type 2 diabetes mellitus and the training and support required to deliver this service

From these primary aims, a number of objectives emerged, which were to:

- Develop a model of consensus agreed pharmaceutical care activities
- Identify potential types of support (if required) for community pharmacists

5.2 Methods

5.2.1 Study Design

Three rounds of modified Delphi questionnaire.

5.2.2 Subjects and Settings

5.2.2.1 Delphi D1-D3

Recruitment to the modified Delphi process was by invitation questionnaire sent to 70 participants already listed as participants in a Pharmaceutical Care Model Schemes Initiative [148], and with a special interest in diabetes mellitus. From this invitation 35 participants provided baseline information (Delphi D1) and agreement to participate in the Delphi process which involved two successive rounds (Delphi D2 and D3).

5.2.2.2 Ethical Considerations

At the time that this research was carried out, research and ethics committee approval was not required for surveys of health care professionals.

5.2.3 Study Procedure

5.2.3.1 Development of the Delphi Questionnaire-Pharmacist's Activities

The Delphi questionnaire comprising 26 questions with 49 activities was designed by a research group based on findings from a multidisciplinary Model of Care of the patient with type 2 diabetes mellitus in primary care [147] and with reference to other published research in this area [35,45,63-74,77]. Similar to the model of care, the modified Delphi questions were divided into five themes; assessment, treatment plan, treatment administration, patient monitoring, confirmation/review [147]. Face and content validity of the modified Delphi questionnaire were established with a pharmacist expert group from the University of Strathclyde research group comprising of one Professor of Pharmaceutical Care and three Pharmacy Practice Research Fellows. Each section of the questionnaire was discussed at length and appropriate changes made, prior to piloting it in 10 pharmacists. Questions were designed to provide a 7-point Likert scale response anchored at 1 "strongly disagree" and 7 "strongly agree".

5.2.3.2 Pharmacists' Training and Support

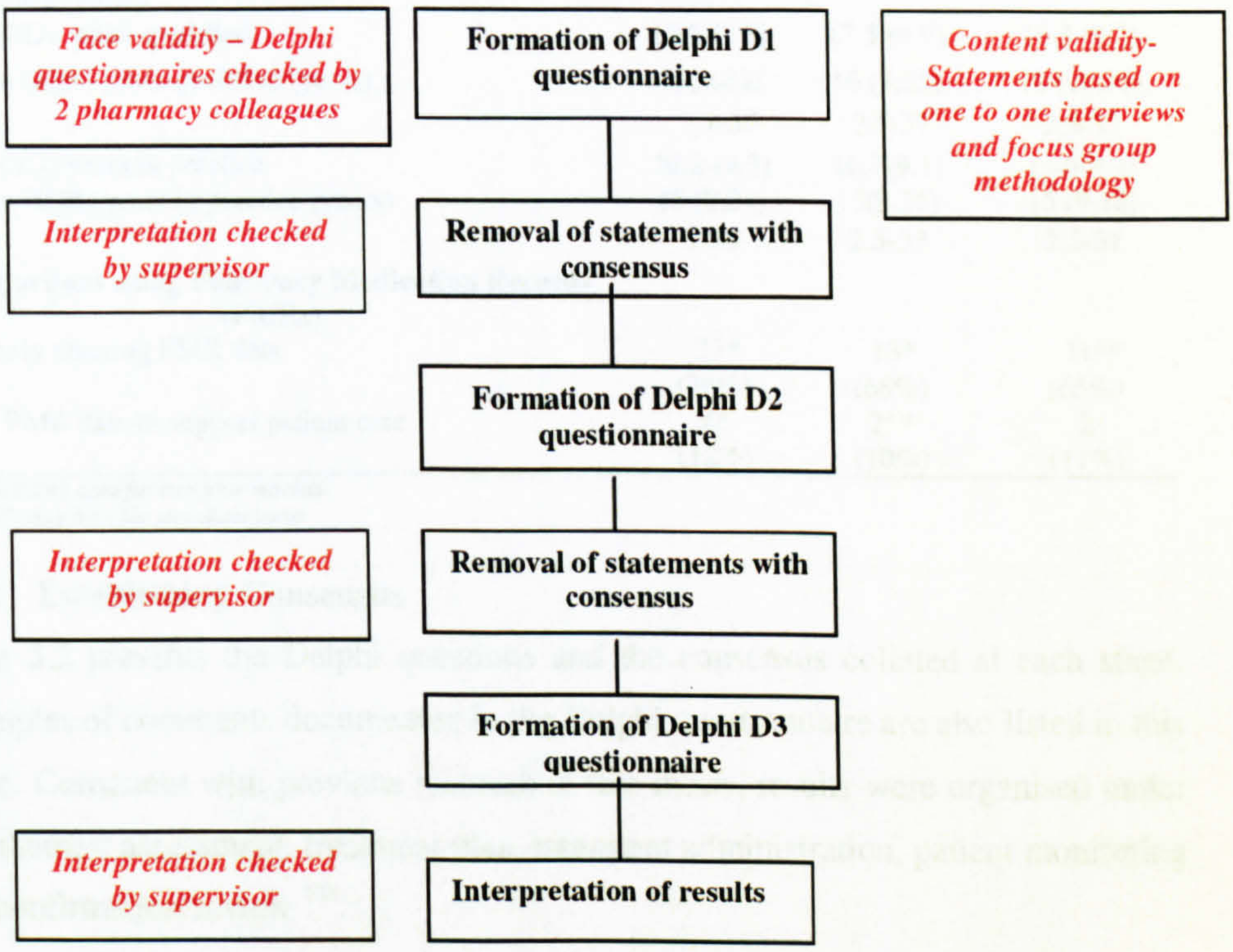
A scoping exercise of the training and support needs of pharmacists took place during Delphi D1. Two questions were asked of the Delphi D1 participants. In one question the participants were asked to rank their preference. From these results and published literature [97,90,161-165], 12 questions were designed and incorporated into the Delphi D2 process.

5.2.4 Data Handling and Analysis

Consensus was defined as having been reached when a threshold of 80% [166] (D1 and D2) and 70% [167] (D3) of respondents had scored 6 or 7 on the Likert scale. Feedback of median and personal responses for comparison was given after Delpi D1 and D2. Any statement not reaching the threshold was repeated in the next round.

Figure 5.1 shows the scheme of quantitative research data analysis and verification for the Delphi questionnaire process.

Figure 5.1: Scheme of quantitative research data analysis and verification stages for the Delphi questionnaire process



5.3 Results

5.3.1 Study Population Characteristics

Response rates between Delphi rounds were 22/35 (63%; Delphi D2) and 18/22 (82%; Delphi D3). Table 5.1 shows the characteristics of the community pharmacists involved in all three rounds of the Delphi process.

Table 5.1: Characteristics of community pharmacists involved in the Delphi round one (D1), round 2 (D2) and round 3 (D3)

Pharmacist Characteristics	Delphi Rounds D1-D3		
	D1 n=35	D2 n=21	D3 n=18
Experience (years)			
Mean (SD) years qualified	16.6 (9.8)	17.3 (9.9)	16.3 (9.3)
Median (IQR) years qualified (years)	15(9,24)	16 (9,25)	16 (10,18)
Range	1-37	2.5-37	2.5-37
Mean (SD) years in practice	16.2 (9.3)	16.7(9.1)	15.6(8.4)
Median (IQR) years in practice (years)	15 (9,24)	15(9,25)	15 (9,18)
Range	1-33	2.5-33	2.5-31
Proportions using Pharmacy Medication Records (PMRs)			
Routinely entering PMR data (%)	25* (76%)	13* (68%)	11** (65%)
Using PMR data to support patient care (%)	4* (12%)	2** (10%)	2 (11%)

Key: *Missing data for two pharmacists
*****Missing data for one pharmacist***

5.3.2 Establishing Consensus

Table 5.2 presents the Delphi questions and the consensus collated at each stage. Examples of comments documented in the Delphi questionnaire are also listed in this Table. Consistent with previous research in this thesis, results were organised under five themes; assessment, treatment plan, treatment administration, patient monitoring and confirmation/review [138].

Table 5.2: The results of the Delphi study showing percentage achievement of consensus and median score at consensus point or in the final round (D1-D3); based on completion of all 3 rounds (n=18 unless otherwise stated)

Activity Number	Questionnaire Statements	Delphi Response at rounds D1, D2 and D3		
		Percentage of cohort scoring ≥6 in D1, D2, D3	Group median (IQR) at consensus or final round	Consensus achieved?
	Assessment			
1	By using computer based patient medication records, I would create a register to identify patients with diabetes (n=16)	72, 72, 77	6 (6,7)	Yes
2	I would identify my patients' need for my support by patient interviews	78, 88	6 (6,7)	Yes
3	I would identify a standard pharmaceutical care plan for my own use ***Comments after Delphi D1:-*** *'Please define standard care plan'* ***Reworded after Delphi D1 to:-*** I would like to use a standard care plan to help me record the delivery of pharmaceutical care to my patients	56, 83	6 (6,7)	Yes
	Treatment Plan			
4	I would liaise with primary care, secondary care and GPs by sharing my standard pharmaceutical care plan ***Comments after Delphi D1:-*** *'Please define standard care plan'* ***Reworded after Delphi D1 to:-*** If I maintain a standard care plan, I would want to be able to share it with other members of the diabetic team	61, 83	7 (6,7)	Yes
5	I would liase with primary care, secondary care and GPs using the record booklet ***Comments after Delphi D1:-*** *'What is this?'* ***Reworded after Delphi D1 to:-*** If the diabetic team uses a standard patient-held record booklet I would find it useful as a means of liaison with primary care, secondary care and GPs	56, 83	6 (6,7)	Yes
6	I would be pleased to receive more information about my patients' treatment goals and medical/drug history from the multidisciplinary team	94	7 (6,7)	Yes
7	I would integrate information about my patients' treatment goals and medical /drug history that I receive from the multidisciplinary team into the standard care plan	72, 88	6 (6,7)	Yes

Table 5.2: The results of the Delphi study showing percentage achievement of consensus and median score at consensus point or in the final round (D1-D3); based on completion of all 3 rounds n=18 unless otherwise stated)

Activity Number	Questionnaire Statements	Delphi Response at rounds D1, D2 and D3		
		Percentage of cohort scoring ≥6 in D1, D2, D3	Group median (IQR) at consensus or final round	Consensus achieved?
8	My pharmaceutical care plan would be maintained in respect of:- Antidiabetic agent	89	7 (6,7)	Yes
9	Patient's status in respect of diabetic complications	64, 95	6 (6,6)	Yes
10	Identification of cardiopreventive medication	78, 100	6 (6,7)	Yes
11	Dietary goals needing to be addressed eg obesity/poor diet	61, 89	6 (6,6)	Yes
12	Problems in blood glucose control requiring balancing food intake/ insulin dose	67, 78, 89	6 (6,6)	Yes
13	General advice on the use of insulin therapy	78, 83	6 (6,7)	Yes
14	Advice given on self-monitoring of glycaemic control	83	7 (6,7)	Yes
15	Records of targets agreed with patient on:- HbA1c	72, 89	6 (6,7)	Yes
	Blood Pressure	72, 89	6 (6,7)	Yes
	Cholesterol	72, 88	6 (6,7)	Yes
	Frequency of hypoglycaemic episodes	78, 89	6 (6,7)	Yes
	Treatment Administration			
16	After suitable training, I would be comfortable with prescribing:- *Comments after Delphi D1:-* 'We don't all prescribe!' *Reworded after Delphi D1 to :-* After suitable training, I would be comfortable with adjusting doses for:- Antibiotics (n=17)	65, 83	6 (6,6)	Yes
	Analgesics (n=17)	82	7 (6,7)	Yes
	Oral hypoglycaemic agents (n=17)	71, 83	6 (6,7)	Yes
	Insulin (n=17)	61, 56, 65	6 (5,6)	No
	Hypertension treatment	66, 83	6 (6,7)	Yes
	Cardiopreventive medicine:-Lipid lowering drugs	78, 89	7 (6,7)	Yes
	Beta blocker	77, 89	6 (6,7)	Yes
	ACE inhibitors	78, 89	7 (6,7)	Yes
	Anti-anginal treatment	78, 89	6 (6,7)	Yes
17	My role is to support the motivation of patient /family in:- Self care	66, 83	6 (6,7)	Yes
	Treatment goals	72, 83	6 (6,7)	Yes
	Loss of diabetic control	67, 83	6 (6,7)	Yes

Table 5.2: The results of the Delphi study showing percentage achievement of consensus and median score at consensus point or in the final round (D1-D3); based on completion of all 3 rounds n=18 unless otherwise stated)

Activity Number	Questionnaire Statements	Delphi Response at rounds D1, D2 and D3		
		Percentage of cohort scoring ≥6 in D1, D2, D3	Group median (IQR) at consensus or final round	Consensus achieved?
	Patient Monitoring			
18	My role in helping to individualise patients' oral antidiabetic treatment is:-			
	Checking and follow up the drug/dose regimen	84	7 (6,7)	Yes
	Identifying unsatisfactory treatment	84	7 (6,7)	Yes
	Monitoring for signs and symptoms of toxicity	72, 83	6 (6,6)	Yes
19	I would help my patient maintain a patient-held diabetes record booklet on:-			
	Changes in prescribed medication	83	7 (6,7)	Yes
	Changes in purchased medicines	61, 78, 94	6 (6,7)	Yes
	Self-reporting of symptoms	66, 78, 94	6 (6,6)	Yes
	Episodes of hypoglycaemia	66, 78, 95	6 (6,7)	Yes
	Documentation of achievement of personalised treatment goals	70, 72, 78	6 (6,7)	Yes
	Confirmation/Review			
	I would share plans with the patients and other members of the diabetic team to ensure:-			
20	Suitability of medication for preventing cardiovascular disease	83	6 (6,7)	Yes
21	Appropriate foot care	55, 39, 45	5 (5,6)	No
22	Suitable drug treatment for neuropathy	73, 78, 89	6 (6,6)	Yes
23	Suitability of medication in the presence of renal impairment	78, 83	6 (6,6)	Yes
24	Suitability of medication in the presence of visual impairment	67, 84	6 (6,6)	Yes
25	I would be comfortable monitoring the patient for signals for review by the GP where:-			
	Identification of co-prescribed/purchased medicines for co-morbidity interact	89	7 (6,7)	Yes
	Significant changes in blood glucose, HbA1c, ketones, blood pressure, weight or cardiovascular risk are recorded in the patient-held record booklet	89	7 (6,7)	Yes
	Infection, other complication or new symptoms (n=17)	73, 78, 77	6 (6,7)	Yes
	Failure to reach personalised treatment goals	72, 78, 94	6 (6,6)	Yes
26	Part of my role would be to provide education on how to limit tissue damage through:-			
	Smoking cessation	72, 89	6 (6,7)	Yes
	Weight control	66, 83	6 (6,7)	Yes

5.3.2.1 Pharmacists' Activities Delphi D1-D3

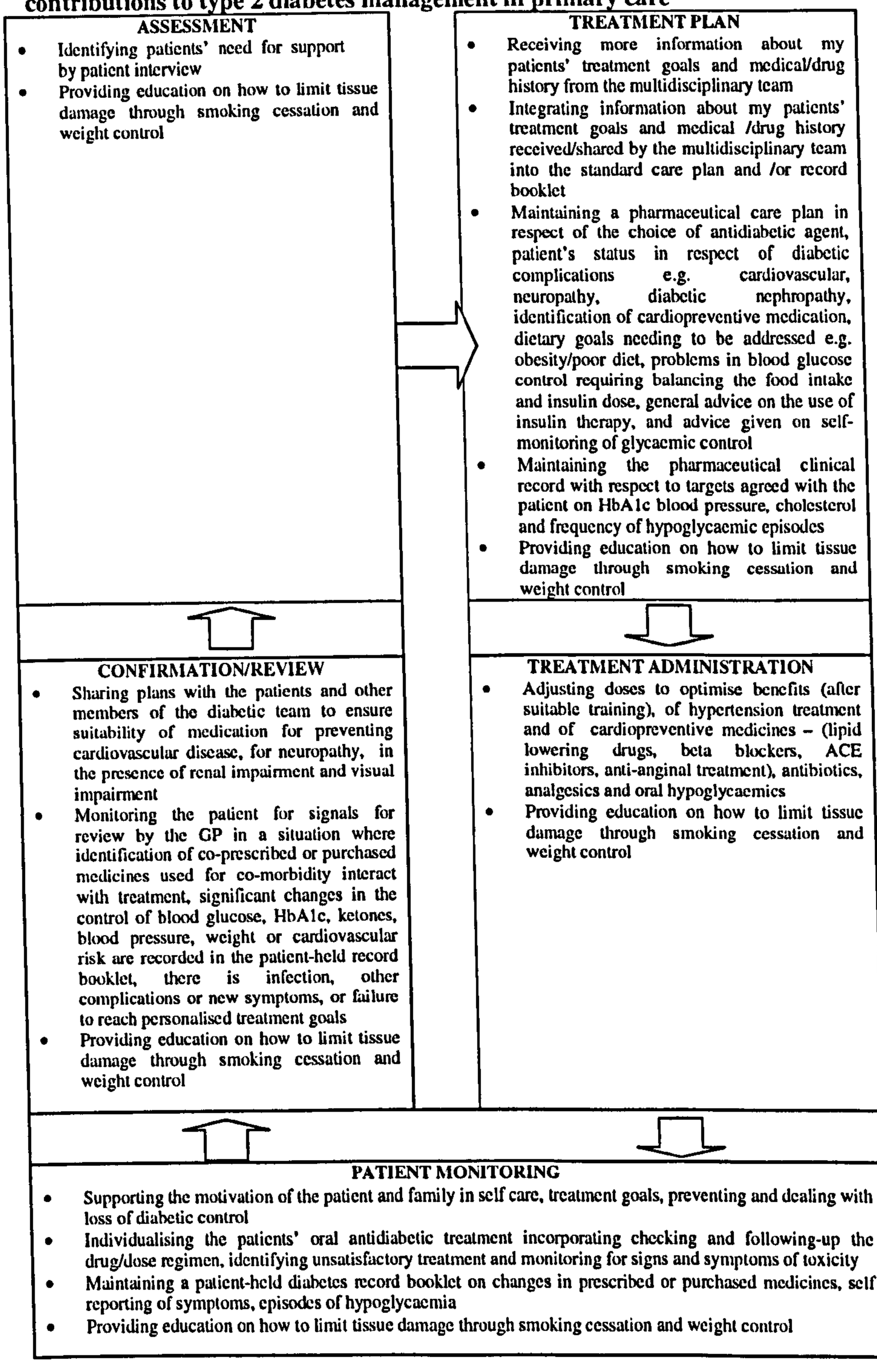
After Delphi D1, 10 (20%) of the initial activities reached consensus, 28 (57%) after Delphi D2 and 9 (18%) after Delphi D3. Two activities (4%) did not reach consensus after three rounds of modified Delphi technique.

There was an early consensus achieved on the core functions that participants were already delivering to the patient with diabetes mellitus. These are functions which have been highlighted and delivered in previous studies within this disease state; receiving and sharing patient information, individualising treatment, identifying unsatisfactory treatment and monitoring and prescribing analgesia [35,45,63-74].

Care activities failing to reach Delphi consensus after three rounds involved were 'adjusting doses of insulin' and 'ensuring appropriate foot care' .

Figure 5.2 shows the model that emerged from the modified Delphi process. This is a diagrammatical representation of consensus agreed activities under the five themed headings. Activities agreed as appropriate throughout the journey of care were listed under each heading.

Figure 5. 2: Diagrammatical representation of consensus on pharmacists' contributions to type 2 diabetes management in primary care



5.3.2.2 Educational Needs Assessment (ENA)

Pharmacists were unanimous (100%) in perceiving an educational need before delivering structured pharmaceutical care to patients with type 2 diabetes mellitus. There was a desire for distance learning pack alone although more participants (76%) expressed a desire for training away from their workplace. The pharmacists' ranking of preference for seven educational options showed a range of responses. The favoured options being direct face-to-face courses (national or multidisciplinary). Table 5.3 illustrates the community pharmacists' preference for support. Each pharmacist was asked to rank their preference 1-7 with one being the best option. The number weighting was then reversed with the most favoured receiving seven points.

Table 5.3 : Responses to ENA exercise showing community pharmacists' preference for support

	Type of CPD support	Total point score n=17*
1	National day course for pharmacists [168]	80
2	Multidisciplinary course	80
3	Distance learning-written format [107,162,168]	74
4	A "buddy" system with another pharmacist who already provides this system	63
5	Distance learning-interactive multi-media or web/CD ROM based package [107,162,168,169]	62
6	Pharmacists would meet as a peer group to discuss issues or problems [107]	57
7	Local evening courses for pharmacists [107,163,168]	51

*missing data from one pharmacist. Some responders choose more than one option.

5.3.2.3 Pharmacists' Training and Support Delphi D2-D3

Table 5.4 presents the results of Delphi D2 and D3 highlighting where consensus was reached on methods of CPD support and accreditation for community pharmacists for their pharmaceutical services to patients with type 2 diabetes mellitus in primary care.

Table 5.4: The results of the Delphi study (D2and D3)-Training and support; based on completion of both rounds (n=18 unless otherwise stated)

Activity Number	Comments on Portfolio of Evidence	Delphi Response at rounds D2 and D3		
		Percentage of cohort scoring ≥6 in D2, D3	Group median (IQR) at consensus or final round	Consensus achieved?
	I would be comfortable:-			
27	Critically reviewing current literature within a group of pharmacists [168]	**31.3, 22.2**	5.0 (5.0,5.0)	**No**
28	Critically reviewing current literature within a multidisciplinary group	**31.3, 16.7**	4.5 (4.0,5.0)	**No**
29	Sharing examples of practice through individual cases within a group of pharmacists	**68.8, 72.2**	6.0 (5.3,7.0)	**Yes**
30	Sharing examples of practice through individual cases within a multidisciplinary group	**50.1, 61.1**	6.0 (5.0,6.8)	**No**
31	Sharing reflections of your best performance in practice within a group of pharmacists	**68.8, 77.8**	6.0 (6.0,6.8)	**Yes**
32	Sharing reflections of your best performance in practice within a multidisciplinary group	**43.8, 38.9**	5.0 (5.0,6.0)	**No**
33	Sharing reflections where your performance leaves room for improvement within a group of pharmacists Sharing reflections where your performance leaves room for improvement within a multidisciplinary group	**62.6, 72.2**	6.0 (5.3,6.0)	**Yes**
34	***Comments after Delphi D2 :-'Are we at this stage yet?'*** ***Reworded after Delphi D2 to :-***Taking part in a local multi-disciplinary mentoring group ***Comments after Delphi D3 :-'I would welcome this!'*** *'Get everyone's perspective-improved relations with other professionals'*	**25.0, 50.1**	5.5 (5.0,6.0)	**No**
	General Educational Questions			
	Pharmacist delivering a level 3 (comprehensive) service to patients with type 2 diabetes mellitus should be assessed and accredited as competent	**88.3**	6.0 (6.0,7.0)	**Yes**
	Accreditation should be granted by:-			
	Evidence of attendance at courses [53]	**51.0, 77.8**	6.0 (6.0,7.0)	**Yes**
	Multiple choice question examination [168]	**47.0, 22.3**	5.0 (5.0,5.0)	**No**
	Practical examination (OSCE's ie. Objective structured clinical examination)(n=17) [164,165]	**47.0, 29.4**	5.0 (4.0,6.0)	**No**
	Evidence of self assessment and reflection through identification of personal learning needs (n=17) [107]	**44.0, 50.0**	5.5 (4.3,6.0)	**No**

5.4 Discussion

5.4.1 Pharmacists' Activities Reaching Consensus after Delphi D1

A Cochrane review of interventions to improve the management of diabetes mellitus in primary care, outpatient and community settings, concluded that a major barrier to improved patient care was discontinuity in care provided that was due to poor quality of documentation [80]. Since the envisaged potential contribution of an expanded role for pharmacists in a Chronic Medication Service is improved continuity of care, it is an important finding at the initiation of the Delphi exercise, that only 12% of participants used the pharmacy patient medication record (PMR) to support the care of their patients with diabetes (Table 5.1). In particular the failure to achieve consensus on the need to identify a separate register of diabetes patients within their PMR systems requires further investigation. This finding confirms previous work in Scotland (work including the author) in 2002 in which only 14% of pharmacists were using their PMR to target services to patients with diabetes. In this study a strong association between low levels of service provision and need for education was found [77].

There was early consensus that pharmacists contribute to monitoring of blood glucose, HbA1c, ketones, blood pressure and body weight in the patient-held booklet and also for the process of referring patients to the GP if appropriate. These findings may demonstrate a developing confidence among community pharmacists in their ability to handle and interpret clinical data while accepting greater responsibility for basic clinical monitoring. This finding contradicts previous work (Chapter 4) where community pharmacists were less inclined towards undertaking point-of-care clinical testing as performed in the USA [78,79], and instead favoured a role interpreting the results that have been otherwise obtained and documented by other members of the diabetes team [77,147].

However pharmacists did show some reluctance to agree on the monitoring of the patient for signs of infection, other complications and new symptoms for review by the GP. Those findings should signal a need in continued professional education for more focus on specific skills in, and attitudes towards, the clinical assessment of

patients. Further research in this area is required.

The participants showed agreement that they could help the patient document prescribed medication changes in a patient-held diabetes record booklet. However the documentation of clinical details in the form of the achievement of personalised treatment goals in the record did not quite achieve a consensus at the predefined level of 80% at this stage. There has been debate in the diabetes literature over the value of patient-held records. Studies have identified advantages and problems in their use [170]. The future of patient ownership and access to their treatment plans may reside with health technology innovations and in Scotland an electronic patient record is given a high priority in the Kerr report on the future strategy of the Scottish NHS system [171]. In Scotland sharing of patient information among multiple deliverers of care is being developed to support diabetes in the form of a web-based system, the Scottish Care Information - Diabetes Collaboration (SCI DC). It is envisaged that as a new community contract becomes implemented to support chronic disease management, community pharmacists may have access to this system [133]. In Scotland SCI DC will certainly improve co-ordination between clinicians; however it will not address the issue of patient self-empowerment at this time and so research will need to continue to address the value of patients recording their contributions to their own care and using that to inform the patient-healthcare provider relationship. Since the patient-held record as a clinical tool is unlikely to be effective in all patients, research will need to help discriminate which types of patients benefit from using such tools.

5.4.2 Pharmacists' Activities Reaching Consensus after Delphi D2

Consensus was achieved in the second Delphi round on the role of the patient interview in the assessment of patients' needs. Consensus was also achieved on the use of a standard care plan and on the use of a patient-held diabetes record booklet to help record the delivery of pharmaceutical care. Perhaps consensus would have been reached on those points earlier had it not been for a possible misunderstanding that pharmacists needed to create their own care plan instead of using a nationally agreed document. Participants were comfortable with the idea of sharing their care plan with other members of the team, although, because of confusion over the exact

nature/source of the care plan, the wording of this statement needed to be altered slightly between rounds before consensus was achieved.

At this stage, there was agreement for pharmacists to document all details in their care plan except for problems in blood glucose control requiring the balancing of the patient's food intake and their insulin doses (consensus was reached for this activity at Delphi D3). Community pharmacists showed they would be comfortable with adjusting doses of all drug groups except insulin. Between Delphi D1 and Delphi D2, the wording on this question about prescribing (question 16) was changed from "prescribing" to "adjusting doses", as the comments from Delphi D1 seemed to suggest some pharmacists, may at this point in time, be more comfortable adjusting doses using a patient group directive rather than being trained as a supplementary prescriber.

In a recent UK study (n= 518), only 3% of pharmacist supplementary prescribers in 2005 were actually prescribing within the endocrine speciality [26]. Lack of time, inadequate support staff and insufficient awareness among other health care professionals and the general public about the pharmacists' skills and attributes are known to be the major obstacles to expanding the professional role of pharmacists, especially in the community setting [27]. The opportunity for pharmacists to qualify as independent prescribers in Scotland may help to develop this role further in the future.

There was agreement to take responsibility for the motivation of the patient and family in self-care, in meeting treatment goals and in preventing and dealing with loss of diabetic control. The community pharmacists' agreed role also included education on limiting long term risks through smoking cessation and weight control. Previous studies have suggested that motivation and education are two potentially important roles for community pharmacists, who are well-placed to make a major impact, relative to other members of the healthcare team, because they see the patient most frequently [62,63,172].

5.4.3 Pharmacists' Activities Reaching Consensus after Delphi D3

Only after the third round did the community pharmacists agree to help maintain their patient-held diabetes record booklet with all details including changes in prescribed and purchased medicines, self-reporting of disease symptoms and achievement of treatment goals. A previous study (work including the author) in 2002 showed that only 43% of Scottish participating pharmacists believed that using a shared-care booklet or 'smart' card to assist information transfer was a service priority (work including the author) [77].

5.4.4 Pharmacists' Activities Not Reaching Consensus

The two activities in which consensus was not reached involved sharing plans with the patients and other members of the diabetes team to ensure appropriate foot care and adjusting doses of insulin. The reluctance to provide foot care services is in contrast to previous work in Scotland [77] where foot care was one of the top five services reported as being provided by approximately two-thirds of community pharmacy respondents to a questionnaire. Perhaps hesitancy to agree to these activities may be a lack of training in both these areas rather than an exclusion of their relevance to the pharmacy service, since activities have been successfully carried out by pharmacists in previously reported studies [64,173]. Research linked to continued professional development is indicated in order to help direct attention to the needs of service providers.

5.4.5 Community Pharmacists' Educational Needs Assessment

All pharmacists reported that they would require more training before becoming confident in providing a higher level of service to patients with type 2 diabetes mellitus. Some participants felt that a distance learning pack could provide this training. Distance learning packs have the advantage of flexibility and provide a means by which learning can fit in to a busy pharmacist's day as the learning is generally divided into small topics [162]. Almost half the participants (44%) felt they needed some training away from the workplace although only 11% felt that they require substantial training away from the workplace. When asked to rank their

preference of support options in order to meet these training needs, the top two options were a national course and a multidisciplinary course. A buddy system with another pharmacist who already provides this system was voted as the next favoured option.

A distance learning-interactive multi-media or web based package or DVD format and a local evening course for pharmacists were voted the least favoured options. Previous work has identified several problems with the learning web which could also be applicable to DVD formats such as technical problems, limited range of off-the shelf solutions and expense of in-house production. However the increasing use of these technologies in leisure will make their increased use in work and education inevitable and easier to integrate. Current difficulties may be outweighed by the advantage of 24 hour accessibility to education [174]. It was interesting that the participants favoured a national course (5 hours training), to a local evening course (2.5 hours training). This may be due to the fact they believed the topic required a full day of teaching or may be that they wished the national perspective as opposed to the local one, as both training options would be carried out in the pharmacists' own time.

5.4.6 Consensus of Training and Support Issues after Delphi D2

There was only one training and support statement to reach consensus after Delphi D2: that was the belief that community pharmacists delivering a level 3 service or intensive structured pharmaceutical care to patients with type 2 diabetes mellitus should be assessed and accredited as competent (83% majority). Accreditation programs are continuously reviewed and changed and accreditation organisations constantly strive to improve quality [175]. Although accreditation issues have received attention over time, an accurate current examination of accreditation of a pharmacist's delivery of care is at present absent within the pharmacy literature. For a clinician to be assessed and accredited as competent, they would have to prove clinical competence by delivering care that is proven to be optimal for that particular patient group [176]. This would take further study to establish the standards required and the appropriate assessment method.

5.4.7 Consensus of Training and Support Issues after Delphi D3

In this study, after Delphi D3, consensus was reached on the training and support statement that accreditation as a competent practitioner should be granted by evidence of attendance at courses. This finding is in contrast to the educational philosophy that attendance at an educational event does not result in competence. Interesting research may be to conduct a Delphi questionnaire among educational specialists and senior pharmacy managers on their perceptions of the role of accreditation in theory and in practice in recognising the suitability of community pharmacists for services provision.

Other methods of assessing their competency such as by multiple choice question examinations or practical examinations (OSCEs ie. Objective structured clinical examination) did not prove popular with participants obtaining only 22% and 28% agreement respectively.

At this stage the participants agreed that they would be comfortable sharing examples of practice through individual cases within a group of pharmacists. Consensus was also achieved with sharing examples of practice through individual cases within a group of pharmacists and sharing reflections of where their performance leaves room for improvement within a group of pharmacists. They obviously seem comfortable with uniprofessional peer review whereas consensus was not reached with these three activities when involved in a multidisciplinary group. Indeed the activity sharing reflections where their performance leaves room for improvement within a multidisciplinary group only obtained 25% consensus after Delphi. The Delphi comment:

'Are we at this stage yet?'

shows hesitance in taking up this opportunity at this stage.

Interestingly, reviewing current literature within a group of pharmacists or multidisciplinary group did not receive consensus. This should be an identified training need for pharmacists.

5.4.8 Training and Support Issues Not Reaching Consensus

Should accreditation be granted by Multiple Choice Question examination, practical examination (OSCEs ie. Objective structured clinical examination), or peer review (active participation at meetings with other colleagues providing similar services)? All did not reach consensus during the Delphi process. Initially the main perceived advantage of the OSCE was objectivity and standardisation which were regarded as the main underpinnings of its reliability. However an abundance of study evidence has shown that the reliability of an OSCE is based on careful sampling, particularly across clinical content, and an appropriate number of stations which generally means that several hours of testing time are necessary [177].

From an educational point of view, van der Vleuten compared different methods of comparing professional competence, including multiple choice assessments, oral examinations, OSCEs and practice video assessment. He concluded from this work that:

' no one method of assessment is inherently unreliable and any method of assessment can be sufficiently reliable' [178]

Accreditation of community pharmacists may therefore be a mixture of several means of assessment. Validity of the means of accreditation must also be taken into account i.e. does the mean(s) of assessment of accreditation actually measure what it is supposed to do; in this case fitness to provide high quality pharmaceutical care to patients with type 2 diabetes mellitus. Further research is required in this area of accrediting pharmacists' services in this disease state.

Evidence of self assessment and reflection through identification of personal learning needs or portfolio of evidence (Record of patient scenarios and documented actions) as a means of assessment did not reach consensus. Community pharmacists may have had limited experience to using learning portfolios for CPD purposes and there is no published literature to suggest portfolios have been used for accreditation purposes in the profession at this time. Portfolios have been used to support CPD [179,180] with some success and for assessment of the competence and performance

[181,182] within the profession of medicine. Research has recently been carried out using the Big-Five questionnaire with hospital pharmacists [183]. This was a questionnaire, designed by Goldberg et al [184], that has been used in an attempt to determine pharmacists' characteristics of portfolio engaging behaviour.

5.4.9 Issues Requiring Further Investigation

As highlighted throughout the discussion section, there are issues requiring further investigation as a result of this work; there is little evidence for why consensus was not reached on some activities/training or reached only after two or three rounds of the Delphi process on other activities/training.

Further study may be required to establish why participation at courses is the community pharmacists' favoured means of obtaining accreditation. This may be the easiest option as opposed to the most educationally sound.

In the majority of Delphi studies, authors have not paid attention to what happens between Delphi rounds. They tend to have a decision rule applied to the final round to determine what the consensus is and whether there is an acceptable level of agreement. Data analysis between rounds would show the progression towards consensus agreement. Further study in this area would add to the quality and credibility of the final decision of consensus [185]. The phenomenon of the level of agreement between the panel members increasing between the Delphi rounds is recognised [158]. In order to study this, further individual inquiry amongst experts shifting their opinion in later rounds would need to be made. This may offer some insight into how committed the panellist is to the change of opinion, and, if formally included as part of a Delphi study design, it might deter panellists from defaulting to a group norm [185].

The patients' voice was not included in defining the activities that should be delivered by a community pharmacy and clearly there is much further scope for patients' perceptions to inform the model. In that respect this model should be seen only as a first step in designing a pharmacy service to meet the needs of this group of

patients. The patient may also have an opinion on how the community pharmacists' services should be assessment and accredited. Patient involvement is now an important factor in service design, delivery and evaluation in NHS Scotland.

In Chapter 6, these consensus agreed pharmacy activities will be used as behavioural statements in generating a competency framework for the delivery of pharmaceutical care to the patients with type 2 diabetes mellitus.

5.4.10 Conclusion

The majority of suggested pharmaceutical care activities reached consensus suggesting a desire to deliver a comprehensive service. For service development and linked continued professional development a well-defined service model for delivering pharmaceutical care to patients with type 2 diabetes is required. The present study has proposed such a model based on a consensus among the leading edge community pharmacist practitioners in Scotland.

The Delphi participants felt there was a need for training in order to provide an intensive pharmaceutical care service to the patient with type 2 diabetes mellitus. Consensus was reached that all community pharmacists should be assessed and accredited as competent to deliver this service. Participation at courses was the only method of accreditation which reached consensus. With regard to CPD, consensus was reached with peer support in the form of case discussions and reflections on good and poor practice, but only within the profession of pharmacy. These activities within a multiprofessional group did not reach consensus.

Chapter 6:

Development and Piloting of a Competency Based CPD Workbook

Research Focus 3:

A Community Pharmacy CPD Support Model for Providing Care to the Patient with Type 2 Diabetes Mellitus in Primary Care

6.1 Introduction

6.1.1 Background

The role of Skills for Health, the Sector Skills Council for the UK health sector is to develop solutions that deliver a skilled and flexible UK workforce in order to improve health and healthcare. One of its main functions is to develop National Occupational Standards (NOS) and National Workforce Competencies (NWC) for use within the health sector [186]. The organisation Skills for Health, is gradually developing competencies for chronic conditions such as diabetes mellitus but these were few in number at the time of this project. During the research period however, NHS Education for Scotland (NES) started to develop competency frameworks to assist with identifying the educational needs of health professionals involved in the delivery of care for patients with long term chronic conditions. The Competency Framework for the Care of a Person with Diabetes (CFD) [118] was published in 2004. This work used 6 competency clusters:

1. Participates as a member of the multidisciplinary team, in the care of a person with diabetes

2. Has knowledge of tests and assessments carried out and of the devices used

3. Show an understanding of the diagnosis of diabetes and therapeutic interventions in diabetes care

4. Can demonstrate personal knowledge of multidisciplinary diabetes care is up-to-date and based on local and national standards/ guidelines

5. Contributes to the continuing education of other healthcare professionals

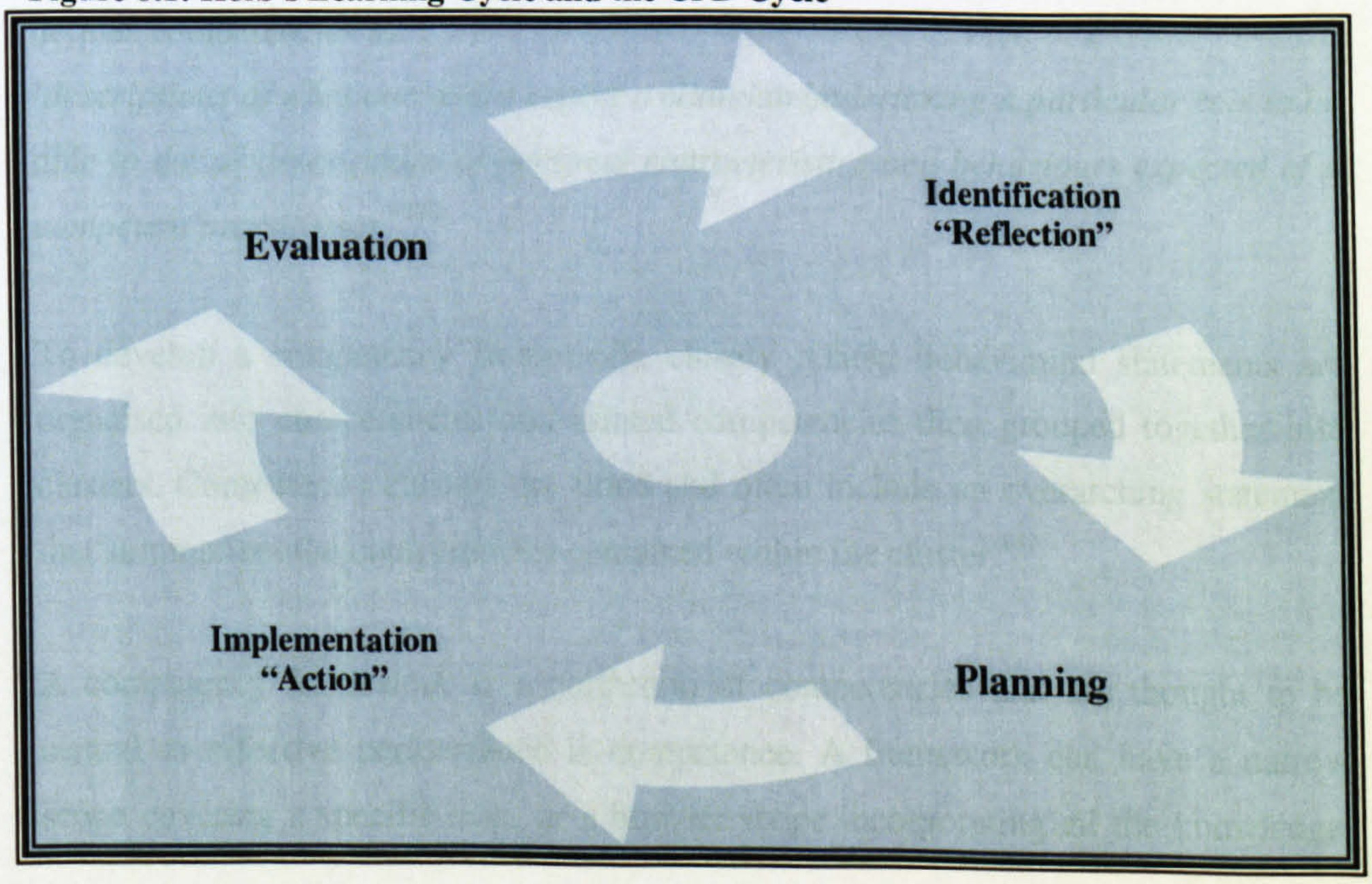
6. Contributes to the continuing education of the patient and family/carers about diabetes and diabetes care

The decision to use this framework for this research was based on the fact that diabetes mellitus is recognised as a complex disease treated by a multidisciplinary team, and this was the most current nationally agreed set of multidisciplinary competencies published within Scotland.

Within the CFD document, these competency clusters were then cross matched to the 10 'Quality in Scotland' standards for diabetes as a means by which healthcare professionals could record the knowledge and skills they require to remain or become competent in delivering care for the patient with diabetes [187]. The primary purpose of the CFD was to facilitate the individual practitioner in their assessment of their personal needs against agreed competencies, and from this develop their Continuing Professional Development (CPD) action plan.

Continuing Professional Development (CPD) is a systematic, ongoing, cyclical process of reflection on practice, planning, action and evaluation (reflection on learning), based on the 4-stage Kolb learning cycle; identification/reflection, planning, implementation/action, evaluation [93] as shown in Figure 6.1. CPD is inclusive of any learning that is relevant to pharmacists' development of their capabilities, including any continuing education. This reflective process should lead not only to individuals meeting their specific professional learning needs, to allow them to keep pace with the changes in practice, but also to consider the need to retain, develop and maintain public confidence in their services.

Figure 6.1: Kolb's Learning Cycle and the CPD Cycle



At the time of this research in Scotland, community pharmacists are beginning to prepare for the Chronic Medication Services (CMS) element of the new NHS community pharmacy contract. This development intends to aid the delivery of pharmaceutical care to patients suffering from chronic disease states such as diabetes mellitus [130,188]. Clinical governance requires professional self-regulation and a demonstration to lifelong learning. It is difficult to determine the competencies required to deliver a service in which the operational definitions are unclear, and thus the Delphi exercise (Chapter 5) was used to determine which possible pharmaceutical care activities (behavioural statements) might be offered by community pharmacies to patients with this disease.

Many organisations and professions, including pharmacy are increasingly using a competency approach to describe the knowledge, skills and attitudes required to provide a service or to do a job well [189]. In the Royal Pharmaceutical Society of Great Britain (RPSGB) continuing professional development (CPD) requirements, the documentation expects pharmacists to include the competencies relating to a particular CPD entry. There are many definitions of competency. Whiddett suggests competency is an ability which is based on work tasks or job outputs [111]. RPSGB defines competencies as:

'descriptions of what one might expect a clinician undertaking a particular role to be able to do, or descriptions of personal characteristics and behaviours expected of a competent practitioner' [190]

To develop a competency framework, closely related behavioural statements are organised into competencies and related competencies then grouped together into clusters. Competency clusters are titled and often include an overarching statement that summarises the competencies contained within the cluster [189].

A competency framework is a collection of competencies that are thought to be central to effective performance ie competence. A framework can have a narrow scope covering a specific task, or a broader scope incorporating all the knowledge,

skills and attitudes required for a community pharmacist to provide pharmaceutical care to a patient with type 2 diabetes mellitus.

In this chapter, the pharmaceutical care activities or behavioural statements already agreed through the Delphi process were used to detail each CFD competency cluster [119]. This piece of research links competencies with analysis of personal learning needs in the form of a CPD workbook. Currently workbooks are not widely used CPD tools within the pharmacy profession in Britain, [191] although reflective course portfolios have been used successfully in some instances [180,192,193].

6.1.2 Justification for Research

This research built on previous work (Chapter 4 [147] and 5 [194]), with focus group discussions facilitating the design and content of a competency based workbook for community pharmacists' CPD support. Work to date (inclusive of the author) in Pharmacy has identified the need to confirm the usefulness of such a support tool when used with pharmacists on a leadership programme [191].

6.1.3 Study Aims and Objectives

The aim of the research was to develop a competency-based system for self-identification of CPD needs for delivering comprehensive pharmaceutical care to the patient with diabetes mellitus type 2.

From this primary aim, a number of objectives emerged:

- To draft a competency framework for community pharmacists providing pharmaceutical care to patients with type 2 diabetes mellitus using consensus agreed pharmacist activities as behavioural statements

- To develop a Continuing Professional Development Workbook from this framework

- To validate this competency framework and to identify areas of strengths and weaknesses in the CPD workbook

- To investigate the acceptability and the comprehensiveness of the competency based CPD workbook via pilot group work

6.2 Methods

6.2.1 Study Design

A qualitative study using 2 focus groups. Pilot-study data collation of pharmaceutical care issues and CPD workbook entries.

6.2.2 Subjects and Settings

6.2.2.1 Focus Group A

Focus Group A participants n=7 (39%) were drawn from the national Delphi study group (Chapter 5) and asked to consider the competency based CPD workbook. This group was characterised in terms of age, sex, number of years qualified and sector of employment.

6.2.2.2 Pilot Study

The pilot study sample n =11 was recruited from one region in Scotland where community pharmacists were being funded by the Scottish Government to carry out a pharmaceutical care service to patients with diabetes mellitus as part of a Pharmaceutical Care Model Scheme (PCMS) initiative [14]. This group was characterised in terms of age, sex, number of years qualified and sector of employment.

6.2.2.3 Focus Group B

Focus group B participants n =7 were drawn from the pilot group (64% of the pilot group) and asked to consider the competency based CPD workbook. Again this group was characterised in terms of age, sex, number of years qualified and sector of employment.

6.2.2.4 Ethical Considerations

As this research was carried out after April 2004, ethics approval was sought for both focus groups and the pilot study. Ethical approval was deemed to be required for Focus Group A (Greater Glasgow Health Board) and was sought and obtained (Appendix 6.1a and b). Ethical approval for the pilot study and subsequent Focus Group B was deemed by the local ethics board (Dumfries and Galloway Health Board) to not be required. They considered the study to be part of service development.

6.2.3 Study procedure

6.2.3.1 Development of a Competency-based CPD workbook

The CFD document [119] was studied by a research team from the Pharmaceutical Care Department at the University of Strathclyde consisting of the Professor of Pharmaceutical Care, an Honorary Lecturer with a special interest in Diabetes Mellitus, a Research Fellow and the lead researcher (author). This work formed part of Stage One of the formation of the CPD workbook. Competency clusters and competencies believed most relevant to the pharmaceutical care of the patient were selected from the CFD document [119]. It was decided not to use the entire document as it was large and therefore may have appeared daunting to community pharmacists. Sections were chosen or prioritised with reference to the findings in Chapter 4 on the potential roles of community pharmacists (Table 4.5). From the potential 94 competencies in the CFD, 43 (45.7% of the CFD) were selected. The 34 behavioural statements from Chapter 5 involved in the Delphi process were then matched to the CFD competencies [119] to form Draft 1 of a CPD competency based document - For Focus Group Discussion (Appendix 6.2). In order to convert this document into a workbook format, four columns were developed on the right hand page of the document. These columns were titled 'Changes in Performance-How do I improve my performance?', 'Analysis of Personal Learning Needs', 'Personal Learning Plan' and 'Evidence of Change'. The competencies and behavioural statements formed the left-hand page of the document.

6.2.3.2 Focus Group A (Stage One)

Focus Group A was part of Stage One of the formation of the CPD workbook and was held with 7 Delphi participants after the Draft 1-CPD workbook was designed. Participants in Focus Group A were given the draft CPD workbook (Appendix 6.2) and the CFD document [119]. Reference was made to both these documents during the focus group to stimulate discussion and allow debate within the group. This focus group was facilitated by the lead researcher using a semi-structured questionnaire (Appendix 6.3). Focus Group A was asked to consider:

- Competency clusters and competencies in the multidisciplinary CFD document which should have been included in the workbook
- Workbook format
- Terminology updates
- Links between competency and behavioural statements
- Potential removal of behavioural statements for which consensus was not achieved in the Delphi process (Chapter 5)
- Suitable behavioural statements for any newly selected competencies
- Ways the workbook could be of practical use
- Problems/limitations to the use of the workbook
- Improvements to the design of the workbook

6.2.3.3 Pilot Study (Stage Two)

After Focus Group A, the competency based CPD workbook was revised accordingly and the revised Draft 2 Workbook-For Pilot Study Use (Appendix 6.4) was used in a 5 month pilot study with eleven community pharmacists in one region in Scotland. This Pilot Study formed part of Stage Two of the formation of a CPD workbook. During this time period, the pilot participants were encouraged to use the competency based CPD workbook as a CPD aid while delivering pharmaceutical care to their patients with type 2 diabetes mellitus. All entries made in the competency based CPD workbooks during the pilot phase were collated.

For assessing comprehensiveness of the workbook, each pilot pharmacist submitted 10 examples of the most common care issue and 5 of the least common care issues encountered while delivering care to these patients. This procedure was to ensure that all issues encountered in practice were covered by the competencies and behavioural statements in the workbook. The researcher obtained these examples in the last 2 weeks of the study; allowing maturation of professional services to this patient group. A team at the Pharmaceutical Care Heath Service Unit at the University of Strathclyde consisting of the Professor of Pharmaceutical Care, an Honorary Lecturer with a special interest in diabetes mellitus, two Research Fellows and the lead researcher (author) then matched the care issues to the competency or competencies under which each might be documented.

6.2.3.4 Focus Group B (Stage Two)

At the end of this pilot period, a second focus group, Focus Group B took place with 7 of the 11(64%) pilot participants. This focus group formed part of the Stage Two process of the formation of a CPD workbook. Participants in Focus Group B were asked to bring along their CPD workbooks and were given a compiled list of all the common and less common care issues (Tables 6.6 and 6.7) to consider. This focus group was facilitated by a local researcher (Researcher 5) (DK) using a semi-structured questionnaire (Appendix 6.5). Focus Group B was asked to consider:

- Acceptability of the CPD workbook
- Potential improvements to the CPD workbook
- Potential support in the use of the CPD workbook
- Time taken to complete the workbook
- Proportion of workbook completed during study
- Usefulness as a benchmarking document
- Comprehensiveness of the CPD workbook

As previously mentioned, neutrality or freedom from bias is pivotal to validity in qualitative research. A researcher's experience, background and perspective influences the data collection and analysis. A local researcher was chosen to facilitate

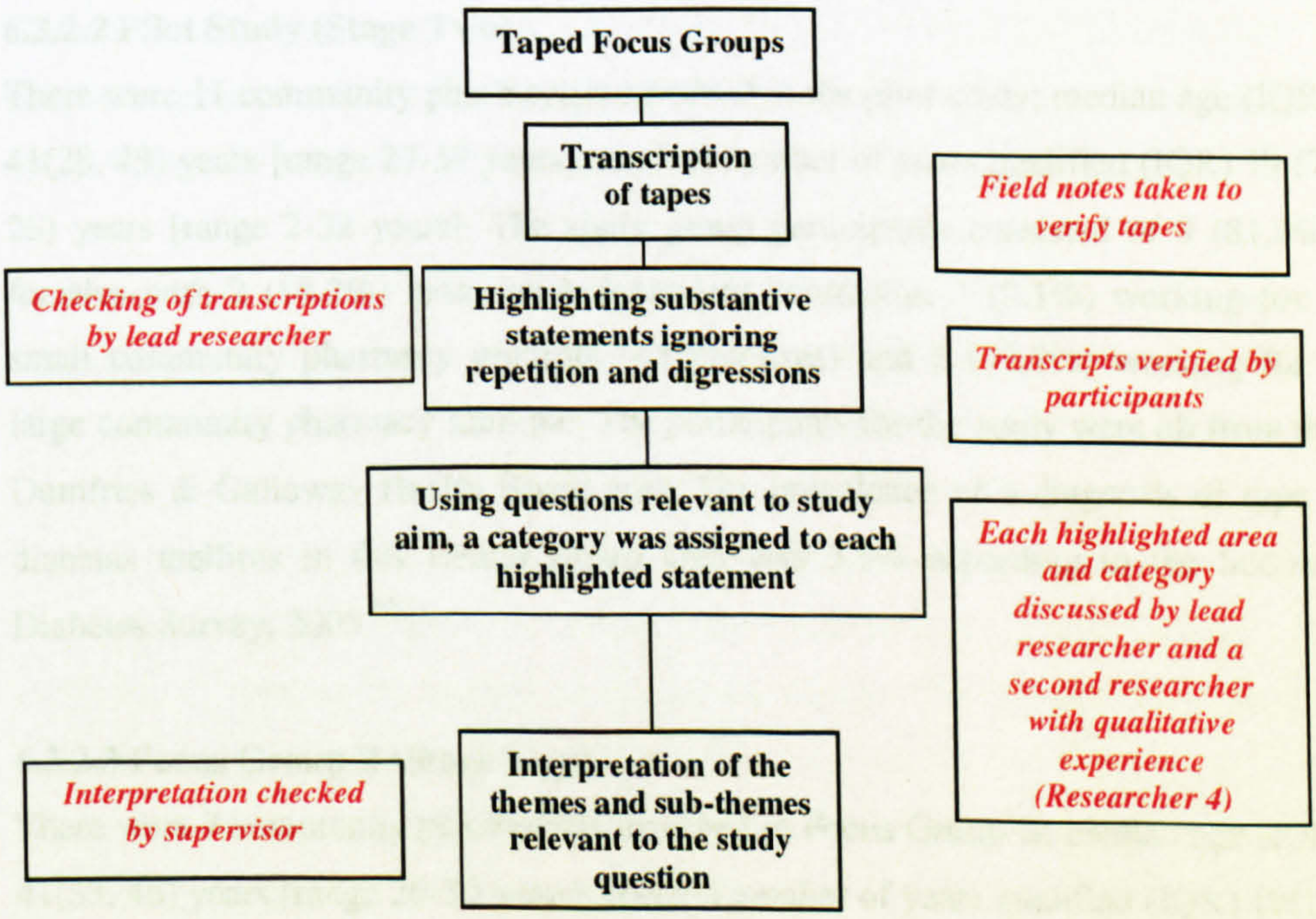
this particular piece of work as it was felt that the participants would be more likely to give honest feedback to a colleague than to a member of staff from NHS Education for Scotland (author), who had produced the workbook. Short biographical detail for Researcher 5 (DK) is thus presented:

Researcher 5 (DK)- had been registered as a pharmacist for 19 years at the time of this research. She had spent the majority of this time either in community pharmacy or in primary care. Researcher 5 had assisted and participated in many qualitative pieces of work and has experience of facilitating focus groups.

6.2.4 Data handling and analysis

Both focus groups were tape-recorded and transcribed. All transcripts were confirmed as accurate by the interviewees themselves. The content was analysed using a framework approach [132], and the themes discussed with a separate qualitative researcher (Researcher 4) (HH). Figure 6.2 illustrates the qualitative research data analysis and verification process.

Figure 6.2: Scheme of qualitative research data analysis and verification stages



6.3 Results

6.3.1 A Competency Based CPD Workbook

Initially from the potential 94 competencies in the CFD [119], 43 (45.7% of the CFD) were selected by the research team at the University of Strathclyde. Focus Group A however selected a further 11 (20.4%) competencies resulting in 54 (57.4%) from the CFD document being included in the CPD workbook; 54 competencies under 5 competency clusters.

6.3.2 Study Population Characteristics

6.3.2.1 Focus Group A (Stage One)

There were 7 community pharmacists involved in Focus Group A; median age (IQR) 39(30, 41) years [range 28-52 years], median number of years qualified (IQR) 17(15, 21) years [range 4-29 years]. The study group participants consisted of 4 (57.1%) females with 1(14.3%) being an independent contractor, 2 (28.6%) working for a small community multiple (<5 premises) and 4 (57.1%) working for a large community pharmacy multiple. The study participants were from Greater Glasgow, Argyll and Clyde, Lanarkshire and Dumfries & Galloway Health Board areas.

6.3.2.2 Pilot Study (Stage Two)

There were 11 community pharmacists involved in the pilot study; median age (IQR) 41(28, 49) years [range 27-57 years], median number of years qualified (IQR) 19 (7, 26) years [range 2-32 years]. The study group participants consisted of 9 (81.8%) females with 2 (18.2%) being an independent contractor, 1 (9.1%) working for a small community pharmacy multiple (<5 premises) and 8 (72.7%) working for a large community pharmacy multiple. The participants for the study were all from the Dumfries & Galloway Health Board area. The prevalence of a diagnosis of type 2 diabetes mellitus in this Health Board area was 3.8% according to the Scottish Diabetes Survey, 2003 [133].

6.3.2.3 Focus Group B (Stage Two)

There were 7 community pharmacists involved in Focus Group B; median age (IQR) 41(33, 46) years [range 26-50 years], median number of years qualified (IQR) 19(12,

24) years [range 4-28 years]. The study group consisted of five (71.4%) females with one (14.3 %) being an independent contractor, two (28.6%) working for a small community multiple (<5 premises) and four (57.1 %) working for a large community multiple. The participants for the study were all from the Dumfries & Galloway Health Board area.

6.3.3 Establishing Team Member Opinions

6.3.3.1 Focus Group A (Stage One)

The complete transcript of Focus Group A is available in the Appendix Section (Appendix 6.6) with the appropriate quotes highlighted. Table 6.1 presents the 11 additional competencies selected by Focus Group A to be added to the CPD workbook in addition to the 43 already selected by the research team.

Within the CPD workbook, each competency chosen from the CFD document [119] was matched to a behavioural statement. Table 6.1 and 6.2 presents the behavioural statements created by Focus Group A, to match any competencies in the CPD workbook with no matched statement.

There were 11 competencies chosen by Focus Group A from the CFD document [119] to which there were no linked behavioural statements. These were developed by Focus Group A (Table 6.1) after studying Draft 1-CPD workbook (Appendix 6.2).

There were six existing competencies from the CFD document [119] with no linked behavioural statements after matching by the research group. Again Focus Group A developed these (Table 6.2) after studying Draft 1-CPD workbook (Appendix 6.2).

Table 6.3 shows the seven pharmacy activities which did not reach consensus during the Delphi process (Chapter 5). These were considered by Focus Group A for inclusion as behavioural statements in the workbook. The decision to include or exclude an activity from the workbook was made on an individual basis. Any relevant comments made by the Delphi participants were taken into account.

Figure 6.3 shows diagrammatically a representation of Stage One of the formation of the final Competency based CPD workbook.

Figure 6.3: Diagrammatical representation of Stage One of the formation of the final Competency based CPD workbook

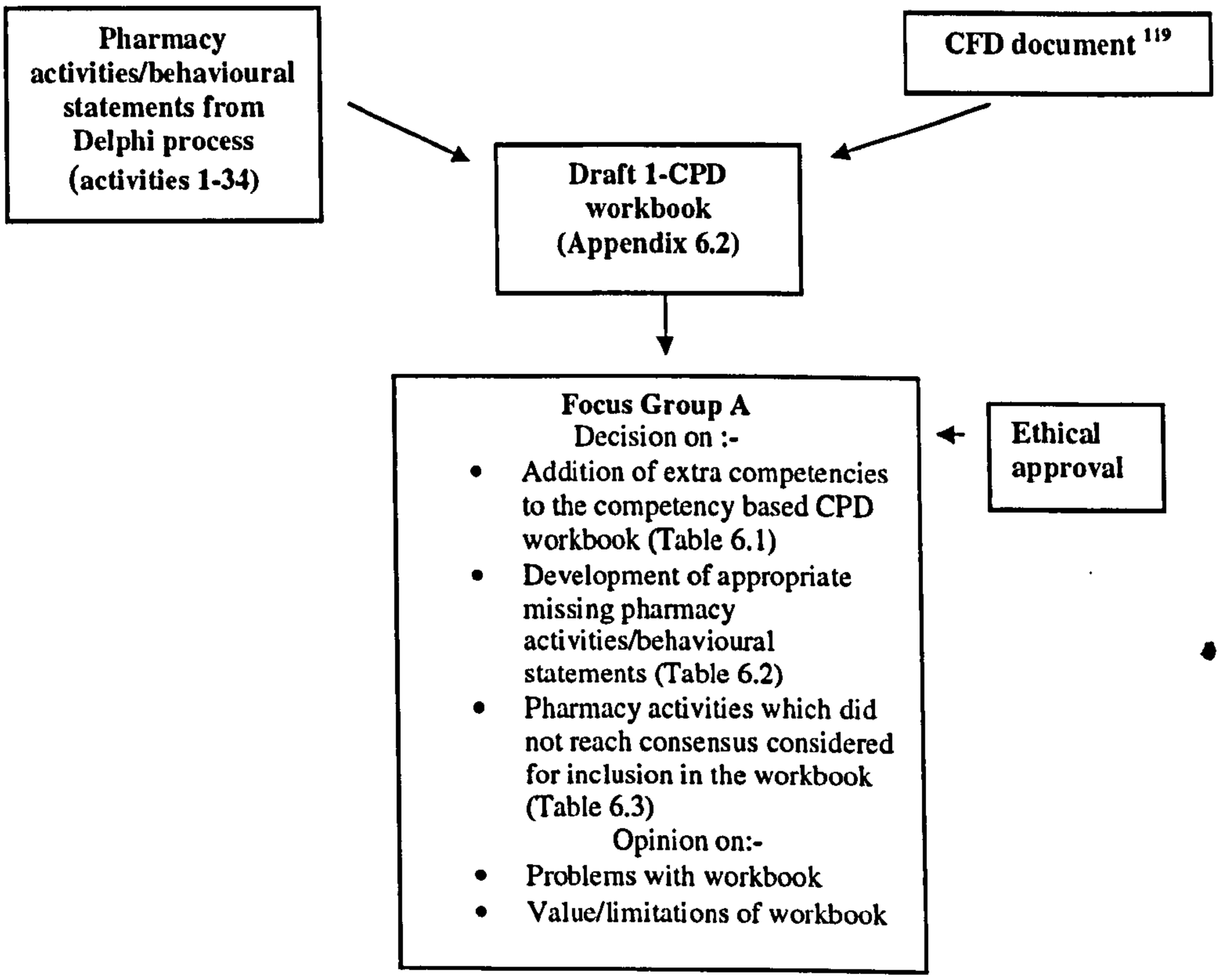


Table 6.1: Additional competencies and appropriate linking behavioural statements as decided by Focus Group A
(Pharmaceutical Care Activities/behavioural statements 1-34 were involved in the Delphi process in Chapter 5)

Additional Competencies requested by Focus Group A	Assigned Activity Number	Pharmacist behavioural statements developed by Focus Group A (Unless otherwise stated)
Managed clinical networks in diabetes care	35	Involvement in relevant local committees
National and local clinical management systems for the identification and follow up of people with diabetes	1	Creating a register to identify patients with diabetes (consensus agreed activity from Chapter 5)
Clinical management of a person with diabetes in relation to glycaemia	18	Individualising patient's oral antidiabetic treatment incorporating checking and following up the drug/dose regime (consensus agreed activity from Chapter 5)
Clinical management of a person with diabetes in relation to management of acute hypoglycaemic episodes	36	Advise patients on what action should be taken in an event of a hypoglycaemic event
Maintaining the patient focus of diabetes care Maintaining knowledge about the care of the person with diabetes	37	Continually educate and encourage the patient and carer to be proactive in their disease
Lifestyle factors that contribute to maintenance of health and reduce the risk of complications	26	Provide education on how to limit tissue damage through smoking cessation and weight control (Consensus agreed activity from Chapter 5)
Principles of health promotion and education	38	Provide appropriate information on lifestyle advice and health promotion
Treatment options in diabetes care, and possible side effects: patient/carer involvement	39	Provide advice and appropriate information on treatment options and possible side effects
Identifying with patients/ families/ carers opportunities for learning	40	Advise on sources of learning or appropriate support groups
Critically appraising information on diabetes from various formats	41	Critically review sources of information for patient and carer

Table 6.2: Existing competencies with no linked behavioural statements as decided by Focus Group A (Pharmaceutical Care Activities/behavioural statements 1-34 were involved in the Delphi process in Chapter 5)

Selected competencies by the University research team with no obvious behavioural statement	Assigned Activity Number	Behavioural statements developed by Focus Group A
Local and National guidelines relating to the care of people with diabetes	42	Obtain a working knowledge of national and local guidelines
Joint research and audit programmes	43	Become involved in audit and/or becoming part of a research project
Involving service users in the evaluation of services	44	Use patient evaluation questionnaires
Cultural issues that may affect the care of the person with diabetes	45	Have a working knowledge of patient cultures and implications of the disease state
Screening processes for the detection of diabetes: Information for the patient/carer	46	Provide appropriate information on screening processes to patient and carer. Refer if necessary
Relating the importance of concordance with therapeutic regimens in diabetes care to patients/carers	47	Provide timely patient counselling to patients and carers. Monitor compliance from their patient medication records

Table 6.3: Results of consideration by Focus Group A on pharmacy activities which did not reach consensus in the Delphi process

Assigned Activity Number	Pharmacy Activity	Examples of Comments from Focus Group A [FGA] or Delphi Exercise 3[D3]	Decision of Focus Group A
16	After suitable training, I would be comfortable with adjusting doses for insulin	*'Yes well I can see why that wasn't popular! Too scary!'*[FGA]	Exclusion from CPD workbook
21	I would share plans with the patients and other members of the diabetic team to ensure appropriate foot care	*'Foot care didn't get consensus. Hmmm interesting, folk must think it's too specialised'*[FGA]	Exclusion from CPD workbook
	I would be comfortable:-		
27	Critically reviewing current literature within a group of pharmacists	*'with the phrase 'with appropriate experience and expertise' added can we not keep it in the CPD workbook'*[FGA]	Inclusion in CPD workbook
28	Critically reviewing current literature within a multiprofessional group	*'people would feel a bit out of their depth if they went in with people like GPs and so on'* [FGA]	Exclusion from CPD workbook
30	Sharing examples of practice through individual cases within a multidisciplinary group	*'we can't leave that out. That is hugely important. We may not like it, but it is the only way forward'* [FGA]	Inclusion in CPD workbook
32	Sharing reflections of your best performance in practice within a multidisciplinary group	*'Again, this has to stay in. We are not considering what we do today, but what we should be doing 5 years from today'* [FGA]	Inclusion in CPD workbook
34	Taking part in a local multi-disciplinary mentoring group	*'I would welcome this!'*[D3] *'Get everyone's perspective-improved relations with other professionals'*[D3] *'I think if it had been allowed more Delphi rounds it would have made consensus. It would only be fair to include it in the workbook'*[FGA]	Inclusion in CPD workbook

Table 6.4 presents the finalised agreed content of the competency-based framework for community pharmacists providing pharmaceutical care to patients with type 2 diabetes mellitus after Focus Group A. The graphically designed CPD workbook used for the pilot phase is shown in Appendix 6.4.

Table 6.4: Finalised agreed content of the competency-based framework for community pharmacists providing pharmaceutical care to patients with type 2 diabetes mellitus after Focus Group A. Each activity/behavioural statement was assigned a number at the Delphi stage (Chapter 5) or after Focus Group A

Competency	Assigned Activity Number	Behavioural Statement
Competency Cluster 1: Participates as a member of the multidisciplinary team, in the care of a person with diabetes		
• Personal role in diabetes care as a member of the multidisciplinary team	2 5/19	Identify patients' need for support by patient interview/assessment. Help patients maintain a patient-held diabetes record booklet to be shared by other members of the team
• Maintaining the patient focus of care • The role in diabetes care of other members of the team	4 25	Maintain a standard pharmaceutical clinical record that would be shared with other members of the team Monitor the patients for signals for assessment and referral to other members of the team
• Personal accountability and that of other members of the team • Managed clinical networks in diabetes care • Decision making networks and processes in diabetes care	6/7 10/2022 23/24 16	Dispense prescriptions and counselling patients. Receive and integrate information about patients' treatment goals and medical/drug history obtained from the team into the standard pharmaceutical clinical record Share plans with the patients and members of the team to ensure, suitability of medication for preventing cardiovascular disease, for neuropathy, in renal impairment or visual impairment Adjust doses to optimise benefits of hypertension treatment, cardio protective medicines, anti-anginal treatment, antibiotics, analgesics, oral hypoglycaemics
• Systems for referral of patients to other disciplines who contribute to the care of the person with diabetes • The need for, and components of, clinical review • Understand the effects of other conditions on the care of the person with diabetes	25	Monitor the patient for signals for review by GP where identification of co-prescribed/purchased medicines for co-morbidity interact, significant changes are recorded in the patient-held record booklet, infection, other complication or new symptoms, failure to reach personalised treatment goals
• Team contribution to the design of services for the care of patients • Managed clinical networks in diabetes care	35	Involvement in relevant local committees

Table 6.4: Finalised agreed content of the competency-based framework for community pharmacists providing pharmaceutical care to patients with type 2 diabetes mellitus after Focus Group A. Each activity/behavioural statement was assigned a number at the Delphi stage or after Focus Group A

Competency	Assigned Activity Number	Behavioural Statement
Competency Cluster 1: Participates as a member of the multidisciplinary team, in the care of a person with diabetes		
• How primary and secondary care services interface in the care of patients • Contribution to planning , including discharge planning and follow up for the care of the person with diabetes	6/7 5	Receiving and integrating information about patients' treatment goals and medical/drug history received from the multidisciplinary team into the standard pharmaceutical clinical record Using a standard patient-held diabetes record book to liaise with primary care, secondary care and GPs
• Involving patients and their families and carers in the planning of care	17	Supporting the motivation of the patient and family in self care, treatment goals, preventing and dealing with loss of diabetic control
• Local and national guidelines relating to the care of people with diabetes • Access to sources of up-to-date information on diabetes care	42	Obtaining a working knowledge of national and local guidelines
• Quality assurance systems to monitor the standard of services for patients • Needs for and components of audit of care • Importance of risk assessment and management in diabetes care	29/30 31/32	Sharing examples of practice through individual cases within a group of pharmacists or within a multiprofessional group Share reflections of your best performance in practice within a uniprofessional or multiprofessional group
• Contribution to the development, implementation and evaluation of clinical guidelines in diabetes care • Current research relating to the care of the person with diabetes	27	With appropriate experience and expertise, critically review current published papers on advances on diabetic care within a group of pharmacists

Table 6.4: Finalised agreed content of the competency-based framework for community pharmacists providing pharmaceutical care to patients with type 2 diabetes mellitus after Focus Group A. Each activity/behavioural statement was assigned a number at the Delphi stage or after Focus Group A

Competency	Assigned Activity Number	Behavioural Statement
Competency Cluster 1: Participates as a member of the multidisciplinary team, in the care of a person with diabetes		
• Joint research and audit programmes	43	Become involved in audit and/or becoming part of a research project
• Communication systems and methods of record keeping employed by the multidisciplinary team in diabetes care	1	Create a register to identify patients with diabetes
	3	Record delivery of care on a standard pharmaceutical clinical record
• National and local clinical management systems for the identification and follow-up people with diabetes	20-24	Use a standard referral process to share information with team members
	6/7	Receive information and integrate into pharmaceutical clinical record
• Maintaining standards for data capture and coding and record keeping	8	Pharmaceutical care plan would be maintained in respect of antidiabetic agent,
	9	patient's status in respect of diabetic complications, identification of cardio
• The role of the individual in the general practice or hospital team responsible for data processing	10/11	preventive medication, dietary goals needing to be addressed, problems in blood
	12	glucose control requiring balancing food intake/ insulin dose, general advice on
	13	the use of insulin therapy, advice given on self-monitoring of glycaemic control,
	14	records of targets agreed with patient on HbA1c, blood pressure, cholesterol and
	15	frequency of hypoglycaemic episodes
• Establishing and maintaining methods of communication with other members of the multidisciplinary team	18	Individualise patients' oral antidiabetic treatment by checking and follow up the drug/dose regimen, identifying unsatisfactory treatment and toxicity monitoring
• Provision of high quality information to patients and their family/carers, tailored to the needs of the individual	19	Maintaining a patient-held diabetes record booklet on changes in prescribed/purchased medication, self-reporting of symptoms, episodes of hypoglycaemia and documentation of personalised treatment goals
• Involving service users in the evaluation of services	44	Use patient evaluation questionnaires
Competency Cluster 2 : Has knowledge of tests and assessments carried out and of the devices used		
• Knowledge of the specific tests used in diabetes care and why and how they are carried out	15	Maintain the pharmaceutical clinical record with respect to agreed targets on HbA1c, BP, cholesterol, frequency of hypoglycaemic episodes
• Knowledge of when and how often tests should be carried out according to individual need		
• Interpretation, recording and reporting the results of tests		
• Operation of devices and equipment used in testing in diabetes care	14	Maintain the pharmaceutical clinical record with respect to advice given on self-monitoring of glycaemic control

Table 6.4: Finalised agreed content of the competency-based framework for community pharmacists providing pharmaceutical care to patients with type 2 diabetes mellitus. Each activity/behavioural statement was assigned a number at the Delphi stage or after Focus Group A

Competency	Assigned Activity Number	Behavioural Statement
Competency Descriptor 3: Show an understanding of the diagnosis of diabetes and therapeutic interventions in diabetes care		
• Clinical management of a person with diabetes in relation to cardiovascular system, glycaemia, renal function, neuropathy, management of eyes, management of acute episodes	10/20	Share plans with the patients and other members of the team to ensure suitability of medication for preventing cardiovascular disease, in renal impairment
	23	
	9/10	Maintain a pharmaceutical clinical record in respect of patients cardiovascular disease, identification of cardioprotective medication, problems in blood glucose control requiring balancing the food intake and insulin dose, advice given on self-monitoring of glycaemic control, in respect of patient's diabetic nephropathy
	12/14	
	22	
	16	Adjust doses of cardioprotective medicines, oral hypoglycaemics
	18	Individualise patients' oral antidiabetic treatment/ checking drug/dose regime
	22	Share plans to ensure suitable drug treatment for neuropathy and in the presence of visual impairment
	24	
	36	Advise patients on what action should be taken in a hypoglycaemic event
• Pharmaceutical interventions in diabetes care, their actions, interactions and possible side effects	18	Individualise patients' oral antidiabetic treatment;check drug/dose regimen, identify unsatisfactory treatment, monitor for signs and symptoms of toxicity
	8	Update the pharmaceutical care plan on choice of antidiabetic agent
• Pharmaceutical interventions in diabetes care, their actions, interactions and possible side effects	25	Monitor patient for signals for review by the GP where identification of co-prescribed/purchased medicines for co-morbidity interact
	16	Adjust doses to optimise benefits of hypertension treatment, cardio protective medicines, anti-anginal treatment, antibiotics, analgesics, oral hypoglycaemics.
• The influence of diet and nutrition on diabetes and diabetes care	11	Maintain the pharmaceutical clinical on dietary issues needing addressed.
	26	Provide education on how to limit tissue damage through weight control
• The influence of physical activity on diabetes and diabetes care	12	Maintain the pharmaceutical clinical record in respect of problems in blood glucose control requiring balancing the food intake and insulin dose
• Recognition of the signs and symptoms of complications in the person with diabetes	9	Maintain the pharmaceutical care plan on the patient's status in respect of diabetic complications
• Health promotion in addition to therapeutic interventions for secondary prevention • Prevention through health promotion and health education	26	Provide education on how to limit tissue damage through smoking cessation

Table 6.4: Finalised agreed content of the competency-based framework for community pharmacists providing pharmaceutical care to patients with type 2 diabetes mellitus after Focus Group A. Each activity/behavioural statement was assigned a number at the Delphi stage or after Focus Group A

Competency	Assigned Activity Number	Behavioural Statement
Competency Descriptor 4: Can demonstrate personal knowledge of multidisciplinary diabetes care is up-to-date and based on local and national standards/ guidelines		
• Cultural issues that may affect care of person with diabetes	45	Have a working knowledge of patient cultures and implications of disease state
• Identification of educational opportunities specific to specialty	33	Share reflections of where your performance leaves room for improvement within a group of pharmacists
• Interdisciplinary learning in diabetes	34	Take part in a local multi-disciplinary mentoring group
Competency Descriptor 5: Contributes to the continuing education of the patient and family/carers about diabetes and diabetes care		
• Screening processes for detection of diabetes: Information for patient/carer	46	Provide information on screening processes. Referral if necessary
• Relating the importance of concordance with therapeutic regimes in diabetes care to patients/carers	47	Provide timely patient counselling to patients and carers. Monitor compliance from their patient medication records
• Maintaining the patient focus of diabetes care • Maintaining knowledge about care of person with diabetes	37	Continually educate and encourage patient/ carer to be disease proactive
• Lifestyle factors that contribute to the maintenance of health and reduce the risk of complications • Principles of health promotion and education	38 26	Provide information on lifestyle advice and health promotion Provide education on how to limit tissue damage through smoking cessation/ weight control
• Treatment options in diabetes care, and possible side effects:patient/carer involvement	18 39	Individualise oral antidiabetic treatment- check and follow-up drug/dose regimen, identify unsatisfactory treatment, monitor for signs/symptoms of toxicity Provide advice and appropriate information on treatment options and possible side effects
• Identifying learning with patients/ families/ carers • Critically appraising information on diabetes from a various formats	40/41	Advise on sources of learning or appropriate support groups. Critically review sources of information for the patient/carer

6.3.3.2 Focus Group A and B

The complete transcript of Focus Group B is available in the Appendix section (Appendix 6.7) with the appropriate quotes highlighted. Table 6.5 presents examples of specific focus group quotes from Focus Group A and B. Examples of quotes in this table explore the acceptability, value and problems or limitations of the workbook.

PAGE NUMBERING AS ORIGINAL

Table 6.5: Focus Group A and B's views on the competency based CPD workbook as a CPD tool

Discussion point	Examples of Interviewee Quotes
Acceptability	*'Yes. It is reassuring that if you are trying to do something, then you are going in the right direction. You are not missing things out along the way, or if you are, it will then highlight what you maybe should be doing. It is something that you maybe just work out'[FGA]* *'I used it more because I was trying to develop a service for diabetes in my pharmacy, and that was probably why it was easier for me' [FGB]* *'I think they are probably a necessity' [FGB]*
Value	
Focus	*'I think it would prompt you to see what you need to focus on '[FGA]* *'Obviously you don't need to do everything at once, you could pick it up and say, I think that is what is important to me right now'[FGA]* *'I think that it is the right size'[FGA]*
Plan	*'Well I think at the beginning of the model scheme you might sit down, and decide what stage you thought you were at, am I ready to give a service, can I meet enough of the criteria to do it competently, and then (?) and go back'[FGA]* *'So when I was thinking about where I wanted to be, and what diabetes service I wanted that was when I was using it'[FGB]*
Identify gaps	*'And to identify gaps in the knowledge as well'[FGA]*
Limitations	
Workbook Format	*'I read the introduction I don't know how many times before I started'[FGB]* *'And it is far easier to record it on-line, if you are listed to use that for your CPD'[FGB]* *'You have your CPD and then you have to go online as well, the Pharmaceutical Society wants to know what you have been doing'[FGB]* *'I think that maybe if it had been in a different format then it would be easier. It is quite bulky. Two pages open makes it too difficult.'[FGB]* *'Well it would have to be modified'[FGB]* *"I thought that there was' [duplication][FGB]*
Complexity	*'I thought it was very complicated to work through'[FGB]* *'I think that a diabetic pharmacist specialising in the secondary care would be fine but for pharmacists in primary care, jack of all trades, whatever you want to call us, it was too complicated'[FGB]* *'The activities required to be demonstrated were out with the remit of the community pharmacist'[FGB]*
Further support	*'Possibly, I mean it has things that it says you can do with appropriate training, you might be thinking, well that is all very well, but where do I get the appropriate training from?'[FGA]* *'Sort of what is that and how does it tie in with that, now that we have talked it through I think I understand. At first I just thought gosh''[FGA]* *[Examples of entries] 'I think so yes. Because you well get people looking at this and thinking 'what do I do?''[FGA]* *'If there had been worked examples then maybe we would have thought of more things to fill in'[FGB]* *[Support] 'It depends in what form. Yes, I think certainly that we have all proved that tonight, we need some kind of guidance, just to help us become more comfortable with these competencies. It's a new area for probably most of us['FGB]* *'I just felt it was going to take up far too much of my time.' [FGB]*

6.3.4 Collation of Care Issues during the Pilot Phase

Table 6.6 presents the most common care issues as documented by the pilot group participants. Table 6.7 presents the least common care issues. These were both linked to appropriate competencies within the CPD workbook to ensure the comprehensiveness of the workbook. This linking was validated by Focus Group B.

Figure 6.4 shows the diagrammatical representation of Stage Two in the formation of the final Competency based CPD workbook.

Figure 6.4: Diagrammatical representation of Stage Two in the formation of the final Competency based CPD workbook

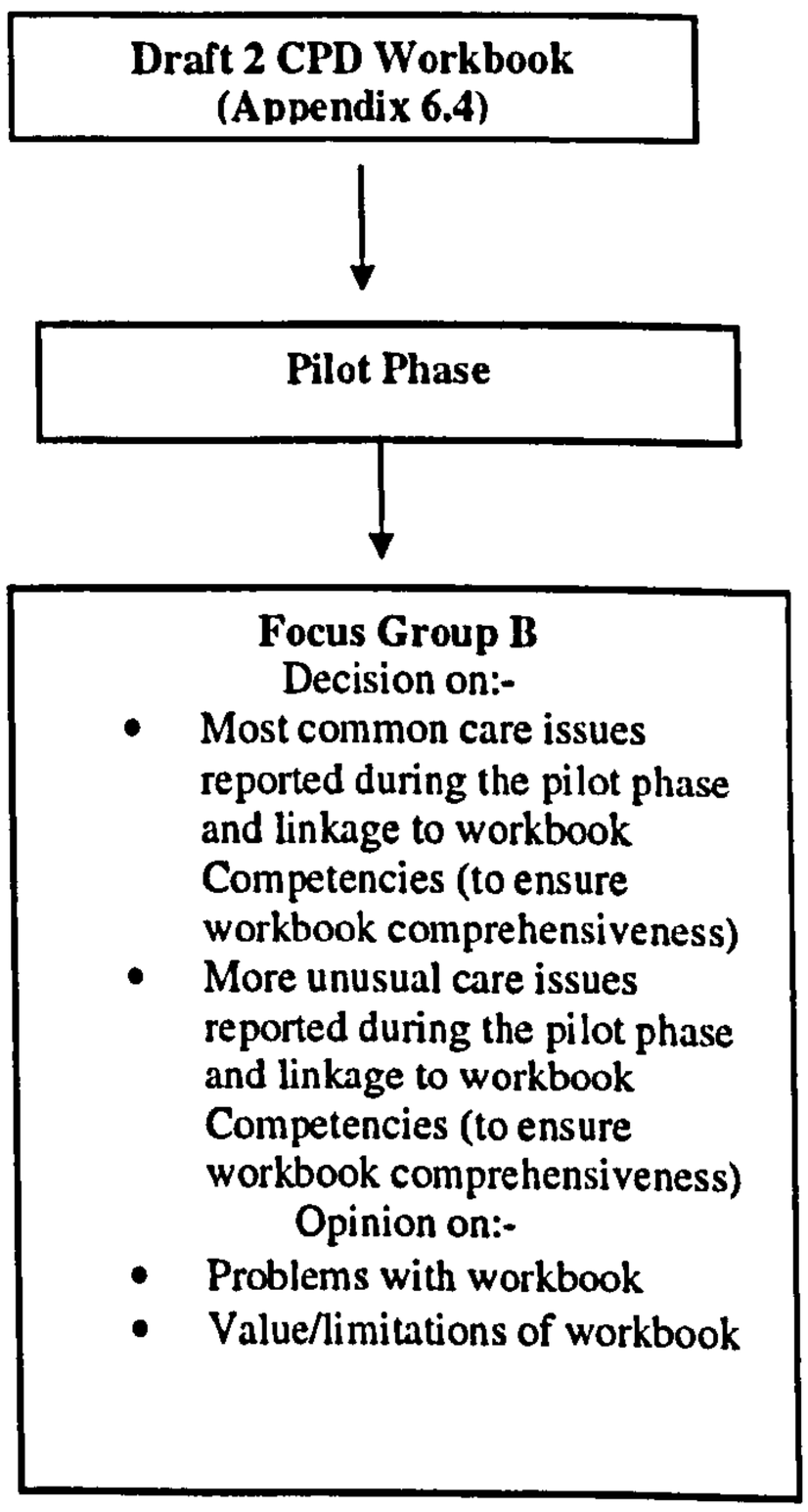


Table 6.6: Most common care issues reported during the pilot phase and linkage to Competencies (validated by Focus Group B)

Most Common Care Issues	Inclusive Competency
Competency cluster one-Participates as a member of the multidisciplinary team in the care of the person with diabetes	
Easy access to services	Managed clinical networks in diabetes care
Weight loss	Systems for referral of patients to other disciplines who contribute to the care of the person with diabetes
Depression	Systems for referral of patients to other disciplines who contribute to the care of the person with diabetes
Wound not healing	Systems for referral of patients to other disciplines who contribute to the care of the person with diabetes
People are not clear on what their targets are	Involving patients and their families and carers in the planning of care
Patient not taking Aspirin 75mg as per guidelines	Local and national guidelines relating to the care of people with diabetes Clinical management of a person with diabetes in relation to:- Cardiovascular system
Patient not taking statin as per guidelines	Local and national guidelines relating to the care of people with diabetes Clinical management of a person with diabetes in relation to:- Cardiovascular system
Not confident with monitoring meter/meter calibration (x3)	Operation of devices and equipment used in testing in diabetes care
Competency cluster two-Has knowledge of the tests and assessments carried out in diabetes care and of the devices used	
Knowing when blood sugar is too low and what to do (x2)	Interpretation, recording and reporting the results of tests
Competency cluster three-Shows an understanding of the diagnosis of diabetes and therapeutic interventions in diabetes care	
Blood pressure control	Clinical management of a person with diabetes in relation to:-Cardiovascular system
Patient not taking ACE Inhibitor	Clinical management of a person with diabetes in relation to:-Cardiovascular system
What to do if a dose of medication is missed (x3)	Pharmaceutical interventions in diabetes care, their actions, interactions and possible side effects
Side effects of medication (x2)	Pharmaceutical interventions in diabetes care, their actions, interactions and possible side effects Treatment options in diabetes care, and possible side effects: patient/carer involvement
Checks for eyes (x3)	Clinical management of a person with diabetes in relation to :- Management of eyes
Insulin changeover	Pharmaceutical interventions in diabetes care, their actions, interactions and possible side effects Treatment options in diabetes care, and possible side effects: patient/carer involvement
Hypoglycaemic situations	Clinical management of a person with diabetes in relation to:-Management of acute episodes
Patient not happy with new medication	Pharmaceutical interventions in diabetes care, their actions, interactions and possible side effects Treatment options in diabetes care, and possible side effects: patient/carer involvement

Table 6.6: Most common care issues reported during the pilot phase and linkage to Competencies (validated by Focus Group B)

Most common care issues	Inclusive Competency
Competency cluster three-Shows an understanding of the diagnosis of diabetes and therapeutic interventions in diabetes care	
New medication not effective/existing medication not effective (x2)	Pharmaceutical interventions in diabetes care, their actions, interactions and possible side effects Treatment options in diabetes care, and possible side effects: patient/carer involvement
No warning of hypoglycaemic attack	Clinical management of a person with diabetes in relation to:-Management of acute episodes
Patient hot carrying a supply of short acting carbohydrate with them at all times	Clinical management of a person with diabetes in relation to:-Management of acute episodes
Too high a dose of Metformin	Pharmaceutical interventions in diabetes care, their actions, interactions and possible side effects Treatment options in diabetes care, and possible side effects: patient/carer involvement
More exercise needed by patients	The influence of physical activity on diabetes and diabetes care
Poor diet (x2)	The influence of diet and nutrition on diabetes and diabetes care
Tendency to stay at the higher end of the glucose range	Recognition of the signs and symptoms of complications in the person with diabetes
Patient not knowing how diabetes can affect long term health(x3)	Recognition of the signs and symptoms of complications in the person with diabetes
Competency cluster five-Contributes to the continuing education of the patient and family/carers about diabetes and diabetes care	
Smoking cessation advice (x2)	Health promotion in addition to therapeutic interventions for secondary prevention Prevention through health promotion and health education
Lifestyle issues not addressed	Lifestyle factors that contribute to the maintenance of health and reduce the risk of complications Principals of health promotion and education
What to do if sick after taking medication(x2)	Maintaining knowledge about the care of the individual person with diabetes
How to take medication (x3)	Relating the importance of concordance with therapeutic regimens in diabetes care to patients/carers
People believing it's about sugar they eat	Maintaining knowledge about the care of the individual person with diabetes
Knowing how often blood sugar is too low	Maintaining knowledge about the care of the individual person with diabetes
Frequency of monitoring of glucose levels (x3)	Maintaining knowledge about the care of the individual person with diabetes
Patient on triple diabetic regime	Treatment options in diabetes care, and possible side effects: patient/carer involvement
Problems following diet/unsure of what supposed to eat (x2)	Maintaining the patient focus of diabetes care
Insulin change due to product discontinuation	Treatment options in diabetes care, and possible side effects: patient/carer involvement
Not knowing what to do with their blood sugar results	Maintaining knowledge about the care of the individual person with diabetes

Key-xn- number of times stated by pilot participants

Table 6.7: More unusual care issues reported during the pilot phase and linkage to Competencies (validated by Focus Group B)

More Unusual Care Issues	Inclusive Competency
Competency cluster one-Participates as a member of the multidisciplinary team in the care of the person with diabetes	
Uncontrolled diabetes despite careful supervision	Involving patients and their families and carers in the planning of care Pharmaceutical interventions in diabetes care, their actions, interactions and possible side effects Treatment options in diabetes care, and possible side effects: patient/carer involvement
Competency cluster three-Shows an understanding of the diagnosis of diabetes and therapeutic interventions in diabetes care	
Frequent hypoglycaemic attack (3-4times per day)	Clinical management of a person with diabetes in relation to:- Management of acute episodes
Competency cluster five-Contributes to the continuing education of the patient and family/carers about diabetes and diabetes care	
Patient chose not to take medication	Treatment options in diabetes care, and possible side effects: patient/carer involvement
Patient had no confidence with insulin treatment	Treatment options in diabetes care, and possible side effects: patient/carer involvement
Low blood sugar on starting Metformin	Treatment options in diabetes care, and possible side effects: patient/carer involvement
Patient didn't know his insulin had been discontinued until presented at prescription point	Maintaining the patient focus of diabetes care

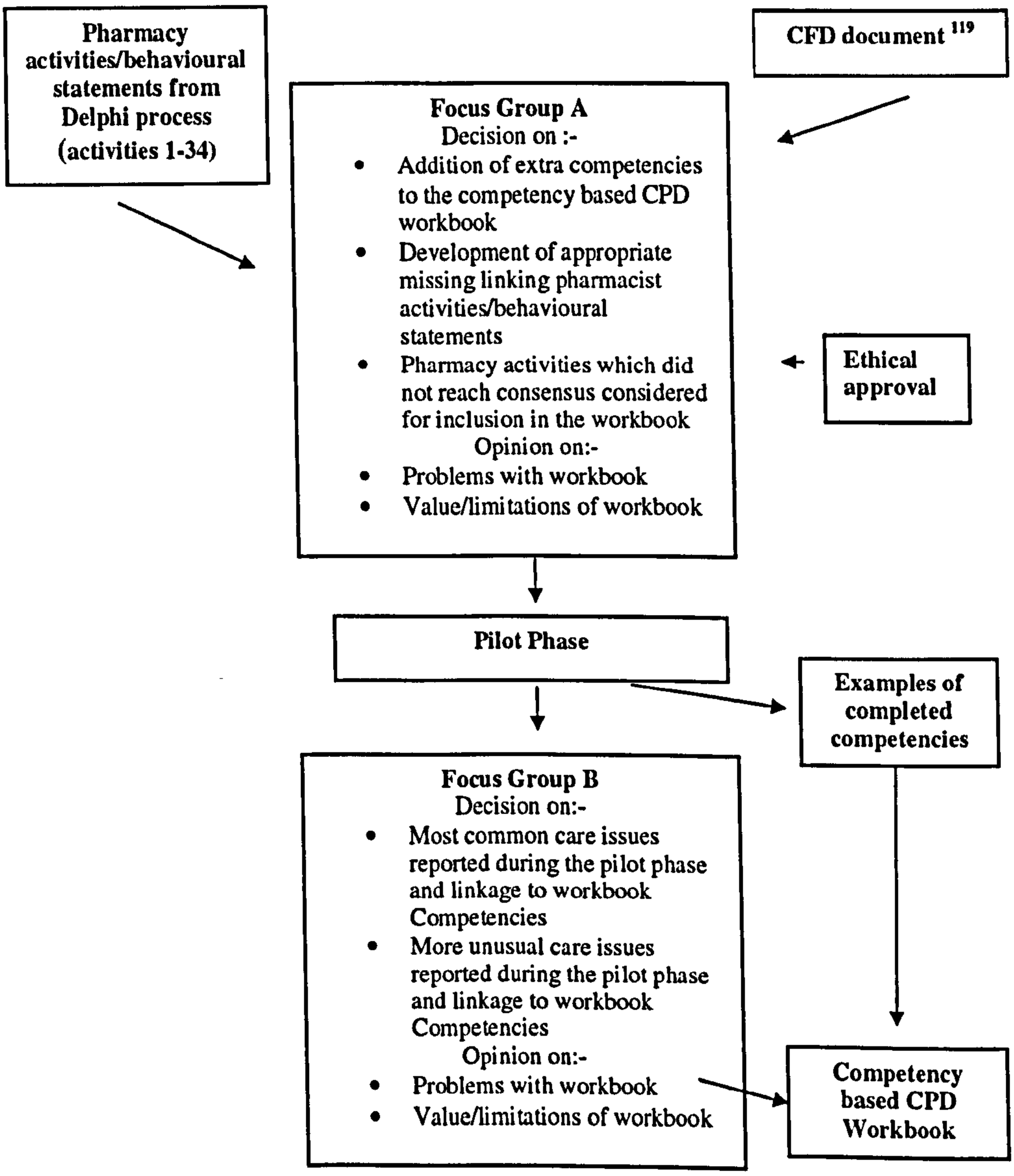
6.3.5 Competency based CPD workbook Entries

All entries made in the competency based CPD workbooks during the pilot phase were collated (Appendix 6.8). These were used as examples in the final CPD workbook.

6.3.6 Final Competency-based CPD Workbook

Figure 6.5 details the steps taken in producing the final Competency-based CPD workbook. A professionally graphic design was used for the final Competency-based CPD workbook as a result of this research (Appendix 6.9).

Figure 6.5: Diagrammatical representation of formation of the final Competency-based CPD workbook



6.4 Discussion

6.4.1 Demographics of Study Groups

Three small separate study groups were used in Chapter Six; Focus Group A, Focus Group B and a Pilot Group. All groups were similar; predominantly female (57%-82%) and working in a large multiple (≥ 5 premises) community pharmacy. The gender balance mirror the RPSGB database statistics for Scotland of 67% female practising pharmacists [195], and the Workforce Update figures of 56% of pharmacists being female in Great Britain [196]. The groups also had similar experience; 17-19 years qualified. No data was collected on whether they worked full or part-time. Dumfries and Galloway was chosen as the pilot study area as at the time of the study, it had the highest reported incidence of Diabetes Mellitus in Scotland [133].

6.4.2 Format of the Competence-based CPD Workbook

The competency based CPD workbook is based on a spinal column model [197], and was designed to form one elective clinical specialty within a future Community Pharmacy Vocational Training Scheme in Scotland. In this model, a series of competencies with related behavioural statements form the central column of the workbook. Documented reflective CPD and the evidence collected to demonstrate their achievement could be compared to the nerve roots entering the vertebrae.

6.4.3 Focus Group A Workbook Adaptations

This work formed Stage One of the formation of the CPD workbook. Initially the University research team identified almost half of competencies in the multiprofessional competency framework document [119] as being obviously applicable for a community pharmacist practitioner. This selection was made in an attempt to produce a workbook of a manageable size. Focus Group A identified eleven additional competencies from the CFD multiprofessional pool resulting in almost 60% of the CFD criteria within the workbook. This inclusion of further competencies shows the community pharmacists' desire and enthusiasm to take on a full and comprehensive role in the care of the patient with type 2 diabetes. No competencies selected by the University Group were removed by Focus Group A as being unachievable.

The clinical management of a person with diabetes in relation to glycaemia was added as a competency as the community pharmacists in Focus Group A believed they could offer this service. Indeed previous studies have shown a reduction in HbA1c when a community pharmacist was included into the diabetic team [45,60,75]. The United Kingdom Prospective Diabetes Study 35 (UKPDS 35) concluded that each 1% reduction in mean HbA1c was associated with a reduction in risk of 21% for death related to diabetes, 14% for myocardial infarction and 37% for microvascular complications [198].

Focus Group A community pharmacists wished to include distributing information for the patient/carer on screening processes for the detection of diabetes in the workbook as a competency. Interestingly however they did not wish at this time to carry out the screening process itself. This may have been due to political decisions not to remunerate pharmacists for this service in Scotland at the time of this study as a previous Scottish survey (n=261) of the pharmacy profession in 2001 (including the author), showed a co-ordinated programme of targeted screening for those at risk of diabetes as the most favoured potential future service [77].

Similarly the participants felt that acting as a source of information on diabetes for the patient was an important competency. Advising on sources of learning or signposting appropriate support groups and critically reviewing sources of information from the patient or carer were suggested as appropriate behavioural statements. These findings show the community pharmacy emerging as an accessible professional site for health education and advice for the general public.

Maintaining the patient focus of diabetes was an issue that Focus Group A wished to include as a competency as they felt a large part of their role was to encourage and motivate the patient to take responsibility for their disease. Part of this was lifestyle factors and principles of health promotion and education in issues relating to diabetes. Not surprisingly health and lifestyle issues; lack of exercise, weight/diet problems and smoking were all listed as common care issues by the community pharmacists in this study.

Diabetes is associated with a very high burden of responsibility for individual patients if they wish to remain well and avoid long term complications. It has been estimated that at least 99% of diabetes management is self care and involves not only the patient but also their family and immediate social networks [199]. This care should also not just be limited to patients who already have the disease, but the Diabetes Prevention Program Research Group study found that lifestyle interventions delivered over 2.8 years reduced the incidence of diabetes by 58% [200].

There was much debate in Focus Group A over the omission of 'Treatment options in diabetes care, and possible side effects: patient/carer involvement' as a competence by the University Research Team. The focus group participants felt this was perhaps one of the most important functions of their job as a community pharmacist, that is involving and educating patients about the side effects they might expect or are experiencing and alterations to treatment in an attempt to overcome these problems.

6.4.4 Acceptability of the CPD Workbook

From the focus groups' discussions, it was suggested that the CPD workbook, after the pilot phase, might require modification to make completion easier. Although Focus Group A felt the workbook was the correct size, participants in Focus Group B who had used it in practice, felt it was large and difficult to follow at times.

Focus Group B also found difficulty with the design of the workbook as participants had to work on two open landscape pages. The landscape was therefore changed to a portrait design which was suggested by the group as being easier to complete. Focus Group A and B discussed repetition and not knowing which part to complete in the workbook were issues.

'Sort of what is that and how does it tie in with that..' [Focus Group A]

The workbook was thus simplified by the addition of separate chapters and by the introduction of an index to aid linking between sections. It was interesting that Focus

Group B discussed the fact that the behavioural statements within the workbook were not relevant to community pharmacists.

'I think that a diabetic pharmacist specialising in the secondary care would be fine but for pharmacists in primary care, jack of all trades, whatever you want to call us, it was too complicated' [Focus Group B]

''The activities required to be demonstrated were out with the remit of the community pharmacist' [Focus Group B]

The majority of these behavioural statements were agreed by consensus in a community pharmacist's Delphi questionnaire exercise (Chapter 5) as being achievable pharmacy activities. The remaining behavioural statements were decided by a community pharmacy focus group. Within Scotland at the time of this study there was recognised to be a lack of consistency in pharmaceutical care delivery to the patient with type 2 diabetes mellitus from region to region. This was reflected from the findings reported in Chapter 4; from the interviews of healthcare professionals from different areas within Scotland [147]. This difference of opinion about the achievability of behavioural statements within the workbook may be due to the Delphi achieving consensus nationally while the pilot study was based in only one Scottish region.

Focus Group B also discussed the problem of documentation and having to separately document CPD for the Royal Pharmaceutical Society of Great Britain.

'And it is far easier to record it on-line' [Focus Group B]

'You have your CPD and then you have to go online as well, the Pharmaceutical Society wants to know what you have been doing' [Focus Group B]

A decision was therefore made to offer the CPD workbook as an on-line feature for any further research and from 2008 any contribution to a NES on-line workbook

would be mapped directly onto each individual's society CPD pages. This development has been agreed by the Royal Pharmaceutical Society of Great Britain.

Time was an issue with completing the research documentation with the pilot participants in Focus Group B.

'I just felt it was going to take up far too much of my time.' [Focus Group B]

At the time of this study, community pharmacists were receiving no remuneration for delivering a pharmaceutical service to patients with chronic diseases. It was thus decided that participants in any further study be paid a set fee for their research time.

From Focus Group B, it was evident that the community pharmacists completing the CPD workbook required continual support. The idea of using examples to aid documentation was raised.

'If there had been worked examples then maybe we would have thought of more things to fill in' [Focus Group B]

Examples of entries into the workbook were thus collected during the pilot phase (Appendix 6.8) and used in the final version of the workbook (Appendix 6.9).

Participants in Focus Group A felt the workbook could act as a prompt and allow the practitioner to focus on their learning needs and completion of the competency. The participants felt the workbook could also be useful in planning future services for patients with diabetes within their community pharmacy and in identifying knowledge gaps. They also suggested it was a source of reassurance that they were developing their service appropriately.

'It is reassuring that if you are trying to do something, then you are going in the right direction. You are not missing things out along the way, or if you are, it will then highlight what you maybe should be doing.' [Focus Group A]

Participants in Focus Group B felt that competency based CPD workbooks were probably a necessity for identifying learning needs and allowing development of new services.

6.4.5 Comprehensiveness of the CPD Workbook

As shown in Tables 6.6 and 6.7, both common and more unusual pharmaceutical care issues were linked to existing competencies within the CPD workbook. This linking was validated by Focus Group B. This finding shows that the CPD workbook is comprehensive in nature covering all care issues identified; thus providing a valid resource in structured pharmaceutical care to the patient with type 2 diabetes mellitus.

The most common care issues documented were perhaps unsurprisingly non-compliance, non-adherence to guidelines/targets, side effects, missing annual check-up appointments, sub-optimal control, a lack of understanding of the disease state and monitoring issues. Within the diabetic healthcare team it is believed that to slow the onset of complications, a patient should adopt an active rather than a passive role. If patients are to take on this active role, they must have knowledge of their condition and its management in order to make informed decisions. Depression in patients with type 2 diabetes mellitus is becoming a common pharmaceutical care issue for the community pharmacist. A recent study (n=879) has challenged the conceptualisation of depression as a categorical risk factor for non-adherence and suggested that even low levels of depressive symptomatology are associated with non-adherence to important aspects of diabetes self-care. It is suggested that interventions aimed at alleviating depressive symptoms, could result in significant improvements in diabetes self-care [201].

Developments in technology, including the availability of a wider range of insulins have led some of the major manufacturers to withdraw selected older insulin products because of declining use. Patient confusion was documented as a pharmaceutical care issue in this study as a result of the need to switch to an equivalent, alternative formulation. The transition between insulin types should have

minimal impact if the patient is fully informed and receives on-going clinical and emotional support from the diabetes team which includes the community pharmacist.

The least common care issues documented were uncontrolled chronic disease management despite careful supervision. Also, reassuringly, frequent hypoglycaemic attacks were listed as an uncommon care issue. It is no longer acceptable for patients with type 2 diabetes mellitus to suffer these attacks on a regular basis.

There were also three medicines related issues listed as uncommon care issues; namely that patients choosing not to take their medication, a lack of confidence in the medicines regimen and changes to medication without the knowledge of the patient.

6.4.6 Future Work

These competencies, required to provide pharmaceutical care to patients with type 2 diabetes mellitus, are indicators against which the community pharmacist could be assessed in the future. From the focus group discussions it was found that further support is required if the CPD workbook is to be a useful CPD tool. Using the workbook as part of a larger CPD Support Model, the value of the competency based CPD workbook could be assessed in a larger study.

6.5 Conclusion

The profession of Pharmacy in Scotland was developing rapidly at the time of the study with the imminent introduction of the Scottish Community Pharmacy Contract, specifically on Chronic Medication Service, allowing the community pharmacists to deliver a more comprehensive pharmaceutical care service to the patient. From the work in Chapters 4, 5 and 6, a competency based CPD workbook has been designed based on a competency framework with five competency clusters, 54 competencies and 47 behavioural statements. This workbook required modification following a pilot study to aid completion by the community pharmacist. From the work in this chapter it would appear the workbook is comprehensive and pilot group participants felt that the workbooks were probably a necessity for identifying learning needs and allowing development of new services.

Chapter 7:

Developing and Evaluating the CPD Support Model in Terms of Pharmacists' Views and Attitudes Towards CPD

Research Focus 3:

A Community Pharmacy CPD Support Model for Providing Care to the Patient with Type 2 Diabetes Mellitus in Primary Care

7.1 Introduction

7.1.1 Background

The drive towards a modernised NHS has identified continuing professional development (CPD) as being a pivotal development in the way in which knowledge is used effectively at work, resulting in a continuous improvement in services [88,89]. In the Scottish NHS, a new contract for community pharmacies is helping to extend care to patients with diabetes and a national competency framework [119], is providing general descriptors of competencies of NHS staff. Today clinical governance requires professional self-regulation and a demonstration to lifelong learning.

In practice, the Bristol Royal Infirmary Inquiry and subsequently the Kennedy Report have acted as explosive events, stimulating movement among all healthcare professional bodies to focus on the importance of participation in CPD. A summary of that report stated that 'a patient is entitled to be cared for and by healthcare professionals with relevant and up-to-date skills and experience' [92]. The Kennedy Report recommended that CPD:

'must be compulsory for all healthcare professionals' .

The NHS has also produced various documents addressing the importance of CPD among healthcare professionals including, 'A First Class Service: Quality in the new NHS' [91], 'Continuing Professional Development; Quality in the new NHS' [89], and in relation to pharmacy in particular, 'Pharmacy in the Future - implementing the NHS plan' [202].

To date, evidence has been limited about the views and attitudes of pharmacists towards CPD. A study carried out by Bell et al in 2001 aimed to find the perceptions of pharmacists in Northern Ireland. All pharmacists in Northern Ireland (n=1689) were sent a questionnaire, with a response rate of 24.1%. This study concluded that the barriers to CPD must be overcome in order for CPD to be properly implemented. Factors such as lack of time, remuneration and locum cover, plus lack of understanding of CPD were all identified as barriers to participation [106].

A study by Mottram et al evaluated the current practices of pharmacists with regard to their professional development and to explore their perceptions and attitudes towards proposed future developments in CPD. In that study, a questionnaire was sent to all pharmacists in one English region (n=750) with a response rate of 43.3%. Results showed that 90.4% of respondents had undertaken continuing education in the previous 12 months [107].

In another study, Attewell et al qualitatively investigated a small number (n=21) of English community pharmacists' perceptions and views on what constitutes CPD. This study, albeit involving a small sample size, showed that many pharmacists were not fully engaging in CPD and needed further support [108].

The Scottish Diabetes Framework Action Plan discussed the need for a Continuing Professional Development (CPD) strategy as a means of providing health care professionals an opportunity to update and refresh their knowledge [203]. As a next step towards improving the education of health care professionals, such as community pharmacists, their learning needs for diabetes care should be assessed. The aim of expanding the diabetes care services provided by primary care requires the multidisciplinary team to identify their education and training needs.

Studies have demonstrated that CPD is an individualised activity. One type of CPD will not prove comfortable to all practitioners and many pharmacists will use more than one form of CPD [107,168,204]. Therefore in an attempt to encourage all practitioners to undertake and document CPD, various differing educational methods should be made available. Not only is this helpful for catering for practitioners' differing preferred learning options, but also in Scotland due to the remote and rural geography.

Various studies have considered CPD support packages. Swainson et al collated activities that both community and hospital pharmacists in Leeds believed to be CPD [204]. These included private study, external training, writing papers and attending meetings.

The aim of the present study was to develop and evaluate the use of a CPD Support Model in terms of pharmacists' views and attitudes to CPD. This research aimed to build on previous work, focusing particularly on a small group of community pharmacists delivering structured pharmaceutical care to patients with type 2 diabetes mellitus. This Support Model included the competency-based CPD workbook developed in Chapters 4, 5 and 6.

7.1.2 Justification for the Research

Previous work in Scotland in 2005 (inclusive of the author) obtained the views and attitudes of pharmacists across different employment sectors within Scotland [109]. Power et al concluded that the community pharmacy sector in Scotland particularly required more support in their CPD. Community pharmacists involved in the Delphi exercise in Chapter 5 were unanimous (100%) in perceiving an educational need before delivering structured pharmaceutical care to patients with type 2 diabetes mellitus (Section 5.3.2.2.1). Having established this need for support, a CPD model of support should be available to community pharmacists delivering pharmaceutical care to patients with type 2 diabetes mellitus. This CPD Support Model must offer different elements of CPD and be appropriately evaluated. The monitoring and use of the CPD Support Model throughout the 12 month study period will be addressed in the next chapter.

7.1.3 Study Aims and Objectives

The aim of the research was to develop and evaluate a CPD Support Model for community pharmacists providing pharmaceutical care to patients with type 2 diabetes mellitus.

From this primary aim, a number of objectives emerged:

- To identify CPD support packages used in previous research
- To offer a variety of CPD options to practitioners delivering care
- To collate motivational and attitudinal data in both the control and active groups before and after the study period

- To compare the results obtained with previous work with community pharmacists in Scotland.

7.2 Methods

7.2.1 Study design

A randomised controlled trial using a pre and post-test based upon a 6 point Likert-type validated questionnaire.

7.2.2 Subjects and Settings

7.2.2.1 Pilot Study

Piloting of the questionnaire was undertaken by the same study group as in Chapter 6 who were piloting the competency based CPD workbook. These 11 community pharmacists were based in one geographical region in Scotland (Dumfries & Galloway) carrying out pharmaceutical care to patients with type 2 diabetes mellitus. That particular region of Scotland was chosen as at the time of the study it had the highest prevalence of diabetes mellitus in Scotland [133]. The pilot study population was characterised in terms of age, sex, number of years qualified, their main sector of employment, hours of employment and the median number of CPD hours undertaken.

7.2.2.2 Intervention Study

A group of sixty community pharmacists was recruited to this one year study and invited to complete an initial pre-study questionnaire. On commencement of this study, these participants were all providing structured pharmaceutical care to patients with type 2 diabetes mellitus in their community pharmacy. They were numbered sequentially according to their motivational score and the odd numbers allocated to the active group and the even numbers to the control group. This study population was also characterised in terms of age, sex, number of years qualified, hours of employment, their sector of main employment, hours of employment and the number of estimated annual CPD hours.

7.2.3 Ethical considerations

As this research was carried out after April 2004, ethical approval was sought for this study. Ethics was deemed to not be required by the COREC ethics board (Appendix 7.1).

7.2.4 Study procedure

7.2.4.1 Views and attitudes to CPD questionnaire

A previously validated questionnaire was used in this study (Appendix 7.2) [109]. The definition of CPD as stated at the beginning of the questionnaire was:

'A systematic, ongoing, cyclical reflection on practice, planning, action and evaluation (reflection on learning). It includes everything that pharmacists learn which makes them able to maintain and develop their capabilities'

The questionnaire collected information on demographics, followed by question items relating to CPD and the respondents' perceptions and attitudes towards CPD. The majority of questions were statements requiring a Likert-type response (on a numerical scale anchored at 1 and 6, strongly disagree and strongly agree with no other verbal descriptors and no neutral point). The questionnaire was divided into two sections; 'Motivation' (overall CPD activity and motivation towards your CPD) and 'Participation in the CPD cycle and process of reflection'. 'Motivation' consisted of 10 questions with a maximum score of 60. 'Participation in the CPD cycle and process of reflection' was composed of 9 questions with a maximum score of 54.

The linking of the positivity/negativity of phrasing to the anchor points of five of the questions in the questionnaire were deliberately reversed to avoid monotony when completing the questionnaire and to reduce the likelihood of respondents adopting a fixed pattern in their answers. Analysis of the scores took this reversal into account. After each question, participants were invited to document any comments.

7.2.4.2 Questionnaire Piloting

The purpose of the pilot study was twofold; to ensure all questions were understandable and answered correctly; to obtain a baseline score on which to base

power calculations for the larger intervention study. The pilot participants completed the questionnaire on only one occasion and had not received any CPD support for delivering pharmaceutical care to patients at that time. Based on this pilot study, the mean motivational score was 36.5 (SD 6.85). This score was used as it was the higher of the two scores although the mean attitudinal score was very similar (35.3). As there was no follow-up to the pilot there was no information on the change in scores but if we assume independence of results then the SD of the change in scores is calculated to be $6.85 \times \sqrt{2} = 9.59$. Using this value for the SD of change in score Table 7.1 shows the sample size in each group required to detect a difference in change of score between the two groups for 80% and 90% power and 5% significance level [205].

Table 7.1 Required sample size in each group to detect a difference in change of score between the Active and Control Groups

Difference	1	2	3	4	5	6	7	8	9	10	11	12
80% power	1445	362	162	92	59	42	31	24	19	16	13	12
90% power	1934	485	215	122	79	55	41	32	25	21	17	15

Based on these findings tabulated in Table 7.1, and assuming that a difference of 8 points in the total motivational and attitudinal scores is of practical significance, using 80% power, it is recommended that at least 24 subjects be recruited to each group and allowing for dropouts it is proposed to recruit 30 subjects per group; a total of 60 subjects.

7.2.4.3 CPD Support Model

From a literature review and reference to the findings from the Educational Needs Assessment (ENA) exercise carried out in Chapter 5 (Section 5.3.2.2.1), an 8 element model was designed.

Seventeen participants took part in the ENA exercise in Chapter 5, in which they were unanimous (100%) in perceiving an educational need before delivering structured pharmaceutical care to patients with type 2 diabetes mellitus. There was a desire for distance learning pack alone although more participants expressed a desire for training away from their workplace. The pharmacists' ranking of preferences of

seven educational options showed a range of responses with the favoured options being direct face-to-face courses (national or multidisciplinary). Table 7.2 illustrates the community pharmacists' preference for support. Each pharmacist was asked to rank their preference 1-7 with a score of 1 being the favoured option and receiving 7 points.

Table 7.2: Responses to ENA exercise showing community pharmacists' preference for support (Chapter 5) using pharmacists who completed all 3 rounds of the Delphi exercise (n=18)

Preference for support options were ranked in order to meet these training needs Each pharmacist was asked to rank their preference 1-7 with 1 being the best option and receiving 7 points		**Total Point Score n=17***
1	National day course for pharmacists	**80**
2	Multidisciplinary course	**80**
3	Distance learning-written format	**74**
4	A "buddy" system with another pharmacist who already provides this system	**63**
5	Distance learning-interactive multi-media or web/CD ROM based package	**62**
6	Pharmacists would meet as a peer group to discuss issues or problems	**57**
7	Local evening courses for pharmacists	**51**

missing data from one pharmacist. Some responders choose more than one option.

A literature search was carried out using the combined key word search 'CPD and pharmacists', 'Assessment of CPD', 'CPD support' in the Embase and MEDLINE databases from 1995 to May 2006. The search yielded 14 useful published papers linked to a valid and reliable evidence base [106-108,168,169,180,204,206-212].

The final CPD Support Model comprised: (a) a competency-based CPD paper workbook or an e-portfolio version (available from month 6), (b) a knowledge exchange network, (c) direct educational sessions as face-to-face courses or DVD recordings, (d) peer support, (e) mentor support, (f) quarterly posted samples of current published papers, (g) shadowing or 'buddying' systems (arranged on request) and (h) a distance learning resource.

7.2.4.4 The Intervention

The intervention for the Active Group of community pharmacists consisted of access to the CPD Support Model over the 12 month study period. The Control Group received no intervention. Both groups completed a questionnaire on their views and attitudes to CPD pre and post-intervention (zero and twelve months).

7.2.4.5 Measuring Views and Attitude to CPD

The Views and Attitudes to CPD questionnaire was mailed to the Active and Control groups pre intervention at month zero and post intervention at month 12. This methodology allowed measurement of their views and attitudes to CPD after 12 months of receiving CPD support (Active Group) and after no support (Control Group). The pre-intervention answers (month zero) for each pharmacist were highlighted on the post-intervention questionnaire to help the participants with rescoring their answers. The reason for this was the anticipation that the participants would not remember their answers from the previous 12 months. By supplying this information participants were allowed to make educated decisions about whether their views and attitudes had altered over the study period rather than choosing answers randomly.

7.2.5 Data Handling and Analysis

All the data were coded and entered in a quantitative form using the SPSS® software, version 13. The number of CPD hours reported in a range form was entered as a median of the range. The sets of questions of each of the two main groups (i.e. motivation and attitudes) were gathered to calculate total scores. All negative phrasing questions were reversed to the positive forms when analysing the scores (e.g. the option five reversed into two at the Likert Scale). For the motivational section this included question three and 18 and for the attitudinal section this included questions 6, 9 and 12. The pre and post-intervention questionnaires from each group (i.e. at month zero and month 12) were compared. For the Active Group this was comparing their views and attitudes before and after receiving a CPD support package for type 2 diabetes mellitus.

Another researcher (Researcher 6) (MA) helped with data entry for the post-intervention questionnaire.

Researcher 6 (MA)- had been registered as a pharmacist for 4 years overseas and was on postgraduate study in Scotland.

The Questionnaire Total Score (maximum score 114), the Motivational Score (maximum score 60) and the Attitudinal Score (maximum score 54) pre and post intervention were calculated for the Control and Active Groups. Mann Whitney tests were used to identify any statistically significant differences between the pre and post-intervention score differences between the Control Group and the Active Groups. Calculated p-values <0.05 were considered statistically significant.

Comments documented on the questionnaires were collated and organised into themes by the lead researcher and a separate qualitative researcher (Researcher 4)(HH).

7.3 Results

7.3.1 Study Group Characteristics

7.3.1.1 Pilot Group

In the Pilot Group (n=11), the median (IQR) age of the respondents was 42 (27.0, 51.3) years (n=10) and 81.1% were female. The median (IQR) number of years on the register was 19(5.0, 28.0) years and 18.2% worked in an independent community pharmacy, 9.1% in a small community pharmacy multiple (< 5 premises) and 72.7% worked in a large community pharmacy multiple (≥5 premises). No data were documented by participants for hours of employment. The median (IQR) number of hours of CPD undertaken by the Pilot Group was 30 (22.5, 40.0) hours.

7.3.1.2 Intervention Group

Only 55 (91.7%) community pharmacists completed the pre-intervention questionnaire at month zero. Participants were then sequentially allocated depending on their motivational score; 28 Control Group and 27 Active Group. At month 12, 52

of the 55 (94.5%) study participants completed and returned the post-intervention questionnaire. The dropouts were all Active Group participants. From the 60 study participants eight (13%) withdrew during the study period 3(5%) due to job changes and five (8%) due to pressure of work. The characteristics of the remaining 52 study participants (28 Control Group and 24 Active Group) are collated in Table 7.3.

Table 7.3: Characteristics of community pharmacists involved in the Control and Active Groups

Pharmacist Characteristics	Control Group (n=28)	Active Group (n=24)
Age		
Median	42	42.5
(IQR)	(32.5,49.5)	(36.8,49.5)
Sex		
Female	67.9%	70.8%
Number of years qualified (years)		
Median	16.0	20.5
(IQR)	(6.0,25.0)	(13.3,26.5)
Sector of employment (%)		
Community pharmacy independent	32.1	45.8
Community pharmacy multiple (small <5)	10.7	4.2
Community pharmacy multiple (large ≥5)	67.9	45.8
Hours of Employment		
Full time	82.1%	50%
Number of annual CPD hours-post study Median (IQR)		
Month 0	43(31,55)	35(30,50)
Month 12	40(30,50)	35(30,50)

7.3.2 Pilot Study Questionnaire Changes

No data on hours of employment were collected from the Pilot Group as this question was awkwardly placed on the questionnaire during the pilot study and was not completed by any participant. This question was therefore moved to a more prominent positioning for the intervention study. No other changes to the questionnaire were made.

7.3.3 Total Motivational and Attitudinal Scores

Table 7.4 tabulates the median (IQR) Motivational, Attitudinal and Total Scores for the Control and Active Groups pre and post intervention.

Table 7.4: Factors affecting the Total Score, Motivation towards CPD Scores (1-10) and Attitudinal Scores (11-19) pre test and post test for Control and Active Groups

		Control Median (IQR) n=28		Active Median (IQR) n=24	
		Pre-test	**Post-test**	**Pre-test**	**Post-test**
1	*I feel confident that my present engagement with CPD meets my needs*	4.0 (3.0,4.8)	4.0 (3.0,5.0)	4.0 (2.3,5.0)	4.0 (3.3,5.0)
2	*I do not feel confident that my CPD is preparing me for practice developments*	5.0 (4.0,5.0)	4.5 (3.0,5.0)	4.0 (3.0,5.0)	4.0 (3.0,5.0)
3	*I receive support with my CPD*	3.5 (2.0,5.0)	3.5 (2.0,5.0)	3.0 (2.0,4.0)	4.0 (3.0,5.0)
4	*I do not have sufficient time to achieve my CPD goals*	2.0 (2.0,3.0)	2.0 (1.0,3.0)	2.5 (1.3,3.0)	2.5 (2.0,3.0
5	*I have sufficient resources to achieve my CPD goals*	4.0 (3.0,5.0)	4.0 (3.0,5.0)	4.0 (3.0,5.0)	4.0 (4.0,5.0)
6	*I have sufficient enthusiasm to achieve my CPD goals*	4.0 (4.0,5.0)	4.0 (3.0,5.0)	5.0 (4.0,5.0)	4.5 (4.0,5.0)
7	*I have a sufficiently sympathetic work environment to achieve my CPD goals*	3.0 (2.0,4.0)	3.0 (2.0,4.0)	3.0 (2.0,4.0)	3.0 (2.0,4.8)
8	*Challenges in my job alone motivate me into achieving my CPD goals*	4.0 (3.0,5.0)	4.0 (3.0,5.0)	4.0 (3.3,5.0)	4.0 (4.0,5.0)
9	*Meeting with colleagues motivates me into achieving my CPD goals*	4.0 (4.0,5.0)	4.0 (4.0,5.0)	4.0 (4.0,5.0)	5.0 (4.0,5.0)
10	*RPSGB requirements motivate me into achieving my CPD goals*	4.0 (3.0,5.0)	4.0 (3.0,5.0)	4.0 (3.3,5.0)	4.0 (4.0,5.0)
	Median Motivational Score (IQR) ***(possible total score 60)***	37.0 (34.0,42.0)	37.0 (33.0,43.0)	35.5 (32.8,41.8)	39.5 (35.0,43.8)

*** for calculation of the median, scores on 'reversed' questions have been adjusted so that higher median scores = more positive attitude to CPD**

Table 7.4: Factors affecting the Total Score, Motivation towards CPD Scores (1-10) and Attitudinal Scores (11-19) pre test and post test for Control and Active Groups

		Control Median (IQR) n=28		Active Median (IQR) n=24	
		Pre-test	**Post-test**	**Pre-test**	**Post-test**
	Identification: what are my learning needs?				
11	*I feel confident in my ability to identify my own learning needs engagement with CPD meets my needs*	5.0 (4.0,5.0)	5.0 (4.0,5.0)	5.0 (4.0,5.0)	5.0 (4.0,5.0)
12	*I need some help in the process of identifying my learning needs*	4.0 (3.0,5.0)	4.0 (3.0,5.0)	4.0 (3.3,5.0)	4.0 (3.0,5.0)
	Planning: how can I learn?				
13	*I am fully aware of the range of resources available to me to address my CPD requirements*	4.0 (3.0,5.0)	4.0 (3.0,5.0)	3.0 (3.0,5.0)	4.0 (3.0,5.0)
14	*I am not confident about my ability to access resources to address my CPD*	4.0 (3.0,5.0)	5.0 (3.0,5.0)	5.0 (3.0,5.0)	4.5 (4.0,5.0)
	Implementation/action: undertaking CPD activities				
15	*I have support in my workplace to carry out my CPD plans*	3.0 (2.0,5.0)	3.0 (2.0,5.0)	3.0 (2.0,3.0)	3.0 (2.0,4.0)
16	*I do not have adequate access to suitable CPD resources*	5.0 (4.0,5.0)	4.0 (3.0,5.0)	5.0 (3.0,5.0)	5.0 (3.3,5.0)
	Evaluation: what have I learned? How is it benefiting my practice?				
17	*I feel confident in my ability to assess what I have learned*	4.0 (4.0,5.0)	4.0 (4.0,5.0)	4.0 (3.0,4.0)	4.0 (4.0,4.8)
18	*I feel confident in my ability to assess what additional CPD activity may be necessary*	4.0 (3.0,4.8)	4.0 (4.0,5.0)	4.0 (3.0,4.0)	4.0 (4.0,5.0)
19	*I feel confident in my ability to assess the benefit to my practice*	4.0 (4.0,5.0)	4.0 (4.0,5.0)	4.0 (3.0,5.0)	4.0 (4.0,5.0)
	Median Attitudinal Score (IQR) ***(possible total score 54)***	35.0 (32.0,40.0)	36.0 (32.3,40.8)	34.0 (29.8,39.3)	36.5 (33.0,41.0)
	Median Total Score (Motivational + Attitudinal Score) (IQR) ***(possible total score 114)***	74 (66.0,82.0)	74 (67.0,83.0)	71 (64.0,82.3)	75 (70.3,83.3)

7.3.4 Median Differences between the Control and Active Groups

As can be seen from Table 7.4 the median Motivational Score, median Attitudinal Score and median Total Score (Motivational and Attitudinal Score) in the Control Group either remained the same or increased slightly (37.0 vs 37.0, 35.0 vs 36.0, 74.0 vs 74.0) respectively while the median Motivational Score, median Attitudinal Score and median Total Score (Motivational and Attitudinal Score) in the Active Group tended to result in a larger increase (35.5 vs 39.5, 34.0 vs 36.5, 71 vs 75). Mann Whitney tests however showed there were no statistically significant differences between the Control and Active score differences for any of these scores. Table 7.5 tabulates the median score differences (post-test - pre-test) between the Control and Active Groups.

Table 7.5 Median score differences (pre-test to post-test) between the Control and Active Groups

	Score Differences (pre-test to post-test) between Control Group medians	Score Differences (pre-test to post-test) between Active Group medians	Statistical difference (p value)
Motivational	0	+4	NS (0.23)
Attitudinal	+1	+2.5	NS (0.31)
Total	0	+4	NS (0.24)

Mann Whitney tests were performed. NS-Not significant.

Figures 7.1, 7.2 and 7.3 are box plots of the pre to post-test Motivational Scores, Attitudinal Scores and Total Scores of the Control and Active Groups. These plots diagrammatically show the differences in scores pre and post-test in the Control and Active Groups. Subjectively the two groups look similar at baseline, but after one year, the Active Group (Group 2) appears to have slightly higher values.

Figure 7.1: Box plot of the differences pre to post-test between the median Motivational Scores of the Control (group 1) and Active Group (group 2)

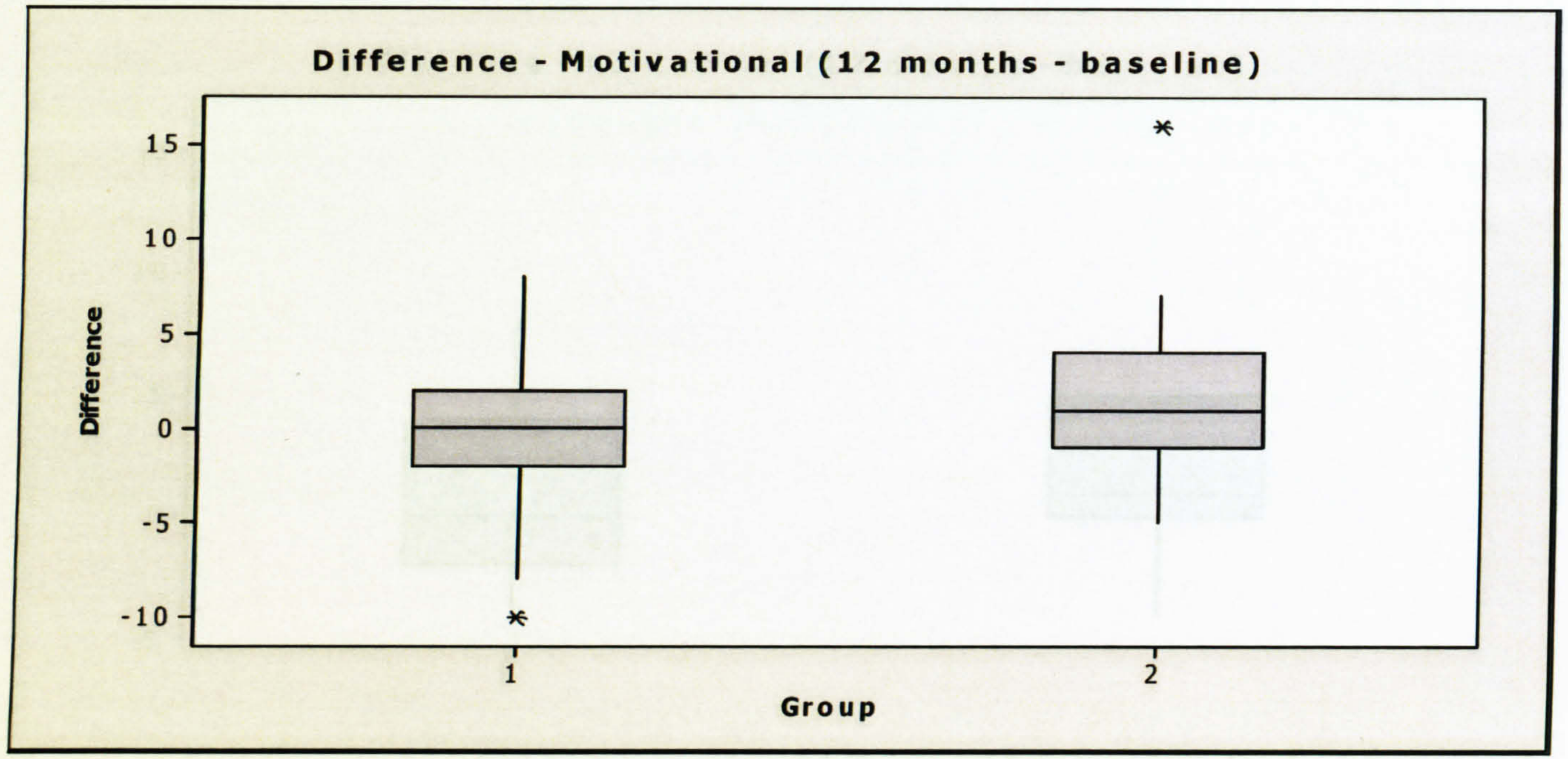


Figure 7.2: Box plot of the differences pre to post-test between the median Attitudinal Scores of the Control (group 1) and Active Group (group 2)

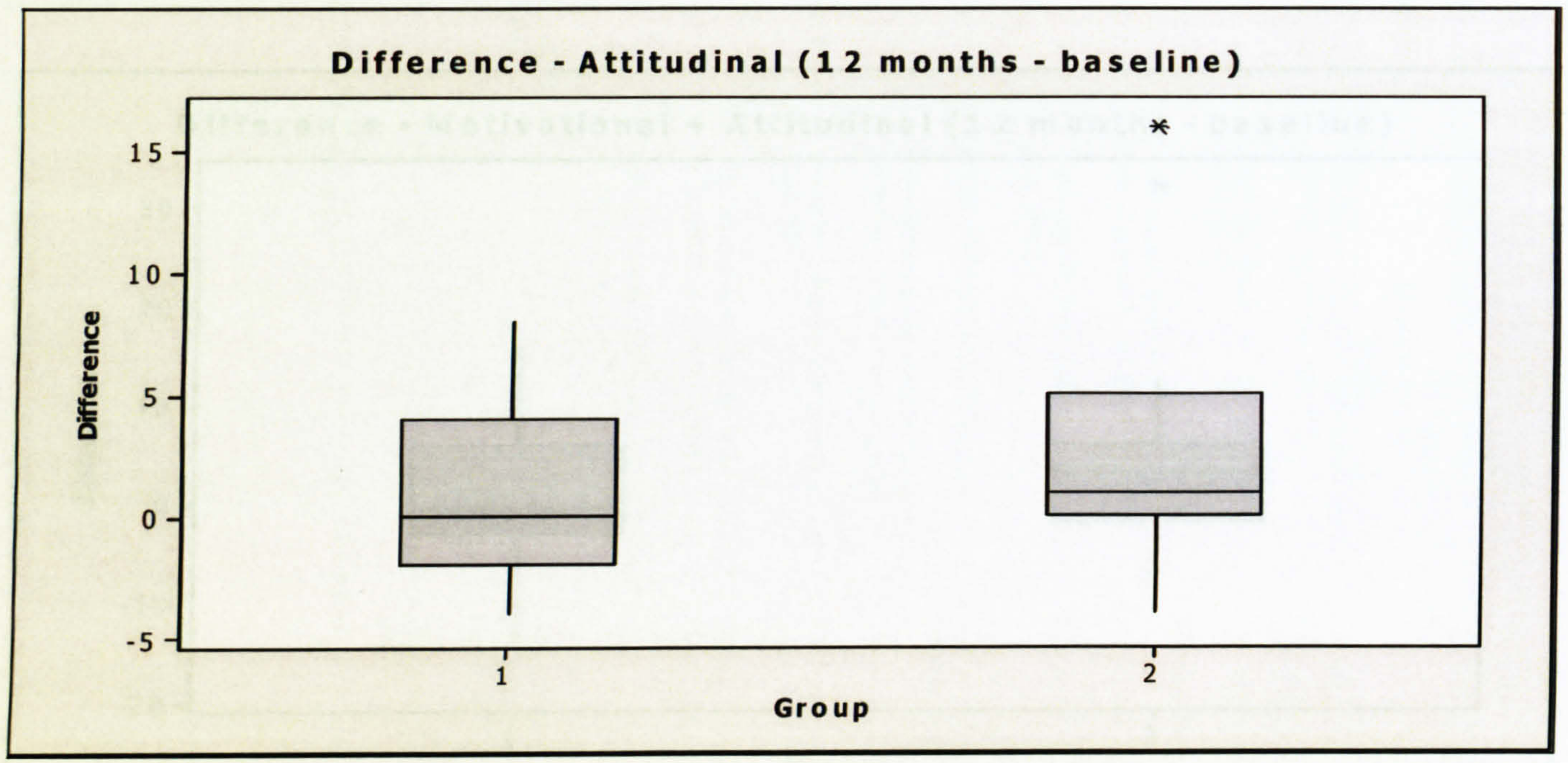
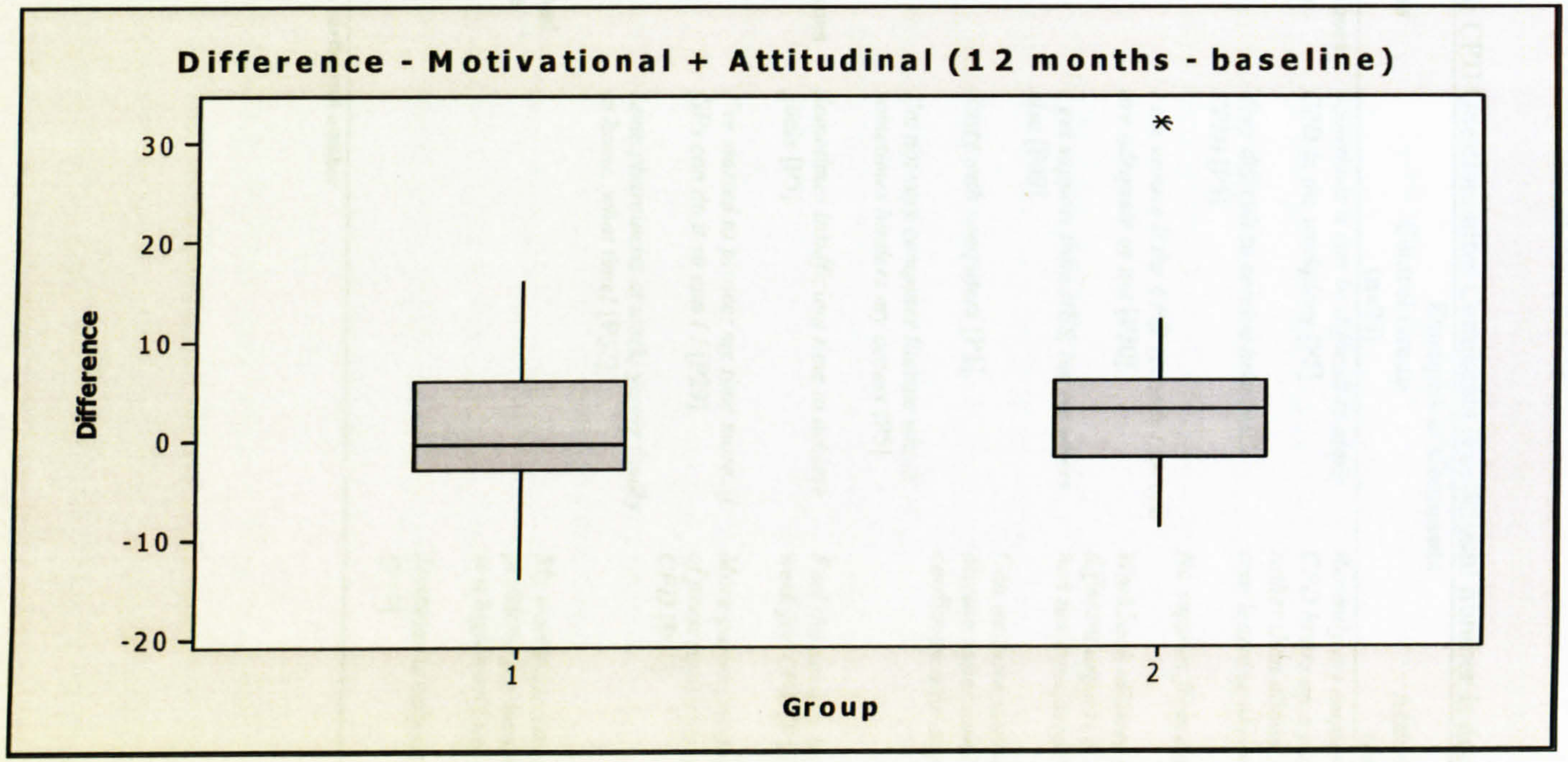


Figure 7.3: Box plot of the differences pre to post-test between the median Total Scores of the Control (group 1) and Active Group (group 2)



7.3.5 Questionnaire comments

Table 7.6 collates the comments made by the Control and Active Group participants on the Views and Attitude to CPD Questionnaire at month 12. There were no questionnaire comments at month zero.

Table 7.6: CPD Questionnaires Comments (Participant number is denoted by brackets)

Themes	Examples of Comments Control Group (n=28)	Active Group (n=24)
CPD Support Issues	*Sometimes it can be difficult to apply CPD in the workplace* [P5] *Very difficult to receive help (with CPD)* [P5] *I am unsure if the CPD records I record are adequate or not* [P30] *I get support from NES, but no where else* [P49] *Rusty with computers* [P1] *I'm not very computer literate which sometimes hinders my access* [P5]	*Recently my employer made me use my CPD hours on a pointless exercise rather than allowing me to decide my own learning needs* [P4] *No support from employers* [P37] *Workbook allowed me to identify different aspects of CPD needs which I had not considered* [P25] *Can we have some help with other disease states now? What about cardiovascular disease?* [P56]
Time Issues	*Sometimes insufficient time to achieve goals* [P5] *I've started to protect my time more..if GPs can do it so can I !* [P29] *Lone pharmacist at work, young family at home..what time!* [P32]	*Feel the need to try and allot time each week for CPD* [P17] *More patient contact and same amount of prescriptions= even less time for CPD* [P17]
Workload Issues		*My workplace can sometimes cause problems for implementation because it is a high workload dispensary* [P31] *Diabetes is only a tiny part of what I do!* [P14]

[Px] denotes participant number

7.4 Discussion

7.4.1 Study Samples

The Pilot Group were representative of the final study group in terms of age, sex, experience and number of CPD hours. The percentage of female pharmacists was slightly higher in the pilot study than in the Control and Active groups (81.1% vs 67.9% and 70.8% respectively). These findings in the Control and Active Groups do mirror the RPSGB database statistics for Scotland of 67% female practising pharmacists [195], (compared with the Workforce Update figures of 56% of pharmacists being female in Great Britain [196]). The majority of pilot responders also worked in a large multiple compared to the Control and Active groups (72.77% vs 67.9% and 45.8%) respectively, with a corresponding lower number working in the independent pharmacy (18.2% vs 32.1% and 45.8%) respectively.

One function of the pilot study was to provide baseline scores in order to inform a power calculation. There were more female employees working in large multiple companies in the pilot study. Some studies have indicated that female pharmacists do spend more time engaging in CPD [168], however the mean Motivational Pilot Group score was similar to the mean Motivational Score using the same questionnaire in a larger study of the Scottish community pharmacy population which has since been carried out (36.6 vs 35.4) [109].

There were no data on employment hours from the Pilot Study, however in the intervention study, 50% of all respondents indicated that they worked part time. This figure is higher than the finding of 33% part-time pharmacists in the workforce study of Hassell in 2003 [213]. There was also a surprisingly large number of community pharmacists working in independently-owned premises (45.8%) within the pilot study.

The Control and Active Groups study groups were well matched in terms of age, sex, experience and number of CPD hours. There were however differences (Table 7.3) in their sectors of employment with less of the Control Group (33% vs 46%) working in independent pharmacies, more of the Control Group working in small multiple

pharmacies (11% vs 4%) and more of the Control Group working in large multiple pharmacies (68% vs 46%). Although these differences were not statistically significant, these factors may impact on the results as independent companies and multiple pharmacies may offer differing CPD support to their employees.

There was a statistically significant difference (p=0.019-chi-squared test) between the number of hours of employment, with more of the Active Group (82% vs 50%) being part-time workers. Both groups have a higher percentage of part-time workers than that of 33% part-time pharmacists in the workforce study of Hassell in 2003 [213]. It may be argued that part-time employees have more time to spend on CPD than their full-time colleagues although a recent study has concluded that female community pharmacists working part-time or as locums received relatively less support for CPD than those employed in other sectors [214].

7.4.2 CPD Hours

Respondents in the intervention study reported spending a median (IQR) of 35 (30, 50) hours per annum on CPD. No participant admitted to spending zero time on CPD which refutes the CPD findings in a larger study of Scottish pharmacists (work including the author) [109] and other UK community pharmacy studies [168,169,204]. The Active Group and Control Group reported a median of 35hrs and 43hrs of CPD respectively at month zero. This was a lower figure than in a larger study of Scottish community pharmacists. Power et al reported community pharmacists spent a mean of 45hrs per annum [range 0-600 hrs] on CPD. This was a much lower figure than primary care pharmacists (mean time spent=68hrs. [range 0-600 hrs]) and hospital pharmacists (mean time spent=66hrs. [range 0-720 hrs]) in the same study [109]. The hours reported in this thesis which is small and intense, however may be more accurately assessed than previous large anonymous surveys. Previous UK studies have reported a median or mean of between 7 and 26 CPD hours per annum [107,108,204]. There was no reported increase in CPD hours in the Active Group during the study period which is interesting, and no evidence of a difference or change in CPD hours between groups. This shows a CPD Support Model does not necessarily lead to an increase or indeed a decrease in CPD hours by the recipients.

7.4.3 Developing the CPD Model of Support

All pharmacists in the Educational Needs Assessment exercise in Chapter 5 reported that they would require more training before becoming confident in providing a higher level of service to patients with type 2 diabetes mellitus (section 5.3.2.2.1). Some participants felt that a distance learning pack could provide this training. This was a similar finding to that of Douglas et al (work including the author), where pharmacists who responded to the study questionnaire favoured written distance learning courses or local evening courses as their preferred CPD options [77]. These findings also mirror work carried out in 1997, where 28% and 25% of Scottish pharmacists respectively placed workshop and distance learning packs as their most useful methods of continuing education [215]. A distance learning pack was therefore made one of the elements of the CPD Support Model.

Distance learning packs have the advantage of flexibility and provide a means by which learning can fit in to a busy pharmacist's day as the learning is generally divided into small topics [161]. As 76% of the ENA respondents in Chapter 5 expressed a desire for training away from their workplace, educational sessions were organised in five areas in Scotland over the 12-month study period. These sessions used a number of other diabetes team members to teach the pharmacists. Education away from the workplace could also be in the form of shadowing or buddying with other practitioners. Both these systems were encouraged throughout the intervention study.

A distance learning-interactive (multi-media or web based) package did not score highly in the ENA exercise (Table 7.2). Previous work has identified several problems with the learning web such as technical problems, limited range of off-the shelf solutions and expense of in-house production. However the increasing use of these technologies in leisure will make their increased use in work and education inevitable and easier to integrate. Current difficulties may be outweighed in the future by the advantage of 24 hour accessibility to education, [174] and bearing this in mind, although a web based package was not included in the support model, a DVD

was sent to each participant of the training sessions. An on-line knowledge-exchange network was also used to allow dialogue between Active Group participants.

Monitoring of the use of the CPD Support model was studied in detail in Chapter 8.

7.4.4 Motivational Scores

Motivation has been shown to be a key factor in adult learning [94] and more specifically in CPD participation [209]. Knowles acknowledged social relationships, external expectations, social welfare, personal advancement, stimulation and cognitive interest as the six major factors of motivation in an adult [94]. Generally motivation was positive in our study with both Control and Active group participants scoring 7/10 questions a median of 4 out of a possible 6 (Table 7.4). The median Motivational Scores in the Control Group remain the same (pre-test-37 vs post-test-37), while the median scores in the Active Group appeared to show an increase (pre-test-36 vs post-test-40). This increase was however not statistically significant as the study was powered to detect a difference in scores of 8. These scores are very similar to previous work carried out in Scotland (n= 288) (work including the author) where a baseline median (IQR) Motivational Score for community pharmacists using the same questionnaire was 35 (30,40) [109].

Previous studies have illustrated more support was perceived to be needed by pharmacists for their CPD [108,109,168]. There were several comments from the Control Group confirming this lack of support:

'No support from employers' [Participant 37-Control Group]

'Very difficult to receive help (with CPD)' [Participant 5-Control Group]

Although within the Active Group there were more positive comments citing NES (NHS Education for Scotland) as providing support:

'I get support from NES, but nowhere else' [Participant 49-Active Group]

The competency-based CPD workbook from the CPD Support Model was also noted by one participant as being a useful CPD tool:
'Workbook allowed me to identify different aspects of CPD needs which I had not considered' [Participant 25-Active Group]

The fact that 8% of participants had to withdraw from this CPD study due to pressure of work is consistent with the withdrawal in other studies and confirms time pressure to be a recognised barrier to CPD. From our results, community pharmacists considered they did not have sufficient time to achieve their CPD goals. This was highlighted in our study in both the Control and Active Groups. This observation, not surprisingly, re-iterates findings in previous work [106,107,205,207]. Comments to illustrate this point were:
'Sometimes insufficient time to achieve goals' [Participant 5-Control Group]

'More patient contact and same amount of prescriptions= even less time for CPD' [Participant 17-Active Group]

'Lone pharmacist at work, young family at home..what time!' [Participant 32-Control Group]

A study conducted in England found that pharmacist respondents acknowledged that they were prepared to invest personal time in CPD, but they believed that a proportion of working time could be invested in CPD activities [180]. A study published in 2007 supported this belief [214]. Other healthcare professionals working in medicine and dentistry have defined learning time 'protected' as their model to provide additional CPD support. A similar need among pharmacists is supported by the finding in the present study that respondents perceived insufficient time to achieve CPD goals, although the concept of 'protected time' is unlikely to be uniformly recognised by the workplaces where registered pharmacists are employed. A comment to support this was:
'I've started to protect my time more..if GPs can do it so can I' [Participant 29 – Control Group]

7.4.5 Attitudinal Scores

The Control Group's median Attitudinal Score did show a trend of increase during the study period (35 vs 36) however the Active Group's median Attitudinal Score increase was larger (34 vs 37) (Table 7.5). The difference between the groups' median Attitudinal Score was not statistically significant. These baseline Attitudinal Scores were very similar to previous work in Scotland which resulted in a community pharmacists' median (IQR) Attitudinal Score of 34.5(30,39) [109]. In that piece of work, Power et al showed community pharmacists had significantly (statistically) lower median (IQR) Attitudinal Scores compared to hospital (34.5 (30, 39) vs 36.2 (31,41)) and primary care pharmacists (34.5 (30, 39) vs 38.4 (35,43)) although the sizes of the differences were too small to draw conclusions.

7.5 Conclusion

The future of CPD is likely to increase in relevance as new community pharmacy contracts are implemented in Great Britain and as requirements become mandatory for the pharmacy profession. There are limited data on pharmacists' views, attitudes and participation in CPD; the information from our study contributes to informing the forward pathway for the profession. A CPD Support Model for diabetes mellitus does increase practitioner CPD hours and shows a trend to increase Motivational and Attitudinal Scores to CPD. These increases are however not statistically significant. Similar support models in other disease states may further increase motivation and attitudinal support to CPD.

Chapter 8:

Monitoring the Use of the Elements of the CPD Support Model for Providing Pharmaceutical Care to the Patient in Primary Care

Research Focus 3:

A community pharmacy CPD support model for providing care to the patient with type 2 diabetes mellitus in primary care

8.1 Introduction

8.1.1 Background

This chapter will focus in more detail on the monitoring of the CPD Support Model introduced in Chapter 7.

Continuing professional development (CPD) has been defined as:

'the process through which pharmacists continuously enhance their knowledge, skills and personal qualities throughout their professional careers' [206]

As explained already in Chapter 7, CPD is an individualised activity. A single system will not prove comfortable to all practitioners. Therefore in an attempt to encourage all practitioners to undertake and document CPD, various differing educational methods should be made available. Variety of form caters for practitioners' differing preferred learning options, but also in Scotland, responds to differences in access brought about by the geography.

In the Delphi exercise in Chapter 5, all pharmacists participating reported that they would require more training before becoming confident in providing a higher level of service to patients with type 2 diabetes mellitus. Acting on this finding, it was essential that a CPD support package must be available. In Chapter 7, a CPD Support Model, consisting of 8 elements was designed. The CPD Support Model comprised: (a) a competency based CPD paper workbook or an e-portfolio version (available from month 6), (b) a knowledge exchange network, (c) direct educational sessions as face-to-face courses or DVD recordings, (d) peer support, (e) mentor support, (f) quarterly posted samples of current published papers, (g) shadowing or buddying systems (arranged on request) and (h) a distance learning resource.

In Chapter 5, 88.3% of the Delphi participants believed pharmacists delivering a comprehensive service to patients with type 2 diabetes mellitus should be subject to assessment and accreditation of their competence (Table 5.4). One step towards accreditation of practitioners to deliver pharmaceutical care to a particular group of patients, is the analysis of overall competence to perform a role into constituent

competencies. Competencies and their associated behavioural statements or activities are a useful way of defining knowledge, skills and attitudes needed for a clinician to be effective. Once the competencies for a particular role are accepted by the individual, profession or organisation, they can also be used to support CPD [216].

When initiating a service such as a Chronic Medication Service for patients with type 2 diabetes mellitus in primary care, there is a wide range of clinical knowledge with which the practitioner must be familiar. A reliance on this factual clinical information can create a misunderstanding of the requirements for 'skills' associated with professional practice [189]. This confusion is often exacerbated by a lack of structure within clinical practice and an absence of national or internationally agreed standards of practice. Competencies are thus a useful aid in formulating and communicating this standard.

A framework of competencies should allow consistency in the quality of the service that practitioners deliver to the patient with type 2 diabetes mellitus [216]. Taking responsibility for ones personal development is important in adult learning [217]. One benefit of using a competency framework is that if an individual identifies a gap in their knowledge or skills, the breakdown of the competency into its essential behaviours may aid the individual to identify where their knowledge or skills need to improve. This process in turn, might result in a focus for deciding further CPD or training needs.

8.1.2 Justification for Research

This research aimed to monitor a CPD Model of Support for community pharmacists delivering pharmaceutical care to the patient with type 2 diabetes mellitus. The Model of Support included the competency-based CPD workbook developed in previous work (Chapter 4, 5 and 6). This present study was designed to identify what proportion of study participants would use each of the CPD options available. To establish which elements of the CPD Support Model are used most frequently is helpful for educational providers.

Similarly by establishing which, when and why competencies and behavioural statements have a CPD need identified and subsequently addressed can structure future training initiatives and timely CPD support can be better structured. Any CPD need identified but not addressed within the study period highlights a potential gap in training. This study was conducted using a research approach in diabetes which may offer an exemplar for use in the management of other chronic diseases.

8.1.3 Study Aims and Objectives

This section of the thesis was the process element of the intervention study explained in Chapter 7. The primary aim of this study was to monitor the use of a CPD Model of Support for community pharmacists providing pharmaceutical care to the patients with type 2 diabetes mellitus in the primary care setting.

From this primary aim, a number of objectives emerged:

- To gather preferences by the clinical pharmacist on the use of elements within the CPD Support Model
- To use the CPD workbook as a competency-based system for self identification of CPD needs while delivering comprehensive pharmaceutical care to the patient with diabetes mellitus type 2
- To establish if the CPD Support Model affected the use of CPD tools outwith the model
- To establish the diabetes competencies and behavioural statements targeted as a CPD need by the practitioners during the 12 month period
- To use a structured questionnaire to explain the prioritisation at 6 months by study subjects of competency clusters, competencies and behavioural statements with a CPD need identified

8.2 Methods

8.2.1 Study Design

Application of a Support Model Questionnaire (12 months), application of a pre and post-intervention CPD Views and Attitudes Questionnaire (0 and 12 months), a two

point collation of workbook entries (6 months and 12 months) and telephone application of a structured questionnaire (6 months).

8.2.2 Subjects and Settings

As explained in Chapter 7 (7.2.2.2), a group of sixty community pharmacists were recruited to this one-year study and invited to complete an initial pre-study questionnaire. On commencement of this study, these participants were all providing structured pharmaceutical care to patients with diabetes mellitus type 2 in their community pharmacy. They were sequentially allocated into control and active groups depending on their baseline motivational score.

8.2.3 Ethical Considerations

As this research was carried out after April 2004, ethics approval was sought for this study. Ethics was deemed to not be required by the COREC ethics board (Appendix 7.1).

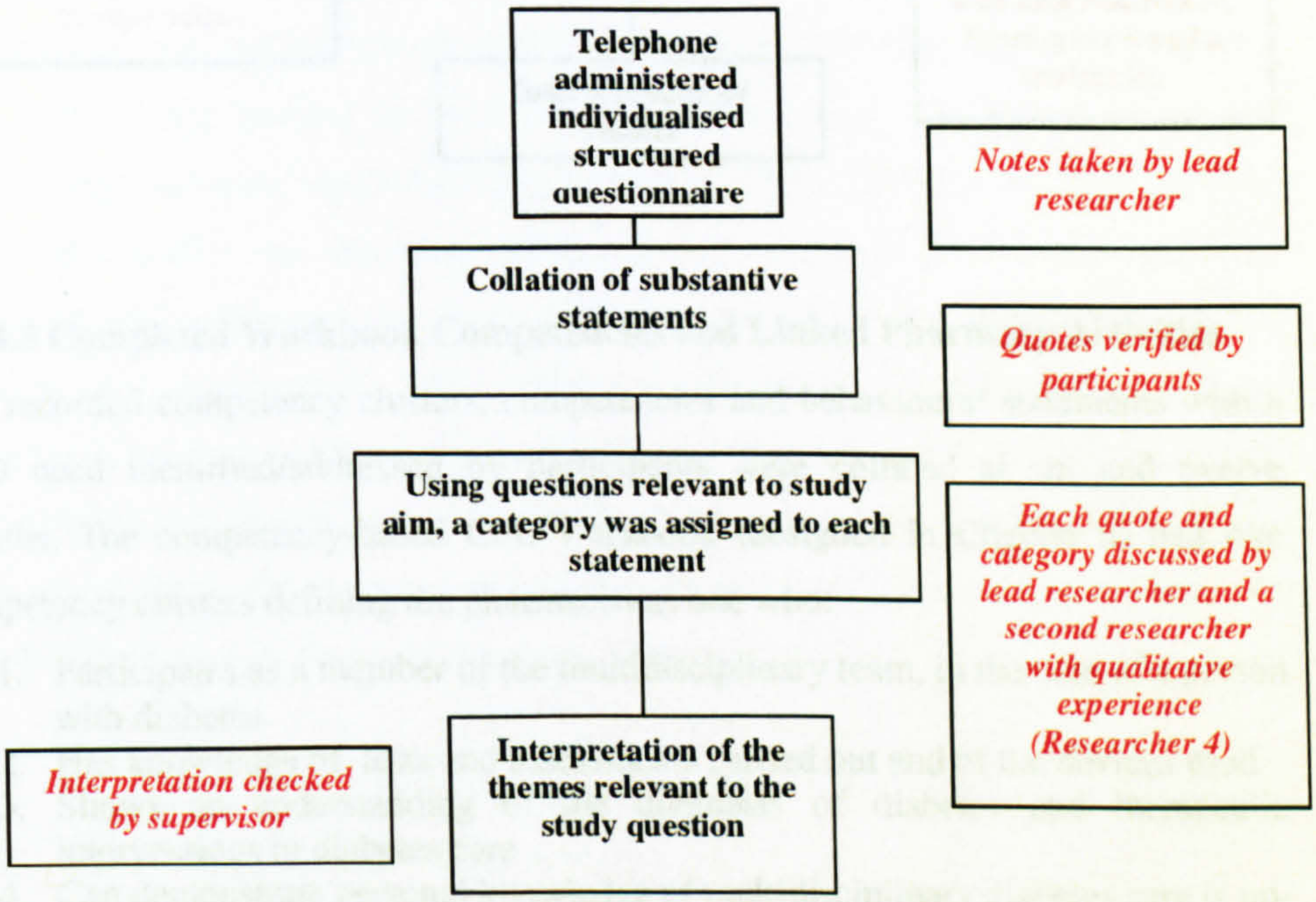
8.2.4 Study Procedure

The CPD Support Model formed the intervention in this research. The Active Group had access to this intervention. The Control Group had no access. A one year field study was conducted which used three sources of data:

8.2.4.1 Support Model Questionnaire

A questionnaire was designed to determine the relative uptake and expressed preferences of community pharmacists for the eight elements of the Support Model. At 12 months participants were asked to identify which CPD elements they had used over the 12 month period and also asked to rank the three CPD tools that they perceived to be most useful. The element favoured number one in the ranking was assigned three points, number two was assigned two points and number three was assigned one point. This questionnaire was piloted on three community pharmacists and minor alterations in text made as a result. Researcher 6 (MA) helped with the distribution and data entry for this questionnaire.

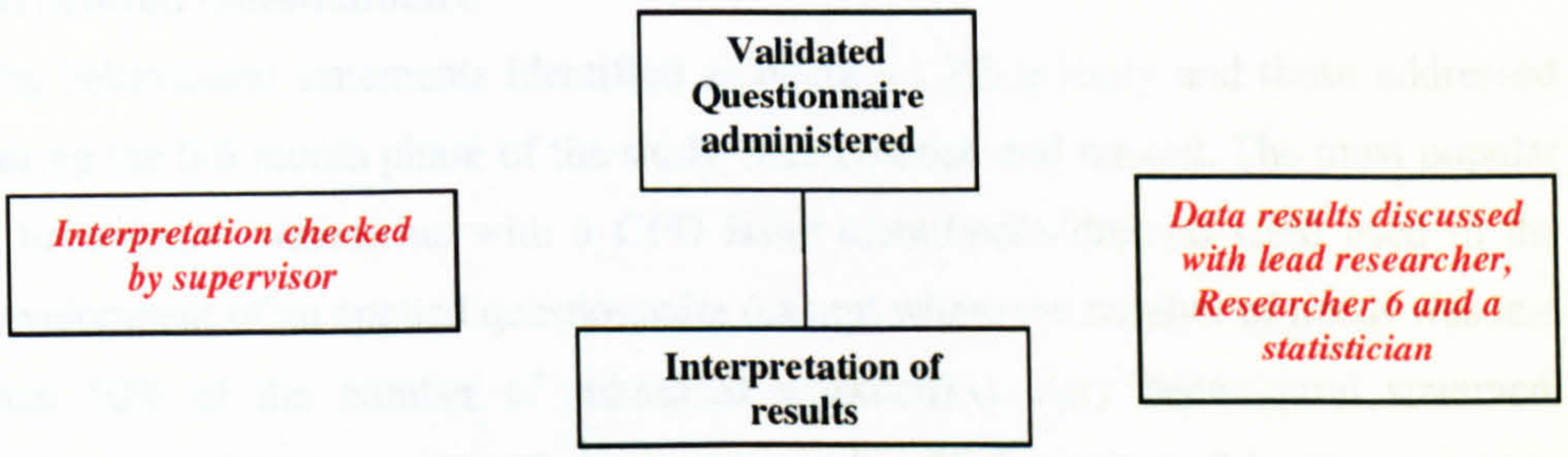
Figure 8.1: Scheme of quantitative research data analysis and verification stages- Support Model Questionnaire



8.2.4.2 CPD Views and Attitudes Questionnaire

A CPD Views and Attitude Questionnaire (used in Chapter 7) (Appendix 7.2) was used to collect data on the breakdown of the percentage of CPD time spent on activities in the Control and Active Groups. The use of seven CPD support tools outwith the Support Model at different stages of the CPD cycle (identification, planning, implementation and evaluation) pre and post intervention was studied. Their use was monitored to identify any changes in use brought about by the CPD Support Model.

Figure 8.2: Scheme of quantitative research data analysis and verification stages- CPD Views and Attitudes Questionnaire



8.2.4.3 Completed Workbook Competencies and Linked Pharmacy Activities

The recorded competency clusters, competencies and behavioural statements with a CPD need identified/addressed by participants were collated at six and twelve months. The competency-based CPD workbook (designed in Chapter 6) had five competency clusters defining the pharmacist as one who:

1. Participates as a member of the multidisciplinary team, in the care of a person with diabetes
2. Has knowledge of tests and assessments carried out and of the devices used
3. Shows an understanding of the diagnosis of diabetes and therapeutic interventions in diabetes care
4. Can demonstrate personal knowledge of multidisciplinary diabetes care is up-to-date and based on local and national standards/ guidelines
5. Contributes to the continuing education of the patient and family/carers about diabetes and diabetes care

Each competency cluster was further detailed by competencies and behavioural statements. The workbook consists of five competency clusters, 54 competencies and 47 behavioural statements.

8.2.5 Development and Application of a Telephone Applied Individualised Structured Questionnaire

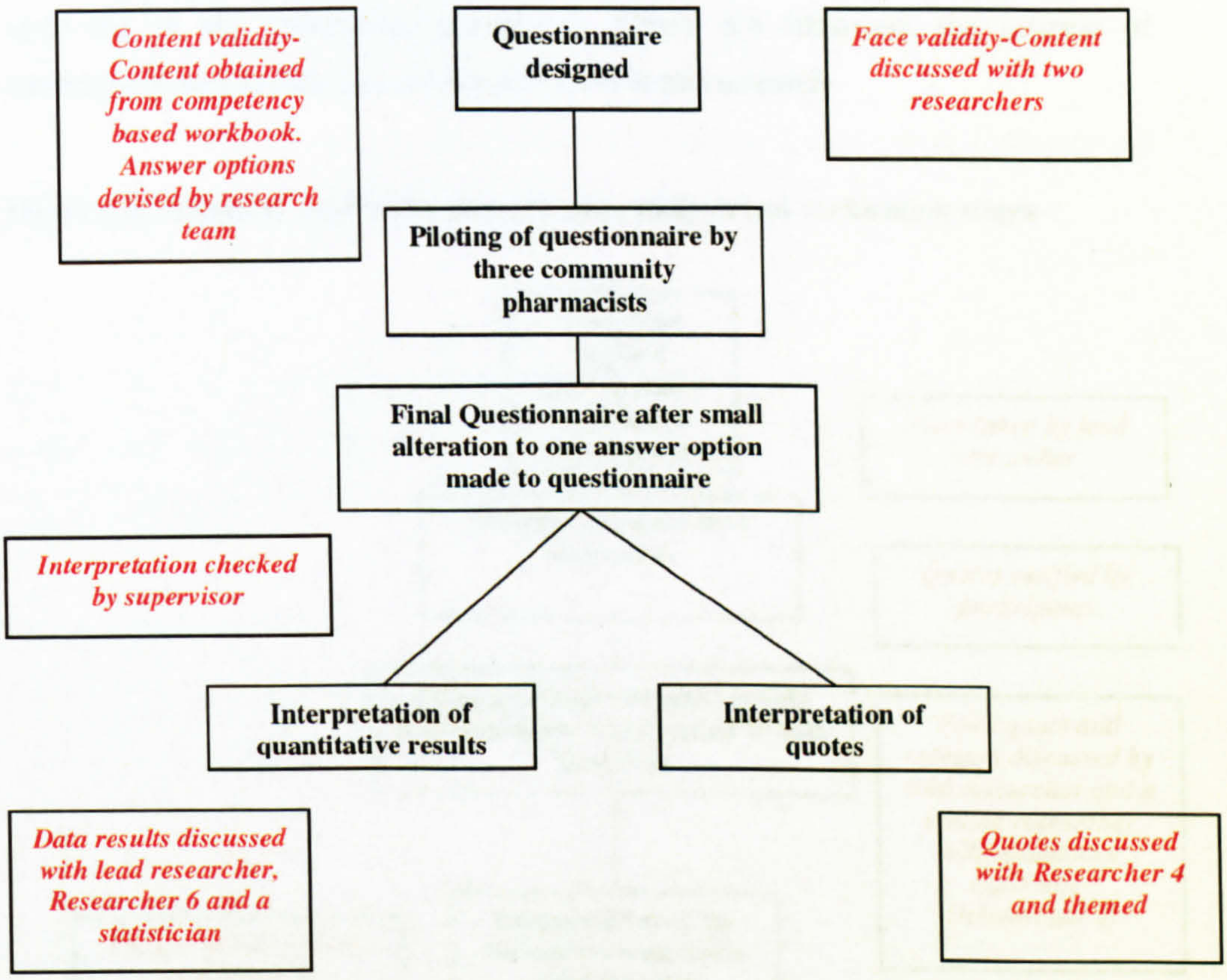
The behavioural statements identified as being a CPD priority and those addressed during the 0-6 month phase of the study were collated and ranked. The most popular 3 behavioural statements with a CPD issue identified/addressed were used in the development of an applied questionnaire (except where the number of needs was less than 50% of the number of submitted workbooks). Any behavioural statement without any CPD issue identified was also used in the formation of the questionnaire. The questionnaire was individualised depending on which CPD issues had been identified and addressed by each participant. During the application of the individualised questionnaire, each participant was asked why they had or had not identified CPD issues with the targeted behavioural statements. They had the choice of 4 standard answers for each question. The four answer options were developed by the research team. This team consisted of a Professor of Pharmaceutical Care, two Research Fellows and the lead researcher. These answers were:

1. Not relevant to community pharmacy practice
2. Not a priority for my service development
3. Not possible in my area at this time
4. Not necessary (ie an activity in which the participant already felt competent)

The questionnaire was piloted in three participants to ensure all possible answers were involved in the choices given. As a result of this pilot, one answer was adapted from 'Not possible in my area at this time' to 'Not possible in my area/in my job at this time'.

All study participants who chose to use the CPD workbook as part of the CPD support model took part in an applied structured questionnaire at 6 months.

Figure 8.3: Scheme of research data analysis and verification stages-Telephone application of structured individualised questionnaire

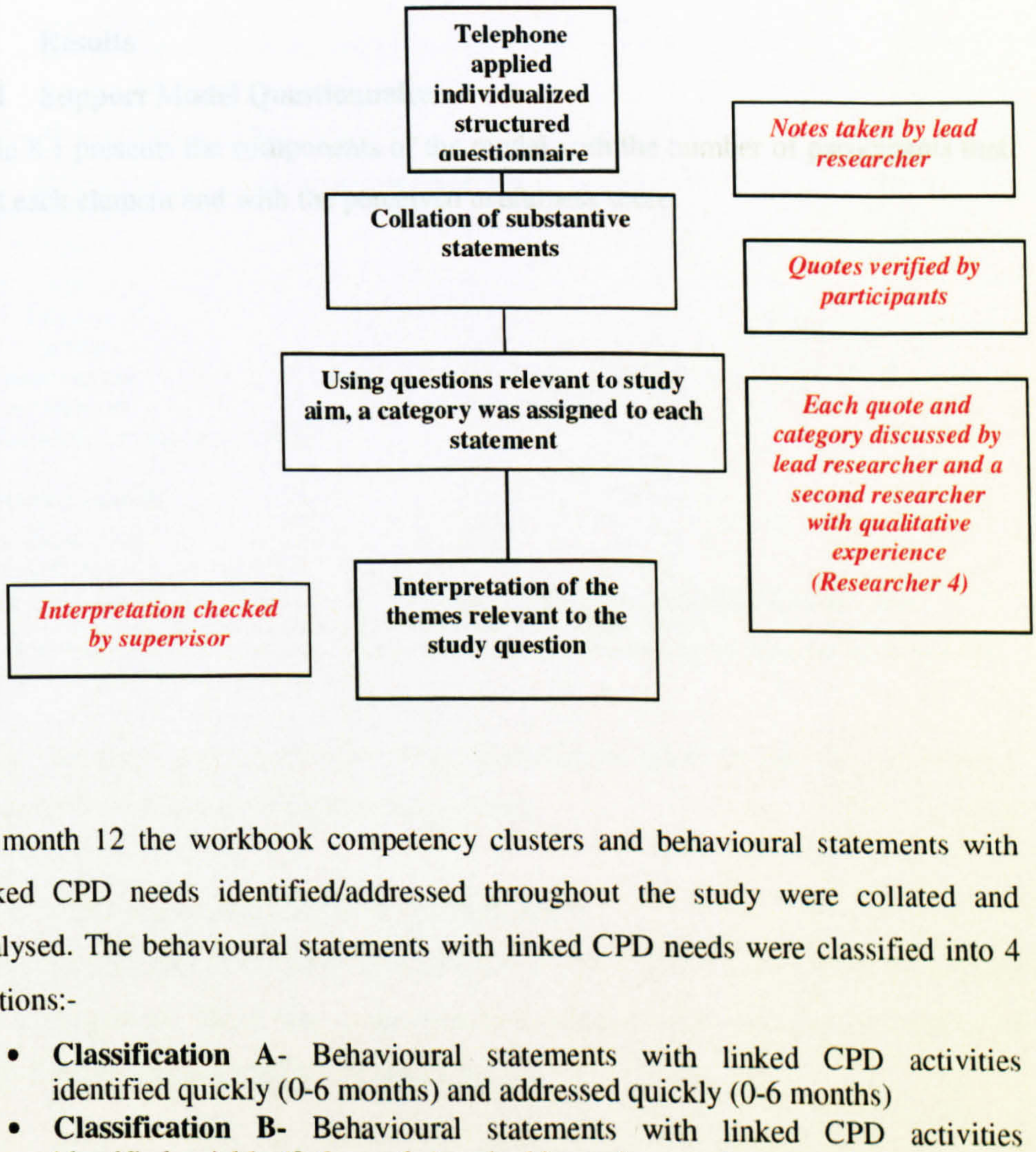


8.2.6 Classification of Workbook Competencies

For each CPD need identified/addressed, the competency cluster, competency and behavioural statement were coded manually and independently by two researchers (Lead Researcher and Researcher 6(MA)). Any coding discrepancies were then discussed between the researchers and a mutual decision reached. Some behavioural statements existed in more then one competency cluster. The code of the behavioural statement was then counted in each appropriate competency cluster. The data were analysed statistically using SPSS®.

The application of the telephone questionnaire was not taped due to the objection of one participant in the study group. Throughout the application of the questionnaire, notes were taken by the lead researcher. Any quotes used in the research were approved by the appropriate participant. Figure 8.4 illustrates the scheme of qualitative research data and verification used in this research.

Figure 8.4: Scheme of qualitative research data analysis and verification stages



At month 12 the workbook competency clusters and behavioural statements with linked CPD needs identified/addressed throughout the study were collated and analysed. The behavioural statements with linked CPD needs were classified into 4 sections:-

- **Classification A**- Behavioural statements with linked CPD activities identified quickly (0-6 months) and addressed quickly (0-6 months)
- **Classification B-** Behavioural statements with linked CPD activities identified quickly (0-6 months) and addressed over a longer period of time or unaddressed during the study period (over 6 months)

- **Classification C-** Behavioural statements with linked CPD activities identified over a longer period of time(6-12 months) but then addressed quickly (6-12 months)
- **Classification D-** Behavioural statements with linked CPD activities identified over a longer period of time (6-12 months) and not addressed quickly ie were unaddressed during the study period (over 12 months)

Each activity may have been assigned more than one classification coding as all participants' actions were analysed.

8.3 Results

8.3.1 Support Model Questionnaire

Table 8.1 presents the components of the model with the number of participants that used each element and with the perceived usefulness score.

Table 8.1: Components of the CPD support model and analysis of its usage by the participants (n=24)

Mode of support	Number of participants used the support tool (%)*	Total perceived usefulness score**
• Educational session	18 (75.0)	41
▪ Live course	9	
▪ DVD	12	
• CPD competencies	14 (58.3)	21
▪ Paper based workbook	14	
▪ Electronic portfolio (available from 6 months)	2***	
• NES diabetes distance learning package	11 (46.8)	16
• Use of published papers in the field provided by the researcher	15 (62.5)	15
• Peer support	12 (50.0)	12
▪ e mail	3	
▪ Telephone	5	
▪ Meeting	10	
• Shadowing or 'buddying' with another/other practitioners	6(25.0)	8
• Knowledge exchange network	3(12.5)	2
• Mentor support	3(12.5)	0
▪ Email	2	
▪ Telephone	2	

*** Some pharmacists selected more than one option, therefore total percentage will add up to more than 100%**
**** Rank one was assigned 3 points, rank two 2 points and rank three assigned 1 point**
*****Both pharmacists used the paper-based and electronic workbook as the electronic version was not available until 6 months**

From the study participants, 14 (58%) participants opted to use the competency based CPD workbook during the study period.

8.3.2 CPD Views and Attitudes Questionnaire

Table 8.2 illustrates the change in time spent on CPD activities in general throughout the study period. There was a statistically significant difference in the number of NES CPD events attended in the active group.

Table 8.2: Breakdown of percentage of CPD time spent on activities in the Control and Active Groups at zero and 12 months

Activity	% CPD time spent on activity			% CPD time spent on activity		
	Median % (IQR)			Median % (IQR)		
	Control (n= 28) Baseline (time 0)	Control (n=28) 12 months	Median Difference	Active (n= 24) Baseline (time 0)	Active (n=24) 12 months	Median Difference
NHS Education for Scotland (NES) conferences	20.0 (10, 30)	19 (10.0, 30.0)	**0***	22.5 (10.0, 39.25)	32.5 (12.5, 50.0)	**+2.5***
RPSGB branch meetings	0 (0.0, 0.0)	0 (0.0, 0.0)	**0**	0 (0.0, 5.0)	0 (0.0, 5.0)	**0**
In-service meetings	2.5 (0.0, 10)	2.5 (0.0, 10)	**0**	0 (0.0, 10.0)	2.5 (0.0, 10.0)	**0**
Distance learning courses	20.0 (6.25, 30)	20 (10.0, 30.0)	**0**	15 (4.25, 30.0)	15 (8.5, 20.0)	**0**
Directed reading in the workplace	10.0 (0.5, 20)	10 (1.25, 10.50)	**0**	10 (4.25, 10.0)	6 (0.0, 13.75)	**0**
Learning from colleagues E.g. mentoring, shadowing, discussion	10.0 (0.0, 13)	10 (0.0, 18.75)	**0**	5 (1.0, 10.0)	5 (0.0, 10.0)	**0**
Personal study/undirected reading	12.5 (5.0, 27.75)	20 (10.0, 37.50)	**0**	20 (10.0, 30.0)	10 (10.0, 23.75)	**0**
Teaching or enquiry	0 (0.0, 8.75)	0 (0.0, 10.0)	**0**	3 (0.0, 10.0)	2 (0.0, 10.0)	**0**
Online courses	0 (0.0, 3.75)	0 (0.0, 0.0)	**0**	0 (0.0, 10.0)	0 (0.0, 6.50)	**0**

*Statistical difference between the Control and Active Group median difference in time spent (Mann Whitney). p value = 0.04

Table 8.3: Breakdown of CPD tools used outwith the model at each stage of the CPD cycle at zero and 12 months (Control Group)

Activity		Percentage (0 months)				Percentage (12 months)			
	I would find the following helpful in identifying my learning needs *:-	Identification	Planning	Implementation	Evaluation	Identification	Planning	Implementation	Evaluation
1	RPSGB CPD documentation	67.9	41.4	64.3	57.1	53.6	50.0	50.0	46.4
2	Other pharmacy professional organisations eg UKCPA, College of Pharmacy Practice	32.1	35.7	39.3	21.4	21.4	21.4	21.4	17.9
3	Employer's documentation	32.1	32.1	42.9	39.3	35.7	25.0	35.7	32.1
4	Multiprofessional activities	67.9	53.6	42.9	35.7	32.1	32.1	35.7	17.9
5	Significant Event Analysis	39.3	21.4	32.1	32.1	32.1	17.9	14.3	21.4
6	Personal support from an individual with experience	57.1	53.6	60.7	67.9	39.3	42.9	42.9	42.9
7	Workshop (CPD group)	42.9	32.1	39.3	32.1	35.7	39.3	39.3	35.7

*More than one choice could be made by the participant at each stage

Table 8.4: Breakdown of CPD tools used outwith the model at each stage of the CPD cycle at zero and 12 months (Active Group)

	Activity	Percentage (0 months)				Percentage (12 months)			
	I would find the following helpful in identifying my learning needs *:-	Identification	Planning	Implementation	Evaluation	Identification	Planning	Implementation	Evaluation
1	RPSGB CPD documentation	39.3	42.9	50.0	46.4	50.0	54.2	58.3	37.5
2	Other pharmacy professional organisations Eg UKCPA, College of Pharmacy Practice	25.0	25.0	21.4	25.0	20.8	25.0	29.2	16.7
3	Employer's documentation	21.4	17.9	17.9	14.3	33.3	25.0	25.0	29.2
4	Multiprofessional activities	42.9	35.7	46.4	32.1	50.0	29.2	41.7	25.0
5	Significant Event Analysis	39.3	35.7	25.0	35.7	33.3	25.0	8.3	8.3
6	Personal support from an individual with experience	64.3	67.9	64.3	57.1	66.7	54.2	54.2	62.5
7	Workshop (CPD group)	60.7	57.1	60.7	57.1	41.7	33.3	33.3	58.3

*More than one choice could be made by the participant at each stage

Table 8.3 and Table 8.4 illustrate the breakdown of the use of CPD tools outwith the Support Model that were used by the Control and Active Groups at each stage of the CPD cycle at zero and 12 months.

With the Control Group at month zero, the most used CPD tools outwith the model were: RPSGB documentation and multiprofessional activities during the identification phase; multiprofessional activities and personal support during the planning phase; RPSGB documentation and personal support during the implementation and evaluation phases. There were no statistically significant changes to this at month 12 where the tools used were RPSGB documentation and personal support during all phases.

With the Active Group at month zero the most used CPD tools outwith the model were personal support and CPD workshop/group during all phases. Again there were no statistically significant changes to this at month 12 where RPSGB documentation and personal support were used most during the identification, planning and implementation phases, while personal experience and CPD workshop/group were used during the evaluation phase.

8.3.3 Classified of Behavioural Statements with a Linked CPD Need

Table 8.5 shows the workbook classification of competency clusters and behavioural statements with a linked CPD need during the study period at 6 and 12 months. Of the CPD issues identified, 86.4% were addressed in the first 6 month phase of the study. After the first six months, 86 CPD issues were identified as new or still needing to be addressed and 68 (78.2%) had been addressed by 12 months. Table 8.6 shows the rate of identification and assessment of CPD needs in competency clusters.

Table 8.5: Classification of Behavioural Statements with linked CPD needs identified/addressed (0-6 months) and (6-12 months) n=14

Competency Cluster	Classification Code(s)	Behavioural Statements	No. identified needs 6 Months	12 months	No. addressed needs 6 months	12 months
1. Participates as a member of the multidisciplinary team, in the care of a person with diabetes	B	Create a register to identify patients with diabetes	2	0	0	1
	A,B	Identify patients' need for support by patient interview/assessment	12	0	11	1
	A, B, C	Record delivery of care on a standard pharmaceutical clinical record	11	1	9	1
	A, B, C	Maintain a standard pharmaceutical clinical record that would be shared with other members of the multidisciplinary team	12	1	11	1
	A, B	Help patients maintain a patient-held diabetes record booklet to be shared by other members of the multidisciplinary team. Using a standard patient-held diabetes record book to liase with primary care, secondary care and GP	3	0	2	0
	A, B	Dispense prescriptions and counselling patients. Receive and integrate information about patients' treatment goals and medical/drug history obtained from the team into the standard pharmaceutical clinical record. Receive information and integrate into pharmaceutical clinical record	10	0	9	0
	A, B	Pharmaceutical care plan would be maintained in respect of antidiabetic agent	4	0	3	0
	A,C	Share plans with the patients and members of the team to ensure, suitability of medication for preventing cardiovascular disease, for neuropathy, in renal or visual impairment	6	1	6	1
	A	Pharmaceutical care plan would be maintained in respect of:- dietary goals	7	0	7	0
	C	-problems in blood glucose control requiring balancing food intake/ insulin dose	0	2	0	2
	A, C	-general advice on the use of insulin therapy	2	2	2	2
	A, C	-advice given on self-monitoring of glycaemic control,	6	2	6	2
	A	-records of targets agreed with patient on HbA1c, blood pressure,cholesterol and frequency of hypoglycaemic episodes.	2	0	2	0
	A, B, C, D	Adjust doses to optimise benefits of hypertension treatment, cardioprotective medicines, anti-anginal treatment, antibiotics, analgesics, oral hypoglycaemics.	5	3	2	4

A- Behavioural statement with linked CPD need identified quickly and addressed quickly, B- Behavioural statement with linked CPD need identified quickly and addressed over a longer period of time or were unaddressed during the study period, C- Behavioural statement with linked CPD need identified over a longer period of time but then addressed quickly, D- Behavioural statement with linked CPD need identified over a longer period of time and not addressed quickly ie were unaddressed during the study period

Table 8.5: Classification of Behavioural Statements with linked CPD needs identified/addressed (0-6 months) and (6-12 months) n=14

Competency Cluster	Classification Code(s)	Behavioural Statements	No. Identified needs 6 Months	12 months	No. Addressed needs 6 months	12 Months
1. Participates as member of the multidisciplinary team, in the care of a person with diabetes	C	Supporting the motivation of the patient and family in self care, treatment goals, preventing and dealing with loss of diabetic control	0	1	0	1
	A, B	Help to individualise the patients' oral antidiabetic treatment- check and follow-up drug/dose regimen, identify unsatisfactory treatment, monitor for signs and symptoms of toxicity	6	0	5	0
	A, B	Monitor the patients for signals for assessment and referral (using a standard referral process) to other members of the multidisciplinary team.	12	0	11	0
	B	Critically review published papers on advances in care within pharmacy group.	1	0	0	0
	A, B	Sharing examples of practice through individual cases within a group of pharmacists or within a multiprofessional group.	6	0	4	1
	A, B	Share reflections of your best performance in practice within a uniprofessional or multiprofessional group.	3	0	2	1
	A, B, C	Involvement in relevant local committees.	2	2	1	3
	A, B, C	Obtaining a working knowledge of national and local guidelines.	9	2	8	3
	A, C	Become involved in audit/research project.	13	1	13	1
	B	Use patient evaluation questionnaires.	2	0	0	2
		Competency cluster one totals	**136**	**18**	**115**	**27**
2. Knowledge of tests/assessments and of devices	A, B,C	Maintain the pharmaceutical clinical record with respect to advice given on self-monitoring of glycaemic control.	10	1	8	3
	A, C	Maintain the pharmaceutical clinical record with respect to agreed targets on HbA 1c, BP, cholesterol, frequency of hypoglycaemic episodes	3	1	3	1
		Competency cluster two totals	**13**	**2**	**11**	**4**

A- Behavioural statement with linked CPD need identified quickly and addressed quickly, **B**- Behavioural statement with linked CPD need identified quickly and addressed over a longer period of time or were unaddressed during the study period, **C**- Behavioural statement with linked CPD need identified over a longer period of time but then addressed quickly, **D**- Behavioural statement with linked CPD need identified over a longer period of time and not addressed quickly ie were unaddressed during the study period

Table 8.5: Classification of Behavioural Statements with linked CPD needs identified/addressed (0-6 months) and (6-12 months) n=14

Competency Cluster	Code(s)	Behavioural Statements	No. Identified needs 6 Months	No. Identified needs 12 months	No. Addressed needs 6 months	No. Addressed needs 12 months
3. Show an understanding of the diagnosis of diabetes and therapeutic interventions in diabetes care	**A, B, C, D**	Maintain the pharmaceutical clinical record of choice of antidiabetic agent.	**3**	**1**	**2**	**1**
	A, B, C	Pharmaceutical care plan would be maintained in respect of patient's status in respect of diabetic complications	**5**	**2**	**4**	**3**
	A, C	Maintain a pharmaceutical clinical record in respect of patient's cardiovascular disease, identification of cardioprotective medication.	**5**	**1**	**5**	**1**
	A, B	Maintain the pharmaceutical clinical record in respect of diabetic nephropathy.	**6**	**0**	**5**	**0**
	A	Share plans to ensure suitable drug treatment for neuropathy.	**1**	**0**	**1**	**0**
	A, B	Share plans with the patients and other members of the diabetic team to ensure suitability of medication in renal impairment.	**5**	**0**	**4**	**0**
	A, C	Share plans to ensure suitability of medication in visual impairment.	**4**	**1**	**4**	**1**
	A, C	Maintain the pharmaceutical clinical record of dietary issues needing addressed.	**4**	**1**	**4**	**1**
	C	Maintain the pharmaceutical clinical record in respect of problems in blood glucose control requiring balancing the food intake and insulin dose.	**0**	**1**	**0**	**1**
	A, C	Adjust doses of cardioprotective medicines.	**2**	**1**	**2**	**1**
	A	Adjust doses of oral hypoglycaemics.	**2**	**0**	**2**	**0**
	A	Individualise patients' oral antidiabetic treatment incorporating checking and following up the drug/dose regime.	**1**	**0**	**1**	**0**
	A, C	Share plans with the patients and other members of the team to ensure suitability of medication for preventing cardiovascular disease.	**2**	**1**	**2**	**1**
	A, C	Monitor the patient for signals for review by GP where identification of co-prescribed/purchased medicines for co-morbidity interact, significant changes are recorded in the patient-held record booklet, infection, other complication or new symptoms, failure to reach personalised treatment goals.	**4**	**1**	**4**	**1**
	A	Provide education on how to limit tissue damage through weight control.	**8**	**0**	**8**	**0**
	A, C	Providing education on how to limit tissue damage by smoking cessation.	**2**	**1**	**2**	**1**
	A, C	Advise patients on what action should be taken in a hypoglycaemic event	**3**	**2**	**3**	**2**
	Competency cluster three totals		**57**	**13**	**53**	**14**

A- Behavioural statement with linked CPD need identified quickly and addressed quickly, **B**- Behavioural statement with linked CPD need identified quickly and addressed over a longer period of time or were unaddressed during the study period, **C**- Behavioural statement with linked CPD need identified over a longer period of time but then addressed quickly, **D**- Behavioural statement with linked CPD need identified over a longer period of time and not addressed quickly ie were unaddressed during the study period

Table 8.5: Classification of Behavioural Statements with linked CPD needs identified/addressed (0-6 months) and (6-12 months) n=14

Competency Cluster	Code(s)	Behavioural Statement	No. identified needs 6 Months	No. identified needs 12 months	No. addressed needs 6 months	No. addressed needs 12 months
4. Can demonstrate personal knowledge of multidisciplinary diabetes care is up-to-date and guideline based	**A, C, D**	Share reflections of where your performance leaves room for improvement within a group of pharmacists.	**1**	**2**	**1**	**1**
	D	Take part in a local multi-disciplinary mentoring group.	**0**	**1**	**0**	**0**
	A, B, C	Have a working knowledge of patient cultures and disease implications.	**2**	**2**	**1**	**3**
		Competency cluster four totals	**3**	**5**	**2**	**4**
5. Contributes to the continuing education of the patient and family/carers about diabetes and diabetes care	**A, C**	Individualise patients' oral antidiabetic treatment incorporating checking and following up he drug/dose regime.	**2**	**1**	**2**	**1**
	A, C	Provide education to limit tissue damage through smoking cessation/ weight control.	**6**	**2**	**6**	**2**
	A, C	Continually educate and encourage patient/ carer to be proactive in their disease.	**3**	**2**	**3**	**2**
	A, B, C, D	Provide information on lifestyle advice and health promotion.	**6**	**3**	**5**	**3**
	A, B, C	Provide advice and appropriate information on treatment options/ side effects	**6**	**2**	**5**	**3**
	A, C	Advise on sources of learning or appropriate support groups. Critically review sources of information for the patient/carer.	**2**	**2**	**2**	**2**
	B	Provide information on screening processes. Referral if necessary.	**1**	**0**	**0**	**1**
	A, B, C	Provide timely patient counselling to patients and carers. Monitor compliance	**7**	**3**	**5**	**5**
		Competency cluster five totals	**33**	**15**	**28**	**19**
		Total number	**242**	**53**	**209**	**68**
		Percentage of issues addressed			**86.4%**	**78.2%**

A- Behavioural statement with linked CPD need identified quickly and addressed quickly, **B**- Behavioural statement with linked CPD need identified quickly and addressed over a longer period of time or were unaddressed during the study period, **C**- Behavioural statement with linked CPD need identified over a longer period of time but then addressed quickly, **D**- Behavioural statement with linked CPD need identified over a longer period of time and not addressed quickly ie were unaddressed during the study period

Table 8.6: Rate of identification and assessment of CPD needs in competency clusters

	Competency Cluster	Rate of Identification and Assessment			
		Early and Quickly	Early and Slower	Later and Quickly	Later And Unaddressed
1	Multidisciplinary team member	115	21	17	1
2	Tests, assessments and associated devices	11	2	2	0
3	Diagnosis and therapeutic interventions	53	4	12	1
4	Apply standards/ guidelines (local/national)	2	1	3	2
5	Education of the patient and family/carers	28	5	14	1
	Total	209	33	48	5

8.3.4 Development and Application of a Telephone Applied Structured Questionnaire

Table 8.7 shows the competency clusters, competencies and behavioural statements most Active Group participants identified with a CPD need at 6 months and reasons for this prioritisation.

Table 8.8 shows competency clusters, competencies and behavioural statements with no CPD need identified at 6 months (n=13) and reasons for this.

Table 8.9 charts the comments made by participants while applying the individualised structured questionnaire at 6 months.

Table 8.7: CPD need identified by most participants at 6 months (n=13) and reasons for this prioritisation

Competency Cluster	Competency	Behavioural statement	Reason	No. need identified(%)	No. need addressed (%)
Participates as a member of the multidisciplinary team in the care of a person with diabetes	Personal role in diabetes care as a member of the multidisciplinary team	**Identify patients' need for support by patient interview/assessment**	Relevant to community pharmacy practice	1 (7.7)	1(7.7)
			A priority for my service development	10 (76.9)	9(69.2)
			Possible in my area/in my job at this time	0	0
			Not an activity in which I already feel competent	1 (7.7)	1 (7.7)
			Not relevant to community pharmacy practice	0	0
			Not a priority for my service development	0	0
			Not possible in my area/in my job at this time	0	1(7.7)
			An activity in which I already feel competent	1 (7.7)	1 (7.7)
	Communication systems and methods of record keeping employed by the multidisciplinary	**Record delivery of care on a standard pharmaceutical clinical record**	Relevant to community pharmacy practice	3 (23.0)	2 (15.4)
			A priority for my service development	7 (53.8)	7 (53.8)
			Possible in my area/in my job at this time	0	0
			Not an activity in which I already feel competent	2 (15.4)	2 (15.4)
			Not relevant to community pharmacy practice	0	0
	National and local clinical management systems for identification and follow-up		Not a priority for my service development	0	0
			Not possible in my area/in my job at this time	1 (7.7)	2 (15.4)
			An activity in which I already feel competent	0	0
	Maintaining the patient focus of care	**Maintain a standard pharmaceutical clinical record that would be shared with other members of the multidisciplinary team**	Relevant to community pharmacy practice	3 (23.0)	2 (15.4)
			A priority for my service development	7 (53.8)	7 (53.8)
			Possible in my area/in my job at this time	0	0
	The role in diabetes care of other members of the multidisciplinary team		Not an activity in which I already feel competent	2 (15.4)	2 (15.4)
			Not relevant to community pharmacy practice	0	0
			Not a priority for my service development	0	0
			Not possible in my area/in my job at this time	1 (7.7)	2 (15.4)
			An activity in which I already feel competent	0	0
		Monitor the patients for signals for assessment and referral to other members of the multidisciplinary team	Relevant to community pharmacy practice	4 (30.8)	3 (23.0)
			A priority for my service development	6 (46.0)	6 (46.0)
			Possible in my area/in my job at this time	0	0
			Not an activity in which I already feel competent	2 (15.4)	2 (15.4)
			Not relevant to community pharmacy practice	0	0
			Not a priority for my service development	0	0
			Not possible in my area/in my job at this time	1 (7.7)	2 (15.4)
			An activity in which I already feel competent	0	0

Table 8.8: CPD need identified by no participants at 6 months (n=13) and reasons for this

Competency Cluster	Competency	Behavioural Statement	Reason	No. (%)
Participates as a member of the multidisciplinary team in the care of a person with diabetes	Involving patients and their families and carers in the planning of care	**Supporting the motivation of the patient and family in self care, treatment goals, preventing and dealing with loss of diabetic control**	Not relevant to community pharmacy practice	1 (7.7)
			Not a priority for my service development	3 (23.0)
			Not possible in my area/in my job at this time	5 (38.5)
			An activity in which I already feel competent	4 (30.8)
Show an understanding of the diagnosis of diabetes and therapeutic interventions in diabetes care	The influence of diet and nutrition on diabetes and diabetes care	**Maintain the pharmaceutical clinical record in respect of problems in blood glucose control requiring balancing the food intake and insulin dose**	Not relevant to community pharmacy practice	6 (46.0)
			Not a priority for my service development	3 (23.0)
			Not possible in my area/in my job at this time	4 (30.8)
			An activity in which I already feel competent	0
	The influence of physical activity on diabetes and diabetes care			
Can demonstrate that personal knowledge of multidisciplinary diabetes care is up-to-date and based on local and national standards and guidelines	Identification of educational opportunities specific to their speciality	**Share reflections of where your performance leaves room for improvement within a group of pharmacists**	Not relevant to community pharmacy practice	0
			Not a priority for my service development	1 (7.7)
			Not possible in my area/in my job at this time	9 (69.2)
			An activity in which I already feel competent	3(23.0)
	Interdisciplinary learning in diabetes	**Take part in a local multi-disciplinary mentoring group**	Not relevant to community pharmacy practice	0
			Not a priority for my service development	0
			Not possible in my area/in my job at this time	13(100)
			An activity in which I already feel competent	0

Table 8.9: Comments made by participants while applying the structured questionnaire at 6 months

Themes	Examples of Quotes
Most identified CPD issues	*'This is nuts and bolts stuff'* [P14]
Least identified CPD issues	*'I feel there are a lot of things I need to get competent in before I can do these icing on the cake things'* [P18]
	'I need to get the basics done first' [P4]
	'That's a luxury that the big stores or multiples have' [P58]
	'Aye, I would like that but the systems are just not in place yet' [P16]
Common Issues	*'How do I know when I am competent? When can I tick it off and move on?' 'Surely I can still improve doing these activities?'* [P21]

[Px] denotes participant number

8.4 Discussion

8.4.1 Support Model Questionnaire

Educational sessions, posted quarterly distribution of literature on diabetes care and CPD competency workbooks were identified as the most used component of the CPD Support Model. The diabetes literature was perhaps used routinely as it was being mailed proactively to community pharmacists at regular intervals.

Participants were also asked to rank the three elements that they perceived to be the most useful CPD aid. The resultant support tools were again educational sessions (score=41) and CPD competency workbook (score=22) and also the NES diabetes distance learning package (score=16). The fact that educational sessions were the most used and perceived the most useful, refutes current educational thinking and Swaison et al's belief that learning providers should focus less on directed learning [204]. Pharmacists may appreciate direct learning events due to the social relationship element to Knowles theory of motivation in adult learning ie part of their motivation to learn comes from the desire to make new friends, to meet a need for associations and friendships, to network within the pharmacy community [91]. Some of these practitioners will work in isolation within the community pharmacy setting.

There may also still be some confusion over the difference between continuing education (CE) and CPD. This is a recurring theme in previous work in this area [107,168,169,217]. Continuing education is only one element of CPD. Mottram et al discusses the fact that CE or 'formal' educational sessions overlooks the significance of learning and development that occurs in everyday practice [107]. This point is indeed one of Knowles four critical assumptions of adult learning; as a person matures he accumulates a growing reservoir of knowledge that becomes an increasing resource for learning [91]. Some pharmacists have difficulty recognising any activity other than formal educational sessions as aiding their professional development.

The elements of the support model which was least used were mentor support (3 participants used. Perceived CPD usefulness score=0) and the knowledge exchange network (3 participants used. Perceived CPD usefulness score=3).

The mentor support in this study was given by the lead researcher; perhaps a locally based mentor chosen by the participant would be more acceptable to participants. In previous studies, the use of a mentor has so far not been a great success with practitioners in Scotland [191] (work inclusive of the author), however the concept has proven useful in other educational programmes with groups of pharmacists [218]. Taking part in a local multidisciplinary mentoring group was also a pharmacy activity that no participant identified as a CPD need at 6 months (Table 8.8). The majority of participants stated this was because it was not possible in their area or job at this time. Perhaps until now community pharmacists have not been encouraged to become involved in multidisciplinary mentoring. The use of a locally based member of the multiprofessional Diabetes Managed Clinical Network (MCN) or a member of a nationally based pharmacy diabetes specialist interest group may be a good choice of mentor for this group of practitioners.

The knowledge exchange network is an on-line facility established by communities who share common objectives within a defined area of interest or practice. Knowledge exchanges enable communities to share documents, and information on projects; to create lists of links within simple web pages; and to discuss issues of mutual interest. However a Knowledge Exchange is restricted to community members only and the practitioner must apply for a NES e-library membership (if they do not already have membership) and then for membership of the specific knowledge exchange network. This was a fairly lengthy and cumbersome procedure that may have dissuaded participants from using this element of the model.

8.4.2 CPD Views and Attitudes Questionnaire

From Table 8.2 it was evident that the introduction of the CPD Support Model did not result in a statistically significant change in the choice of CPD activity undertaken in the Active Group. There was only a statistically significant difference in the number of NES CPD events attended by the Control and Active Groups. This was to be expected as the Active Group was invited to additional NES educational sessions on type 2 diabetes mellitus.

Tables 8.3 and 8.4 illustrate that the introduction of the CPD Support Model also did not result in any real changes in the uptake of CPD tools outwith the support model itself between the control and active groups.

8.4.3 Identification of CPD Issues

The CPD workbook was scored as the second most useful CPD tool and 58% of participants opted to use this support method during the study period. A previous study has shown that initially participants may find completion of these books/electronic records difficult. Mc Millan et al concluded (work including the author) that more research was required to determine the value of this CPD support tool [191].

The total number of CPD issues being identified was 295 with 270 (93%) of these issues being addressed during the study period. This rate of CPD issues being addressed is very encouraging and shows that given an appropriate time period, practitioners can use this tool effectively. One interesting point was that only 14.3% (n=2) of those opting to use the workbook, used the electronic format. This low uptake may however be due to this format not being available until month six of the study.

8.4.4 CPD Needs Identified and Addressed During 0-6 months

Of issues being identified, the majority (83%) of CPD needs were identified during the first six months of the study. The percentage of CPD issues identified and addressed

within six months (Classification A) was also very high (86%). The most common CPD issues identified and addressed during the study period were linked to four behavioural statements; 'interviewing/assessing patients', 'recording delivery of care', 'maintaining a clinical record that would be shared' and 'monitoring patients for signals for assessment and referral'. These behavioural statements are all core functions for a community pharmacist and have been highlighted and delivered in previous studies within this disease state [35,45,63-70,147]. It was interesting to learn that community pharmacists still can identify CPD issues with these functions but that all do not feel already competent in them.

From the applied structured questionnaire to investigate the reasons for the majority of participants highlighting the identification of 'patients' need for support by interview/assessment', over three quarters of participants cited that it was a priority for their service development. This may reflect Knowles assumptions of adult learning; **Readiness to learn:** As a person matures his readiness to learn becomes oriented increasingly to the developmental tasks of his social roles and **Orientation to learning:** As a person matures his time perspective changes from one of postponed application of knowledge to immediacy of application, and accordingly his orientation toward learning shifts from one of subject-centeredness to one of problem centredness [91].

Only one participant admitted that they were already competent in this activity and thus had not identified this as a CPD need. Another participant admitted they were not competent in this activity.

Similarly, with the behavioural statements 'recording delivery of care on a standard pharmaceutical clinical record' , 'maintaining a standard pharmaceutical clinical record that would be shared with other members of the multidisciplinary team' and 'monitoring for signals for assessment and referral' again the majority of participants (53.8%, 53.8% and 46% respectively) felt these activities were a priority for their service development.

No participants felt they were already competent in any of these activities, with two participants admitting they were not competent. Although the majority of participants identified a CPD need linked with these behavioural statements, not all managed within the 6 month period to address this need fully. Several participants stated that it was not possible in his/her job or area during that time period. This study shows that community pharmacists do not yet perceive themselves as competent in basic activities necessary to provide pharmaceutical care to patients with type 2 diabetes mellitus and therefore further education and CPD support is required

Hesketh et al stated that the core information in the subject area needs to be precisely defined and analysed so that the learner's educational needs in the subject area can be accurately identified and satisfied appropriately [161]. These results can provide important baseline information on which to base future training initiatives and CPD support for the Chronic Medication Service for patients with this disease type. The initial training must be matched to the competencies and behavioural statements from which CPD needs were identified during the 0-6 month phase.

One participant stated:

'This is nuts and bolts stuff' [P14]

Despite this sentiment and the fact these are core functions which have been highlighted and delivered in previous studies, the majority of these behavioural statements or community pharmacy activities did not reach consensus until round two of the Delphi process in Chapter 5 [194] (although one activity did require rewording for clarification). This may highlight an initial hesitancy to deliver these services. This hesitancy may be linked to perceived educational needs. Douglas et al (work including the author) found a strong association between levels of service provision and needs for education score supported the argument for appropriate education and training for pharmacists to deliver pharmaceutical care to patients with type 2 diabetes mellitus in Scotland [77].

8.4.5 CPD Needs Not Identified During 0-6 months

No participant identified relevant CPD needs linked to the behavioural statement 'supporting the motivation of patient and family in self care, treatment goals and loss of diabetic control' at 0-6 months. Motivation of patients is considered fundamental to the care of patients with type 2 diabetes. Reasons for not identifying a CPD need with this behavioural statement were mixed. At six months approximately a third of participants (31%) felt it was a behavioural statement in which they already felt competent. Another third of participants (39%) believed this activity was not possible in their area or job at this time and twenty-three percent did not feel it was a priority for their service development:

'I feel there are a lot of things I need to get competent in before I can do these icing on the cake things' [P18]

Only one participant felt this behavioural statement was not relevant to community pharmacy practice.

This pharmacy activity reached consensus in the second round of the Delphi exercise (Chapter 5). Further study with a larger number of participants would be required to explore this concept further.

The second behavioural statement from which no CPD issues were identified was 'maintaining a clinical record of problems in blood glucose control requiring balancing food intake with insulin dose'. When participants were questioned, almost half (46%) believed this was not relevant to community pharmacy practice. This links to earlier work in Chapter 4 [147] and 5 [194] where community pharmacists were uncomfortable in taking on the role of managing insulin. This activity did not reach consensus in the Delphi process until the third round. Twenty three percent of participants felt this behavioural statement was not a priority in their service development:

'I need to get the basics done first' [P4]

The remaining participants (30.8%) believed this behavioural statement was not possible in their job or area at that time.

With the increased use of insulin in the care of patients with type 2 diabetes mellitus, the management of insulin will become more common in primary care. This is an area in which community pharmacists may need to become competent. Indeed in a one to one interview with a diabetologist in Chapter 4, it was suggested that a potential new role for community pharmacists could be initiating insulin therapy and fine tuning of insulin doses.

There were two CPD support related pharmacist activities that were not identified by any participant during 0-6 months. The first was 'sharing reflections of where your performance leaves room for improvement within a group of pharmacists'. When questioned on not identifying CPD issues with this behavioural statement, the majority (69.%) felt this was not possible in their job or area at that time:

'That's a luxury that the big stores or multiples have' [P58]

Encouragingly, three participants felt this was an area in which they already felt competent, although these participants were all from one geographical area where there is an active diabetes network. This activity reached consensus after two rounds of the Delphi process in Chapter 5.

'Taking part in a local multi-disciplinary mentoring group' was the other behavioural statement with no linked CPD issues. All pharmacists claimed that at this time it was not possible in their job or area to take part in a local multi-disciplinary mentoring group:

'Aye, I would like that but the systems are just not in place yet' [P16]

This was a pharmacist activity which failed to reach consensus agreement in the Delphi process in Chapter 5, but the focus group (Chapter 6) decided to include as it received positive comments (Table 6.3). Again during the telephone interviews, the pharmacists seemed positive about the concept, but at 6 months no-one had taken this activity forward.

8.4.6 CPD Needs Identified and Addressed During 6-12 months

The percentage of unresolved CPD needs and new CPD issues identified and addressed during 6- 12 months (Classification B and C) was 78.2%. The most commonly identified behavioural statements with linked CPD issues were 'giving counselling and health advice to patients' and 'monitoring compliance and adjusting doses to optimise benefits of treatment'. These were slightly more complex pharmaceutical care issues and may be due to the introduction of the Public Health component of the new community pharmacy contract and new prescribing roles for community pharmacists beginning to emerge.

8.4.7 CPD Needs Identified but Not Addressed During the Study Period

All competencies and behavioural statements had CPD needs identified by at least one participant during the study period. This suggests that the competency-based CPD workbook was fit for purpose and that all the competencies and behavioural statements within the five competency clusters were relevant to this group of clinically active practitioners. There were however 18 (6%) CPD issues that were identified but not addressed during the study period. These could be divided into core functions; 'recording delivery of care', 'maintaining a standard pharmaceutical clinical record to be shared', 'dispensing prescriptions and counseling patients', 'checking and following-up drug/dose regimen' and 'monitoring patients for signals for assessment and referral'. Again this suggests community pharmacists still require education and CPD support with basic pharmaceutical care activities.

'Creating a register to identify patients' as a CPD issue was also not addressed in some instances. This however may be due to technical problems as identified in Chapter 4.

More complex behavioural statements with linked CPD needs not addressed were 'adjusting drug doses', 'critically reviewing published papers', 'sharing examples of practice through individual cases within a group of pharmacists' or 'within a multiprofessional group'. Further qualitative study would be required to establish why these CPD issues were not able to be addressed; whether this was due to lack of CPD support, training initiatives or time.

8.4.8 Comparing the Competency Clusters

From Table 8.6, it is obvious that competency clusters 1, 2, 3 and 5 are mostly composed of Classification A issues ie CPD issues that are identified and addressed quickly (within 6 months). These competencies clusters are 'participating as a member of the diabetes team', 'understanding the diagnosis and therapeutic interventions' and 'having knowledge of the appropriate tests and assessments carried out and 'patient/carer education'. (The number of CPD needs in cluster 4 was too few on which to comment). This table also showed that irrespective of whether a CPD need was identified quickly (< 6 months) or slower (>6 months), the majority of these CPD issues were addressed quickly. This information is useful when planning training and CPD support initiatives in this area, although further work on a larger sample size is needed.

8.4.9 Future Study

As this study does not provide information on why some CPD issues were not addressed during the study period, future qualitative research may help to address this. From a comment made at the time of applying the telephone questionnaire, it became apparent that a rating scale may be advantageous in this style of CPD workbook:

How do I know when I am competent? When can I tick off and move on? Surely I can still improve doing these activities? [P21]

This rating scale could be in the form of self assessment of how well the participant felt they had addressed the competency. Peer assessment could be another possibility, where peers could rate their colleague [117] . Patient assessment could also be an option.

Work in Chapter 5 also showed that the majority of participants (83%) in the Delphi exercise felt that community pharmacists delivering intensive structured pharmaceutical care to patients with type 2 diabetes mellitus should be assessed and accredited as competent. Self, peer and client assessment would go some way towards achieving that goal.

Competence is what:

'individuals know or are able to do in terms of knowledge, skills and attitudes' [219]

Capability however is a relatively new term within the healthcare team, [220] which looks into the future and has been defined as:

'Extent to which an individual can apply, adapt and synthesise new knowledge from experience and so continue to improve their performance' [219]

Rather than just the competencies required to deliver pharmaceutical care services to patients with type 2 diabetes mellitus, the capability of the community pharmacy workforce should also researched.

8.5 Conclusion

Community pharmacists in Scotland who are electing to work in programmes to deliver pharmaceutical care to patients with type 2 diabetes recognise a need for education and are variously receptive to elements within a CPD support model. While direct face-to-

face courses are the favoured way of learning, there are varied preferences for other elements which support pluralistic and customised approaches to the provision of CPD support. Within the CPD support model a competency-based CPD workbook has a definite place.

Chapter 9:

Study Limitations

This chapter highlights the limitations of this thesis, concentrating initially on generic limitations of the study, then focusing on chapter-sector limitations.

9.1 Overall Limitations of the Study

The study would have been strengthened by patient-involvement. A Model of Care and subsequentially a CPD Support Model for community pharmacist practitioners delivering care, was produced with no patient involvement. Their involvement may have resulted in beneficial changes being made to the study as it progressed.

The research was limited to investigation within Pharmacy and other healthcare professional groups and did not look outwith this narrow sector. Investigation of product delivery systems and competencies outwith the NHS healthcare setting may have been advantageous.

9.2 Chapter-Sector Limitations

9.2.1 Chapter 4- A Multi-disciplinary Model of Pharmaceutical Care for the Primary Care Patient

A limitation of this section of research was the small number of interviews which were carried out. Further study should be carried out amongst a wider range of healthcare professionals drawn from a wider variety of clinical settings, including dietitians, chiropodists and podiatrists. All these professionals are important in the primary care diabetes team. More debate may have been created by organising regional multiprofessional focus groups. As mentioned above, perhaps the most important member of the diabetes team was ignored in this study- the patient. The care recipients' views were not considered in the model at this stage and investigation of patients' perceptions should be obtained to inform the continuing development of the model.

Neutrality or freedom from bias is pivotal to validity in qualitative research [122]. The paradox of this type of research is that while reducing the barrier between the participants and the researcher, the quality of the data may be enhanced, this reduced barrier introduces the risk of subjectivity [141]. Researcher bias may be a limitation in this chapter as the lead researcher (AP) was a pharmacist who was investigating the potential role of the community pharmacist in the primary care diabetes team. There was an attempt to minimise this bias by using a non-pharmacist independent researcher (Researcher 4)(HH) for peer debriefing and the use of a reflective diary to document the researcher's thoughts, issues and responses during the research process [141].

9.2.2 Chapter 5- Achieving Consensus on Community Pharmacist Activities in the Pharmaceutical Care of the Patient with Type 2 Diabetes Mellitus and Training and Support to Aid Delivery

This research section was conducted on a small purposive sample of community pharmacists who were self-selected as those electing to complete all three rounds of the questionnaire (n=18). The findings reflect the views of a specific group of pharmacists with a special interest in diabetes mellitus, with an established service commitment and who are consequently in a position to influence future service developments.

Using 80% consensus level agreement at Delphi 3 stage may have been more appropriate than the lower 70% chosen [194]. Pharmacists would then not have reached the predefined level of consensus about a role in referring patients to their GP should the patient have an infection, other complication or new symptoms. This may have highlighted some training needs in relation to building the pharmacists' confidence to identify these problems. Consensus would also not have been obtained with regard to ensuring suitability of drug treatment for neuropathy.

The pharmacists' support and training issues underwent only two Delphi processes, as a scoping exercise was undertaken during Delphi D1. This was a weakness in the study-design of this section of work.

9.2.3 Chapter 6- Development and Piloting of a Competency Based CPD Workbook

The pilot study in this section of work lasted only five months and involved a relatively small number of participants. The findings reflect the views of a local and specific group of pharmacists with a special interest in diabetes mellitus, with an established service commitment but may not reflect the opinions of all community pharmacists in Scotland.

9.2.4 Chapter 7- Developing and Evaluating the CPD Support Model in Terms of Pharmacists' Views and Attitudes towards CPD

The findings in this section of research were based on the self-reporting by community pharmacists, however does provide information on views and attitudes of practising community pharmacists providing pharmaceutical care to patients with type 2 diabetes mellitus. The findings also relate only to Scottish and not necessarily UK pharmacists, due the different NHS systems in Scotland.

This questionnaire may also have collected the views and attitudes to CPD in general not specifically to diabetes CPD. This was shown by some comments on the CPD questionnaires (Table 7.6):

'Diabetes is only one tiny part of what I do' [Participant 14- Active Group]

'Can we have some help with other disease states now? What about cardiovascular disease?'[Participant 56-Active Group]

Community pharmacists are ultimately generalist practitioners, although the new Scottish community pharmacy contract will allow them to specialise in certain chronic

disease management areas depending on the needs of their patients. This study was powered to detect a score difference of 8 points, which may have been ambitious for looking at only one disease state. From the perspective of Scotland's health, it is probable that cardiovascular and respiratory disease may also be priority specialities for the community pharmacist. It would thus be interesting to introduce CPD models of support for these two disease states in addition to diabetes and to repeat the CPD questionnaire to study if motivation and attitude to CPD rises and the difference between the Control and Active groups are statistically significant. These models once established could be run by specialist groups or local multidisciplinary managed clinical networks (MCNs).

9.2.5 Chapter 8- Monitoring the Use of the Elements of the CPD Support Model for Providing Pharmaceutical Care to the Patient in Primary Care

The thesis findings in this chapter were based on self-reports and were further limited by a small study sample. It is likely that a response bias exists towards pharmacists who had an interest in CPD. Again in this section the findings also relate only to Scottish and not necessarily UK pharmacists, due the different NHS systems in Scotland.

Chapter 10

Future Implications for Diabetes Care and Educational Research

The concluding chapter summarises the implications of this research, suggests future applications of the competency-based CPD model and highlights the need for future research as a result of the work in this thesis.

10.1 Areas for Future Research

10.1.1 Research Focus One

As multidisciplinary co-operation develops and standards improve in the delivery of services for patients with diabetes, the integrated Model of Care will expand in terms of clinical expectations and the range of activities within the models. The extent to which professions will overlap in their capacity to deliver required services will increase. Consequently, further qualitative studies are necessary to inform the continuous improvement process. Such studies should aim to include a wider range of healthcare professionals drawn from a wider variety of clinical settings, including dieticians, chiropodists and podiatrists. The primary care team is expanding by integrating these various professionals. More debate may be created by organising multiprofessional focus groups than by one to one interviews.

The patient, as care recipient has been left out in this study to determine a Model of Care for the patient with type 2 diabetes mellitus only because of a need to start with a complex team of professionals. Of course, the patient as care recipients requires to be included as services strive to match patients' needs and expectations.

The patients' voice was also not included in defining the activities that should be delivered by a community pharmacy and clearly there is much further scope for patients' perceptions of what services they would like or expect to receive from this healthcare setting.

10.1.2 Research Focus Two

As a result of this work there is little evidence of why consensus was not reached on some community pharmacist activities (behavioural statements). There are questions about the evolving perceptions of pharmacists – what they are and what influences the change in perception, since these are educationally important matters - reflected in the movement towards consensus within this project and during two or three rounds of the Delphi process. Qualitative research with the Delphi participants may give a clearer understanding of this differing receptiveness of pharmacists to the modernisation of practice.

Further study may be required to establish why participation at courses is the community pharmacists' favoured means of obtaining accreditation. Course attendance may be a traditional and the easiest option but might not be the most educationally effective. The favouring of this method may be due to Knowles Social Relationship factor of motivation in adult learning; to make new friends, to meet a need for associations and friendships, to network within the pharmacy community [91]. While there is little argument that knowledge (even if tacit knowledge) is a necessary ingredient of practice, simply mastering a syllabus of received knowledge makes a surprisingly low contribution to increased professional effectiveness [221,222].

As defined standards and expectations of care delivery to patients with diabetes continue to emerge, educational research will need to be applied into evaluating methods for conducting competence assessments as part of pharmacists continuous professional development and as part of accreditation of pharmaceutical care services.

The subject views of patients are now expected to inform service design, delivery and evaluation in NHS Scotland. The patient's perceptions as care recipient require to be part of assessment of a pharmacist's competence and also a part of the continuing

accreditation of services. There is a need for research to show how those perceptions should be integrated into quality assurance of the delivery of diabetes care.

10.1.3 Research Focus Three

In this research the quantity of CPD issues identified and addressed in the competency based CPD workbook were investigated but not the quality of entry of the CPD issues. According to Parboosingh to remain current, clinicians require both an understanding of their areas of strength and their ability to think reflectively [105]. Kolb's Cycle relies on practitioners reflecting on and identifying the areas of practice where they are not so competent [101]. Unfortunately however healthcare professional sometimes have difficulty in identifying their learning needs. Whether competency based frameworks generally aid the identification of learning needs is debatable. In this thesis a competency framework was converted to a CPD workbook format with columns titled 'Changes in Performance-How do I improve my performance?-From (what are you doing at present?) To(What do I want to be doing in the future) in an attempt to help the identification of these learning needs. Three further probing questions; 'Analysis of Personal Learning Needs' (What do I need to learn)', 'Personal Learning Plan' (What do I need to do?) and 'Evidence of Change'(What have I changed) were created to fit into the 4 stages of Kolb's Cycle [101].

However whether competence-based approaches are sufficient for meeting the demands of professional practice is highly questionable. Explicitly identifying skills and competences needed by practitioners can be a powerful means of assisting development, but attempting to encapsulate the entirety of practice in a list of skills or competences is a doubtful enterprise. This ignores practitioners' roles in creating and defining their own task, [223] and undertaking intelligent and reflective practice which is so important in adult learning [104]. Using competency frameworks means accepting a world as others define it. Competency frameworks may also not encourage self-reflection nor self-directed learning by merely collating pieces of evidence. CPD however is a self-directed learning

process, supporting one of the principal characteristics of adult learning; adults and thus pharmacists are autonomous and self-directed [94].

Self-directed learning is an active process which encourages the adoption of the deep approach to learning [102]. Deep learning, as opposed to surface learning is described as an active search for understanding. Surface learning merely encourages the learner to reproduce what has been learned by rote. Moon views the reflection section of Kolb's Cycle as the catalyst that moves surface learning to deep learning. Deep learning can be integrated with current experience and knowledge, resulting in rich cognitive networks that the individual can draw on in practice [103].

The word 'competence' itself suggests to some people satisfaction with ordinariness as opposed to excellence [224]. According to Edwards and Nicoll the use of the term 'competence' has a rhetorical effect:

'...to be merely competent rather than to strive for excellence...relocates what it means to be a professional or to work professionally' [225].

Another principle of adult learning is that learners should be involved in mutual planning of education [226]. This is not supported in the competency-based framework approach.

For educational governance the implementation of a CPD support system must address the assurance of the quality of recording of the CPD issues. Assessment of the CPD competency based workbook could be evaluated using a standard marking schedule. This has been used and documented in other studies [227]. Mentor or peer review of workbook entries would also be possible if using an electronic version of the workbook as mentors or peers can be given restricted access for review purposes. Research would be needed to assess the usefulness of these assessments.

Further qualitative study would also be required to establish why certain CPD issues within the diabetes workbook were not able to be addressed during the study period; whether this was due to lack of CPD support, training initiatives or time. Schon's reflection on action educational theory that is so important to CPD and learning, is most under threat when confronted with constraints of time and opportunity [104]. While critically important to improve practice, reflection on action is most easily lost to the pressures of work, particularly in times of change when it is needed most [228].

To allow this competency framework to be useful in career development, the competencies could be linked to a role profile or job description against the National Occupational Standards and National Workforce Competencies (NWCs) listed by Skills for Health (SfH). Now that a NWC for Diabetes Mellitus has been developed, research must go into combining these elements into the Competency-based CPD workbook [112].

The effects of the CPD Support Model developed in this thesis were not directly evaluated on patient outcomes. A Cochrane review of interventions to improve the management of diabetes mellitus in primary care, outpatient and community settings, found lack of data on outcomes to be a common fault of studies in this area [80]. Patient outcomes were not evaluated in this thesis as the pharmaceutical care to patients with type 2 diabetes mellitus from community pharmacists is not yet standardised nationally. The scale of this study was also too limited to allow any patient outcome measures to play a meaningful role.

From a clinical governance point of view, the quality of pharmaceutical care within the overall Model of Care should be subject to audit. Research is needed to inform the introduction of routine and continuous evaluation of the pharmaceutical care provided within the overall model.

Since a CPD Support Model has now been produced for the patient with type 2 diabetes mellitus, a similar approach that could be reproduced for use in meeting the needs of developing services to other public health priority patient groups. The Views and Attitudes to CPD Questionnaire could be applied to pharmacists using more than one Support Model to assess if motivation and attitude to CPD rises further. These models once established could be run by specialist groups or local multidisciplinary managed clinical networks (MCNs).

The CPD competency framework model also has a more general application potential which may serve the needs of the profession more widely in terms of revalidation with post-registration education and training programmes for community pharmacists in the future.

10.2 International Developments in Mandatory CPD and Revalidation

Mandatory CPD for pharmacists in Great Britain will almost certainly be introduced as part of the proposals for an order under Section 60 of the Health Act 1999 [229]. A Pharmacy Workforce Survey carried out in 2006 showed CPD and/or CE was mandatory in 9 out of 37 countries that responded to the questionnaire. These included Portugal, Canada (most provinces), USA, France, Kenya and Zambia, although each country (and provinces within one country) had different mandatory standards [230]. In some provinces of Canada, pharmacists require only proof of completion of a minimum number of hours of continuing education to renew their licence. While in some other provinces during a quality assurance process, pharmacists may be required to have their learning portfolio reviewed [230].

Although as yet, in Finland, CPD is not mandatory there are long term professional development programmes for community pharmacists. These programmes aim to upgrade practising pharmacists in management, business and professional skills. In Finland a licence from the National Agency for medicines is required in order to own a

retail pharmacy. If there are several applicants for a pharmacy ownership licence, the applicant who is considered the best qualified will be selected. When a pharmacist has received a certificate for undertaking professional development programmes, he/she has a better chance of owning a pharmacy [230].

Internationally, the revalidation of pharmacists is being carried out in different ways. In Portugal, the revalidation model for pharmacists has been defined and implementation was started in 2004 with 1950 pharmacists. This approved model defines as mandatory, the renewal every 5 years of the pharmacist's right to practise subject to a pre-defined number of credit units available through CPD activities [231]. The Ontario College of Pharmacists also has a well-established program of revalidation including more than proof of CPD activities,[232] and the Pharmacy Council of New Zealand has now introduced a process of assessed re-certification prior to issuing practising certificates [233].

10.3 Scottish Revalidation Developments

The White Paper, 'Assurance and Safety - The Regulation of Healthcare Professionals in the 21st Century', states that revalidation will be introduced for pharmacists and other health care professionals over the next four years in Great Britain with mandatory CPD expected to play a large role in this process [234]. Currently healthcare professionals are encouraged to assess their own skills and knowledge and to identify their learning needs and competence gaps. Community pharmacists have been reported to show greater difficulty in meeting required standards in the 'patient care' competencies when compared to hospital pharmacists [235]. These findings reflect the likelihood that pharmacists generally will require various forms of educational support in order to undertake future revalidation. Community pharmacists however, may not have access to a supportive environment to guide them through the revalidation process.

NHS Education for Scotland (NES) plans to use the NES e-portfolio with competency frameworks as the means of all professional revalidation in Scotland. Work has already been carried out to move this forward within the medical profession after collaboration with the appropriate specialist Medical Colleges [236].

Each professional member would have an e-portfolio for the duration of their professional lives, individualised by their choice of competency clusters. This choice would be dependent on their clinical practice and within their e-portfolio, each clinician would provide evidence of achievement of these competencies. For revalidation, appropriate completed competency clusters would be electronically sent to the regulatory body. Within the profession of Pharmacy, this would be the General Pharmaceutical Council (GPharm C) professional body.

From July 2008, NES Pharmacy will be managing the Pharmacy pre-registration year in Scotland [121] and aims to have the pre-registration competencies available in an e-portfolio format by 2009 [237]. This presents an opportunity for pharmacists within Scotland to have a competency-based e-portfolio from the pre-registration year onwards. There may also be scope for this CPD e-portfolio to begin at the undergraduate level in the future.

10.4 Post-registration Education and Training Programmes for Community Pharmacists

A Post-registration Education and Training Programme for hospital pharmacists has been established within London, east and south-east England [238]. In this model a number of NHS bodies, NHS stakeholders and eight universities are working collaboratively to manage a postgraduate diploma in general pharmacy practice for hospital pharmacists. The purpose of this diploma is to equip hospital pharmacists with the core skills and competencies they require to provide pharmaceutical care. The competencies needed to achieve the diploma in this model are based on the General Level Framework [117].

At present in Scotland, there is no post-registration education and training programme or vocational scheme specifically directed at community pharmacists. The use of a competency framework such as a General Framework for Community Pharmacists which concentrates on patient care competency clusters, personal competency clusters, problem solving competency clusters and management and organisation competency clusters [117] would be useful to practitioners and educationalists within Scotland. The scheme would benefit in terms of quality assurance from collaboration with the Scottish Schools of Pharmacy.

Competency-based CPD frameworks such as the type 2 diabetes mellitus framework developed in this thesis could be developed for elective clinical specialties. The Support Model surrounding each elective clinical specialty could be developed and expanded to include appropriately trained tutors and organised work-based placements. Evaluation of this future scheme, in terms of what was delivered to the clinical pharmacist, and ultimately to the patient, would be essential. Such a scheme would not only produce a career pathway within community pharmacy linked to CPD, but also introduce a quality assurance element within this sector of practice.

10.5 Conclusion

Community pharmacists in Scotland are extending their role within a Strategy for Pharmaceutical Care in Scotland and a new community pharmacist contract. CPD is becoming formalised and is a necessary support to the development of new services. Further research could develop the present educational tool for community pharmacists into an assessment tool. This project used a research approach in diabetes which may offer an exemplar for use in the management of other chronic diseases. The work in this thesis represents only a first step towards documented competency-based practice within community pharmacy in Scotland.

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Appendices

Appendix 4.1 Semi-structured Questionnaire

Basic questions asked at each section of the cycle

1. Do you have any general comments about the cycle of care?

2. In your opinion is there important information which has been omitted from the multi-disciplinary cycle of care?

3. In your opinion is there information which requires greater emphasis within the cycle of care?

4. In your opinion is there information present in the cycle which is not appropriate?

5. Within the cycle of care, in which order should the services be delivered to patients?

6. In your opinion what are the perceived advantages to community pharmacy delivering services to patients with type 2 diabetes mellitus?

7. In your opinion, what are the perceived barriers to community pharmacy delivering services to patients with type 2 diabetes mellitus?

Appendix 4.18- Reflective Diary of Qualitative work

*-interviews carried out by final year students

**-where the final year students helped facilitate qualitative work

One to one interviews:-

1. DN01-

- Very quiet interviewee
- I was perhaps asking loading questions. Require more open questions in future interviews
- There is repetition in the table and the cycle and it is difficult to follow with a separate table and cycle. Perhaps these should be combined?
- I feel that on reflection box 2 may be inappropriate in this cycle
- This professional did not know about repeat dispensing cycles. May have to explain better for future interviews
- In the side effects of drugs, there is hypoglycaemia missing as a side effect of Sulphonylureas

2. D01-

- Easier to interview. Forthcoming with ideas and opinions
- Had obviously looked at cycle prior to interview and had comments prepared
- Must ensure all interviewees receive paperwork at least 2 days before being interviewed
- Positive about pharmacy input
- Strong beliefs that insulin should be initiated in secondary care
- Some tests seem to be missing from the initial assessment

3. D02-

- Interviewee fairly aggressive and dismissive of work and as an interviewer struggled to keep him interested and focused using a mixture of open and closed questions
- Interviewee felt that the cycle was too big and complicated

4. GP01-*

- Interviewee again fairly negative of the potential role of the community pharmacist. Possibility of creating more work rather than saving GP work
- Interviewee has some realistic concerns about the practical problems of making the cycle of care involving many clinicians work safely
- Communication between the professions within the diabetes team will be very important.

5. GP02-*

- During this interview the tape recorder failed to tape. This highlights the importance of having a back-up tape or of having a second facilitator to take notes. During this interview a student had taken brief interview notes.
- Interviewee believed the cycle to be too big, and felt sections could be combined
- Interviewee believed pharmacists were capable of taking on the majority of roles within the cycle, but raised an important question-would patients be interested in pharmacists taking on this role?

6. GP03-*

- Interviewee was confused with secondary care references as most care of type 2s is primary care based
- Interviewee suggested that most GPS see pharmacists as only dispensers rather than to take a more active role in the care of the patient

- Interviewee suggested that the students may be bias and 'pushing up the role of pharmacists in diabetes care'
- Interviewee suggested different systems of the cycle will vary depending on local circumstances

7. DN02-

- Interviewee was quiet. Found myself using leading questions. Tried to use open questions to avoid receiving "yes" or "no" answers
- Again found that there was some repetition in certain sections of the table and thus is could be simplified
- Compliance angle is completely missing from the cycle
- Idea of using community pharmacists to pick up defaulters was introduced

8. DN03

- Interviewee was from a very remote area of Scotland where there was clearly a different system of care for the patients. This was mainly nurse-led. There was also a limited number of diabetics who were easier to monitor. In this area also a lot of dispensing GPs
- Ideas of first antibiotic prescribed to a patient perhaps not being the best choice was introduced. Thus pharmacist could review both antibiotic and course length

9. D03

- Easy to interview. Happy to put forward opinions
- Repeated a lot of the opinions already collated about omissions and inappropriate material within the cycle

10. D04

- Easy to interview. Happy to express opinions

- More forward thinking on potential role of pharmacists in future as involved in the mentoring scheme with the pharmacist prescribing course at the university of Strathclyde

11. DN04

- Nurse more opinionated. Less prompting required but struggled to keep focused as the interviewee would want to discuss topics that were loosely related to the cycle
- Repeating comments already collated

12. DN05

- Straight forward interview
- Made the point that it is perhaps not clear that it is a cycle for type 2 patients
- Reinforced earlier comments that acarbose is not used very often

13. D05

- Interviewee not forthcoming with opinions. As an interviewer had to use open questions so as not to get a "yes" or "no" answer, especially at the beginning and end of interview. Tried to make encouraging noises to any comments that he did make. Tried bringing in the opinions of other professionals to stimulate discussion
- Did not suggest much factual change to the cycle, but had ideas on the future roles of pharmacists

14. GP05

- Interviewee happy to talk and express his opinions

- Interviewee was clear that the pharmacist should not be making decisions about managing the patient with diabetes mellitus type 2- making these decisions was the job of the GP
- Interviewee had concerns about extending prescribing outwith the medical profession
- Interviewee believed pharmacy had a big role to play in concordance and compliance

Focus Group-**

- I found facilitating a focus group much harder than the one to one interviews as the participants encouraged each other to go 'off on tangents'
- I found it very helpful having the students at the focus group to observe the participants and to take field notes
- The community pharmacists did not have much technical input into the cycle, but throughout were concerned with its impact to the patient and the community pharmacist

Appendix 5.1- Delphi Questionnaire 1

DELPHI STUDY

1st Round of the Delphi

Identifying Standardised Expectations for the delivery of a Pharmaceutical Care Model for the patient with type 2 Diabetes Mellitus

Introduction

This exercise aims to investigate the consensus among pharmacists about expectations of what type of pharmaceutical care is achievable in the management of type 2 diabetes in primary care. This consensus would also help to produce guidelines to support the emerging supplementary prescribing role. Please indicate your level of agreement with the following statements describing specific activities within the multidisciplinary care of the diabetic patient. This is not about the level of service you **provide at present**, but the service you would **hope to provide** to your type 2 diabetic patients now and in the future.

For each statement, can you please indicate by choosing the appropriate number that is the most applicable to your decision?

I would appreciate if you could also add your further opinion and recommendations in the space provided after each statement.

Identifying my patients

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
By using computer based patient medication records, I would create a register to identify patients with diabetes	☐	☐	☐	☐	☐	☐	☐

Comments

Identifying my patients' needs

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
I would identify my patients' need for my support by:-							
Patient interview	☐	☐	☐	☐	☐	☐	☐
Completing a standard pharmaceutical care plan for my own use	☐	☐	☐	☐	☐	☐	☐
Creating a patient-held diabetes record booklet	☐	☐	☐	☐	☐	☐	☐

Comments

Receiving/sharing information about my patients' treatment

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
I would liase with primary care, secondary care and GPs by:-							
Sharing my standard pharmaceutical care plan	☐	☐	☐	☐	☐	☐	☐
Using the patient-held diabetes record booklet	☐	☐	☐	☐	☐	☐	☐

Comments

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
I would be pleased to receive more information about my patients' treatment goals and medical/drug history from the multidisciplinary team	☐	☐	☐	☐	☐	☐	☐
I would integrate this information into the standardised patient pharmaceutical care plan in my pharmacy	☐	☐	☐	☐	☐	☐	☐

Comments

Patient motivation, education and family support

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
My role is to support the motivation of the patient and family in:-							
Self care	☐	☐	☐	☐	☐	☐	☐
Treatment goals	☐	☐	☐	☐	☐	☐	☐
Preventing and dealing with loss of diabetic control	☐	☐	☐	☐	☐	☐	☐

Comments

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
Part of my role would be to provide education on how to limit tissue damage through:-							
Smoking cessation	☐	☐	☐	☐	☐	☐	☐
Weight control	☐	☐	☐	☐	☐	☐	☐

Comments

Individualising patient therapy

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
My role in helping to individualise the patients' oral antidiabetic treatment incorporates:-							
Checking and following up the drug/dose regimen	☐	☐	☐	☐	☐	☐	☐
Identifying unsatisfactory treatment	☐	☐	☐	☐	☐	☐	☐
Monitoring for signs and symptoms of toxicity	☐	☐	☐	☐	☐	☐	☐

Comments

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
I would share plans with the patients and other members of the diabetic team to ensure:-							
Suitability of medication for preventing cardiovascular disease	☐	☐	☐	☐	☐	☐	☐
Appropriate foot care	☐	☐	☐	☐	☐	☐	☐
Suitable drug treatment for neuropathy	☐	☐	☐	☐	☐	☐	☐
Suitability of medication in the presence of renal impairment	☐	☐	☐	☐	☐	☐	☐
Suitability of medication in the presence of visual impairment	☐	☐	☐	☐	☐	☐	☐

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
My pharmaceutical care plan would be maintained in respect of the following items of information:-							
Choice of antidiabetic agent	☐	☐	☐	☐	☐	☐	☐
Patient's status in respect of diabetic complications e.g. cardiovascular, neuropathy, diabetic nephropathy	☐	☐	☐	☐	☐	☐	☐
Identification of cardiopreventive medication	☐	☐	☐	☐	☐	☐	☐
Dietary goals needing to be addressed e.g. obesity/poor diet	☐	☐	☐	☐	☐	☐	☐
Problems in blood glucose control requiring balancing the food intake and insulin dose	☐	☐	☐	☐	☐	☐	☐
General advice on the use of insulin therapy	☐	☐	☐	☐	☐	☐	☐
Advice given on self-monitoring of glycaemic control	☐	☐	☐	☐	☐	☐	☐
Records of targets agreed with the patient on:-							
HbA1c	☐	☐	☐	☐	☐	☐	☐
BP	☐	☐	☐	☐	☐	☐	☐
Cholesterol	☐	☐	☐	☐	☐	☐	☐
Frequency of hypos	☐	☐	☐	☐	☐	☐	☐

Comments

Helping to update the patient-held diabetes record booklet

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
I would help my patient maintain a patient-held diabetes record booklet on:-							
Changes in prescribed medication	☐	☐	☐	☐	☐	☐	☐
Changes in purchased medicines	☐	☐	☐	☐	☐	☐	☐
Self-reporting of symptoms	☐	☐	☐	☐	☐	☐	☐
Episodes of hypoglycaemia	☐	☐	☐	☐	☐	☐	☐
Documentation of achievement of personalised treatment goals	☐	☐	☐	☐	☐	☐	☐

Comments

Initiating and Changing Patient Treatment

In the next question, please indicate to what extent you would be comfortable with the following being part of a supplementary prescribing arrangement.

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
After suitable training, I would be comfortable with prescribing:-							
Hypertension treatment	☐	☐	☐	☐	☐	☐	☐
Cardiopreventive medicines:- Lipid lowering drugs	☐	☐	☐	☐	☐	☐	☐
Beta blockers	☐	☐	☐	☐	☐	☐	☐
ACE inhibitors	☐	☐	☐	☐	☐	☐	☐
Anti-anginal treatment	☐	☐	☐	☐	☐	☐	☐
Antibiotics	☐	☐	☐	☐	☐	☐	☐
Analgesics	☐	☐	☐	☐	☐	☐	☐
Oral hypoglycaemics	☐	☐	☐	☐	☐	☐	☐
Insulin	☐	☐	☐	☐	☐	☐	☐

Comments

Signals for Review

Closer involvement in patient care will require the pharmacist to actively monitor for signals for referral of a patient to their GP. In the next question please state how comfortable you are in taking this responsibility.

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
I would be comfortable in the position of monitoring the patient for signals for review by the GP in a situation where:-							
Identification of co-prescribed or purchased medicines used for co-morbidity interact with treatment	☐	☐	☐	☐	☐	☐	☐
Significant changes in the control of blood glucose, HbA1c, ketones, blood pressure, weight or cardiovascular risk are recorded in the patient-held diabetes record booklet	☐	☐	☐	☐	☐	☐	☐
Infection, other complication or new symptoms	☐	☐	☐	☐	☐	☐	☐
Failure to reach personalised treatment goals	☐	☐	☐	☐	☐	☐	☐
Comments							

Comments- For anything that you feel relevant which is not covered in the Delphi

Your Educational Needs

In this question you may wish to make more than one choice.

	No further training required	*Distance learning pack only*	*Some training away from the workplace*	*Substantial training away from the workplace*
I would be confident to start providing a higher level of service to my patients with type 2 diabetes mellitus with the following training	□	□	□	□

Thank you for completing this questionnaire

Now please tell me a little about yourself:-
Number of years qualified.....
Number of years in practice.....
Do you currently routinely enter patient information onto your PMR system Yes/No?
Do you use your PMR system to support your patients with type 2 diabetes mellitus Yes/No.?
If yes, please explain how-

Appendix 5.2- Delphi Questionnaire 2

Each second round Delphi questionnaire was individualised , thus this appendix is only an example.

DELPHI STUDY

2nd Round of the Delphi

Identifying Standardised Expectations for the delivery of a Pharmaceutical Care Model for the patient with type 2 Diabetes Mellitus

Introduction

Firstly thank you for returning the first round of the Delphi questionnaire. This survey aims to investigate the consensus among pharmacists about expectations of what type of pharmaceutical care is achievable in the management of type 2 diabetes level 3 model schemes initiative.

Therefore we are going to ask you to re-rank some of the questions.

In this questionnaire we have indicated

- your previous responses
- the distribution of the responses (expressed in percentage)
- the median group response (below which 50% of the responses lie - marked with a cross)
- the interquartile range (where 50 % of the responses lie – boxes are shaded)

There are a few reformulated or 'new' questions in this round and thus the results from the first round are not included.

Identifying my patients

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
By using computer based patient medication records, I would create a register to identify patients with diabetes	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	3	8	19	35	35
Group median (interquartile range is shaded) :							
Your previous response						X	

Identifying my patients' needs

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
I would identify my patients' need for my support by Patient interview	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	5	19	41	35
Group median (interquartile range is shaded):							
Your previous response						X	

Receiving/sharing information about my patients' treatment

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
I would like to use a <u>standard care plan</u> to help me record the delivery of pharmaceutical care to my patients	☐	☐	☐	☐	☐	☐	☐
Comments							

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
I would integrate information about my patients' treatment goals and medical/drug history that I receive from the multidisciplinary team into the standard care plan.	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	3	11	16	30	40
Group median (interquartile range is shaded):							
Your previous response						X	

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
If the diabetic team used a standard patient-held diabetes record booklet I would find it useful as a means of liaison with primary care, secondary care and GPs.	☐	☐	☐	☐	☐	☐	☐

Comments

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
If I maintain a standard care plan I would want to be able to share it with other members of the diabetic team.	☐	☐	☐	☐	☐	☐	☐

Comments

My role is to support the motivation of the patient and family in:-

Self care

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	3	22	30	46
Group median (interquartile range is shaded):							
Your previous response						X	

Treatment goals

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	5	16	32	46
Group median (interquartile range is shaded):							
Your previous response						X	

Preventing and dealing with loss of diabetic control

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	8	16	27	49
Group median (interquartile range is shaded):							
Your previous response						X	

Part of my role would be to provide education on how to limit tissue damage through:-

Smoking cessation

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	□	□	□	□	□	□	□
% of response	0	0	0	3	19	27	51
Group median (interquartile range is shaded):							
Your previous response							X

Weight control

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	□	□	□	□	□	□	□
% of response	0	0	0	5	24	46	46
Group median (interquartile range is shaded):							
Your previous response						X	

My role in helping to individualise the patients' oral antidiabetic treatment incorporates:-

Checking and following up the drug/dose regimen

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	□	□	□	□	□	□	□
% of response	0	0	3	8	14	27	49
Group median (interquartile range is shaded):							
Your previous response						X	

Identifying unsatisfactory treatment

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	□	□	□	□	□	□	□
% of response	0	3	0	16	11	32	38
Group median (interquartile range is shaded):							
Your previous response						X	

Monitoring for signs and symptoms of toxicity

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	3	3	8	24	35	27
Group median (interquartile range is shaded):							
Your previous response						X	

I would share plans with the patients and other members of the diabetic team to ensure:-

Suitability of medication for preventing cardiovascular disease

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	14	22	38	27
Group median (interquartile range is shaded):							
Your previous response						X	

Appropriate foot care

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	22	35	32	11
Group median (interquartile range is shaded):							
Your previous response					X		

Suitable drug treatment for neuropathy

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	14	30	43	14
Group median (interquartile range is shaded):							
Your previous response						X	

Suitability of medication in the presence of renal impairment

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	14	28	39	19
Group median (interquartile range is shaded):							
Your previous response						X	

Suitability of medication in the presence of visual impairment

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	19	31	39	11
Group median (interquartile range is shaded):							
Your previous response						X	

My pharmaceutical care plan would be maintained in respect of the following items of information:-

Choice of antidiabetic agent

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	3	3	14	38	43
Group median (interquartile range is shaded):							
Your previous response						X	

Patient's status in respect of diabetic complications
e.g. cardiovascular, neuropathy, diabetic nephropathy

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	3	3	11	19	44	19
Group median (interquartile range is shaded):							
Your previous response						X	

Identification of cardiopreventive medication

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	3	19	11	38	30
Group median (interquartile range is shaded):							
Your previous response						X	

Dietary goals needing to be addressed e.g. obesity/poor diet

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	3	11	27	32	27
Group median (interquartile range is shaded):							
Your previous response						X	

Problems in blood glucose control requiring balancing the food intake and insulin dose

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	3	17	22	39	19
Group median (interquartile range is shaded):							
Your previous response						X	

General advice on the use of insulin therapy

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	3	11	19	31	36
Group median (interquartile range is shaded):							
Your previous response						X	

Advice given on self-monitoring of glycaemic control

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	3	3	14	42	39
Group median (interquartile range is shaded):							
Your previous response						X	

I would help my patient maintain a patient-held diabetes record booklet on:-

Changes in prescribed medication

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	5	16	30	49
Group median (interquartile range is shaded):							
Your previous response						X	

Changes in purchased medicines

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	11	25	22	42
Group median (interquartile range is shaded):							
Your previous response						X	

Self-reporting of symptoms

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	14	19	35	32
Group median (interquartile range is shaded):							
Your previous response						X	

Episodes of hypoglycaemia

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	11	24	32	32
Group median (interquartile range is shaded):							
Your previous response						X	

Documentation of achievement of personalised treatment goals

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	14	19	33	33
Group median (interquartile range is shaded):							
Your previous response						X	

After <u>SUITABLE</u> training, I would be comfortable with adjusting doses for:-

Hypertension treatment

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	3	6	26	29	37
Group median (interquartile range is shaded):							
Your previous response						X	

Cardiopreventive medicines:-
- Lipid lowering drugs

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	3	6	23	26	43
Group median (interquartile range is shaded):							
Your previous response						X	

After <u>SUITABLE</u> training, I would be comfortable with adjusting doses for:-

- Beta blockers

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	3	6	23	34	34
Group median (interquartile range is shaded):							
Your previous response						X	

- ACE inhibitors

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	3	6	20	31	40
Group median (interquartile range is shaded):							
Your previous response						X	

Anti-anginal treatment

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	6	11	17	37	29
Group median (interquartile range is shaded):							
Your previous response						X	

Antibiotics

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
% of response	0	0	9	9	24	38	21
Group median (interquartile range is shaded):							
Your previous response						X	

Analgesics

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	3	3	18	29	47
Group median (interquartile range is shaded):							
Your previous response						X	

After <u>SUITABLE</u> training, I would be comfortable with adjusting doses for:-

Oral hypoglycaemics

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	3	9	21	32	35
Group median (interquartile range is shaded):							
Your previous response						X	

Insulin

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	3	20	31	17	23
Group median (interquartile range is shaded):							
Your previous response					X		

I would be comfortable in the position of monitoring the patient for signals for review by the GP in a situation where:-

Identification of co-prescribed or purchased medicines used for co-morbidity interact with treatment

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	6	11	33	50
Group median (interquartile range is shaded):							
Your previous response							X

Significant changes in the control of blood glucose, HbA1c, ketones, blood pressure, weight or cardiovascular risk are recorded in the patient-held diabetes record booklet

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	6	3	11	36	44
Group median (interquartile range is shaded):							
Your previous response						X	

Infection, other complication or new symptoms

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	3	14	17	19	47
Group median (interquartile range is shaded):							
Your previous response						X	

Failure to reach personalised treatment goals

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	11	22	33	33
Group median (interquartile range is shaded):							
Your previous response						X	

The following are the collated results from round one of the Delphi for the question:-

I would be confident to start providing a level 3 service to my patients with type 2 diabetes mellitus with the following training

	% of response	Your previous response
No further training required	6	
Distance pack only	43	
Some training away from the workplace	80	
Substantial training away from work	31	

From these results could you now rank your preference (1-7) for support options in order to meet these training needs (1 is the best option)

Support Option	Rank
1 Distance Learning-written format	
2 Distance Learning-interactive multi-media or web-based package	
3 Local evening courses for pharmacists	
4 National day course for pharmacists	
5 Multidisciplinary course	
6 Pharmacists would meet locally to discuss issues/problems	
7 A "buddy" system with another pharmacist who is already provides this System	

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
Pharmacists delivering a level 3 service to patients with type 2 diabetes mellitus should be assessed and accredited as competent.	☐	☐	☐	☐	☐	☐	☐

After SUITABLE TRAINING AND EXPERIENCE delivering a funded service I would be comfortable:-

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
Critically reviewing current published papers on advances on diabetic care within a group of pharmacists	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	10	20	35	20	15
Group median (interquartile range is shaded):							
Your previous response					X		

Critically reviewing current published papers on advances on diabetic care within a multidisciplinary group

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	5	10	35	15	25	10
Group median (interquartile range is shaded):							
Your previous response					X		

Sharing examples of practice through individual cases within a group of pharmacists

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	20	10	30	40
Group median (interquartile range is shaded):							
Your previous response					X		

Sharing examples of practice through individual cases within a multidisciplinary group

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	5	20	20	20	35
Group median (interquartile range is shaded):							
Your previous response					X		

Sharing reflections of where your performance leaves room for improvement within a group of pharmacists

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	15	20	35	30
Group median (interquartile range is shaded):							
Your previous response						X	

Sharing reflections of your best performance in practice within a multidisciplinary group

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	5	25	25	20	25
Group median (interquartile range is shaded):							
Your previous response					X		

Sharing reflections of where your performance leaves room for improvement within a group of pharmacists

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
%response	0	0	0	30	5	40	25
Group median (interquartile range is shaded):							
Your previous response						X	

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
Taking part in local multidisciplinary mentoring group	☐	☐	☐	☐	☐	☐	☐
Comments							

This accreditation should be granted by:-

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
Evidence of attendance at courses	☐	☐	☐	☐	☐	☐	☐
Multiple choice question examination	☐	☐	☐	☐	☐	☐	☐
Practical examination (OSCE's i.e. objective structured clinical examination)	☐	☐	☐	☐	☐	☐	☐
Evidence of self-reflection of practice and identification of personal learning needs	☐	☐	☐	☐	☐	☐	☐
Comments							

Thank you for completing this questionnaire. Your patience is appreciated

Appendix 5.3- Delphi Questionnaire 3

Each third round Delphi questionnaire was individualised , thus this appendix is only an example.

DELPHI STUDY

Final Round of the Delphi

Identifying Standardised Expectations for the delivery of a Pharmaceutical Care Model for the patient with type 2 Diabetes Mellitus

Introduction

Thank you for returning the first and second rounds of the Delphi questionnaire. This is the third and final round. This survey aims to investigate the consensus among pharmacists about expectations of what type of pharmaceutical care is achievable in the management of type 2 diabetes in primary care.
Therefore we are going to ask you to re-rank some questions.
In this questionnaire we have indicated

- your previous responses
- the distribution of the responses (expressed in percentage)
- the median group response (below which 50% of the responses lie - marked with a cross)
- the interquartile range (where 50 % of the responses lie – boxes are shaded)

We would very much appreciate your help with this research and ask if you could return this questionnaire back to me by 9th October 2004.

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
By using computer based patient medication records, I would create a register to identify patients with diabetes	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	5	23	50	23
Group median (interquartile range is shaded):							
Your previous response						X	

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
There are technical limitations in me creating a register	☐	☐	☐	☐	☐	☐	☐
Comments							

If you were paid per capita, explain how in practice you would identify your patients with type 2 diabetes mellitus eg seek technical solution, collaborate with GP

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
I would identify my patients' need for my support by contributing to my patients' diabetes record booklet	☐	☐	☐	☐	☐	☐	☐
Comments							

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
If the diabetic team used a standard patient-held diabetes record booklet I would find it useful as a means of liaison with primary care, secondary care and GPs.	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	0	23	54	23
Group median (interquartile range is shaded):							
Your previous response						X	

I would share plans with the patients and other members of the diabetic team to ensure:-
Appropriate foot care

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	9	50	36	5
Group median (interquartile range is shaded):							
Your previous response					X		

Suitable drug treatment for neuropathy

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	5	18	64	14
Group median (interquartile range is shaded):							
Your previous response						X	

My pharmaceutical care plan would be maintained in respect of problems in blood glucose control requiring balancing the food intake and insulin dose

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	5	18	64	14
Group median (interquartile range is shaded):							
Your previous response						X	

I would help my patient maintain a patient-held diabetes record booklet on:-

Changes in purchased medicines

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	9	14	32	45
Group median (interquartile range is shaded):							
Your previous response						X	

Self-reporting of symptoms

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	9	14	50	27
Group median (interquartile range is shaded):							
Your previous response						X	

Episodes of hypoglycaemia

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	5	18	41	36
Group median (interquartile range is shaded):							
Your previous response						X	

Documentation of achievement of personalised treatment goals

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	9	18	32	41
Group median (interquartile range is shaded):							
Your previous response						X	

After SUITABLE training, I would be comfortable with adjusting doses for insulin

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	5	0	14	27	41	14
Group median (interquartile range is shaded):							
Your previous response						X	

I would be comfortable in the position of monitoring the patient for signals for review by the GP in a situation where:-

There was infection, other complication or new symptoms

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	5	0	5	14	36	41
Group median (interquartile range is shaded):							
Your previous response						X	

Failure to reach personalised treatment goals

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	5	0	5	14	55	23
Group median (interquartile range is shaded):							
Your previous response						X	

Pharmacists who are being accredited as competent to deliver a level 3 service to patients with type 2 diabetes should obtain this accreditation by:-

Evidence of attendance at courses

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	5	5	0	5	25	15	45
Group median (interquartile range is shaded):							
Your previous response						X	

Multiple choice question examination

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	29	24	33	14
Group median (interquartile range is shaded):							
Your previous response					X		

Practical examination (OSCE's i.e. objective structured clinical examination)

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	29	24	29	19
Group median (interquartile range is shaded):							
Your previous response					X		

Evidence of self assessment and reflection through identification of personal learning needs

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	5	25	15	45	10
Group median (interquartile range is shaded):							
Your previous response						X	

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
Portfolio of evidence (Record of patient scenarios and documented actions)	☐	☐	☐	☐	☐	☐	☐

Comments

Other suggestions for granting accreditation:-

After SUITABLE TRAINING AND EXPERIENCE delivering a funded service I would be comfortable:-

Critically reviewing current published papers on advances on diabetic care within a group of pharmacists

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	10	20	35	20	15
Group median (interquartile range is shaded):							
Your previous response					X		

Critically reviewing current published papers on advances on diabetic care within a multidisciplinary group

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	5	10	35	15	25	10
Group median (interquartile range is shaded):							
Your previous response					X		

Sharing examples of practice through individual cases within a group of pharmacists

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	20	10	30	40
Group median (interquartile range is shaded):							
Your previous response						X	

Sharing examples of practice through individual cases within a multidisciplinary group

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	5	20	20	20	35
Group median (interquartile range is shaded):							
Your previous response						X	

Sharing reflections of your best performance in practice within a group of pharmacists

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	15	20	35	30
Group median (interquartile range is shaded):							
Your previous response					X		

Sharing reflections of your best performance in practice within a multidisciplinary group

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	5	25	25	20	25
Group median (interquartile range is shaded):							
Your previous response					X		

Sharing reflections of where your performance leaves room for improvement within a group of pharmacists

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
	☐	☐	☐	☐	☐	☐	☐
% of response	0	0	0	30	5	40	25
Group median (interquartile range is shaded):							
Your previous response						X	

	Strongly disagree 1	2	3	4	5	6	Strongly agree 7
Taking part in local multidisciplinary mentoring group	☐	☐	☐	☐	☐	☐	☐

Comments

Thank you for completing this questionnaire!

Appendix 6.1

15 FEB 2005

Enclosure 1

Primary Care Division

Gartnavel Royal Hospital
1055 Great Western Road
Glasgow G12 0XH
Tel: 0141 211 3600
www.nhsgg.org.uk

NHS Greater Glasgow

Mrs Ailsa Power
Assistant Director of Pharmacy,
NHS Education for Scotland
2 Central Quay, 89 Hydepark St,
Glasgow
G3 8BW

Date 14 February 2005
Your Ref
Our Ref

Direct line 0141 211 3824
Fax 0141 211 3814
E-mail anne.mcmahon@gartnavel.glacomen.scot.nhs.uk

Dear Mrs Power

Full title of study: *To develop a competency based system for self-assessment of practice in delivering comprehensive pharmaceutical services to the patient with diabetes mellitus type 2*
REC reference number: *05/S0701/11*
Protocol number:

The Research Ethics Committee reviewed the above application at the meeting held on 10 February 2005.

Documents reviewed

The documents reviewed at the meeting were:

Document Type:	Version:	Dated:	Date Received:
Application		12/01/2005	20/01/2005
Investigator CV		12/01/2005	20/01/2005
Protocol		12/01/2005	20/01/2005
Covering Letter		12/01/2005	20/01/2005
Copy of Questionnaire	1	20/01/2005	20/01/2005
Letters of Invitation to Participants	1	20/01/2005	20/01/2005
Other	1-Competency Based CPD Workbook	20/01/2005	20/01/2005

Provisional opinion

Committee would be content to give a favourable ethical opinion of the research subject to receiving a complete response to the request for further information below -
a) Start and end date of study would seem to be the same
b) QA4 and QA5 contradict each other
c) QA24 and QA39 require completion
d) It is not appropriate to offer Â£50 as a token of appreciation - rephrasing required e.g. locum fees, expenses

Authority to consider your response and to confirm the Committee's final opinion has been delegated to a meeting of the Sub-Committee of the REC.

When submitting a response to the Committee, please send revised documentation where appropriate underlining or otherwise highlighting the changes you have made and giving revised version numbers and dates.

The Committee will confirm the final ethical opinion within a maximum of 60 days from the date of initial receipt of the application, excluding the time taken by you to respond fully to the above points. A response should be submitted by no later than 14 June 2005.

Membership of the Committee

The members of the Ethics Committee who were present at the meeting are listed on the attached sheet.

Communication with sponsor and care organisation(s)

This communication is confidential but you may wish to you to forward copies to your sponsor and/or relevant NHS care organisation(s) for their information.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

05/S0701/11	**Please quote this number on all correspondence**

Yours sincerely,

Mrs Anne W McMahon
Research Ethics Committee Coordinator

E-mail: Anne.McMahon@gartnavel.glacomen.scot.nhs.uk

Enclosures *List of names and professions of members who were present at the meeting and those who submitted written comments*

Appendix 6.3

Basic questions asked

- Are there any competencies in the multidisciplinary document which you feel should have been included?

- Workbook Format. Are you happy with this format? Would you like anything changed here?

- Is there any suggested change in the highlighted terminology with which you do not agree?

- Is there any link between competency and activity that you think do not match?

- Of the activities for which consensus was "not achieved", do you support removing them?

- Of the competencies which have no activities because they have been recently introduced, please propose suitable activities to match them.

- In what ways would you find this workbook of practical use in your own service development?

- What are the problems/limitations to its use that you can forsee?

- How and when would you use it?

- Please suggest any improvements to the design of the workbook that you think would address some of these problems/limitations.

Appendix 6.5 Semi-structured questionnaire for Focus Group B

- How useful did you find the CPD workbook?

- How could the CPD workbook be improved?

- How and when was the workbook used, and/or how and when could you see it being used?

- What would assist you in using this workbook?

- How long did you spend completing the workbook?

- What proportion of the workbook did you feel that you could complete at this stage?

- As a benchmarking document, how helpful if at all, was the workbook in developing future services?

- What improvements then do you think could be carried out to make the workbook more useful?

- Looking at the common and unusual care issues listed, they have now been linked to the appropriate competencies in the workbook. Do you feel that they do relate? Are they linked appropriately? Or are there any that should be altered?

Appendix 6.8: Entries made in Competency Based CPD Workbooks during pilot phase

Change in Performance From	Change in Performance To	Analysis of Personal Learning Needs	Personal Learning Action Plan	Evidence of Change
Competency Descriptor 1				
Patient self-referral to pharmacist	Patient needs identified through assessment	Use an assessment tool	Follow Diabetes Model Scheme	Now using assessment tool to identify patient's needs
No participation in helping patients with their diabetes record booklet	Get patient to show me their diabetes record booklet	Find out more about booklet – who sees them/how they are used etc.	Encourage patient to bring it to pharmacy	Now adding to the multidisciplinary care of the patient using the booklet
Working outside the multidisciplinary team and not having clear referral signals	Clear referral signals to identify those patients needing input from multidisciplinary team	Read up on HbA1c levels and develop referral system	Speak to GP Practice and Diabetes Specialist Nurse	Better knowledge and confidence to assist in appropriate referrals.
Dispensing diabetic medication as stated on Rx without thinking about beneficial drugs which patient could also be taking.	Recommend cardio-protective drugs for patient to take by communicating directly with GP.	Up knowledge of beneficial drugs in diabetes.	Attend SCPPE session. Complete SCPPE book. Take part in diabetes model schemes.	During model scheme I referred many of the patients who were not taking aspirin 75mg by way of the referral form.
Limited knowledge of diabetes footcare	Access to specialist members of multidisciplinary team. Working knowledge of diabetes footcare.	Contact head of podiatry.	Ask to attend meeting with podiatrists involved in diabetes care. Find relevant material on footcare.	Working knowledge of diabetes footcare. Good communication links with podiatrists.
Limited ability to adjust patients diabetes related medication.	More involved in the management of diabetic patients and their related complications.	Go on a specialised diabetes course.	Complete course with R.G.U.	Now a supplementary prescriber in diabetes.
No involvement in local committees.	Involvement in relevant local committees	Find out what local committees there are	Contact committees and ask if my input would be appropriate.	Attending local diabetes support group committee
Little knowledge of national and local guidelines	Working knowledge of national and local guidelines	Find out what local and national guidelines there are	Obtain these guidelines and read	Aware of all guidelines and can now apply them to everyday practice
Isolation in practice with diabetic devices	Sharing good practice within a group of pharmacists	Find out what other pharmacists want to learn and achieve	Ensure good working knowledge of all diabetic devices	Demonstrated the use of diabetic devices to a group of pharmacists

Appendix 6.8: Entries made in Competency Based CPD Workbooks during pilot phase

Change in Performance From	Change in Performance To	Analysis of Personal Learning Needs	Personal Learning Action Plan	Evidence of Change
Competency Descriptor 2				
No knowledge of local agreed targets	Having agreed targets with other members of diabetic team	Identify and read local and national guidelines on diabetic targets	Agree targets with other members of diabetes team	Working knowledge of agreed local targets for HbA1c, BP, Cholesterol
Competency Descriptor 3				
Only being able to influence changes in medication. Not able to adjust it in the pharmacy	Make appropriate interventions independently within an agreed plan with the GP	Need to attend prescribing course	Attend course a R.G.U.	Supplementary prescriber specialising in Diabetes
Limited knowledge of renal impairment and the use of medication in RI	Good knowledge of renal impairment	Identify learning needs	Contact renal team. Read SIGN Guidelines and BNF	Confident in adjusting medication in patients with renal impairment within a clinical management plan
Advising customers on hypoglycaemia only if they ask.	Being proactive and asking diabetic patients if they know what to do in event of a hypoglycaemic event.	Check current recommendations for hypoglycaemia.	Read guidelines in model scheme pack.	Giving advice to diabetic customers who when questioned, do not know what action to take during a hypoglycaemic attack.
No influence on footcare team.	Have access to member of diabetic footcare team and their literature.	Find out who to speak to and what material they have available for patients	Contact diabetic team.	Good links with podiatry and have good literature available for patients.
No literature available and unsure of current advice on nutrition in diabetes	Providing good advice and literature to patients on nutrition	Contact specialist diabetes dietician for current advice	Sit in with dietician during diabetes clinic. Read any material supplied	Offer good nutrition support to diabetics and have a range of literature available.
Not spending enough time actively educating and counselling patients and their carers	Continually educating and encouraging patients and their carers to be proactive in their disease	Organise time more effectively	Always check PMR for compliance	Spending more time checking for compliance and counselling and educating patients on their condition

Appendix 7.1

Multi-Centre Research Ethics Committee for Scotland

Secretariat
Deaconess House
148 Pleasance
Edinburgh
EH8 9RS
Telephone 0131 536 9026
Fax 0131 536 9346
www.corec.org.uk

NHS SCOTLAND

Ms Ailsa Power
Assistant Director of Pharmacy
NHS Education for Scotland
2 Central Quay
89 Hydepark Street
Glasgow
G3 8BW

Date: 7 March 2006
Your Ref.:
Our Ref.:

Enquiries to: Walter Hunter
Extension: 89026
Direct Line: 0131 536 9026
Email: walter.hunter@lhb.scot.nhs.uk

Dear Ms Power

To assess changes in community pharmacists' views and attitudes towards continuing professional development while receiving CPD support for delivering a pharmaceutical care service to patients with type 2 diabetes mellitus

I refer to our exchange of e-mails seeking clarification on whether the above project requires ethical review.

The Committee's Chairman has had an opportunity to consider the protocol. Professor Lees has advised that the project is not one that is required to be ethically reviewed under the terms of the Governance Arrangements for Research Ethics Committees in the UK. There is therefore no requirement for you to submit an application for ethical review and approval.

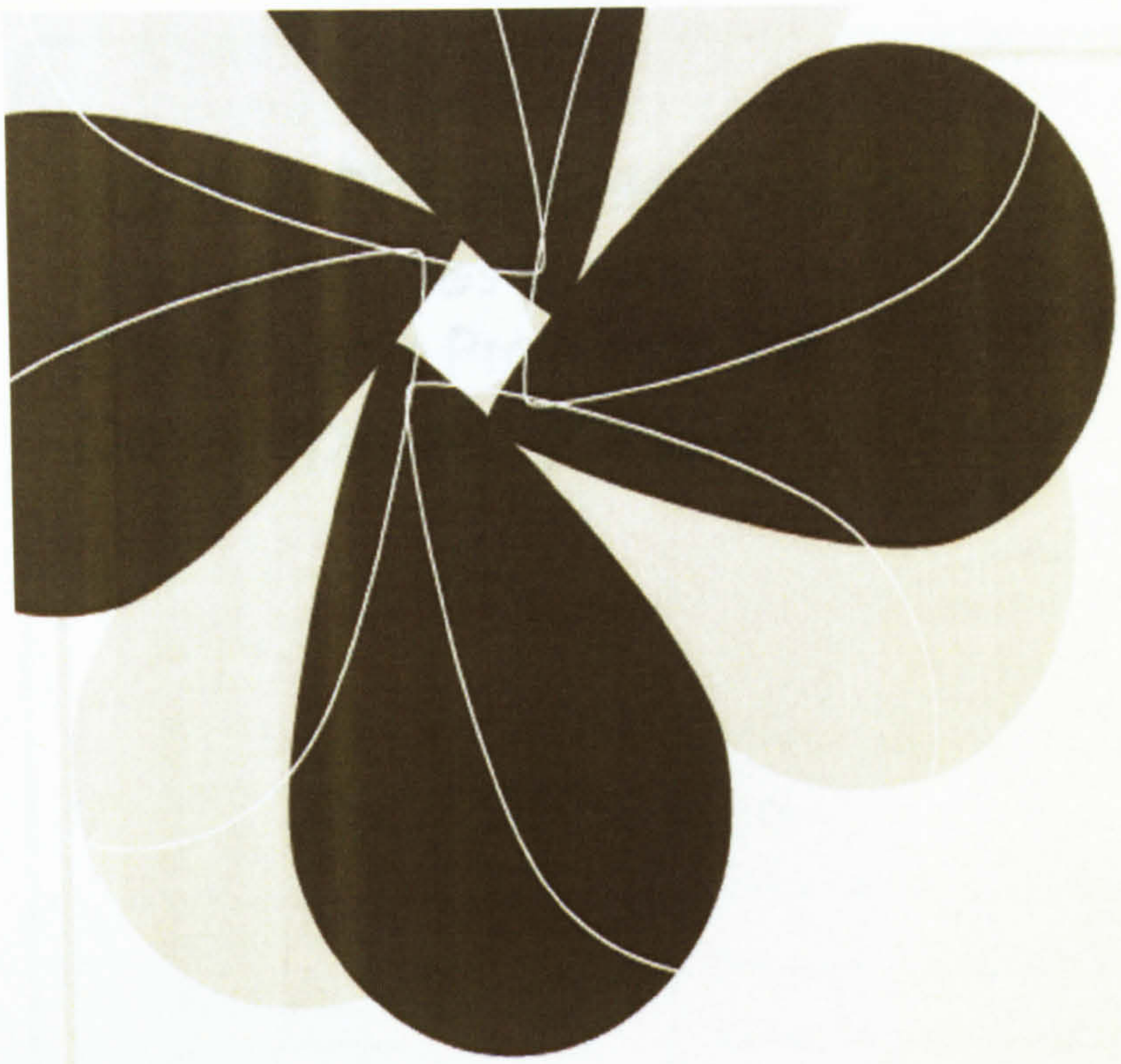
Although review by a Research Ethics Committee is not required, you should check whether management approval is required before the project starts.

I hope this clarifies the position.

Yours sincerely

WALTER HUNTER
Committee Co-ordinator

Appendix 7.2



NHS Education for Scotland (Pharmacy)
3rd Floor, 2 Central Quay
89 Hydepark Street
Glasgow G3 8BW

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www.nes.scot.nhs.uk

NHS
Education for Scotland

Scottish Pharmacists' views and attitudes towards Continuing Professional Development (CPD)

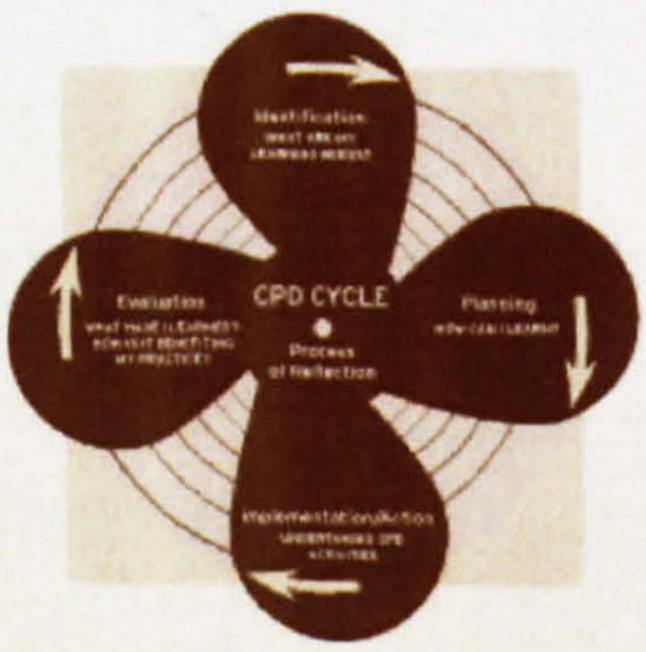
Scottish pharmacists' views and attitudes towards Continuing Professional Development (CPD)

Continuing professional development (CPD) is a systematic, ongoing, cyclical process of reflection on practice, planning, action and evaluation (reflection on learning). It includes everything that pharmacists learn which makes them able to maintain and develop their capabilities.

The RPSGB has recognised in their Code of Ethics that in order for pharmacists to fulfil their responsibilities as competent and effective practitioners they must undertake CPD, which can be used as a framework for the profession to participate in lifelong learning.

Clinical governance is about both continuous quality improvement and being accountable for quality improvement. As such, CPD has become an integral part of clinical governance and affects all health professionals working in the NHS.

CPD should meet the learning needs of the individual health professionals to inspire public confidence in their skills as well as meeting the wider service development needs of the NHS.



Personal Details

Personal code _____

Age _____

Sex _____

Number of years registered _____

Full time ☐ Part time ☐

Sector of pharmacy for main employment
(Please tick the relevant boxes)

Hospital

Community pharmacy independent ☐

Community pharmacy multiple (small <5) ☐

Community pharmacy multiple (large >5) ☐

Primary care (managed service) ☐

Public health ☐

Academia ☐

Industry ☐

Other (Please list) _____ ☐

Estimate the number of hours that you spend annually participating in the CPD cycle? (See diagram opposite)

Notes:

Please indicate the % of time you would spend on each of the following activities. Please put zero against any activity that you would not engage in:-

1. CPD Activity

Organised face to face conferences:-
NHS Education for Scotland (NES)
RPSGB branch meetings
In service meetings
Distance Learning Course
Directed reading in the workplace
Learning from colleagues
e.g. mentoring, shadowing, discussion
Personal study/undirected reading
Extending knowledge through teaching or enquiry
Online courses

Overall CPD Activity
(Rate the scale of your agreement)

2. I feel confident my present engagement with CPD currently meets my needs

Stongly disagree					Strongly agree
1	2	3	4	5	6

Comments

---

3. I do not feel confident my CPD is preparing me for practice developments

Stongly disagree					Strongly agree
1	2	3	4	5	6

Comments

---

4. I receive support with my CPD (colleagues/managers, educational services)

Stongly disagree					Strongly agree
1	2	3	4	5	6

Comments

Participation in the CPD Cycle and the Process of Reflection

Identification: What are my learning needs?
Assessing your learning needs in terms of your personal, career, organisation and patient objectives (Please tick the relevant boxes)

5. I feel confident in my ability to identify my own learning needs

Stongly disagree					Strongly agree
1	2	3	4	5	6

Comments

---

6. I need some help in the process of identifying my learning needs

Stongly disagree					Strongly agree
1	2	3	4	5	6

Comments

---

7. I would find the following helpful in identifying my learning needs:-
(Please tick the relevant boxes)

Documented competencies to help with self-assessment ☐
NES CPD workbook ☐
RPSGB CPD documentation ☐
Other Pharmacy professional organisations eg UKCPA, College of Pharmacy Practice ☐
Employer's documentation ☐
Multiprofessional activities ☐
The process of Significant Event Analysis (specific reflection on a particular incident in your practice) ☐
Personal support from an individual with experience ☐
Workshop (CPD group) ☐
Other help you would find useful
(Please list below)

_____

_____

Planning: How can I learn?
You should consider all the options available to ensure the most appropriate method is used to meet your identified need.
(Please tick the relevant boxes)

8. I am fully aware of the range of resources available to me to address my CPD requirements

Stongly disagree					Strongly agree
1	2	3	4	5	6

Comments

9. I am not confident about my ability to access resources to address my CPD requirements

Stongly disagree					Strongly agree
1	2	3	4	5	6

Comments

10. I would find the following helpful in planning my CPD needs:-
(Please tick the relevant boxes)

- Documented competencies to help with self-assessment ☐
- NES CPD workbooks ☐
- RPSGB CPD documentation ☐
- Other Pharmacy professional organizations eg UKCPA, College of Pharmacy Practice ☐
- Employer's documentation ☐
- Multiprofessional activities ☐
- The process of Significant Event Analysis (specific reflection on a particular incident in your practice) ☐
- Personal support from an individual with experience ☐
- Workshop (CPD group) ☐
- Other help you would find useful

(Please list below)

_____

_____

_____

_____

Implementation/Action: Undertaking CPD activities. You must implement the most appropriate method identified in the planning stage that will address your learning need.
(Please tick the relevant boxes)

11. I have support in my workplace to carry out my CPD plans

Stongly disagree					Strongly agree
1	2	3	4	5	6

Comments

12. I do not have adequate access to suitable CPD resources

Stongly disagree					Strongly agree
1	2	3	4	5	6

Comments

13. I would find the following helpful in implementing my CPD:-
(Please tick the relevant boxes)

- Documented competencies to help with self-assessment ☐
- NES CPD workbooks ☐
- RPSGB CPD documentation ☐
- Other Pharmacy professional organizations eg UKCPA, College of Pharmacy Practice ☐
- Employer's documentation ☐
- Multiprofessional activities ☐
- The process of Significant Event Analysis (specific reflection on a particular incident in your practice) ☐
- Personal support from an individual with experience ☐
- Workshop (CPD group) ☐
- Other help you would find useful (Please list below)

_____

_____

_____

_____

Evaluation: What have I learned? How is it benefiting my practice?

I feel confident in the following processes:-
You should assess the CPD action in terms of effectiveness, appropriateness, efficiency and impact (Please tick the relevant boxes)

14. My ability to assess what I have learned

Stongly disagree					Strongly agree
1	2	3	4	5	6

Comments

15. My ability to assess what additional CPD activity may be necessary

Stongly disagree					Strongly agree
1	2	3	4	5	6

Comments

16. My ability to assess the benefit to my practice

Stongly disagree					Strongly agree
1	2	3	4	5	6

Comments

17. I would find the following helpful in evaluating my CPD:-
(Please tick the relevant boxes)

- Documented competencies to help with self-assessment ☐
- NES CPD workbooks ☐
- RPSGB CPD documentation ☐
- Other Pharmacy professional organizations eg UKCPA. College of Pharmacy Practice ☐
- Employer's documentation ☐
- Multiprofessional activities ☐
- The process of Significant Event Analysis (specific reflection on a particular incident in your practice) ☐
- Personal support from an individual with experience ☐
- Workshop (CPD group) ☐
- Other help you would find useful (Please list below)

18. I do not have sufficient time to achieve my CPD goals

Stongly disagree					Strongly agree
1	2	3	4	5	6

Comments

19. I have sufficient resources to achieve my CPD goals

Stongly disagree					Strongly agree
1	2	3	4	5	6

Comments

20. I have sufficient enthusiasm to achieve my CPD goals

Stongly disagree					Strongly agree
1	2	3	4	5	6

Comments

21. I have a sufficiently sympathetic work environment to achieve my CPD goals

Stongly disagree					Strongly agree
1	2	3	4	5	6

Comments

22. Challenges in my job alone motivate me into achieving my CPD goals

Stongly disagree					Strongly agree
1	2	3	4	5	6

Comments

23. Meeting with colleagues motivate me into achieving my CPD goals

Stongly disagree					Strongly agree
1	2	3	4	5	6

Comments

24. RPSGB requirements motivate me into achieving my CPD goals

Stongly disagree					Strongly agree
1	2	3	4	5	6

Comments

Thank you for taking the time to complete this questionnaire

Please fold & return in enclosed envelope to:

NHS Education for Scotland (Pharmacy)
3rd Floor
2 Central Quay
89 Hydepark Street
Glasgow G3 8BW

Appendix 8.1: CPD Support Questionnaire

This questionnaire is for determining the CPD support tool provided that was used by the participants within the last 12 months. There are no right or wrong answers.

Please tick the box ☑ or fill the gaps as appropriate.

1. Which of the following you have used for your CPD? (you can tick more than one)

- ❑ Paper based workbook
- ❑ Knowledge exchange network
- ❑ Peer support
- ❑ Published paper provided
- ❑ NES diabetes in practice distance learning package
- ❑ E-portfolio workbook
- ❑ Educational session
- ❑ Mentor support
- ❑ Shadowing another practitioners

2. If you used the **educational session,** which facility you have used? (you can tick more than one)

- ❑ Live course
- ❑ DVD

3. If you used the **peer support,** which facility you have used? (you can tick more than one)

- ❑ E-mail
- ❑ Meeting
- ❑ Telephone

4. If you used the **mentor support,** which facility you have used? (you can tick more than one)

- ❑ E-mail
- ❑ Telephone

5. Of the support tool you used, indicate the 3 most useful tools for your CPD.

- ❑ _____
- ❑ _____
- ❑ _____

6. Is there any other type of support tools that have not been provided and you think they will be useful for your CPD?

- ❑ Yes
- ❑ No

7. If **Yes** please state:

- ❑ _____
- ❑ _____
- ❑ _____

Thank you for completing this questionnaire.