



UPPSALA
UNIVERSITET

*Digital Comprehensive Summaries of Uppsala Dissertations
from the Faculty of Pharmacy 107*

Counselling in Swedish Community Pharmacies

*Understanding the Process of
a Pharmaceutical Care Service*

ANNA MONTGOMERY



ACTA
UNIVERSITATIS
UPSALIENSIS
UPPSALA
2009

ISSN 1651-6192
ISBN 978-91-554-7622-9
urn:nbn:se:uu:diva-108973

Dissertation presented at Uppsala University to be publicly examined in Auditorium Minus, Museum Gustavianum, Akademigatan 3, Uppsala, Monday, November 16, 2009 at 09:15 for the degree of Doctor of Philosophy in Pharmacy. The examination will be conducted in Swedish.

Abstract

Montgomery, A. 2009. Counselling in Swedish Community Pharmacies. Understanding the Process of a Pharmaceutical Care Service. Acta Universitatis Upsaliensis. *Digital Comprehensive Summaries of Uppsala Dissertations from the Faculty of Pharmacy* 107. 71 pp. Uppsala. ISBN 978-91-554-7622-9.

Community pharmacy practice is moving towards patient care and away from the mere dispensing of medicines. In this movement, which is guided by the philosophy of *Pharmaceutical care (PC)*, new counselling services emerge.

The purpose of the thesis was to add knowledge about the real-world provision of PC services by studying a defined PC service in Swedish pharmacies.

Specific aims of this thesis were to investigate the experiences of professionals working with or close to the service and to describe the content of consultations, counselling behaviour and patterns of follow-up. Further aims were to characterise patients receiving the service and describe their perceived outcomes, in relation to standard service.

Data were collected via focus groups, telephone interviews, observations, a patient medication record database and a cross-sectional survey.

The practitioners reported greater use of their pharmaceutical knowledge and provision of more thorough patient support. Perceived barriers in delivering the service included difficulties in documenting and getting commitment from colleagues, managers and prescribers. Doctors working close to PC pharmacies held varying opinions about the service.

Consultations dealt with issues potentially improving the outcomes of medical treatment, but the level of patient centredness varied and was limited by the practitioners' focus on the computer screen. The rate of follow-up evaluations was modest, but was higher at pharmacies with a high volume of patients receiving the service.

PC patients were mostly elderly and female, using about 10 prescription drugs. In comparison to patients receiving standard service, they were more worried, vulnerable and information-seeking. At the same time, their feelings of safety following the pharmacy visit were more pronounced than those of patients receiving standard service. They also felt better prepared for doctor visits.

In order for community pharmacy to better meet patients' needs and optimise PC services, increased attention should be given to implementation strategies, interprofessional collaboration and educational efforts focusing on patient centredness.

Keywords: Community pharmacy, Counselling, Pharmaceutical care, Sweden

Anna Montgomery, Department of Pharmacy, Box 580, Uppsala University, SE-75123 Uppsala, Sweden

© Anna Montgomery 2009

ISSN 1651-6192

ISBN 978-91-554-7622-9

urn:nbn:se:uu:diva-108973 (<http://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-108973>)

*The pure and simple truth is rarely
pure and never simple.*

Oscar Wilde

List of Papers

This thesis is based on the following papers, which are referred to in the text by their Roman numerals.

- I Montgomery AT, Källemark Spörng S, Henning M, Tully MP, Kettis Lindblad Å. Implementation of a pharmaceutical care service: prescriptionists', pharmacists' and doctors' views. *Pharmacy World & Science* 2007;29(6):593-602
- II Montgomery AT, Källemark Spörng S, Tully MP, Kettis Lindblad Å. Follow-up of patients receiving a pharmaceutical care service in Sweden. *Journal of Clinical Pharmacy and Therapeutics* 2008;33(6):653-662
- III Montgomery AT, Kettis Lindblad Å, Eddby P, Söderlund E, Tully MP, Källemark Spörng S. Community pharmacists providing a pharmaceutical care service: Identifying counselling behaviour and content. *Submitted*
- IV Montgomery AT, Källemark Spörng S, Manap N, Tully MP, Kettis Lindblad Å. Receiving a pharmaceutical care service compared to receiving standard pharmacy service – How do patients in Sweden differ with regard to perceptions of medicine use and the pharmacy encounter? *Research in Social and Administrative Pharmacy (Accepted)*

Reprints were made with permission from the respective publishers.

Front cover: Pharmacist *Hedvig Andrén*, counselling patient *Broni Bågedahl* in a community pharmacy in Stockholm, Sweden. Photo: *Henrik Montgomery*

Contents

Introduction.....	11
The objectives of this research	12
Background.....	13
Shifting the focus in community pharmacy	13
Pharmaceutical care in theory	13
Definitions of pharmaceutical care	14
Process of pharmaceutical care.....	14
Role of community pharmacists.....	16
Basic and continuing education	16
Collaboration between community pharmacists and physicians	17
Community pharmacist – patient relationship	18
Patients’ perspectives of medicine taking	19
Non-optimal drug therapy	19
Drug-related problems.....	20
Drug-related morbidity, mortality and costs	20
Pharmaceutical care in practice	21
Implementation of pharmaceutical care services	21
Evidence base of PC services in community pharmacy	22
Evaluation and outcomes	22
The Swedish community pharmacy setting.....	23
Pharmaceutical care-oriented activities in Sweden	24
Aims.....	27
Methods	28
Study population	30
Paper I.....	30
Paper II	30
Paper III	30
Paper IV	31
Design	31
Focus groups (Paper I).....	31
Telephone interviews (Paper I).....	31
Database review (Paper II)	31
Non-participant observations (Paper III)	32

Cross-sectional survey (Paper IV)	32
Data collection instruments and assessments	33
Topic guide (Paper I)	33
Interview guide (Paper I)	33
Patient and service characteristics (Paper II)	33
Counselling behaviour and content of consultations (Paper III)	33
Questionnaire (Paper IV)	34
Analysis of qualitative data (Papers I and III)	35
Analysis of quantitative data (Papers II and IV)	35
Ethical considerations	35
Summary of findings	37
Paper I	37
Paper II	38
Paper III	39
Paper IV	40
Discussion	41
Methodological considerations	41
Qualitative methods	41
Quantitative methods	42
Pharmacy practice implications	43
Implementation	43
Documentation	44
Follow-up evaluations	45
Counselling behaviour	45
Training	46
Implications on role development	47
Meeting patients' needs and expectations	47
Collaboration with physicians	48
The link between the PC process and the outcomes of drug therapy	49
Context of this study	49
Conclusions	51
Future perspectives	52
Acknowledgements	54
Summary in Swedish	56
References	59

Key concepts and abbreviations

In this thesis, the following key concepts and abbreviations are used. Some of these may have other meanings in other contexts and publications.

Drug-related problem (DRP)	An event or circumstance involving drug therapy that actually or potentially interferes with desired health outcomes (1).
Patient centredness	A concept in health care in which the practitioner takes the patient's desire for information into account, seeks an integrated understanding for the patients' whole person, emotional needs, and life issues, shares decision making, enhances prevention and health promotion and the continuing relationship between the patient and the practitioner (2).
Patient medication record (PMR)	A document (often computerised) that lists a person's prescribed drugs, their strength, dosage and dosage form. The PMR may be used to document identified DRPs, pharmacists' actions to solve these and advice given.
PC practitioner	A pharmacist or a prescriptionist who provides pharmaceutical care.
Pharmaceutical care (PC)	A practice philosophy originally conceived for community pharmacy as a practice in which the practitioner takes responsibility for a patient's drug-related needs and is held accountable for this commitment (3).
Prescriptionist	A professional with a three-year university pharmacy degree, having the same legal rights and obligations within Swedish pharmacy practice as a pharmacist.

Preamble

This research project was initiated by Apoteket AB (The National Corporation of Swedish Pharmacies) in 2002, at about the same time as a new counselling service in community pharmacies was developed and implemented in Sweden. The research assignment for the newly employed PhD student (the author) was to evaluate the service in collaboration with Uppsala University.

To be an employee of the company whose practice was the subject of my evaluation has been an interesting experience. Next to me at Apoteket's main office, colleagues have been working with the development and national launching of the service. I have closely and with great interest followed their work, difficulties and successes. At the same time, I have scrutinized the results of their efforts. This split position has been both an asset and a challenge. The proximity to practice has sharpened the relevance of my work. Yet it has been important to keep some distance. Being a part of The Pharmaceutical Outcomes Research Group at Uppsala University has facilitated my efforts to be as objective as possible in the evaluation process.

As my own experience from working in community pharmacy is limited, I have visited practising pharmacists to stay updated on the everyday work. The one visit that really made a difference was, however, when I, as a relative (and covert observer) sat beside my grandmother during a consultation within the service. Most of the time, the pharmacist was focused on the computer screen, documenting medications and doctors' names. In the end, however, most of Grandma's drug-related needs were met, although it was not done in a particularly patient-centred or caring way. I was motivated to study further the black box of counselling at the pharmacy.

As an attempt to facilitate research utilization, I have regularly presented my results to practitioners and managers. New knowledge does not implement itself, and although it is beyond the scope of my thesis, I have reflected on dissemination and use of scientific results in practice and the factors that might facilitate practice change.

My work with this thesis has developed over a period of seven years. In this time, the counselling service has undergone only minor changes compared to the initial outline. As Swedish community pharmacy now faces a major change (deregulation of ownership), counselling services may develop in different directions. Hopefully, the research presented in this thesis will contribute to that development, for the benefit of patients, society and pharmacists.

Introduction

Medicines have an important role in modern health care, and have contributed to effective treatment of many disorders. Medicine use is complex, however, not only in a pharmacological way, but also with regard to the process from the prescribing by the physician, to the dispensing and counseling by the pharmacist and the medicine use by the patient in everyday life. This complexity, and the increasing role of self-medication, means that medicines do not always have the expected effects. As a result, patients do not achieve optimal effects from their medications, which may lead to unnecessary suffering, hospitalisation and even death (4-8). These consequences also generate great costs to society (9, 10).

Pharmacists¹, doctors and nurses all make efforts to remedy this situation. Among these health care professionals, community pharmacists are the most accessible. Patients can easily walk into a pharmacy and request medications, seek pharmacists' advice, and share their experiences from using medications. In contrast to other health care professionals, pharmacists have an educational background with medicines as their core interest. Therefore, they are in a unique position to offer patients their specialized skills and knowledge about the safe and rational use of medicines. By providing advice and support in medication use, by explaining how, when and why to use medicines and discussing expected effects and side effects, pharmacists can encourage patients in their efforts to maintain their health.

Community pharmacy is currently at a time of change worldwide. Pharmacists move towards direct patient care and away from focusing on the medicines as products. Guiding this movement is the practice philosophy of *pharmaceutical care* (PC), which was developed within the pharmacy profession as a strategy of using professional knowledge to support patients in achieving optimal outcomes from drug therapy. New community pharmacy services are being provided and existing services are being expanded. This service development means that pharmacists are taking on a greater professional role. Based on the current debate, many pharmacists appear to want to move their operations in this direction. However, wanting to move in this direction is a world away from actually doing it. Internationally, the imple-

¹ In this thesis, if not stated otherwise, the term pharmacists includes both pharmacists (five-year degree) and prescriptionists (three-year degree), as they have the same rights to make independent decisions within pharmacy practice in Sweden.

mentation of PC services has been a slow process, influenced by numerous hindering and facilitating factors (11-16).

The objectives of this research

The research presented in this thesis was conducted with the objective of adding knowledge about the process and perceived effects of community pharmacy-based counselling services, and thus of contributing to the further development of such services. The four studies on which the thesis is based deal with aspects of PC that have not previously been examined in depth, such as the pattern of follow-up evaluations, pharmacists' counselling behaviour, and patient-perceived outcomes of consultations in relation to standard service. Hence, the level of consciousness of problems and opportunities in PC services is raised, which may increase the possibilities of further improving pharmacy-based counselling for the benefit of patients and society.

Background

Shifting the focus in community pharmacy

Traditionally, community pharmacists compounded and dispensed prescribed medications. When most compounding was transferred to the pharmaceutical industry, pharmacists' core responsibility became dispensing, i.e. counting and labelling, assessing and monitoring prescriptions to ensure that they are appropriate and safe (17). This has resulted in a deprofessionalisation process in which pharmacists found themselves over-qualified for what they did, and underutilized in relation to their knowledge (18). Consequently, researchers and pharmacists' professional organisations re-examined the professional role and initiated a long debate about the future of the profession (19-22). A new patient-centred role requires pharmacists to shift from a task-oriented practice (filling physicians' orders) to a patient-oriented practice, including expanded pharmacy services. These are any qualified service delivered by a pharmacy beyond the manufacturing, packaging or dispensing of drugs.

This movement coincides with an increased awareness of the problems following increased medication use rates, at great cost to society and individuals (4-10).

In response, the concept of PC, which has become central to modern community pharmacy, has been developed. It has stimulated the development and implementation of counselling services responding to the drug-related needs of individual patients.

Pharmaceutical care in theory

PC is a practice philosophy embraced by the pharmacy profession and its professional organisations in many countries. The philosophy defines a patient-centred approach to improve medication use by meeting patients' needs of support in drug therapy. Moreover, PC describes the application of pharmacists' pharmacotherapeutic knowledge to identify and prevent or resolve drug therapy problems, the establishment of a caring therapeutic relationship, and the practitioner's specific responsibilities. Follow-up and documenting the work, and collaborating with other patient care providers are also important components of PC. The overall aim of providing community

pharmacy services guided by this philosophy is to improve patients' drug therapy and thereby maintain or improve health and quality of life, making effective use of resources to the benefit of individuals and society (23, 24).

Definitions of pharmaceutical care

The term *pharmaceutical care* evolved in the United States as part of the clinical pharmacy movement and the first definition was published in 1975 by Mikeal *et al.* (25). The concept has, for different practice and research purposes, been developed and defined in multiple ways (23, 24, 26-30). Two American pharmacists and researchers, Charles Hepler and Linda Strand, formulated the most widely used definition of PC in 1990: '*Pharmaceutical care is the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life*' (24). In 1998, Strand, together with Cipolle and Morley (3), approached the topic from a more humanistic perspective when they stated that '*Pharmaceutical care is a practice in which the practitioner takes responsibility for a patient's drug-related needs and is held accountable for this commitment*'.

The European understanding of PC, as described by van Mil *et al.* (31), is that it is the way in which pharmacists coach individual patients about their medication.

The concept of care is strongly influenced by national care concepts and local circumstances in health care practice, which has made a consensus definition of PC at an international level difficult to establish (32). PC cannot always be literally translated. In the Scandinavian countries, '*care*' has been translated as '*omsorg*', which may be associated with care provided by less qualified labour.

In the U.S., the term *medication therapy management services* refers to a strategy to incorporate the philosophy of PC into everyday pharmacy practice for a defined patient population, for example patients with certain diagnoses (33, 34).

Process of pharmaceutical care

Along with the definitions, there are descriptions of how to provide PC in practice. The process, as described by Cipolle *et al.* (23), involves three major steps in which the patient's drug-related needs are addressed.

Firstly, the practitioner makes an assessment of the patient, including his/her medical problems and drug therapies leading to drug therapy problem identification.

Secondly, a care plan is developed; the goals of therapy are established and appropriate individualized interventions are selected and carried out. A follow-up evaluation is scheduled.

Thirdly, a follow-up evaluation is conducted to determine the outcomes of drug therapies and what has happened as a result of previous decisions, pharmacotherapeutic advice and instructions. The follow-up evaluation will guide further action. In addition, the follow-up is also where and when pharmacists can gain clinical experience and is thereby an important element of lifelong learning.

These three steps make up a continuous loop of assessments, interventions and follow-up. All steps need to be agreed upon by the practitioner and the patient; the process should be characterised by patient centredness, caring and empathy. Documentation of the measures taken is also of importance to the PC concept (23).

Patient centredness and caring

PC can only be provided when a good quality relationship exists, in which patient centredness and caring are essential components.

The patient-centred approach is broadly advocated throughout health care (35, 36). A patient-centred professional explores the patients' main reasons for the visit, their concerns, and their needs for information. He or she seeks understanding of the patient's whole person, emotional needs, and life issues and seeks to activate the patient in the consultation (37). The professional and the patient mutually agree on management, health promotion and the continued relationship (2). Patients may benefit from aspects of patient centredness; improved communication can improve satisfaction and adherence to prescribed therapy (36, 38-40). For shared decision making to work well, however, both the patient and the provider must adjust and be open to the influence of the other throughout the exchange (41).

As suggested by the name, caring is an integral component of PC (42). Caring can be characterised by qualities such as compassion, competence, confidence, conscience and commitment, and should be based on sharing and mutual respect (43). Specific behaviours that demonstrate pharmacists' caring include physical behaviours (such as non-verbal language), relationship behaviours (such as being polite and personal) and task behaviours (such as counselling) (44, 45).

Documentation

Documentation is an essential part of the concept of PC, facilitating the provision of an efficient service. Without documentation, practitioners would have to obtain the same information each time the patient visits the pharmacy. Documentation also aids the development of care plans, the continuous evaluation of the effectiveness and safety of pharmacotherapy as well as individualised counselling.

To support practitioners providing PC, a patient medication record (PMR) may be kept. A PMR is a document (often computerised) that lists a person's prescribed drugs, their strength, dosage and dosage form. It may also be used

to document the patients' drug-related problems and pharmacists' actions to solve these. The PMR gives the pharmacist an overall picture and can be used to individualise counselling and facilitate follow-up evaluations over time. In countries such as the Netherlands (46) and the United Kingdom (47), PMRs have been used routinely for several years, although they may differ in how comprehensive the documentation is.

Before giving examples of the international practice and research of PC and describing the Swedish PC service in detail, the surrounding factors influencing the ongoing shift in community pharmacy need to be further examined. In particular, the developing role of the community pharmacists, patients' perspectives on medicine taking and societal aspects of non-optimal medicine use impact on this development.

Role of community pharmacists

The professional orientation towards PC has been difficult (11, 16, 48). Factors such as the beliefs held by pharmacists about expanded services and confidence in pursuing such services, i.e. self-efficacy, determine whether individual pharmacists engage in PC behaviours (49). Some pharmacists may disagree on the potential benefits of expanded pharmacy services (50) or identify lack of therapeutic knowledge and clinical problem solving skills as potential barriers to this development (12). For example, a qualitative study in Iceland indicated that pharmacists have difficulties reconciling their technical paradigm with a legislation specifying patient centredness and focus on patient outcomes (48). Additionally, some pharmacists are reluctant to change, some lack confidence in their abilities to implement expanded services and some fear increased liability. On the other hand, some pharmacists feel that the future of pharmacy depends on the provision of services other than dispensing (12). They are eager to develop their professional role and to become more integrated into the primary healthcare team (51). In Sweden, pharmacists are professionally and legally expected to use their expertise and competence in pharmacotherapy to counsel each patient appropriately (52, 53).

Besides motivation and self-efficacy, having the appropriate educational basis and training is an important prerequisite for carrying out the developing role's professional tasks.

Basic and continuing education

In the last century, the pharmacy curriculum has been based on natural sciences like pharmacology, pharmaceutics and chemistry. However, the content of the basic pharmacy curricula has started to change in some countries in accordance with the changes in the pharmacist's professional role (54-57).

Courses closely related to the social sciences and the humanities, which would aid the development of pharmacy practice towards patient-oriented activities, are slowly becoming essential components in the pharmacy university educations.

In Sweden, completing a pharmacy degree requires five (pharmacist) or three (prescriptionist) years of study at university level. In the curricula for pharmacists, courses on patient counselling, communication skills, caring and empathy are practically non-existent (58, 59). As the curricula for prescriptionists generally are more focused on preparing students for pharmacy practice, they usually include a short course on communication skills (60-64). During internship (both programmes) some of these aspects are discussed based on the students' own experiences (58-61). Thus, students have limited knowledge of the complexity of patient counselling when they graduate.

To promote the new counselling role of pharmacists, continuing professional education in relevant areas is also needed (65, 66). In the International Pharmaceutical Federation (FIP) Statement of Policy on Good Pharmacy Education Practice (67) it is concluded that '*continuing professional development must be a lifelong commitment for every practising pharmacist*'. The learning process and its sustainability are influenced by the forms of the training. Reflective practice (68, 69) and simulated patient visits with immediate feedback (70) are examples of strategies that have had positive results in workplace learning. However, the long-term impact on performance is not known, as evaluation has only focused on the immediate impact of courses. In order to change counselling practices, long-term courses are needed (71).

Emphasizing communication and counselling skills and stimulating interaction between students in different educational programs will not only influence the relationships with patients and colleagues, but is also likely to influence pharmacists' abilities to form good collaborative relationships with other health care professionals.

Collaboration between community pharmacists and physicians

Physicians' legal prescribing authority and liability make them central decision-makers in patients' medication use. Although ambulatory patients may receive health care from different physicians, many visit only one pharmacy, putting pharmacists in an ideal position to provide continuous care and drug-related support for their patients. As both physician and community pharmacists have specialist and complementary knowledge of medicines, collaboration is likely to increase the potential impact on patient outcomes. In other practice settings where pharmacists have been incorporated successfully and collaborate with physicians on drug-therapy issues, patient outcomes have improved (72-74).

In community pharmacy-based expanded counselling services, the pharmacist may need to collaborate with the patient's health care providers when-

ever it is in the best interest of the patient (23). Even if the links between community pharmacists and general practitioners (GPs) often are informal, poor relationships with local GPs are negatively correlated with the pharmacist providing individual patient care (75).

Studies exploring the attitudes of physicians toward an expanded role for the community pharmacists indicate that GPs generally acknowledge pharmacists' responsibilities related to finding and preventing medication errors, providing patient education, and suggesting use of non-prescription medications (76, 77), although some do not know what to expect of pharmacists (78). Physicians who have formed relationships with pharmacists improved their attitudes toward pharmacists providing patient-focused activities (79).

Barriers for multi-professional collaboration include limited time available for team activities, limited possibilities to meet and get to know each other, lack of proximity to each other, financial considerations, and a tendency for the different professions to protect their own professions (80).

However, the development of clinical pharmacy services in hospital settings in some countries, show that although interprofessional struggles influenced the early stages, pharmacists and physicians increasingly collaborate effectively for the benefit of patients (73, 81).

The community pharmacist may also collaborate with other healthcare professionals such as nurses (82), but those interactions are less studied. The most important relationship for the community pharmacist, however, is with the patient.

Community pharmacist – patient relationship

All of the professional activities shared by patients and pharmacists (as well as other healthcare providers) occur within the context of interpersonal relationships. In community pharmacy, the face-to-face patient-pharmacist interaction is one of the core activities and an opportunity to develop trusting care relationships with patients.

As pharmacists' roles have changed, different types of relationships have developed in practice (83). The role of the patient has also shifted from passive information recipient to that of active information gatherer and partner in medication use (84). Research on the pharmacist-patient relationship and communication has concentrated on the encounters in standard pharmacy service (85-87), where interactions commonly are short, counselling does not always occur, the majority of questions asked are closed-ended, and hence, patient-centred care is unusual. The focus has often been on quantifying and explaining the extent and type of information provided by the pharmacists (88). Few studies focus on the dynamics of communication and the aspects of patient centredness (89) and caring (44) in the community pharmacy setting.

In general, patients are satisfied with pharmacists' services, and pharmacists are highly trusted health care professionals. However, patients' views about the role of the pharmacist differ in some aspects from pharmacists' own perceptions of their professional role. Studies have shown that a large proportion of the public does not consider advice- or information- giving as the primary role of pharmacists (90-92), but rather the dispensing of medicines.

Central to the development of fruitful relationships with patients in community pharmacy is the awareness of how patients perceive and experience medicine taking.

Patients' perspectives of medicine taking

Patients' attitudes towards medicines vary. For example, according to a Swedish study of the general population, 60% consider medicines as something helpful and positive, and 38% consider medicines as something necessary but evil. Very few (2%) consider medicines as a danger (93). There is a variety of definitions of medicines, ideas of the origin and function of medicines and concerns about taking medicines among lay people (94).

Patients' beliefs about the specific medication prescribed for them can be grouped into two core themes. These are their beliefs about the *necessity* of the prescribed medication for maintaining health, and *concerns* about the potential adverse effects of taking it, such as becoming too dependent on the medication, or that regular use might lead to long-term adverse effects (95). Qualitative studies focusing on the experience of patients' medicine-taking confirm that medicines generally are seen as unwelcome but necessary and that there is a preference for using as little as possible (96). More specifically, elderly multiple medication users display co-existing accounts of positive (being grateful that drugs provide relief of symptoms and extend life) and negative attitudes to (being afraid of adverse effects and insecure about the total net benefit), and experiences of, medicine taking (97). Based on the occurrence of adverse effects, patients try out medicines and weigh risks and benefits (98, 99). Also, individuals who do not recognize their diseases are not likely to accept their treatment (100).

Since patients are often ill, they can also be anxious, confused and distressed when they visit their pharmacist. Any changes made to present medication, or introduction of new medicines, may be thought to 'upset the balance' and increase worries (101).

Non-optimal drug therapy

Medicines undeniably have a fundamental function in modern health care; they treat many disorders effectively. However, the therapeutic use of drugs

may also cause problems, and consequently be the origin of distress, illness and death (4-8) at great costs (9, 10) to both the individual and the society.

Drug-related problems

When the therapeutic outcome deviates from the intended beneficial effect of a medication, a drug-related problem (DRP) has occurred (10, 24). Several different classification systems for DRPs have been proposed and reviewed (102-104). The Pharmaceutical Care Network Europe (PCNE) defined a DRP as '*an event or circumstance involving drug therapy that actually or potentially interferes with desired health outcomes*' (1). The causes of DRPs are often multifactorial and their assessment has been based on factors such as inappropriate prescribing, inappropriate delivery, patient behaviour and inappropriate monitoring.

A number of quantitative studies have been published regarding the frequency and characteristics of DRPs in different populations (105-107). In a UK study of patients who are over 65 and taking multiple medicines, all patients experienced at least two issues that involved DRPs (108). The risk of having a DRP increases with each additional drug supplied, and a linear relationship between the number of medicines used and the number of DRPs per patient has been found (109). Elderly patients using multiple medications are at greater risk of drug-related problems (4).

Drug-related morbidity, mortality and costs

Drug-related morbidity represents a major problem to patients and society (5, 8). Besides unnecessary suffering, the cost incurred by these errors is enormous. Studies have shown that the costs associated with non-optimal drug therapy exceed the expenditures for initial therapy, that is, the total cost of drug-related morbidity and mortality exceeds the cost of the medications themselves (9, 10).

Two highly prevalent DRPs are adverse drug reactions (ADRs) and non-adherence. In studies, the prevalence of hospital admissions due to ADRs ranges from 2.4% to 15% (5, 110-112). Fatal ADRs account for approximately 3% of all deaths in the general population in Sweden, estimated to be the seventh most common cause of death (7).

ADRs include both avoidable and unavoidable reactions. The management of ADRs is an important part of the quality work in drug treatment. Epidemiological studies show that the majority of ADRs are caused by known pharmacological reactions (5, 6, 111, 112). A systematic review estimated a median drug-related hospital admissions prevalence of 7.1% and a median preventable drug-related hospital admissions prevalence of 4.3% (8).

The average rate of non-adherence to chronic medication in developed countries has been estimated at about 50% (113). Common barriers to adher-

ence are forgetfulness, other priorities, decisions to omit doses, lack of information, emotional factors, complex regimen, cost of medications and poor therapeutic relationships with the doctor (114, 115). Medication beliefs are a stronger predictor of adherence than clinical and socio-demographic factors (99). In particular, beliefs that medicines are harmful was associated with decreased adherence among Swedish pharmacy clients (116).

These data represent an important clinical issue, and also present an opportunity for health care professionals to address these problems.

Pharmaceutical care in practice

Different ways of practising PC have developed, suggesting that PC can be conceived in many ways. Many pharmacists use some elements of the PC process, but relatively few have integrated the entire process into practice. The settings in which the services are provided are also different; they include the community pharmacy (117), patients' homes (118) or health-care centres (GP practices) (119). The differences are a result of the national and social environment in which health care is provided.

Focusing on the services provided in community pharmacies only, the target groups are either concentrated on a limited number of health conditions, such as cardiovascular disease (120, 121), asthma (117, 122) and diabetes (123) or, more generally, patients on complex medication regimens, such as the elderly (124-127). PC services may include counselling, identification of and addressing DRPs, providing life-style advice or practical instructions, relieving uncertainties and fears, or combinations of these (23).

Implementation of pharmaceutical care services

The implementation of PC services in community pharmacies is a complex and slow process (11-16).

Barriers are related to the practice environment and include lack of time, the prevailing opinion, and the knowledge and attitudes of the involved professionals (128-130). Another significant barrier is problems with professional boundaries, especially between physicians, mainly GPs, and pharmacists (79, 131).

Facilitators of practice change from both business and professional perspectives include: good relationships with local GPs, remuneration, pharmacy layout (space and privacy), patient expectation, having sufficient and appropriately trained staff, communication, teamwork, leadership and delegation of tasks and external support in the implementation process (132, 133).

Evidence base of PC services in community pharmacy

An important aim of the pharmacy practice literature during the last three decades has been to describe and enhance the shift in focus from the product to the patient, and consequently, to form a new function for pharmacists in society.

In theory, pharmacists providing PC services should be able to improve the quality of medicine therapy and reduce the impact of DRPs on clinical, humanistic and economic outcomes for the benefit of patients and societies.

Many studies on the outcomes of different types of PC services in different settings have been conducted. Interventions range from patient counselling and self-management training to systematic screening for DRPs and pharmacotherapeutic discussions with GPs. However, such studies are often hampered by poorly defined interventions, inadequately assessed outcomes and lack of scientific rigour (134-138), making the interpretation of results complicated. In addition, few studies compare pharmacist services targeted at patients with services delivered by other health professionals (136).

It is considered less complicated to evaluate PC services targeted at a homogenous group of patients, e.g. patients with specific diagnoses, than to evaluate comprehensive services to a heterogeneous group of patients such as the elderly. In consequence, the benefits of PC services have been shown in services directed at patients with, for example, asthma (117, 122), cardiovascular disease (120, 121) and diabetes (123) whereas services directed at heterogeneous groups of patients have shown varying results (124-127)

In spite of the deficiencies in the interventions and methods used, systematic reviews focusing on collating the findings of evaluations of new community pharmacy services (34, 134, 136, 139-146) generally suggest positive conclusions, and support the provision of such services to patients. These reviews point out improvements in patient knowledge and satisfaction. Quality of life improvements are small, however, and improvements in adherence and drug acquisition costs are equivocal.

Evaluation and outcomes

Different kinds of evaluations have been conducted, and there is still a need for additional research demonstrating the potential benefits of community pharmacy counselling services to patients, health care and societies (147). The three key aspects of evaluation (structure, process and outcome) are interrelated and need to be carefully considered for evaluations to provide meaningful results (148). An important step, however, is to assess the readiness of an intervention or service to spend time and resources on an evaluation (149).

The expected impact of PC rests on the assumption that the intervention works as planned; that the pharmacist adopts this new way of working and

provides the service as intended, that the patients welcome the service, and that the necessary collaboration with colleagues and other professionals takes place. In reality, the PC service provision may work quite differently.

Many studies aiming to evaluate the outcomes of PC are conducted as trials under relatively controlled conditions measuring the efficacy of the service in terms of the economical, clinical and humanistic outcomes (119, 126, 150). However, the processes by which those outcomes are mediated are not considered. Relatively few studies have taken a longitudinal approach using individual level data in a practice-based setting (151, 152). Additionally, only a few studies have shown any impact on humanistic outcomes.

Although the patient perspective is put forward as a central element of PC, such effects are rarely systematically assessed in evaluations of PC services. If direct patient experiences are assessed, the focus is generally on satisfaction with the pharmacy service (121, 122, 125). Other common patient-reported outcomes include attitudes towards medicines (153), adherence to treatment (124, 126) and quality of life (126, 127). In the Swedish setting, a qualitative study (154) points out the subjective outcomes perceived by the patients receiving the PC service (described below) focused on in this thesis – a way to gain control of drug treatment, be empowered and increase the feeling of safety and drug knowledge.

The Swedish community pharmacy setting

There are about 900 community pharmacies (equivalent to one pharmacy per 10 000 inhabitants) in Sweden. For almost 40 years (1971 to 2009) a regulation has stated that the sale of medicines to individuals should be operated by a state monopoly, meaning that all Swedish pharmacies have been organized into one single, government-owned chain, Apoteket AB (155). On July 1st 2009, a new legislation was effectuated, deregulating pharmacy ownership in Sweden.

In addition to pharmacists and prescriptionists, the staff in Swedish pharmacies consists of technicians and assistants with varying educational backgrounds. Approximately 40-60% of the pharmacy staff has university pharmacy education. Pharmacists are typically more involved in special assignments, such as educational activities, project work, drug and therapeutics committees, medication reviews, and research and development. Prescriptionists are typically involved with day-to-day dispensing and interactions with patients. Pharmacists and prescriptionists have the same legal rights and obligations.

Standard pharmacy service is comprised of dispensing and, when needed, a short consultation (lasting no more than 15 minutes) aiming to ensure that the patient knows how to use the dispensed medications. Identification and solving of DRPs that may occur in relation to use of these medicines are not

carried out systematically. Follow-up based on previous consultations is not included and no documentation, except for a list of dispensed medications (national pharmacy record database), is available.

Pharmaceutical care-oriented activities in Sweden

Until 2001, PC-oriented activities were restricted to small-scale development projects that were not implemented nationally (125, 156).

Starting in 1991, and lasting for about 10 years, annual theme campaigns directed toward patients and pharmacy staff (including aspects of PC) with certain diagnoses or symptoms, e.g. diabetes (157), asthma (158), skin diseases (159), dementia (160) and allergy (161), were carried out by Apoteket AB. The aims were to increase knowledge about common diseases and to bring about better drug therapy. For example, study circles for patients newly diagnosed with Type 2 diabetes were led by specially trained pharmacists at community pharmacies and were proven to be a feasible way of educating these patients (162).

Following the campaigns, there has been an emphasis on the identification, resolution, and documentation of DRPs. Since 2001, when DRPs are identified and solved in standard pharmacy service, they are supposed to be classified and documented in a national database.

A counselling service based on pharmaceutical care

The wider development of modern community pharmacy practice in Sweden started in 2002 when a counselling service, resting heavily on the principles of PC (as described by Cipolle et al. (3, 23)), was developed and implemented.

The service, initially called *Läkemedelsprofiler* (*Patient medication records*), was introduced on a trial basis in 11 pharmacies and evaluated by researchers at Uppsala University (163). Representatives from doctors' professional associations were involved in reference groups and local GPs at the project locations were informed personally.

The overall aim of this service is to support patients with pharmaceutical interventions and advice in order to achieve optimal effect from drug therapy. The outline of the service includes a booked initial consultation (approximately 30 minutes) in a separate or semi-separate area of the pharmacy and shorter follow-up evaluations.

The service is provided by pharmacists and prescriptionists (both categories, henceforth called *PC practitioners*), who are specially trained in the theories and practice of PC, communication skills, and reflective practice (seven days of effective training in total). Prior to entering the training programme, practitioners are required to pass a test on their pharmacological knowledge. There are one or two PC practitioners per pharmacy, which

means that patients are likely to meet the same practitioner when receiving the service.

The service is supported by PMRs, in which the practitioner, during (or immediately after) each consultation, documents medications used, DRPs identified (classification system based on Westerlund (164)), issues discussed, and advice given. The PMRs are stored in a national database.

Patients are mainly recruited to the service in the local pharmacies by the pharmacy staff. In addition, anyone on prescription medicines who feels that they are in need of continuous support or counselling by a pharmacist may choose to sign themselves up for the service. Patients may ask for the service as a result of national advertising campaigns and information leaflets placed in the waiting area in pharmacies. Pharmacies do not receive any third-party payments for this service and it is voluntary and free of charge to the patient. It is financed through Apoteket AB's overall profit margin, as a public service.

This service, now called *Bokad rådgivning med uppföljning* (*Booked counselling with follow-up*, henceforth referred to as *the PC service*), has become a permanent part of pharmacy practice in about 260 out of 900 community pharmacies. The decision as to whether to provide the PC service is based on the pharmacy's workload, staffing, interest in counselling, and their patients' estimated need of counselling services. The features of the PC service are summarised in Box 1.

This PC service provided an opportunity to study aspects of PC in community pharmacy in a natural setting. The studies in this thesis were conducted to fill the knowledge gaps of the processes of PC, particularly regarding the central aspects of follow-up evaluations, pharmacists' counselling behaviour, and patient-perceived outcomes of consultations in relation to standard service.

As the scope of practice for community pharmacists changes towards patient care, the need to clarify the value to patients and societies by the pharmacy profession becomes more evident. By gaining understanding of the processes of a counselling service and its perceived effects, refined methods of how to develop effective services may be identified.

Box 1. Features of the PC service provided in Swedish community pharmacies.

The PC service
<ul style="list-style-type: none">• was introduced on a small scale in 2002• aims to support patients with pharmaceutical interventions and advice in order to achieve optimum effects from medicine therapy• includes a scheduled initial counselling session (approx. 30 minutes) and shorter follow-up evaluation sessions (scheduled or drop-in)• focuses on continuous individual patient counselling including identifying and solving DRPs, documentation and follow-up of care• is voluntary and free of charge to the patients• targets anyone on prescription drugs who is in need of support or counselling by a pharmacist• is either initiated by pharmacy staff or asked for by the patients• is provided by one or two specially trained pharmacists or prescriptionists per service pharmacy• is supported by PMRs, including documentation of medications, DRPs and advice given, which are stored in a national database

Aims

The overall aim of this thesis was to explore and describe the process and perceived effects of the provision of a PC service in Swedish community pharmacies.

The specific aims were to:

- Investigate the experiences and perceptions of PC practitioners providing the PC service (Paper I)
- Identify the perceptions and opinions of doctors working in close proximity to PC service pharmacies (Paper I)
- Describe the content of consultations within the PC service (Paper III)
- Explore the patient centredness of PC practitioners providing the PC service (Paper III)
- Determine factors associated with whether follow-up takes place within the PC service (Paper II)
- Characterise patients receiving the PC service, with regard to demographics, medication use and number and type of DRPs (Paper II)
- Describe the patient-perceived outcomes of the PC service in relation to standard pharmacy service (Paper IV)

Methods

The focus in this thesis is on understanding the process and perceived effects of providing a PC service on the perspectives of the professionals and the patients. The findings in Papers I and II led to the formulation of research questions of Papers III and IV. The research was done using different methods, both quantitative and qualitative, based on the character of the different research questions.

At the time of the first study (Paper I), the provision of the PC service in Swedish community pharmacies was relatively new. To get an idea of how this altered way of working influenced pharmacy practitioners and doctors, use of an explorative research design was suitable. The methods chosen were focus groups and telephone interviews. Focus groups are in-depth, open-ended group discussions that explore a specific set of issues on a predefined and limited topic (165, 166).

To analyse what characterises patients who had received the PC service and to explore follow-up patterns within the service, a quantitative assessment of computerised information in the national PMR database was conducted (Paper II).

To study the provision of the PC service in terms of content of consultations and level of patient centredness (Paper III), non-participant observation was used. This method provides insights into the actual behaviours of people against the background of constraints, difficulties and facilitative aspects of their environments (167).

Finally, in Paper IV, to see whether patients receiving the PC service differ from patients receiving standard pharmacy service, a self-administered questionnaire was used in cross-sectional samples representing these groups.

In Table 1 a methodological summary of the papers included in this thesis is provided.

Table 1. Overview of papers included in the thesis.

Design	Study samples	Data collection instruments and assessments	Analysis
I	Focus groups Telephone inter-views	21 PC practitioners (5 pharmacists, 16 prescriptionists), 11 doctors	Topic guide ^a and interview guide ^a : perceptions and experiences of the PC service
			Qualitative analysis, i.e. an iterative, stepwise, analysis; identifying meaning units (no preconceived categories); condensation of meaning units into themes and sub-themes; consensus analysis.
II	Non-experimental, retrospective database study	3298 patients who had received the PC service in 240 pharmacies	PMR database: patient and service characteristics
			Statistical analysis, i.e. chi-square tests, t-tests and binary logistic regression.
III	Non-participant observations	5 PC practitioners (3 pharmacists, 2 prescriptionists)	Observation guide: content of consultations and patient centredness of practitioners
			Qualitative analysis, i.e. an iterative, stepwise, analysis; identifying meaning units (predefined areas of interest corresponding to the study aims); condensation of meaning units into themes and sub-themes; consensus analysis.
IV	Cross-sectional survey	258 and 276 patients who had received the PC service or standard service respectively, in 30 community pharmacies	Questionnaire ^b : socio-demographics, general health, safety with drug-therapy, DRPs, adherence, medication beliefs, experiences of pharmacy encounters
			Statistical analysis, i.e. chi-square tests and t-tests.

^a See Paper I.

^b Available from the author upon request.

Study population

The study populations are comprised of practitioners providing the PC service, doctors working in close proximity to PC pharmacies, patients who have received the PC service and patients who have received standard pharmacy service in community pharmacies.

Paper I

At the time of the study (March 2003), there were 41 practitioners (30 prescriptionists, 11 pharmacists) providing the PC service in 11 community pharmacies in Sweden. All of them were invited to participate in focus group interviews. A total of 21 practitioners (16 prescriptionists and 5 pharmacists, all females), representing all PC pharmacies, agreed to participate. The median age in the groups was 46 years for prescriptionists and 36 years for pharmacists.

The practitioners at the 11 PC pharmacies were asked to nominate doctors who worked in health care centres close to the service pharmacies. Practitioners were instructed to pick doctors whom they knew had patients who had received the PC service, including doctors known to hold positive and negative views about the service. Twenty-two doctors were nominated. Telephone interviews were done with 11 doctors (seven males, five females) before saturation was reached.

Paper II

All patients who had registered for the PC service during the study period (April 24, 2004 to March 16, 2007) were included in the study (n=3298).

For the analysis of follow-up only, patients who had been registered with the service less than two months (n=50) were excluded, because their chance of having received a follow-up within that time frame was small².

Paper III

Ten PC practitioners working in ten pharmacies in and around two of Sweden's largest cities were purposively asked to participate in the study. The main selection criterion was to capture a range of PC practitioners with re-

² Swedish legislation on drug reimbursement stipulates that at least two thirds of the time that the original dispensed installment was intended to cover (which usually is three months) has had to elapse before a new reimbursed installment is allowed. Consequently, most patients on chronic treatment come to the pharmacy every second or third month to fill their prescriptions.

gard to age, gender, education and years of experience, to give a wide variety of types of patient-practitioner interactions. Five PC practitioners, two prescriptionists (females) and three pharmacists (one female, two males), agreed to participate in the study. Their ages ranged between 28 and 52 years and their experience of providing the PC service ranged between one and four years. One of the pharmacists was born and professionally trained in another European country.

Paper IV

The study population in Paper IV was defined based on the results from Paper II, showing that patients receiving this service tend to be old and have multiple medications. Consequently, patients who simultaneously used five or more prescription drugs and were 60 years of age or older were eligible for inclusion in the study. In the PC pharmacies, patients who had received the PC service at least twice (registration plus at least one 1 follow-up) were included, whereas in the control pharmacies, the included patients had received only standard pharmacy service. The pharmacy staff recruited the patients and were instructed to invite all patients who fulfilled the criteria to participate. In total, 258 PC patients and 276 standard service patients participated in the study.

Design

Focus groups (Paper I)

Three focus groups were conducted; one with pharmacists (n=5) and two with prescriptionists (2 x n=8). The discussions took place at a conference centre, lasted about two hours, were audio recorded and transcribed verbatim for further analysis. An experienced researcher moderated the groups, while the thesis author acted as an observer, took notes and monitored the recording equipment.

Telephone interviews (Paper I)

Semi-structured telephone interviews were carried out by the thesis author, and lasted approximately five to ten minutes. No audio recording was made, but careful notes were taken.

Database review (Paper II)

A non-experimental, retrospective assessment of data from the national PMR database was conducted. The PMR database stores the patients' personal

information and factors of importance to drug therapy, but is not primarily used for research purposes. Names and doses of medications used, identified DRPs, pharmacists' interventions and advice, and consequences thereof (better, worse or no change) are recorded, as is an indication of whether a piece of advice needs specific attention during follow-up evaluations. Data collection was carried out by means of extracting relevant data from the national PMR database.

Non-participant observations (Paper III)

Two fifth-year pharmacy undergraduate students conducted the observations individually. Patients who came to the pharmacy for their first booked consultation within the PC service were welcomed by the PC practitioner and informed about the study by the observer.

During the consultation, the observer sat beside the patient, in full view of the PC practitioner. The observer attempted to be as unobtrusive as possible and did not interact with patients or PC practitioners. Field notes focusing on descriptions of the consultation area, the non-verbal language of the practitioner and the use of the computer during the consultation were taken during and immediately after the observations. The consultations were audio recorded on digital media and transcribed verbatim.

Cross-sectional survey (Paper IV)

The study compared two groups of patients, those who had received the PC service and those who had received standard pharmacy service in a cross-sectional assessment. The groups were compared with regard to self-reported aspects of medicine use and self-reported health. Fifteen PC pharmacies were selected, based on having the highest numbers ($n=33-121$) of patients enrolled in the service and the highest follow-up rate (60-90%) in the country. By including the pharmacies with the most experience of providing the service, the study was likely to reach patients who had received the best available version of the PC service. Standard service pharmacies were identified and matched to PC pharmacies based on geographical location and size (number of employees and dispensing volume). Inclusion criteria for patients were being ≥ 60 years of age and using ≥ 5 prescription drugs. PC patients should have received the service at least twice. The pharmacy staff were instructed to ask everyone who fulfilled the criteria to fill in the questionnaire either at the pharmacy or at home and post it in a pre-paid envelope to the University.

Data collection instruments and assessments

Topic guide (Paper I)

For the focus groups, a topic guide (see Paper I, Box 3) was developed based on the research aims. The aim of the questions was to promote discussion on the experiences of working with the PC service, the professional role of pharmacy staff and the relationship with GPs.

Interview guide (Paper I)

An interview guide (see Paper I, Box 4) was used in telephone interviews with the doctors, as a reminder to cover relevant issues. The main issues in this guide were the doctors' opinions on the PC service provision, the effects of the service and the collaboration between doctors and pharmacists or prescriptionists.

Patient and service characteristics (Paper II)

In the PMR, medications were recorded by trade name and classified using the Anatomical Therapeutic Chemical (ATC) system (168). DRPs and pharmacists' interventions were recorded according to Westerlund's classification system (164). Patients' assessments of the outcomes of interventions were recorded on a three-level scale (better, unchanged, or worse).

Follow-up was defined as data recorded in the PMR after the first month of registration. The reason for this was to allow for retrospective documentation of the initial meeting in the PMR, since PC practitioners vary as to when they record data in the PMR. Some record the data during the registration meeting, whereas others do it after the patient has left the pharmacy.

Counselling behaviour and content of consultations (Paper III)

Two observations were used to pilot the data collection strategy (169). Pilot data were not included in the analysis.

The study aims directed the analysis of the observations to predefined areas of interest, i.e. the characteristic of the practitioners' counselling behaviour (patient centredness and caring) and the content of the consultations. Based on the pilot observations and literature review, a field note form was developed and used by the observers to record descriptions of the consultation area, the PC practitioner's non-verbal communication and the computer use during the consultation.

Questionnaire (Paper IV)

The questionnaire used (available from the author upon request) consisted of previously used scales and one item regarding DRPs added for the purpose of the study, 42 items in total. The questions covered experience of pharmacy encounters, medicine use, information needs, relationship with prescribers, medication beliefs, adherence, general health, DRPs and socio-demographics. The questionnaire was tested for face validity in elderly patients ($n=17$) (170), evaluated and amended.

The questions regarding experiences of pharmacy encounters were developed by Apoteket AB (171) and have been used in several evaluations of their pharmacy services. Patients' feelings of increased safety after talking with a pharmacist and experiences of genuine interest from the pharmacist were evaluated. Also, patients were asked if they thought pharmacists gave them important information and explanations about medicines and prepared patients for future doctors' visits. Patients' feelings of safety and control over medicines and their needs of information about new drugs were also assessed. Attitudes to the prescribing doctor were identified through questions about trust and desire to be involved in therapeutic decisions. Each item was rated by respondents using Likert-type scales.

Medication beliefs were assessed using part of the Beliefs about Medicines Questionnaire (BMQ) (95). This is comprised of two 5-item Likert scales assessing beliefs about the benefits of prescribed medication (specific-necessity) and concerns about prescribed medication (specific-concerns). Responses ranged from 1 (=strong disagreement) to 5 (=strong agreement). Scores for each scale (range 5-25) were obtained by summing ratings for items in that scale. As an indication of the relative importance of these attitudes for individual patients, a necessity-concerns differential was calculated (possible range of -20 to 20; positive scores indicate that the patient perceives that benefits of medication outweigh the concerns). The specific-necessity scale and the specific-concerns scales have exhibited good internal consistencies, with reported Cronbach's α -values ranging from 0.6 to 0.8 (95).

The 8-item Morisky Medication Adherence Scale (MMAS) (172) was used to measure adherence, with scores ranging from 0-8, where 8 indicates high adherence, 6-7 medium adherence, and 0-5 low adherence. An adherence summary score was calculated for respondents who had fully completed the MMAS. The Swedish version of MMAS has been shown previously to have good internal consistency (Cronbach's α -value 0.74) (173).

General health was assessed using a global item from the SF-36 (174), using a 5-point Likert-type responses ranging from 'excellent' to 'poor'.

Experience of DRPs was assessed by an item made up by nine statements based on previous work by Westerlund (104), e.g. 'Experience side effects',

‘Uncertain of the aim of my medicines’, ‘Worries about drug-drug interactions’. Respondents were asked to indicate ‘yes’, ‘no’ or ‘do not know’.

The background questions covered gender, age, education, first language, occupation, marital status, number of prescription medicines, and whether the patient received assistance in medicine therapy from a relative or other carer.

Analysis of qualitative data (Papers I and III)

The analytic procedures of data from focus groups, telephone interviews (Paper I) and observations (Paper III) involved reading the transcripts several times and identifying meaning units. In Paper III, the analysis was based on predefined areas of interest corresponding to the study aims, whereas in Paper I, where the discussions were guided by a topic guide, themes brought up during discussions were identified. Analyses were conducted independently by the thesis author and members of the research team (see Papers I and III) in order to handle preconceptions and stay open to multiple interpretations of the data. The data reduction and sense-making process can be described as a condensation of meaning units (coding) into themes and sub-themes. Any discrepancies between the coders were discussed until consensus was reached.

Analysis of quantitative data (Papers II and IV)

The data analysis was carried out using SPSS for Windows version 15.0 and 16.0 (SPSS Inc, Chicago 2000). The level of significance was set at 0.05.

- Chi-square tests were used to assess categorical data (Papers II and IV)
- Independent t-tests were used when comparing means (Papers II and IV)
- Binary logistic regression was used to identify factors associated with whether follow-up took place or not, while adjusting for covariates (Paper II)
- Cronbach’s α was used to measure internal consistence reliability (Paper IV)

Ethical considerations

According to Swedish regulations, no permission was needed from an ethics committee for any of the four studies included. However, ethical requirements were fulfilled. All data were anonymised. Informants in the focus groups and telephone interviews (Paper I) were included after informed con-

sent. Patients registered for the PC service (Paper II) had given consent for their data to be used for research purposes when signing up for the service. PC practitioners in the observational study (Paper III) participated voluntarily and patients signed a written informed consent to participate and accept the recording. No personal identification was used in the questionnaires (Paper IV).

Summary of findings

Paper I

The first paper presents the results of a qualitative study on PC practitioners' and doctors' perceptions and experiences of the PC service. Central questions were: Does the PC service affect the professional roles of pharmacists, prescriptionists and doctors? and What are the PC practitioners' perceptions of the effects of delivering the PC service?

The analysis of the focus groups with PC practitioners resulted in four main themes.

Firstly, working with the PC service had changed the practitioners' views of their professional role; they assumed greater professional responsibility, and described greater use of their pharmaceutical knowledge, greater confidence in practice and an increased awareness of their counselling role. They also experienced a feeling of a more stimulating, instructive and worthwhile daily occupation.

Secondly, benefits from working with the PC service included the possibility to follow up counselling, the opportunity to review patients' complete use of medicines and the feeling that pharmacists' competence becomes more tangible for patients.

Thirdly, perceived problems with the PC service included being time-consuming, difficulty of keeping records (in the PMR), difficulty in getting understanding and support from colleagues and managers, and difficulty involving doctors.

Lastly, discussions of the future of the PC service included the importance of involving GPs and the need for ensuring high quality PC practitioners' work.

Analysis of the telephone interviews with GPs showed that the doctors had not taken an active interest in the project. Their general opinion of the provision of the PC service varied and included being positive due to increased safety of drug treatment, being left out due to limited access to the PMR or being disturbed by PC practitioners' attention to non-clinical relevant therapy problems.

Paper II

In the second paper the characteristics of the patients receiving the PC service and the patterns of follow-up within the PC service are presented.

A total of 3298 patients in Sweden received the PC service in 240 pharmacies during the study period (April 24, 2004 to March 16, 2007), and were included in the study.

Service characteristics included a mean number of registered patients per pharmacy of 13.7 (range: 1-89), mean time since registration was 19.6 months (range: 1-35) and mean follow-up rate of 35% (range: 0-100%) of registered patients per pharmacy.

Patient characteristics included 66.3% female, mean age 71.1 (± 11.7) years, mean number of prescription drugs used 10.5 (± 4.65), with 86.2% of patients using one or more cardiovascular drugs. A quarter (25.8%) of patients had one or more DRPs, most commonly side effects.

At least one follow-up evaluation was carried out for 46.6% of the patients; the remainder only had one documented registration consultation. Followed-up patients had been registered longer, used more medications, and used a compliance aid more often than non-followed-up patients. A significant association between the number of follow-up consultations and the number of registered patients at the local pharmacy was found; patients receiving the PC service at pharmacies that had enrolled more than the mean number of patients to the PC service were more likely to be followed up than patients attending pharmacies that had less than the mean number of registered patients.

Followed-up interventions led to a better perceived outcome in 46.3% of cases, no change in 48.5% and a worse outcome in 5.2%.

Paper III

The third paper explores the provision of the PC service and focuses on the content of consultations and the PC practitioners' level of caring and patient centredness.

Consultations were held at the pharmacy counter or in a small office. The mean length of consultations was 31 minutes (range 15-56 minutes).

The main themes observed were related to the practitioners' attempts to understand the patients' narratives by listening and asking questions, computer use, a variety of counselling issues, vague descriptions of the purpose and content of the PC service, and non-verbal communication. The counselling behaviour was also characterised by a willingness to help. However, the computer often played an important role in the consultations, being used for documentation (PMR) and as a supportive tool for identification of drug-drug interactions. As practitioners focused on the computer screen their abilities to practise patient-centred care were limited.

Consultations included a wide variety of issues, which could potentially help patients' achieve optimal outcomes of medical treatment. Most patients expressed emotions like worry, fear and uncertainty about their drug therapy. Some wanted to gain control over multiple medications used while others wanted to be listened to as they were dissatisfied with health care or wanted to share life issues. Most were seeking information to confirm that their treatment was relevant. The practitioners met these needs by clarifying the purpose of medicines, confirming the prescribers' choices, explaining the therapeutic effects, side effects, drug-drug interactions, dosing and practical directions for taking medicines. They provided vague descriptions of the purpose and outline of the service.

Practitioners had their own personal ways of providing the service. However, two different roles taken by the practitioners were identified: the 'PMR monitor' and the 'listener'. The 'PMR monitor' used the documentation in the PMR as a framework for the service and relied heavily on computer support, in particular when checking for drug-drug interactions and potential adverse reactions for the current medication. These practitioners often took command in the initial phase of the consultation, and omitted determination of the patients' most urgent drug-related needs. The 'listener' focused on the patient's needs by listening actively, taking notes (on a piece of paper) during the consultation, and documenting the consultation in the PMR when the patient had left the pharmacy. The 'listener' used personal knowledge and skills as the main tools for counselling, sometimes supported or confirmed by the databases.

Paper IV

The fourth paper describes and compares patients who had received the PC service and patients who had received standard pharmacy service, with regard to their perceptions of medicine use, particularly feelings of safety with medicine therapy, and the pharmacy encounter.

A total of 258 PC patients and 276 standard service patients from 30 pharmacies (15 PC and 15 standard service) completed the questionnaire. The overall response rate was 90.2%; 92.4% for the PC group and 88.2% for the standard service group. No substantial differences in the background characteristics of the two groups were found.

Patients receiving the PC service used more prescription medicines, had poorer self-reported health, and perceived less safety in their medicine therapy, than did patients in standard service. At the same time, their feelings of safety following the pharmacy visit were more pronounced than those of patients receiving standard service. In addition, the PC patients reported that they felt a genuine interest from the pharmacist, received important information and felt better prepared for doctor visits to a greater extent than did patients receiving standard service.

DRPs reported to a greater extent by patients receiving the PC service included difficulties opening containers, worries about side effects, experiences of side effects, worries about drug-drug interaction and inadequate treatment effects. Adherence and medication beliefs showed no statistical difference between groups.

Results of the questionnaire show that patients receiving a PC service make up a worried, vulnerable and information-seeking group.

Discussion

The overall aim of this thesis was to add knowledge about community pharmacy-based counselling services – their processes and perceived effects.

Practitioners providing the PC service reported that this had changed their professional role, and that it allowed for better monitoring of the patients' treatment. Perceived barriers included time constraints, difficulties in record keeping, and difficulty getting commitment from colleagues, managers and prescribers. Observations of counselling PC practitioners revealed that important advice and support was provided to patients. However, focus on the computer screen limited PC practitioners' abilities to practise patient-centred care. In the nation-wide perspective, there was a modest rate of follow-up evaluations and a significant association between the number of follow-up consultations and the number of registered patients at the local pharmacy.

Patients receiving the PC service were mostly elderly and female, using about 10 prescription drugs on average. In comparison to patients receiving standard service, this group consists of worried, vulnerable and information-seeking patients who were more insecure about their drug therapy. At the same time, PC patients reported increased feelings of safety and perceived preparation for visits to the doctor to a greater extent than did patients receiving standard service.

Doctors working in close proximity with PC pharmacies held varying opinions about the provision of the counselling service, although their involvements were limited.

Methodological considerations

The main strength of this study was that it was designed to represent contemporary community pharmacy reality. By basing all studies on the natural, uncontrolled setting and employing methods according to research questions, new knowledge was gained about the practice of PC. However, some methodological considerations need to be mentioned.

Qualitative methods

In Paper I, focus groups proved to be a useful way to collect data about PC practitioners' perceptions of providing the service. An alternative method

would have been interviewing each practitioner individually. However, focus groups were assumed to give a more varied and nuanced information as group members could exchange experiences and opinions in a dynamic way. In contrast, short telephone interviews during clinic hours were used to reach the opinions of physicians. The difference in data collection limited the results of giving equal justice to the views of the two professional groups.

In Paper III, the non-participant observations involved watching and recording (on digital media and by field notes) what PC practitioners said and did. An even more detailed description of the nature of the pharmacist-patient relationship would have been achieved by video-taping the encounters. However, doing so would possibly have decreased practitioners' willingness to participate.

Sample selection

It cannot be ruled out that the PC practitioners participating in focus groups and observations differed from non-participants in a way that may have influenced the results, e.g. by being relatively more devoted to the whole idea of the service or more interested in professional development. Likewise, the nomination of doctors to telephone interviews may have introduced selection bias, although the results suggest a wide representation of views.

The varying enrolment rates in the service in participating pharmacies in the observation study gave rise to a skewed distribution of observations with half of the data coming from one single practitioner. This was taken into account in the analysis by giving equal weight to all practitioners rather than all observations.

Saturation

In the observation study, saturation may not have been reached due to the limited number of participating practitioners. Therefore, it cannot be ruled out that additional counselling roles may not have been captured. However, as this method requires extensive resources, the possibilities of increasing the number of participating practitioners were limited.

Quantitative methods

In Paper IV, the reason for conducting a cross-sectional study was to characterise patients receiving the PC service as compared to patients receiving standard service with regard to perceptions of medicine use. Also, intermediary effects, directly attributed to the service by patients, were identified, such as whether they felt safer taking medicines after having met the pharmacist.

Answering the question of whether exposure to the two services have different impact on the overall outcome of drug therapy, would have required use of an experimental design, such as a randomised controlled trial (RCT).

Carrying out an RCT was, however, ruled out as results from Papers I-III indicated important limitations in the provision of the PC service showing that the service was not ready to undergo such an extensive and resource-demanding evaluation.

Documentation in patient medication records

In Paper II, PC practitioners may have completed the documentation in the PMRs differently, depending on their experience or interpretations of patients' narratives, which may have affected the result.

Sample selection

The participant selection process in Paper IV was left to the pharmacy staff and was not random; therefore, it might carry a risk of selection bias and limit generalisability to all patients receiving the services. However, as the proportion of non-responders was small and the socio-demographic characteristics of the participants in the two groups were equal, this risk may be considered small.

Social desirability

Social desirability is a major concern in most, if not all, research based on self-reporting (175). The answers in the survey (Paper IV) might have been influenced by social desirability, but there is no reason to believe that this would differ considerably between groups.

Pharmacy practice implications

The results presented in this thesis give insights into the provision of the PC service in Sweden, enabling an evaluation of how the theoretical PC service turned out in practice. The implications of these results on community pharmacy practice are discussed below.

Implementation

The PC service described in this thesis started out as an ambitious pilot project resting heavily on the features of the philosophy of PC. Over the last seven years, the service has grown to be a permanent part of one third of Swedish community pharmacies. Although not specified in the aims of these studies, aspects of implementation were highlighted through Papers I-III.

The assessment of the national PMR database (Paper II) shows that the rates of enrolment and follow-up were modest and varying among participating pharmacies. This indicates that the implementation of this new service align with international reports (12-16) showing that changing pharmacy prac-

tice and the professional roles of pharmacists are slow and problematic processes.

Potential reasons for the limited implementation of the PC service could be extracted from the two qualitative papers in the thesis. Firstly, the PC practitioners in the focus groups (Paper I) reported problems related to lack of time, getting support from colleagues and managers and involving prescribers. These results are congruent with previous findings (12, 133, 176). Secondly, the observations of PC practitioners providing vague descriptions of the purpose and outline of the service (Paper III) in combination with previously research showing low and variable patient expectations (154, 177), may also explain the low enrolment and follow-up rates.

Implementation of new services may be aided by basing implementation strategies on factors facilitating practice change in community pharmacy, i.e. remuneration (which warrants sufficient time), reorganization (such as real-locating tasks and emphasizing different roles), promoting collaboration with other health care professionals on different levels, communicating the reasons for the pharmacy's involvement to all staff members and having a leader or mentor for support (178). Taking patients' expectations and desires into account (154) when developing counselling services will help managers to tailor services for specific patient groups. Additionally, increasing the individual demands on the performance of PC practitioners (and pharmacy staff) regarding reaching a critical mass of patients enrolled to the service and relating this performance to salary would probably have a positive influence on recruitment and follow-up rates, and possibly also on quality.

Documentation

The electronic PMR system used for documentation in the Swedish PC service was perceived by the PC practitioners as an important tool for getting an overview of patients' complete medication use, and thus as a basis for individual advice and follow-up of care. However, they also found it difficult to document properly (Paper I). The focus on documentation was made explicit when PC practitioners who centred their provision of the PC service on documentation were observed (Paper III). The intense focus on the computer screen limited their ability to stay patient-centred throughout the consultation, which is in agreement with previous research that found that introducing a desk-top computer in the GP's office resulted in consultations that were less patient-centred (179). This behaviour might originate in pharmacists having difficulties adjusting their technical paradigm with a patient-centred and caring role (48). It might also be an expression of low self-efficacy in the counselling role (49) or be a result of insufficient training. This suggests that educational efforts need to be made to provide knowledge and skills in documentation. In addition, the software of the PMR system may need improvements in order to serve its purpose and be easy to use.

Follow-up evaluations

Despite the emphasis of follow-up in the theoretical framework of the service as well as in the name of the service, the rate of follow-up evaluations was modest and varying among the PC pharmacies (Paper II).

The reasons for not following up need to be further studied. However, one explanation was found in the observations of PC practitioners, i.e. their brief and vague descriptions of the PC service itself and the possibility to receive follow-up (Paper III), which probably reduced the number of patients returning to the pharmacy for a follow-up. It might be that the PC practitioners have not fully internalised the concept of PC, the outline of the service and the importance of follow-up to the overall result of the service, i.e. establishing a long-term relationship and evaluating the outcomes of therapy.

Practitioners seem to lack workable strategies for conducting the service according to its original objective. Follow-up rates might be increased by ensuring PC practitioners' common perceptions of the purpose and outline of the service, developing guidelines of how to present the service and the follow-up to patients, and developing routines and continuous quality assessments.

An association was found between the number of patients enrolled for the service and the follow-up rate of the pharmacy; the more patients were enrolled for the service, the higher the proportion of the patients who were followed up (Paper II). In other words, PC practitioners who have gained experience from providing the PC service to many patients, and presumably gotten confident and good at it, follow up patients to a greater extent than inexperienced providers. This result implicates the importance of reaching a critical mass of patients to the service and getting into a regular routine. As Cipolle et al. state *'If you don't follow up, you don't care'*(3).

Counselling behaviour

Becoming a good PC practitioner depends on many factors, such as the level of pharmacotherapeutic knowledge, interest in counselling, self-efficacy, caring and empathic abilities and appropriate training.

Practitioners in focus groups (Paper I) and observations (Paper III) seem to be confident in their pharmacological skills. Observations gave many examples of how PC practitioners made important and relevant interventions trying to optimise the outcomes of their patients' therapy, thus showing that they use their skills properly.

However, the analysis of the counselling behaviour underlined the importance of more humanistic skills such as communication, caring and patient centredness.

Two counselling roles were identified: the 'PMR monitor' and the 'listener'. Based on the need of the individual patient both roles may be rele-

vant. However, as there is a positive association between patients' perceptions that the pharmacist is patient-centred and their perceived quality of the pharmacist-patient relationship (180), the role of 'the listener' must be considered preferable for most encounters.

An important skill for practitioners is not necessarily the 'relationship building' as such, but in recognising when particular types of relationships are appropriate (83) and to be able to take on the role that is most suitable for the patient at that time. Therefore, it is of great importance to emphasise the necessity for practitioners to understand the concept of patient centredness and to develop strategies and counselling techniques. However, although most patients want to influence treatment decisions by sharing what is important to them, not everybody wants to. For example, studies (181, 182) indicate that older patients, men, and patients with less education express a desire for less or no involvement in decisions. Other factors that influence patients' preferences for involvement in decision making include experience of illness and medical care, type of decision to make, diagnosis and attitude to illness and medicines (182). Consequently, PC practitioners need to identify these factors to be more sensitive to individual patients' preferences, and provide better patient-centred care (182).

Training

The extent and content of the required training programme for Swedish PC practitioners have not been studied in detail in this research. However, based on the results (Papers I-IV) issues of relevance, content and length are highlighted. Parts that need to be reinforced include patient centredness, communication and counselling skills and strategies of how to meet patients' worry and insecurity about taking medicines.

Moreover, the basis of selection of practitioners for the training programme is unknown, but the results presented here indicate that the selection process should consider the practitioner's capability and motivation to achieve the required changes to the professional role. Additionally, since undergraduate pharmacy educations (at least in Sweden) lack study of social sciences and humanities, these abilities should also be taken into account when assessing applicants to training programmes aiming to produce competent PC practitioners.

Learning through social mechanisms, by paying attention to salient behaviours and characteristics of other professionals and mentors, is also of importance for pharmacists, particularly when developing caring and empathic skills (183).

In addition, the experience from and reflection on patient encounters is important in developing and fostering professionalism in pharmacy (69). Reflectivity may be explained as an essential phase of the learning process where people consciously explore their experiences in order to arrive at new

understandings and behaviours (184). Without specific training in reflective practice, most pharmacists are at the lower levels of reflectivity, and have a limited understanding of the interactive role of the pharmacists (185). Also, empathic skills seem to correlate to abilities of self-reflection (183).

To some extent, the pharmacists' and prescriptionists' undergraduate education would also have to change to correspond with the central concepts of PC. A general exposure to patient perspectives throughout the education would produce a different knowledge base, paving the way for the future practice of PC.

Implications on role development

Practising pharmacists reacted with enthusiasm to the implementation of the PC service; they reported that it expanded their professional role and stimulated their everyday work (Paper I). However, changing the professional role of community pharmacists and prescriptionists will depend on patients' and health care professionals' (particularly physicians') acceptance of the profession's expertise. As stated in the Background section, patients' and physicians' views of pharmacists' responsibilities do not always coincide with pharmacists' own views of their role (76-78, 186). The pharmacy profession in general and the role of the pharmacist in particular are likely to continue to be at the centre of an extensive change process.

Meeting patients' needs and expectations

The characterisation of patients receiving the PC service presented in Papers II and IV adds to the knowledge about the needs presented to community pharmacists and prescriptionists by elderly persons using multiple medicines. The finding that this group of patients are particularly worried, seeking information and in need of extra support, indicates that the PC service reaches a target group that is likely to benefit from the support and advice of PC practitioners. Hence, the PC service might function as a way for patients who are concerned about their medications to become less worried and more motivated to use their medications correctly.

However, although the PC patients had received counselling within the service at least twice, they were still more insecure about their drug therapy than patients receiving standard care. In combination with the results concerning lack of patient centredness from the observations (Paper III), questions may be raised regarding the efficacy of the PC service. In order to make PC encounters more fruitful, future counselling service development may be aided by the knowledge that worry is an important characteristic of this patient group. Consequently, the pharmacy profession's focus on pharmaceutical knowledge needs to be further combined with the skills in patient

care. In addition, the importance of recruiting the patients most likely to benefit from the service must be emphasised when developing and implementing a PC service.

Another patient need that in part also may originate from insecurity was the explicit desire to create a medication list and get it reviewed by the practitioner (Paper III). This confirms a previous finding that one of the benefits perceived by patients receiving this service was gaining control over their current medicines (154). This need is probably well met by the practitioners taking the role of the 'PMR monitor'.

Patients' sets of expectations may include fuzzy, precise, implicit, explicit, unrealistic and realistic expectations which, if uncontrolled, may threaten long-lasting customer satisfaction (187). By managing these expectations, it will be more likely that patients and practitioners read from the same 'relationship script' (186), and thus, provide an opportunity to achieve strong relationships and satisfaction (187). The practitioners observed in this study (Paper III), however, explained the PC service itself only briefly and vaguely, giving patients limited information on which to base realistic expectations. The consequence might be that patients were unsure of what to expect from the consultation and experience a degree of 'role ambiguity'.

Each health care profession may be considered to have a 'culture', created through a socialisation process encountered during the educational and on-the-job training periods (188). Whether the culture of the pharmacy profession, i.e. the salient and unique characteristics of this distinct collective, is flexible enough to include the patient-centred role in the strict dispensary focus is yet to be seen.

The different cultures of pharmacists and physicians may also impact in the professional interactions between these two groups (83).

Collaboration with physicians

Physicians' perceptions of the PC service and the role of community pharmacists and prescriptionists, as determined by the small-scale telephone interview study (Paper I), was characterised by indifference and varying opinions. It should be noted that the study on physicians' experiences was conducted when the PC service was newly implemented, which makes it possible that the opinions may have changed over time.

Collaboration between pharmacists and doctors is needed to enhance appropriate, timely and continuous care (189), and is essential in the conduct of PC. For successful cooperation, both parties should agree on each other's respective tasks. A more explicit and precise description of the PC practitioners' responsibilities may improve the extent of interprofessional cooperation and would create a clearer situation for the patient. The communication might be improved if additional insights are gained into the factors which underlie the different perceptions. Future studies should also elaborate on

possible ways to strengthen interprofessional relationships and mutual understanding of professional roles.

The link between the PC process and the outcomes of drug therapy

In Paper IV, a positive association was found between having received the PC service and experiences of increased safety with medications and being empowered in their relationship with the prescribing doctor. This highlights the potential benefit from providing PC services to elderly patients using multiple medications and confirms previous qualitative findings (154). The question of whether this effect actually impacts the overall outcome of therapy could not be answered by this study. However, studies have shown that health care professionals who help patients gain greater sense of control and manage uncertainty, attenuate or alleviate patients' suffering (190). Furthermore, patients' health can be improved by empowering patients to be active and capable of managing their own health (190). Self-efficacy in mastering one's own medication, has a positive impact on adherence and hence on clinical outcomes (191, 192). Encouragement, help with practical problems (such as demonstrating how to use inhaler devices), suggestions of possible modifications to medicine schedules, or referring the patient for additional help (such as social services) can benefit patient adherence (193).

Context of this study

The results in this thesis must be interpreted in relation to the pharmacy setting (described in the Background section), in which the studies were conducted. From the international perspective, the Swedish community pharmacy system is unique in that it has been regulated by a state monopoly and organized by a single state-owned chain. Nevertheless, compared to international pharmacy chains or even independently run pharmacies there are many similarities to the Swedish system, thus making generalisations of results possible to some extent. However, state-owned Apoteket AB had some societal assignments from the government, such as promoting optimised outcomes of drug therapy through relevant counselling, in which monetary profit was less in focus. Pharmacies do not receive any patient or third-party payments for the PC service, which is financed through Apoteket AB's overall margin. This may affect how patients are recruited to the service and also pharmacists' interactions with patients. In particular, it may account in part for PC practitioners' failure to explain or promote the service to patients (Paper III). In settings where pharmacists are paid (by patients or

a third-party payer, such as the government) per service provided, they may put more effort into promoting the services they offer. On the other hand, in such a setting, the selection of patients to approach may not be based on patients' need of support, but rather on economic incentives.

Coinciding with the national launching of the PC service, an ambitious (and successful) effort to shorten the long waiting times in community pharmacies was initiated. As the PC service is time-consuming (practitioners' training programme and patient consultations), this meant that the implementation of the PC service slowed down.

In September 2009, Apoteket AB decided to shut down the PMR database. Awaiting the settlement of the re-regulated market, the PC service consultations are now based on the extracts from the national pharmacy record database or the pharmacy-held records of prescribed medications. Documentation of advice given is carried out on a simple electronic form. A printout of the form is given to the patient and a paper copy can be stored in the local pharmacy. Whether this change impacts on the counselling behaviour of the PC providers, the follow-up rate or patient-perceived effects has yet to be evaluated.

Conclusions

To conclude, the main findings in this thesis are as follows:

- Pharmacists and prescriptionists who provide a PC service in community pharmacy experience a positive influence on their daily work and on their view of their professional role. They perceive that they make more use of their pharmaceutical knowledge.
- Doctors' general opinions of the provision of the PC service vary and include being positive due to a perceived increased safety of drug treatment, being left out due to limited access to the PMR or being disturbed by PC practitioners' attention to non-clinical relevant therapy problems.
- A range of important issues potentially improving the outcomes of medical treatment and patients' well-being is discussed during PC service consultations.
- The PC practitioners' level of patient centredness varies. Focus on the computer during consultations limits PC practitioners' abilities to practice patient-centred care.
- Follow-up evaluations are carried out for about half of the patients signing up for the PC service. The number of patients enrolled in the service per pharmacy predicts whether follow-up evaluations will take place more than do patient characteristics.
- Patients who receive the PC service are characterised by old age and use of multiple medications. This group is worried, vulnerable and information-seeking.
- In comparison to patients receiving standard pharmacy service, the PC patients are more insecure about their drug therapy. PC patients report increased feelings of safety and perceived preparation for visits to the doctor to a greater extent than patients receiving standard service.

Future perspectives

Despite the plethora of research findings available worldwide within pharmacy practice, relatively little attention has been paid to ensuring that these results are implemented in routine practice (194). Hence, there is often a gap between findings and practice. Lack of time, organizational barriers and problems identifying, assessing, interpreting, and applying best evidence to practice are barriers to good pharmacy practice (195).

Community pharmacy owners who wish to develop counselling services need to find strategies to address these barriers and ways to close the gap between research and practice for the benefit of the patients and societies that they serve. In particular, this recommendation is valid with respect to:

- Implementation strategies, i.e. considering barriers and facilitators to ensure effective implementation of expanded pharmacy services.
- Patients' perspectives of taking medicines, patients' needs, safety concerns, empowerment, expectations and characteristics – to ensure development and marketing of patient-centred services tailored to meet these needs.
- Educational requirements for counselling pharmacists and prescriptionists; focusing on patient centredness, caring, documentation, communication and counselling skills.
- Implementation of a quality framework, i.e. set standards for how a counselling service should be carried out, followed by continuous quality assessment of community pharmacy services, through elements like peer observations and feedback.
- Emphasis on the importance of enrolling a critical mass of patients in a counselling service to ensure that the professionals achieve experience and develop their skills.

Previous findings of clinical, humanistic and economic outcomes of community-based counselling services suggest some impact, although not a fully convincing one, which may in part be caused by interventions that are not completely nor successfully implemented. Researchers and pharmacy owners should therefore carefully assess the implementation and the real-world practice of a service, before starting an evaluation process.

Research questions to be approached in the future include:

- What driving forces for and attitudes towards developing the roles of community pharmacists and counselling services exist among pharmacy owners, pharmacists, managers and pharmaceutical organisations? Differences and similarities?
- How can collaborative relationships be developed between community pharmacists and GPs?
- What kind of educational approach and content would foster skilled PC practitioners in community pharmacy?
- Which components (listening, caring, solving DRPs, offering kind reception) in the pharmacists' counselling are effective for patients' feelings of safety, well-being and maintained health?
- How important is the continuous and trusting relationship between a pharmacist and a patient?

Acknowledgements

My thesis work was performed at the Department of Pharmacy, Uppsala University and at Apoteket AB, Stockholm, Sweden. I wish to thank all those who in various ways have contributed to this thesis, and all those who have supported and encouraged me during my PhD program.

To my *research participants*, thank you for volunteering and taking part in this research.

To my supervisors, *Åsa Kettis Lindblad*, *Sofia Källemark Sporrang* and *Mary P. Tully*, I extend my most sincere thanks. Your patience and guidance throughout this project was invaluable. It was through your unique perspectives that I was challenged to grow and think and develop. It has been an honour and a pleasure working with three such dedicated educators and researchers.

To *Åsa*, thank you for your most generous and committed support and guidance throughout my research. Thanks for your scientific cogency, your confidence in me and for being a positive role model.

To *Sofia*, thank you for facilitating the beginning of my doctoral work and for excellent supervision. Thanks for your unwavering personal and professional support and for always being encouraging.

To *Mary*, thank you for generously sharing your knowledge, for your critical review of manuscripts and for kind and skilful language review.

To *Pernilla Eddby*, *Mari Henning*, *Nila Manap* and *Emelie Söderlund*, co-authors, for valuable collaboration.

To *Cecilia Stålsby-Lundborg* and *Urban Rosenquist*, thank you for valuable help at my half-time seminar.

To *Apoteket AB (The National Corporation of Swedish Pharmacies)*, especially *Anders Carlsten* and *Monica Hagman*, I am truly grateful for the opportunity to work with this research project and for generous personal and

financial support. *Anders*, thank you also for valuable comments during the finalisation phase.

To all of my colleagues at *Apoteket AB*, especially within *Stab Forskning & Utveckling* and *Tjänstenheten*, thank you for providing an inspiring working atmosphere, for support and friendship.

To my former and present colleagues of the *Pharmaceutical Outcomes Research Group*: *Ida Bergström*, *Hanna Fagerlind*, *Kristin Krigsman*, *Christina Ljungberg*, *Janne Moen*, *Annika Nordén-Hägg*, *Tobias Renberg*, *Lena Ring*, *Birgitta Rylén*, *Björn Södergård* and *Andy Wallman*, thank you for a truly intellectual experience and for your friendship. *Tobias*, special thanks for valuable input on my work and for help with references.

To *Eva Nises Ahlgren* and *Ulla Wästberg Galik*, thank you for kind help with all formalities.

To all of my friends, thanks for taking interest in my research and for bringing joy to my life.

To my parents *Margaretha Bågedahl-Strindlund* and *Gottfrid Strindlund*, warmest thanks for always encouraging me to pursue my goals and for your mastery in pep-talk. *Mamma*, thank you also for your endless interest and support in my scientific work!

To the rest of my family, *Sara*, *David*, *Ludvig*, *Mormor*, *Morfar*, *Farmor*, *Farfar*, *Gitte*, *Märta*, *Gunnar*, *Carl*, *Britt*, *Peter*, thanks for all love and caring.

To the most important people in my life: *Henrik*, thank you for everything! Without your support, kind words and love this thesis would never have seen the light of day. I love you! *Hedda* and *Jacob*, thank you for giving me a deep sense of joy and love and for showing me new ways to experience our world!

Summary in Swedish

Läkemedel är i regel bra produkter och sjukvårdens vanligaste och viktigaste behandlingsform. Användningen av läkemedel kan dock vara problematisk för många människor. Förutom att bota, lindra och förebygga sjukdom kan läkemedel ge upphov till oönskade eller icke avsedda effekter. Det är dessutom vanligt att läkemedel inte används som avsett och därför inte ger önskad effekt. Detta innebär onödigt lidande och stora kostnader för individer och samhälle.

Hälso- och sjukvårdens professioner och företrädare vidtar ofta åtgärder för att optimera utfallet av läkemedelsanvändningen. Farmaceuter på öppenvårdsapotek har, genom sin läkemedelsfokuserade utbildning och goda tillgänglighet i samhället, en unik möjlighet att via rådgivning och stöd bidra till förbättrad läkemedelsanvändning och därmed till ökat välbefinnande för många människor.

Öppenvårdsfarmacin i västvärlden förändras; successivt flyttas fokus från information om själva läkemedlen till kvalificerad rådgivning anpassad till enskilda läkemedelsanvändare. Nya tjänster utvecklas och befintliga tjänster förfinas. Farmaceuter intar en mer omfattande professionell roll med större engagemang i allmänhetens läkemedelsanvändning och ökar samarbetet med övriga professioner inom hälso- och sjukvården. Vägledande för denna utveckling har varit filosofin om *pharmaceutical care* (farmaceutisk omsorg) som utvecklades i USA i början av 1990-talet.

Internationella erfarenheter om farmaceutiska rådgivningstjänster var också grunden för den rådgivningstjänst som startades i liten skala 2002 på svenska öppenvårdsapotek. Tjänsten hette först *Läkemedelsprofiler*, sedermera *Bokad rådgivning med uppföljning* och syftar till att hjälpa kunden (patienten) till en bättre läkemedelsanvändning. I nuläget (hösten 2009) erbjuds tjänsten på knappt en tredjedel av landets apotek. Farmaceuter som vidareutbildats inom kommunikation och farmaceutisk omsorg ansvarar för tjänsten.

Den, för kunden kostnadsfria, bokade rådgivningen (ca 30 min. vid första tillfället) utgår från kundens läkemedelsrelaterade behov av stöd och hjälp och kan t ex innebära att farmaceuten tillsammans med kunden:

- går igenom samtliga förskrivna och receptfria läkemedel och förklarar indikation (ev. kontakter förskrivare), förväntad effekt och kontrollerar eventuella interaktioner

- instruerar hur läkemedel ska användas och diskuterar hur läkemedelsanvändningen bäst kombineras med kundens övriga vardagliga rutiner
- förbereder och vägleder kunden inför mötet med läkare eller övrig hälso- och sjukvård
- lindrar kundens oro kring läkemedelsanvändningen
- svarar på kundens läkemedelsrelaterade frågor

Två viktiga komponenter av tjänsten är *dokumentation*, som sker i en elektronisk läkemedelsprofil, och *uppföljning*, dvs att kunden återkommer på ett bokat eller spontant besök till rådgivningsfarmaceuten. Läkemedelsprofilen används som underlag för uppföljningen.

Det övergripande syftet med avhandlingen har varit att studera tjänsten *Bokad rådgivning med uppföljning* och därmed bidra med kunskaper till utvecklingen av rådgivningstjänster på öppenvårdsapotek.

Farmaceuters erfarenheter av tjänsten studerades via fokusgrupper (artikel 1). Resultaten visar att farmaceuter stimuleras av att arbeta med tjänsten och upplever att de använder sina farmaceutiska kunskaper i större utsträckning än vid standardservice. Upplevda problem är att tjänsten är tidskrävande, att det är krångligt att dokumentera och att det är svårt att få stöd från kollegor och chefer i arbetet med tjänsten.

Baserat på en analys av den nationella läkemedelsprofildatabasen utvärderades uppföljningen inom tjänsten (artikel 2). Uppföljning sker för hälften av de kunder som registrerar sig för tjänsten. Apotek med relativt många kunder registrerade för tjänsten gjorde signifikant fler uppföljningar än apotek med få kunder registrerade för tjänsten.

Kvalitativa observationer med ljudinspelning (artikel 3) av rådgivningsmöten inom ramen för tjänsten visade att en mängd viktiga aspekter av kundens läkemedelsanvändning avhandlas. Användning av datorn (dokumentation i läkemedelsprofilen samt kontroll i interaktionsdatabas) spelar ofta en viktig roll i rådgivningsmötena och begränsar ibland farmaceutens möjlighet att vara helt fokuserad på kunden i rådgivningen.

De kunder som fått rådgivningstjänsten karaktäriserades dels via analys av dokumentationen i läkemedelsprofilerna (artikel 2), dels i en beskrivande tvärsnittsstudie med enkäter (artikel 4). Kunder som fått rådgivningstjänsten är i snitt 71 år gamla och använder i medeltal 10,5 receptbelagda läkemedel. De utgör en grupp som är oroliga och informationssökande när det gäller läkemedelsanvändningen.

Tvärsnittsstudien (artikel 4) visade också att kunder som fått rådgivningstjänsten är mer otrygga i sin medicinering än kunder som fått standardservice på apotek. Att prata med en farmaceut ökar dock såväl känslan av trygghet i medicineringen som känslan av att vara bättre förberedd inför mötet med doktorn, enligt de kunder som fått tjänsten.

Uppfattningar om rådgivningstjänsten hos läkare som arbetar i anslutning till apotek som erbjuder tjänsten studerades via telefonintervjuer (artikel 1). Läkare hade varierande uppfattningar om farmaceuternas arbetssätt. Några

hade positiv inställning eftersom de upplever att rådgivningen ökar säkerheten i läkemedelsanvändningen, andra var mer negativa eftersom de hade begränsad tillgång till dokumentationen samt blev störda av farmaceuter som påtalade läkemedelsrelaterade problem som inte var kliniskt relevanta.

Några av de slutsatser som kan dras av avhandlingen är att rådgivningstjänsten ger möjlighet att utveckla farmaceutrollen och bättre utnyttja farmaceuters läkemedelskunskaper. Farmaceuternas utförande av tjänsten kan dock förbättras, främst när det gäller grad av uppföljning och patient-/kundfokusering. Tjänsten når en grupp kunder som använder många läkemedel och dessutom är oroliga och otrygga i sin medicinering. Deras trygghet ökar något av att träffa farmaceuten.

För att förbättra och utveckla rådgivningstjänsterna på öppenvårdsapotek är det viktigt att säkerställa att utbildningen av rådgivningsfarmaceuter är ändamålsenlig, dvs fokuserar på att lära ut ett kundfokuserat och konsultativt arbetssätt. Baserat på kundernas oro och otrygghet i läkemedelsanvändningen, bör rådgivningstjänstens innehåll och inriktning anpassas för att tillgodose målgruppens behov, för att i större utsträckning bidra till förbättrad läkemedelsanvändning och ökat välbefinnande.

References

- 1 van Mil F. Proceedings of the International Working Conference on Outcomes Measurements in Pharmaceutical Care. 1999 January 26-29; Hilleroed, Denmark: Pharmaceutical Care Network Europe (PCNE); 1999. p. 84.
- 2 Stewart M. (2001) Towards a global definition of patient centred care. *BMJ*;322:444-445.
- 3 Cipolle RJ, Strand LM, Moreley PC. (1998) *Pharmaceutical care practice*. New York: McGraw-Hill Companies Inc.
- 4 Lindley CM, Tully MP, Paramsothy V, Tallis RC. (1992) Inappropriate medication is a major cause of adverse drug reactions in elderly patients. *Age Ageing*;21:294-300.
- 5 Pirmohamed M, James S, Meakin S, Green C, Scott AK, Walley TJ, Farrar K, Park BK, Breckenridge AM. (2004) Adverse drug reactions as cause of admission to hospital: prospective analysis of 18 820 patients. *BMJ*;329:15-19.
- 6 Sarlöv C, Andersen-Karlsson E, von Bahr C. (2001) [Adverse effects of drugs in patients with heart disease lead to hospital care]. *Läkartidningen*;98:5349-5353.
- 7 Wester K, Jonsson AK, Spigset O, Druid H, Hagg S. (2007) Incidence of fatal adverse drug reactions: a population based study. *Br J Clin Pharmacol*
- 8 Winterstein AG, Sauer BC, Hepler CD, Poole C. (2002) Preventable drug-related hospital admissions. *Ann Pharmacother*;36:1238-1248.
- 9 Ernst FR, Grizzle AJ. (2001) Drug-related morbidity and mortality: updating the cost-of-illness model. *J Am Pharm Assoc*;41:192-199.
- 10 Johnson JA, Bootman JL. (1995) Drug-related morbidity and mortality. A cost-of-illness model. *Arch Intern Med*;155:1949-1956.
- 11 Rossing C, Hansen EH, Krass I, Traulsen JM. (2003) Pharmaceutical care in Denmark: perceived importance of medicine-related problems and participation in postgraduate training. *Pharm World Sci*;25:73-78.
- 12 Dunlop JA, Shaw JP. (2002) Community pharmacists' perspectives on pharmaceutical care implementation in New Zealand. *Pharm World Sci*;24:224-230.
- 13 Rossing C, Hansen EH, Traulsen JM, Krass I. (2005) Actual and perceived provision of pharmaceutical care in Danish community pharmacies: the pharmacists' opinions. *Pharm World Sci*;27:175-181.
- 14 Ruston A. (2001) Achieving re-professionalisation: factors that influence the adoption of an 'extended role' by community pharmacists. A national survey. *J Soc Adm Pharm*;18:103-100.

- 15 van Mil F, Tromp DF, McElnay JC, de Jong-van den Berg LT, Vos R. (1999) Development of pharmaceutical care in The Netherlands: pharmacy's contemporary focus on the patient. *J Am Pharm Assoc*;39:395-401.
- 16 Zardain E, Del Valle MO, Loza MI, Garcia E, Lana A, Markham WA, Lopez ML. (2009) Psychosocial and behavioural determinants of the implementation of Pharmaceutical Care in Spain. *Pharm World Sci*;31:174-182.
- 17 Traulsen JM, Bissell P. (2004) Theories of professions and the pharmacist. *Int J Pharm Pract*;12:107-114.
- 18 Gilbert L. (1998) Pharmacy's attempts to extend its roles: a case study in South Africa. *Soc Sci Med*;47:153-164.
- 19 Keely JL. (2002) Pharmacist scope of practice. *Ann Intern Med*;136:79-85.
- 20 Rubensdotter Carlsson J. Apotekare — En utrotningshotad art? [Pharmacists — under the threat of extermination?]. Undergraduate thesis: Faculty of Pharmacy, Uppsala University, Sweden; 2008.
- 21 Ivey MF. (1993) Shifting pharmacy's paradigm. *Am J Hosp Pharm*;50:1869-1874.
- 22 Norgaard LS, Colberg L, Niemann MR. (2001) The role of the Danish community pharmacist: perceptions and future scenarios. *Pharm World Sci*;23:159-164.
- 23 Cipolle RJ, Strand LM, Moreley PC. (2004) Pharmaceutical care practice — the clinician's guide. 2nd ed. New York: McGraw-Hill Companies Inc.
- 24 Hepler CD, Strand LM. (1990) Opportunities and responsibilities in pharmaceutical care. *Am J Hosp Pharm*;47:533-543.
- 25 Mikeal RL, Brown TR, Lazarus HL, Vinson MC. (1975) Quality of pharmaceutical care in hospitals. *Am J Hosp Pharm*;32:567-574.
- 26 Brodie DC, Parish PA, Poston JW. (1980) Societal needs for drugs and drug-related services. *Am J Pharm Educ*;44:276-278.
- 27 Hepler CD. (1987) The third wave in pharmaceutical education: the clinical movement. *Am J Pharm Educ*;51:369-385.
- 28 Munroe WP, Dalmady-Israel C. (1998) The community pharmacist's role in disease management and managed care. *Int Pharm J*;12:(suppl II).
- 29 International Pharmaceutical Federation. FIP statement of professional standards — pharmaceutical care. 1998 [cited 2009 February, 27]; Available from: <http://www.fip.org>
- 30 Pharmaceutical Care Network Europe. PCNE Mission Statement. [cited 2009 February, 27]; Available from: <http://www.pcne.org>
- 31 van Mil F, Schulz M, Tromp TF. (2004) Pharmaceutical care, European developments in concepts, implementation, teaching, and research: a review. *Pharm World Sci*;26:303-311.
- 32 van Mil F, McElnay JC, De Jong-van den Berg LT, Tromp DF. (1999) The challenges of defining pharmaceutical care on an international level. *Int J Pharm Pract*;7:202-208.

- 33 McGivney MS, Meyer SM, Duncan-Hewitt W, Hall DL, Goode JV, Smith RB. (2007) Medication therapy management: its relationship to patient counseling, disease management, and pharmaceutical care. *J Am Pharm Assoc* (2003);47:620-628.
- 34 Pellegrino AN, Martin MT, Tilton JJ, Touchette DR. (2009) Medication therapy management services: definitions and outcomes. *Drugs*;69:393-406.
- 35 Little P, Everitt H, Williamson I, Warner G, Moore M, Gould C, Ferrier K, Payne S. (2001) Preferences of patients for patient centred approach to consultation in primary care: observational study. *BMJ*;322:468-472.
- 36 Kinnarsley P, Stott N, Peters TJ, Harvey I. (1999) The patient-centredness of consultations and outcome in primary care. *Br J Gen Pract*;49:711-716.
- 37 Michie S, Miles J, Weinman J. (2003) Patient-centredness in chronic illness: what is it and does it matter? *Patient Educ Couns*;51:197-206.
- 38 Bultman DC, Svarstad BL. (2000) Effects of physician communication style on client medication beliefs and adherence with antidepressant treatment. *Patient Educ Couns*;40:173-185.
- 39 Bultman DC, Svarstad BL. (2002) Effects of pharmacist monitoring on patient satisfaction with antidepressant medication therapy. *J Am Pharm Assoc*;42:36-43.
- 40 Mead N, Bower P. (2002) Patient-centred consultations and outcomes in primary care: a review of the literature. *Patient Educ Couns*;48:51-61.
- 41 Charles C, Gafni A, Whelan T. (1997) Shared decision-making in the medical encounter: what does it mean? (or it takes at least two to tango). *Soc Sci Med*;44:681-692.
- 42 Murawski MM, Miederhoff PA. (1994) Pharmaceutical caring. *Am J Pharm Educ*;58:310-315.
- 43 Cronqvist A, Theorell T, Burns T, Lutzen K. (2004) Caring about--caring for: moral obligations and work responsibilities in intensive care nursing. *Nurs Ethics*;11:63-76.
- 44 Fjortoft N. (2006) Identifying caring behaviors of pharmacists through observations and interviews. *J Am Pharm Assoc* (2003);46:582-588.
- 45 Galt K. (2000) The need to define "care" in pharmaceutical care: an examination across research, practice and education. *Am J Pharm Educ*;64:223-233.
- 46 de Gier JJ. (1996) The Electronic Pharmaceutical Dossier: an effective aid to documenting pharmaceutical care data. *Pharm World Sci*;18:241-243.
- 47 Rogers PJ, Rees JE. (1996) Comparison of the use of PMRs in community pharmacy in 1991 and 1995: (2) The recording of patients' details. *Pharm J*;256:491-495.
- 48 Almarsdottir AB, Morgall JM. (1999) Technicians or patient advocates?-- still a valid question (results of focus group discussions with pharmacists). *Pharm World Sci*;21:127-131.

- 49 Farris KB, Schopflocher DP. (1999) Between intention and behavior: an application of community pharmacists' assessment of pharmaceutical care. *Soc Sci Med*;49:55-66.
- 50 Assa M, Frenzel Shepherd E. (2000) Interpersonal perception: A theory and method for studying pharmacists' and patients' views of pharmaceutical care. *J Am Pharm Assoc* (2003);40:71-81.
- 51 Bell HM, McElnay JC, Hughes C, Woods A. (1998) A qualitative investigation of the attitudes and opinions of community pharmacists to pharmaceutical care. *J Soc Adm Pharm*;15:284-295.
- 52 Läkemedelslagen [Swedish Law] 1992:859, 22§..
- 53 Läkemedelsverkets föreskrifter om förordnande och utlämnande av läkemedel m.m. (receptföreskrifter). [Provisions on authorisation and distribution of drugs, etc. (prescription directives) Swedish Law] LVFS 2009:13, 21§].
- 54 Accreditation Council for Pharmacy Education. Accreditation standards and guidelines for the professional program in pharmacy leading to the doctor of pharmacy degree: The Accreditation Council for Pharmacy Education Inc.; 2006.
- 55 McDonough RP, Bennett MS. (2006) Improving communication skills of pharmacy students through effective precepting. *Am J Pharm Educ*;70:58.
- 56 Galt K, Markert R. (2002) Description and assessment of an early curriculum to teach pharmacy students caring behaviors. *Pharm Educ*;2:23-30.
- 57 Perrier DG, Winslade N, Pugsley J, Lavack L, Strand LM. (1995) Designing a pharmaceutical care curriculum. *Am J Pharm Educ*;59:113-125.
- 58 Uppsala University Faculty of Pharmacy Grundutbildningskommittén. [Outline of Master of Science Programme in Pharmacy], 300 credits. 2009
- 59 Sahlgrenska Akademin vid Göteborgs Universitet. Outline of Master of Science Programme in Pharmacy, 300 credits. 2006.
- 60 Uppsala University Faculty of Pharmacy Grundutbildningskommittén. [Outline of Bachelor of Science Programme in Pharmacy] 180 credits. 2009
- 61 Sahlgrenska Akademin vid Göteborgs Universitet. Bachelors programme in Pharmacy/Dispensing Pharmacists 2007.
- 62 Högskolan i Kalmar. Outline of Bachelor of Science Programme in Pharmacy, 180 credits. 2009
- 63 Karlstad Universitet. Outline for Bachelor of Science Programme in Pharmacy, 180 credits. 2009
- 64 Umeå Universitet. Outline for Bachelor of Science Programme in Pharmacy, 180 credits. 2009
- 65 Rouse MJ. (2004) Continuing professional development in pharmacy. *Am J Health Syst Pharm*;61:2069-2076.

- 66 Odenina FK, Segal R, Hepler CD. (1995) Providing pharmaceutical care in community practice: differences between providers and non-providers of pharmaceutical care. *J Soc Adm Pharm*;12:170-180.
- 67 FIP Statement of Policy on Good Pharmacy Education Practice. Vienna: International Pharmaceutical Federation (FIP); 2000.
- 68 Wallman A, Lindblad AK, Hall S, Lundmark A, Ring L. (2008) A categorization scheme for assessing pharmacy students' levels of reflection during internships. *Am J Pharm Educ*;72:05.
- 69 Droege M. (2003) The role of reflective practice in pharmacy. *Educ Health (Abingdon)*;16:68-74.
- 70 Berger K, Eickhoff C, Schulz M. (2005) Counselling quality in community pharmacies: implementation of the pseudo customer methodology in Germany. *J Clin Pharm Ther*;30:45-57.
- 71 Kansanaho H, Pietila K, Airaksinen MS. (2003) Can a long-term continuing education course in patient counselling promote a change in the practice of Finnish community pharmacists? *Int J Pharm Pract*;11:153-160.
- 72 Sorensen L, Stokes JA, Purdie DM, Woodward M, Elliott R, Roberts MS. (2004) Medication reviews in the community: results of a randomized, controlled effectiveness trial. *Br J Clin Pharmacol*;58:648-664.
- 73 Gillespie U, Alassaad A, Henrohn D, Garmo H, Hammarlund-Udenaes M, Toss H, Kettis-Lindblad A, Melhus H, Morlin C. (2009) A comprehensive pharmacist intervention to reduce morbidity in patients 80 years or older: a randomized controlled trial. *Arch Intern Med*;169:894-900.
- 74 Hanlon JT, Weinberger M, Samsa GP, Schmader KE, Uttech KM, Lewis IK, Cowper PA, Landsman PB, Cohen HJ, Feussner JR. (1996) A randomized, controlled trial of a clinical pharmacist intervention to improve inappropriate prescribing in elderly outpatients with polypharmacy. *Am J Med*;100:428-437.
- 75 Muijers PE, Knottnerus JA, Sijbrandij J, Janknegt R, Grol RP. (2004) Pharmacists in primary care. Determinants of the care-providing function of Dutch community pharmacists in primary care. *Pharm World Sci*;26:256-262.
- 76 Bradshaw SJ, Doucette WR. (1998) Community pharmacists as patient advocates: physician attitudes. *J Am Pharm Assoc*;38:598-602.
- 77 Ranelli PL, Biss J. (2000) Physicians' perceptions of communication with and responsibilities of pharmacists. *J Am Pharm Assoc*;40:625-630.
- 78 Smith WE, Ray MD, Shannon DM. (2002) Physicians' expectations of pharmacists. *Am J Health Syst Pharm*;59:50-57.
- 79 Muijers PE, Knottnerus JA, Sijbrandij J, Janknegt R, Grol RP. (2003) Changing relationships: attitudes and opinions of general practitioners and pharmacists regarding the role of the community pharmacist. *Pharm World Sci*;25:235-241.

- 80 Dobson RT, Henry CJ, Taylor JG, Zello GA, Lachaine J, Forbes DA, Keegan DL. (2006) Interprofessional health care teams: attitudes and environmental factors associated with participation by community pharmacists. *J Interprof Care*;20:119-132.
- 81 Kaboli PJ, Hoth AB, McClimon BJ, Schnipper JL. (2006) Clinical pharmacists and inpatient medical care: a systematic review. *Arch Intern Med*;166:955-964.
- 82 McLean DL, McAlister FA, Johnson JA, King KM, Makowsky MJ, Jones CA, Tsuyuki RT. (2008) A randomized trial of the effect of community pharmacist and nurse care on improving blood pressure management in patients with diabetes mellitus: Study of cardiovascular risk intervention by pharmacists-hypertension (SCRIP-HTN). *Arch Intern Med*;168:2355-2361.
- 83 Austin Z, Gregory PA, Martin JC. (2006) Characterizing the professional relationships of community pharmacists. *Res Social Adm Pharm*;2:533-546.
- 84 Chewning B, Sleath B. (1996) Medication decision-making and management: a client-centered model. *Soc Sci Med*;42:389-398.
- 85 Sleath B. (1996) Pharmacist-patient relationships: authoritarian, participatory, or default? *Patient Educ Couns*;28:253-263.
- 86 Skoglund P, Isacson D, Kjellgren KI. (2003) Analgesic medication--communication at pharmacies. *Patient Educ Couns*;51:155-161.
- 87 Puumalainen I, Peura S, Kansanaho H, Benrimoj SI, Airaksinen M. (2005) Progress in patient counselling practices in Finnish community pharmacies. *Int J Pharm Pract*;13:149-156.
- 88 Shah B, Chewning B. (2006) Conceptualizing and measuring pharmacist-patient communication: a review of published studies. *Res Social Adm Pharm*;2:153-185.
- 89 de Oliveira DR, Shoemaker SJ. (2006) Achieving patient centeredness in pharmacy practice: openness and the pharmacist's natural attitude. *J Am Pharm Assoc* (2003);46:56-64; quiz 64-56.
- 90 Haugbolle LS, Sorensen EW, Gundersen B, Petersen KH, Lorentzen L. (2002) Basing pharmacy counselling on the perspective of the angina pectoris patient. *Pharm World Sci*;24:71-78.
- 91 Traulsen JM, Almarsdottir AB, Bjornsdottir I. (2002) The lay user perspective on the quality of pharmaceuticals, drug therapy and pharmacy services--results of focus group discussions. *Pharm World Sci*;24:196-200.
- 92 Tully MP, Hassell K, Noyce PR. (1997) Advice-giving in community pharmacies in the UK. *J Health Serv Res Policy*;2:38-50.
- 93 Isacson D, Bingefors K. (2002) Attitudes towards drugs--a survey in the general population. *Pharm World Sci*;24:104-110.
- 94 Bjornsdottir I, Almarsdottir AB, Traulsen JM. (2009) The lay public's explicit and implicit definitions of drugs. *Res Social Adm Pharm*;5:40-50.
- 95 Horne R, Weinman J, Hankins M. (1999) The beliefs about medicines questionnaire: the development and evaluation of a new method for

- assessing the cognitive representation of medication. *Psychol Health*;14:1-24.
- 96 Pound P, Britten N, Morgan M, Yardley L, Pope C, Daker-White G, Campbell R. (2005) Resisting medicines: a synthesis of qualitative studies of medicine taking. *Soc Sci Med*;61:133-155.
- 97 Moen J, Bohm A, Tillenius T, Antonov K, Nilsson JL, Ring L. (2009) "I don't know how many of these [medicines] are necessary.." — a focus group study among elderly users of multiple medicines. *Patient Educ Couns*;74:135-141.
- 98 Svensson S, Kjellgren KI, Ahlner J, Saljo R. (2000) Reasons for adherence with antihypertensive medication. *Int J Cardiol*;76:157-163.
- 99 Horne R, Weinman J. (1999) Patients' beliefs about prescribed medicines and their role in adherence to treatment in chronic physical illness. *J Psychosom Res*;47:555-567.
- 100 Adams S, Pill R, Jones A. (1997) Medication, chronic illness and identity: the perspective of people with asthma. *Soc Sci Med*;45:189-201.
- 101 Granås AG, Bates I. (2005) Patients' understanding and management of their illnesses and prescribed medicines--a descriptive study. *Pharm World Sci*;27:321-328.
- 102 Björkman IK, Sanner MA, Bernsten CB. (2008) Comparing 4 classification systems for drug-related problems: Processes and functions. *Res Social Adm Pharm*;4:320-331.
- 103 van Mil F, Westerlund LO, Hersberger KE, Schaefer MA. (2004) Drug-related problem classification systems. *Ann Pharmacother*;38:859-867.
- 104 Westerlund LT, Almarsdottir AB, Melander A. (1999) Drug-related problems and pharmacy interventions in community pharmacy. *Int J Pharm Pract*;7:40-50.
- 105 Paulino EI, Bouvy ML, Gastelurrutia MA, Guerreiro M, Buurma H. (2004) Drug related problems identified by European community pharmacists in patients discharged from hospital. *Pharm World Sci*;26:353-360.
- 106 Vinks TH, de Koning FH, de Lange TM, Egberts TC. (2006) Identification of potential drug-related problems in the elderly: the role of the community pharmacist. *Pharm World Sci*;28:33-38.
- 107 Denneboom W, Dautzenberg MG, Grol R, De Smet PA. (2005) User-related pharmaceutical care problems and factors affecting them: the importance of clinical relevance. *J Clin Pharm Ther*;30:215-223.
- 108 Krska J, Cromarty JA, Arris F, Jamieson D, Hansford D, Duffus PR, Downie G, Seymour DG. (2001) Pharmacist-led medication review in patients over 65: a randomized, controlled trial in primary care. *Age Ageing*;30:205-211.
- 109 Viktil KK, Blix HS, Moger TA, Reikvam A. (2007) Polypharmacy as commonly defined is an indicator of limited value in the assessment of drug-related problems. *Br J Clin Pharmacol*;63:187-195.

- 110 Schneeweiss S, Hasford J, Gottler M, Hoffmann A, Riethling AK, Avorn J. (2002) Admissions caused by adverse drug events to internal medicine and emergency departments in hospitals: a longitudinal population-based study. *Eur J Clin Pharmacol*;58:285-291.
- 111 Mjörndal T, Boman MD, Hägg S, Backström M, Wiholm BE, Wahlin A, Dahlqvist R. (2002) Adverse drug reactions as a cause for admissions to a department of internal medicine. *Pharmacoepidemiol Drug Saf*;11:65-72.
- 112 von Euler M, Eliasson E, Ohlen G, Bergman U. (2006) Adverse drug reactions causing hospitalization can be monitored from computerized medical records and thereby indicate the quality of drug utilization. *Pharmacoepidemiol Drug Saf*;15:179-184.
- 113 Adherence to long-term therapies. Evidence for action. Geneva: World Health Organization; 2003.
- 114 Osterberg L, Blaschke T. (2005) Adherence to medication. *N Engl J Med*;353:487-497.
- 115 Jin J, Sklar GE, Min Sen Oh V, Chuen Li S. (2008) Factors affecting therapeutic compliance: A review from the patient's perspective. *Ther Clin Risk Manag*;4:269-286.
- 116 Mårdby AC, Åkerlind I, Jörgensen T. (2007) Beliefs about medicines and self-reported adherence among pharmacy clients. *Patient Educ Couns*;69:158-164.
- 117 Mangiapane S, Schulz M, Muhlig S, Ihle P, Schubert I, Waldmann HC. (2005) Community pharmacy-based pharmaceutical care for asthma patients. *Ann Pharmacother*;39:1817-1822.
- 118 Holland R, Lenaghan E, Harvey I, Smith R, Shepstone L, Lipp A, Christou M, Evans D, Hand C. (2005) Does home based medication review keep older people out of hospital? The HOMER randomised controlled trial. *BMJ*;330:293.
- 119 Zermansky AG, Petty DR, Raynor DK, Freemantle N, Vail A, Lowe CJ. (2001) Randomised controlled trial of clinical medication review by a pharmacist of elderly patients receiving repeat prescriptions in general practice. *BMJ*;323:1340-1343.
- 120 Vrijens B, Belmans A, Matthys K, de Klerk E, Lesaffre E. (2006) Effect of intervention through a pharmaceutical care program on patient adherence with prescribed once-daily atorvastatin. *Pharmacoepidemiol Drug Saf*;15:115-121.
- 121 Tsuyuki RT, Johnson JA, Teo KK, Simpson SH, Ackman ML, Biggs RS, Cave A, Chang WC, Dzavik V, Farris KB, Galvin D, Semchuk W, Taylor JG. (2002) A randomized trial of the effect of community pharmacist intervention on cholesterol risk management: the Study of Cardiovascular Risk Intervention by Pharmacists (SCRIP). *Arch Intern Med*;162:1149-1155.
- 122 Herborg H, Soendergaard B, Froekjaer B, Fonnesbaek L, Jorgensen T, Hepler CD, Grainger-Rousseau TJ, Ersboell BK. (2001) Improving drug therapy for patients with asthma--part 1: Patient outcomes. *J Am Pharm Assoc*;41:539-550.

- 123 Krass I, Armour CL, Mitchell B, Brilliant M, Denaar R, Hughes J,
Lau P, Peterson G, Stewart K, Taylor S, Wilkinson J. (2007) The
Pharmacy Diabetes Care Program: assessment of a community phar-
macy diabetes service model in Australia. *Diabet Med*;24:677-683.
- 124 Benrimoj SI, Peacocke G, Whitehead P, Kopeckny E, Ward PR, Emer-
son L. (2003) Cognitive pharmaceutical services in emerging health
care systems — new patient medication management and concordance
services in community pharmacy. *J Soc Adm Pharm*;20:2-11.
- 125 Bernstein C, Björkman I, Caramona M, Crealey G, Frokjaer B,
Grundberger E, Gustafsson T, Henman M, Herborg H, Hughes C,
McElnay J, Magner M, van Mil F, Schaeffer M, Silva S, Sondergaard
B, Sturgess I, Tromp D, Vivero L, Winterstein A. (2001) Improving
the well-being of elderly patients via community pharmacy-based pro-
vision of pharmaceutical care: a multicentre study in seven European
countries. *Drugs Aging*;18:63-77.
- 126 Sturgess IK, McElnay JC, Hughes CM, Crealey G. (2003) Community
pharmacy based provision of pharmaceutical care to older patients.
Pharm World Sci;25:218-226.
- 127 Volume CI, Farris KB, Kassam R, Cox CE, Cave A. (2001) Pharma-
ceutical care research and education project: patient outcomes. *J Am
Pharm Assoc*;41:411-420.
- 128 van Mil F, De Boer W, Tromp D. (2001) European barriers to the
implementation of pharmaceutical care. *Int J Pharm Pract*;9:163-168.
- 129 Grol R, Grimshaw J. (2003) From best evidence to best practice: ef-
fective implementation of change in patients' care. *Lancet*;362:1225-
1230.
- 130 Rossing C, Hansen EH, Krass I. (2002) Barriers and facilitators in
pharmaceutical care: perceptions and experiences among Danish
community pharmacists. *J Soc Adm Pharm*;19:55-64.
- 131 Norgaard LS, Morgall JM. (2000) The social construction of a drug
interaction screening program — expectations and changes in Danish
pharmacy practice. *J Soc Adm Pharm*;17:110-117.
- 132 Roberts AS, Hopp T, Sorensen EW, Benrimoj SI, Chen TF, Herborg
H, Williams K, Aslani P. (2003) Understanding practice change in
community pharmacy: a qualitative research instrument based on or-
ganisational theory. *Pharm World Sci*;25:227-234.
- 133 Roberts AS, Benrimoj SI, Chen TF, Williams KA, Aslani P. (2008)
Practice change in community pharmacy: quantification of facilitators.
Ann Pharmacother;42:861-868.
- 134 Tully MP, Seston EM. (2000) Impact of pharmacists providing a pre-
scription review and monitoring service in ambulatory care or com-
munity practice. *Ann Pharmacother*;34:1320-1331.
- 135 Kheir NM, van Mil JW, Shaw JP, Sheridan JL. (2004) Health-related
quality of life measurement in pharmaceutical care. Targeting an out-
come that matters. *Pharm World Sci*;26:125-128.

- 136 Beney J, Bero LA, Bond C. (2000) Expanding the roles of outpatient pharmacists: effects on health services utilisation, costs, and patient outcomes. *Cochrane Database Syst Rev*CD000336.
- 137 Fish A, Watson MC, Bond CM. (2002) Practice based pharmaceutical services: a systematic review. *Int J Pharm Pract*;10:225-233.
- 138 Kennie NR, Schuster BG, Einarson TR. (1998) Critical analysis of the pharmaceutical care research literature. *Ann Pharmacother*;32:17-26.
- 139 Schumock GT, Butler MG, Meek PD, Vermeulen LC, Arondekar BV, Bauman JL. (2003) Evidence of the economic benefit of clinical pharmacy services: 1996-2000. *Pharmacotherapy*;23:113-132.
- 140 Roughead L, Semple S, Vitry A. The value of pharmacist professional services in the community setting. A systematic review of the literature 1990-2002. Sydney: Pharmacy Guild of Australia; 2003.
- 141 Singhal PK, Raisch DW, Gupchup GV. (1999) The impact of pharmaceutical services in community and ambulatory care settings: evidence and recommendations for future research. *Ann Pharmacother*;33:1336-1355.
- 142 Anderson C, Blenkinsopp A, Armstrong M. The contribution of community pharmacy to improving the public's health, Report 1: Evidence from the peer-reviewed literature 1990-2001. London, Great Britain; 2003.
- 143 Anderson C, Blenkinsopp A, Armstrong M. (2004) Feedback from community pharmacy users on the contribution of community pharmacy to improving the public's health: a systematic review of the peer reviewed and non-peer reviewed literature 1990-2002. *Health Expect*;7:191-202.
- 144 Van Wijk BL, Klungel OH, Heerdink ER, de Boer A. (2005) Effectiveness of interventions by community pharmacists to improve patient adherence to chronic medication: a systematic review. *Ann Pharmacother*;39:319-328.
- 145 McLean WM, MacKeigan LD. (2005) When does pharmaceutical care impact health outcomes? A comparison of community pharmacy-based studies of pharmaceutical care for patients with asthma. *Ann Pharmacother*;39:625-631.
- 146 Pickard AS, Hung SY. (2006) An update on evidence of clinical pharmacy services' impact on health-related quality of life. *Ann Pharmacother*;40:1623-1634.
- 147 Indritz ME, Artz MB. (1999) Value added to health by pharmacists. *Soc Sci Med*;48:647-660.
- 148 Tully MP, Cantrill JA. (1999) Subjective outcome measurement--a primer. *Pharm World Sci*;21:101-109.
- 149 Quinn Patton M. (2008) *Utilization-Focused Evaluation*. 4th ed. Thousand Oaks, California: SAGE Publications, Inc.
- 150 Holland R, Brooksby I, Lenaghan E, Ashton K, Hay L, Smith R, Shepstone L, Lipp A, Daly C, Howe A, Hall R, Harvey I. (2007) Effectiveness of visits from community pharmacists for patients with heart failure: HeartMed randomised controlled trial. *BMJ*;334:1098.

- 151 Doucette WR, McDonough RP, Klepser D, McCarthy R. (2005) Comprehensive medication therapy management: identifying and resolving drug-related issues in a community pharmacy. *Clin Ther*;27:1104-1111.
- 152 Becker C, Bjornson DC, Kuhle JW. (2004) Pharmacist care plans and documentation of follow-up before the Iowa Pharmaceutical Case Management program. *J Am Pharm Assoc* (2003);44:350-357.
- 153 Narhi U, Airaksinen M, Tanskanen P, Enlund H. (2001) The effects of a pharmacy-based intervention on the knowledge and attitudes of asthma patients. *Patient Educ Couns*;43:171-177.
- 154 Renberg T, Kettis-Lindblad A, Tully MP. (2006) Exploring subjective outcomes perceived by patients receiving a pharmaceutical care service. *Res Social Adm Pharm*;2:212-231.
- 155 Swedish Law. Lag om handel med läkemedel [Statute on drug retailing] SFS 2009:366.
- 156 Westerlund LT, Bjork HT. (2006) Pharmaceutical care in community pharmacies: practice and research in Sweden. *Ann Pharmacother*;40:1162-1169.
- 157 Rosenqvist U, Höglund A, Nilsson JLG. (1995) Diabetes mass education for patients, their educators and the general public by pharmacies in Sweden. *Drug Inform J*;29:609-616.
- 158 Lisper B, Nilsson JL. (1996) The asthma year in Swedish pharmacies: a nationwide information and pharmaceutical care program for patients with asthma. *Ann Pharmacother*;30:455-460.
- 159 Hammarstrom B, Wessling A, Nilsson JL. (1995) Pharmaceutical care for patients with skin diseases: a campaign year at Swedish pharmacies. *J Clin Pharm Ther*;20:327-334.
- 160 Gustafsson S, Holtin R, Löfberg L, Pettersson S, Rydberg Å, Sahlstedt L, Nilsson JLG. (1996) Pharmaceutical care for patients with senile dementia. Results of a campaign year in Swedish pharmacies. *Consult Pharm*;11:1026-1036.
- 161 Fallsberg M, Edberg U, Ullenius B. (1998) Allergy year '95 - a unique and successful Swedish campaign in national collaboration. *Allergy Newslett*17-20.
- 162 Sarkadi A, Rosenqvist U. (1999) Study circles at the pharmacy--a new model for diabetes education in groups. *Patient Educ Couns*;37:89-96.
- 163 Kettis Lindblad Å, Ring L. Kundutvärdering Projekt Läkemedelsprofiler, delrapport 2 [Internal Report: Customer evaluations] . Apoteket AB; 2003.
- 164 Westerlund T, Almarsdottir AB, Melander A. (1999) Factors influencing the detection rate of drug-related problems in community pharmacy. *Pharm World Sci*;21:245-250.
- 165 Hassell K, Hibbert D. (1996) The use of focus groups in pharmacy practice research: processes and practicalities. *J Soc Adm Pharm*;13:169-177.
- 166 Kitzinger J. (1995) Qualitative research. Introducing focus groups. *BMJ*;311:299-302.

- 167 Mays N, Pope C. (1995) Qualitative research: Observational methods in health care settings. *BMJ*;311:182-184.
- 168 Anonymous. ATC index with DDDs. Oslo: WHO Collaborating Centre for Drug Statistics Methodology; 2004.
- 169 Holm J. Bokad rådgivning med uppföljning — metodutveckling inför en observationsstudie. Undergraduate thesis: Faculty of Pharmacy, Uppsala University, Sweden; 2008.
- 170 Manap N. Utvärdering av en farmaceutisk rådgivningstjänst på apotek — Pilottest av patientenkät [Evaluation of a pharmaceutical care service in community pharmacy — Pilot test of a patient survey]. Undergraduate thesis: Faculty of Pharmacy, Uppsala University, Sweden; 2008.
- 171 Apoteket AB. Utblicken, kundenkät [Swedish pharmacy client survey]; 2007.
- 172 Morisky DE, Ang A, Krousel-Wood M, Ward HJ. (2008) Predictive validity of a medication adherence measure in an outpatient setting. *J Clin Hypertens (Greenwich)*;10:348-354.
- 173 Sodergard B, Halvarsson M, Lindback S, Sonnerborg A, Tully MP, Lindblad AK. (2006) Differences in adherence and motivation to HIV therapy--two independent assessments in 1998 and 2002. *Pharm World Sci*;28:248-256.
- 174 Ware JE, Jr., Sherbourne CD. (1992) The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. *Med Care*;30:473-483.
- 175 Robson C. (2002) Real world research. Oxford: Blackwell Publishing.
- 176 Herrier R, Boyce R. (1994) Why aren't more pharmacists counseling? *Am Pharm*;NS34:22-23.
- 177 Cavaco AM, Dias JP, Bates IP. (2005) Consumers' perceptions of community pharmacy in Portugal: a qualitative exploratory study. *Pharm World Sci*;27:54-60.
- 178 Roberts AS, Benrimoj SI, Chen TF, Williams KA, Hopp TR, Aslani P. (2005) Understanding practice change in community pharmacy: a qualitative study in Australia. *Res Social Adm Pharm*;1:546-564.
- 179 Greatbatch D, Heath C, Campion P, Luff P. (1995) How do desk-top computers affect the doctor-patient interaction? *Fam Pract*;12:32-36.
- 180 Worley-Louis MM, Schommer JC, Finnegan JR. (2003) Construct identification and measure development for investigating pharmacist-patient relationships. *Patient Educ Couns*;51:229-238.
- 181 Swenson SL, Buell S, Zettler P, White M, Ruston DC, Lo B. (2004) Patient-centered communication: do patients really prefer it? *J Gen Intern Med*;19:1069-1079.
- 182 Say R, Murtagh M, Thomson R. (2006) Patients' preference for involvement in medical decision making: a narrative review. *Patient Educ Couns*;60:102-114.
- 183 Lonie JM. (2006) From counting and pouring to caring: the empathic developmental process of community pharmacists. *Res Social Adm Pharm*;2:439-457.

- 184 Jarvis P. (1992) Reflective practice and nursing. *Nurse Educ To-*
day;12:174-181.
- 185 Kansanaho H, Cordina M, Puumalainen I, Airaksinen M. (2005) Prac-
ticing pharmacists' patient counseling skills in the context of reflectiv-
ity. *Pharm Educ*;5:19-26.
- 186 Worley MM, Schommer JC, Brown LM, Hadsall RS, Ranelli PL,
Stratton TP, Uden DL. (2007) Pharmacists' and patients' roles in the
pharmacist-patient relationship: are pharmacists and patients reading
from the same relationship script? *Res Social Adm Pharm*;3:47-69.
- 187 Ojasalo J. (2001) Managing customers expectations in professional
services. *Managing Service Quality*;11:200-212.
- 188 Hall P. (2005) Interprofessional teamwork: professional cultures as
barriers. *J Interprof Care*;19 Suppl 1:188-196.
- 189 Brock KA, Doucette WR. (2004) Collaborative working relationships
between pharmacists and physicians: an exploratory study. *J Am
Pharm Assoc* (2003);44:358-365.
- 190 Street RL, Jr., Makoul G, Arora NK, Epstein RM. (2009) How does
communication heal? Pathways linking clinician-patient communica-
tion to health outcomes. *Patient Educ Couns*;74:295-301.
- 191 Gatti ME, Jacobson KL, Gazmararian JA, Schmotzer B, Kripalani S.
(2009) Relationships between beliefs about medications and adher-
ence. *Am J Health Syst Pharm*;66:657-664.
- 192 Mann DM, Ponienman D, Leventhal H, Halm EA. (2009) Predictors of
adherence to diabetes medications: the role of disease and medication
beliefs. *J Behav Med*;32:278-284.
- 193 Wright EC. (1993) Non-compliance--or how many aunts has Matilda?
Lancet;342:909-913.
- 194 Goode JV, Mott DA, Chater R. (2008) Collaborations to facilitate
success of community pharmacy practice-based research networks. *J
Am Pharm Assoc* (2003);48:153-162.
- 195 Burkiewicz JS, Zgarrick DP. (2005) Evidence-based practice by
pharmacists: utilization and barriers. *Ann Pharmacother*;39:1214-
1219.

Acta Universitatis Upsaliensis

*Digital Comprehensive Summaries of Uppsala Dissertations
from the Faculty of Pharmacy 107*

Editor: The Dean of the Faculty of Pharmacy

A doctoral dissertation from the Faculty of Pharmacy, Uppsala University, is usually a summary of a number of papers. A few copies of the complete dissertation are kept at major Swedish research libraries, while the summary alone is distributed internationally through the series Digital Comprehensive Summaries of Uppsala Dissertations from the Faculty of Pharmacy. (Prior to January, 2005, the series was published under the title "Comprehensive Summaries of Uppsala Dissertations from the Faculty of Pharmacy".)

