

Assessment of pharmacy systems in selected countries

- Identification of literature and experiences

December 2011



Pharmakon

Milnersvej 42 – 3400 Hillerød
Tel 4820 6000 – Fax 4820 6060
www.pharmakon.dk

Assessment of pharmacy systems in selected countries

- Identification of literature and experiences

December 2011

Authors: Linda Aagaard Thomsen, Bente Frøkjær, Charlotte Rossing and Hanne Herborg

Assessment of pharmacy systems in selected countries
- Identification of literature and experiences
December 2011

©Pharmakon, december 2011

ISBN 978-87-91598-58-6

Pharmakon

Milnersvej 42
DK-3400 Hillerød
Denmark

Tel +45 4820 6000
Fax +45 4820 6062
www.pharmakon.dk

Summary

Introduction

The aim of the study was to identify assessments of community pharmacy systems as well as personal experiences with the performance of selected community pharmacy systems. The literature search was to include scientific as well as “grey” literature.

The aim was to identify assessments in a broad sense, thereby providing a preliminary mapping of the available literature which can form a basis for future analytical studies. A number of European countries and English-speaking countries outside Europe were selected.

The study was conducted within the framework of the Danish Community Pharmacy Evidence Database in collaboration by Pharmakon and the Association of Danish Pharmacies.

The study period was from June to December 2011.

Method

A cross-sectional analysis was conducted based on the following three sub-studies completed for this study:

- a questionnaire study identifying literature on and experiences with the assessments of pharmacy systems in different countries
- case studies describing selected pharmacy systems
- preparation of a reference list with identified references and a table with a summary of results from selected references.

The results were analysed on the basis of the four pharmacist roles defined in the standards for Good Pharmacy Practice (GPP)¹:

- Role no. 1: Prepare, obtain, store, secure, distribute, administer, dispense and dispose of medical products
- Role no. 2: Provide effective medication therapy management
- Role no. 3: Maintain and improve professional performance
- Role no. 4: Contribute to improving effectiveness of the health-care system and public health.

The conclusions from the sub-studies are summarised in the following paragraphs; thereafter, conclusions are drawn across the sub-studies.

Summary of conclusions from the questionnaire study

The aim of the questionnaire study was to:

1. identify countries and respondents of relevance for the assessment of pharmacy systems
2. identify literature (scientific and “grey”) concerning the assessment of pharmacy systems
3. identify personal experiences with the performance of pharmacy systems
4. identify countries relevant for case studies.

Interviews with 10 key persons provided references on the assessments of pharmacy systems and respondents for the questionnaire study.

The survey response rate was 65 % (15 of 23 countries). Responses were received from European as well as non-European countries.

The questionnaire study identified more than 250 references to both scientific and “grey” literature.

The questionnaire study revealed that the types and numbers of cognitive services provided by community pharmacies and the funding of these services varied between countries. The most frequently provided cognitive services were: medication review, opportunistic screenings on health targets and smoking cessation programmes.

The most frequently delivered activities related to the distribution of medicines were: generic substitution, counselling on medicines use, and dose dispensing.

Respondents stated a number of incentives and/or regulatory mechanisms contributing to controlling medicine expenditures for public or private health insurance systems. The most frequently mentioned mechanisms were: generic substitution, patient co-payment, use of preference lists, reference pricing, and fixed-price contracts.

The survey revealed that counselling standards for community pharmacies were defined in 10 of 15 countries, and that these standards were mandatory in 7 countries. The implementation rate and the counselling quality were relatively unknown. To ensure implementation and quality, some countries used pseudo-customers, inspectors/auditors and customer satisfaction surveys.

Summary of conclusions from the case studies

The aim was to gain a deeper understanding of specific countries' pharmacy systems through in-depth interviews. The purpose of the case studies was not to identify "good" or "bad" pharmacy systems, but to describe pharmacy systems that had gone through an interesting development over the last 10 years.

Cases were prepared on the basis of interviews with pharmacists having great knowledge of the national pharmacy systems of Germany, Hungary, Iceland, Northern Ireland and the Netherlands.

As it turned out, the case studies provided relevant information about selected pharmacy systems that could not have been extracted from the identified references.

The five cases revealed that a deregulation of pharmacy systems resulted in very different pharmacy systems in terms of health professionalism.

The following strengths of pharmacy systems were mentioned: a national pharmacy system; high availability; strong professional competencies; third party-paid cognitive services; equal cooperation between pharmacy staff and general practitioners; focus on health professionalism and pharmaceutical care; recognition of pharmacists, and safe and effective distribution of medicine.

The following weaknesses of pharmacy systems were mentioned: competition between pharmacies and between pharmacies and general practitioners; sales orientation; decreasing pharmacy availability in rural areas; time needed to give advice on reimbursement is taken from counselling on medicines use; pharmacy chains often lack interest in health professionalism; pharmacy income based solely on the sale of medicines; insufficient economic sustainability; no recognition of pharmacists; lack of interdisciplinary co-operation, lack of professional discussions in small pharmacies.

The interviewees mentioned that the main drivers behind the development of pharmacy systems were economic considerations (for the pharmacy owners/health insurance/public health authorities), the professional organisations/the profession and politics.

The interviewees anticipated/wished for a pharmacy system with greater health professionalism, several third party-paid cognitive services, greater interdisciplinary collaboration, an official role in public health programmes, and a regulated pharmacy system integrated into the health care system.

Summary of conclusions from preparing a list with identified references and a table with a summary of results from selected references.

List of references

The aim of the reference list was to compile the identified literature on assessments of community pharmacy systems.

The reference list contains all references from interviews with key persons and from the questionnaire study.

The reference list contains 251 references to scientific and “grey” literature on assessments of community pharmacy systems collected from 18 countries (out of 23 possible). There was some geographical bias in the collection of references since participants typically provided references to the pharmacy system of their own country. In addition, some participants chose not to contribute to the study, or contributed with very few references or did not contribute with “grey” literature.

Table with summary of results from selected references

The aim of the table was to describe the aim, methods and results of selected studies assessing community pharmacy systems’ performance.

The reference list was screened, and 24 references selected for a cross-sectional analysis of pharmacy systems within the four pharmacist roles defined by the standards for Good Pharmacy Practice (GPP)¹.

The analysis concluded that in several countries, deregulation led to a larger number of pharmacies and to longer opening hours in metropolitan areas, but not in rural areas.

In several countries, pharmacies are first choice when it comes to purchasing of OTC medicines.

The collected references showed that in many countries, pharmaceutical care is only offered to a limited extent. In England third party-paid cognitive services are implemented in most pharmacies.

Some studies have shown that collaboration between community pharmacy and general practitioner proved to be a good basis for implementing cognitive services and may provide a significant reduction in drug expenditures. It was also shown that pharmacies identify and solve many drug-related problems among patients requesting OTC medicine.

A European study revealed a higher degree of professional involvement in regulated countries, and a greater focus on business in the deregulated countries.

Conclusions

Main conclusion

Results are based on data from 15 interviews and 20 questionnaires from 18 countries, as well as data from 24 key literature references. The results show that pharmacy systems have general strengths of societal value, but also that there are pitfalls worth avoiding.

Several respondents highlighted the following strengths which are also mentioned in the literature: a high level of professional competence enabling pharmacies to provide cognitive services of proven societal value; the high availability of pharmacies; and safe and effective distribution of medicine.

In both interviews and the literature the perception is that pharmacies, in spite of their strengths, are a highly available and underutilised health care provider in the health care sector.

Pitfalls emphasized by interviewees, respondents and the literature were, that without controlling the role of pharmacy systems, pharmacy systems will focus on sale rather than health professionalism, and without restrictions on establishment, there is a risk of inequality in the population's access to medicines and cognitive services through pharmacies.

- The development of a pharmacy system is always based on an existing system; therefore, pharmacy systems develop differently, e.g. as the result of a deregulation process.
- The value of pharmacist ownership or personal ownership is sparsely evaluated in the literature. The literature, the case studies and the qualitative comments show a tendency for the chain pharmacies and franchise pharmacies to prioritize the distribution of medicine over cognitive services.
- Easy access to a pharmacy and strong professional competencies are emphasised as general strengths of pharmacy systems. Strengths which are perceived to be of public health value.
- In several countries, deregulating restrictions on the establishment of pharmacies have led to a larger number of pharmacies in metropolitan areas but fewer in rural areas, causing inequality in the population's access to medicine and cognitive services.
- According to respondents, the pharmacy systems of the participating countries offer a wide range of cognitive services. The most frequently mentioned are advanced services such as medication review, smoking cessation programmes and opportunistic screenings on health targets. These are evidence-based services that improve the quality of medication therapy and public health.
- Several interviewees and respondents found it a major challenge for a pharmacy system that authorities and insurance companies see the role of pharmacies as being distributors of cheap medicines rather than providers of pharmaceutical care. This becomes a challenge for pharmacy systems when it comes to adding value to health care.
- According to both literature and interviewees, it is a challenge, that members of the pharmacy profession do not appreciate the importance of cognitive services for future system development.
- In several of the participating countries, maintaining and developing professional competencies are generally highly valued in pharmacy systems. However, there is a tendency that deregulation causes a shift in focus from care towards sales, resulting in fewer health professional competencies in pharmacies.

- Requests for cost savings on medicines are an important driver for the development of pharmacy systems, and pharmacies do contribute to stabilising or reducing health care costs through generic substitution, the administration of reimbursement, the contribution to medicines-use statistics and the provision of evidence-based cognitive services.
- There is a tendency that pharmacies' economic sustainability weakens as a result of deregulation because of the establishment of many new pharmacies.

Appendix 1 – Reference list with assessments of community pharmacy systems

The reference list contains all the references to scientific and “grey” literature identified through the questionnaire study.

Not all references have been published. The author or publisher of these references needs to be contacted to gain access to these references.

The references have been divided according to the country or country area they concern:

- The Nordic countries: Denmark, Norway, Sweden, Island, Finland
- England, Northern Ireland, Ireland
- Northern Europe: Germany, Holland, Belgium
- Central Europe: France, Switzerland
- Southern Europe: Spain, Portugal
- Eastern Europe: Lithuania, Estonia, Hungary, Croatia
- United States
- Canada
- Asia and Oceania: Australia, New Zealand, Japan, Taiwan
- Other areas of the world: South America, Africa, Middle East and studies of several non-European countries.

Appendix 1 - References from Nordic countries

1. Apotekslovgivningen set i et EU-perspektiv. København: Danmarks Apotekerforening; 2008.
2. Bilag 1: Oversigtstabel med landeregulering. Danmarks Apotekerforening; 1-7-2008.
3. Evaluering av apotekloven og indeksprissystemet. Oslo: ECON Analyse AS for Helsedepartementet; 2004. 10.
4. Hva slags apotek trenger vi? [internet]. Sidst opdateret Sep 2002; citeret 22 May 2008]. Tilgjengelig på: Dagens Medisin.
5. Almarsdottir AB, Morgall JM, Björnsdottir I. A question of emphasis: efficiency or equality in the provision of pharmaceuticals. *Int J Health Plann Mgmt* 2000;15(2):149-161.
6. Almarsdottir AB, Morgall JM, Grimsson A. Cost containment of pharmaceutical use in Iceland. *J Health Serv Res Policy* 2000;5(2):109-113.
7. Almarsdottir AB, Grimsson A. Over-the counter codeine use in Iceland: the impact of increased access. *Scand J Public Health* 2000;28(4):270-274.
8. Almarsdottir AB, Björnsdottir I, Traulsen JM. Pharmacists in a liberalised system – results from a profession-wide survey in Iceland. *IJPP* 2002;10(1):47-53.
9. Almarsdottir AB, Morgall JM, Grimsson A. Professional Responsibility for the Patient's Welfare - is it possible to legislate Pharmaceutical Care? *J Soc Adm Pharm* 2001;18(2):45-50.
10. Almarsdottir AB, Morgall JM. Technicians or patient advocates? – still a valid question (results of focus group discussion with pharmacists). *Pharm World Sci* 1999;21(3):127-131.
11. Ax F, Brånstad JO, Westerlund T. Pharmacy counselling models: a means to improve drug use. *J Clin Pharm Ther* 2010;35(4):439-451.
12. Berglund CM, Hall H. Omregleringen av apoteksmarknaden - Redovisning av ett regeringsuppdrag. Karlstad, Sverige: Konsumentverket; 2011. 2011:9.
13. Bjermeland M. Grådighet fremfor etikk [internet]. Sidst opdateret May 2007; citeret 22 May 2008]. Tilgjengelig på: Norsk Farmaceutisk Tidsskrift.
14. Bolvig T. Forekomst af lægemiddelrelaterede problemer ved selvmedicinering. 24-10-2011. Powerpoint præsentation.
15. Crone M. Sovepille til dansk apoteks-liberalisering [internet]. Sidst opdateret Feb 2007; citeret 22 May 2008]. Tilgjengelig på: Business.dk.
16. Ebne HV. Fri konkurranse = ingen konkurranse. 2003.
17. Falkenhall B, Widerstedt B. Utvärdering av kostnadsutvecklingen för läkemedel på den omreglerade apoteksmarknaden. Östersund, Sverige: Tillväxtanalys; 2010. 13.
18. Gedde-Dahl S. Norge i tysk apotekstrid [internet]. Sidst opdateret Dec 2007; citeret 22 May 2008]. Tilgjengelig på: Næringsliv.

19. Hviding K, Flottorp S. Helsetjenester i apotek. En summarisk gjennomgang av rapporterte effekter. Oslo: Nasjonalt kunnskapssenter for helsetjenesten; 2009.
20. Håkonsen H. Legemiddeløkonomiske tiltak for å begrense veksten av samfunnets legemiddelkostnader i perioden 1998-2004. Har norske myndigheters tiltag virket etter hensikten? Universitetet i Oslo, Farmasøytisk institutt, 2005.
21. Håkonsen H, Horn AM, Toverud EL. Price control as a strategy for pharmaceutical cost containment - what has been achieved in Norway in the period 1994-2004? *HealthPol* 2009;90:277-285.
22. Jörgensen TM, Andersson KA, Mårdby AC. Beliefs about medicines among Swedish pharmacy employees. *Pharm World Sci* 2006;28(4):233-238.
23. Kostianen E. Pharmacies fulfill Finns expectations well [internet]. Sidst opdateret Jul 2007; citeret 1 Nov 2011]. Tilgjengelig på: The Association of Finnish Pharmacies.
24. Langgaard-Lauridsen P. Notat. Apotekslovgivningen set i et EU-perspektiv. Danmarks Apotekerforening; 11-7-2008.
25. Langgaard-Lauridsen P. Notat. Dereguleringstendenser i Europa. Danmark Apotekerforening; 16-7-0011.
26. Malmsten P, Fransson E. Tillgänglighet till kommersiell och offentlig service. Östersund, Sverige: Tillväxtanalys; 2010. 08.
27. Marklund B, Westerlund T, Brånstad JO et al. Referrals of dyspeptic self-care patients from pharmacies to physicians, supported by clinical guidelines. *Pharm World Sci* 2003;25(4):168-172.
28. Montgomery A. Counselling in Swedish Community Pharmacies: Understanding the Process of a Pharmaceutical Care Service. Uppsala Universitet, Sverige, 2009.
29. Morgall JM, Almarsdottir AB. No struggle, no strength: how pharmacists lost their monopoly. *Soc Sci Med* 1999;48(9):1247-1258.
30. Morgall JM, Almarsdottir AB. The New Consumer – implications for pharmacy. *IJPP* 999;7(4):198-201.
31. Morken T, Fossum S, Horn AM et al. Self-efficacy in counseling in Norwegian chain pharmacies: a cross-sectional study. *Res Social Adm Pharm* 2008;4(4):375-383.
32. Nordén-Hagg A. Failure-Free Pharmacies?: An Exploration of Dispensing Errors and Safety Culture in Swedish Community Pharmacies. Uppsala Universitet, Sverige, 2010.
33. Otterström E, Nilsson I. "Alla vill sälja piller". Göteborgs Universitet, Samhällsvetenskapliga Fakulteten, 2010.
34. Person PK. En omreglerad apoteksmarknad - delrapport 1. Stockholm: Statskontoret; 27-4-2011. 2011:10.
35. Regeringskansliet. Regeringen utreder prissättning och tillgänglighet på apoteksmarknaden. 17-6-2011.
36. Ringbom T, Rydberg M, Svalfors E. Omregleringen av apoteksmarknaden – Redovisning av regeringsuppdrag. Stockholm: Konkurrensverket; 2010.

37. Thomsen E, Safiye E, Rasmussen PF, Thomsen TL, Habl C, Leopold C. Pharmaceutical Pricing and Reimbursement Information: Denmark. European Commission, Health and Consumer Protection Directorate-General and Austrian
38. Thomsen MH, Kristoffersen LB, Kjær-Hansen B, Hellebek T. Analyse af receptkorrektioner på apotek. Danmarks Apotekerforening og Lægeforeningen; 2008.
39. Traulsen JM, Almarsdottir AB, Björnsdottir I. The lay user perspective on the quality of pharmaceuticals, drug therapy and pharmacy services. *Pharm World Sci* 2002;24(5):196-200.
40. Westerling AM. The Unknown Pharmacist-Thoughts on the Profession's PR. *Sven Farm Tidskr* 1963;67:989-998.
41. Westerling AM, Hynninen JT, Haikala VE et al. Opinion comparison concerning future information technology in Finnish community pharmacies. *Pharm World Sci* 2010;32(6):787-794.
42. Westerlund LOT, Handl WH, Marklund BR et al. Pharmacy practitioners' views on computerized documentation of drug-related problems. *Ann Pharmacother* 2003;37(3):354-360.
43. Westerlund LT, Marklund BR, Handl WH et al. Nonprescription drug-related problems and pharmacy interventions. *Ann Pharmacother* 2001;35(11):1343-1349.
44. Westerlund LOT, Björk HT. Pharmaceutical care in community pharmacies: practice and research in Sweden. *Ann Pharmacother* 2006;40(6):1162-1169.
45. Westerlund T, Marklund B. Assessment of the clinical and economic outcomes of pharmacy interventions in drug-related problems. *Journal of Clinical Pharmacy and Therapeutics* 2008;34(2):319-327.
46. Westerlund T, Almarsdottir AB, Melander A. Drug-related problems and pharmacy interventions in community practice. *IJPP* 1999;7:40-50.
47. Westerlund T, Allebeck P, Marklund B et al. Evaluation of a model for counseling patients with dyspepsia in Swedish community pharmacies. *Am J Health Syst Pharm* 2003;60(13):1336-1341.
48. Westerlund T, Almarsdottir AB, Melander A. Factors influencing the detection rate of drug-related problems in community pharmacy. *Pharm World Sci* 1999;21(6):245-250.
49. Westerlund T, Brånstad JO. GPs' views on patient drug use and the pharmacist's role in DRP management. *Pharm World Sci* 2010;32:562-565.
50. Westerlund T, Andersson IL, Marklund B. The quality of self-care counselling by pharmacy practitioners, supported by IT-based clinical guidelines. *Pharm World Sci* 2007;29(2):67-72.

Appendix 1 – References from England, Northern Ireland and Ireland

1. Baseline Study of Community Pharmacy Practice in Ireland. Dublin, Ireland: The Pharmaceutical Society of Ireland - The Pharmacy Regulator; 27-1-2011. Final Report.
2. Ashcroft DM, Morecroft C, Parker D et al. Likelihood of reporting adverse events in community pharmacy: an experimental study. *Qual Saf Health Care* 2006;15(1):48-52.
3. Blenkinsopp A, Bond C, Gianpiero C, Inch J, Gray N. National evaluation of the new community pharmacy contract. London, UK: Pharmacy Practice Research Trust; 2009. ISBN 9780955696985.
4. Bradley F, Wagner AC, Elvey R et al. Determinants of the uptake of medicines use reviews (MURs) by community pharmacies in England: a multi-method study. *HealthPol* 2008;88:258-268.
5. Brookes ST, Whitley E, Peters TJ et al. Subgroup analyses in randomised controlled trials: quantifying the risks of false-positives and false-negatives. *Health Technol Assess* 2001;5(33):1-56.
6. Bush J, Langley CA, Wilson KA. The corporatization of community pharmacy: implications for service provision, the public health function, and pharmacy's claims to professional status in the United Kingdom. *Res Social Adm Pharm* 2009;5(4):305-318.
7. Edmunds J, Calnan MW. The reprofessionalisation of community pharmacy? An exploration of attitudes to extended roles for community pharmacists amongst pharmacists and General Practitioners in the United Kingdom. *Soc Sci Med* 2001;53(7):943-955.
8. Hind CA, Bond CM, Lee AJ et al. Needs assessment study for community pharmacy travel medicine services. *J Travel Med* 2008;15(5):328-334.
9. Latter S, Maben J, Myall M et al. Perceptions and practice of concordance in nurses' prescribing consultations: findings from a national questionnaire survey and case studies of practice in England. *Int J Nurs Stud* 2007;44(1):9-18.
10. Matheson C, Bond CM, Pitcairn J. Community pharmacy services for drug misusers in Scotland: what difference does 5 years make? *Addiction* 2002;97(11):1405-1411.
11. Parkinson T, Chilvers D, Lloyd M, Ellis R. Community Pharmacy Use, Quantitative and Qualitative Research. London, UK: Department of Health; 1-1-2008. Market Research Report.
12. Paudyal V, Hansford D, Scott Cunningham IT et al. Cross-sectional survey of community pharmacists' views of the electronic Minor Ailment Service in Scotland. *Int J Pharm Pract* 2010;18(4):194-201.
13. Pflieger DE, McHattie LW, Diack HL et al. Views, attitudes and self-assessed training needs of Scottish community pharmacists to public health practice and competence. *Pharm World Sci* 2008;30(6):801-809.
14. Sheridan J, Strang J, Taylor C et al. HIV prevention and drug treatment services for drug misusers: a national study of community pharmacists' attitudes and their involvement in service specific training. *Addiction* 1997;92(12):1737-1748.

15. Sinclair HK, Bond CM, Stead LF. Community pharmacy personnel interventions for smoking cessation. *Cochrane Database Syst Rev* 2004;1.
16. Tinelli M, Bond C, Blenkinsopp A et al. Patient Evaluation of a Community Pharmacy Medications Management Service. *Ann Pharmacother* 2007;41(12):1962-1970.
17. Trueman P, Lowson K, Meszaros A, Blighe A, Wirght D, Glanville J, Taylor D, Newbould J, Bury M, Barber N, Jani Y. Evaluation of the Scale, Causes and Costs of Waste Medicines. York Health Economics Consortium / School of Pharmacy, University of London; 1-11-2010. Final Report.
18. Tze-Min Ang K, Saini B, Wong K. Sleep health awareness in pharmacy undergraduates and practising community pharmacists. *J Clin Pharm Ther* 2008;33(6):641-652.
19. Warden J. General practice "out of step," claim managers. *Br Med J (Clin Res Ed)* 1986;293(6560).
20. Watt R, McGlone P, Evans D et al. The prevalence and nature of recent self-reported changes in general dental practice in a sample of English general dental practitioners. *Br Dent J* 2004;197(7):401-405.

Appendix 1 - References from Northern Europe

1. Berger K, Eickhoff C, Schultz M. Counselling quality in community pharmacies: Implementation of the pseudo customer methodology in Germany. *J Clin Pharm Ther* 2005;30(1):45-57.
2. Eickhoff C, Hämmerlein A, Griese N et al. Nature and frequency of drug-related problems in self-medication (over-the-counter drugs) in daily community pharmacy practice in Germany. PDS 2011.
3. Eickhoff C, Schulz M. Pharmaceutical Care in Community Pharmacies: Practice and Research in Germany. *Ann Pharmacother* 2006;40:729-735.
4. Hämmerlein A, Müller U, Schulz M. Pharmacist-led intervention study to improve inhalation technique in asthma and COPD patients. *J Eval Clin Pract* 2009;17:61-70.
5. Hämmerlein A, Griese N, Schulz M. Survey of Drug-Related Problems Identified by Community Pharmacies. *Ann Pharmacother* 2007;41:1825-1832.
6. Hämmerlein A, Müller U, Schulz M. Versorgungsmanagement für Menschen mit Asthma – Einbindung der Apotheker. *Z Evid Fortbild Qual Gesundh wesen* 2011;104:92-98.
7. KNMP. About the KNMP [internet]. Sidst opdateret Feb 2008; citeret 23 May 2008]. Tilgængelig på: www.knmp.nl.
8. Krüger M, Griese N, Schulz M. Medikationsmanagement für Menschen mit Diabetes - Häusliches Medikationsmanagement von Apotheker und Arzt ergänzt sinnvoll die bisherige Versorgung. *Diabetes Stoffw herz* 2011;20:9-16.
9. Leendertse AJ. Hospital admissions related to medication, prevalence, provocation and prevention. Utrecht University, 2010.
10. Mangiapane S, Schulz M, Mühlig S et al. Community Pharmacy-Based Pharmaceutical Care for Asthma Patients. *Ann Pharmacother* 2005;39:1817-1822.
11. Muijers PE, Knottnerus JA, Sijbrandij J et al. Pharmacists in primary care. Determinants of the care-providing function of Dutch community pharmacists in primary care. *Pharm World Sci* 2004;26(5):256-262.
12. Müller U, Hämmerlein A, Casper A et al. Community pharmacy-based intervention to improve self-monitoring of blood glucose in type 2 diabetic patients. *Pharmacy Practice* 2006;4(4):195-203.
13. Nasser M, Sawicki P. Institute for Quality and Efficiency in Health care: Germany. *IQWiG* 2009;57(1294):1-11.
14. Sawicki PT, Bastian H. German health care: a bit of Bismarck plus more science. *BMJ* 2008;337:1142-1145.
15. Schulz M. Connecting Care and Outcomes: Challenges and Perspectives. 19-10-2011.
16. Simoens S, Lobeaux M, Verbeke K et al. Patient experiences of over-the-counter medicine purchases in Flemish community pharmacies. *Pharm World Sci* 2009;31(4):450-457.
17. Storimans MJ, Klungel OH, Talsma H et al. Collaborative services among community pharmacies for patients with diabetes. *Ann Pharmacother* 2005;39(10):1647-1653.

18. van Mil JWF. Pharmacy in the Netherlands. 5-11-2011.
19. von der Schulenberg JM, Hodek JM. Nutzen und Kosten der derzeitigen Regulierung des Apothekenmarktes in Deutschland [internet]. Sidst opdateret Feb 2008; citeret 23 May 2008]. Tilgængelig på: IDEAS, Department of Economics, College of Liberal Arts and Sciences, University of Connecticut.
20. Warlé-Van Herwaarden MF, Kramers C, Sturkenboom MC, Van den Bernt PMLA, De Smet PAGM. Targeting outpatient drug safety: Recommendations of the Dutch HARM-Wrestling task force. De Koninklijke Nederlandse Maatschappij ter bevordering der Pharmacie; 2011.

Appendix 1 - References from Central Europe

1. Locca JF, Ruggli M, Buchmann M et al. Development of pharmaceutical care services in nursing homes: practice and research in a Swiss canton. *Pharm World Sci* 2009;31(2):165-173.
2. Niquille A, Ruggli M, Buchmann M et al. The nine-year sustained cost-containment impact of swiss pilot physicians-pharmacists quality circles. *Ann Pharmacother* 2010;44(4):650-657.
3. Ordre national des pharmaciens. Le pharmacien d'officine, acteur de santé, de proximité et de sécurité. 22-1-2008.
4. Orriols L, Gaillard J, Lapeyre-Mestre M et al. Evaluation of abuse and dependence on drugs used for self-medication: a pharmacoepidemiological pilot study based on community pharmacies in France. *Drug Saf* 2009;32(10):859-873.
5. Visiocritical. Image et attachement des Français à la profession de pharmacien Enquête quantitative réalisée pour l'Ordre national des pharmaciens. 10-11-2009.
6. Zehnder S, Bruppacher R, Ruppanner H et al. Swiss community pharmacies' on the Web and pharmacists' experiences with E-commerce: longitudinal study and Internet-based questionnaire survey. *J Med Internet Res* 2004;6(1).

Appendix 1 - References from Southern Europe

1. Alvarez de Toledo F, González PA, Riera TE et al. Atención farmacéutica en personas que han sufrido episodios coronarios agudos (Estudio TOMCOR). *Rev Esp Salud Pública* 2001;75(4):375-388.
2. Atozqui J, Noguera AD. Determinación del grado de satisfacción en el uso de un sistema personalizado de dosificación. *Pharm Care Esp* 2004;6:91-94.
3. Benrimoj SI. Evaluación del Seguimiento Farmacoterapéutico: "Programa conSIGUE: el impacto clínico, económico y humanístico del Seguimiento Farmacoterapéutico (SFT) en adultos mayores polimedicados". *Pharm Care Esp* 2010;51(1):11-27.
4. Costa FA, Guerreiro JP, Melo MN et al. Effect of reminder cards on compliance with antihypertensive medication. *IJPP* 2010;13(3):205-211.
5. Costa S, Santos C, Silveira J. Community pharmacy services in Portugal. *Ann Pharmacother* 2006;40(12):2228-2234.
6. De San Vicente OG, Erauncetamurgil O, De Escalza P et al. Evaluación del número de recetas mal cumplimentadas que llegan a una farmacia comunitaria. *Pharmacy Practice* 2005;3(3):125-129.
7. Fernández VJB, González AB, Ibáñez LS. Las consultas de indicación farmacéutica en la farmacia comunitaria. *Pharm Care Esp* 2005;7(2):54-61.
8. Ferrer-López I, Machuca M, Baena MI et al. Aplicabilidad y efectividad de un protocolo de indicación farmacéutica en farmacias comunitarias de Sevilla capital. *Pharm Care Esp* 2008;10(2):67-75.
9. Fikri-Benbrahim N, Garcia-Cardenas V, Saez-Benito L et al. Adherence: a review of education, research, practice and policy in Spain. *Pharmacy Practice* 2009;7(3):125-138.
10. Fornos JA, Andrés NF, Andrés JC et al. A pharmacotherapy follow-up program in patients with type-2 diabetes in community pharmacies in Spain. *Pharm World Sci* 2006;28:65-72.
11. Garcao JA, Cabrita J. Evaluation of a pharmaceutical care program for hypertensive patients in rural Portugal. *J Am Pharm Assoc* 2002;42(6):858-864.
12. Gouveia M, Macahdo F, Mendes Z. Free but Valuable: The Economic Significance of Services Provided by Portuguese Pharmacies. 2009.
13. Guerra MM, Pérez JAF, Rodríguez NFA. Detección de diabéticos no diagnosticados en las farmacias comunitarias de la provincia de Pontevedra. *Pharm Care Esp* 2003;5:166-169.
14. Jácome JA, García AI. Estudio prospectivo sobre el impacto de un servicio de atención farmacéutica comunitaria en personas asmáticos. *Rev Esp Salud Pública* 2003;77(3):393-403.
15. López LA, Jiménez JM, Luna Jde D et al. Opinions of primary care managers on sources of influence on medical practice. Differences with physicians' opinions. *Gac Sanit* 2002;16(5):417-424.
16. Martins AP, Ferreira AP, Costa FA et al. How to measure (or not) compliance to eradication therapy. *Pharmacy Practice* 2006;4(2):88-94.

17. Mirco A, Campos L, Falcao F et al. Medication errors in an internal medicine department. Evaluation of a computerized prescription system. *Pharm World Sci* 2005;27(4):351-352.
18. Morgado M, Rolo S, Castelo-Branco M. Pharmacist intervention program to enhance hypertension control: a randomised controlled trial. *Int J Clin Pharm* 2011;33(1):132-140.
19. Parra MDG, Parra IRG, Alvarado JR et al. Mefartabac: Programa medicofarmacéutico de tratamiento del tabaquismo. Protocolo y metodología de trabajo en la farmacia comunitaria. *Pharm Care Esp* 2004;6:82-90.
20. Parra MDG, Parra IRG, Ordonez MPF et al. Nicotine replacement therapy in smoking cessation and drug related problems solution. *Pharm Care Esp* 2002;4:367-376.
21. Sahuquillo CL, Segura PB, Marrero MRH et al. Estudio de errores de dispensación en Oficinas de Farmacia de Valencia. *Pharm Care Esp* 2004;6:53-58.
22. Tamargo EZ, Martinez AMD, Fueyo MLFN et al. Promoción del buen uso de antibióticos en el Principado de Asturias 2004-2006. *Pharm Care Esp* 2006;8(4):179-186.
23. Viegas JML, Pegado E. Evaluation of User Satisfaction with Pharmaceutical Services. 2011.

Appendix 1 - References from Eastern Europe

1. Gaal P, Szigeti A, Csere M, Gaskins M, Pantreli D. Health system in transition: Hungary, Health system review. World Health Organization, European Office Copenhagen; 2011.
2. Hanko B. Pharmacy environment in Hungary. 5-7-2011.
3. Mestrovic A, Stanicic Z, Hadziabdic MO et al. Evaluation of Croatian community pharmacists' patient care competencies using the general level framework. *Am J Pharm Educ* 2011;75(2):36.
4. Skyrius V, Kapocius K, Radziūnas R. Patient medication record in pharmacy: development of specialized information system and possibilities of its application in Lithuanian community pharmacies. *Medicina (Kaunas)* 2003;39(2):154-159.
5. Volmer D, Bell JS, Janno R et al. Change in public satisfaction with community pharmacy services in Tartu, Estonia, between 1993 and 2005. *Res Social Adm Pharm* 2009;5(4):337-346.
6. Volmer D, Vendla K, Vetka A et al. Pharmaceutical care in community pharmacies: practice and research in Estonia. *Ann Pharmacother* 2008;42(7):1104-1111.

Appendix 1 – References covering several European countries

1. Dereguleringstendenser i Europa. København: Danmarks Apotekerforening; 2011.
2. Liberalisation trends of the Pharmacy System in Europe. PGEU Secretariat; 2011. Annex 10, GA 21.
3. PGEU factsheet on pharmaceutical care. Brussels: PGEU; 2008. 08.03.28E 016FS.
4. PGEU factsheet. Services provided in and by community pharmacies - 2008. Brussels: PGEU; 2010. 10.02.10E 004FS.
5. Habl C. Acces on High Level Pharmacy Services: Community Pharmacy in Europe - Lessons from deregulation - case studies. 15-10-2008.
6. Habl C, Antony K, Arts D, Entleitner M, Fröschl B, Leopold C, Stürzlinger H, Vogler S, Weigl M. Surveying, Assessing and Analysing the Pharmaceutical Sector in the 25 EU Member States. Österreichisches Bundesinstitut für Gesundheitswesen ÖBIG, commissioned by European Commission - DG Competition; 2006.
7. Hughes CM, Hawwa AF, Scullin C et al. Provision of pharmaceutical care by community pharmacists: a comparison across Europe. *Pharm World Sci* 2010;32(4):472-487.
8. Kanavos P, Vandoros S, Irwin R, Nocod E, Casson M. Differences in costs of and access to pharmaceutical products in the EU. European Parliament, Brussels: Policy Department Economic and Scientific Policy; 2011.
9. Morak S, Vogler S, Walser S, Kijlstra N. Understanding the pharmaceutical care concept and applying it in practice. Wien, Østrig: Österreichisches Bundesinstitut für Gesundheitswesen (ÖBIG); 2010. ISBN-13 978-3-85159-141-5.
10. Paulino EI, Bouvy ML, Gastelurrutia MA et al. Drug related problems identified by European community pharmacists in patients discharged from hospital. *Pharm World Sci* 2004;26(6):353-360.
11. Taylor R, Miceli E, Giorgio F. Community pharmacy in Europe - Facts and figures. PGEU Secretariat, Brussels; 2004. 05.06.10E 003 FS.
12. van Mil JWF, Schulz M. A Review of Pharmaceutical Care in Community Pharmacy in Europe. *Harvard Health Policy Review* 2006;7(1):155-168.
13. Vogler S, Arts D, Habl C. Community Pharmacy in Europe, Lessons from deregulation - case studies. Vienna, Austria: Österreichisches Bundesinstitut für Gesundheitswesen (ÖBIG). Commissioned by PGEU; 2006. 4514-06.
14. Vogler S, Schmickl B. Rational use of medicines in Europe. Wien, Østrig: Österreichisches Bundesinstitut für Gesundheitswesen (Öbig); 2010. ISBN-978-3-85159-144-6.

Appendix 1 - References from The United States

1. Medication Therapy Management (MTM) [internet]. University of Minnesota; [Sidst opdateret Sep 2011; citeret 19 Sep 2011]. Tilgængelig på: <http://www1.umn.edu/ohr/benefits/pharmacy/mtm/index.html>.
2. Abarca J, Malone DC, Skrepnek GH et al. Community pharmacy managers' perception of computerized drug-drug interaction alerts. *J Am Pharm Assoc* 2003;46(2):148-153.
3. Anderson C, Blenkinsopp A, Armstrong M. The contribution of community pharmacy to improving the public's health: Literature review update 2004-7. 1-4-2008. Management summary.
4. Anthony MK. The relationship of authority to decision-making behavior: implications for redesign. *Res Nurs Health* 1999;22(5):388-98.
5. Blake KB, Madhavan SS. Perceived barriers to provision of medication therapy management services (MTMS) and the likelihood of a pharmacist to work in a pharmacy that provides MTMS. *Ann Pharmacother* 2010;44(3):424-431.
6. Bond CA, Pitterle ME, Raehl CL. An assessment of recent pharmacy graduates' knowledge and competency, professional practice functions, and involvement in pharmacy teaching programs. *Pharmacotherapy* 1994;14(6):712-723.
7. Brown CM, Cantu R, Corbell Z et al. Attitudes and interests of pharmacists regarding independent pharmacy ownership. *J Am Pharm Assoc* (2003) 2007;47(2):174-180.
8. Caldwell E. Pharmacists believe drive-through windows contribute to delays, errors . 1-8-2008. Research communications.
9. Clark BE, Mount JK. Pharmacy Service Orientation: a measure of organizational culture in pharmacy practice sites. *Res Social Adm Pharm* 2006;2(1):110-128.
10. Dahlheimer J, Mitchell S. The Benefits of North Dakota's Pharmacy Ownership Law. *New Rules Project* 2009;(1):1-8.
11. Doucette WR, Koch YD. An exploratory study of community pharmacy practice change. *J Am Pharm Assoc (Wash)* 2000;40(3):384-391.
12. Doucette WR, Brooks JM, Sorofman BA et al. Market factors and the availability of community pharmacies. *Clin Ther* 1999;21(7):1267-1279.
13. Esposito D, Schone E, Williams T et al. Prevalence of unclaimed prescriptions at military pharmacies. *J Manag Care Pharm* 2008;14(6):541-552.
14. Faris RJ, MacKinnon GE 3rd, MacKinnon NJ et al. Perceived importance of pharmacy management skills. *Am J Health Syst Pharm* 2005;62(10):1067-1072.
15. Franic DM, Haddock SM, Tucker LT et al. Pharmacy patronage: identifying key factors in the decision making process using the determinant attribute approach. *J Am Pharm Assoc* (2003) 2008;48(1):71-85.
16. Gadkari AS, Mott DA, Kreling DH et al. Characteristics of unmet demand for pharmacists: a survey of rural community pharmacies in Wisconsin. *J Am Pharm Assoc* (2003) 2008;48(5):598-609.

17. Green CR, Ndao-Brumblay SK, West B et al. Differences in prescription opioid analgesic availability: comparing minority and white pharmacies across Michigan. *J Pain* 2005;6(10):689-699.
18. Hansen RA, Henley AC, Brouwer ES et al. Geographic Information System mapping as a tool to assess nonresponse bias in survey research. *Res Social Adm Pharm* 2007;3(3):249-264.
19. Hansen RA, Roth MT, Brouwer ES et al. Medication therapy management services in North Carolina community pharmacies: current practice patterns and projected demand. *J Am Pharm Assoc* (2003) 2006;46(6):700-706.
20. Harrison DL. Effect of attitudes and perceptions of independent community pharmacy owners/managers on the comprehensiveness of strategic planning. *J Am Pharm Assoc* (2003) 2006;46(4):459-464.
21. Harrison DL. Effect of strategic planning education on attitudes and perceptions of independent community pharmacy owners/managers. *J Am Pharm Assoc* (2003) 2007;47(5):599-604.
22. Harrison DL. Strategic planning by independent community pharmacies. *J Am Pharm Assoc* (2003) 2005;45(6):726-733.
23. Harrison DL, Ortmeier BG. Strategic planning in the community pharmacy. *J Am Pharm Assoc* (Wash) 1996;36(9):583-588.
24. Hirsch JD, Rosenquist A, Best BM et al. Evaluation of the first year of a pilot program in community pharmacy: HIV/AIDS medication therapy management for Medi-Cal beneficiaries. *J Manag Care Pharm* 2009;15(1):32-41.
25. Ivanitskaya L, Brookins-Fisher J, O Boyle I et al. Dirt cheap and without prescription: how susceptible are young US consumers to purchasing drugs from rogue internet pharmacies? *J Med Internet Res* 2010;12(2).
26. Jacobson Vann JC, Christofferson S, Humble CG et al. Pharmacist and physician satisfaction and rates of switching to preferred medications associated with an instant prior authorization program for proton pump inhibitors in the North Carolina Medicaid program. *J Manag Care Pharm* 2010;16(4):250-263.
27. Johnson CL, Crawford SY, Lin SJ et al. Neighborhood geographical factors and the presence of advanced community pharmacy practice sites in Greater Chicago. *Am J Pharm Educ* 2009;73(1):1-8.
28. Johnsrud M, Lawson KA, Shepherd MD. Comparison of mail-order with community pharmacy in plan sponsor cost and member cost in two large pharmacy benefit plans. *J Manag Care Pharm* 2007;13(2):122-134.
29. Kalsekar I, Sheehan C, Peak A. Utilization patterns and medication adherence in patients with type 2 diabetes: Variations based on type of pharmacy (chain vs independent). *Res Soc Admin Pharm* 2007;3:378-391.
30. Khandelwal N, Duncan I, Rubinstein E et al. Medication adherence for 90-day quantities of medication dispensed through retail and mail order pharmacies. *Am J Manag care* 2011;17(11):427-434.

31. Law AV, Okamoto MP, Chang PS. Prevalence and types of disease management programs in community pharmacies in California. *J Manag Care Pharm* 2005;11(6):505-512.
32. Lee JK, Grace KA, Taylor AJ. Effect of a Pharmacy care program on medication adherence and persistence, blood pressure, and low-density lipoprotein cholesterol: a randomized controlled trial. *AMA* 2006;21(296):2563-2571.
33. Mrayyan MT. Nurses' autonomy: influence of nurse managers' actions. *J Adv Nurs* 2004;45(3):326-336.
34. Muenzen PM, Corrigan MM, Smith MA et al. Updating the pharmacy technician certification examination: a practice analysis study. *J Am Pharm Assoc* (2003) 2006;46(1):1-6.
35. Nau DP, Chi C, Mallya U et al. Member satisfaction related to self-reported cost share and difficulty in obtaining prescription drugs in a university pharmacy benefit plan. *J Manag Care Pharm* 2007;13(2):135-141.
36. Powell MF, Stevenson JD, Solomon DK. A survey of current operations and future plans for ambulatory pharmacy services. *Top Hosp Pharm Manage* 1991;11(2):79-89.
37. Rao D, Gilbert A, Strand LM et al. Drug therapy problems found in ambulatory patient populations in Minnesota and South Australia. *Pharm World Sci* 2007;29(6):647-654.
38. Ray MD, Breland BD. Methods of fostering change in the practice model at the pharmacy department level. *Am J Health Syst Pharm* 2011;68(12):1138-1145.
39. Ruhnke GW, Wilson SR, Akamatsu T et al. Ethical decision making and patient autonomy: a comparison of physicians and patients in Japan and the United States. *Chest* 2000;118(4):1172-1182.
40. Santell JP. ASHP national survey of hospital-based pharmaceutical services -1994. *Am J Health Syst Pharm* 1995;52(11):1179-1198.
41. Schafer DS. Three perspectives on physical therapist managerial work. *Phys Ther* 2002;82(3):228-236.
42. Schommer JC, Planas LG, Johnson KA, Doucette WR. Medication Therapy Management Digest. Washington DC, USA: APhA; 1-3-2011.
43. Shepherd MD, Kirk KW. Men and women as pharmacy managers. *Am J Hosp Pharm* 1981;38(10):1463-1466.
44. Singleton LH. Financial Side of Pharmacy. *J Natl Med Assoc* 1909;1(1):40-42.
45. Sisson EM, Israel MK. Extent of community-based delivery of pharmaceutical care in Virginia. *Pharmacotherapy* 1996;16(1):94-102.
46. Skrepnek GH, Armstrong EP, Malone DC et al. Workload and availability of technology in metropolitan community pharmacies. *J Am Pharm Assoc* (2003) 2006;46(2):154-160.
47. Svarstad BL, Bultman DC, Mount JK. Patient counseling provided in community pharmacies: effects of state regulation, pharmacist age, and busyness. *J Am Pharm Assoc* 2004;44(1):22-29.

48. Tannenbaum RP, Sohn CA, Gerbino PP et al. Preceptors' views of community pharmacy clerkships: a national survey. *Drug Intell Clin Pharm* 1981;15(10):766-774.
49. Traynor AP, Sorensen TD. Student pharmacist perspectives of rural pharmacy practice. *J Am Pharm Assoc (2003)* 2005;45(6):694-699.
50. Weinbaum Z, Quinn V, Rogers T et al. Store tobacco policies: a survey of store managers, California 1996-1997. *Tob Control* 1999;8(3):306-310.
51. Westrick SC, Breland ML. Sustainability of pharmacy-based innovations: the case of in-house immunization services. *J Am Pharm Assoc (2003)* 2009;49(4):500-508.
52. Westrick SC, Mount JK. Effects of repeated callbacks on response rate and nonresponse bias: results from a 17-state pharmacy survey. *Res Social Adm Pharm* 2008;4(1):46-58.
53. Wilson DL, Kimberlin CL, Brushwood DB et al. Constructs underlying community pharmacy dispensing functions relative to Florida pharmacy technicians. *J Am Pharm Assoc (2003)* 2007;47(5):588-598.
54. Wright-De Agüero L, Weinstein B, Jones TS et al. Impact of the change in Connecticut syringe prescription laws on pharmacy sales and pharmacy managers' practices. *J Acquir Immune Defic Syndr Hum Retrovirol* 1998;18(1):102-110.
55. Xu KT. Choice of and overall satisfaction with pharmacies among a community-dwelling elderly population. *Med Care* 2002;40(12):1283-1293.

Appendix 1 - References from Canada

1. Canadian Drug Shortages Survey. Canadian Pharmacists Association; 2010. Final report.
2. Anderson C, Blenkinsopp A, Armstrong M. The contribution of community pharmacy to improving the public's health: Literature review update 2004-7. 1-4-2008. Management summary.
3. Austin Z, Marini A, Croteau D et al. Assessment of Pharmacists' Patient Care Competencies: Validity Evidence from Ontario (Canada)'s Quality Assurance and Peer Review Process. *Pharmacy Education* 2004;4(1):23-32.
4. Axworthy S, MacKinnon NJ. Perceived importance and self-assessment of the skills of Canada's health-system pharmacy managers. *Am J Health Syst Pharm* 2002;59(11):1090-1097.
5. Broadview Applied Research Group. Alberta Pharmacy Practice Models Initiative, Evaluation Report. 9-4-2010.
6. Costello MJ, Sproule B, Victor JC et al. Effectiveness of pharmacist counseling combined with nicotine replacement therapy: a pragmatic randomized trial with 6,987 smokers. *Cancer Causes and Control* 2011;22(2):167-180.
7. Dobson RT, Perelkin J. Pharmacy ownership in Canada: Implications for the authority and autonomy of community pharmacy managers. *Res Social Adm Pharm* 2010;28.
8. Dobson RT, Taylor JG, Henry CJ et al. Taking the lead: community pharmacists' perception of their role potential within the primary care team. *Res Social Adm Pharm* 2009;5(4):327-336.
9. Evans CD, Eurich DT, Lamb DA et al. Retrospective observational assessment of statin adherence among subjects patronizing different types of community pharmacies in Canada. *J Manag Care Pharm* 2008;15(6):476-484.
10. Fairly HB, Wigle ED. The Pharmacy Examining Board of Canada. *Can Med Assoc J* 1964;90:379-380.
11. Faris RJ, MacKinnon GE 3rd, MacKinnon NJ et al. Perceived importance of pharmacy management skills. *Am J Health Syst Pharm* 2005;62(10):1067-1072.
12. Jones EJ, Mackinnon NJ, Tsuyuki RT. Pharmaceutical care in community pharmacies: practice and research in Canada. *Ann Pharmacother* 2005;39(9):1527-1533.
13. Kaczorowski J, Chambers LW, Dolovich L et al. Improving cardiovascular health at population level: 39 community cluster randomised trial of Cardiovascular Health Awareness Program (CHAP). *BMJ* 2011;342:d442.
14. Kassam R, Collins JB, Berkowitz J. Comparison of patients' expectations and experiences at traditional pharmacies and pharmacies offering enhanced advanced pharmacy practice experiences. *Am J Pharm Educ* 2010;74(5):90.
15. Kennedy WP. Managers for Medicine. *Can Med Assoc J* 1964;4(90):36-7.
16. Law MR, Ytsma A, Morgan SG. The Short-term Impact of Ontario's Generic Pricing Reforms. Ontario, Canada: UBC Centre for Health Services and Policy Research; 2011.

17. Lyszkiewicz DA, Koren G, Einarson A et al. Evidence based information on drug use during pregnancy: a survey of community pharmacists in three countries. *Pharm World Sci* 2001;23(2):76-81.
18. Mansell K, Perepelkin J. Patient awareness of specialized diabetes services provided in community pharmacies. *Res Social Adm Pharm* 2010.
19. Mrayyan MT. Nurses' autonomy: influence of nurse managers' actions. *J Adv Nurs* 2004;45(3):326-336.
20. Myers T, Cockerill R, Millson M et al. The role of policy in community pharmacies' response to injection-drug use: results of a nationwide Canadian survey. *AIDS Public Policy J* 1996;11(2):78-88.
21. Perepelkin J, Dobson RT. Influence of ownership type on role orientation, role affinity, and role conflict among community pharmacy managers and owners in Canada. *Res Social Adm Pharm* 2010;6(4):280-292.
22. Perepelkin J, Dobson RT. Perceptions of Saskatchewan community pharmacists regarding a prior-authorization program. *J Manag Care Pharm* 2007;13(7):589-597.
23. Scharr K, Bussi eres JF, Prot-Labarthe S et al. A comparative pilot study of the professional ethical thinking of Quebec pharmacy residents and French pharmacy interns. *Int J Clin Pharm* 2011.
24. Taylor J, Semchuk W, Neubauer S et al. Patient Satisfaction with a Smoking Cessation Program in Community Pharmacies. *Can Pharm J* 2003;136(5):30-34.
25. Tracy CS, Dantas GC, Moineddin R et al. Contextual factors in clinical decision making: national survey of Canadian family physicians. *Can Fam Physician* 2005;51:1106-1107.
26. Yuksel N, Majumdar SR, Biggs C et al. Community pharmacist-initiated screening program for osteoporosis: randomized controlled trial. *Osteoporosis Int* 2010;21(3):391-398.

Appendix 1 - References from Asia and Oceania

1. The Roadmap: The Strategic Direction for Community Pharmacy. Sydney, Australia: The Pharmacy Guild of Australia; 2010.
2. Aslani P, Hamrosi K, Feletto E, Raynor T, Knapp P, Hughes J, Nissen L. Investigating Consumer Medicine Information (I-CMI) Project. Sydney Australia: The Pharmacy Guild of Australia; 2007. 2007/08-03.
3. Benrimoj SC, Gilbert A, Quintrell N et al. Non-prescription medicines: a process for standards development and testing in community pharmacy. *Pharm World Sci* 2007;29(4):386-394.
4. Chen TJ, Chou LF, Hwang SJ. Application of concentration ratios to analyze the phenomenon of "next-door" pharmacy in Taiwan. *Clin Ther* 2006;28(8):1225-1230.
5. Goodyear-Smith F, Janes R. New Zealand rural primary health care workforce in 2005: more than just a doctor shortage. *Aust J Rural Health* 2008;16(1):40-46.
6. Hattingh HL. The regulation of pharmacy ownership in Australia: the potential impact of changes to the health landscape. *J Law Med* 2011;19(1):147-154.
7. Healthcare Management Advisors. Consumer perceptions on supply of and access to Pharmacy Medicine. Sydney, Australia: The Pharmacy Guild of Australia; 2007. RFT 2007/08-02.
8. Hellberg B. Pharmacy Review Update: Majority of New Zealanders support pharmacy deregulation [internet]. Sidst opdateret Mar 2003; citeret 23 May 2008]. Tilgængelig på: New Zealand Retailers Association.
9. Human Capital Alliance. Pharmacy Workforce Planning Study. Sydney, Australia: The Pharmacy Guild of Australia; 1-8-2007. RFT 2007/8-01.
10. Iguchi S, Ohnishi M, Nishiyama T et al. Community pharmacy practice in Japan-results of a survey. *J Clin Pharm Ther* 1998;23(3):223-227.
11. Kamei M, Teshima K, Fukushima N et al. Investigation of patients' demand for community pharmacies: relationship between pharmacy services and patient satisfaction. *Yakugaku Zasshi* 2001;121(3):215-220.
12. Krass I, Delaney C, Glaubitz S et al. Measuring patient satisfaction with diabetes disease state management services in community pharmacy. *Res Social Adm Pharm* 2009;5(1):31-39.
13. Lee YC, Huang KH, Huang YT. Adverse pharmaceutical payment incentives and providers' behaviour: the emergence of GP-owned gateway pharmacies in Taiwan. *Oxford journal* 2007;22(6):427-435.
14. McKone B, Bellingham C. Learning from New Zealand pharmacy. *Pharmj* 2004;273.
15. Roberts AS, Benrimoj SI, Chen TF et al. Practice change in community pharmacy: quantification of facilitators. *Ann Pharmacother* 2008;42(6):861-8.
16. Sakurai H, Nakajima F, Tada Y et al. An investigation on pharmacy functions and services affecting satisfaction of patients with prescriptions in community pharmacies. *Yakugaku Zasshi* 2009;129(5):581-591.

17. The Nous Group. The Menzies-Nous Australian Health Survey 2010. Sydney, Australia: Menzies Centre for health Policy, The University of Sydney, ANU; 2010.

Appendix 1 – References other parts of the world

1. Almarsdottir AB, Traulsen JM. Cost-Containment as Part of Pharmaceutical Policy . Pharm World Sci 2003;27(3):144-148.
2. Anderson C, Blenkinsopp A, Armstrong M. The contribution of community pharmacy to improving the public's health: Literature review update 2004-7. 1-4-2008. Management summary.
3. Antoun RB, Salameh P. Satisfaction of pharmacists in Lebanon and the prospect for clinical pharmacy. East Mediterr Health J 2009;15(6):1553-1563.
4. Goel PK, Ross-Degnan D, McLaughlin TJ et al. Influence of location and staff knowledge on quality of retail pharmacy prescribing for childhood diarrhea in Kenya. Int J Qual Health Care 1996;8(6):519-526.
5. Hansen RA, Roth MT, Brouwer ES et al. Medication therapy management services in North Carolina community pharmacies: current practice patterns and projected demand. J Am Pharm Assoc (2003) 2006;46(6):700-706.
6. Kamat VR, Nyato DJ. Soft targets or partners in health? Retail pharmacies and their role in Tanzania's malaria control program. Soc Sci Med 2010;74(3):626-633.
7. Lyszkiewicz DA, Koren G, Einarson A et al. Evidence based information on drug use during pregnancy: a survey of community pharmacists in three countries. Pharm World Sci 2001;23(2):76-81.
8. Mrayyan MT. Nurses' autonomy: influence of nurse managers' actions. J Adv Nurs 2004;45(3):326-336.
9. Oparah AC, Kikanme LC. Consumer satisfaction with community pharmacies in Warri, Nigeria. Res Social Adm Pharm 2006;2(4):499-511.
10. Rao D, Gilbert A, Strand LM et al. Drug therapy problems found in ambulatory patient populations in Minnesota and South Australia. Pharm World Sci 2007;29(6):647-654.
11. Ruhnke GW, Wilson SR, Akamatsu T et al. Ethical decision making and patient autonomy: a comparison of physicians and patients in Japan and the United States. Chest 2000;118(4):1172-1182.
12. Scharr K, Bussi eres JF, Prot-Labarthe S et al. A comparative pilot study of the professional ethical thinking of Quebec pharmacy residents and French pharmacy interns. Int J Clin Pharm 2011.
13. Traverso ML, Salamano M, Botta C et al. Questionnaire to assess patient satisfaction with pharmaceutical care in Spanish language. Int J Qual Health Care 2007;19(4):217-224.
14. Weinbaum Z, Quinn V, Rogers T et al. Store tobacco policies: a survey of store managers, California 1996-1997. Tob Control 1999;8(3):306-310.

Appendix 2 - Assessments of community pharmacy systems. Characteristics of selected evaluations.

Title, Journal/publisher, year, Country	Objective	Methods
Community Pharmacy in Europe, Lessons from deregulation - case studies, ÖBIG and PGEU, 2006 ¹ Europe	To survey and analyse the possible effects of deregulation in the pharmacy sector, with special focus on accessibility to, quality of, and the expenditure of pharmacy services.	A case study analysing the effects of deregulation on accessibility to, quality of, and the expenditure of pharmacy services. The pharmacy systems of three deregulated countries (Ireland, the Netherlands and Norway) were compared with the pharmacy systems of three highly regulated countries (Austria, Finland and Spain).
Provision of pharmaceutical care by community pharmacists: a comparison across Europe, Pharm World Sci 2010 ² Europe	To investigate the provision of pharmaceutical care by community pharmacists in European countries and to examine the factors that could affect implementation.	A questionnaire-based survey of community pharmacies conducted in 13 European countries. The questionnaire consisted of two sections concerning demographic data and services provided in the pharmacy, and a slightly adapted version of the Behavioral Pharmaceutical Care Scale (BPCS). The BPCS consists of the three main dimensions: direct patient care activities; referral and consultation activities; and instrumental activities.
Drug related problems identified by European community pharmacists in patients discharged from hospital, Pharm World Sci 2004 ³ Europe	To study the frequency and nature of drug related problems identified in community pharmacies among patients discharged from hospitals.	The study was conducted in 112 community pharmacies in 6 European countries. Discharged patients presenting a prescription issued by a hospital Feb.-Apr. 2001 were asked to participate. Patients' drug related problems were identified using a questionnaire. Pharmacists documented drug related problems and issues regarding the prescription.
Omregleringen av apoteksmarknaden – Redovisning av ett regeringsuppdrag (Regulation of the pharmacy market – evaluation of a government commission), Konsumentverket 2011 ⁴ Sweden	To monitor and analyze consequences of deregulating the pharmacy market on customer satisfaction. Specific focus was customer related issues such as accessibility, information, price information, services, consumer protection, and complaint opportunities	A before-after analysis of deregulating the pharmacy market based on two consumer surveys conducted before and two years after pharmacy deregulation.
Helsetjenester i apotek. En summarisk gjennomgang av rapporterte effekter (Health services at pharmacy. A brief summary of reported effects), Kunnskapssenteret 2009 ⁵ Norway	To review identified international studies on health services provided by pharmacies with respect to effects on health outcomes.	A systematic literature review of studies evaluating the effects of health services provided by pharmacies. Services on smoking cessation, lipid monitoring, medication dialogue, monitoring of diabetes, and counseling on COPD or asthma were included in the study. Patient oriented outcome measures were adherence, improvements in symptoms (for COPD, asthma and diabetes), ability to cope with their disease, quality of life, and satisfaction with the service. Other measures were rational use of medicine, number of contacts with physicians/specialists, hospital admissions, cost-effectiveness of the service.
Evaluering av apotekloven og indeksprissystemet (Evaluation of the Pharmacy Act and the index price system), Helsedepartementet 2004 ⁶ Norway	To evaluate the new Pharmacy Act, which came into force in 2001, and the index price system, which came into force in 2003 To discuss the effects of the law and the index price system	An evaluation based on analysis of registry data as well as interviews.
Cost containment of pharmaceutical use in Iceland: the impact of liberalization and user charges, J Health Serv Res Policy 2000 ⁷ Iceland	To test the assumptions that liberalising community pharmacy ownership would lower reimbursement costs for the state's Social Security Institute and that increasing patient charges would reduce use and, therefore, lower the cost to the Institute.	Developing and testing two models using interrupted time series design contrasting monthly reimbursement costs before and after the regulation took effect. A control variable was tested to assess other events in the health care arena. Monthly data on these variables were provided by the Icelandic State Social Security Institute.
A question of emphasis: efficiency or	To evaluate the impact of the legislation on users' access to	Focus group discussions with pharmacy customers.

equality in the provision of pharmaceuticals, Int J Health Plann Mgmt 2000 ⁸ Iceland	and costs of pharmaceuticals.	
Pharmacies fulfill Finns expectations well The Association of Finnish Pharmacies, 2007 ⁹ Finland	To investigate customers experiences with and expectations of the service at Finnish pharmacies.	A study based on telephone interviews with Finnish citizens in the age group 15-79.
Survey of Drug-Related Problems Identified by Community Pharmacies, Ann Pharmacother, 2007 ¹⁰ Germany	To identify the nature of drug related problems encountered in community pharmacies.	All German community pharmacies were invited to register identified drug related problems. Outcome measures: number of patient interactions, number of prescriptions filled/OTCs sold, patient age and sex, whether a prescription-only or OTC drug caused the drug related problem, and the time needed for problem resolution. The identified problems were classified using a modified version of the problem-intervention-documentation classification system.
Nature and frequency of drug-related problems in self-medication (over-the-counter drugs) in daily community pharmacy practice in Germany, Pharmacoepidemiol drug saf, 2011 ¹¹ Germany	To identify the nature and frequency of drug-related problems in self-medication identified by community pharmacists in Germany.	Community pharmacists registered drug-related problems identified among 100 consecutive customers presenting symptoms or requesting OTC drugs. For each encounter, data on age, sex, first or repeated request, and the availability of a patient file in the pharmacy including drug history were documented. Also, identified drug related problems, problem descriptions, and solutions were documented. Data were transcribed electronically, coded, checked for validity, and analyzed.
The nine-year sustained cost-containment impact of Swiss pilot physicians-pharmacists quality circles, Ann Pharmacother 2010 ¹² Switzerland	To assess the cost-containment impact of the physicians-pharmacists quality circles (PPQCs), in the period 1999-2007.	The study used data from community pharmacy invoices to the health insurance companies. The cost-containment impact of the PPQCs was analyzed in comparison with GPs working in similar conditions without collaboration with pharmacists. Data on generic prescriptions for specific cardiovascular drug classes and drug costs were also analysed.
Patient experiences of over-the-counter medicine purchases in Flemish community pharmacies, Pharm World Sci, 2009 ¹³ Belgium	To study patient experiences of purchasing OTC medicines in community pharmacies in the Flemish part of Belgium.	A questionnaire was sent to patients purchasing OTC medicines at a random sample of Flemish community pharmacies. The questionnaire included questions on: sources of information about OTC medicines; the patient relationship with pharmacist and GP; organisation and layout of the pharmacy; distribution channels; patient satisfaction. Questions were measured using Likert scales.
Baseline Study of Community Pharmacy Practice in Ireland Horwarth Bastow Charleton, Pharmaceutical Society Ireland 2011 ¹⁴ Ireland	To provide an understanding of the nature and type of pharmacy services currently being delivered in Ireland, To review and report on the international profile of the standards of pharmacy service and care delivery.	A qualitative interview study with community pharmacists collecting structured data on pharmacy activity, staffing, infrastructure, and examining views on the future development of pharmacy services.
National evaluation of the new community pharmacy contract, Pharmacy Practice Research Trust 2007 ¹⁵ UK	To evaluate the new community pharmacy contract Key areas for the evaluation were <ul style="list-style-type: none"> • Advanced/enhanced services • Outcomes for staff (satisfaction, skill mix) • Quality issues: monitoring and clinical governance. 	A multi-method approach used to yield data at macro and micro level using quantitative and qualitative methods. It comprised surveys, analysis of NHS data on Medicines Use Reviews, focus groups and interviews with community pharmacists, GPs, patients and PCO staff, documentary analysis of key public documents in the case study sites, and a multistakeholder workshop at the end of the study.
The corporatization of community pharmacy: implications for service provision, the public health function, and pharmacy's claims to professional status in the United Kingdom,	To describe the public health activities of community pharmacists in the UK; To explore the attitudes of community pharmacists toward recent changes of their public health function To investigate variations between activity, attitudes, and the	A questionnaire was mailed to a random sample of practicing community pharmacists within Great Britain (n=1998), with a follow-up 4 weeks later. Data were analyzed using SPSS.

Res Social Adm Pharm 2009 ¹⁶ UK	type of community pharmacy.	
Comparison of patients' expectations and experiences at traditional pharmacies and pharmacies offering enhanced advanced pharmacy practice experiences. Am J Pharm Educ 2010 ¹⁷ USA	To compare patients' expectations and experiences with pharmacies offering traditional advanced pharmacy practice experiences (APPE) compared to those offering APPEs incorporating pharmaceutical care activities	A survey of patient satisfaction was conducted in 2 groups of community pharmacies: those participating in an enhanced APPE model versus those participating in the traditional model.
An exploratory study of community pharmacy practice change, J Am Pharm Assoc, 2000 ¹⁸ USA	To compare the activities and resources in pharmacies having changed their practice with pharmacies not having changed. Focus was on factors affecting ability to support practice change.	Six pharmacies were studied using a multiple-case design.
Assessment of Pharmacists' Patient Care Competencies: Validity Evidence from Ontario's (Canada) Quality Assurance and Peer Review Process, Pharmacy Education 2004 ¹⁹ Canada	To describe how community pharmacists experience a tool for self assessment of competencies.	A self assessment questionnaire was used as well as ongoing maintenance of a learning portfolio. The pharmacists were given a written test of clinical knowledge. This process was performed annually for a randomly selected group of pharmacists.
Influence of ownership type on role orientation, role affinity, and role conflict among community pharmacy managers and owners in Canada, Res Social Adm Pharm, 2010 ²⁰ Canada	To study the relationship between pharmacy ownership and pharmacy managers with regard to orientation, affinity, and conflicts with the role.	A cross-sectional survey of community pharmacy managers in Canada using a questionnaire sent to a stratified sample of community pharmacies. Statistical analysis was performed using exploratory factor analysis with reliability testing on identified constructs.
Pharmacy ownership in Canada: Implications for the authority and autonomy of community pharmacy managers, Res Social Adm Pharm 2010 ²¹ Canada	To examine the relationship between type of ownership and managers of community pharmacy with respect to professional and employer authority, autonomy, decision making, and control.	A questionnaire was mailed to a stratified sample of community pharmacies. Statistical analysis was performed using exploratory factor analysis with reliability testing on identified constructs.
Consumer perceptions on supply of and access to Pharmacy Medicine, Healthcare Management Advisors Pharmacy Guild of Australia, 2008 ²² Australia	To identify the number of customers using OTC medicines To identify factors influencing access to OTC medicines, number of customers requesting advice on OTC medicines, and how customers benefit from advice provided by pharmacies.	Computer assisted telephone interviews with citizens were conducted by an independent market research company over a period of 6 months in 2009. Pharmacy interviews were conducted by the evaluators. Each pharmacy was surveyed by an evaluator for four hours during which customers asking for OTC medicine were invited to participate in the project.
Analyse af receptkorrektioner på apotek (Analysis of prescription corrections by community pharmacy), Danmarks Apotekerforening og Lægeforeningen, 2008 ²³ Denmark	To document the extent, type and severity of prescription corrections made on a representative sample of Danish pharmacies in 2007.	The study was based on copies of prescription corrections collected through 62 pharmacies. Corrections were coded by two pharmacists and subsequently scored according to potential seriousness by a group of two pharmacists and a medical risk manager with experience from general practice.
Forekomst af lægemiddelrelaterede problemer ved selvmedicinering (Prevalence of drug-related problems in self-medication), Pharmakon, 2011 ²⁴ Denmark	To identify the nature and frequency of drug-related problems by self-medication identified in Danish community pharmacy. To detect which interventions pharmacists carry out in relation to identified drug related problems.	Community pharmacies registered drug-related problems identified among 100 consecutive customers presenting symptoms or requesting OTC drugs. For each encounter, data on age, sex, first or repeated request, identified drug related problems, problem descriptions, and solutions were documented. Data were entered electronically, coded, checked for validity, and analyzed.

Appendix 3 - Assessments of community pharmacy systems. Results from selected evaluations

The table contains selected key references to assessments of community pharmacy systems. The table is based on the four pharmacy roles defined in the international guidelines for Good Pharmacy Practice (GPP) revised by FIP/WHO in 2011.

Role no. 1 covers the wide range services related to distribution of medicine, including the availability of pharmacy and pharmacy services to society and patient satisfaction with pharmacies' distribution services.

Role no. 2 covers services related to the provision of pharmaceutical care, including patient satisfaction with provided services. Pharmaceutical care is the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life. Pharmaceutical care involves the process through which a pharmacist cooperates with a patient and other professionals in designing, implementing, and monitoring a therapeutic plan that will produce specific therapeutic outcomes for the patient. This involves identifying potential and actual drug-related problems, resolving actual drug-related problems, and preventing drug-related problems.

Role no. 3 covers how pharmacies plan and implement continuing professional development strategies to improve current and future performance. This includes pharmacies' use of guidelines and standards, further education and accreditation. The concept of continuing professional development (CPD) can be defined as "the responsibility of individual pharmacists for systematic maintenance, development and broadening of knowledge, skills and attitudes, to ensure continuing competence as a professional, throughout their careers."

Role no. 4 covers the dissemination of evaluated information about medicines and various aspects of self-care, the engagement of pharmacies in preventive care activities and services, how pharmacies comply with national professional obligations, guidelines and legislations, and how pharmacies advocate and support national policies that promote improved health outcomes. This includes pharmacies' contribution to effectiveness in society's use of medicine, which also implies ensuring pharmacy business sustainability.

Title, journal / publisher, year, country	Results / conclusions based on the four pharmacy roles defined by the WHO/FIP Good Pharmacy Practice model			
	Prepare, obtain, store, secure, distribute, administer, dispense and dispose of medical products	Provide effective medication therapy management	Maintain and improve professional performance	Contribute to improve effectiveness of the health-care system and public health
Community Pharmacy in Europe, Lessons from deregulation - case studies, ÖBIG and PGEU 2006 ¹ Europe	Deregulation without establishment criteria lead to higher pharmacy density, but only in urban areas. Pharmacy density was highest in Spain, Ireland and Austria, and lowest in Norway. Immediate availability of medicines was highest in Austria, Finland and Spain.		The quality of services was high in all countries observed. However, regulated countries performed better with higher degree of supervision by pharmacists and participation in public health tasks. There was higher involvement in professional practice in regulated countries, and higher focus on reaching business targets in deregulated countries.	Deregulation lead to formation of horizontal or vertical chains. The increase in pharmacy density may damage the economic viability of the pharmacy. Deregulation in Norway did not lead to more competition. Growth in pharmaceutical expenditure was more moderate in the regulated countries and Holland. Prices of OTC products tended to be more stable in regulated countries.
Provision of pharmaceutical care by community pharmacists: a comparison across Europe, Pharm World Sci 2010 ² Europe		The provision of pharmaceutical care in community pharmacy is limited. Pharmacists were routinely engaged in patient record screening but were only occasionally involved in patient centered professional activities, or in self-evaluation of performance.		
Drug related problems identified by European community pharmacists in patients discharged from hospital, Pharm World Sci 2004 ³ Europe		Drug related problems were identified in 63.7 % of the patients. Patients with more changes in drug regimens and using more drugs were more likely to develop DRPs. Community pharmacists recorded 305 interventions in 205 patients with DRPs.		
Omregleringen av apoteksmarknaden – Redovisning av ett regeringsuppdrag (Regulation of the pharmacy market – evaluation of a government commission), Konsumentverket 2011 ⁴ Sweden	The comparative analysis of the surveys conducted in 2008 (before deregulation) and in 2011 (after deregulation) shows that customers experience better availability with a decline in transportation time to the nearest pharmacy and improved opening hours. Also, customers believe that they more often have to wait over 24 hours for prescribed medicine.		In general, customers' perception of the pharmacies' interior have become more negative. Customers believe that provided information and pharmacists' competence have deteriorated after deregulation.	
Helsetjenester i apotek. En summarisk gjennomgang av rapporterte effekter (Health services at pharmacy. A brief summary of reported effects), Kunskapsenteret 2009 ⁵ Norway		A smoking cessation program with nicotine supplements, counseling and follow-up by trained pharmacists resulted in fewer smokers. Pharmaceutical care for diabetes improved adherence and symptom		

		control and reduced hospital admissions. A combined programme for coronary patients with diabetes and mental illness also had effect. Effects of medicine consultations and pharmaceutical care for asthma and COPD were inconclusive. Cholesterol monitoring did not improve disease management or prevent cardiovascular disease. Medicine consultations for elderly patients did not reduce hospital admissions or mortality.		
Evaluering av apotekloven og indeksprissystemet (Evaluation of the Pharmacy Act and the index price system), Helsedepartementet 2004 ⁶ Norway	The aims of the new Pharmacy Act are largely achieved. Increased competition in the pharmacy sector has significantly increased the public access to pharmacies, and service to customers has improved. Meanwhile, the pharmacy sector underwent a major streamlining.			The law has led to stronger competition between drugs, with patients replacing equivalent medicines at the pharmacy. The competition has to a limited extent led to lower retail prices to patients.
Cost-Containment as Part of Pharmaceutical Policy, Pharm World Sci 2003 ⁷ Iceland				Reimbursement costs have risen throughout the study period. The interrupted time series analysis did not show a substantial effect from the legislative change in March 1996 or from the regulatory intervention in January 1997.
A question of emphasis: efficiency or equality in the provision of pharmaceuticals, Int J Health Plann Mgmt 2000 ⁸ Iceland				Definite changes with respect to lower prices and increased access were reported in the urban setting, whereas the rural population's perception is that it is being left out. It is clear that the equilibrium between equality and efficiency in distribution of pharmaceuticals in Iceland has shifted. The liberalisation has increased inequality between rural and urban residents in exchange for increased efficiency.
Pharmacies fulfill Finns expectations well, The Association of Finnish Pharmacies, 2007 ⁹ Finland	92 % of those interviewed believe that there are enough pharmacies in Finland. 64 % felt that the availability of pharmacy services must be guaranteed by regulating pharmacy establishment. 82 % see pharmacy opening hours as satisfactory, and among the respondents older than 60 the figure is 90 %.	The Finns see the checking of the compatibility of medicines, guidance on the use of medicines, and direct reimbursement from the pharmacy as the most important pharmacy services. Among these services, the importance of medicine guidance has increased the most compared with previous years.		
Survey of Drug-Related Problems Identified by		Community pharmacies that participated in the study		

<p>Community Pharmacies, Ann Pharmacother 2007¹⁰ Germany</p>		<p>documented 10,427 DRPs (9.1 DRP per pharmacy per week). A broad spectrum of DRPs was identified, with 9 of 10 cases involving prescribed medicines. Overall, drug-drug interactions were the most frequently reported DRP (8.6 %) and, more than 80 % of identified DRPs could be resolved completely. The GP was contacted in 60.5 % the cases.</p>		
<p>Nature and frequency of drug-related problems in self-medication (over-the-counter drugs) in daily community pharmacy practice in Germany, Pharmacoepid drug saf 2011¹¹ Germany</p>		<p>Community pharmacists documented 12,567 encounters identifying DRPs in 17.6 % of all cases. Four indications comprised more than 70 % of all DRPs: pain, respiratory, gastrointestinal, and skin disorders. Four DRPs were responsible for almost 75 % of all DRPs identified: self-medication inappropriate (29.7 %), requested product inappropriate (20.5 %), intended duration of drug use too high (17.1 %), and wrong dosage (6.8 %). All patients with identified DRPs were counseled accordingly. Furthermore, the most frequent interventions were referral to a physician (39.5 %) and switching to a more appropriate drug (28.1 %).</p>		
<p>The nine-year sustained cost-containment impact of Swiss pilot physicians-pharmacists quality circles, Ann Pharmacother 2010¹² Switzerland</p>		<p>The physicians-pharmacists quality circles (PPQCs) may form a solid basis for implementing more comprehensive programs, such as medication reviews, adherence-enhancing interventions, or disease management approaches.</p>		<p>A 42 % decrease in drug costs in the PPQC group as compared to the control group was seen over 9 years. For 2007 the savings per GGP was \$225,000. These results are explained by better compliance with clinical and with using pharmacovigilance guidelines, larger use of generic drugs, a more balanced attitude toward marketing strategies, and interdisciplinary continuing education on the rational use of drugs.</p>
<p>Patient experiences of over-the-counter medicine purchases in Flemish community pharmacies, Pharm World Sci 2009¹³ Belgium</p>	<p>358 questionnaires were returned (response rate 46 %). The first point of contact about OTC medicines was the pharmacist (61 % of patients), followed by the physician (29 %). Newspapers and the internet were not viewed as primary sources of advice on OTC medicines. Patients purchased OTC medicines for acute treatment of pain,</p>	<p>More than 75 % of patients felt that pharmacists provided sufficient information about health and use of OTC medicine. About one-third of patients did not wish the GP to be informed of their use of OTC medicine.</p>		

	gastro-intestinal conditions, common cold, cough or musculoskeletal pain. Patients did not seem to agree to have other distribution channels for OTC medicines than the pharmacy.			
Baseline Study of Community Pharmacy Practice in Ireland Horwarth Bastow Charleton, Pharmaceutical Society Ireland 2011 ¹⁴ Ireland	52 % of the respondents were in single-outlet pharmacies, while small group or chain pharmacies represent 26 % and large group or chain pharmacies represent 22 %. The average length of time that pharmacies were established was 32.8 years (161-0.08 years) In terms of future service provision, many respondents felt that their layout of the pharmacy was adequate, especially with the consultation area in place. Pharmacists spend most of their professional time on dispensing prescription medicines, counseling prescription patients, counseling OTC customers, and giving advice about minor illness.	Some of the respondents felt that the existing consultation areas would be too small to accommodate equipment for screening and diagnostic procedures. The top three services not currently provided, but which pharmacists would like to provide in future, consist of Lung Capacity Screening, Sexual Health, and Medicine Use Reviews; The appetite for providing enhanced pharmacy services in future was mixed. Overall, the majority were keen to provide enhanced services Potential barriers included opposition by local GPs and other healthcare providers to the extension of diagnostic or treatment services to pharmacy.	Pharmacists spend most of their professional time outside normal working hours on CPD activities, attending health-related meetings and audit and practice research. There are many who believe that the key skills of pharmacists remain with medicines expertise and core dispensing of prescription and OTC medication. It is a barrier for providing new services that specific, validated training in clinical procedures is not available.	The main barrier to providing enhanced pharmacy services was identified as being money. If pharmacies had a different income model, one that generated income for all the services provided, then they could pay for more qualified staff, which in turn would free up the time of the supervising pharmacist and others to develop and run these enhanced services.
National evaluation of the new community pharmacy contract, Pharmacy Practice Research Trust 2007 ¹⁵ , UK	Many pharmacists report that they are less satisfied with their job and less likely to stay in community pharmacy that they were prior to the new contract. Perceived positive aspects of the contract for included increased patient contact and improved relationship with patients. Negative aspects included additional workload, particularly the new requirements for data recording. Facilitators and barriers to implementation were identified.	The new contract has resulted in substantial changes. Implementation of essential services is well advanced or complete in most pharmacies. Majority of pharmacies in UK now have private consultation area. More than half are providing the Medicines Use Review service and most of those who are not, plan to do so in the future. Enhanced services are being provided by 87 % of pharmacies, with over 40 % providing three or more services.		
The corporatization of community pharmacy: implications for service provision, the public health function, and pharmacy's claims to professional status in the United Kingdom, Res Social Adm Pharm 2009 ¹⁶ UK		The level of provision of emergency hormonal contraception, supervised administration of medicines, and needle-exchange schemes was lower in supermarket pharmacies than in the other types of pharmacy. Respondents believed that supermarkets and the major multiple pharmacy chains had advantages with respect to attracting financing for service development despite suggesting that the premises of such pharmacies may not be the		

		most suitable for the provision of such services.		
Comparison of patients' expectations and experiences at traditional pharmacies and pharmacies offering enhanced advanced pharmacy practice experiences, Am J Pharm Educ 2010 ¹⁷ USA	Patients visiting pharmacies with enhanced services reported significantly higher satisfaction and fewer service gaps. Further, satisfaction was significantly higher for patients who had received consultation from either pharmacist or students, than those reporting no consultations.	Including provision of pharmaceutical care services as part of advanced pharmacy practice experiences (APPE) resulted in direct and measurable improvements in patient satisfaction.		
An exploratory study of community pharmacy practice change, J Am Pharm Assoc 2000 ¹⁸ USA		Practitioners should consider a broad range of activities when trying to facilitate pharmacy practice change. Researchers are urged to develop studies that will provide stronger scientific evidence, contributing to a model of pharmacy practice change. This could assist pharmacists working to incorporate pharmaceutical care into daily practice.		
Assessment of Pharmacists' Patient Care Competencies: Validity Evidence from Ontario's (Canada) Quality Assurance and Peer Review Process, Pharmacy Education 2004 ¹⁹ Canada			14 % of the responders did not meet the standards, and were directed to a peer-assisted process to facilitate professional development. The other 86 % met or exceeded standards and were encouraged to continue with their own professional development. Individuals who were educated outside Canada or USA, individuals working in community pharmacy practice, and those who had been in practice 25 years or more demonstrated greatest difficulty in meeting standards.	
Pharmacy ownership in Canada: Implications for the authority and autonomy of community pharmacy managers, Res Social Adm Pharm 2010 ²¹ Canada	646 questionnaires from pharmacy managers were returned (33 %). Respondents rated their authority similarly across ownership types. Autonomy, decision-making capabilities, and control needed to carry out the professional role appear most limited among corporate respondents and, to a lesser extent, franchise managers.			
Influence of ownership type on role orientation, role affinity, and role conflict among community pharmacy managers and owners in Canada,	646 questionnaires were received (33 %). 61 % of the respondents were males, 45 % identified their practice type as an independent pharmacy. Five multi-item scale constructs (professional orientation, business orientation,			

<p>Res Social Adm Pharm 2010²⁰ Canada</p>	<p>professional affinity, business affinity, and role conflict) were identified and analyzed against the pharmacy ownership structure (independent, franchise, corporate). Analysis revealed significant differences for 3 of the 5 constructs; however, no differences were seen regarding the 2 professionally focused constructs.</p>			
<p>Consumer perceptions on supply of and access to Pharmacy Medicine Healthcare Management Advisors, Pharmacy Guild of Australia, 2008²² Australia</p>	<p>Population currently using or seeking to use OTC drugs: Known or possible purchasers of OTC-drugs comprise between 21 % and 57 % of the population, with males, those in the youngest and older age groups, and those from lower income households least likely to make an OTC purchase. Overall, most people who want OTC drugs can afford it Factors affecting supply of and access to OTC drugs: Perceived high cost of OTC medicines was reported by almost half the population, but did not affect extent of OTC purchase. Although a small proportion of consumers (primarily elderly or people living in rural areas) found access to a pharmacy difficult, this also did not affect extent of OTC purchase. Males and those aged 18-24 years do not always want to speak to pharmacy staff about their condition, and this was associated with them being less likely to purchase an OTC drug despite having a condition for which an OTC drug is available.</p>	<p>Perceived customer benefit and need for pharmacy advice about OTC drugs: Although only 29 % of purchasers of OTC drugs are seeking advice at each occasion of OTC purchase, 67 % recall seeking pharmacy advice associated with their purchase over the previous year. A total of 67 % of consumers also recall receiving pharmacy advice when purchasing an OTC drug. Purchasers of OTC drug are generally very satisfied with the level of pharmacy advice provided and approximately 80 % want advice to always be available for these products in the future. Although 55 % of purchasers of OTC drugs believe that these drugs should not be more widely available at places like supermarkets without availability of advice, 34 % did agree with this proposition, with the remaining 11 % being undecided.</p>		
<p>Analyse af receptkorrektioner på apotek (Analysis of prescription corrections by community pharmacy) Danmarks Apotekerforening og Lægeforeningen 2008²³ Denmark</p>	<p>62 pharmacies registered 2,305 corrections, corresponding to corrections on 0.33% of all prescriptions in the study month. 45% of the corrections were administrative in nature and 55% were clinical. The most common administrative corrections were backorders, abbreviations used, or lack of instructions for reimbursement. The most frequent clinical corrections related to dosage, strength or dosage form. 790 corrections (34 %) were scored as potentially serious. Of these, 33% scored with seriousness score 1 -</p>			

	<p>minimal inconvenience, 49% with score 2 - could affect patient care to some degree, but reversible, and 18% with score 3 - could affect patient care in such a degree that hospital admission could be relevant.</p> <p>47 of the corrections scored with score 3 were assessed by a risk manager (with experience from general practice) to actually could happen and have consequences for not vulnerable patients. This represents 0.007 % of the prescriptions that were processed in the study month. Nationwide, this is estimated to be 2,645 corrections per year, or 7 per day.</p>			
<p>Forekomst af lægemiddelrelaterede problemer ved selvmedicinering (Prevalence of drug-related problems in self-medication), Pharmakon 2011²⁴ Denmark</p>		<p>Drug related problems are found in 21 % of self-medication clients. The most common drug related problem is <i>'drug not appropriate / optimal for the symptom'</i>. It is identified at 44 % of all clients with drug related problems.</p> <p>The counseling approaches are generally higher for clients with drug related problems.</p> <p>35 % of clients with drug related problems are <i>'Recommended to contact GP'</i> and 23 % are <i>'Recommended to use another drug'</i>.</p>		

References

1. Vogler S, Arts D, Habl C. Community Pharmacy in Europe, Lessons from deregulation - case studies. Vienna, Austria: Österreichisches Bundesinstitut für Gesundheitswesen (ÖBIG). Commissioned by PGEU; 2006. 4514-06.
2. Hughes CM, Hawwa AF, Scullin C et al. Provision of pharmaceutical care by community pharmacists: a comparison across Europe. *Pharm World Sci* 2010;32(4):472-487.
3. Paulino EI, Bouvy ML, Gastelurrutia MA et al. Drug related problems identified by European community pharmacists in patients discharged from hospital. *Pharm World Sci* 2004;26(6):353-360.
4. Berglund CM, Hall H. Omregleringen av apoteksmarknaden - Redovisning av ett regeringsuppdrag. Karlstad, Sverige: Konsumentverket; 2011. 2011:9.
5. Hviding K, Flottorp S. Helsetjenester i apotek. En summarisk gjennomgang av rapporterte effekter. Oslo: Nasjonalt kunnskapssenter for helsetjenesten; 2009.
6. Evaluering av apotekloven og indeksprissystemet. Oslo: ECON Analyse AS for Helsedepartementet; 2004. 10.
7. Almarsdottir AB, Morgall JM, Grimsson A. Cost containment of pharmaceutical use in Iceland. *J Health Serv Res Policy* 2000;5(2):109-113.
8. Almarsdottir AB, Morgall JM, Björnsdottir I. A question of emphasis: efficiency or equality in the provision of pharmaceuticals. *Int J Health Plann Mgmt* 2000;15(2):149-161.
9. Kostianen E. Pharmacies fulfill Finns expectations well. [1 Nov 2011.] The Association of Finnish Pharmacies.
10. Hämmerlein A, GRIESE N, Schulz M. Survey of Drug-Related Problems Identified by Community Pharmacies. *Ann Pharmacother* 2007;41:1825-1832.
11. Eickhoff C, Hämmerlein A, GRIESE N et al. Nature and frequency of drug-related problems in self-medication (over-the-counter drugs) in daily community pharmacy practice in Germany. PDS 2011.
12. Niquille A, Ruggli M, Buchmann M et al. The nine-year sustained cost-containment impact of swiss pilot physicians-pharmacists quality circles. *Ann Pharmacother* 2010;44(4):650-657.
13. Simoens S, Lobeaux M, Verbeke K et al. Patient experiences of over-the-counter medicine purchases in Flemish community pharmacies. *Pharm World Sci* 2009;31(4):450-457.
14. Baseline Study of Community Pharmacy Practice in Ireland. Dublin, Ireland: The Pharmaceutical Society of Ireland - The Pharmacy Regulator; 27-1-2011. Final Report.
15. Blenkinsopp A, Bond C, Gianpiero C, Inch J, Gray N. National evaluation of the new community pharmacy contract. London, UK: Pharmacy Practice Research Trust; 2009. ISBN 9780955696985.
16. Bush J, Langley CA, Wilson KA. The corporatization of community pharmacy: implications for service provision, the public health function, and pharmacy's claims to professional status in the United Kingdom. *Res Social Adm Pharm* 2009;5(4):305-318.

17. Kassam R, Collins JB, Berkowitz J. Comparison of patients' expectations and experiences at traditional pharmacies and pharmacies offering enhanced advanced pharmacy practice experiences. *Am J Pharm Educ* 2010;74(5):90.
18. Doucette WR, Koch YD. An exploratory study of community pharmacy practice change. *J Am Pharm Assoc (Wash)* 2000;40(3):384-391.
19. Austin Z, Marini A, Croteau D et al. Assessment of Pharmacists' Patient Care Competencies: Validity Evidence from Ontario (Canada)'s Quality Assurance and Peer Review Process. *Pharmacy Education* 2004;4(1):23-32.
20. Perepelkin J, Dobson RT. Influence of ownership type on role orientation, role affinity, and role conflict among community pharmacy managers and owners in Canada. *Res Social Adm Pharm* 2010;6(4):280-292.
21. Dobson RT, Perelkin J. Pharmacy ownership in Canada: Implications for the authority and autonomy of community pharmacy managers. *Res Social Adm Pharm* 2010;28.
22. Healthcare Management Advisors. Consumer perceptions on supply of and access to Pharmacy Medicine. Sydney, Australia: The Pharmacy Guild of Australia; 2007. RFT 2007/08-02.
23. Thomsen MH, Kristoffersen LB, Kjær-Hansen B, Hellebek T. Analyse af receptkorrektioner på apotek. Danmarks Apotekerforening og Lægeforeningen; 2008.
24. Bolvig T. Forekomst af lægemiddelrelaterede problemer ved selvmedicinering. 24-10-2011. Powerpoint præsentation.