

From Aging Research Center (ARC)  
Department of Neurobiology, Care Sciences and Society  
Karolinska Institutet and Stockholm University  
Stockholm, Sweden  
and  
Sophiahemmet University  
Stockholm, Sweden

**Medicine management in municipal  
home care;  
delegating, administrating and  
receiving**

Åsa Gransjön Craftman



**Karolinska  
Institutet**

Stockholm 2015

All previously published papers were reproduced with permission from the publisher.  
Cover photo ©Fantasista Dreamstime.com  
Published by Karolinska Institutet. AJ E-print AB, Stockholm.  
© Åsa Gransjön Craftman, 2015  
ISBN 978-91-7549-804-1



# Medicine management in municipal home care; delegating, administrating and receiving

## Thesis for Doctoral Degree (Ph.D.)

By

**Åsa Gransjön Craftman**

*Principal Supervisor:*

Professor Eva von Strauss  
Swedish Red Cross University College  
Karolinska Institutet  
Department of NVS  
Division of Aging Research Center (ARC)

*Co-supervisor(s):*

PhD Margareta Westerbotn  
Sophiahemmet University  
Karolinska Institutet  
Department of NVS  
Division of Caring Sciences

Associate Professor Kristina Johnell  
Karolinska Institutet  
Department of NVS  
Division of Aging Research Center (ARC)

*Opponent:*

Professor Kenneth Asplund  
Mid Sweden University  
Faculty of Human Sciences  
Division of Nursing Science

*Examination Board:*

Associate Professor Elisabeth Häggström  
University of Gävle  
Department of Health and Caring  
Sciences  
Faculty of Health and Occupational  
Studies

Professor Johan Lökk  
Karolinska Institutet  
Department of NVS  
Division of Clinical Geriatrics

Professor Marta Szebehely  
Stockholm University  
Department of Social Work

*Defense of the thesis will be conducted Wednesday the 4<sup>th</sup> of March 2015 at 13:00.  
Sophiahemmet University, Erforssalen, Vallhallavägen 91, Hus R, Stockholm*



*Ever tried. Ever failed. No matter. Try again. Fail again. Fail better.*  
*Samuel Beckett*

**AIM**

The general aim of this thesis was to investigate how delegation of medication is handled in municipal home care. Specific aims were to 1) explore the prevalence of medication use in older adults over time; 2) describe district nurses' experiences of the delegation of medication management to municipal home care personnel; 3) explore and describe how home care assistants experience receiving the actual delegation of the responsibility of medication administration; and 4) to describe how older adults, living at home, perceive receiving assistance from home care assistants to manage their own medication.

**Study I:** Changes were explored in medication use over a period of 20 years among three cohorts of older adults aged 78+ years and living in Stockholm, Sweden (1517 participated in 1987; 1581 in 2001; and 1206 in 2007). All were included, whether living at home or in an institution. Univariate analysis was carried out, as well as multivariate logistic regression models. The mean number of drugs increased for both genders in all age groups: from 2.8 in 1987 to 5.8 in 2007 for those aged 78+ years, the corresponding figures for 96+ years was 3.6 and 7.7. Overall (1987, 2001 and 2007), drugs for the cardiovascular system were most frequent (53.1%, 60.8% and 68.7% respectively). Prevalence of polypharmacy (concurrent use of five drugs or more) increased from 27.0% (1987) to 53.9% (2001), and 65.3% (2007). Adjusting for age, gender, education and cognition, the odds of using analgesics and psychotropics were significantly higher in 2007 compared to 1987; OR (95% CI) of 3.3 (2.8-4.0) and 1.3 (1.1-1.6) respectively. Cognitively intact elderly primarily used hypnotics, whereas cognitively impaired elderly used hypnotics, sedatives and antidepressants. People living at home used fewer drugs. For those living in institutions, polypharmacy increased from 24.4% in 1987 to 95.3% in 2007. Corresponding figures for those living in service buildings were 44.6% to 82.4%.

**Study II:** District nurses' (DNs) perceptions of the concept of delegating the administration of medication to unlicensed personnel (home care aides, HCAs) working in municipal social care were described. Twenty DNs were interviewed and the interviews were audio taped. Data were collected from April 2009 to August 2010 and analysed using content analysis. Findings revealed that the statutes of delegation were outdated and appeared to be incompatible with day to day practice. Communication between DNs and HCAs, as well as tutoring, was regarded as important. The DNs found it imperative to be available to the HCAs and made an effort to create a trusting atmosphere. Delegation of administration of medication to a person, who lacked knowledge of medication, for example when it is proper to mix pills or blend them in a thick liquid, was reported by the DN as being stressful. This was explained by various responsible authorities and the growing number of social service groups. Despite this, the DNs did not see any major problems with the fact that the HCAs work for a separate authority (the county council vs. the municipality).

**Study III:** The purpose was to explore and describe how HCAs experience receiving the delegation of medicine management, and how they handle the responsibility that comes with the delegation. Four focus groups consisting of 19 HCAs were conducted. Data were analysed using qualitative content analysis. According to the HCAs, health and social care depends on delegation arrangements to function effectively, but mainly it relieves a burden for DNs. Even when the delegation had expired, administration of medication continued, placing the statutes of regulation in a subordinate position. There

was low awareness among HCAs of the content of the statutes of delegation. Accepting delegation to administer medication was an inevitable and a routine fact, regarded as a mandatory task that had become an implicit prerequisite for social care work in the municipality.

**Study IV:** Finally, we wanted to describe how older people, living at home, experience the use and assistance of administration of medicines in the context of social care. Ten older adults, aged 68 to 94 years, were interviewed in their own homes. Latent content analysis was used. There were divided feelings about being dependent on assistance in handling medication, since it interfered with their autonomy at a time of health transition. On the other hand, the assistance eases daily life with regard to practical matters and improves adherence to a medicine regimen. Participants were balancing empowerment and a dubious perception of the home care assistants' knowledge of medicine and safety. The trust in the physicians' and DNs' knowledge about medication routines was seen as a guarantee with regard to medicines in general and the medicine regimen in particular. The perceived strained work situation for HCAs risks placing older people in an adverse position in relation to HCAs with their heavy workload and limited schedules. This may negatively influence the care relationship and patient safety.

**Conclusions:** This thesis reports: 1) A dramatic increase in medication use in older adults from the late 1980s to the mid- 2000s in central Stockholm, Sweden; 2) DNs cannot manage their workload without delegating the administration of medication to unlicensed personnel (HCAs) in the present organisational model of health- and social care; 3) Accepting the delegation to administer medication was inevitable and had become routine to meet the needs of a growing number of older home care recipients; and 4) Assistance with handling medication eases daily life and medicine regimen adherence. Dependence on assistance may affect older adults' sense of autonomy. Perceived safety varied relating to HCAs' knowledge of medicine.

We believe our results may contribute to a better understanding of how health and social care, two fields spanning sociology and nursing, perceive and adjust to the given frames; in the first place by indicating how delegated administration of medication to older people living at home is perceived by the care recipients, DNs, and HCAs and also by illustrating how the possibility of delegating medical chores can give temporary tasks a manifest transition from licensed to unlicensed personnel.

**Key words:** Delegation, district nurse, home dwelling, home care, home care assistant, health care, medication use, medication management, polypharmacy, population-based, time trends, task shifting, responsible authorities, older people

## SYFTE

Det övergripande syftet för denna avhandling var att undersöka hur delegering av läkemedel hanteras inom hemtjänsten. Specifika syften var att 1) undersöka förekomsten av läkemedelsanvändning hos äldre vuxna över tid (under 20 år); 2) beskriva distriktssjuksköterskors upplevelser av delegering av läkemedelsadministrering till personal inom hemtjänsten; 3) att studera hemtjänstpersonalens uppfattning att ta emot delegeringen av läkemedelsadministrering som en del i sitt dagliga arbete; samt 4) beskriva hur personer 65+ år, i eget boende, uppfattar att få hjälp av hemtjänstpersonal för att hantera sin medicinering.

**Studie I:** Vi undersökte förändringar i läkemedelsanvändning under en period av 20 år genom att jämföra tre kohorter av äldre vuxna i åldern 78+ år och boende i Stockholm, Sverige (1517 deltog år 1987, 1581 år 2001, och 1206 år 2007). Personerna i studien bodde hemma eller i särskilt boende. Resultatet visade att antal läkemedel ökade för båda könen i samtliga åldersgrupper: för de som var 78 år från 2,8 (år 1987) till 5,8 (år 2007), motsvarande siffror för 96+ år var 3,6 och 7,7. Läkemedel för hjärt-kärlsystemet var vanligast förekommande (53,1% år 1987; 60,8% år 2001; och 68,7% år 2007). Förekomst av polyfarmaci (samtidig användning av 5 läkemedel eller fler) ökade från 27,0% (1987) till 53,9% (2001), och 65,3% (2007). Efter att ha justerat för ålder, kön, utbildning och kognition, var oddsen för att använda analgetika och psykofarmaka signifikant högre under 2007 jämfört med 1987; OR (95 % CI) av 3,3 (2,8–4,0) och 1,3 (1,1–1,6) respektive. Kognitivt intakta äldre personer använde framförallt sömnmedel, medan äldre personer med nedsatt kognition använde sömnmedel, samt lugnande- och antidepressiva läkemedel. Personer som bodde kvar hemma använde färre läkemedel. För de som bodde i särskilt boende ökade polyfarmaci från 24,4% år 1987 till 95,3% år 2007. Motsvarande siffror för dem som bodde i servicehus var 44,6% till 82,4%.

**Studie II:** Vi ville beskriva distriktssjuksköterskors (DSKs) uppfattningar av att delegera administration av läkemedel till personal inom hemtjänsten (icke-legitimerad personal). Tjugo DSK intervjuades och intervjuerna spelade in digitalt och analyserades med hjälp av innehållsanalys. Data samlades in mellan april 2009 till augusti 2010. Det framkom att regelverket för delegation av läkemedelshantering var föråldrat och inte förenligt med den dagliga verksamheten. Kommunikation mellan DSK och hemtjänstpersonalen, samt möjlighet till handledning betraktades som viktig. DSK fann det nödvändigt att vara tillgängliga för hemtjänstpersonalen och de försökte skapa en förtroendefull atmosfär. DSK rapporterade det stressigt att behöva delegera administration av läkemedel till en person som saknade kunskap om läkemedel, t.ex. när det är lämpligt att blanda olika läkemedel eller späda ut dem med vätska. Det försvårades även av att det hanteras av olika myndigheter, såsom hälso- och sjukvårdslagen och socialtjänstlagen.

**Studie III:** Vi studerade hur personal inom hemtjänsten upplevde att ta emot delegering för läkemedelsadministrering och åtföljande ansvar. Fyra fokusgrupper med totalt 19 personer genomfördes. Data analyserades med hjälp av kvalitativ

innehållsanalys. Deltagarna ansåg att delegering av läkemedelshantering inom hemtjänsten var en förutsättning för att få vården och omsorgen att fungera effektivt och för att det underlättade arbetsbördan för DSK. Man fortsatte ge läkemedel även när delegationen hade löpt ut; det var behovet som styrde och regelverket fick därigenom en underordnad ställning. Det fanns en låg medvetenhet bland personalen inom hemtjänsten om vilka regler som gällde för delegering. Att acceptera delegation att administrera läkemedel betraktades som en obligatorisk uppgift som var oundviklig. Det hade blivit en rutin och en förutsättning för ett socialt omsorgsarbete i kommunen.

**Studie IV:** Slutligen ville vi beskriva hur äldre hemmaboende personer upplevde att få hjälp av personal inom hemtjänsten med administration av sina läkemedel. Tio hemmaboende personer i åldrarna 68-94 år intervjuades i bostaden. Data analyserades med latent innehållsanalys. Deltagarna uttryckte blandade känslor av att vara beroende av hjälp för att ta sina mediciner; det påverkade autonomin i en tid av försämrad hälsa, men det underlättade samtidigt vardagen när det gällde praktiska frågor och ökade följsamheten att ta sin medicin. De uttryckte samtidigt oro vad gällde hemtjänstpersonalens kunskaper om läkemedel men ansåg inte att man kunde kräva mer med hänvisning till hemtjänstpersonalens arbetsbelastning. De förlitade sig på läkarnas och DSKs kunskap och ansåg att de var en garant när det gällde kunskap om läkemedel i allmänhet och delegering av administrering i hemmet. Generellt uttrycktes uppskattning av insatserna, men en informant gav exempel på hur hon bytte besök mot ett telefonsamtal för att underlätta hemtjänstpersonalens ansträngda arbetssituation. Det riskerade att placera den äldre personen i en beroendeställning till hemtjänsten med en risk för negativt inverkan på vårdrelationen och patientsäkerheten.

**Slutsatser:** Denna avhandling visar: 1) En dramatisk ökning av läkemedelsanvändning hos äldre vuxna från det sena 1980-talet till mitten av 2000-talet i centrala Stockholm; 2) Att DSK inte kan hantera sin arbetsbörda utan att delegera administrationen av läkemedel till icke-legitimerad personal (personal inom hemtjänsten) inom den nuvarande organisationen för hälso- och socialvården; 3) Att ett accepterande av delegation att administrera läkemedel var oundvikligt och hade blivit rutin för att tillgodose behoven hos en ökande andel äldre personer boende kvar hemma; och 4) Att hjälp med att hantera sin medicinering underlättade vardagen och följsamheten för de äldre. Samtidigt kan beroendet av hjälp negativt påverka den äldres känsla av självständighet. Upplevd säkerhet varierade avseende HCAs kunskaper i medicin.

Våra resultat kan bidra till en ökad förståelse för hur hälso- och sjukvården samt socialtjänsten, två fält som innefattar både vård, omvårdnad och sociologi, uppfattar och anpassar sig till de givna ramarna. I första hand hur delegerad administration av läkemedel uppfattas av vårdtagaren, DSK och omvårdnadspersonal. Den visar också hur tillfälliga medicinska uppgifter riskerar att överföras permanent från DSK till icke-legitimerad personal. Möjligheten att delegera blir invävt i verksamheterna med intentionen att underlätta DSK arbetsbörda.

**Nyckelord:** Delegering, distriktssjuksköterska, hemmaboende, hemtjänst, hemtjänstpersonal, hälso- och sjukvård, medicinanvändning, medicinhantering, polyfarmaci, populationsbaserad, tidstrender, uppgiftsväxling, huvudmän, äldre.

## LIST OF PUBLICATIONS

- I. **Gransjön Craftman Å**, Johnell K, Fastbom J, Westerbotn M, von Strauss E.  
Time trends in twenty years of medication use in older adults: Findings from three elderly cohorts in Stockholm, Sweden.  
*Submitted*
- II. **Gransjön Craftman Å**, von Strauss E, Rudberg LS, Westerbotn M.  
District nurses' perceptions of the concept of delegating administration of medication to home care aides working in the municipality: A discrepancy between legal regulations and practice.  
*Journal of Clinical Nursing* 2013; 22(3-4):569-578.
- III. **Gransjön Craftman Å**, Hammar LM, von Strauss E, Hillerås P, Westerbotn M.  
Unlicensed personnel administering medications to older persons living at home: A challenge for social and care services.  
*International Journal of Older People Nursing* 2014 Dec 16. doi: 10.1111/opn.12073. [Epub ahead of print]
- IV. **Gransjön Craftman Å**, Westerbotn M, von Strauss E, Hillerås P, Hammar LM.  
Older people's experience of utilization and administration of medicines in a health- and social care context.  
*Scandinavian Journal of Caring Sciences* 2014 (In press) doi: 10.1111/scs.12207

Reproduced with permission from the publisher. All rights reserved:

Study II © 2012 John Wiley & Sons, Inc.

Study III © 2014 John Wiley & Sons, Inc.

Study IV © 2014 John Wiley & Sons, Inc.

# CONTENTS

INTRODUCTION AND BACKGROUND .....	1
The aging of populations .....	1
Social definition of older people .....	1
Chronic disease and multimorbidity .....	2
Health- and home care organisation in Sweden .....	2
Health- and social care context for older people in ordinary housing .....	3
The ÄDEL reform .....	4
Home health- and home care organisations .....	4
Assistance according to Social Services Act .....	5
The Act on System of Choice .....	6
Care personnel with in the health- and social care contex .....	7
Home care assistant .....	7
District nurse .....	7
Use of medication in older people .....	7
Drug treatment .....	7
Polypharmacy .....	8
Responsible use of medication for the individual.....	10
Assistance of medicine regimen to older people in the context of health- and home care .....	10
Patient safety .....	11
Delegation of administration of medication .....	12
RATIONALE.....	16
AIMS .....	17
DESIGN AND METHODS .....	18
Participants and settings .....	19
Data collection .....	20
Data analysis .....	22
ETHICAL CONSIDERATIONS .....	24
RESULTS .....	25
DISCUSSION .....	29
Methodological considerations .....	34
CONCLUSIONS .....	36
Clinical implications.....	36
ACKNOWLEDGEMENTS .....	37
REFERENCES .....	39

## LIST OF ABBREVIATIONS

ATC	Anatomic Therapeutic Chemical Classification System
CI	Confidence Interval
DDI	Drug-Drug Interaction
DN	District Nurse
EU	European Union
FGI	Focus Group Interview
FV	The Administrative Law (Förvaltningslag)
HCA	Home care assistant
HSL	Health and Medical Services Act (Hälso- och sjukvårdslagen)
LOV	The Act on System of Choice (Lag om valfrihetssystem)
MMSE	Mini Mental State Examination
OR	Odds Ratio
RN	Registered Nurse
SALAR	The Swedish Association of Local Authorities and Regions (Sveriges kommuner och landsting)
SEK	Swedish kronas
SNBHW	Swedish National Board of Health and Welfare (Socialstyrelsen)
SoL	Social Services Act (Socialtjänstlagen)
WHO	World Health Organization

# **INTRODUCTION AND BACKGROUND**

## **THE AGING OF POPULATIONS**

The aging of populations started several decades ago and is now a global phenomenon (1). Increased life expectancy, and lower birth rates, result in a demographic change which is expected to continue (2). There is also an ongoing global and national trend where care is moving out from hospitals and into patients' homes and a broad spectrum of needs has to be met over a long period of time. Societies face the challenge of providing health and home care to an extended number of older people. This includes new paths also for district nurses and home care assistants (3). In Sweden average life expectancy has been rising for more than a century (4).

This thesis focuses on medication use among older people as a background, as well as health- and home care professionals' experiences and perspectives on the administration of medication. Hence three interfaces are examined: 1) district nurses experience of delegation of medication administration to home care assistants; 2) the latter's accepting and performing the task and; 3) the experiences of care recipients living in their own homes of perceived assistance with administration; that is, delegating, administering and receiving.

### **Social definition of older people**

In the absence of an accepted and acceptable definition of an older person, the age at which an individual becomes eligible for statutory and occupational retirement pensions has become the default definition. Characterisations, such as chronological age or social/cultural/functional markers, are commonly used by, demographers, sociologists, anthropologists and economists. According to the World Health Organization [WHO] (5), most developed world countries have accepted a subjective chronological age of 60 or 65 as a definition of 'older person', since this tends to be the age when most people retire in developed countries and qualify to receive old-age benefits in accordance with national laws and regulations. In the context of a worldwide perspective, however, retirement may not have the same meaning as in Sweden. The United Nations (2) have agreed on a cut off of 60+ years to refer to the older population.

The Swedish Government Official Report (6) states that definitions of who should be considered elderly are changing as average life expectancy increases. The significant progress in the health, cognitive capacity and education of old people also raises the limit when natural aging can be viewed as considerably reducing the work capacity of an older person. Sweden will shift the prevailing de facto normal retirement age of 65 years and implement 67 as a recommended retirement age to reflect progressing average life expectancy. There are no any clear indications that early retirement on average improves health, reduces mortality or increases the quality of life for older people.

## **Chronic disease and multimorbidity**

Chronic diseases (sometimes also referred to as non- communicable diseases) are defined by WHO as “diseases of long duration and generally slow progression” and requiring “ongoing management over a period of years or decades”. The term often refers to the diagnosis of cardiovascular disease, diabetes, asthma, and chronic obstructive pulmonary disease (7-9). There is no consensus, however, of specified diagnoses that are to be included the term cover a wide range of health problems that go beyond the previously mentioned conventional identification. Previous research place disability as second to chronic conditions (1, 10). One explanation of this trend of an increased number of chronic conditions can be ascribed to enhanced medical knowledge and the possibility of earlier diagnosis leading to improved preventive treatments. For example osteoporosis, diabetes and hypertension referred to as ‘silent diseases and conditions’, can now be detected and treated earlier and thus prevented from causing functional limitations of the individual (1). Multimorbidity, defined as the coexistence of a number of chronic diseases in the same individual, is well recognized with age (11). Relating to this health transition, several appropriate medications may be prescribed for older people with several diagnoses, making them large consumers of medications which also can contribute to polypharmacy with the risk of drug-drug interactions (DDI). Prescribing medication for vulnerable older people can be difficult and potentially unsafe (12, 13).

## **HEALTH- AND HOME CARE ORGANISATION IN SWEDEN**

The financing and organisation of health services remains a primary responsibility of the 21 county councils in Sweden. The two responsible authorities, the community and municipality are expected interact to provide a safe and person-centered health- and home care (14).

Responsibility for health care is shared by central government, the county councils and the municipalities. Central government has overall responsibility for health care policy. The authorities responsible for health and home care are bound to offer support to community-dwelling elders to live in ordinary housing as long as possible, despite potentially significant frailty and a need for health and home care. The Health and Medical Services Act (1982:763) [HSL], (15) determines the responsibilities of county councils and municipalities.

The authorities have different responsibilities and tasks, see figure 1, which should be integrated in home services, optimizing the given care.

County council	Municipality
<ul style="list-style-type: none"> <li>▪ Medical context</li> <li>▪ Health Care Act</li> <li>▪ Duty/responsibility</li> <li>▪ Lex Maria</li> <li>▪ Health personnel (DN)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Social context</li> <li>▪ Social Services Act</li> <li>▪ Apply/rights</li> <li>▪ Lex Sarah</li> <li>▪ Caring personnel (HCA)</li> </ul>
Natural Sciences Behavioral Sciences	Social Sciences Behavioral Sciences

**Figure 1.** The responsible authorities. © Craftman, (2015).

The county councils are responsible for meeting the health care needs of the population. They have to ensure that their inhabitants receive health care in hospitals, care facilities, special types of housing and their own homes. This view is also found in policies in the Western world in general and effective multidisciplinary organisation is of vital importance in times of changing social conditions (16-18).

### **Health- and home care context for older people in ordinary housing**

Health and medical policies in the Western world tend to result in shorter hospital stays and patients being discharged while they are still in need of qualified care (19-23). People will not be discharged from hospital as the place of care, to home. Instead they are transferred to their homes for care (22, 24). Local authorities are responsible for health care in special housing and day centers (excluding medical intervention). In addition, municipalities have the opportunity to, in agreement with the county, all or part of the responsibility for home care (excluding medical intervention) in ordinary housing. In 2012, this has been implemented in 174 of 290 municipalities in Sweden (25).

The main task of the county councils and the municipalities is to commission and fund the activities to be carried out (26). The Swedish Association of Local Authorities and Regions [SALAR] (27) states that difficulties of providing the sick and elderly with coordinated health and home care are well known regardless of health systems and not unique to Sweden. Deficiencies in outpatient care lead to increased risk of acute need for inpatient care. Every fifth ill person older than 65 years also requires unplanned re-hospitalization within 30 days. Some examples of reasons for this can be problems with medications, lack of follow up, poor contact between primary care, hospital and municipal care. SALARs (2012) survey including older people who had been re-hospitalised showed that the decision to go to hospital is usually made by the older person her/himself or relatives. The participants themselves voiced the opinion that home visits by doctors or district nurses, more home care services or assistive devices sometimes could have prevented the ambulance ride and readmission. The result also yielded clear indications that older people do not understand the information they receive in health care.

## **The ÄDEL reform**

The Swedish Parliament decided on a new elderly care policy in 1992 called the Ädel reform. Municipal responsibilities were introduced with regard to so called “bed blockers”; that is, a patient’s medical treatment was completed at county council units like somatic emergency- and geriatric care. A municipality is liable when a patient is ready for discharge from hospital if he or she is no longer assessed by the treating physician as needing care at a unit exclusively operated by the county council (28). One aim of the reform was to provide municipalities with the financial and organisational preconditions to develop freedom of choice, security and integrity in health and social service as well as care for old people. Swedish National Board of Health and Welfare (29). The aim is to enable older people to remain in their own homes for as long as possible, or for as long as they wish, regardless of their health condition or need of assistants (16, 30, 31).

## **Home health- and home care organisations**

The European Union [EU] funded project ‘mapping professional home care in Europe, used the definition professional care, provided at home to adult people with formally assessed needs, which comprises rehabilitative, supportive, domestic aid and personal care, as well as care provided to informal caregivers. Home care systems seem to differ both between and within countries (32). According to Leichsenring (33) policy papers at national and European levels underline that a person in need of long-term care should be supported as long as possible at home: residential homes should be reduced, different kinds of providers and services (daycare, short-term care) should be supported and the whole system of providers should be “coordinated”. All recommendations and proposals are made in the context of increasingly market-driven regulatory strategies and could be seen as a general attempt to reduce public health and welfare costs.

In the term base of the Swedish National Board of Health and Welfare [SNBHW] home care is defined as care and social service delivered in a persons’ own home or equal housing. In this definition of home care, a distinction is made between home care provided by the municipalities, and home health care, provided by the county councils. Home care is service relating to daily living, as practical help with housing in general, and personal assistance, such as help with personal hygiene, to meet physical, psychosocial and social needs, mobilisation and socialisation. Home health care is health care when it is provided in the patients’ own residence, or equivalent housing, and where the responsibilities for medical procedures are continuous over time. These definitions by the SNBHW are used in this thesis (34). Home health care includes medical treatment, rehabilitation, habilitation and care provided by licensed health care professionals or other health professionals with delegation conforming to the Board's regulations and general guidelines on delegation of duties within the health care and dental care. Assisting a licensed professional is also referred to as being a health -care professional (35).

Legal preparatory work restricts home health care in ordinary housing for “the part of primary care that performs health care in individuals' homes in ordinary housing”. Legislative history also shows that home care is intended for people who need long term support from both health care and social services. It is not a requirement that

patients should have the need for assistance from both the health care and social services in order to be able to receive home health care. Efforts of a temporary character, such as healthcare professionals perform in the home, do not count as home health care, but as open health care (36).

### **Assistance according to the Social Services Act**

In the age group 65–74 around 3 percent received care in their homes or lived in special housing while the corresponding proportion among older people (95 years and older) was about 90 percent. In the age group 80 and older about 38 percent either had assisted living or lived in special housing. The number of people in residential care has declined by about 3000, while the figure in ordinary housing having been granted home care services has increased by about 1300 (25).

The Social Services Act (Socialtjänstlagen) [SoL] (SFS: 2001:453) (16) states that the municipality have the uttermost responsibility to provide individuals with publicly funded service and help in everyday life and the potential to live independently and safely at home, despite old age, health or caring needs.

*“Anyone who cannot meet their needs or have them met in other ways has the right to the assistance of the Social Welfare Board... The individual will through assistance reach a fair standard of living. The assistance should be designed so as to enhance his or her ability to live independently.”* (4 chapter 1 § SoL)

Chapter four, 1<sup>st</sup> § SoL. Basic principles of social services to the elderly are self-determination and normalization. Those include efforts to facilitate for the elderly person to be able to remain living in their own home if they so desire.

Tasks that involve the exercise of public authority may not be carried out by private providers of social service, even when financed with public money. The assistance is preceded by an individual's application for assistance Förvaltningslag (1986:223) [FV], (37). One assistance officer makes a house call or attends an organized meeting at the hospital, involving so called care planning if the individual needs assistance immediately when discharged to her/his home.

The assistance officer carries out a needs analysis and assesses the individual's situation as a whole. The individual is free to request assistance of different kinds, but needs *de facto* must always constitute the base for the aid decision. Decisions regarding entitled support and assistance are always communicated in writing and should be reconsidered once a year. If the request is turned down partly or as a whole; this can be appealed against at a general administrative court. For support, health and home care interventions among the elderly municipalities charge a fee up to a certain maximum level. The fee is individual and calculated on the basis of income, housing costs and granted support. A statement of income paid out of the Pension Authority is obtained from social insurance and capital gains from the tax authorities; any other income must be disclosed. The fee is regulated by the Social Services Act (Socialtjänstlagen) [SoL] (16) and depends on the current price base amount which is set by the government and adjusted annually.

Even though the annual National Study of Users' Perception of Quality on Home Care and Residential Care performed 2013 and 2014 reveals a high rate (89%) of satisfaction among care recipients it also indicates that care personnel were perceived to lack time, were sometimes hard to contact and did not always inform of temporary changes at short notice (38, 39).

## **The Act on System of Choice**

The Act on System of Choice (SFS 2008:962) [LOV] is an alternative to the Swedish Competition Authority (2011), and can be applied to health care services and social services (40). The individual user has to be supported by the authority in choosing a provider, explaining what the freedom to choose entails and what providers are available. Measures taken under the Social Services Act build on a decision to provide assistance. In home care it is the public authority that contacts the providers and makes sure that the user's choice is fulfilled. For people who are not capable of choosing by themselves, or who want help from someone else in making their choice, the rules on assistants, representatives and legal assistance are the same as in ordinary cases when free choice systems have not been introduced. The individual also has to be given the option to change provider in a simple way. The opportunity to choose is the very core of the system and is intended to help to maintain and further develop the quality of the services included. The SNBHW (38), however, found no differences in the experience of satisfaction among care recipients when comparing the answers from municipalities with and without the Act on system of Free choice for home care. Apart from individual capabilities, another important element for a system to work according to market economics is the availability of information about services.

A report by Svensson and Edebalk (41) evaluating customer choice of social services concluded that few older people assisted by home care changed providers and the care recipients' interest mostly focused on who comes to their home and what tasks that person does there; which company provides the services was not a priority. Kraus (42) finds the option to choose who should provide the assistance to be in line with New Public Management applied in the public sector. The different units, often with separate responsible authorities, are only part of the overall puzzle of public services. There is thus a strong need for well-functioning cooperation between sections in order to provide users with high quality service and not "fall through the cracks". Health- and home care for older people involves a variety of procedures from both municipal and county councils for the support of those who need help. Many believe that cooperation between various providers has been hampered by changes that have occurred in the New Public Management reforms. This is because each unit has to manage its own budget, instead of seeing the big picture and the users' overall experience.

The ability to supply more patient-centred and patient-directed health care is balanced against worker shortages and financial constraints (24), leading to the delegation of tasks from licensed personnel like DNs to unlicensed personnel home care assistants. Person-centred care is a concept, based on the persons' own desires, that during recent years has become equivalent with best practice care and is advocated in the Social Services Act for the benefit of persons who are granted home care (16). Sandman (43)

states that the concept of autonomy is often used within the care context. At least four different aspects can be seen, for instance self-determination, freedom, desire fulfilment and independence. The decision of how to handle given situations can be made by oneself or be handed over to someone else to make. There should also be an awareness that a patient may be uninterested in making decisions in all situations. Plath (44) finds independence and dependence for older people of a dual nature. The strength to make own decisions is a positive aspect, but can also have a negative impact by underestimating one's needs.

## **CARE PERSONNEL IN HEALTH- AND HOME CARE CONTEXT**

### **Home care assistant**

In Sweden, municipal social home care has its roots in the 1950s when the organisation of "home helpers" for older people was established. The workforce consisted of middle-aged women who had extensive experience of housekeeping, and no formal education was required. Today, HCAs in municipal home care perform more complex tasks. They generally work alone and independently in the old person's home, providing direct personal care, service, and housekeeping and are also expected to perform medical tasks such as the administration of medication (45). Chapter 3. § 3 paragraph Social Services Act (2001: 453) (16) stipulates that tasks performed within social services must be provided by personnel with appropriate training and experience. The SNBHW (46) have communicated general advice as well as giving recommendations to clarify the meaning of established requirements of staff working in social service care for the elderly.

### **District nurse**

The Swedish DNs (DN) or primary care nurses are licensed nurses specialised in primary care nursing with a comprehensive, psychosocial care perspective and as specialists they play a pivotal nursing role in home care. A DNs workplace can be sited in many different contexts from well-baby clinics to older people in ordinary housing, including comprehensive and psychosocial care. Their specialised education including care, pharmacology and social medicine gives DNs a role as health educators as well as instructors of caregivers or home care assistants (47, 48).

## **USE OF MEDICATION IN OLDER PEOPLE**

### **Drug treatment**

Treating older adults with drugs is a challenge because of age-related physiological changes and high levels of co-morbidities (49). Medication is a main component in healthcare for elderly persons (50) and aging is often accompanied by chronic conditions and multi morbidity (51). Earlier detection of diseases, as well as the increase of available medical treatments has enhanced the use of medication (10, 52, 53). Veehof et al. (2000) found an increase or worsening of diseases, aging itself, hospitalisation, the patient's own expectations and consultation with several different

physicians to be associated with multiple drug use. Medication without a clear indication was also found to contribute to increased use of medicines in the group of older people (54). Also, the impact of specific evidence-based clinical guidelines for explicit disease diagnosis may contribute to increased medication use, and thereby the presence of polypharmacy, as these only state the benefits of an individual medicine for a specific disease. Thus, clinical guidelines may not be adapted to complex drug treatment of frail older persons suffering from multiple diseases (55, 56).

A medication regimen needs to be reconsidered on a regular basis, as the medical condition changes over time. Flaherty, Perry (57) state that five out of ten of the most frequent used medicines among old people receiving home care were obtainable without a prescription. They also found polypharmacy to be a marker for old care recipients at risk for hospitalization. Mannucci, Nobili (58) see a multidisciplinary team involving nurses, pharmacists, social workers and clinical pharmacologists as an important approach to avoid the risk of care fragmentation, as well as practicing patient-oriented medicine, and, at the same time performing a realistic personalised medicine when handling the multimorbid and polytreated elderly. Gould and Mitty (59) point out the preference of adherence before compliance, when prescribing medications and in the discussion of medication regimen between physician and patient.

## **Polypharmacy**

There are several definitions of polypharmacy (55). Some researchers have performed a qualitative examination, for example relating to the use of drugs that are not clinically indicated (60). This has also been defined quantitatively and a common definition is the use of five or more drugs (55, 61). Polypharmacy can be explained by physicians' inclination to follow national treatment guidelines for specific diseases and prescribe the medications recommended for each of the diseases that affect the elderly. However, guidelines normally do not take into account multimorbidity and polypharmacy. The clinical trials, as the basis for medication prescription according to evidence-based medicine, usually enroll patients completely different from older people, i.e. relative young, and purposefully selected for having only the disease that is expected to benefit from the medication under investigation (58). According to Haider, Johnell (62) >40% of people aged 77+ years in Sweden were exposed to polypharmacy and the prevalence of polypharmacy further increases with age (63). Veehof, Stewart (64) find that polypharmacy develops gradually and is not related to the number of diseases in question. It is, however, possible to maintain a high quality administration of medicine even when using several medications if there is continuous monitoring of the medication therapy, since polypharmacy does not automatically lead to adverse outcomes (65). It is vital to be vigilant with regard to possible medication errors and recognise associated polypharmacy risk factors instead of denying older people a valuable medication therapy (66).

**Table 1.** A selection of studies reporting medication use in older adults.

Author, year	Study participants and place	Main findings
Franchi et al, 2014 (54)	Two million subjects ranging in age from 65 to 94 years recorded in the Drug Administrative Database of the Lombardy Region (Italy) from 2000 to 2010.	Prescriptions to community-dwelling elderly people have increased substantially between 2000 and 2010 and the prevalence of those exposed to chronic polypharmacy doubled. Males were less frequently treated than females, except for chronic polypharmacy. People aged 80+ years showed the largest increase in all prescribing patterns. This can be due to an improvement in care, but also to polypharmacy and chronic polypharmacy and need to be analysed in relation to quality of care, patient safety, and costs.
Olsson et al, 2011 (68)	A Swedish study including 150 patients aged 75+ years, using five or more drugs and living in ordinary homes recently discharged from hospital. A randomized controlled study with 3 groups: (A) controls, (B) prescription review sent to physician, and (C) as in B and with a current comprehensive medication record sent to the patient.	Extreme polypharmacy was common and persistent in all three groups and this was accompanied by an unchanged frequency of drug-risk indicators. The intervention seems to have had no effect on quality of prescriptions or quality of life. This underlines the major challenge of finding new strategies for improving prescription quality and patient outcome measures such as quality of life and reducing the known risks of polypharmacy for the elderly.
Johneil & Fastbom, 2012 (75)	Swedish individuals aged 65+ years who filled at least one drug prescription during three months (n = 1,347,564; 1,260,843 community-dwelling and 86,721 institutionalized elderly).	The results indicate that institutionalized elderly are more likely than community-dwelling elderly to use psychotropics, analgesics and laxatives, but less likely to receive recommended cardiovascular drug therapy, which may indicate a need for implementation of evidence-based guidelines for drug treatment in this vulnerable group of elderly patients. Further research is needed to elucidate to what extent the differences in drug use between community-dwelling and institutionalised elderly are explained by varying underlying disease patterns and by divergent prescribing traditions in the different settings.
Jyrkkä et al, 2006 (53)	Prospective follow-up study. A random sample of 601 participants at baseline in 1998 aged 75+ years from the City of Kuopio, (Finland). The changes in medicine use among the survivors (n=339), were re-examined in 2003.	From 1998 to 2003, the mean number of medicines in use per individual increased as well as the prevalence of polypharmacy and excessive polypharmacy. This was explained by increased use of regularly taken medicines, but the use of medicines taken as needed decreased in both genders. Persons in institutional care used significantly more medicines than community-dwelling elderly persons. Central nervous system medicines and cardiovascular medicines were the most commonly used medicines in both years. In order to optimize medication it is necessary to regularly assess the medication regimen.

## **Responsible use of medication for the individual**

The use of medicine is, as well as ageing, an ongoing topic of discussion in the world. (67)WHO (2014) define rational medicine use as follows “patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community”. This integrates the weight of stakeholder responsibility and the challenge to adjust to limited resources. Despite the benefits of medicine treatment, there is a negative side including side effects, adverse drug reaction, DDI and inappropriate medication use. This can lead to increased morbidity and hospital admission. The most significant risk is polypharmacy (68).

Beckman, Bernstein (69) found that elderly persons may have cognitive, visual or physical limitations which may decrease their ability to take medications accurately, and can make taking prescription medications difficult. This can also influence the perception of being independent (70). The use of a multi-dose medication dispenser is a compliance aid aimed to enhance adherence to medical treatment. The dispenser containers hold all of the patient’s oral medicines in compartments which are marked with day of the week and time for dose-taking (71). The most frequently used support system in Sweden is said to be the Dosett and ApoDos pouch. However, previous research found that patients using a multi-dose medication dispenser system, also had an increased number of medications, were more often subjected to potentially harmful medication treatment, and had fewer changes in their medication regime (72, 73).

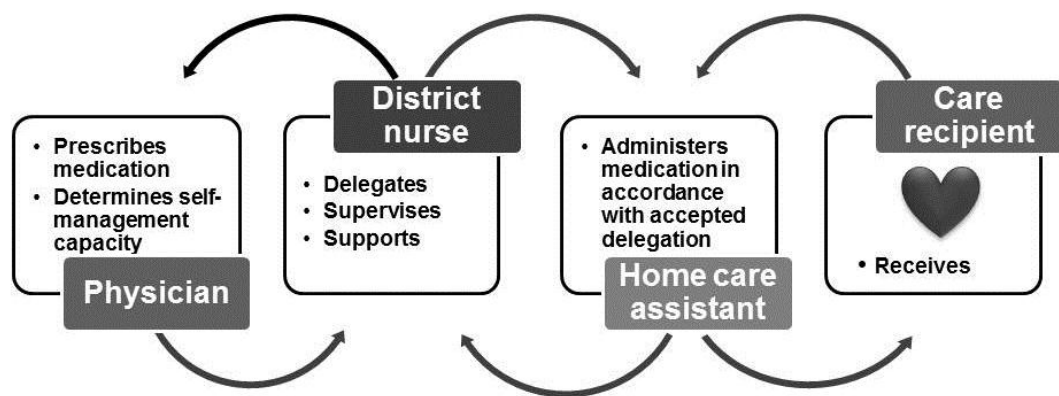
All residents in Sweden are covered by a scheme that includes most prescription medicines. The maximum amount that a patient in Sweden may have to pay during a twelve month period, commencing on the date of the first purchase, is 2200 SEK (around €200). The part of the cost of medicines and other defined and entitled products paid for by the patient is referred to as a customs fee (25%) and the portion paid by the society is termed benefit. Pharmaceutical Benefits are paid in principle by the county councils but the cost is subsidized through government grants under contracts between the state and county councils (74).

## **ASSISTANCE WITH MEDICINE REGIMEN TO OLDER PEOPLE IN THE CONTEXT OF HEALTH- AND HOME CARE**

The population of older people living at home with chronic conditions has expanded and due to demographic changes the number and complexity of cases of old people (65 years and older) being cared for in their homes has been on the increase. The aim is to enable old people to remain in their homes for as long as possible, or for as long as they wish, This should be provided regardless of a person’s health or need of assistants (16, 30, 31). This view of the choice of place to be cared for as well as resultant changes in the organisation of health care can also be found in several other European countries (32).

Johnell and Fastbom (75) estimated that home-dwelling people in Sweden use on average 4.3 medicines per person. Dhalla, Anderson (76) highlight inappropriate medication use in older people living in their own homes. This is because the

medication regimen of home-dwellers is usually less well monitored than among institutionalised elderly. Francis, Smith (77) underline this as a central aspect of the medicine regimen; hence failure to adhere to prescribed regimens may lead to deterioration of medical conditions, readmission to hospital, and adverse effects or reactions. The SNBHW (78) have provided guidelines as to how the assessment of the individual's capacity to perform self-care should be handled. The physician with the prescribing responsibility should also determine self-management capacity; that is, whether there is a need of assistance to conform to the medication regimen. Figure 2 describes the chain of administration of medication in home care. The physicians prescribe and determine self-capacity; if assistance with administration is considered necessary the DN is informed. The next step is to decide whether the DN will administrate the medication herself or consider it appropriate to delegate the task. If so, the HCA assists the care recipient. The care recipient is supposed to communicate benefits or side effects of the medication regimen to the HCA who should report to the DN who then can contact the physician.



**Figure 2.** The chain of administration of with regard to delegation of medication in home care. ©Craftman (2015).

## Patient safety

An important starting point for patient safety considerations is that it is human to make mistakes. Therefore patient safety is one of the cornerstones in all quality work and a basic concept in health and home care. When a mistake occurs, it often has underlying causes in organisation or routines. Care should be knowledge based and purposive; that is, health care should be based on science and proven experience and designed to meet the individual patient's needs in the best possible way. In order to exercise such knowledge-based health care requires relevant knowledge leading to action in an orderly manner. The definition of “*good care*” by SNBHW is divided into five foundations namely; safe health care, patient-focused health care, effective health care, equitable health care and health care in a timely manner (79).

The patient safety Act (2010:659) (80) relates care injury to suffering, physical or psychological injury or illness and death that could have been avoided if adequate measures had been taken during the patient's contact with health and medical care.

In chapter 6. *Responsibilities for health professionals and others*, general obligations are stated as follows:

*1 § Healthcare professionals should conduct their work in accordance with good clinical practice. A patient will be given expert and diligent care that meets these requirements. Care shall as far as possible be designed and implemented in consultation with the patient. The patient should be shown consideration and respect.*

*2 § member of the health care personnel responsibility for how they carry out their duties*

*The first paragraph does not diminish the caregiver's responsibilities under this Act or other statutes.*

*3 § member of the health care personnel may delegate a task to someone else only when it is consistent with the requirements of good and safe care.*

*The delegating a task to someone else, is responsible for ensuring that the person is able to carry out the task.*

*4 § Health care staff are required to contribute to the high patient safety is maintained. Staff shall for this purpose to the caregiver report risk for preventable adverse events and incidents that have resulted or could result in a nursing injury.*

The Swedish Parliament (80).

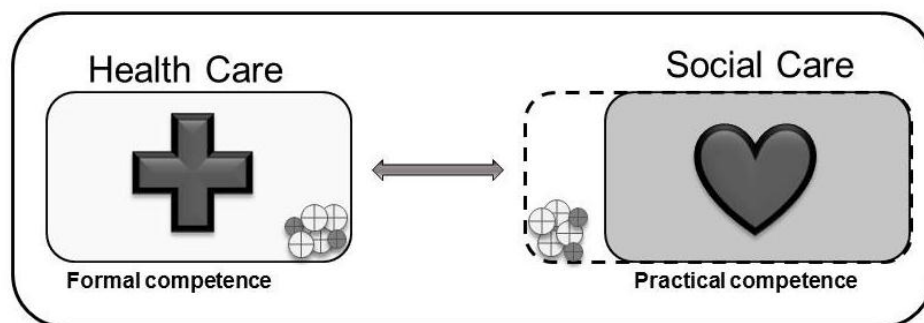
The rule to report care deviations is named Lex Maria. According to the Patient Safety Act (2010:659) (80) health care workers should report risks of preventable adverse events and incidents that have resulted or could result in a patient injury to the provider of health care. As a next step, the provider has a duty to investigate the case and must report incidents to the Health and Home care Inspectorate [IVO]. The main task of the IVO is to check that the public receives safe, good quality health and home care in accordance with laws and other regulations.

## **Delegation of administration of medication**

HCAs are neither registered nor licensed by a regulatory body. The organisations of social services and health care which steer the content of HCAs' work in the municipalities can cooperate to meet elderly people's needs both of today and in the future. In this thesis the administration of medication has been in focus, but other medical tasks like dressing wounds can also be delegated. The administration of medication is not part of HCAs' ordinary tasks. However, Hansson and Engström (81) found that 14% of HCAs' working time comprised medical assignments. Ninety- five percent of the HCAs had been delegated the responsibility of administering medication (82). According to the SNBHW (35) DNs who are registered in accordance with formal conditions of competence have the authority to delegate and are also accountable for the decision. Delegation of administration of medication to HCAs in the context of

municipal home care can thereby be performed even though they do not possess the formal knowledge, but they must be deemed by the DN concerned to have the necessary practical knowledge and training in this regard. A DN should only delegate administration of medication to a person who has had appropriate training and whom they deem competent to perform the task. When a DN is delegating she must be assured that the delegates fully understand the nature of the delegated task, particularly in relation to what is expected of them to be able to carry out the task of administering medications. The delegation is made across boundaries of health and home care.

The medical task of administering medication from the health care, with formal competence represented by the DN, is transferred by delegation, see figure 3. The HCA with practical competence in home care performs the task as part of professional duties, thus taking on a personal delegation with possibility of reporting to the DN and receiving tutoring when needed.



**Figure 3.** Delegation of administration of medication. ©Craftman (2015).

To avoid misunderstandings the delegated task must be clearly defined. The delegation is personal, given from a specified DN to a specified HCA and it is important that the delegation should be accepted voluntarily by both professions. The National Council of State Boards of Nursing (83) and the Nursing and Midwifery Council (84), finds the specific task and the specific performer as the core when proper delegation is to be performed. The DNs must consider the needs and safety of the people in their care and the complexity of the task being delegated, as well as the expected outcome of the task.

A delegation can be valid for a maximum of one year; however, it can also be repealed earlier if needed, for example if the DN; or the HCA terminates employment. After one year the delegation needs to be renewed; if not, the task goes back to the DN and the HCA is not permitted to perform the administration. The DN who has delegated should also, according to the statute (1997:14), follow up the given assignment and supervise the HCA to be assured that the task is performed as expected, and patient safety maintained. This emphasizes the importance of properly educated personnel and sufficient time to provide care and a consistent service. One of the aims of this arrangement is that the use of HCAs would reduce the number of different staff seen by the care recipient, and lead to more effective use of HCAs' and DNs' working time. The delegation is not supposed to be an everyday solution addressed to shortage of personnel, or economic restraints. It should be a benefit for the third party, in this case the care recipient.

The National Council of State Boards of Nursing (1995) has stated “Five rights of Delegation”

1. Right task;(a) nursing task(s) to a specific nursing assistant for a specific patient
2. Right circumstances; the setting of care is appropriate for the nursing act/task to be delegated; there are sufficient staff, resources, and trained personnel such that care can be appropriately provided and monitored.
3. Right person; applicable laws are incorporated into institutional standards and staff competencies such that the delegating nurse can adequately assess a nurse assistant’ skills and understanding to perform the task; that is, “the right person is delegating the right task to the right person to be performed on the right patient”
4. Right direction and communication; a clear, concise description of the task, including its purpose/goal, potential complications, and expectations of communicating change in patient/resident status.
5. Right supervision and evaluation; protocols for monitoring, documentation, performance evaluation, and feedback to the delegator and delegatee.

**Table 2.** A selection of studies reporting delegation of administration of medication.

Author, year	Study participants and place	Main findings
Bystedt et al, 2011 (102)	Twelve Swedish registered nurses (RN) were interviewed and the material was analysed using a phenomenographic approach.	Delegation is seen as a prerequisite for a functioning organisation. The work situation of RNs; the relationship with unlicensed personnel for mentoring, use of unlicensed personnel (UP) competence and the creation of fairness vs. questioning UP competence and the patients' increase in continuity, quicker treatment, and improved security vs. insecurity. RNs who delegate to UPs must be given time for mentoring so that the nursing care is safe care of high quality.
Mitty et al, 2010 (109)	Executive Directors of Board of Nursing or their nurse practice consultants of 44 states in the USA were interviewed via telephone.	Administration of medication is an important aspect of care. It is not realistic for a RN to manage all tasks, considering resources available in assisted living, homes or community settings. Some form of delegation or "working through others" is needed. The question is raised whether the assistance should be implemented outside a delegation model and be a responsibility of another provider.
Wood et al, 2010 (119)	1,335 assisted living facilities (ALFs) in a western state in United States, surveyed for 2007-2008.	The rise ALFs, coupled with residents with increasingly complex conditions, leads to unanticipated problems linked to medication management. Of the allegations, 60.3% involved individual residents, with 25.2% of these being medication related. Complex medication regimens delivered by unlicensed assistive personnel place residents at risk for negative health consequences. More nursing oversight is critically needed to ensure the health and safety of the new generation of ALF residents.
Bittner & Gravlin, 2009 (120)	Twenty-seven registered nurses (RN) participate in focus groups in a teaching hospital in the Northeast United States.	Frustration of knowledge expectations of the delegatee and RNs did not ensure that the delegatee understood or accepted the delegation. A successful delegation deepened a good relationship between the delegator and the delegatee. Delegation overload was resulting in safety concerns and the lack of follow-through on delegated tasks, even in the case of nurses who stated their understanding that the accountability remained. It was simply not possible for RNs to follow through on delegated tasks. This is related to increased workload and patient acuity.
Axelsson & Elmstahl, 2004 (82)	Employees (n=341) within the social services in the municipality of Malmö, Sweden of whom 313 were HCAs and 28 were supervisors, at a total of 36 workplaces.	Most HCAs (95%) are engaged in medication administration; to a great extent they lack knowledge in this area. However 53% managed to give a correct or partially correct answer to questions concerning medication administration; indications for common drugs were 55%, contra-indications and adverse drug effects 25%, and symptoms 59%. There is a need for further training of HCAs in order to ensure patient safety. With respect to this, issues of learning and quality improvement are discussed.

## RATIONALE

To meet the increase of an aging population and use of medication requires changes in the view of the possibilities regarding aging in ordinary housing. The responsible authorities' organisation of health and home care provides assistance to facilitate administration of medication by a delegation from a DN to a home care assistant. There are only few previous studies focusing on the two professions of caregivers' experience of the context of administration of delegation. There is also a shortage of studies concerning how older people themselves perceive the situation of receiving assistance with the administration of medication in ordinary homes. Extended knowledge and understanding in these fields, spanning sociology and nursing, will enhance the possibilities for the responsible authorities and others to monitor care and support to older people aging at home with morbidity. This is also a contribution to revealing how health and social personnel perceive their opportunities to perform and meet the demands on future caretakers in a society undergoing shifts in demographics.

Home care is sometimes referred to as the 'Cinderella service' according to Miller, McKeever and Coyte (85) because home care assistants are under-funded, under-supported, undervalued and under-researched. In a political and operational climate where there is much concern at hospital discharge, extended ways to ageing in place, it is paradoxical to find that a crucial element required to address this issue is given little regard. In order to provide a 'seamless service', and improve the health and home care of older people, attention needs to be focused on ways to retain knowledgeable and skilled home care assistants and DNs who are needed to providing this crucial health and- home care. It is also important to be aware of the work conditions and environment for both professions the latter also is the care recipients own home.

# AIMS

## GENERAL AIMS

The overall aim of this thesis was to investigate how delegation of medication is handled in municipal home care. I wanted to 1) explore the prevalence of medication use in older adults over time (20 years); 2) describe DNs' experiences of the delegation of medication management to municipal home care personnel; 3) explore and describe how HCAs experience receiving the actual delegation of the responsibility of medicine management; and 4) to describe how elderly persons, living at home, perceive achieving assistance from home care aids to manage their own medication.

## SPECIFIC AIMS

The specific aims of the four studies (Paper I-IV) included in the thesis:

- I. To explore changes in medication use and polypharmacy in general, and analgesics and psychotropics in particular, from 1987 to 2007, among older adults living in Stockholm, Sweden.
- II. To describe DNs' perceptions of the concept of delegating the administration of medication to HCAs (unlicensed personnel) working in the municipal social services.
- III. To explore *(i)* how HCAs experience receiving the actual delegation of the responsibility of medicine management; and *(ii)* how HCAs handle the responsibility that comes with the delegation and perceive administration of medication to older people living at home, as delegated to them in the context of social care.
- IV. To describe how older people, living at home, experience the use and assistance of administration of medicines in the context of social care.

## DESIGN AND METHODS

The research project consisting of four sub studies has a quantitative (paper **I**) and a qualitative, descriptive approach (paper **II, III and IV**). An overview of the sub studies is provided in Table 3.

**Table 3.** Overview of studies in the thesis.

	Title	Participants	Data collection	Data analyses
<b>(I)</b>	Time trends in twenty years of medication use in older adults: Findings from three elderly cohorts in Stockholm, Sweden.	Persons aged 78+ years, (n=4,304) living at home or in institution in three population-based cross-sectional surveys. The Kungsholmen Project (KP) and the Swedish National study on Aging and Care Kungsholmen (SNAC-K).	Structured interviews by trained nurses, clinical examinations by physicians, and psychological testing.	Descriptive and comparative statistics.  Logistic regression models.
<b>(II)</b>	DNs' perceptions of the concept of delegating administration of medication to HCAs working in the municipality: A discrepancy between legal regulations and practice.	Twenty DNs in urban and rural areas in Stockholm, Sweden.  Snowball sampling.	Semi structured individual interviews.	Qualitative manifest content analysis.
<b>(III)</b>	Unlicensed personnel administering medications to older persons living at home; a challenge for social and care services.	Nineteen HCAs in an urban area of Stockholm, Sweden.  Snowball sampling.	Four focus group interviews, divided into 5, 5, 4 & 5 participants.	Qualitative manifest content analysis.
<b>(IV)</b>	Older people's experience of utilization and administration of medicines in a health- and social care context.	Ten persons aged 68-94 years, living in ordinary housing, requiring assistance with administration of medication; in urban and rural areas of Stockholm, Sweden. Participants were identified through SNAC-K or academic health care centers	Semi structured individual interviews.	Qualitative latent content analysis.

## **PARTICIPANTS AND SETTINGS**

### **Study I Older people**

The study population consisted of 4,304 participants in three population-based cross-sectional surveys conducted in the Kungsholmen area of central Stockholm, Sweden: the Kungsholmen Project (KP) in 1987 and the Swedish National study on Aging and Care in Kungsholmen (SNAC-K) in 2001 and 2007. The KP was a community-based cohort study on aging and dementia that targeted all inhabitants in the Kungsholmen district in October 1987 and aged 75+ years, living either at home or in institution (n=1,810). The project design for KP has been described in detail elsewhere (86).

The SNAC-K is part of a national longitudinal study on aging and care ongoing in four different geographical areas of Sweden. Participants were randomly selected from the population of adults aged 60+ years living at home or in institution in the Kungsholmen district in 2001 (baseline n=3,363). As the KP included only people aged 75+ years, only participants from SNAC-K in the same age ranges were included. Data were derived from KP baseline in 1987-89, SNAC-K baseline in 2001-03 and in 2007-09. It took approximately two years to examine the population of each survey; thus people aged 77 to 79 years would be included in the 78 year age group; people aged 80 to 82 years would be included in the 81 year age group etc.

### **Study II District nurses**

The inclusion criteria for the DNs were: Swedish speaking; a postgraduate diploma in Primary Healthcare Nursing; experience of delegating administration of medication; and working at a health care center. The participants, all women, (n=20, all females) were recruited from 17 different district healthcare centers. The age of the DNs ranged from 33-61 years, their average length of work experience in this area was 14 years, with a total range of 2-33 years of experience.

### **Study III Home care assistants**

In total 19 HCAs from four different units within an urban municipality in central Sweden volunteered to participate in focus groups interviews (FGI). The participants were 15 women and four men. The length of their professional experience varied between 1 to 27 years; 4 lacked formal health care related education.

### **Study IV Older people**

The participants (n=10), four women and one man, were identified from the database of SNAC-K, and two women and three men were identified through academic health care centers in a suburban area in a rural county in Sweden. Age varied between 68-94 years. The participants had daily help from municipal social service care with administration of medication as well as varied domestic help, for example housing, and care, such as personal hygiene and getting dressed. The assistance was granted pursuant to the Social Services Act (SFS, 2001:453) (16) and Swedish Health Care Act (SFS. 1982:763) (15).

## DATA COLLECTION

### Study I

Data derived from structured interviews by trained nurses, clinical examinations by physicians, and psychological testing, all following standardized protocols (31, 86). The same research team with the same expertise conducted all three cohort surveys, using the same study design and assessment tools. All study variables were collected during the examination and/or through an interview with the participant's next-of-kin or a close informant. Data covered sociodemographic characteristics such as age, gender, marital status, education, and living situation. Furthermore, the participants' cognitive status and medication use was recorded.

### Study Variables

All variables were collected during the examination and/or through an interview with the participant's next-of-kin or a close informant.

*Sociodemographic characteristics* were age, gender, marital status, living situation and education.

*Cognitive function* was measured by the Mini-Mental State Examination (MMSE) (87) administered by registered nurses or by a physician. The test gives a maximum of 30 points, where cognitive impairment was defined as having a score below 25.

*Medication use* was collected by the physician. Participants were asked to bring a list of current regularly and as needed used drugs. Medication prescriptions and medical containers were inspected where possible. Both prescribed and over-the-counter medications were recorded. Medications taken daily or at regular intervals were defined as being in regular use. When information could not be provided (e.g., due to cognitive impairment), a relative or a close informant supplied information. For persons living in institution information on medication use was collected from medical records. Medications were classified according to the Anatomical Therapeutic Chemical (ATC) (88) Classification system, as recommended by the World Health Organization. We analyzed the use of medications, and in particular analgesics (N02A-B) and psychotropics (N05A-C and N06A). Polypharmacy was defined as concurrent use of five or more medications.

### Study II

The participants in this study consisted of 20 Swedish speaking DNs from different district healthcare centers. The participants were selected according to the chain sampling technique called snowballing (89). The first DN was invited from an academic health care center. After stating their interest in participating, they received an e-mail with information. Afterwards, they were contacted to confirm their participation and a time and place which was suitable for the participant was set for the interview. The research group and an invited DN developed an interview guide with open-ended questions to maintain consistency. The guide was tested in two pilot interviews with DNs: it was found to be effective and suitable and no changes were made. Every interview started with an invitation to speak freely about delegation and related topics. The interviews were conducted between April 2009 and October 2010 in a place and time chosen by the participant. Each interview lasted for approximately 60 minutes.

### **Study III**

Four focus group interviews (FGI) were conducted, one FGI at each social care unit. The participants' names were obtained in line with chain sampling described by Polit and Beck (89). In this study the first contacted manager suggested the next home care unit, whose manager suggested the next unit. After approval from the manager at each home care unit, an invitation letter containing information was sent to the manager, who informed the unit about the study and the voluntary nature of participation in the FGI. The HCAs who accepted the invitation to participate notified the first author of a suitable time and place for the interview. All participants gave oral consent to participate prior the interview.

Each FGI took place in a separate room at the respective unit at the participant's workplace, where the interview could be performed undisturbed. The participants were invited to sit around a table to enable eye contact, interaction and awareness of non-verbal as well as verbal communication. The FGIs comprised open ended questions aiming to encourage free discussion. The same opening question was asked in all interviews, 'Could you please tell me what it means to you as an HCA to accept a delegation to administer medication'. This question was followed-up by probing questions to ensure that the FGIs stayed within the aim, and to explore the participants' interpretation of the topic. The probing questions were dependent on the content of the discussions, and could therefore differ in the four FGIs. The first author moderated sessions while the third author assisted and kept notes. Each interview session lasted about 60 minutes and was audio recorded and transcribed verbatim.

### **Study IV**

Qualitative interviews were conducted for the purpose of gaining an understanding of older people's experiences of administration of medicines. The first author conducted the audio-recorded interviews in the homes of the participants. The interviews started with the question: "Could you please tell me about your experience of receiving assistance with your administration of medicines?" Probing questions were asked to clarify and confirm how the answers were being understood. The interviews lasted between 20 and 60 minutes and were transcribed verbatim.

## DATA ANALYSIS

In studies II, III and IV, qualitative content analysis was used. Qualitative content analysis can be performed deductively or inductively according to Hsieh & Shannon (90). The inductive approach, however, is the most frequent in health care research (91). Content analysis could also be performed latent or manifest. “Latent” refers to the content and its underlying meaning; what the text speaks about (92, 93) and “manifest” describes the obvious and visible components; what the text says (92, 94). Content analyses have the aim of drawing replicable and valid conclusions from the data in a reference to their context and of providing knowledge, new insights, and practical guides to action (92). Qualitative content analysis is a dynamic form of analysis of the verbal and visual that is oriented towards summarizing the content of the data (92, 93). It is focused on differences and similarities in the data, which are expressed through analysis in categories or themes according to Graneheim & Lundman (94). When creating categories or themes, knowledge and insight into the context is important in order to conduct valid interpretations of the data; hence no part of the text can be excluded from its context. Content analysis is flexible in terms of design, can be applied in various depths (92), and is suitable when analyzing communication between persons such as in interviews (91, 94). Graneheim and Lundman (94) also suggested that texts based on interviews are formed by interaction between the researcher and the participants and thus can be seen as a communicating act in which the messages have been interpreted and described.

In this thesis, manifest qualitative content analysis was used in study II as described by Graneheim and Lundman (94) and in study III as described by Elo and Kyngas (91). In study IV latent content analysis was performed in accordance with Graneheim and Lundman (94).

## Quantitative analysis

**Study I.** Chi-square tests for categorical variables and analysis of variance for continuous variables were used to compare differences between participants in the three surveys with regard to sociodemographic characteristics, living situation, and cognition. Furthermore, age- and gender-specific prevalence figures per hundred population for medication use (number of medications) were calculated. A p-value of less than 0.05 was considered to be significant.

Using the KP cohort of 1987 as reference category, logistic regression models were used to estimate the odds ratios (ORs) and 95% confidence intervals (CIs) for use of analgesics and psychotropic medications in the SNAC-K cohorts of 2001 and 2007. Analyses were controlled for age, gender, education and cognition. IBM SPSS Statistics 22.0 for Windows (IBM, SPSS Inc., Chicago, IL, USA) was used for the statistical analyses.

## Qualitative analysis

**Study II and III.** A qualitative manifest content analysis was used in study II and III. In study II, the interviews were transcribed verbatim; each typed transcript was coded and checked in comparison with its corresponding audio file. The resulting text was analysed using a qualitative content analysis (94). An inductive approach was used while analysing the transcribed interviews. Three authors, of which one was a DN, read through the texts several times separately, to obtain a sense of the whole and then together. The texts were then reread with the aim of the study in mind, as well as the process of content analysis. Units of text, for example, words, sentences or whole paragraphs, that answered the research question were marked and condensed into a description of their manifest content and labelled with codes. The

condensed units of meaning were analysed and organised into subthemes and finally into themes. The author with DN competence verified that the identified themes reflected the context of the delegation of medication administration to HCAs.

In study III a qualitative inductive content analysis, described by Elo and Kyngäs (91), was performed on the transcribed interview text. This analysis included several steps. First, in the preparation phase, the text was read thoroughly by the first and fifth author individually to obtain a sense of the data and the text as a whole. During reading, notes were made in the margins of transcripts. Furthermore, relevant codes from each interview were marked and transferred to a matrix. Depending on similar descriptions or statements in the codes, they were interpreted, abstracted and grouped into subcategories. Each subcategory was analysed with regard to similarities and differences. Thereafter the subcategories were interpreted and similar statements were abstracted into generic categories named with content-characteristic words. The abstraction should continue as far as reasonable and permitted by the data. In this study, the generic categories - Adopting an inevitable and prominent task”, “Lacking knowledge leaving common sense as a vague competence” and “Being on the frontline were on the highest level of abstraction of this study”.

**Study IV.** Latent content analysis was used and followed procedures described by Graneheim and Lundman (94). The first step began by reading the transcribed interview text several times to obtain an overall sense of the content as a whole. Textual content related to the study aim was marked and subsequently copied to a separate document. In the next step, the texts were broken down into meaning units, which consisted of words, sentences or phrases relating to the aim of the study. In the third phase the meaning units were abstracted and labeled with codes. Codes could be discrete objects, events or other phenomena and were understood in relation to the context. As a fourth step, codes were continuously compared to identify differences and similarities. Based on the codes, categories were developed which denoted expressions of the manifest content of the text. The last step was to compare and critically analyse the categories to determine the underlying meaning. Three secondary themes were developed which became a consistent motif, or guiding principle (“red thread”) throughout the condensed meaning units, codes and sub themes on an interpretative level, and expressed the latent content of the text. One theme linked the secondary themes together.

## ETHICAL CONSIDERATIONS

When conducting research involving humans it is of importance to make careful ethical considerations. This is even more crucial when the research involves older people with a fair proportion of frail and/or cognitively impaired persons living in ordinary housing. Older people receiving social and care services are often either experiencing an acute illness or an exacerbation of a chronic condition. This means that they are both sicker than the general population of older adults and thereby can be more socially isolated. Both of these may influence a person's understanding or decision-making capacity and willingness to participate in a research study for a number of reasons, which include their capacity to fully understand the consent process (95, 96).

All potential participants for all studies in this thesis were sent or handed a personal letter of invitation, explaining the content, duration and aim of the project. This letter stated that participation was voluntary and that their right to withdraw from the project at any time. Additionally, they were informed that an audio recorder would be used and that results and citations cannot be traced to them in person.

In study I and IV, a registered nurse invited potential participants and delivered the letter. If they expressed interest they were contacted via telephone by a researcher and asked whether or not they agreed to participate. Time and place for the data collection was set by the participants in all studies. Moreover, there was also preparedness to place the participants' in contact with DN or physician if considered necessary.

All studies included in this thesis have been approved by the Regional Ethical Committee in Stockholm, Sweden:

Study I: Dnrs KI 87:148; KI 01-114; REPN 2007/279-31 & CEPN Ö26-2007,

Study II: Dnr 2008/103-31/2,

Study III: Dnr 2008/103-31/2,

Study IV: Dnrs 2009/583-31/5; 2011/1154-32.

# RESULTS

## STUDY I

The mean number of medications increased for both genders in all age groups, from 2.8 in 1987 to 5.8 in 2007 for those aged 78 years; corresponding figures for 96+ years were 3.6 and 7.7. Overall (1987, 2001 and 2007), medications acting on the cardiovascular system were most frequent (53.1%, 60.8% and 68.7% respectively).

The prevalence of polypharmacy (use of 5 or more medications) increased from 27.0% (1987) to 53.9% (2001), and 65.3% (2007). Adjusting for age, gender, education and cognition, the odds of using analgesics and psychotropics were significantly higher in 2007 compared to 1987; OR (95% CI) of 3.3 (2.8-4.0) and 1.3 (1.1-1.6) respectively.

People living at home used fewer drugs, but nevertheless polypharmacy in this group had increased from 26% in 1987 to 61.5% in 2007. The largest increase was for those who received help from the municipal home care; an increase from 24.5% in 1987 to 74.4% twenty years later. Corresponding figures for those living at home with no home care were 26.7% and 57.6% respectively. For those receiving home care, the mean number of drugs had increased from 3.3 to 7.3 during the same period. See Table 4. For those living in institutions, polypharmacy increased from 24.4% in 1987 to 95.3% in 2007. Corresponding figures for those living in service buildings were 44.6% to 82.4%.

**Table 4:** Drug use by residential setting and use of home help services in the KP cohort (1987) and the SNAC-K cohorts (2001 and 2007)

Drug use	Living conditions				
	At home			Service building	Nursing home
	Home help services Yes	No	All		
<b>KP 1987</b>	n=413	n=881	n=1294	n=92	n=131
Mean no. of drugs (SD)	3.3 (±2.6)	3.1 (±2.6)	3.1 (±2.6)	4.2 (±2.8)	3.4 (±2.3)
Polypharmacy*	24.5%	26.7%	26.0%	44.6%	24.4%
<b>SNAC-K 2001**</b>	n=258	n=1042	n=1300	n=101	n=180
Mean no. of drugs (SD)	6.1 (±3.6)	4.6 (±3.3)	4.9 (±3.4)	6.3 (±3.7)	6.9 (±3.2)
Polypharmacy*	64.0%	45.4%	49.1%	66.3%	78.3%
<b>SNAC-K 2007†</b>	n=246	n=802	n=1048	n=51	n=106
Mean no. of drugs (SD)	7.3 (±4.0)	5.5 (±3.5)	5.9 (±3.7)	8.3 (±4.0)	10.3 (±4.0)
Polypharmacy*	74.4%	57.6%	61.5%	82.4%	95.3%

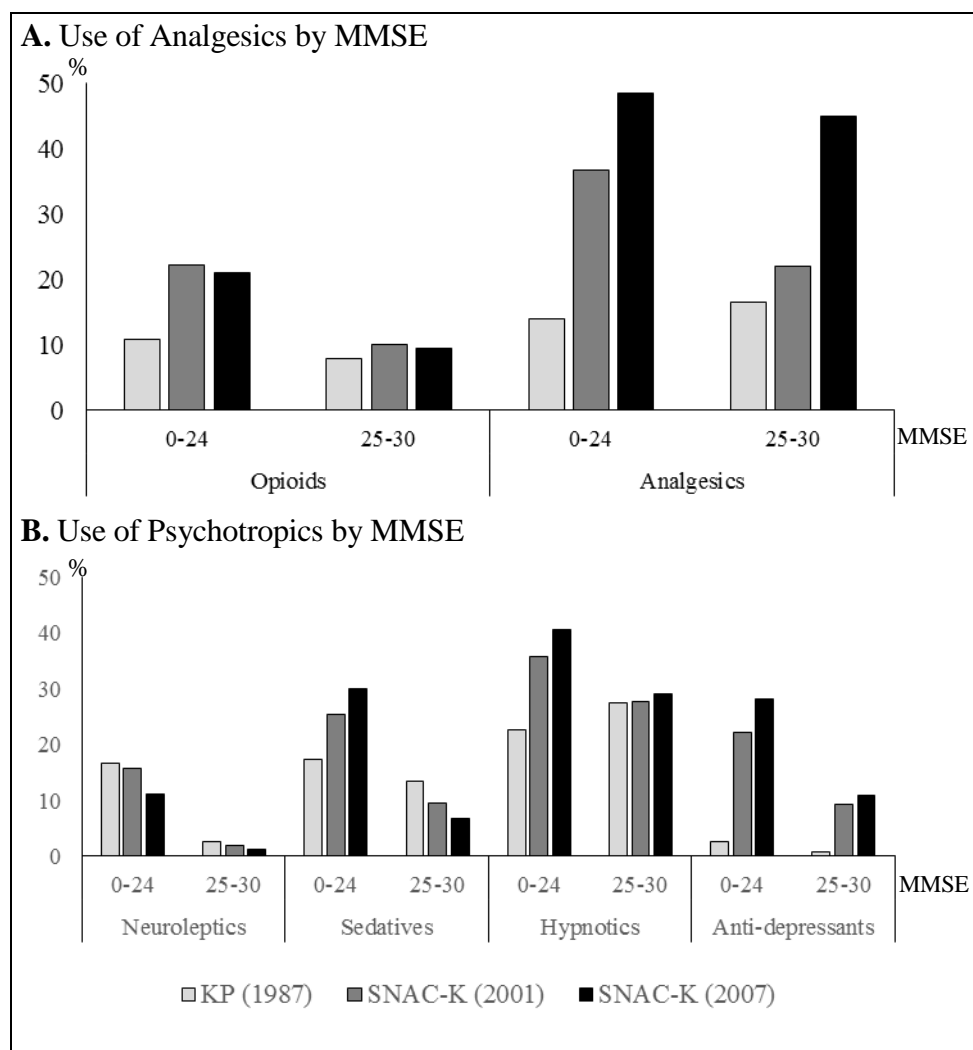
Abbreviations: KP=Kungsholmen Project; SNAC-K=Swedish National Study on Aging and Care in Kungsholmen.

\* concurrent use of five or more drugs; \*\* missing information on drug use for 11 persons in SNAC-K 2001.

† missing living situation for 1 person (2007).

Cognitively intact elderly primarily used hypnotics, whereas cognitively impaired elderly used hypnotics, sedatives and antidepressants. Over the years, from 1987 to 2007, the use of opioids had doubled for persons with cognitive impairment (MMSE 0-24), whereas there was no change for cognitively intact older adults (MMSE 25-30). During the same period, the use of analgesics had increased dramatically in both groups. See Figure 4 A.

Use of neuroleptics had decreased in all groups, whereas the use of sedatives had almost doubled for cognitively impaired elderly and decreased by half for those with an MMSE score 25 and over. Use of hypnotics almost doubled in the cognitively impaired group but remained stable for the cognitively intact elderly. Anti-depressants increased in all, but more for those persons with an MMSE score below 25. See Figure 4 B.



**Figure 4.** Prevalence (%) of use of analgesics (4 A) and psychotropics (4 B) by cognitive impairment (MMSE score 0-24 vs 25-30), in the KP cohort (1987) and the SNAC-K cohorts (2001 and 2007).

## **STUDY II**

There was a perception in organisations in health care and social services of the statute regulating delegation as being outdated and thereby incompatible with reality. Volunteerism was called into question, it was not seen as a realistic option to terminate delegation, in which case the workload for DNs would significantly increase. This was also influenced by the expectation that home care assistants administrate medications when employed in the social service.

The DNs lacked support by decision-makers and the legal framework concerning the responsibility for the delegation of administering medication. There were also difficulties in communicating with and supervising HCAs on a daily basis with regard to various responsible authorities and the growing number of social service groups. On the whole, the responsibility allocated to HCAs was regarded as uncomfortable. The DN had to trust that the HCA provided the patient with the correct medication and the right number of tablets at the right time. On the other hand, some DNs believed that it was not necessary to further educate the HCAs and did not find the responsibility of delegating the administration of medication troublesome. In their opinion, administering medication was a kind of assistance or could be seen as 'lending a hand' to the patient in their daily care. Thus, HCAs did not need to possess more knowledge and competences than they already have.

In contrast, it was voiced that self-care could be a risk to the patient in home health care when used as an argument for not assisting the patient with the administration of medication. The physician was lacking in the discussion regarding medications. A task such as administration of medication could be stressful for registered nurses to delegate to a person who lacked knowledge of medication, for example when it is appropriate to crush pills or dissolve them in thick liquid. There was lack of time to assess the home care assistant's practical skill. Furthermore, it posed an increased risk of miscommunication in delegating when a home care assistant did not speak Swedish fluently. DNs offered regular 'drop-ins' offered at the primary health care centre, or meetings scheduled in home care assistants' workplaces. Individuals or small groups were preferred when delegating to be able to establish communication and an opportunity to evaluate their understanding of the task and the statute of delegation. Collaboration with the HCAs and no hesitations to contact the DN was important and a necessary safety precaution. However, the DNs did not see any major problems with the fact that the HCAs answer to a separate authority (the council vs. the municipality).

## **STUDY III**

Accepting the delegation to administer medication was an inevitable and a routine fact, regarded as a mandatory task in the social home care services. This places the regulating statute in a subordinate position, and consequently patient safety can be threatened. Occasionally HCAs administrated medication without valid delegation and thus assumed the responsibility of the DNs. The organisation of health and home care relies on the delegation arrangement to meet the help needs of a growing number of older home care recipients. The work situation for HCAs on the municipal home care frontline can be questioned since they seem to be forced to operate outside their level of knowledge and skills. This places them in a challenging position between the care recipients, on the one hand, and the formal responsibilities of the DNs' and the HCAs', on the other. HCAs work alone, in close contact with the care recipients, and are required to solve all issues or problems that can arise in caring for older persons with varying health conditions. This is a crucial task which management in both the health care profession and

municipal home care needs to address to bridge the gap between statutes and practice and to create arenas for mutual collaboration in the care recipients' interests and to ensure patient safety.

#### **STUDY IV**

The findings in this present study have illuminated how older people with chronic diseases living at home experience the use of medication and its administration in the context of home care. The findings revealed the complexity of aging and poor health which requires assistance with administration of medications, over and above the different forms of assistance is required. Presently home care is applied as a solution for delivering assistance in administering medications for persons living alone. Through practical help, assistance from home care with the administration of medications can lead to better compliance with a medication regimen and make daily life easier. However, the situation is multifaceted; dependency upon assistance from home care affects self-efficacy, and the need to balance personal empowerment against a need for assistance and a sceptical perception of the HCAs' knowledge of medication and patient safety. Independence and dependence are balanced in accordance with needs, desires, and opportunities. However, trust in knowledge of physicians' and DNs' about medication routines was seen as a guarantee with regard to medications in general and the medication regimen in particular.

## DISCUSSION

The findings from the four studies are discussed in terms of their combined contribution to describe the context of medication use among older people and the administration of medication in terms of delegation between personnel in a health and home care context.

### AN AGING POPULATION IN A MEDICATION CONTEXT

Welfare states strive to provide equity in medication treatment for all of their citizens (97) and today's healthcare systems spend financial resources on medications for the elderly at a higher rate than for any other age group. Use of prescription medications continues to grow as a result of an increasing demand for medications available to treat chronic aging related diseases (98, 99). In Sweden more than 40% of the population aged 77+ years use more than 5 medications concurrently(62). Our results in study I confirm previous findings.

In study IV, the participants voiced that it was unclear who had made the decision regarding their need of assistance with administration of medication, and had no memory of being asked. One participant found this troublesome. On the other hand another found the assistance with the medication as an extra dimension adding wholeness to the situation of being cared for. Sandman and Munthe (100) state that the comprehension of the health and home care personnel decision making as paternalistic derives from the Hippocratic ideal of the caretaker of the patient's interest. When making decisions, this attitude may result in failing to involve the patient in the decision process, even act contrary to her/his wishes, or ignore the perspective of the patient, as long as the patient is perceived to benefit. It is this last aspect that makes the decision-making paternalistic.

Moen, Bohm (101) saw a lack of interest in which medication the older individuals were receiving. This was similar to our findings in study IV, recipients appeared uninterested in the medication regimen in general, although the opinion was voiced that it would be helpful to be familiar with some medications when new HCAs or fill-ins should administrate medication. Otherwise it was seen as the physicians' responsibility in the first place and no reason to question this, since the medication was prescribed for a cause. The DN was as a next step, seen as providing safety for the HCAs administration of medication. The goal and focus for the delegation can easily be adapted to practical circumstances like giving the medication from the Dosett dispenser to the care recipient. This is more to be seen as compliance according to Gould and Mitty (59). However, medication adherence is a complex phenomenon as individuals assume greater responsibility for, and participate in, supporting adherence behaviours that reflect a person's unique lifestyle stated as the core of a physician-patient partnership. Some participants in study IV saw the medication regimen as something in relation to aging; one participant referred to the amount of medication given to him as "*a poison*".

## WHAT TO KNOW AND WHAT IS APPROPRIATE TO DO

When performing medical tasks regardless of profession, these should be performed according to the Health and Medical Services Act (15). The HCA performs home care according to the Social Services Act (16). However, when accepting a delegation to administer medication the HCA is to be seen as a member of health care personnel in the situations when performing the task.

In study III, the HCAs exemplified the difficulties of knowing for sure what medication they were administering and thereby the eventual side effects to be expected. Home care assistants were only allowed to administer medication from the dispenser. Problems could occur when the caretaker needed treatment with e.g. antibiotics and the pills did not fit into the dispenser compartment. Then the HCA had to administer from the original packing, which is against regulations.

There is a perception of higher safety if the HCA also had an assisting nurse education, while it is accepted that untrained personnel perform tasks in health and home care. This understates the complexity of the home care assistants' work in municipal care for older people. The DNs in study II were careful in their clarification of the meaning of the delegation. Even if a DN was certain that the meaning of the responsibility of the delegation was understood by the HCAs, no one would sign the paper. The HCAs in Study III, on the other hand, were not familiar with the content of the statute of delegation. They performed the task they were asked to do, and if something went wrong they would be told. The regulations were then put aside.

SNBW highlights the importance of education and knowledge within the workforce of HCAs. Medication assignments often occur in their daily work and in-field training should be provided. In line with statute 1997:14 (35) the DN delegating the administration shall ensure her/himself of the appropriateness of the HCAs practical skills and capacity to perform and complete the task while maintaining patient safety. Both DNs and HCAs found this impossible to assess for a DN who *"could only hope for the best"*.

In study II, II and IV all three groups of participants find the HCAs skills and knowledge satisfactory for the purpose, but at the same time they express the need for further competence. The DNs found it noteworthy that the administration of medication, which is a registered nurse's task, could easily be handed over by delegation under complex circumstances to an individual lacking theoretical knowledge, and awareness. The core principle of the statute, that is, to tutor and follow up the given delegation ensuring the task is correctly performed could not realistically be carried out with a view to a heavy workload and also the large number of home care groups. The HCAs receiving the delegation were only met on that occasion, and often they were new to the job. The DNs (102) expressed their powerlessness in the situation; tasks at hand must be solved there and then which put pressure on the DNs to delegate. They also voiced certain resignation with regard to the future, since they believe that there is going to be a shortage of DNs within municipal care and delegation will increase as a solution. The elderly in study III presupposed that someone who managed and administered the medication had proper education. However, examples were given as to how one must be prepared to manage the medication oneself in case of "fill-in" personnel. The HCAs found "common sense" to be of help when handling medication, but highlighted the possibility of care recipients' more complex needs. Moreover, an example was given of how lack of knowledge of medications led to that

sleeping pills were administered in the morning since they had been forgotten the evening before. If knowledge is lacking of the medications administered, it is impossible to pay attention to the impact or potential side effects of the medication regimen which is a part of the meaning of “completing” the task in the statute of delegation. An interpretation of the view of required knowledge from a wider perspective can be difficult to conclude from the studies, but there is a presumption that HCAs have a satisfactory competence. However, more knowledge is required in times of change in care recipients’ medical needs.

The core issue which deserves to be addressed here is that the care recipient, who has been assessed to need assistance with administration of medication, must decide whether the visiting HCA is competent and trustworthy. If this is not found to be the case, they must perform the task by themselves. Axelsson and Elmståhl (82) found in their study a need for further training of HCAs in order to ensure patient safety and this is also asked for by NBHW. They find the increase in medication use, together with improved efficiency in treatment, to pose an increased risk of adverse medication reactions. HCAs assisting care recipients with medication administration have a great responsibility, since not reporting errors can have severe consequences. However, two DNs in study II found it no more difficult than if you could take an aspirin yourself, you can administer to someone else. And some HCAs in study III were of the opinion that education did not make them better at their work. They expressed a vocal pride performing job which not just “anyone” could do. Börjesson, Bengtsson (103) point out that the context of shared knowledge through interaction illustrates that tacit knowledge is a crucial aspect of care work. The directorial view, however, on knowledge needed by HCAs to increase the quality of care of older people is focused on theoretical formal education. A study by Swedbergs (104) includes patients’ with outspoken wishes to remain at home, despite extended needs of advanced care and technology necessitating caregivers around the clock. Patients with impaired breathing in need of prolonged mechanical ventilation are commonly cared for in intensive care units or specialised clinics due to their complex needs because of the requirement of staff competence. In contrast, when the patient is moving home to receive home care, no formal healthcare training is required for the caregivers employed for the 24-hour responsibility of patients. An important issue is the risk of insufficient communication between the DN and HCA (42). The DNs in study II found it difficult to find time and options to meet the HCAs on a regular basis to discuss the mutual care recipients. The HCAs were encouraged to call the DN at any time of insecurity. However, the HCAs in study III did not always find it easy to get in contact with the DNs. And they were also left to deal with situations when medication was lacking in the care recipient’s home.

## **ORGANISATION OF HEALTH- AND HOME CARE OUT OF STEP WITH THE TIME?**

The findings in studies II, III and IV somehow picture a scenario which may be out of step with the time in the light of the latest research (102, 105, 106) point out that health and home care have evolved over the past decades and must continue to adapt in response to a number of drivers of change. A similar view in studies II and IV focused on the perception of improved quality of care through the development of trust-based relationships and the reduction in the number of care providers entering the care recipient’s home. However, challenges were also brought up associated with the administration of medication which is in transition and issues due to lack of time and increase in care recipients’ perceived needs (102) found delegation as a way to use the HCAs competence. The HCAs, who were educated to perform medical tasks were not allowed to do so without delegation. (107) found that lack of personnel, time and course funding

makes mandatory education difficult and clarity is then required with regard to who will provide necessary resources.

Axelsson and Elmstahl (82) find that the increasing complexity of health and home care needs of care recipients has made an important change not only to the type of work undertaken by HCAs, but the hours within which the home care are delivered.

The conclusion of study II and III indicated that delegation of administration of medication has become built into care providers' assigned work responsibilities, but is, not for the benefit of the care recipient in the first place as written in the statutes of law. In study II the use of delegation was described as unavoidable to manage DNs' increasing work load. However, the statute was found to be old and lacking a ground in the present reality. The HCAs in study III found themselves standing in the front-line alone with the care recipient. Their performing of medical tasks has led to new expectations and slowly blurred the line between their core tasks and the responsibilities of healthcare personnel such as DNs. HCAs were feeling unsupported in emergencies and not always clear about their role in the meeting with for example ambulance personnel with expectations of medical reports which are outside the HCAs' assigned responsibilities. In Fleming and Taylor's (108) study of HCAs perception of their assignments, the participants made a distinction between job satisfaction and working conditions.

The move from provision of a traditional domestic help service to a service that aims to meet a wide range of requirements, including personal and healthcare needs has placed immense pressure on front-line staff and on management to change. Our findings in study III are similar to those of Fleming and Taylor (108). There are increasing demands on home care personnel. However, if the service is to meet fundamental expectations of providing a skilled workforce who can respond in a timely manner to a range of needs in the municipalities, while fulfilling care standards, these issues need to be addressed. Mitty et al (109) find that use of delegation or "working through others" is needed to handle the workload of DNs, but they also raise the question of whether assistance should be implemented outside a delegation model and be the responsibility of another provider. In study II the DNs found it difficult to handle the increasing number of home care groups related to LOV. This made it difficult to follow up and tutor the HCAs as expected. The meeting to delegate could be the only time the DN and HCA met face to face in reality and afterwards the DN could not be sure whether the HCA was still employed or had left. Findings by Kraus (42) of the financial interests in the path of the Act on System of Choice are also seen in study II and III. The financial restraints are perceived and communicated by both DNs and HCAs. The DNs find the administration of delegation as something that belongs to the municipal authorities and they see the situation as unloading of the DNs - a moneysaving device. The numbers of home care units are a challenge for the DNs when trying to maintain continuity in their work.

## **WE ARE IN THIS TOGETHER**

Findings in study II, III and IV give a picture of the dependence and interaction, not only with and between DNs and HCAs but also the care recipients. The focus of home care provision has shifted from the model of a home help service meeting minor domestic needs, to the development of a home care service providing domestic, personal and medical assistance. New demands give both DNs and HCAs increased hours, changes in working patterns, heavier workloads, and the responsibility of working with those who are most vulnerable in the municipality. The HCAs expressed frustration of being used by the DNs in the first place to ease

their burden by administering medication in their place. In study IV the care recipients were satisfied to achieve assistance to enable them to stay at home. On the other hand, they also adjust and find new ways to manage their lives. They were well aware of the HCAs workload and this was addressed as a reason not to raise more demands than necessary. An example was given of facilitating the HCAs workload by asking them to give a call instead of a personal visit. The SNBHW (39) found in the annual survey among older care recipients regarding their perception of quality in home care that they seldom or never had any influence at what times the HCAs came; nor did they receive information in advance of temporary changes. Mannucci, Nobili (58) see the communication and transparency between hospital and municipal care. This would support a realistic assessment of available resources and health- and home care and could reduce care recipients' stress as well as assisting negotiations between all involved parties.

In study II, III and IV the HCAs were considered to be the ones who know the care recipient best as a result of continuity in visits, providing a more consistent care with a reduced number of care providers which gave an opportunity to see changes in health status. Similar findings are expressed in the Canadian study by Denton, Zeytinoglu (110). The advantage is the 'eyes and the ears' of the HCAs in the home healthcare system, HCAs can bridge the gap between care recipients and other healthcare professionals. According to Kraus (42) the relationship in the situation of caring for the person in their home has made the HCA put the care recipient at the forefront. The main drivers in health care according to Wiskow, Albrecht (111) which can also be seen from DN's and HCAs point of view, the so-called "push factors", are related to the work environment, poor working conditions, limited educational and career opportunities, and a lack of resources for effective work. But there are also elements of a broader socioeconomic environment like political and economic instability so the "pull factors" mirror the push factors, like better-resourced health systems, and opportunities for professional development. In study II, III and IV the workload addressed; both DN's and HCAs find themselves under time constraints which also were recognised by the care recipients. Denton et al find (110) that task shifting may improve the quality of care recipients' services. Task shifting disadvantages are the risk of insufficient knowledge, training and education necessary to perform more complex tasks. This might lead to inconsistent care once tasks are delegated or transferred and compromise the quality of care clients' receive. Kapborg and Svensson (112) found the most common mistake among HCAs concerning medication was administering without following instructions properly. However, since medical tasks generally appear in a HCAs' job assignment, knowledge and training in this area should be provided. Delegated medical tasks can foster the professional development of HCAs, and such opportunities of training and education may reduce a high staff turnover among HCAs (113).

## METHODOLOGICAL CONSIDERATIONS

### Study I

*Strengths.* The study was based on three assessments over a study period of twenty years providing strong evidence of time trends in medication use. The strength of the study was the use of three population-based cohorts including all inhabitants, whether living at home or in institutions. The same expertise and same research team conducted all three cohort surveys, using the same study design and assessment tools. Data were collected through interviews and individual examinations.

The participation rate was significantly higher in the earliest cohort in 1987 than in the following cohorts in 2001 and 2007. There was also disparity in cause of drop out between the three cohorts, as more people had refrained from participation in 2001 and a higher percentage had died before participation in 2007. We do not believe this has biased the results as we report higher medication use in both 2001 and 2007 as compared to 1987. On the contrary, it strengthens our results, as these differences would rather be expected to lead to underestimation of medication use. A higher proportion of the study population was aged 90+ years in 2001 and 2007 as compared to 1987. This could be a limitation since age itself predicts higher medication use. Also the educational level increased significantly over the years, and earlier studies have shown that educational level has an impact on medication use, and that women with low educated have a higher risk of polypharmacy and DDI. However the higher education level may also contribute to the use of new medications.

*Limitations.* Data was derived from three cross-sectional investigations without the possibility of identifying potential causalities; however, this study was based on three assessments over a study period of twenty years; thus providing a strong evidence of time trends in medication use. Being part of longitudinal studies, there are excellent future opportunities to explore any processes involved in the increased medication use over time.

### Study II

*Strengths.* The interest in DNs' experience of delegating administration of medication suggested the choice of qualitative method, since this is a way to reveal the person's individual experience and view at the subject. The interviews provided the opportunity to follow up questions and clarify or rephrase questions. The snowball sampling in line with Polit and Beck (89) also has limitations, but there is a strength in the fact that the next participant takes an interest or shows curiosity about the subject. As DNs were difficult to recruit at the time of the study, snowballing became a strength.

*Limitations.* Snowball sampling, in accordance with Polit and Beck (89), was found to be a suitable strategy for recruiting participants. This could be seen as a limitation, however, because of the risk of recruiting people with similar views about the subject.

### **Study III**

*Strengths.* Börjesson (114) describes “frönesis” as practical wisdom in knowledge. Knowledge in practical professions is often referred to as silent or tacit knowledge. The concept of silent knowledge is incorporated in the elder care sector. Tacit knowledge is a challenge. It can be difficult to put down in words, and there is a tradition of meeting this kind of knowledge with a scepticism (115). Group dynamics can help the participants clarify and explore their opinions and perceptions which otherwise may be less accessible within an individual interview (116). Therefore, FGIs as a data collection method are suitable to gather HCAs experiences of delegation of administration of medication, which was our intention in this study. The method was to maintain an open interview climate; different views, were expressed. To increase trustworthiness, all authors were involved in the analysis proceedings. Eventual disagreement e.g. with regard to labelling, was discussed by the authors until consensus was reached. Study limitations included the chain sampling method that was used when recruiting participants. According to Faugier and Sargeant (117) allowing acquainted people to recruit each other poses a risk. They may imitate one another’s views of the topic and this needs to be considered before inferring results. Individual HCAs in a particular home care unit had no official contact with HCAs from other units. This reduced the risk of sampling bias by “disclosing” the content of the discussion and thereby influencing the next FGI in advance. Before the FGI started the group were informed of the importance of secrecy with regards to the group members’ perception of being able to speak freely.

*Limitations.* A possible disadvantage of using FGIs is that the discussion can be steered by a dominant participant or by the moderator. There is also a possibility that a participant speaks freely to a greater extent than anticipated (118).

### **Study IV**

*Strengths.* When considering the aspects surrounding assumed participants whole situation, the qualitative approach was found most suitable. This gave the opportunity to answer questions that may arise during the session, but also to capture views and thoughts. According to Graneheim and Lundman (94) trustworthiness rests upon dependability. In this study, the same person (first author) with experience of meeting with older people in a vulnerable situation performed all the interviews. With respect to age and health of the participants the interviewer was aware of the risk of having to cancel an ongoing interview. The first author conducted the first analyses. To increase trustworthiness three (ÅC, MW, LMH) authors were thereafter involved in the analysis process. Eventual disagreement for example with regard to labelling, was discussed by the authors until consensus was reached.

*Limitations.* There were only native participants from the same kind of cultural context recruited. It is to be expected, however, that people in a foreign context would present another view of both assistance and medication use. This was also a small sample of ten people.

## CONCLUSIONS

- 1) A dramatic increase in medication use in older adults from the late 1980s to the mid- 2000s in central Stockholm, Sweden;
- 2) DNs cannot manage their workload without delegating the administration of medication to unlicensed personnel (HCAs) in the present organisational model of health- and home care;
- 3) Accepting the delegation to administer medication was inevitable and had become routine to meet the needs of a growing number of older home care recipients;
- 4) Assistance with handling medication eases daily life and medicine regimen adherence. Dependence on assistance may affect older adults' sense of autonomy. Perceived safety varied relating to HCAs' knowledge of medicine.

There is a threefold experience of trust in medication and health personnel such as DNs and physicians, and doubts of the safety and training of the “work loaded” HCAs. DNs perceive the statute regarding medication delegation as being incompatible with their work situation, as a heavy workload, increasing numbers of home care recipients and high staff turnover rates among HCAs are common. The prevailing situation, with tendencies to incorporate medical tasks in the administration of medication, can be seen as a step into the future, but needs to be addressed. DNs and HCAs have difficulties in fully abiding by the statutes. The DNs and HCAs see themselves as restricted each group separated by the “organisation”. The benefit of delegation for the care recipient is not the primary goal. HCAs find it to be a moneysaving favour for the benefit of the DNs. The “hostage situation” occurs when the DNs have difficulties in performing their job without delegating the administration of medication, and HCAs do not have a realistic option of working in home care if they do not accept this delegation. The situation is external to the statute of law and driven by a core of voluntarism and the maintenance of patient safety.

## CLINICAL IMPLICATIONS

Older people tend to have more chronic conditions and are prescribed an increasing number of medications. To enable them to continue to live at home as older care recipients, the need for assistance, not only with daily living, but also administration of medication can be urgent. The results from this thesis will contribute to a better understanding of how health- and home care, two fields spanning sociology and nursing, perceive their roles and adjust to the given frames of organisation. In the first place, the focus is on how delegating administration of medication to older people living at home is perceived by the care recipients, DNs, and HCAs. But there is also the need of awareness and attention of how the possibility of delegating medical assignments can give temporary tasks a manifest transition from licensed to unlicensed personnel. In the end it is a question of patient safety, but also relates to the work environment for personnel in the front of health- and home care.

## ACKNOWLEDGEMENTS

I would like to express my gratitude to all of you, mentioned or not, who have in different ways supported and helped me. In the first place, I want to thank all the participants who have taken their valuable time to participate in my studies. I am so glad you gave me the opportunity to meet you.

I would also like to express my deep gratitude to my supervisors and mentor:

**Eva von Strauss**, my main supervisor, for believing in me and sharing your scientific knowledge, and for supporting me all the way, for preventing me from making the small things big and showing me how the big things are made manageable. Your accuracy and your eye for details have been most valuable.

**Margareta Westerbotn**, my co-supervisor, for all discussions, for sharing your valuable knowledge in qualitative methods and for your encouragement and availability.

**Kristina Johnell**, my other co-supervisor, for scientific advice and for supporting me and this project since the very beginning.

**Maria Kumlin**, my mentor and former director of research and graduate education, Sophiahemmet University, for all your personal support including liquorice and chocolate.

**Jan Åke Lindgren**, vice-chancellor, Sophiahemmet University, for encouraging me, for valuable support and providing me with the best research conditions.

**Ewa Englund**, director of Studies, Sophiahemmet University, trusted and provided me with opportunities to create a balance between private life, teaching and research. Also encouraged me in every way to develop in my profession as well as a person.

**Pernilla Hillerås**, director of research and graduate education, Sophiahemmet University. You have been a valuable co-writer and your endless encouragement, guiding and understanding has been very important.

**Susanne Lundell Rudberg**, my co-author, for all important input from a district nurse point of view.

**Lena Mårnstål Hammar**, my co-author at Mälardalen University, for all the valuable guiding and comments on my manuscripts.

**Johan Fastbom**, my co-author, for sharing your extensive knowledge in drug use in the elderly and for introducing me to the Monitor data base.

To *all staff at Sophiahemmet*, and special thanks also to **Eva Unemo** and the staff at the library for all quick and professional assistance at any time, **Gunnel Raadu** for answered all my questions about legal issues.

To **Anna Hnsson, Sissel Andreassen Gleissman, Catharina Gynäs, Margareta Hellner and Camilla Tomaszewski** for all good talks. All my fellow present and former doctoral students at Sophiahemmet University, with special thanks to **Åke Grundberg, Ani Henttonen, Helena Lööf, Marie Tyrell and Taina Sourmunen** for sharing all ups and downs being a doctoral student.

To **Linda Gellerstedt, Monica Rydell-Karlsson and Caroline Löfenmark** for extra scrutinizing and valuable comments of my “kappa”.

My PhD fellows in “Soffgruppen”, at Sophiahemmet University **Anna Swall** for all calls and lunches, **Inger Wallin Lundell** for your good company and inspiration and **Karin Bergkvist**, for all text-message with encourage and support and especially **Anna Klarare** for English advice, a good ear, a big heart and a true friendship.

**Ulla Tunedal**, my dear colleague and former roommate. So many laughs, exchange of recipes and anecdotes as well as hard work and always with a good spirit.

The Drugs and Care group, for all their comments on my work and especially **Britt-Marie Sjölund**. To **Tina Kiderud**, administrative coordinator at SNAC-K, for sharing your knowledge of how data on drug use was collected in Study I, and for providing participants for Study IV.

**Berit Nylander**, my New York twin. Always showing a genuine interest in my research and being a true friend even in times when I have been absent.

To the **Forsén, Lundh, Roos and Wedberg families**, for always having an open door, providing me with “fika” and valuable talks of about everything in life. All celebrations, vacations, dinners, floor boll games and just relaxing with you have been fantastic. You are the good friends one could wish for.

I also express my gratitude to my family and relatives.

To my dear parents, **Bengt and Britt-Marie Gransjön** for always encouraging me and for the never ending thoughtfulness towards me and my family. You were always present when I needed it most.

My brother **Hans Gransjön**, my sister-in-law **Julia**, nephew **Erik** and niece **Anna**. I am so glad to have you in my life.

My parents-in-law **Anita** and **Jan Swälas** and my sisters- and brothers-in-law, you are all dear to me.

My beloved children **Johan, Emma** and **Lovisa**. You are the joy of my life, I am so proud to be your mother. Every day is an unexpected adventure with you, and makes me know I am alive! My son-in-law, **Oskar Andersson** for being a good company, fixing dinner and being helpful in every way.

My husband, my love and companion through life, **Michael**. So patient, positive and always encouraging me in life, but also “holding the horses” when I have a tendency to be “all over the place”. You and me, me an you, for better and for worse♥

In loving memory of **Mats, Helena** and grandmother **Mimmi**. You taught me the valuable lesson to take care of life; you only have one, and to enjoy the moment. We know nothing about tomorrow.

The studies in this thesis were supported by

**The King Gustaf V and Queen Victoria’s foundation of Freemanson, Sophiahemmet Foundation and Aging Research Center (ARC), Department of Neurobiology, Care Sciences and Society, Karolinska Institutet, Stockholm.**

## REFERENCES

1. Christensen K, Doblhammer G, Rau R, Vaupel JW. Ageing populations: the challenges ahead. *Lancet*. 2009 Oct 3;374(9696):1196-208.
2. United Nations. World population ageing 2009. New York: UN; 2009.
3. Socialstyrelsen [The Swedish National Board of Health and Welfare]. Hemsjukvård i förändring: en kartläggning av hemsjukvården i Sverige och förslag till indikatorer. [Home health care in transition: a survey of home care in Sweden and proposed indicators; in Swedish]. Stockholm: Socialstyrelsen; 2008.
4. Statistiska Centralbyrån. Sveriges framtida befolkning 2014–2060 [The future population of Sweden 2014–2060; in Swedish]. Stockholm: SCB; 2012. Demografiska rapporter 2012:2 [cited 2014 Jan 15]. Available from: [http://www.scb.se/statistik/\\_publikationer/BE0401\\_2012I60\\_BR\\_BE51BR1202.pdf](http://www.scb.se/statistik/_publikationer/BE0401_2012I60_BR_BE51BR1202.pdf)
5. World Health Organization. Health statistics and information systems: definition of an older or elderly person. Geneva: WHO; 2014 [cited 2014 May 26]. Available from: <http://www.who.int/healthinfo/survey/ageingdefnolder/en/>
6. Statens offentliga utredningar. Pensionsåldersutredningen. Längre liv, längre arbetsliv: förutsättningar och hinder för äldre att arbeta längre. [Retirement age investigation. Longer life, longer working life: prospects and barriers for older people to work longer; in Swedish] Stockholm: Fritze; 2012. Statens offentliga utredningar 2012:28.
7. World Health Organization. Global status report on noncommunicable diseases 2010. Geneva: WHO; 2011.
8. World Health Organization. Noncommunicable diseases. Geneva: WHO; 2014 [cited 2014 May 14]. Available from: [http://www.who.int/topics/noncommunicable\\_diseases/en/](http://www.who.int/topics/noncommunicable_diseases/en/)
9. World Health Organization. Innovative care for chronic conditions: building blocks for action. Geneva: WHO; 2002.
10. Parker MG, Thorslund M. Health trends in the elderly population: getting better and getting worse. *Gerontologist*. 2007 Apr;47(2):150-8.
11. Barnett K, Mercer SW, Norbury M, Watt G, Wyke S, Guthrie B. Epidemiology of multimorbidity and implications for health care, research, and medical education: a cross-sectional study. *Lancet*. 2012 Jul 7;380(9836):37-43.
12. Fick DM, Cooper JW, Wade WE, Waller JL, Maclean JR, Beers MH. Updating the Beers criteria for potentially inappropriate medication use in older adults: results of a US consensus panel of experts. *Archives of internal medicine*. 2003 Dec 8-22;163(22):2716-24.
13. Fux R, Greiner D, Geldmacher M, Morike K, Gleiter CH. Multiple drug prescribing by general practitioners in a German region: implications for drug interactions and patient safety. *Int J Clin Pharmacol Ther*. 2006 Nov;44(11):539-47.
14. Anell A, Glenngård AH, Merkur S. Sweden health system review. *Health systems in transition*. 2012;14(5):1-159.
15. Hälso- och sjukvårdslag (SFS 1982:763) [Health and Medical Services Act; in Swedish]. Stockholm: Socialdepartementet.

16. Socialtjänstlag (SFS 2001:453) [Social Services Act; in Swedish]. Stockholm: Socialdepartementet.
17. Lau DT, Scandrett KG, Jarzebowski M, Holman K, Emanuel L. Health-related safety: a framework to address barriers to aging in place. *Gerontologist*. 2007 Dec;47(6):830-7.
18. Iwarsson S, Horstmann V, Slaug B. Housing matters in very old age - yet differently due to ADL dependence level differences. *Scand J Occup Ther*. 2007;14(1):3-15.
19. Reinhard SC, Young HM, Kane RA, Quinn WV. Nurse delegation of medication administration for older adults in assisted living. *Nurs Outlook*. 2006 Mar-Apr;54(2):74-80.
20. Socialstyrelsen [The Swedish National Board of Health and Welfare]. Vård och omsorg om äldre 2008: lägesrapport [Health and social care for the elderly 2008: progress Report; in Swedish]. Stockholm: Socialstyrelsen; 2009.
21. Socialstyrelsen [The Swedish National Board of Health and Welfare]. Vård och omsorg om äldre 2006: lägesrapport [Health and social care for the elderly 2006: progress Report; in Swedish]. Stockholm: Socialstyrelsen; 2007.
22. Anderson DJ, Webster CS. A systems approach to the reduction of medication error on the hospital ward. *J Adv Nurs*. 2001 Jul;35(1):34-41.
23. Rydeman I, Törnkvist L. The patient's vulnerability, dependence and exposed situation in the discharge process: experiences of district nurses, geriatric nurses and social workers. *J Clin Nurs*. 2006 Oct;15(10):1299-307.
24. Wright K. The future of healthcare: home is where the health is. *J Wound Ostomy Continence Nurs*. 2004 Nov-Dec;31(6):315-6.
25. Socialstyrelsen [The National Board of Health and Welfare]. Äldre – vård och omsorg den 1 oktober 2012: kommunala insatser enligt socialtjänstlagen samt hälso- och sjukvårdslagen [Elderly - nursing and care October 1, 2012: municipal action under the Social Services Act and Health Care Act; in Swedish]. Stockholm: Socialstyrelsen; 2013.
26. Frittvalutredningen. LOV att välja: Lag Om Valfrihetssystem [The Act on System of Choice; in Swedish]. Stockholm: Frize. Statens offentliga utredningar 2008:15.
27. Sveriges kommuner och Landsting [Swedish Association of Local Authorities and Regions]. Bättre liv för sjuka äldre: slutrapport [Better life for sick elderly; in Swedish]. Stockholm: SKL; 2012.
28. Lag om kommunernas betalningsansvar för viss hälso- och sjukvård (SFS1990:1404) [On Municipal Liability for certain Health Care Act; in Swedish]. Stockholm: Socialdepartementet.
29. Socialstyrelsen [The Swedish National Board of Health and Welfare]. Ädelreformen: Slutrapport [The Ädel Reform, final report; in Swedish]. Stockholm: Socialstyrelsen; 1996. Socialstyrelsen följer upp och utvärderar 1996:2.
30. Hokenstad M, Johansson L. Caregiving for the elderly in Sweden: Program challenges and policy initiatives. In: Bielgel DB, A, editor. *Ageing and caregiving: theory, research and policy*. Newbury Park: Sage; 1990. p. 254-69.
31. Lagergren M, Fratiglioni L, Hallberg IR, Berglund J, Elmståhl S, Hagberg B, Holst G, Rennemark M, Sjölund BM, Thorslund M, Wiberg I, Winblad B, Wimo A. A longitudinal study integrating population, care and social services data: the Swedish National study on Aging and Care (SNAC). *Aging Clin Exp Res*. 2004 Apr;16(2):158-68.

32. Genet N, Boerma WG, Kringos DS, Bouman A, Francke AL, Fagerström C, Melchiorre MG, Greco C, Devillé W. Home care in Europe: a systematic literature review. *BMC Health Serv Res*. 2011;11:207.
33. Leichsenring K. Developing integrated health and social care services for older persons in Europe. *Int J Integr Care*. 2004;4:e10.
34. Socialstyrelsen [The Swedish National Board of Health and Welfare]. Termbanken [The Term Bank; in Swedish, cited 2014 Nov 28]. Available from: <http://socialstyrelsen.terms.se/showterm.php?fTid=249>
35. Delegering av arbetsuppgifter inom hälso- och sjukvård och tandvård (SOSFS:1997:14). [Delegation of Work in Tasks in the Health Care System: directions and general recommendations [in Swedish]. Stockholm: Socialstyrelsen.
36. Socialstyrelsen [The Swedish National Board of Health and Welfare]. Hemsjukvård i förändring: en kartläggning av hemsjukvården i Sverige och förslag till indikatorer [Home health care in transition: a survey of home care in Sweden and proposed indicators; in Swedish]. Stockholm: Socialstyrelsen; 2008.
37. Förvaltningslag (1986:223) [FV], [The Administrative Law; in Swedish] (The Swedish Parliament, 2001)
38. Socialstyrelsen [The Swedish National Board of Health and Welfare]. Vad tycker de äldre om äldreomsorgen?: en rikstäckande undersökning av äldres uppfattning om kvaliteten i hemtjänst och äldreboenden 2012 [National study of users' perception of quality on home care and residential care 2012; in Swedish]. Stockholm: Socialstyrelsen; 2012.
39. Socialstyrelsen [The Swedish National Board of Health and Welfare]. Vad tycker de äldre om äldreomsorgen?: en rikstäckande undersökning av äldres uppfattning om kvaliteten i hemtjänst och äldreboenden 2013 [National study of users' perception of quality on home care and residential care 2013; in Swedish]. Stockholm: 2013.
40. Swedish Public Procurement Act. Stockholm: Konkurrensverket; 2011 [cited 2014 Jan 15]. Available from <http://www.kkv.se/en/publications-and-decisions/swedish-public-procurement-act/>
41. Svensson M, Edebalk PG. Kvalitetskonkurrens och kundval inom kommunal äldreomsorg. Stockholm: Konkurrensverket; 2006.
42. Kraus K. Sven, inter-organisational relationships and control: a case study of domestic care of the elderly [doctoral dissertation]. Stockholm: Stockholm School of Economics; 2007.
43. Sandman L. On the autonomy turf: assessing the value of autonomy to patients. *Med Health Care Philos*. 2004;7(3):261-8.
44. Plath D. Independence in old age: the route to social exclusion? *British Journal of Social Work*. 2008;38:1353-69.
45. Astvik W. Relationer som arbete: förutsättningar för omsorgsfulla möten i hemtjänsten [Relating as a primary task: prerequisites for sustainable caring relations in home-care service; in Swedish, with English summary; doctoral dissertation]. Stockholm: Stockholm University; 2003.
46. Grundläggande kunskaper hos personal som arbetar i socialtjänstens omsorg om äldre (SOSFS 2011:12S) [Basic knowledge of staff working in social services care for the elderly; in Swedish]. Stockholm: Socialstyrelsen [Swedish National Board of Health and Welfare].

47. Distriktssköterskeföreningen i Sverige och Svensk sjuksköterskeförening. Kompetensbeskrivning för legitimerad sjuksköterska med specialistsjuksköterskeexamen distriktssköterska [Description of competence for Registered Nurse with specialisation in district nursing; in Swedish]. Stockholm: Distriktssköterskeföreningen; 2008.
48. Distriktssköterskan: en nyckelroll i primärvården Distriktssköterskeföreningen. [The district nurse: a key provider of primary care; in Swedish]. Stockholm: Distriktssköterskeföreningen; 2008.
49. Turnheim K. When drug therapy gets old: pharmacokinetics and pharmacodynamics in the elderly. *Exp Gerontol.* 2003 Aug;38(8):843-53.
50. Beers MJ, TV. Berkwitz, M. & Porter, R. editors. The merck manual of health and aging. New York: Ballantine Books; 2005.
51. Fratiglioni L, Winblad B, von Strauss E. Prevention of Alzheimer's disease and dementia: major findings from the Kungsholmen Project. *Physiol Behav.* 2007 Sep 10;92(1-2):98-104.
52. Johnell K, Fastbom J, Rosen M, Leimanis A. Inappropriate drug use in the elderly: a nationwide register-based study. *Ann Pharmacother.* 2007 Jul;41(7):1243-8.
53. Jyrkka J, Vartiainen L, Hartikainen S, Sulkava R, Enlund H. Increasing use of medicines in elderly persons: a five-year follow-up of the Kuopio 75+Study. *Eur J Clin Pharmacol.* 2006 Feb;62(2):151-8.
54. Franchi C, Tettamanti M, Pasina L, Djignefa CD, Fortino I, Bortolotti A, Merlino L, Nobili A. Changes in drug prescribing to Italian community-dwelling elderly people: the EPIFARM-Elderly Project 2000-2010. *Eur J Clin Pharmacol.* 2014 Apr;70(4):437-43.
55. Gnjjidic D, Hilmer SN, Blyth FM, Naganathan V, Waite L, Seibel MJ, McLachlan AJ, Cumming RG, Handelsman DJ, Le Couteur DG. Polypharmacy cutoff and outcomes: five or more medicines were used to identify community-dwelling older men at risk of different adverse outcomes. *J Clin Epidemiol.* 2012 Sep;65(9):989-95.
56. Tinetti ME, Bogardus ST, Jr., Agostini JV. Potential pitfalls of disease-specific guidelines for patients with multiple conditions. *N Engl J Med.* 2004 Dec 30;351(27):2870-4.
57. Flaherty JH, Perry HM, 3rd, Lynchard GS, Morley JE. Polypharmacy and hospitalization among older home care patients. *J Gerontol A Biol Sci Med Sci.* 2000 Oct;55(10):M554-9.
58. Mannucci PM, Nobili A, Investigators R. Multimorbidity and polypharmacy in the elderly: lessons from REPOSI. *Internal and emergency medicine.* 2014 Oct;9(7):723-34.
59. Gould E, Mitty E. Medication adherence is a partnership, medication compliance is not. *Geriatr Nurs.* 2010 Jul-Aug;31(4):290-8.
60. Shi S, Morike K, Klotz U. The clinical implications of ageing for rational drug therapy. *Eur J Clin Pharmacol.* 2008;64:183-99.
61. Haider SI, Johnell K, Weitoft GR, Thorslund M, Fastbom J. The influence of educational level on polypharmacy and inappropriate drug use: a register-based study of more than 600,000 older people. *J Am Geriatr Soc.* 2009 Jan;57(1):62-9.
62. Haider SI, Johnell K, Thorslund M, Fastbom J. Analysis of the association between polypharmacy and socioeconomic position among elderly aged > or =77 years in Sweden. *Clin Ther.* 2008 Feb;30(2):419-27.

63. Marengoni A, Angleman S, Melis R, Mangialasche F, Karp A, Garmen A, Meinow B, Fratiglioni L. Aging with multimorbidity: a systematic review of the literature. *Ageing research reviews*. 2011 Sep;10(4):430-9.
64. Veehof L, Stewart R, Haaijer-Ruskamp F, Jong BM. The development of polypharmacy. A longitudinal study. *Fam Pract*. 2000 Jun;17(3):261-7.
65. Johnell K, Weitoft GR, Fastbom J. Sex differences in inappropriate drug use: a register-based study of over 600,000 older people. *Ann Pharmacother*. 2009 Jul;43(7):1233-8.
66. Haasum Y. Drug use in institutionalized and home-dwelling elderly persons [doctoral dissertation]. Stockholm: Karolinska Institutet; 2012.
67. World Health Organization. Essential medicines and health products: rational use of medicines [cited 2014 Jan 12]. Available from: [http://www.who.int/medicines/areas/rational\\_use/rud\\_activities/en/](http://www.who.int/medicines/areas/rational_use/rud_activities/en/)
68. Olsson IN, Runnamo R, Engfeldt P. Medication quality and quality of life in the elderly, a cohort study. *Health Qual Life Outcomes*. 2011;9:95.
69. Beckman A, Bernsten C, Parker MG, Thorslund M, Fastbom J. The difficulty of opening medicine containers in old age: a population-based study. *Pharm World Sci*. 2005 Oct;27(5):393-8.
70. Westerbotn M, Fahlström E, Fastbom J, Agüero-Torres H, Hillerås P. How do older people experience their management of medicines? *J Clin Nurs*. 2008 Mar;17(5A):106-15.
71. Nunney J, Raynor DK, Knapp P, Closs SJ. How do the attitudes and beliefs of older people and healthcare professionals impact on the use of multi-compartment compliance aids?: a qualitative study using grounded theory. *Drugs & aging*. 2011 May 1;28(5):403-14.
72. Sjöberg C, Ohlsson H, Wallerstedt SM. Association between multi-dose drug dispensing and drug treatment changes. *Eur J Clin Pharmacol*. 2012 Jul;68(7):1095-101.
73. Wallerstedt SM, Fastbom J, Johnell K, Sjöberg C, Landahl S, Sundström A. Drug treatment in older people before and after the transition to a multi-dose drug dispensing system: a longitudinal analysis. *PLoS One*. 2013;8(6):e67088.
74. Tandvårds- och läkemedelsförmånsverket. Högkostnadsskyddet [updated 2014; cited 2014 Jul 02]. Available from: <http://www.tlv.se/lakemedel/hogkostnadsskyddet/>.
75. Johnell K, Fastbom J. Comparison of prescription drug use between community-dwelling and institutionalized elderly in Sweden. *Drugs Aging*. 2012 Sept;29(9):751-758.
76. Dhalla IA, Anderson GM, Mamdani MM, Bronskill SE, Sykora K, Rochon PA. Inappropriate prescribing before and after nursing home admission. *J Am Geriatr Soc*. 2002 Jun;50(6):995-1000.
77. Francis SA, Smith F, Gray N, Denham M. Partnerships between older people and their carers in the management of medication. *Int J Older People Nurs*. 2006 Dec;1(4):201-7.
78. Socialstyrelsens föreskrifter om bedömningen av om en hälso- och sjukvårdsåtgärd kan utföras som egenvård (SOFs 2009:6) [in Swedish]. Stockholm: Socialstyrelsen.
79. Socialstyrelsen [The Swedish National Board of Health and Welfare]. Nationella indikatorer för God vård: hälso- och sjukvårdsövergripande indikatorer: indikatorer i Socialstyrelsens nationella riktlinjer [in Swedish]. Stockholm: 2009.
80. Patientsäkerhetslag (SFS 2010:659) [Patient Safety Act; in Swedish]. Stockholm: Socialdepartementet.

81. Hansson M, Engström B, editors. Kommunal hemsjukvård och social omsorg: en kartläggning i Västmanlands län [in Swedish]. Västerås: FoU Västerås; 2005.
82. Axelsson J, Elmståhl S. Home care aides in the administration of medication. *Int J Qual Health Care*. 2004 Jun;16(3):237-43.
83. National Council of State Boards of Nursing. Delegation concepts and decision-making process. *Issues*. 1995;16(4):suppl. 1-4.
84. Nursing and Midwifery Council. Delegation [updated 2012 May 9; cited 2012 Dec 08]. Available from: <http://www.nmc-uk.org/Nurses-and-midwives/Regulation-in-practice/Regulation-in-Practice-Topics/Delegation/>
85. Miller KL, McKeever P, Coyte PC. Recruitment issues in healthcare research: the situation in home care. *Health Soc Care Community*. 2003 Mar;11(2):111-23.
86. Fratiglioni L, Viitanen M, Backman L, Sandman PO, Winblad B. Occurrence of dementia in advanced age: the study design of the Kungsholmen Project. *Neuroepidemiology*. 1992;11 Suppl 1:29-36.
87. Folstein M, Folstein S, McHugh P. 'Mini-Mental State': a practical method for grading cognitive state of patients for the clinicians. *Journal of Psychiatric Research*. 1975;12:189-98.
88. WHO Collaboration Centre for Drug Statistics Methodology. ATC/DDD Index 2014. 2013. Accessed 02 April, 2014.
89. Polit D, Beck C. *Nursing research: generating and assessing evidence for nursing Practice*. 8th ed. Philadelphia: Lippincott Williams & Wilkins; 2012.
90. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res*. 2005 Nov;15(9):1277-88.
91. Elo S, Kyngäs H. The qualitative content analysis process. *J Adv Nurs*. 2008 Apr;62(1):107-15.
92. Krippendorff K. *Content analysis: an introduction to its methodology*. 3rd ed. Thousand Oaks: SAGE Publications; 2013.
93. Sandelowski M. Whatever happened to qualitative description? *Res Nurs Health*. 2000 Aug;23(4):334-40.
94. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Educ Today*. 2004 Feb;24(2):105-12.
95. Locher JL, Bronstein J, Robinson CO, Williams C, Ritchie CS. Ethical issues involving research conducted with homebound older adults. *Gerontologist*. 2006 Apr;46(2):160-4.
96. Barron JS, Duffey PL, Byrd LJ, Campbell R, Ferrucci L. Informed consent for research participation in frail older persons. *Aging Clin Exp Res*. 2004 Feb;16(1):79-85.
97. Haider SI, Johnell K, Ringback Weitoft G, Thorslund M, Fastbom J. Patient educational level and use of newly marketed drugs: a register-based study of over 600,000 older people. *Eur J Clin Pharmacol*. 2008 Dec;64(12):1215-22.
98. OECD. *Health at a Glance 2013: OECD indicators*. Paris: OECD; 2013.
99. Linjakumpu T, Hartikainen S, Klaukka T, Veijola J, Kivela SL, Isoaho R. Use of medications and polypharmacy are increasing among the elderly. *J Clin Epidemiol*. 2002 Aug;55(8):809-17.

100. Sandman L, Munthe C. Shared decision making, paternalism and patient choice. *Health care analysis: journal of health philosophy and policy*. 2010 Mar;18(1):60-84.
101. Moen J, Bohm A, Tillenius T, Antonov K, Nilsson JL, Ring L. "I don't know how many of these [medicines] are necessary.." - a focus group study among elderly users of multiple medicines. *Patient Educ Couns*. 2009 Feb;74(2):135-41.
102. Bystedt M, Eriksson M, Wilde-Larsson B. Delegation within municipal health care. *J Nurs Manag*. 2011 May;19(4):534-41.
103. Börjesson U, Bengtsson S, Cedersund E. "You have to have a certain feeling for this work": exploring tacit knowledge in elder care. *SAGE open*. 2014;4(2):1-9.
104. Swedberg L, Michélsen H, Hammar Chiriac E, Hylander I. On-the-job training makes the difference: healthcare assistants' perceived competence and responsibility in the care of patients with home mechanical ventilation. *Scand J Caring Sci*. 2014 Sep 2. doi: 10.1111/scs.12173. [Epub ahead of print]
105. Casey D. Transforming the delivery of health and social care: the case for fundamental change. *Br J Gen Pract*. 2013 Jun;63(611):292.
106. Robyn IS. The Direct Care Worker: The Third Rail of Home Care Policy. *Annual Review of Public Health*. 2004;25:521-37.
107. Griffiths P, Robinson S. Moving forward with healthcare support workforce regulation: a scoping review: evidence, questions, risks and options. London: National Research unit; 2010.
108. Fleming G, Taylor BJ. Battle on the home care front: perceptions of home care workers of factors influencing staff retention in Northern Ireland. *Health Soc Care Community*. 2007 Jan;15(1):67-76.
109. Mitty E, Resnick B, Allen J, Bakerjian D, Hertz J, Gardner W, Rapp MP, Reinhard S, Young H, Mezey M. Nursing delegation and medication administration in assisted living. *Nurs Adm Q*. 2010 Apr-Jun;34(2):162-71.
110. Denton MA, Zeytinoglu IU, Davies S. Working in clients' homes: the impact on the mental health and well-being of visiting home care workers. *Home Health Care Serv Q*. 2002;21(1):1-27.
111. Wiskow C, Albrecht T, de Pietro C. How to create an attractive and supportive working environment for health professionals. Copenhagen: WHO; 2010.
112. Kapborg I, Svensson H. The nurse's role in drug handling within municipal health and medical care. *J Adv Nurs*. 1999 Oct;30(4):950-7.
113. Socialstyrelsen [The Swedish National Board of Health and Welfare]. Vård- och omsorgsassistenters kompetens: en litteraturgenomgång [in Swedish]. Stockholm: Socialstyrelsen; 2006.
114. Börjesson U. Everyday knowledge in elder care: an ethnographic study of care work [doctoral dissertation]. Jönköping: Jönköpings Universitet; 2014.
115. Nilsen P. Praktisk innovation genom integration av praktik- och forskningsbaserad kunskap. In: Nilsen P, editor. *Implementering teori och tillämpning inom hälso- och sjukvård*. Lund: Studentlitteratur; 2010. p. 127-46.
116. Krueger RA, Casey MA. *Focus groups: a practical guide for applied research*. 4th ed. Thousand Oaks: SAGE Publications; 2008.

117. Faugier J, Sargeant M. Sampling hard to reach populations. *J Adv Nurs*. 1997 Oct;26(4):790-7.
118. Kitzynger J. Qualitative research: introducing focus groups. *BMJ*. 1995 Jul 29;311(7000):299-302.
119. Woods DL, Guo G, Kim H, Phillips LR. We've got trouble: medications in assisted living *J Gerontol Nurs*. 2010 Apr;36(4):30-9.
120. Bittner NP, Gravlin G. Critical thinking, delegation, and missed care in nursing practice. *J Nurs Adm*. 2009 Mar;39(3):142-6.