Exploring hospital readmissions from the primary healthcare service
A multiple case study

by

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Thesis submitted in fulfilment of the requirements for the degree of PHILOSOPHIAE DOCTOR (PhD)

Faculty of Health Sciences
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2020
Acknowledgements

There are many people without whom this thesis would not have been possible.

First I would like to thank all the participants who made time for me and my interviews in their extremely busy work schedules, and contributed with their important views and experiences. Without you, there simply would be no thesis. I would also like to express my gratitude to the hospitals and municipalities’ leaders for their positive outlook on implementation of the project, and their great help in organizing the recruitment process.

Furthermore, my most sincere thanks go to my main supervisor Siri Wiig, who has slowly but surely raised me into the academic world, which I have grown so fond of. Your commitment towards your work is inspirational! Thank you for your invaluable guidance, support and tireless patience. I am grateful for everything that you have thought me. Also, warm thanks to my co-supervisors, Tone Kringeland and Olav Røise. Your expertise, valuable guidance and support have been essential for the completion of this thesis.

Overall, as a supervisory team, you have made the experience of conducting this thesis a great one, and inspired me to continue to develop my knowledge within science. Thank you!

I would also like to thank my colleagues at The Western Norway University of Applied Sciences for always being supportive, dropping by my office once in a while for a chat, providing necessary breaks and distractions; my fellow PhD students for stimulating conversations and discussions; my closest manager during recent years, Else Cathrine Rustad, for good facilitation and support; the employment team at Western Norway University of Applied Sciences, which hired me and gave me this great opportunity, and my colleagues in SHARE for letting me participate at useful seminars and meetings.

Last, but not least, I would like to thank my family and friends. My children, Alma and Rikke, who have been a constant reminder of the most important values in life, and moreover, have shown great patience during the final weeks before the thesis submission. My husband, Åsmund, for supporting and comforting me, for his patience and his contributions to valuable discussions about the project. My friend Marit, for always being there and encouraging me. My mum, dad and father in law for their encouragement and invaluable
help in everyday life, and my late mother in law who made taking my Masters possible, without which I could not have applied for this PhD position.

Haugesund, February 2020
Summary

**Introduction:** Hospital readmissions have received increased attention in the past years due to the negative impact on quality of care, health services’ resources and finances. The hospital readmission issue is a multifaceted phenomenon involving numerous processes (e.g. discharge, transition, admission), a number of actors (e.g. nurses, patients, physicians) and is effected by both contextual and patient related factors. The primary healthcare services are deeply involved in the hospital readmission process, including their responsibility for caring for the patients post hospital discharge, and the primary care physician’s responsibilities in decision-making concerning hospital readmissions. In contrast to the primary healthcare services’ important role in hospital readmissions, research in this area is limited. Furthermore, readmission research has mostly taken a quantitative stance, despite the wide complexity of the phenomenon, thus demonstrating a need for more qualitative research on hospital readmissions from the primary healthcare services.

**Aim:** To explore hospital readmissions from a primary healthcare perspective, aiming to increase knowledge about factors that lead to hospital readmissions from the primary healthcare service. More specifically, the thesis aimed to develop new knowledge about:

- General practitioners (GPs) and nursing home physicians’ decision-making in hospital readmissions.
- The role of nursing home resources in readmission processes (e.g. staffing, nurse competence, physician coverage) as seen from nursing home staff and managers.
- Hospital physicians view on hospital discharges to, and readmissions from, the primary healthcare service.

**Methods:** This thesis was conducted as a multiple case study, and includes three qualitative studies investigating hospital readmissions. The thesis included two cases with multiple sub-units. A case was defined as a municipality with included primary healthcare service and a common hospital. The sub-units consisted of four nursing homes, each of which had nursing home nurses and leaders, primary care physicians (GPs and nursing home physicians) and hospital physicians. The first study included semi-structured
The third study included semi-structured interviews with hospital physicians (residents and consultants), in addition to extraction of significant elements from the commissioner’s documents for the Regional Health Authorities from 2012 – 2018. All data material was analyzed using Granheim & Lundmans’ approach to content analysis.

**Results:** Study I showed that the complexity of patients being discharged to the primary healthcare service had increased, consequently increasing complexity and quantity of the primary care physician’s work tasks. Moreover, patients were perceived to be discharged too early, sometimes with undeclared medical issues, adding to the primary care physicians’ work tasks in terms of, for example, referring patients to other specialist healthcare services. Information exchange, coordination and communication between the primary healthcare service and the hospital was described as poor, particularly when patients were being discharged. These factors, combined with a busy work schedule, were related to decisions to readmit patients to the hospital. Several other factors affected the primary care physician’s decision in this regard. The patients’ and their families’ wishes were highly relevant, although pressure to readmit patients could also come from this group. The nurses were said to be another important influencer in these decisions, mainly through their knowledge about the patients but also through the presence or absence of adequate nurse competence and staffing.

Study II found that the needs of nursing home patients had become more complex, demanding complex nursing procedures and additional resources, ultimately changing the function of the nursing homes. It was the experience of nurses and nursing home leaders that patients were from time to time discharged too early, not always adequately treated causing an increased likelihood of hospital readmission. Nurse competence and staffing were believed to be of significance for hospital readmissions, making capacity building central in all nursing homes. However, staffing and competence varied in the respective nursing homes, and along with it, the focus for capacity building. Overall, a struggle with too many assistants and unstable staffing on weekends was reported. Physician coverage in the nursing homes, which was observed to be varied, was another factor perceived to affect hospital readmissions, along with physician competence, adequate
communication and coordination between healthcare services. Economy was mostly perceived not to influence patient care directly.

In study III, hospital physicians believed that patients, on occasion, were discharged from the hospital too early, sometimes causing hospital readmissions. The criteria for discharging patients had changed, leading to more patients with more complicated needs being discharged to the primary healthcare service. The hospital discharge was perceived as an intricate process involving assessments from different health personnel, requiring several planning steps and being effected by numerous factors (e.g. the patients self-care ability, the patients’ living condition and the place to which the patient was being discharged). However, in some cases, the decision to discharge could be affected by non-medical factors such as ward capacity. As a counterpart, the primary healthcare service sometimes lacked capacity to receive patients who were ready for discharge, causing unnecessarily prolonged hospital stays, and further pressure on the ward’s capacity. Additionally, there were sometimes disagreements between the hospital physicians, and the Decision Office (in the municipality) in regards to what care level the patient should receive after the hospital stay. Although adequate communication between the healthcare services was perceived as an influencing factor for hospital readmissions by most hospital physicians, the communication was limited and most often consisted of the hospital stay summary.

**Conclusion:** The results of this thesis identified several factors affecting hospital readmissions from the primary healthcare service such as competence and staffing in the primary healthcare services, poor coordination and information exchange between the healthcare services and capacity of hospitals and the primary care services. The thesis found a high degree of consensus among the investigated healthcare professionals at different healthcare levels in what they believed influenced hospital readmissions. Many of these influential aspects were linked to organizational conditions. Due to the surge of patients with complications into the primary healthcare services, the nursing homes’ function had changed towards institutions more similar to the hospitals. However, staffing, competence and physician coverage did not seem to have been adjusted accordingly, increasing the probability of unnecessary readmissions. The changed patient group affected the primary care physicians’ work tasks, yet they were still making decisions on hospital readmissions with minimal peer support.
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Abbreviations

CAS: Complex Adaptive Systems
CBDT: Case Based Decision Theory
CNA: Certified Nurse Assistant
DGR: Diagnosed Related Group System
ER: Emergency Room
GP: General Practitioner
HEBU: Hospital Emergency Bed Units
HF: Human Factors
HSS: Hospital Stay Summary
LEON: Lowest Effective Care Level Principles
LTNH: Long-Term Nursing Home
MEBU: Municipal Emergency Bed Units
SEIPS: System Engineering Initiative for Patient Safety
STNH: Short-Term Nursing Home
WAD: Work as Done
WAI: Work as Imagined
Part I
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1 Introduction

Hospital readmissions is a growing quality and safety issue in healthcare services worldwide. Readmission rates range from 10 – 30% across countries, and are causing strains on healthcare resources, finances and on patients and their families (1-4). This thesis explores hospital readmissions from a primary healthcare perspective, aiming to increase knowledge about factors that lead to hospital readmissions from the primary healthcare service.

1.1 The complexity of hospital readmissions

Hospital readmissions is a complex phenomenon involving multiple healthcare personnel, healthcare agencies, and care transitions.

The Norwegian quality indicator “30-day hospital readmissions after hospital stay” defines hospital readmissions as an acute admission, regardless of the cause or hospital of readmission, which occurs between eight hours and 30 days after discharge from a prior hospital stay (primary admission) (5). This definition was used in the current thesis.

When talking about hospital readmissions, it is common to distinguish between necessary and unnecessary hospital readmissions (6). The necessary readmissions are often linked to conditions concerning the patient, such as worsening of illness or patients with chronic illnesses needing frequent follow-up. The unnecessary readmissions are, on the other hand, often linked to organizational factors such as poor coordination between healthcare services. It is therefore with ambiguity that we talk about hospital readmissions as a quality indicator, because a readmission (when necessary) can be a sign of quality in itself – although (low) hospital readmission rates are used as a measurement for quality in healthcare services nationwide (7).

Hospital readmissions, are in other words, not necessarily tantamount to poor quality in the healthcare service (as might be indicated in some literature). Some hospital readmissions are considered necessary, unpredictable and unpreventable, such as for example complications after surgery, where a too strict threshold for readmissions may represent a safety issue (8). However, research focusing on the positive aspects of hospital readmissions are limited.

The hospital readmissions which are considered unnecessary, e.g. readmissions which have the potential to be avoided through improved
clinical management or appropriate discharge planning (9), have received more attention in research. This research shows that a large proportion of hospital readmissions are considered unnecessary and preventable (10, 11). These unnecessary hospital readmissions are deemed inappropriate patient outcomes or adverse events (undesirable events within healthcare or the healthcare process) (12, 13). They can be harmful and stressful for the patient and their families with subsequent tests and treatments, time away from home and family and the existing risk of being hospitalized (e.g. the risk of treatment-related injuries, nosocomial infections and miscellaneous hospital hazards such as falls or bed ulcers) (13-15).

Reasons for hospital readmissions
The causalities in hospital readmissions are complex and often include multiple coherent or separated factors involving the healthcare services: suboptimal patient treatment, unnecessary use of resources, access to post-hospital care, or factors related to the patient: chronic illness, age, and social support (16-20). Moreover, hospital readmissions can be grounded in unforeseen events such as patient falls or worsening of illness, or contextual factors such as length of stay, poor coordination and communication between healthcare services (21). Most research done in this area shows that chronic illness and age are particularly decisive in patients being readmitted to hospital (22, 23). People of old age are not only more likely to be readmitted to the hospital, they are also the patient group most vulnerable to readmission situations (24). With the worldwide greying of the population (expectancy of a doubling of older persons by 2050), hospital readmissions will continue to be an issue in healthcare services across borders and possibly create even more pressure on health service resources (25, 26). It is therefore vital to gain a broader understanding of how hospital readmissions manifest, in order to prevent future, unnecessary strains on an already pressured healthcare service.

Hospital discharges and care transitions
A hospital discharge is the point at which a patient is released from hospital care by a physician and leaves for home or is transferred to another care facility, for example a nursing home, or a rehabilitation institution (27). In Norway, a patient is deemed ready for discharge when a hospital physician assesses the patient to be no longer in need of specialized healthcare (28).

The discharge process involves several members of a multidisciplinary team both within the hospital, and between the hospital and other healthcare
Institutions (e.g. primary care) (29, 30). Furthermore, the process commonly consists of several steps including the hospital admission, the hospital stay and the decision to discharge (28, 31, 32). Although each hospital has its own standard arrangements for discharging patients (33), the final step in a hospital discharge - transition to home or other healthcare institutions - is the same. This process is often referred to as transitional care, which is defined as a “set of actions designed to ensure the coordination and continuity of healthcare as patients transfer between different locations or different levels of care within the same location” (34).

Research has shown that hospital readmissions are closely related to hospital discharge and care transitions, because the process of transition between healthcare services are particularly prone to hospital readmissions, for example, if the handovers are ineffective with poor communication, poor information exchange and poor coordination (35, 36). Moreover, the time of discharge (early hospital discharges) has been suspected to affect hospital readmissions (37), and improved care transitions and quality in discharge planning have shown to reduce them (38, 39).

Decision-making in hospital readmissions
In many countries, general practitioners (GPs) are responsible for referring patients to the hospital when needed (40-42). Hence, GPs are one of the main decision-makers in hospital readmissions, and in the literature have been described as the gatekeepers of the specialist healthcare service (43). In Norway, the GP has the coordination and advisory responsibility for each patient they are in charge of, creating a front-line service, whereby GPs are responsible for referring patients to the specialist healthcare service when needed (44, 45).

In some countries, including Norway, GPs are involved in hospital readmissions in several parts of the healthcare service, because they have other responsibilities in addition to their GP practice. This can, for example, be in emergency rooms (ERs), nursing homes or home care services (40). This means that ER-doctors and nursing home physicians are also involved in decision-making related to hospital readmissions.

Despite the GPs deep involvement in these decisions, research on how they make decisions and what influences them is limited. More knowledge of
primary care physicians’ decision-making when considering hospital readmissions is therefore needed.

Hospital readmissions in Norway
In a Norwegian context, the number of patients being readmitted to hospital has increased during the past decade in line with shorter hospital stays, more complex illnesses and an ageing population (46). The readmission rates have, however, stabilized in the last few years. The distinctive situation in Norway is that there have been rather large differences in readmissions rates between the various municipalities providing primary care (10 -20%), even between municipalities who are linked to the same hospital, and are similar in size and location (46). The reason for this is currently poorly investigated, even though hospital readmissions are under the close supervision of the Norwegian government with annual mapping of hospital readmission rates, reports of the extent of hospital readmissions, and implementation of measures to reduce hospital readmissions (28, 46, 47). Moreover, the hospital readmission issue is discussed in several white papers showing the topicality of this part of the quality and patient safety area in the Norwegian healthcare service (48, 49). Although mapping of readmission rates in the primary healthcare service has been included in the supervision of hospital readmissions in Norway, the attention of the primary healthcare services on readmissions has largely been excluded from research, leaving an essential part of hospital readmissions under-investigated.

1.2 Study context
The trend in the Norwegian healthcare service, in legislation and reform during the past decades, has been an increasing degree of governmental involvement, and a decreasing health personnel involvement in healthcare management. This was particularly reflected in the Norwegian hospital law of 1970 and the Health trust reform in 2002 (50). Along with increasing governmental influence, a stronger focus developed on the enterprise economy with competition, incentives and business-like structure (50-52). The latter (business structure) was included in the Lowest Effective Care Level- Principles (LEON), which became applicable in the 1980s. Patients were to be treated at the lowest professionally sound care level to reduce resource waste (53). The Diagnosed Related Groups-system (DRG), an effort-based funding system where patients were classified in groups with a fixed
reimbursement rate per patient, was from 1993 to be used as a resource control in all councils (53, 54). These measures have affected the healthcare personnel’s working situation, healthcare service management, and the patient care, in terms of increased efficiency requirements and increased focus on healthcare cost (55).

Furthermore, two, somewhat, opposing trends have emerged in Norwegian healthcare history: a trend towards greater separation between primary and secondary health care services (44, 56), and a tireless work to increase coordination between them (28, 50). The difficulties of coordinating these healthcare services have been evident in terms of poor, conflicted coordination between healthcare services, coordination challenges between professional premises and political control and a challenging coordination responsibility for GPs (51, 57, 58).

The Coordination Reform
The political and research interest in coordination between healthcare services blossomed in relation to the introduction of the Coordination Reform in 2012 (59, 60). The Coordination Reform was built upon existing health policy structures, and aimed to secure a future health and care service with a focus on the patients’ need for coordinated healthcare services. The municipality’s role shifted towards a greater focus on preventive healthcare and providing greater efforts within the early phases of the patients’ illnesses. New responsibilities like preventive work, early intervention, diagnosis, treatment and patient follow up were given to the municipalities through new legislation such as the Act on municipal health and care services (2012) (61). The municipalities also became obligated to co-finance the secondary healthcare service and became economically responsible for patients considered ready for discharge from the hospitals (62). The cofounding was liquidated in 2015 (52). The municipality’s economic responsibility for patients ready for discharge has caused changes in the healthcare service such as shorter hospital stays, increased patient flow and increased pressure on the primary healthcare services (63-65).

The Norwegian healthcare service organization
Currently, the Norwegian healthcare services are publicly managed and owned, but separated in two isolated management lines for the specialist healthcare services (secondary healthcare services) which are managed by the Norwegian state, and the primary healthcare services which are managed by
the municipalities (66). The primary healthcare services include GPs, nursing homes, home care services, health centers, emergency rooms and rehabilitation services, and the secondary healthcare services include somatic and psychiatric hospitals. In addition to separate management, the healthcare services are also financed separately (67). Each municipality provides health and care services at their own discretion, within overarching national regulations, resulting in differences in how the primary healthcare services are delivered (56). By 2018 there were 422 different municipalities of different sizes and with different numbers of inhabitants (from 208 to 673469 inhabitants) extending over a distance of 103,000 km in Norway. These 422 municipalities were served by 66 hospitals, indicating vast differences in distance to hospital between municipalities. Nevertheless, all municipalities have equal duties in law.

Norwegian nursing homes
Norwegian nursing homes are organized in long-term nursing homes (LTNH) for elderly people with extensive care needs and short-term nursing homes (STNH) for targeted, limited nursing home stays (1 day to several weeks). How each of these units is organized differs from municipality to municipality, for example in terms of physician staffing, where some nursing homes have a regular nursing home physician, whilst other are serviced by one or several GPs with nursing home duties. Moreover, in 2016, the municipalities became obligated to offer Municipal Emergency Bed Units (MEBU) for patients in need for acute care for whom the municipalities could offer diagnosis, treatment or care (68). The municipalities could organize these units at their own discretion, but were obligated to have the right capacity and competence to care for the patients in need of such services. The purpose of these units was to avoid unnecessary hospitalizations (69).

This thesis’ main focus was nursing homes and GPs in the primary health care service. However, due to the scope of the GPs responsibilities, information about the home care services was provided as well. The nursing homes were chosen as the main focus rather than home care services because there had been large structural changes in nursing homes in relation to the Coordination Reform, such as for example the introduction of MEBUs which was particularly interesting. Secondly, capacity issues were more relevant in nursing homes (although becoming an increasing issue in home care services as well). Thirdly, readmissions from, and discharges to nursing homes had a
greater financial impact on both the hospital and the primary healthcare service, and lastly, the diversity in nursing home organization was an interesting perspective in relation to hospital readmissions.

1.3 Knowledge gaps in research on hospital readmissions

Causes for hospital readmissions are well investigated. However, research has mostly been directed towards the patient perspective (e.g. age, gender, disease, social factors) or the hospital perspective (e.g. length of stay, bed occupancy, staffing) (70-76). Research on reducing hospital readmissions, which is also comprehensive, generally suggests measures directed towards the patient, such as for example hospital follow-up measures for geriatric patients post-hospital discharge (77, 78). Furthermore, there has been a strong focus on readmission rates (3, 79) and other quantitative research concerning the incidence of readmissions, particular diseases or procedures prone to readmissions, and predictors of hospital readmissions (80-82).

Furthermore, few studies on hospital readmissions reflect the primary healthcare perspective, particularly how hospital readmissions occur from nursing homes, home care services, emergency rooms (ERs) and general practitioners’ (GP) offices (83). This contrasts with the important role the primary healthcare service has in caring for the patients post hospital discharge, and the primary care physicians’ gate-keeper role in hospital admissions and readmissions. Furthermore, there has been little qualitative focus on understanding the different aspects of hospital readmissions from the perspectives of healthcare workers at the sharp end of the primary healthcare service.

Fortunately, there seems to be an increasing interest in the subject, particularly in regards to quality and competence in nursing homes (84-86). However, the research is still limited. This thesis reflects the increasing interest in the primary healthcare perspective, and promotes qualitative knowledge on readmissions from the primary healthcare service, through the perspectives of health personnel who hold a great deal of experience of the hospital readmission issue in practice.

Transitional care and the effect on hospital readmissions are also fairly well-investigated areas (87-90). However, exploration of different health personnel’s perspectives within one cooperating healthcare service (nursing
homes, including nurses and leaders, the GPs and the hospital physicians who receive the patients readmitted from the same healthcare service) are lacking. More knowledge about the physicians responsible for making decisions about hospital readmissions and hospital discharges, and the contextual factors affecting these decisions (e.g. other healthcare personnel, resources or staffing) could be helpful in understanding the relationship between hospital discharges, care transitions and hospital readmissions from both the discharging – receiving – and readmitting end of the healthcare service.

Further, the hospital physicians’ view on how readmissions from the primary healthcare service occur has been excluded from previous research, whereas research in hospitals has rather focused on perspectives within the hospital setting (83). Nevertheless, the hospital physicians’ views provide an outside perspective on readmissions from the primary healthcare services, at the same time, as the hospital physicians are deeply involved in these processes. This represents a novel perspective on hospital readmissions, which may prove useful in the further exploration of this complex phenomenon.

This thesis, therefore, contributes to covering the aforementioned knowledge gaps by retrieving qualitative knowledge from key actors in primary care (nurses, nursing home leaders and GPs), and hospital actors experiencing hospital readmissions from the primary healthcare service (hospital physicians).

Additionally, previous research on hospital readmissions have mostly neglected the inclusion of theories, specifically system theories, in the investigation of the readmission issue. This has resulted in a limited holistic and systemic view of hospital readmissions. Much of the previous research has been fragmented, focusing on isolated aspects of the hospital readmission phenomenon (e.g. readmission rates, costs, probability, and risk). This thesis applied system and individual theory to form a holistic view of the readmission issue, across the interfaces of current context and readmission factors as perceived by health personnel.

1.4 Aim and research questions

This thesis aimed to explore hospital readmissions from a primary healthcare perspective, to increase knowledge about factors that lead to hospital readmissions from the primary healthcare service.

More specifically, this thesis aimed to develop new knowledge about:
Introduction

- General practitioners’ (GPs) decision-making in hospital readmissions.
- The role of nursing home resources in readmissions processes (e.g. staffing, nurse competence, physician coverage) as seen from nursing home staff and managers.
- Hospital physicians’ view on hospital discharges to - and readmissions from, the primary healthcare service.

Following research questions (RQ) guided the study:

RQ:1 What factors influence GPs’ decision-making in the hospital readmission process, and how do other healthcare professionals contribute to this decision-making?

RQ:2 How do nurses and nursing home leaders experience the resource situation, staffing and competence level, and how do they consider these factors as possible reasons for hospital readmissions from their organization?

RQ:3 What factors inside and outside the hospital do hospital physicians believe affect the hospital discharge process and how do hospital physicians reflect on reasons for hospital readmissions?

1.5 Structure of thesis

This thesis consists of two parts. Part 1 covers the synopsis and includes six chapters. The introductory chapter (chapter 1), provides a contextual overview of the complexity of the readmissions problem (extent and causes, involved actors and processes) demonstrating the topicality of this thesis. It also provides a description of the study context (the Norwegian healthcare service) and introduces the aim and research questions of the thesis. Chapter 2, outlines the theoretical backdrop on which the thesis is founded, and in the following Chapter 3, a detailed description of the methodological approach, including philosophical underpinnings, research design and research stages of the thesis is provided. Chapter 4 offers a summary of the results from the three sub-studies (paper I, II and III), including a brief synopsis of the findings across papers, forming the background for the discussion in Chapter 5. The discussion chapter reviews the results in light of existing research and the theoretical framework presented in Chapter 2, and includes methodological considerations. Finally, Chapter 6 provides the conclusions of
the thesis, presents implications for further research and suggests possible interventions relevant for policy-makers and healthcare workers.

Part 2 of this thesis consists of three peer reviewed and published research articles. The publications are:

**Study I**


**Study II**


**Study III**

2 Theory

Theories provide a framework in which social phenomena can be understood and findings interpreted (91).

In the current thesis, theory was used as a framework in an attempt to better understand the complex processes of hospital readmissions. Hospital readmissions involves several actors within a system. This demands an understanding of the system in which these actors work, how they are involved, and also, what happens when these systems do not work as intended. Furthermore, there is a need for knowledge about collaboration and coordination between the different healthcare actors. In an effort to understand this, three different theoretical contributions were applied. In order to assess the theoretical aspect of how healthcare workers adjust to changes in a system, and how central guidelines and regulations are implemented in everyday work, the theory of Resilience in healthcare, including Work as Imagined (WAI) and Work as Done (WAD) was applied. Further, the Human factors and the Systems Engineering Initiative for Patient Safety (SEIPS) model was used to explore how systems and work processes interact with each other, and how this interaction affects healthcare outcomes. Lastly, Case Based Decisions Theory (CBDT) was applied to explore how individuals make decisions, and how they are effected by others in their decision-making.

These theoretical perspectives contribute to increasing the understanding of the finding of this thesis in three ways: 1), by increasing the understanding of how health personnel and the healthcare systems cope with or adapt to sudden changes or changes over time, and how these adaptions or lack of adaptions affect hospital readmissions; 2), by providing an outline of the complexity of interactions of factors within a healthcare service affecting hospital readmissions (as seen by health personnel), and thereby provide a better understanding of the phenomenon of hospital readmissions; 3), by providing an in-depth understanding of how the individuals who are first handily dealing with decisions on hospital readmissions are making these decisions.

The application of these different theoretical perspectives provides an integrated understanding of the complexity in the hospital readmission process.
2.1 Resilience in healthcare

Safety I and Safety II

Traditionally, safety in healthcare has focused on the things that go wrong (accidents, adverse events, near misses). The goal of safety has been to keep the number of adverse events as low as possible. Safety has been achieved by setting up barriers in an effort to block processes which lead to adverse events, by constraining performance variability through for example strict training or application of tools, procedures, strategies or policies. It has been argued that this safety perspective (called Safety-I) on its own is an inadequate perspective to use in safety work. This is because healthcare systems today are complex, ever changing and intractable, making it difficult to provide a complete description of the system, or to prescribe an exact performance in an exact situation (92, 93). As seen in hospital readmissions, the processes are complex, they often have individual variation and involve different actors, making it difficult to trace exactly “where things go wrong”. In recent years, there has been a call for new, or supporting perspectives, which can help provide a better understanding of safety in healthcare services (93, 94).

Healthcare systems are named in the literature as complex adaptive systems (CAS). CAS are systems containing a large number of components which adapt or learn from each other through interaction (95). The healthcare service consist of several levels (e.g. primary level, secondary level), holds a large number of “sub-organizations” (e.g. nursing homes, home care services, hospitals, health trusts) and involves multiple actors (e.g. policy makers, managers, different health personnel, patients) leading to a vast number of actions, processes and interactions. The healthcare service also has constantly changing conditions and produces numerous different outcomes, including unintended ones such as unnecessary hospital readmissions (96).

A Safety-II perspective takes greater account of the complexity of the healthcare service by focusing on the things that go well (everyday performance) rather than solely focusing on the things that go wrong. E.g., how do health personnel avoid hospital readmissions 80-90% of the times? The Safety-II perspective says that systems work because of peoples’ ability to adjust their activity to their work conditions, not in spite of it. People are able to detect, for example, problems in system designs (e.g. understaffing) and adjust their performance accordingly. The result is performance
variability, which is one of the main pillars of a resilient healthcare service (92).

Resilience in healthcare
In line with the Safety-II perspective, the Resilience in healthcare theory states that acceptable outcomes and adverse outcomes spring out of the same actions i.e. everyday performance adjustments, and that an important aspect of safety work is to look at the things that go well in everyday performance adjustments and to try to understand how that happens. By understanding how things go well, a foundation for understanding how adverse events happen is being formed (93, 97). Further, the Resilience in healthcare theory promotes a system thinking within safety, where the combination of conditions and factors within a system is used to explain the occurrence of, for example, events such as hospital readmission, rather than ascribing such events to single functions, components or humans (as done in the Safety-I perspective) (98). In this spirit one does not only ask what the GP, ER-doctor or nursing home physician did wrong when a hospital readmission occurs, but look at factors in the system around the health personnel as well.

In short, resilience implies stability in the face of change - a system’s, individuals’ or a communities’ ability to adjust and return to a stable state in the face of disturbances, for example, to handle an unexpected increased patient flow, or an unexpected deterioration of a patients’ condition (99). Multiple definitions of resilience, within different research traditions, exist. In the current thesis the definition of Hollnagel et al., (98) was applied:

Resilience is the ability of healthcare systems to adjust its functioning prior to, during or following changes and disturbances, so it can sustain required performance under both expected and unexpected conditions.

Resilience in healthcare is about flexibility, adjustments, improvisations, adaptation and variability in the meeting of unforeseen, unpredicted or unexpected demands (100). An example would be when caring for complicated patients in the primary healthcare services without having the adequate resources available, to aim to avoid a hospital readmission. These factors are crucial, to be able to adapt to changing work settings and available resources to ensure adequate performance. Resilience in healthcare therefore focuses on how to promote people’s ability to handle complexity under pressure, to gain success. Another important aspect of resilience is the recognition of the dynamics of complex systems and that a stable dynamic
A system has, according to Hollnagel (102), potentials for resilient performance. He proposes four resilience potentials that are necessary for an organization to be able to perform in a resilient manner:

- The potential to respond (be aware of what to do when something happens, and adjust ongoing functioning to the situation)
- The potential to monitor (know what to look for in terms of present or future treats)
- The potential to learn (learn from the acceptable outcomes as well as the unacceptable ones)
- The potential to anticipate (know what to expect in terms of developments or treats in the future)

The potentials show that different mechanisms are involved in everyday adaptations and therefore are relevant for studying the readmission processes. These adaptations must be in action prior, during and after an event (102). The potentials are, further, highly affected and dependent on each other. For example, responding can only be effective if the responses are flexible. In other words, they need to change and develop over time in line with the ever-changing environment of the system, which again assumes the ability to learn. Ability to respond is further dependent on the ability to monitor, and responses and monitoring must be revised based on experience (learning) (103). From the perspective of hospital readmissions, it is necessary to detect potential factors related to unnecessary hospital readmissions, in order to be able to avoid them, and to be aware of what adjustments may be needed to reduce them, both on a systemic level, and in terms of decisions made on a healthcare personnel level. This will further boost the learning potential, and enable further reduction and anticipation of hospital readmissions. A hospital readmission can also be an adequate adaptive response if the alternative threatens the patients’ safety, for example if there is not good enough competence in a nursing home to care adequately for the patient.

Every system has a limit on how far it can be pushed before adaptations can no longer maintain safe system operations (104). There are, for example, boundaries on how low nurse staffing numbers can be at a nursing home before safe operations become impossible. If the understaffing continues, the adaptive capacity becomes exhausted and leads to decompensation (101).
Another version is when adaptations in one part of the system are working “on site” but have negative consequences in other parts of the system, such as ER doctors spending time looking up missing information about a patient to avoid a hospital readmission, stealing time from other patients or tasks. Lastly, if the same adaptations (which have proven successful in the past) are continued to be used, despite the changing outside world, the adaptation becomes maladaptive and one becomes stuck in outdated behavior (104, 105).

Overall, the perspective of resilience can contribute to an increased understanding of how healthcare personnel in the current study adapt their discharge practice, decision-making or patient care, to avoid hospital readmissions or to merely work around a system, which is not always compatible with the patients’ best interest. However, the theory has been criticized for not accurately reflecting how patient safety is practiced in most healthcare settings (106) and for lacking new elements compared to the theory of high reliability organizations (107).

*Work as Imagined and Work as Done*

When practitioners adapt their practice or behavior based on their knowledge, experience and expertise in relation to the situation they are in, their behavior becomes an example of how work is done in practice, which often diverges from how the work was intended by system designers and managers (108).

Work as Imagined (WAI) and Work as Done (WAD) describe the difference between work as it was thought of, or planned (WAI) and work after it has taken place in the organization, including evaluation of consequences and how the work was carried out (WAD) (109). Work has to be managed and planned to ensure productivity, safety and quality, and to avoid performance from becoming random and ineffective (110). People managing the work are often at the blunt end (managers or other authorities) which influences how work is conducted through, for example, organization, resources and reforms, such as the Coordination Reform. They do not actively participate in everyday work. People at the sharp end represent workers who interact in the actual work processes and experience the world directly e.g. nurses or physicians. They hold detailed and precise knowledge of what goes on in everyday work (109).

When work is planned, assumptions about the world are made. The more unpredictable the work context is, the harder it is to make these assumptions and to plan future actions (110). A complete compliance between WAD and
WAI is often impossible, as plans are only anticipations of what may happen, and do not hold any answers about the context or the behavior of those working in these contexts. Plans, therefore, have to be adjusted to the conditions, or the conditions adjusted to the plans (110). In healthcare settings, the latter is problematic, because patients’ health and health problems are difficult to standardize. Plans, guidelines or procedures are therefore bound to be adjusted to WAD, and not vice versa. In order to do so, communication between the “plan-makers” (the blunt end) and those performing the work (the sharp end) is essential (110).

In this thesis, WAI and WAD was applied to investigate the guidelines of the Coordination Reform (applicable for all healthcare services in Norway) and the Commissioner’s Documents (applicable for the health trust of which the included hospital was a part), and further, explore how these guidelines are played out in hospitals and primary healthcare services. Furthermore, WAI/WAD functioned as a backdrop for the development of the interview guide, representing a starting point for understanding the relationship between governmental expectations, national indicators, Commissioner’s Documents and practice. Lastly, WAI/WAD was, along with human factors and resilience, used in the interpretation of the thesis results.

2.2 Human factors and system perspective

2.2.1 Human Factors

Human factors (HF) (also called ergonomics, human factors engineering and human engineering) (111), promotes a holistic human centered approach to work system designs, which focuses on the nature of human beings, their characteristics and capabilities and their interaction with different environments, elements of a system, work processes and other people within a system (112, 113). HF unifies different scientific disciplines such as engineering, design, technology and management of human compatible systems, aiming to create systems which supports the needs, characteristics and limitations of people (112).

*Human factors in patient safety and health services research*

Within patient safety- and health services research, human factors focus on safety and risk related to the system or organization, stressing that errors or
inadequacy in patient care cannot alone be related to actions of individuals. The system in which they work and interact needs to be taken into consideration, which may include the design of devices, team work, coordination and communication between different healthcare levels and health personnel (114, 115). In addition, the cognitive processes of individuals within the system need to be taken into consideration: for example, how they are affected by the organization they work within and what economic and staffing resources are available. The HF within patient safety, further extends to the political backdrop in which the work is conducted, and the culture within the organization (115).

Analyses based on HF are particularly valuable in primary healthcare services where the care processes are often complex and interconnected (for example between different healthcare levels) (116). Moreover, it can be useful to apply HF knowledge and HF approaches within intricate hospital environments to increase understanding of processes which may lead to threats towards quality and patient safety (117). Lastly, HF knowledge can be used to investigate processes in the interface of primary care service and hospitals to provide a better understanding of factors affecting hospital readmissions.

2.2.2 The SEIPS model of work system and patient safety

The Systemic Engineering Initiative for Patient Safety (SEIPS) is a model which applies the human factor approach to understand the complex processes of healthcare settings (see figure 1.) (114). The SEIPS model aims to characterize the multiple variations of interactions between the environment and people, and further, identify points of improvement (114). The SEIPS model has previously proven effective in explaining work systems in the primary healthcare service (118).

The SEIPS model includes five components within work systems: Person which can be the health personnel or the patient, holding different qualities such as skills and knowledge; Task, which can be relevant work tasks within the system, but also involves aspects such as job demands and autonomy; Tool/Instrument, which can be a range of tools such as health records and medical devices; Physical environment which includes factors such as noise, lighting, temperature etc.; and Organizational conditions involving, for example, coordination, collaboration and communication (114). These components are all interacting with each other, and effecting each other, and
produce different outcomes. The persons are conducting tasks using different tools or instruments. The execution of these tasks is happening within a physical environment, which is placed under a specific organization. All these five components (person, task, tools/instruments, environment, organization) interact with, and effect each other producing different outcomes (patient outcomes or employee and organizational outcomes) (114) (Figure 1.).

Any change in the organization will affect the work, the clinical process and the patients, the employee and the organizational outcome in a negative or positive way (e.g. the new structures and organization imposed by the Coordination Reform) (116). The SEIPS model shows how all parts in an organization effect and depend on each other, and how changes can affect organizational outcomes.

The SEIPS model has been introduced by Holden and colleagues in a revised version – the SEIPS model 2.0 (119). This model continues the terms of the original SEIPS model, while more greatly emphasizing the patient’s and the patient’s next of kin perspective. Although the patient’s perspective is of great relevance in hospital readmissions, it was not the focus of this thesis. Therefore, the original SEIPS model (114) was applied to structure and provide an overview of the factors effecting hospital readmissions as perceived by the health personnel in this thesis, and to further investigate the relationship between these factors. The SEIPS model was further applied in the development of the interview guide of study II, and in the interpretation of the results.
Figure 1. The SEIPS model [113]
2.3 Decision Theory

Decision theory offers a framework, which can be utilized in situations where choices have to be made between different courses of action, where the outcome of the decision is unknown (120). There are many different theories concerning decision-making, and therefore also many different research traditions (121). However, most decision theorists distinguish between descriptive theory (how decisions are made) and normative theory (how decisions should be made), although, one conviction is often in common; that decisions are triggered by wishes and beliefs (122). Modern decision theory is dominated by attempts to provide principles for rational decision-making, e.g. provide axioms of how rational decision-makers ought to choose among uncertain prospects to maximize expected utility (122).

Case-based decision theory

The Case-Based Decision Theory (CBDT), developed by the economists Itzak Gilboa and David Schmeidler, represents an alternative to traditional decision theories (e.g. utility theory), aiming to place greater emphasis on the meaning of cognitive processes of decision-making (123). CBDT suggests that people have a tendency to choose actions based on experiences from previous actions, which have shown to provide good outcomes (123).

Although the theory was developed within the field of economy, it is useful within other fields which involve complex decision-making, such as, for example, in healthcare services (124, 125).

CBDT suggests that the main technique for reasoning in decision-making is to compare the current problem at hand, with other similar, previous problems. By adding this idea to decision-making, they suggest that people choose actions based on previous performance in similar cases they have experienced, or utilize other people’s experiences in similar cases (especially if they know, or perceive themselves as similar to the other decision-maker). For example, they may use their own or others’ experiences (e.g. patients’ medical records) when deciding whether or not a patient should be readmitted to hospital. However, previous experiences will only affect their decisions if remembered. Furthermore, previous experiences may be assessed differently by different people (subjective variation) (126).

A case in this theory consists of three components: the problem (stories involving decision problems), the act (own or others memories of how a
decision was made in a similar case) and the result (recollection of the choice made and the outcome that resulted) (127). The problem may not repeat itself in an identical matter, but the problem may have similar features, which the decision-maker can rely on (e.g. patients with similar medical issues). This is a particularly important aspect within healthcare decisions, where human variation is central.

When deciding, the decision-maker ranks different actions to assess similarity to other cases and the sum of beneficial outcomes. Hence, the decision-maker is equipped with a utility function, meaning that they weigh what the most profitable outcome may be (126). If the outcome of a decision is undesirable, the decision-maker will continue to make other decisions, until it results in the wanted outcome, and thereafter will choose that act repeatedly. If the best act is found at first try, the decision-maker will continue to use this act and not explore different alternatives. If the act chosen continues to give bad outcomes, and the options are running out, the decision-maker may have to choose the best of “two evils” (126). An example would be when a physician has to choose to readmit the patient to hospital because there are not any available nursing home placements, and the patient would have been better off getting care at primary care level.

Experience is, in CBDT more central, than thoughts or considerations of what may happen (127). However, the use of hypothetical cases is mentioned (what had happened if I have chosen a different decision). Such assessments provide the decision-maker with reasoning abilities he or she would otherwise have been without. Any knowledge the decision-maker has, and every conclusion they manage to make, as far as they are relevant for the question at hand, will be reflected in hypothetical cases (126).

According to CBDT in a healthcare setting (e.g. questions of hospital readmissions) the physicians can base their decisions on previous experience with similar medical cases, previous experience with the same patients or gather information from other colleagues’ experience, through for example, patient journals or consultation with peers.

The CBDT was used as a backdrop in the creation of the interview guide, aiming to formulate questions contributing to a greater understanding of how GPs and nursing home physicians make decisions concerning hospital readmissions, current influencing factors, and if and how other health personnel contributed to these decisions. Further, the CBDT was applied in
the interpretation and discussion of the study results. However, CBDT was not in itself an adequate theory to interpret the results of this thesis, and functioned as a complement to Resilience in healthcare and Human factors theory by focusing on the individual level of the healthcare system.

2.3.1 Brief theory summary

Resilience in healthcare and Human factors are system theories, while CBDT takes an individual perspective. The three theories complement each other by providing different perspectives of the healthcare system and thereby the hospital readmission issue. Resilience explains the continuous adaptations going on in complex adaptive systems, the SEIPS model contributes to provide a framework on how to think about the different aspects of a system, how these affect each other and the system in its entirety. The CBDT complements the two other theories by contributing to increasing the understanding of how the individuals at the sharp end of the healthcare services (primary care physicians) handle decisions of hospital readmissions.
3 Methodology

This chapter presents the underlying methodology for conducting the current thesis. The chapter starts with a brief presentation of the philosophical underpinnings, and then provides a description of the research design, followed by a portrayal of the thesis stages and context, data collection methods, analysis and ethical considerations. Lastly, the chapter shows how the thesis has ensured trustworthiness. Discussion about methodological strengths and limitations is provided in the discussions section, chapter 5.4 Methodological reflections.

3.1 Philosophical underpinnings

The researcher’s philosophical orientation (paradigm) has significant impact on decisions made in the research process such as methodology and method, and further demonstrates how meaning is constructed from the derived data (128). A paradigm consist of four components: ontology (the study of being), epistemology (the nature and forms of knowledge), methodology and methods. The paradigms’ ontological and epistemological views (assumptions of reality and knowledge) effect the research approach, which again will have meaning for the methodology and methods (129).

This thesis is placed within the paradigm of constructivism as the aim of this thesis was to explore and increase understanding of how health personnel at the sharp end of the healthcare service perceive the issue of hospital readmission.

The constructivist paradigm is situated under the naturalistic movement (focus on insight and understanding of behaviour) which started out as a counter movement to positivism (focused on explaining relationships, causes and outcomes) (129, 130). Naturalism takes the position of relativism (denies existing processes which can determine the infinite truth or the falsification of constructions) and is a branch of postmodernism, which stresses the value of deconstructing and reconstructing ideas and structures and rebuilding them in alternative ways (130). Constructivism names reality (ontology) as a vivid construction of the individuals participating in the research, and emphasizes that reality exist within a context. This means that many constructions are possible and that reality is created within the subject, through lived experience.
and interaction with others (130, 131). We therefore need to access the world through the participant’s language, and discover life from the inside. In order to gain this insight, the researcher must take part in the research process, together with the participants, to be able to be secure that the produced knowledge is reflective of their reality (epistemology) (131). The voices and interpretations of study participants are, in other words, central to gaining understanding of the studied phenomenon, and subjective interactions are the key to access them (130).

Each paradigm corresponds to different methods for developing evidence. A central methodological distinction is the distinction between qualitative and quantitative research, where the quantitative approach leans towards positivism and qualitative research is associated with constructivist inquiry (130). Constructivists seek to understand the human lived experience through careful collection and analysis of qualitative data materials, often leading an inductive process, aiming to illuminate a phenomenon by integrating information to a description of the problem under study (130). Qualitative data is collected in real world settings through, for example, observation or interviews with open-ended questions, situated in places comfortable to the interviewees (132).

Although this thesis is placed within the constructivist paradigm, the choice of method was largely based on the research questions at hand. To be able to gather information about health personnel’s experiences and views, the application of qualitative methods was demanded. However, the constructivist paradigm substantiates the qualitative views of understanding and deriving knowledge. One can say that the philosophical underpinning of this thesis is, as it should be, closely intertwined with the problem under study, and that the philosophical and methodological thoughts were more of an entangled, ongoing process rather than a linear series of chronological provisions.

### 3.2 Study design

This thesis undertook a qualitative methodological approach to pursue the study’s overall aim. Qualitative research allows for exploration and understanding of the meaning individuals or groups ascribe to a problem and enables the researcher to describe and interpret the problem based on these ascriptions (133, 134).
Within the qualitative methodological approach, the thesis carried out an explorative multiple comparative case study design. An explorative path was chosen as research on readmissions from the primary healthcare service was limited (135). The case study approach enabled the thesis to focus on one area and retain a holistic and real-world perspective (136). Moreover, hospital readmissions involve various contexts (e.g. hospitals, nursing homes, ERs GP offices), include multiple actors (e.g. nurses, physicians, nursing home leaders) and various processes in-between care levels (e.g. decisions, communication, information exchange) which must be studied in context to be able to gain an understanding of the readmission problem. Enabling the researcher to investigate a phenomenon within its context is one of the main advantages of case study research (136).

3.3 Case study research

Case study research involves an in-depth investigation of a case. Each case is a unit which is unique in its content and character and can involve people, subjects, issues or programs (137). The case must be defined in the terms of beginning or end points - be a bounded area of research, defined by the nature of the research question (136, 138).

Case study research can be carried out as multiple or single case studies, where the logic behind choosing multiple case studies is to replicate findings, either to find similar results or contrasting results (136). Furthermore, case studies can involve several units of analysis at more than one level, if the case includes (embedded) sub-units. Embedded units occur when attention is given to sub-units within the case, in contrast to holistic case studies where the global nature of the case is studied (136). Embedded case studies facilitate a more extensive analysis of the problem under study and enhance the insight in each case because it enables the researcher to analyze data within the case, between the case, and to conduct a cross case analysis (136, 139).

3.4 Case selection

In case study research, the research questions are the starting point for the case selection process. The research questions, if well developed, lead the researcher to the unit of analysis (140).
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Two cases were selected in the current thesis. A case was defined as a municipality with associated primary healthcare services and the affiliated hospital (which were common for both municipalities) (see table 2.). Two nursing homes in each municipality (one long-term nursing home and one short-term nursing home with included Municipal Emergency Bed Units (MEBUs)) were investigated. Information about the home care services was implicitly retrieved through interviews with GPs and ER physicians (serving the home care service) and nursing home physicians and nurses (discharging and receiving patients to/from the home care services). Case 1 (Municipality A) had historically struggled with high readmissions rates and reported a need for more knowledge about, and research on, the manifestation of hospital readmissions. Case 2 (Municipality B), functioned as a contrast (136) to municipality A with lower readmission rates at the time of selection, but with similarities in organization, population size and proximity to the same hospital as Municipality A. They both had one emergency room (ER) staffed with GPs, interns, temporary doctors and some doctors with permanent positions. The short-term nursing homes had permanent staffed physicians, whilst the long-term nursing homes were served by GPs with nursing home duties. Outside regular work hours and during weekends, the on-call ER physician covered all the nursing homes included in the study.

The nursing homes had some variation in size and structure, but were otherwise organized similarly. The nursing homes in Municipality B had an overall larger patient capacity. The healthcare personnel-to-patient-ratio was similar, but there were differences in the distribution of nurses, certified nurse assistants (CNA) and assistants. Physician coverage was equal in the two STNH. In the LTNH in municipality A, they had a physician present once a week, whilst in municipality B they had a physician present four days a week.

The hospital affiliated to the two municipalities, a medium sized hospital serving approximately 180,000 inhabitants, had the same interest in the readmission problem as the municipalities, and agreed to participate in the study at an early stage of the project.

Two cases were investigated and compared to strengthen the internal validity of the study (136). The purpose of a comparative case design was to increase knowledge of one municipality with low readmission rates and one municipality with high readmission rates at the time of recruitment. However, the municipalities’ readmissions rates evened out during the research period,
Methodology

and the comparison was angled towards exploring and comparing health personnel’s views on readmissions in the two municipalities, and also the hospital physicians’ views on hospital discharges from – and readmissions to – the hospital. Figure 2. provides an overview of the cases (and their embedded units) and demonstrates how they are connected to each of the research questions. Overall, the study aimed to give an in-depth description of the embedded units within the selected cases and identify their perception of factors leading to hospital readmissions.
Table 2 Overview of cases

<table>
<thead>
<tr>
<th>Case 1: Municipality A</th>
<th>GPs/ nursing home physicians</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One long-term and one short-term nursing home (nurses, nursing home leaders)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Case 2: Municipality B</th>
<th>GPs/ nursing home physicians</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One long-term and one short-term nursing home (nurses, nursing home leaders)</td>
</tr>
</tbody>
</table>

|                         | Hospital related to municipality A and B (hospital physicians) |
Methodology

Figure 2: Overview of the cases, embedded units and their connection to the research question.
3.5 The thesis stages

The thesis was conducted in three stages (sub-studies) resulting in three papers. In the first paper (Study I), the aim was to increase knowledge of factors influencing hospital readmissions of elderly patients from the primary healthcare service through exploring GPs’ decision-making in the hospital readmission process, and the contribution of other healthcare professionals to this process. In the second paper (Study II), the aim was to examine how nurses and nursing home leaders experienced the resource situation, manning levels and competence in the primary healthcare services and how they perceived these factors to influence hospital readmissions. The last paper (Study III), aimed to explore hospital physicians’ view on the readmission and discharge process for elderly patients, in the interface between the hospital and municipalities, and learn about hospital physicians’ views on hospital readmissions from the primary healthcare service.

3.6 Data Collection

3.6.1 Recruitment

Representatives from Municipality A and the hospital approached the author of this thesis through the program director of the Western University of Applied Sciences, wanting to increase knowledge about hospital readmissions in the primary healthcare service. To recruit municipality B, the director of health was approached with a description of the project, and further agreed to participate after a meeting with the director of health, the care manager, the municipal director and the manager of community services and healthcare. The nursing homes were recruited by the care managers in both municipalities.

3.6.2 Sampling strategy

Multiple sampling strategies were necessary to collect appropriate data to answer the research questions of this thesis (141). The cases were selected through a purposive sampling strategy with the logic of selecting cases, which were rich on information about the problem under study (132). The embedded units within the cases (GPs, nurses and nursing home leaders and hospital
physicians) demanded different sampling strategies within the purposive approach. The GPs (Study I) were selected through a stratified purposeful sampling as all GPs in the current municipalities where invited to participate (132). Moreover, the strategy of leveraging existing social networks and personal contacts were applied (142). The nursing homes and the nursing home leaders within the respective municipalities (Study II) were purposively selected by key contacts within the municipalities. The selection was based on factors such as diversity in size, location and nursing home tasks, aiming to provide a rich and diverse data material. The nurses were conveniently selected by the nursing home leaders to be able to combine interview time with work schedules and staffing in the wards (132). Lastly, the hospital physicians (Study III) were selected through purposeful sampling (contacting physicians within relevant wards), snowball sampling (recruited physicians provided contact information of eligible participants), voluntary sampling (individuals volunteered to participate at an information meeting) and recruitment through social networks and personal contacts (141-143).

3.6.3 Qualitative data collection

The data material in the case study research consists of various evidence such as documents, interviews and observations. This ensures that “the case is not only explored through one lens, but a variety of lenses, which allow the multiple facets of the phenomenon to be revealed and understood” (144). This thesis applied different qualitative data collection methods in order to establish converging lines of evidence, aiming to ensure as robust findings as possible (140). In the following, setting, participants and data collection methods in each of the studies will be described in detail. Table 3 shows an overview of data collection methods, participants and analysis.
Table 3 Overview of participants, data collection methods, data material and analysis.

<table>
<thead>
<tr>
<th>Study</th>
<th>Research question (RQ)</th>
<th>Data collection methods</th>
<th>Participants</th>
<th>Data Material</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>What factors influence GPs’ decision-making in the hospital readmission process, and how do other healthcare professionals contribute to this decision-making?</td>
<td>Semi-structured interviews</td>
<td>GPs/nursing home physicians (n=20)</td>
<td>Individual interview transcripts (P. 180)</td>
<td>Content analysis (145)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Observation</td>
<td>Nurses and nursing home physicians (40 h)</td>
<td>Observational field notes (P. 60)</td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>How do nurses and nursing home leaders experience the resource situation, staffing and competence level, and how do they consider these factors as possible reasons for hospital readmissions from their organization?</td>
<td>Focus group interviews</td>
<td>Nursing home nurses (n=17)</td>
<td>Focus group transcripts (P. 64)</td>
<td>Content analysis (Graneheim &amp; Lundeman)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Semi-structured interviews</td>
<td>Nursing home leaders (n=7)</td>
<td>Individual interview transcripts (P. 57)</td>
<td></td>
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<td>III</td>
<td>What factors inside and outside the hospital do hospital physicians believe effect the hospital discharge process and how do hospital physicians reflect on reasons for hospital readmissions?</td>
<td>Semi-structured interviews</td>
<td>Hospital physicians (n=15)</td>
<td>Individual transcripts (P. 107)</td>
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Study I
The aim of the first study was to explore physician’s decision-making in questions of hospital readmissions. Semi-structured interviews and observations were applied as data collection methods, with the purpose of capturing the primary care physician’s perspectives on hospital readmissions and attempting to better understand the complexity of factors affecting decisions on hospital readmissions (132).

Settings and participants
The interviews were carried out from September 2016 to February 2017. Time and location for the interviews were adjusted to the physicians’ schedules and availability (136), but were mostly conducted in GP offices, nursing homes or ERs. The recruited physicians were GPs with nursing home responsibilities (8 in each municipality), nursing home physicians (1 in each municipality) and physicians working partly in the ER and in a nursing home (1 in each municipality), making a total of 20 participants. They differed in their work experience (e.g. geriatric competence, general practice, emergency medicine, psychiatry) and years of work experience (on average 9.6 years in municipality A and 15 years in municipality B). The variation in the recruited participants enabled us to obtain different views and perspectives on the hospital readmission issue (132).

Data collection
Semi-structured interviews are loose in their structure and consist of open-ended questions. The interview questions initially define the area under study, but allow for divergence to pursue emerging ideas or responses during the interview (146). In the thesis’ first stage, recruitment proved difficult, mainly because of the physicians’ tight work schedules. As a measure to ensure participation, the interviews were conducted as focused interviews (136), each lasting for approximately 30 minutes. Focused interviews remain open ended, but often pursue the interview guide more closely (136). The interviews were conducted by the author of this thesis, and were based on an interview guide pursuing the themes: Hospital readmissions based on medical justifiability; Hospital readmissions based on external influence; Hospital readmissions based on personal factors and Hospital readmissions
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based on organizational factors (see attachment 1). The themes were inspired by Case-Based Decision Theory.

In addition to the interviews, observations in all of the nursing homes were conducted. The aim of the observations was to explore sides of physician’s decision-making, which were difficult to capture through interviews (147), to support or fill in the interview material and strengthen the validity of the data material. The observations were conducted by the thesis author during the nursing home huddles (meetings between nurses and nursing home physicians prior to the doctors’ round), from December 2016 to June 2017. An observation guide guided the observations and consisted of four themes: coordination/interaction between nursing home physician, other physician colleagues and other health personnel in relation to hospital readmissions; coordination between nursing home physician/GP and patient/next of kin; the readmission process (see attachment 2). This setting was chosen because it involved medical decision-making, cooperation and interaction between the nurses and the physicians. The observed nursing home physicians were the same physicians that were recruited for semi-structured interviews (2 nursing home physicians in the STNH and 2 GPs with nursing home responsibilities in the LTNH). As the focus for the observations was interaction, coordination and decision-making, the observations were done in the on-call rooms where the huddles were situated. Field notes were continuously written throughout the observations, and each session lasted for approximately 2 hours (the length of a huddle). Ten hours of observation in each nursing home were conducted, generating about 40 hours of observation time.

Study II
The second stage of the thesis aimed to examine how nurses and nursing home leaders experienced the resource situation, staffing and competence levels in the primary healthcare service, and if and how they experienced these factors as possible reasons for hospital readmissions. This study applied focus group interviews and semi-structured interviews as data collection methods.

Setting and participants
The focus group interviews were conducted in the nursing homes of the respective nurses from September to October 2017. The location was chosen out of practical reasons (several nurses were having shifts the day of the interview). However, the location provided a known and safe environment for the participants, setting the tone for productive group discussions (148). The
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focus groups were of a relatively homogenous composition consisting of 3-6 female nurses working in the same nursing home with similar work tasks and responsibilities, creating a well-adjusted atmosphere in terms of power balance, conversation flow and openness (149). However, the nurses had differences in total work experience, work experience in the current nursing home and in their specialized backgrounds, facilitating relevant discussions and interaction between nurses with different backgrounds (148).

Semi-structured interviews with nursing home leaders were conducted from October to November 2017, in the same locations as the focus groups. One nursing home leader and one ward manager from each nursing home participated (with the exception of one long-term nursing home, where only the nursing home leader was available). The participants had different experiences as leaders and ward managers, but they had all previously worked as nurses.

*Data collection*

The interaction involved in a focus group interview reveals a group’s shared experiences about a problem and provides a good understanding of the group members’ thoughts and viewpoints (148). Since the focus groups were composed of colleagues who all knew each other well, the interviews were characterized by a good group dynamic where the participants seemed confident of each other (150). To secure openness for both nurses and leaders, the nursing home leaders were not invited to participate in the focus groups, but interviewed individually (151). The thesis author was in the role of moderator, and was in charge of asking questions, stimulating the participants to actively engage in discussions, and keep the conversation “on track” (148). One of the co-supervisors of the study functioned as note-taker and assistant moderator, continuously taking notes throughout the interviews and making sure that all participants had the chance to contribute equally with their opinions (148). The focus group interviews lasted for approximately one hour, were tape-recorded and included themes disclosing nurse–physician cooperation, resources and patient safety (see attachment 3). Themes were formed based on the theoretical perspectives of this thesis.

The semi-structured interviews with the nursing home managers and leaders were conducted in their offices. Although the same interview guide was used with all leaders, the interview time varied from 30 minutes to one hour. Despite the difference in length, the interviews provided rich data material (152). The individual interview guide included themes such as: resources and
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economy, organizational structure and hospital readmissions, organizational changes and the Coordination Reform (see attachment 4). Also, this guide was inspired by the theoretical perspectives of the thesis.

Study III
The third and last stage of the thesis aimed to explore hospital physicians’ views on readmissions and discharge processes for elderly patients in the interface between hospitals and municipalities. The data collection used in this study was semi-structured interviews. In addition, relevant elements from Commissioner’s documents for the Regional Health Authorities were extracted to compare governmental requirements and practice, and to try to increase understanding of, and insight into, the problem under study (153).

Setting and participants
The semi-structured interviews were conducted in offices, examination rooms, on-call rooms, cupboards or anywhere available within the hospital from August 2018 to January 2019. The recruited physicians were fellows and residents within surgical and medical wards with a large variation in years of work experience (1 to 38 years of experience). Common for all were their involvement in treating and discharging patients in wards with a larger proportion of elderly patients. Fifteen hospital physicians participated in the study.

Data collection
The third study was, like the first, characterized by recruitment challenges. Based on the previous experiences with physicians’ tight work schedules, the decision to pursue a focused interview approach was made early in the recruitment process. The interviews lasted for approximately 30 minutes, and were mostly rich in information. The interview guide include the themes: discharge practice and organizational structure; discharges based on collaboration with other occupational groups; patients’ and next of kin’s influence in hospital readmissions; discharges from the hospital with absence of readmissions and adjustment of discharge practice after the Coordination Reform (see attachment 5). The themes were again inspired by the theoretical perspectives of the thesis.

The Commissioner’s documents were publicly available on the internet. Issues from 2012 – 2018 were downloaded early in 2019. They were applied in the exploration of differences between provisions made by the government and how they were pursued in everyday work.
3.7 Data analysis

Qualitative data analysis transforms data into findings by identifying the significant information and patterns and revealing the essence of the collected data, in a process of transformation, transmutation, conversion, synthesis and sense-making (132).

Inductive vs deductive analysis

Inductive analysis aims to derive concepts or themes through the researchers’ interpretation of the data material, where findings emerge from the data through the interaction between the data material and the researcher. A deductive approach, on the other hand, aims to test data up to prior assumptions, theories or hypotheses; hence, the data is analyzed in accordance to an existing framework (132, 154).

This thesis was initiated with a quasi-deductive approach, before it shifted to an inductive phase during the analysis process (132). A theme-based interview guide for each study was developed with support from three theories in a quasi-deductive process. The interview guides functioned as “paddocks,” keeping the interviews within the theme under research, while allowing free conversation within certain boundaries (132). During the development of the codebook (categories, patterns, themes) an inductive tactic was applied, striving to “look at the data afresh for undiscovered patterns and emergent understanding” (132). The data analysis process is described in details in the coming chapters.

3.7.1 Analysis in case study research

The analysis process is one of the least developed aspects of case study research, and is, as in qualitative data analysis in general, largely dependent on the researcher’s rigidity within empirical thinking, sufficient presentation of evidence and careful consideration of alternative interpretations (132, 136). Although clear descriptions of how to perform case study analysis remain limited, several approaches aiming to preserve analytic rigor and secure validity in case studies have been suggested (136, 155), including content analysis (132). Despite limitations on analytical strategies, a distinction between two types of analysis in case study research is described; within case analysis and cross case analysis (140, 156). Within case analysis, aims to describe each case and the themes within it in detail (157). Cross case analysis is about analytic generalizability - finding differences and similarities
across cases and investigating the findings’ applicability to other similar settings (155). The cases included in this thesis were analyzed within and across cases, to map any common patterns, similarities or differences within and between the cases (136).

3.7.2 Content analysis

Content analysis is about reducing and making sense of qualitative data in an attempt to identify core consistencies and meanings. Content analysis usually refers to analyzing text such as interview transcripts, diaries or documents (132), but is also described by Graneheim and Lundman (145) as a tool to analyze observation-based text (field notes). Content analysis focuses on both subject and context and attends to variations within the data material (similarities and differences within and between parts of the text) (158). Furthermore, content analysis allows for manifest (descriptive) and latent (interpretative) analysis. Manifest analysis describes the content close to the text, and represent a lower degree of interpretation than the latent approach. The latent analysis is further away from the text, but closer to the participants’ lived experience and represents a high interpretative level (145, 158). Manifest content is often presented in themes, whilst latent content is presented in categories (145).

In the current thesis, content analysis was applied in all sub-studies. All data material in all studies, with the exception of the Commissioner’s documents, underwent the analytic stages of Graneheim and Lundman (145):

i. Read through interviews multiple times to obtain a sense of the whole
ii. Divide the text into meaning units
iii. Condense meaning units
iv. Label meaning units with codes
v. Sort codes into sub-categories or/and categories
vi. Formulate the latent content into themes

There were some variations in the procedure for each unit of analysis. The analysis process in all studies is described in detail below.

3.7.3 Study I

The units of analysis in this study were interviews with GPs and observation notes from nursing home observations. All tape-recorded interviews were
transcribed before content analysis was initiated. Through several rounds of discussion back and forth between the author of the thesis and the supervisors, the data material for each Municipality (case) was analyzed separately up to category level using matrices in a Microsoft Word document. The categories were then sorted under seven preliminary themes for Municipality A and seven preliminary themes for Municipality B. At an early point, clear similarities between the municipalities started to become evident. However, a cross case analysis, to map these similarities, and to explore eventual differences was conducted. The categories from each municipality were inserted into a common matrix, to be able to compare them appropriately. Only a few differences were found. For example, that there were mentions of lack of nurse staffing in Municipality A, which was not mentioned in Municipality B, or misuse of municipal emergency bed units (MEBU) which was stated as an issue in Municipality B, but not in Municipality A. Overall, the categories showed such similar results that seven common themes for the two Municipalities proved appropriate.

The observation notes were analyzed separately for each of the nursing homes, using the same approach as for the interview transcripts. However, meaning units were condensed in two stages; first into descriptions close to the text, then to meaning units with interpretation of the underlying meaning (145). The meaning units were then abstracted into sub-categories and lastly categories. The results were used to enlighten important aspects or points in each of the municipalities.

3.7.4 Study II

The unit of analysis in this study was focus group interviews with nursing home nurses and semi-structured interviews with nursing home leaders. The analysis of this data set proved challenging, because the data material was large and included several sub-units of analysis. The analysis process therefore demanded close cooperation and multiple rounds of discussion with the thesis supervisors, especially around organization of the analysis, but also in regards to the different stages of the analysis process. It was important that all the aspects of the data material were illuminated, such as similarities and differences between the nursing homes within one municipality, similarities and differences between similar nursing homes across municipalities, and the leader aspect versus the nurse aspect, within and across nursing homes. Firstly, the transcripts of nursing home leaders went through all the content
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analysis steps up to category level, within each of the respective nursing homes (four separate analyses). Secondly, transcripts of focus group interviews went through the same process, also within each nursing home (four separate analyses). Thirdly, the categories of nurses and leaders within each municipality were organized in a table, providing an overview of similarities and differences between leaders, nurses and different nursing homes within the municipality (one table for Municipality A and one table for Municipality B). The categories were sorted using color-coding, were categories with similar meaning were marked with the same color. This showed that there were great similarities between nurses and leaders’ opinions. Fourthly, all categories from nurses and leaders in both municipalities were organized into a new table. Sub-categories covering all nurses and nursing home leaders within one municipality were developed. Lastly, sub-categories from both municipalities were entered into a new table, and four cross case themes (covering both municipalities) were developed. All categories were labeled with the sub-unit of analysis from which they had been derived (e.g. STNH, LTNH or leader) and all themes were labeled with the municipality from which they had originated. This measure was implemented to enable the analysts to differentiate between the sub-units of analysis within the overall analysis (an overview of the analysis process is represented in figure 3.).
Figure 3. Overview of analysis, Study II
3.7.5 Study III

The unit of analysis in the third study was the transcript from each semi-structured interview with hospital physicians. In this study, the analysis software Nvivo Pro was applied for analysis on the lower levels (coding, sub-categories). All transcripts were uploaded into Nvivo, were the program allowed for a review of the text, simultaneously as meaning units were highlighted and sorted under tentative codes. During the screening, codes were developed consecutively, and then reorganized and re-named several times. Codes with similar meaning content were organized into sub-categories, which were also reorganized and re-named continuously. The analysis was, on a regular basis, sent to the supervisors for review and input. As the Nvivo program did not have features for condensing the meaning units they were transferred, along with their respective tentative codes and sub-categories, into a Microsoft word table. Here, the meaning units were condensed and translated from Norwegian to English, and the analysis was, from this point on, continued in Microsoft Word. Analysis up to category level was agreed with the analytical team. For development of themes, summaries of the content were written in an effort to find the underlying meaning of the data material (the latent content). These summaries were also discussed with an external person with limited knowledge of the studies’ content. The analysis resulted in four themes, which in the analytical team’s opinion covered the underlying meaning of the interview transcripts.

3.8 Research Ethics

The study has been approved by the Norwegian Center for Research Data (NSD), reference number: 49331 and date: 01.08.2016 (attachment 6). All participants signed written informed consent to participate in the study, and consented to tape recording of the interviews. Necessary written approval for data collection was obtained from the respective hospital, and oral approval from municipalities and nursing homes was obtained from key persons mandated to give such approval.

Ethical aspects were considered during all parts of the study; however, some aspects were under particular consideration.

The risk of deductive disclosure (being identified in research reports based on personal traits) (159) which is identified under respect for individuals in the Norwegian ethical guidelines (160), was one of these aspects. The main
reason for the concerns with deductive disclosure was that the research was conducted in small communities, meaning that the risk of recognition was larger. This demanded special consideration in the dissemination of the study results, where potential recognizable traits needed to be removed from the text.

Another critical ethical aspect of this study was the third parties (the patients). Although patients were not directly involved in the study, patient stories were a natural aspect of the conversations about hospital readmissions. Additionally, the thesis author could obtain patient information during the nursing home observations. Although informed consent did not apply to third parties, the ethical guidelines obligated the researcher to protect their privacy (160). No information about patients, which was not of interest for the study, was written down during observations, including names or other personal traits. Although, anonymization of the patients were done by the physicians themselves during interviews, quotes or stories involving patients were generalized and anonymized and revealing quotes left out of the dissemination of the results.

3.9 Trustworthiness

Trustworthiness is about establishing and assessing the quality of qualitative research and covers four assessment criteria; credibility, transferability, dependability and confirmability (91).

3.9.1 Credibility

Credibility is viewed as an overall goal in qualitative inquiry, and refers to the process of ensuring confidence in the truth of the data and the data interpretation (130). To ensure credibility, the research has to be conducted in a way that enhances plausible findings (130). There are a number of measures to enhance credibility in qualitative research. The most relevant to this thesis are presented in the following section.

To use different data collection methods (triangulation) to study the same problem is one measure to enhance credibility. This is because different methods complement each other’s shortcomings, and create a more robust data collection, which is less vulnerable to errors linked to one particular method (132, 161). Another aspect of triangulation is application of different
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data sources to compare and cross-check consistency of collected data (132, 140, 161). The prospect of using multiple date sources is promoted as the hallmark of case study research (140): in general, the use of multiple data sources can provide a more complete understanding of the problem under study, and promote validation of conclusions (130). This thesis applied individual interviews, focus group interviews and observation as data collection methods. In addition, interview material was checked against the Commissioner’s documents - a third version of the data triangulation was recommended to promote credibility (132). The thesis also investigated the views of various healthcare workers (hospital physicians, nursing home physicians, GPs nurses, nursing home leaders) with different experiences (years of experience and work experience), and of different genders and ages, about the phenomenon under study. This contributed to a varied and rich data material, enhancing the credibility of the results.

Graneheim and Lundman (145) suggest several measures to achieve credibility in the data analysis process. For example, carefully selecting meaning units (not too broad or too narrow) to avoid loss of the text’s meaning during the condensation and abstraction process; to show representative quotations from the transcribed text; and to cooperate with other researchers to judge similarities and differences between categories (145). These measures were assessed during the data collection and analysis process in the current thesis, and are described in detail in the analysis and data collection chapter (chapter 3.7).

Shenton (161) recommends frequent debriefing sessions between the researcher and his or her superiors. In this thesis, debriefing with supervisors was relevant and peer scrutiny of the research project at regular intervals from the beginning to the end of the project, was received in research groups. The supervisors read all transcripts and contributed in an ongoing process to strengthen the research process.

3.9.2 Transferability

Transferability refers to how a studies’ findings are applicable to other, similar settings or contexts (130). The researcher’s responsibility lies in thoroughly reporting information about the study’s context, the phenomenon under investigation, selection and characteristics of participants, data collection process and analysis. And moreover, the researcher should include
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a vigorous representation of the results, illuminated with appropriate quotations (145, 161, 162).

Transferability was in this thesis handled through a detailed description of hospital readmissions in general, as well as a description of the readmission problem in the municipalities studied. Moreover, the context in which the study was conducted (nursing homes, municipalities), was carefully described. This description included structure, organization and size of the primary healthcare service and the nursing homes and staffing, physician coverage, nurse coverage and proximity to the hospital. Information about the participants, as far as the ethical considerations allowed for, was provided. The same was a detailed description of the analysis process (including examples of the analysis process represented in tables) and a rich description of the results. The investigated municipalities did not, to our knowledge, differ, to any particular degree, from other Norwegian municipalities. On the other hand, Norway consists of a large amount of municipalities with a large population span, meaning that some inequalities must be expected. Lastly, international readers were taken into consideration in the context description, knowing that the Norwegian primary healthcare services’ organization is to some extent unique.

3.9.3 Dependability

In order to address the dependability issue in qualitative research, a detailed reporting of every step of the study should be conducted to such an extent that other, future researchers can follow the steps and repeat the research, although not necessarily to gain the same result (161). Such extensive reporting can also help readers follow the research process, and evaluate whether proper research practice has been followed (161). Yin (136) suggest several methods for reporting case study research. In this thesis, a linear-analytic structure was chosen, as this structure is most applicable for other researchers and readers: the problem was studied in light of relevant exiting literature, followed by a description of the applied method, data collection method and data analysis, ending with conclusions and their implications for the problem under study (136). Moreover, in close cooperation with the thesis supervisors, the thesis author was active in all study phases: development of the project plan and research questions, recruitment, data collection, analysis and dissertation of results, enhancing the consistency of the research. In addition to systematic descriptions of the research process, the interview guides and the raw data
material were made accessible upon reasonable request to promote transparency. The thesis followed Yin’s (136, 140) description of the case study approach rigorously, along with Graneheim & Lundman’s approach to content analysis (145, 158), to make as many steps of the research as operational as possible (136).

3.9.4 Confirmability

Confirmability refers to the researcher’s objectivity (161). That is, to, as far as possible be freed from unconscious researcher biases or be aware of exiting inevitable biases (155).

To address confirmability in qualitative research, self-awareness is an important aspect. It involves processes of self-understanding and self-questioning and reminds the researcher to be “attentive to and conscious of the cultural, political, social, linguistic, and ideological origins of one’s perspective and voice” (132). The aspect of self-awareness was particularly relevant in this thesis, and under tireless consideration throughout the project period. The thesis author had previously worked within the healthcare system as a nurse and had personal experience with the processes under study. Special awareness of any eventual biases concerning personal experiences and personal closeness to the problem under study was therefore required.

3.9.5 The researcher’s role

Reflexivity is a vital part of trustworthiness in qualitative research, and starts with denoting the researcher’s preconceptions (163). In this thesis this implied: awareness directed to my previous background as a nurse in the investigated hospital, having previous first-hand experience of the processes under study (from a few years back) and being mindful of being a wife of a physician working within the healthcare service, currently engaging in the hospital readmission issue. However, any influence from preconceptions was handled through continues dialogue with the thesis supervisors, who all had different perspectives, including medicine, nursing and safety science.
4 Results

This chapter provides a summary of the results of the three thesis papers, in addition to a brief representation of the relationship between the papers.

4.1 Paper I

Exploring physicians’ decision-making in hospital readmission processes - A comparative case study (Glette, Kringeland, Roise & Wiig, 2018)

This study aimed to increase knowledge about factors influencing hospital readmissions of elderly patients from a primary healthcare perspective, through an exploration of how GPs and nursing home physicians make decisions about hospital readmissions, how they are influenced and the contributions of other healthcare professionals.

Overall, the patients were, perceived by the GPs and nursing home physicians, to have more complex needs than before often needing complex treatments. Physicians in both municipalities experienced a relocation of responsibilities from the hospital to the primary healthcare service, with a subsequent increase in primary healthcare responsibilities. Moreover, they experienced that patients were sometimes discharged from the hospital with undeclared medical issues or incomplete treatments, and that they were given the responsibility to continue patient treatment, testing or to refer patients to other specialities.

Cooperation between the hospital and nursing home during hospital discharges was described as poor. Furthermore, the exchange of patient information was inadequate, not only between the hospital and the primary healthcare service, but also within the primary healthcare services. Moreover, the hospital stay summaries were sometimes perceived as incomplete and arriving too late. In the ERs, GPs had access to little or no written information about the patients. This, combined with a busy work schedule with limited time to find information about the patient, could lead to a decision to admit or readmit the patient. Lack of time could also, in itself, lead to decisions about hospital readmission, because finding and admitting the patient to a more suitable option was more time consuming.

In addition to the aspects outlined above, several other factors were described as effecting the physician’s decision-making. The one thing perceived to
effect decisions the most, was the patients’ wishes. In addition, patients were holders of important information, which could effect decisions, as were the patients’ next of kin. However, next of kin were also described as exerting pressure on physicians in terms of promoting medical treatments or a readmission.

The nurses were described as the physicians’ ears and eyes, holders of information, observers, organizers and patient ambassadors. In the nursing homes - where the physicians were seldom present - the physicians had to rely for their decisions on the nurses’ information. Although the nurses’ competence was believed to have increased in recent years, a variation in nurse competence was perceived. The nurses did not always have enough knowledge of the patient, especially temporary nurses and night nurses. Moreover, if the patient’s complexity exceeded the nurses’ competence or the nurse resources (lack of nurse staffing) it could lead to a decision to readmit the patient to the hospital to secure patient safety.

4.2 Paper II

Nursing home leaders’ and nurses’ experiences of resources, staffing and competence levels and the relation to hospital readmissions – A case study (Glette, Roise, Kringeland, Churruca, Braithwaite & Wiig, 2018).

The aim of the second study was to examine how nurses and nursing home leaders experienced the resource situation, staffing and competence level in municipal healthcare services, and if and how they experienced these factors to influence hospital readmissions.

There was an overall agreement that nursing home patients had become more complex, often had multi-morbidities and demanded advanced procedures. It was argued that long-term nursing homes (LTNH) no longer functioned as LTNH because patients often passed away a short time after arrival due to advanced illness. The nurses in the short-term nursing homes (STNH) experienced that the nursing homes functioned as small hospitals and that patients were more time-consuming now than before. Both nurses and leaders said that patients were discharged from the hospital too early, not always adequately treated.

Capacity building had attention in all nursing homes, but was attended to in different ways. For instance, in the LTNH of Municipality A there was a focus on raising assistant competence to formal competence such as certified
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nurse assistants (CNA), while in the STNH in Municipality B there was a focus on raising competence among nurses (continuing nursing education). Common to all nursing homes was the perception that the distribution of assistants and CNAs was inadequate. The existing competence also differed between nursing homes. Some struggled to meet the competence demands of the new complex patient group, while others perceived that they were well covered. Variation in terms of staffing was also described. They had for example recently experienced cuts in staffing in the LTNH in municipality A and although they managed to run the nursing home in a professional manner, and cover the patients’ needs, the nurses were effected by the cuts, resulting in increased sick leave and subsequent pressure on the remaining nurses. In the STNH in Municipality A and in the two nursing homes in Municipality B, the nurses and leaders were mostly satisfied with staffing. However, staffing during weekends were seen as vulnerable in all nursing homes.

Some organizational difficulties in the STNH were described. They experienced problems such as patients being admitted to the ward without being assessed or diagnosed by a physician beforehand, or patients arriving without the nurses being notified in advance. Moreover, patients were sometimes arriving at inappropriate times, for example late in the evening, or were wrongfully admitted when in reality they needed a hospital stay. The STNH in Municipality A found it difficult to discharge patients from their acute ward (72-hour offer) in absence of further care offers (long-term nursing home placements), and the STNH in Municipality B experienced pressure to discharge patients due to full wards.

Economy did not seem to be an issue in either nursing homes. Nurses and nursing home leaders described having access to the equipment they needed, although cost cutting measures were an inculcated part of the leaders’ job description. The nurses in the STNH in Municipality B did not agree with their leaders’ statement saying that economy did not affect patient care.

Several factors were perceived as affecting hospital readmissions. Nurses and leaders across nursing homes and municipalities were similar in their opinions about these factors. Some of the mentioned factors were: nurse competence and staffing, access to nursing colleagues for consultation, longer hospital stays, physician coverage and competence, and adequate cooperation between physicians and between healthcare services in general.
4.3 Paper III

Hospital physicians’ views on discharge and readmission processes: a qualitative study from Norway (Glette, Kringeland, Roise & Wiig, 2018).

The last study aimed to explore hospital physicians’ views on the readmission and discharge processes for elderly patients in the interface between the hospital and municipalities.

Several of the physicians noted that patients were being discharged from hospital too early, suggesting this as a possible reason for hospital readmission. In addition, more complicated patients were being discharged to the primary healthcare service as a consequence of a change in medical criteria for discharge. The patients’ family were sometimes working to get the physicians to keep the patients hospitalized longer, and the physicians also found themselves negotiating the discharge date with the patients.

On occasion, disagreement between the physicians and the primary healthcare services’ Decision office occurred when decisions were made on further care after the hospital stay. Some physicians believed that patients were not always allocated the right level of care (nursing homes, home care services) when being discharged, and sometimes perceived that their patient assessments were overruled. This could lead them to withholding patients who were ready for discharge, to ensure patient safety.

There were reports of limited capacity in the hospital, with subsequent pressure to discharge patients. Other pressuring factors described by the physicians were: setting a discharge date on the patients’ arrival day, nurses working to clear the ward to make room for new patients, and hospital management trying to keep hospital stay days at a low level. This pressure could lower their threshold for discharging patients. On the other hand, the primary healthcare services were not always able to take on patients ready for discharge, leading to overstaying patients. Variation was reported in both the primary healthcare’s ability to take on patients ready for discharge and in handling the complex patients they were discharging.

Hospital stay summaries (HSS) were perceived as the most important dialogue between the hospital and the primary healthcare service, making adequate HSS vital, and an influencer on hospital readmissions. However, it could be challenging to finish the HHS before the patients’ discharge, due to
heavy workloads. The routine of sending the HHS to the GP could cause problems if a patient was going to a nursing home. Workload was further stated as a reason for limited communication between the hospital and primary healthcare services, in addition to the lack of adequate communication tools. However, better communication and coordination between the healthcare services was suggested as a way to reduce hospital readmissions, and a shared communication system was perceived to be the solution.

Decisions to discharge patients were described as a process effected by several factors (medical assessments, the patients’ need for post hospital care), several planning steps (assessing the patient function level and the ability to engage in self-care) and the involvement of various health personnel (consultants, residents, nurses, physiotherapists). The discharge process was perceived to be closely related to hospital readmission, and the physicians stressed the importance of good discharge planning. They also suggested that making sure that the patients were able to cope post hospital discharge and to schedule follow-up appointments before the discharge could reduce hospital readmissions. However, the physicians emphasized that not all hospital readmissions should be avoided, for example if the patient’s condition had worsened.

4.4 Relationship between the papers

GPs (paper I), nurses, nursing home leaders (paper II) and hospital physicians (paper III) agreed that the medical complexity of patients being discharged to the primary healthcare service had increased. They also agreed that some hospital discharges were premature. Leaders, nurses and primary care physicians questioned the criteria for discharging patients, while hospital physicians explained these decisions as a process involving different health professionals’ assessments. However, decisions could be effected by hospital capacity and a hospital management who aspired to keep hospital stays short. Additionally, the hospital physicians said that there was a lack of capacity in the primary healthcare service to take on patients ready for discharge, creating even more pressure in the hospital wards. The GPs found it difficult to get nursing home placements for patients they assessed as needing extended care, and perceived that hospital physicians had more weight in decisions regarding nursing home allocation. The hospital physicians perceived that they had little influence over these decisions, and sometimes disagreed with the Decision
Results

offices’ ruling on care level, post hospital discharge. Nurses and leaders, especially in the short-term nursing homes, experienced a lack of capacity in the wards and sometimes felt pressured to discharge patients. Moreover, they were affected by cost-saving measures with cuts in personnel and conversion of single rooms to double rooms.

Papers I and II showed that leaders and nurses in the primary healthcare service experienced a lack of competence to care for the new patient group with more complicated needs in terms of too few nurses or lack of experience among the existing ones. The GPs stated that a discrepancy between nurses’ competence and the level of complexity in patients could lead them to readmit patients to hospital. This was supported by the hospital physicians (Study III), who had a similar understanding of the ability of the primary cares service to handle patients with complex needs and saw that patients were being readmitted due to lack of competence in nursing home staff or among GPs. According to nurses and leaders, physician coverage was limited in some nursing homes, and the hospital physicians perceived the organization of the physician coverage as an impediment for holistic healthcare.

Both paper I and paper III showed the importance of, and challenges with communication across levels. The primary care physicians experienced poor cooperation and information exchange between the hospital and primary healthcare service and wished for increased communication during hospital discharges. The HSS was, in their opinion, coming too late, the medication list was sometimes incomplete and medication changes not always accounted for. The ER doctors had little or no access to patient information. Limited information about the patient’s medical history were seen as a factor affecting hospital readmissions. Among the hospital physicians the HSS was perceived as their most important communication tool, and they emphasized the importance of informative and precise HSS’s. Although completion of the HSS before the patient discharge was attempted, workload was a common hindrance in managing this. There was variation in hospital physicians’ opinion about the need for increased communication. Some were satisfied with the situation as it was, whilst others wanted improvement, especially when discharging complicated patients. There was an overall agreement in both primary care and the hospital that better communication and cooperation could decrease hospital readmission. Several physicians in both healthcare services suggested a common documentation system as a solution to overcome the communication difficulties.
5 Discussion

The overall aim of this thesis was to increase knowledge about factors leading to hospital readmissions from the primary healthcare service. This chapter discusses the main findings of the thesis in the context of the three applied theories (Resilience in healthcare, Human factors and Case Based Decision Theory) and existing literature, as well as methodological considerations. Initially, reflections on hospital readmissions as a quality indicator and the definition of hospital readmissions are discussed.

5.1 Hospital readmissions as a quality indicator

A quality indicator has four aims: social legitimation, corporate governance, quality improvement and support for user selection (46). High numbers within the hospital readmission quality indicator are usually considered a sign of poor quality (164).

However, the value of using hospital readmissions as a measure of quality has previously been questioned, and several challenges made to this comparison (165, 166). One concern is the variation in how the indicator is measured. These variations can either be caused by differences in the dataset used, in the applied calculation methods or in the purpose of what one wants illuminated. Furthermore, it can be difficult to distinguish the planned and unplanned (or necessary and unnecessary) readmissions in these rates (7). There were for example, several illustrations of necessary hospital readmissions in this thesis results. Primary care physicians in Study I readmitted patients to safeguard the quality of patient care when staffing or competence in the nursing homes or home care services was inadequate. Hospital physicians in Study III had strong opinions about the necessary hospital readmissions, and described the dangers of readmitting patients “too late”.

Another important aspect is that the risk of being readmitted is, as shown previously, not only dependent on the quality of care; it is also depended on patient characteristics (13). In some cases, the readmission in itself is related to high quality, because a patients’ course of disease requires it. Moreover, hospital readmission rates are most commonly used to measure quality in hospitals, with the danger of implying that the risk of being readmitted is only dependent on the quality of care in the hospital (167). The results of this thesis show that the readmission picture is much more nuanced, and that factors
within the primary healthcare service may equally have effects on hospital readmissions, as well as the coordination and communication between the two healthcare services. Readmissions rates must therefore only be used with care as an indicator of quality (167).

That said, readmission rates do provide important information on the size of the readmission problem within a healthcare service; it allows for comparison between different healthcare services and it provide a basis for further research on the hospital readmission issue (168). Readmission rates from the Norwegian quality indicator are, for example, the only (or at least the freshest) readmission numbers available from the Norwegian healthcare service. The rates provide information about the likelihood of readmission to Norwegian hospitals and from primary healthcare services in the municipalities (46). The Norwegian numbers do, in other words, include the primary care perspective as well. However, they do not differentiate between necessary and unnecessary hospital readmissions (similarly to other comparable measurements). This raises a need for supporting qualitative data to better understand hospital readmissions and its meaning for quality in healthcare services both in the hospitals, the primary healthcare service and in the interface of the two healthcare services, as shown in this thesis’ results.

Health personnel in the primary healthcare service and the hospitals studied in the current thesis did, for example, have a clear distinction between necessary and unnecessary readmissions - one of the phenomena difficult to capture by a quality indicator. Unnecessary readmissions were typically related to organizational factors such as lack of competence, lack of nursing staff, early hospital discharge or lack of available patient information. Necessary readmissions were connected to patient characteristics such as worsening of illness, complications or deterioration of the patients’ condition. It should of course be questioned whether readmissions based on the above-mentioned organizational factors are unnecessary or not, if the competence or staffing to properly care for the patient were unavailable. In that case, a readmission might be necessary. On the other hand, if the competence and staffing had been in place in the primary healthcare service, the readmission may had been avoided. The thesis results showed that staffing and competence, particularly in long-term nursing homes, were inadequate compared to the municipalities’ new tasks, and the same was true for nursing home capacity in the municipalities. This has also been demonstrated in other literature (169, 170).
The definition of hospital readmissions has also been problematized in previous literature. It is particularly the 30-day interval which has been under scrutiny (171, 172). Some diseases, for example heart failure, continue to develop after the 30-day frame. A 30-day window can therefore underestimate the true readmission rates in these cases (173). On the other hand, a too wide frame can result in the inclusion of admissions unrelated to the index stay (168). The definition used by the Norwegian quality indicator, and also used in this thesis, include all readmissions independent of the index admission. This could lead to inclusion of hospital readmissions, which are unrelated to the initial admission, and thereby challenge the quality comparison even more. Chin and colleagues (171) argue that the optimal interval to capture variation in risk of hospital readmission at hospital level varies between different medical conditions, and that the quality signal is strongest within the first seven days after discharge.

There are, to my knowledge, no clear answers to what the perfect definition or the perfect time interval for a hospital readmission is. However, it is important to consider the different aspects of the applied definition, and how it effects the yielded results. Furthermore, the complexity of hospital readmissions, including the variation in patient populations, the number of healthcare workers and healthcare services it involves, the diversity of processes it requires (discharge, care transition and the hospital readmission) and the contextual diversity in which hospital readmission happens, suggests that a system perspective is needed to better understand hospital readmission.

5.2 A system perspective on hospital readmissions

Although the aim of many healthcare services is to reduce hospital readmissions, it is difficult to pinpoint exact factors that need to be eliminated in order to achieve this goal. This thesis identified factors leading to hospital readmissions as perceived by healthcare workers both in the primary and secondary healthcare service. By discussing these results, using system theory (Resilience in healthcare and the SEIPS-model) this thesis attempted to further explore and increase knowledge about factors affecting hospital readmissions, and thereby attempt to illuminate points of improvement.
5.2.1 Resilience in healthcare, the Coordination Reform and hospital readmissions

*Healthcare reforms and the changes they induce*

Although health reforms of different countries have their own characteristics or focal points, they often have the common trait of attempting to pursue better outcomes in terms of quantity or quality, while using the same resources (174). This trait has also been evident in the reforms introduced into the Norwegian healthcare service over the years, where enterprise economy has grown stronger in an attempt to avoid unnecessary resource use, while delivering quality care (52). Introductions of new healthcare reforms will necessarily have an impact on the healthcare service and the people working within it, due to smaller or larger changes in the system (174, 175). The Norwegian Coordination Reform represented rather large changes, which particularly effected the primary healthcare service. This was related to one of the main goals of the reform - to treat patients at the right time in the right place – in other words, more patients where to be treated in the primary healthcare service (176). This have led to shorter hospital stays and more patients with complex needs in the primary healthcare service (63), which according to the thesis results is still relevant.

In a five year period after the reform, there was an increase in hospital readmissions, which, in several municipalities eventually evened out (47). From a resilience perspective, this equalization may indicate adaptions on a systemic or health personnel level, leading to a stabilization of a problem caused by change. However, there is a need to look deeper into the reasons for these adaptions.

*Resilience in healthcare – adapting to changes*

Resilience in healthcare takes the view that health personnel have much ability to adjust their functioning (adapt) to new demands and deliver adequate healthcare services despite large changes or unexpected events (177). The thesis results showed several examples of such adaptions managed by physicians and nurses at the sharp end of the healthcare service. The nursing home nurses did, for example, manage to care for patients with complicated needs despite inadequate nurse staffing and competence, and worked to prevent hospital readmissions. The nursing home managers managed to run the nursing homes on limited resources, and the primary care physicians spent time looking up missing patient information when possible, to avoid readmissions.
From a resilience perspective, the health personnel showed the potential to respond and adapt to situations or organizational conditions which they perceived could affect patients’ safety (102). Adaptive capacity identified here is relatable to previous literature (178). One example is trade-offs where hospital physicians choose between keeping the patient longer, risking unnecessary bed occupancy and increased nurse workload - or discharge the patient to a healthcare level offered by the municipality, assessed as inadequate, risking a hospital readmission (Study III). Another example is acquiring knowledge through capacity building in practice and sharing knowledge between healthcare workers, as described by the nurses in Study II (178).

The many adaptations found in the thesis results were micro-level adaptions. However, several of these adaptations arose in the interface between the different care levels (the primary healthcare service and the hospital) due to misalignments between capacity and demands, often caused by changes induced by the Coordination Reform (179). Most resilience in healthcare research investigates the micro-level of the healthcare services (180). This thesis’ identification of adaptations in the interface between the care levels is therefore a novel perspective.

It is eight years since the introduction of the Coordination Reform in Norwegian healthcare services, yet according to the thesis results, the system has, failed to respond adequately to these changes. It is particularly in the primary healthcare service that the system adaptations have proved difficult, a trait also found elsewhere (32). However, in this thesis, difficulties were identified in the hospital as well. These difficulties were related to organizational aspects within the hospital such as cuts in hospital beds and pressure to discharge patients, consequently leading to hospital readmissions, but also to organizational aspects in the primary healthcare service e.g. lack of capacity to take on patients ready for discharge.

The flipside of individual adaptations
Although individual adaptations or problem-solving are necessary and valued in healthcare services, they can create barriers to organizational improvement (181). This is because each healthcare worker solves their problems individually without having to assess the impact their actions have on the system in its entirety as in the example provided above (withholding patients from hospital discharge), or merely making the system work so well that organizational difficulties gets covered up (182). Moreover, busy work
schedules and low staffing hinder workers from resolving underlying causes of the problems, because they simply do not have time. Lastly, leaving the problem solving on an individual level removes the management from the frontline. This may have negative impacts on improvement efforts, as managers hold a broader perspective on organizational conditions and are more capable of resolving problems across the organization (181).

This behavior is connected to so-called single-loop learning. Single-loop learning involves a change in strategy to induce action which helps the organization to recover its normal service, but which leaves the background for the action unchanged (183). This type of learning may be appropriate in stable environments where one is aiming to “do again what was done yesterday” (184). In the primary healthcare services in this thesis (Study I and II), however, individual adjustments had been sustained over time, showing a need for double-loop learning. This type of learning encourages changes in actual practice, along with the change of strategy (183, 184).

Adaptations on healthcare personnel level and single-loop learning over time, where organizational adjustments are on a regular basis left out, are leading to continuous firefighting instead of solving the actual problem, and may eventually affect patient safety negatively (182). Additionally a gap between work as imagined (WAI) and work as done (WAD) are created, because the distance between the blunt end and the sharp end becomes too great (109). This will be discussed in detail later.

Can health personnel’s knowledge help predict and monitor aspects leading to unnecessary hospital readmissions?

Monitoring is another of Hollnagel’s (102) resilience potentials. Previous literature has shown that health personnel have a rather well-developed ability to predict hospital readmissions (185). The primary healthcare personnel and the hospital physicians in this thesis had broad experience with what influenced hospital readmissions from the primary healthcare service. Some examples were: early hospital discharges of patients with complicated medical conditions (Study I, III and III); poor information exchange and communication during discharge (Study I and II); lack of patient information combined with busy work schedules (Study I); and lack of adequate competence and capacity in the primary healthcare service (Study I, II and III). This demonstrates that health personnel have the ability to monitor or know what to look for in regards to potential avoidable hospital readmissions from the primary healthcare service.
Action based on this knowledge (knowledge from qualitative research) could contribute to reducing unnecessary hospital readmissions from the primary healthcare services. For example, from the hospital perspective, relevant actions could be: increase bed capacity in hospitals (Study III), open up for a broader opportunity for hospital physicians to do individual patient assessment in relation to discharge time, including more emphasis on patients’ and next of kin’ opinions during discharge (Study I, III and III), and avoid late night hospital discharges (Study I and II). From the primary healthcare perspective, relevant actions could be: increase efforts in capacity building, particularly within LTNH (Study I, II, III), increase nursing home capacity instead of downsizing (Study I, II, III) and make changes in ER organization and organization of physician staffing in long-term nursing homes (Study I and III). These aspects are suggested to be potential measures to avoid unnecessary hospital readmissions.

Despite the great value of healthcare workers’ knowledge on hospital readmissions from the primary healthcare service, qualitative research from this perspective remains lacking. Furthermore, issues which healthcare workers are experiencing appear to be only considered by policy-makers and health services leaders to a small extent, despite the marked presence of “whistle-blowers” among healthcare professionals (e.g. Gomnæs and Fange (186)).

**Hospital readmissions in the future**

The potential to anticipate future developments and threats is a third resilience potential (102). Previous research has shown that age is a decisive factor in hospital readmissions (187). The ageing of the world population and the effect it will have on future healthcare services is a contemporary concern (25), a concern which includes hospital readmissions. In the context of an ageing population, hospital readmissions can potentially be an increasing problem in healthcare services over the next decades, particularly in terms of resource use. The Norwegian Coordination Reform was, in fact, designed with a view to securing the future of the Norwegian healthcare service, with the expected population ageing in mind (more patients and a smaller workforce) (61). If viewed from a resilience perspective, the Reform was implemented based on anticipations of future threats (102). However, the Reform has caused unexpected ripple effects, one of which was the temporary increase in readmissions rates. However, after the leveling of readmission
rates in the Norwegian municipalities, there have been no signs of a decrease in these rates (188), seemingly demonstrating another gap between WAI and WAD (the intentions of the Reform, and how it played out in practice). This further demonstrates the need for new knowledge about hospital readmissions, using new methods (e.g. qualitative research and mixed methods) to contribute to aligning capacity and demands.

Work as imagined and work as done
In this thesis, Commissioner’s documents were analyzed to provide a contextual understanding and to identify more specific guidelines concerning coordination between the hospital and the primary healthcare service (WAI) and hospital readmissions and the discharge process (WAD). A gap was also demonstrated here (Study III).

Holistic care pathways, close cooperation between healthcare services and improved (or similar) patient care were key points in the Commissioner’s documents. However, lack of proper communication tools, lack of a common documentation system and lack of time to communicate, were some examples, which made these requirements difficult to fulfill, and were perceived as reasons for hospital readmissions in Study III. The healthcare system did, in other words, seem to be poorly facilitated to fulfill the mentioned requirements. This indicates lack of communication between the blunt end and the sharp end, or merely too little involvement of people at the sharp end in the development of these requirements (study III) (109). A larger involvement of healthcare workers could lead to local adjustments to lack of resources, lack of capacity and lack of competence in the primary healthcare services. This is a measure which could be particularly valuable in reducing hospital readmission in an elongated country with many separately run municipalities, each holding a large number of primary healthcare services of various kinds. However, from a historical perspective, health personnel are being moved further and further away from the decision lines (50). In that regard, it can be questioned if the healthcare service is heading towards a direction where reconciliation of WAI and WAD are merely becoming a theoretical aspect only applicable on paper. Regardless, this gap demonstrates an unreleased potential in the Norwegian healthcare services, which may be of great meaning for policy-makers.
5.2.2 Hospital readmissions and the SEIPS model

Overall, the resilience in healthcare theory provides a general overview of how changes are handled through adaptions in complex healthcare systems. The SEIPS model provides a more concrete and holistic theoretical approach to the aim of understanding the tangible factors affecting hospital readmissions in this thesis’ results. The most relevant SEIPS components related to hospital readmissions were Organization, Technology and Tools, Person and Tasks. Although environmental factors such as cramped patient rooms (caused by conversion of single patient rooms into double patient rooms) were mentioned, they were not described as directly connected to hospital readmissions. The aforementioned components will therefore be the focus of the further discussion.

Organization (the work system)
Changes or alterations in any parts of the work system, depending on how the change is designed and implemented, will in some way effect the work and clinical processes and consequently, patient, employee and organizational outcomes (e.g. hospital readmissions) (114). Generally, the findings of this thesis showed that work system changes related to hospital readmissions were largely associated with the Coordination Reform and the (unpredicted) repercussions of the Reform regulations.

The most prominent, and one of the intended effects of the Reform was the overall decrease in length of stay for patients admitted to the hospital (47). Earlier hospital discharges naturally caused more patients with complex needs to be discharged from the hospital to the primary healthcare services, in addition to an increased patient flow with subsequent increased pressure on primary healthcare services (60, 189). This was believed to be a cause of hospital readmissions by all health personnel groups in this thesis, because some of the patients discharged were either too complicated to handle in the primary healthcare service, or too sick to stay there (Study I, II, III).

It has also proven difficult for the primary healthcare service to handle the increased patient flow, leading to patients ready for discharge overstaying in hospitals (188). This aspect has been reported as a problem nationwide, including by the hospital physicians in Study III (47), despite the efforts made in the attempt to increase primary care capacity to meet the new demands (190). At the same time, the amount of hospital beds has steadily decreased in line with the current standard; treating as many patients as possible on
outpatient clinics or closer to home (in the primary healthcare services). As a consequence, hospitals have become overcrowded (188, 191), an aspect, which in this thesis, was highlighted as a factor which could affect hospital physicians’ decisions to discharge patients earlier (Study III). The battle between resources, management pressure and physicians’ medical assessments in hospital discharges has recently been discussed elsewhere (192, 193). This battle, is a demonstration of what Cook and Rasmussen (194) calls going solid: a side effect of reducing inefficiencies of the healthcare service, causing loss of buffers which previously contributed to handling demand surges. This is leading to (seemingly insignificant) events in one part of the healthcare service, causing consequences in another (seemingly remote) part of the healthcare service (194).

Tasks, Tools/technology and person
The transition of sicker patients with more complicated symptoms to the primary healthcare service has led to more complex nursing procedures (tasks) in nursing homes (Study II). This is supported by other research (170). Additionally, the nurse’s administrative work had grown larger, and adequate staffing was not always in place to execute the new tasks, particularly in one of the long-term nursing homes in this thesis (Study II). From a national perspective, in 2018 it was reported that half of the Norwegian municipalities did not have enough nurses, and that nurse shortages had negative consequences for care quality (169). The impact of nurse staffing on quality of care has been shown elsewhere (195). In contrast, nursing homes in both municipalities of the current thesis had recently been required to cut staff, demonstrating the challenge facing health personnel in this setting.

The more complicated nursing tasks have led to a need for increased competence among the primary healthcare workforce (person) (37). Although capacity building was in focus in the examined nursing homes of this thesis, competence was not adequately in place in all of them (Study II). Similar problems have been evident in other primary healthcare services (170, 196). Overall, the primary healthcare competence has, only to a limited extent, been strengthened since the introduction of the Coordination Reform (169). Lack of competence to handle complex patient needs in the primary healthcare service was a pervasive theme related to hospital readmissions among all healthcare groups in the thesis (Study I, II and III). This is a strong indication that policy makers need to act in this area.
Primary care physicians in Study I had been required to carry out a greater degree of patient coordination tasks such as referring patients discharged from the hospital with undeclared medical issues to other specialist healthcare services. Additionally, there had been a transfer of a range of new tasks to GPs, leading to increased work pressure - aspects which have been recently illuminated elsewhere (197, 198). The combination of work pressure and poor access to information were reasons to admit or readmit patients to the hospital among GPs in Study I, particularly during ER duties. Moreover, the Norwegian GP scheme is currently experiencing an ongoing crisis (recruitment issues/ high turnover) which has been partly related to the large number of tasks that have been transferred to the GPs (199). Busy work schedules seem to limit the GPs in professional development (e.g. attending courses), while the medical issues they are required to handle are rapidly developing and becoming more complex (200). The hospital physicians in Study III said that inadequate GP competence was sometimes the reason for readmissions to their hospital.

A while after the reform (in 2016), MEBUs were added to the primary healthcare service, requiring coordination and cooperation between even more healthcare agencies. Additionally, this created a new organizational interface, causing potential patient risks. The purpose of this healthcare service was to decrease the prevalence of hospital admissions. The transition from regular short-term nursing homes to MEBUs was described by the nursing home leaders of study II as an abrupt process demanding major adaptations, an experience shared by others (201).

A transition to electronic communication followed the introduction of the Coordination Reform. This consequently lead to a change in how the primary healthcare service and the municipalities communicated (202). Although communication has been previously described as improved following the Reform (177), communication between hospital physicians (Study III) and primary care physicians (Study I) seemed to be limited. The lack of good communication tools was considered to be a barrier for adequate communication.

Process and Outcome
In the light of human factors, the thesis results provides several examples of how the system design has not been customized to handle changes in the sector. Overall, the alterations the Norwegian healthcare system has gone through the past decade are comprehensive. Failing to comply with the
changed needs on an individual and organizational level may lead to an increase in unnecessary hospital readmissions according to these results. The changes are additionally leading to new work processes, which may cause hospital readmissions because the system is not designed to handle the scope of tasks. Moreover, the SEIPS model demonstrate how the factors within the different components effect and reinforce each other and results in hospital readmissions. At the same time, the model demonstrate where the efforts should be targeted (e.g. increased competence and staffing in primary healthcare or better communication tools for GPs and primary healthcare physicians). Although, the SEIPS model cannot provide a direct answer to which concrete factor is causing hospital readmission (the outcome), it gives an overview of potential factors that may cause hospital readmission, and can from there be utilized to design safer and more efficient processes (116).

5.3 An individual perspective on hospital readmissions – primary care physicians’ decision-making

The Cased Based Decision Theory (CBDT) contributes to an increased understanding of how decisions are made, and how the phenomenon of hospital readmission occurs at an individual level.

Physicians make decisions about patient care or treatment on a daily basis. These decisions are often complex and made under uncertainty (e.g., treatment decisions with unclear diagnosis or uncertain treatment outcomes). (203). In addition, a range of factors need to be incorporated into their decisions such as economy, capacity, patient wishes, benefits versus side effects and risk versus treatment effect (204, 205).

In hospitals, medical decisions are often group decisions made in cooperation with others (e.g. the patient, peer physicians or other healthcare personnel) (203) as seen in Study III. In the primary healthcare service, however, the physicians are to a greater extent alone with their decisions (206). Furthermore, they have to handle a broader range of different diagnoses and conditions compared to hospital physicians, who have more specialized tasks (206). Moreover, studies show that GPs are experiencing great work pressure in their everyday practice due to overall increased responsibilities (58, 207, 208). Related factors such as a lack of reduction in time pressure and working hours have been shown to affect physicians negatively (209). Clinical decision-making is, according to Zavala, Day (210) negatively effect by
pressure (e.g. work load, time constraints and case complexity). This means that the excessive workload inflicted on primary care physicians may compromise adequate decision-making, as for example, by choosing the “easy way out”, and readmitting the patient when the workload is too great and adequate patient information lacking, as seen in Study I.

CBDT is based on the idea that decisions are largely founded on available information (126). Tierney (211) states that both too much information (if it is unorganized), and too little information can cause errors in decision-making. The current thesis mainly identified the latter. The information needed to make decisions was not always available when needed and was not necessarily perfect or complete (e.g. lack of patient medical records, hospital stay summaries or incomplete medication lists) (Study I). In the light of CBDT, when information is limited, the primary care physicians, to a greater extent, have to rely on their own experiences because access to other peoples’ cases are limited. However, experience will necessarily vary among a primary care physician population. In Study I, the physicians’ years of experience span from a few months to over 15 years. In combination with the solitude of primary care physicians’ decision-making, this may indicate that many decisions in primary healthcare services in regards to hospital readmissions are made under unnecessary uncertainty. Unnecessary, because better access to information or peers to consult with could have eliminated some of the uncertainty which already naturally lies in medical decisions (203). This indicates that more information or a better information system could contribute to a reduction of unnecessary hospital readmissions, demonstrating concrete measures which could be implemented by organizational leaders and policy-makers. One example of such a measure was recently introduced to a hospital in western Norway, which started up a dedicated GP telephone line. One hospital physician were responsible for carrying the dedicated telephone at all times and answering questions related to hospital admissions (212). The hospital physicians received up to 40 calls a day, demonstrating the need for such measures.

Decision-making under uncertainty is a psychological state where the decision-maker lacks knowledge about the consequences following a choice. These decisions are often tied to risks, and most individuals faced with scenarios of uncertainty will chose the safe option rather than taking unnecessary risks (213). There were examples of this in Study I, where primary care physicians chose to readmit patients, because they believed it was the safest thing to do, when they, for example lacked nursing home
placements or accurate nursing home staffing. Initially, CBDT only took past experience into consideration in decisions under uncertainty, excluding considerations of beliefs about the future. However a recently offered model combines case-based decision theory and utility theory, allowing for assessment of both possible future scenarios (although not knowing if the list of future scenarios are exhaustive) and past cases (e.g. experience, information) (214). This is a promising theory to apply in the aim of better understanding complex decisions in healthcare services and hospital readmissions, and should be considered in future research.

Another important aspect of medical decisions is that physicians, nowadays, are to a greater degree affected by others (e.g. nurses, patient, next of kin) in contrast to the old paradigm where physicians were “at the top of the chain of command” (211). The nursing home physicians in Study I were, for example, highly dependent on patient information provided by the nurses, because they only had limited presence in the nursing homes. What is more, patient and next of kin were stated to have great influence on decisions, from both the hospital and the primary care physicians’ perspective (Study I and III), which is equal to other studies (215, 216). This influence could be in terms of next of kin holding critical information about the patient, or it could degenerate as pressure to, for example, readmit a patient to the hospital. Experience was stated to be a strength when it came to withstanding pressure to readmit patients in Study I.

Lastly, this thesis’ results demonstrate that context plays a critical role in decisions on hospital readmissions. It will, for example, be of significance if there is not enough, or not experienced enough, staff (nurses) to handle a patient with complicated needs, if there is no available nursing home placements, or merely that the ER is overcrowded and under-staffed (Study I and II). Based on the findings of this thesis, a critique which can be made against CBDT is that context is not sufficiently considered. At best, CBDT is an adequate theory for assessing cognitive processes in term of experience and information and how they are affected by others. On the other hand, a combination of several decision theories are recommended to get a full picture of decision-making in different contexts (217). In this thesis, CBDT functioned as supplementary to the resilience- and human factors theory to provide an individual perspective of the readmission issue. In this way, CBDT highlighted areas of key relevance that are omitted in the two other theories. All together, these perspectives gave new insights to understand the readmissions phenomenon from a primary care perspective.
5.4 Methodological reflections

This section presents a reflection on methodological strengths as well as weaknesses of the thesis.

As in qualitative research in general, this thesis includes a limited sample of the healthcare workforce, the Norwegian municipalities and nursing homes. Generalizability is therefore not expedient (161). In qualitative inquiry, the researcher can provide suggestions about transferability (145), but in the end, it is the reader of the results who decides whether they are applicable to their context or not (161).

The thesis provides an in-depth insight into the selected municipalities and the readmissions issue within the included primary healthcare services. Furthermore, two cases with several sub-units were included in the study, which served to better illuminate the hospital readmission phenomenon (144). Transferability of the results to other countries may represent a challenge because of the unique structure of the Norwegian primary healthcare services. However, several of the factors found to be associated with hospital readmission are believed to be applicable in other countries as well (such as for example staffing, competence and information exchange).

Dependability is associated with the issue of reliability and addresses the question: would the findings be similar if repeated with the same participants in the same setting (130). However, due to the changing nature of the research areas studied in qualitative inquiries, such repetitions are problematic (161). The focus rather lies in consistency of the study process, stability over time and across researchers and methods (155).

The thesis undertook an explorative approach, within a field that is fairly well investigated, which may appear contradictory. However, the hospital readmission issue was well investigated in a hospital perspective, but limited within the primary healthcare perspective. In addition to the applied theories, the knowledge derived from the hospital perspective provided support and guidance in terms of developing relevant themes in the interview guide, though still allowing the participants to speak freely about their experiences of hospital readmissions from the primary healthcare service through semi-structured interviews (130).

Although the homecare services are a large part of the Norwegian primary healthcare services they were not directly involved in this thesis. An inclusion
of the home care services could have provided valuable information about the readmission issue from the primary healthcare perspective. GPs, hospital physicians and nursing home nurses did, however, indirectly provide information about this part of the healthcare service by talking about their experience of, and collaboration with, the home care services. Further, this thesis included hospital physicians’ views on hospital readmissions from the primary care perspective, representing a novel outlook on the readmission issue. The patient and next of kin perspective is another relevant perspective in relation to hospital readmissions, which was not included in this thesis. These perspectives could have provided different results, and should be further investigated in future research.

The Case Based Decision Theory, was in hindsight, discovered to be a rather narrow theory, whereas other decision theories could have provided a broader foundation for discussion of the thesis results. However, the theory supported the resilience in healthcare and the SEIPS model by providing an individual’s perspective on the process of hospital readmission, particularly focusing on information, experience and competence, which were relevant aspects of this thesis’ results. Additionally, the theory contributed with a perspective which were omitted from the two other theories.

The two included cases were selected through purposeful sampling, which seldom results in a typical or representative sample (130). However, municipality A was the starting point of the study, making a purposeful selection of municipality B necessary in terms of finding municipalities with differences in readmission rates and similarity in organization, size and location to the hospital. Although the cases were selected based on readmission rates (in addition to the previously mentioned factors), these rates evened out during the research period. This called for a slight change in the thesis’ focus. This was handled by leading the focus away from the perspective of differences in readmission rates, towards a focus of hospital readmissions in, or from the two municipalities. In hindsight, it would have been difficult for the hospital physicians to differentiate between the municipality with high readmission rates and the municipality with low readmission rates, if the thesis had continued in that direction.

The nurses in both cases were selected by their manager through convenient sampling. This approach was applied to facilitate the combination of interview time and work tasks at the respective wards. Convenient sampling in itself can lead to an atypical sample of the population, and further,
volunteering participants will most likely differ from those who chose not to volunteer (130). Issues in regards to being recruited by their own management also needs to be addressed. The manager can, for example, chose participants he or she believes would provide “good answers” concerning the organization or organizational issues. This could lead to distorted results. Additionally, leader recruitment can create an undesirable pressure to participate, in terms of nurses agreeing to take part in the study to either please their leader or being reluctant to say no to their leader. The same issues needs to be taken into consideration in regards to the GPs in Study I. The directors of health were involved in the recruitment process in terms of forwarding mail from the thesis author and encouraging participation when recruitment was slow, possibly exposing them to unintended pressure. It was also difficult to recruit GPs, and the possibility of safeguarding a selection including all types of the GP population in the municipalities was difficult. This could have led to important voices being left out, or causing a biased selection in terms of, for example, experience and age. A share of the GPs and hospital physicians was recruited through social networks and personal contacts. The effect of this approach is two-sided: on the one hand, it can result in recruiting participants who usually do not volunteer to participate in research, creating a more diverse sample than would have been the initial case. On the other hand it can lead to participants feeling pressured to participate (142). Both aspects need to be taken into consideration. Overall, all participants signed a consent form and were given the opportunity to redraw from the study before the interviews were initiated to secure voluntary participation. The recruitment resulted in a varied selection of health personnel, in terms of field of experience, years of experience and general work experience, providing a diverse data material. Triangulation of data collection methods contributed to robust data collection in this thesis (161). However, potential biases within each of the data collection methods needs to be addressed. Observational studies are limited to the situations being observed (132). Unfortunately, no decisions to readmit patients occurred during the time in the field. However, the observations gave valuable information about the nurse-physician relationship, their cooperation, and how physicians in nursing homes work, providing support to the interview material. In general, the observational data is to a large degree dependent on the perception and interpretation of the observer (132). This bias was limited through interviewing the same physicians that were observed in the nursing homes.
Discussion

Interviews can be affected by possible distorted responses related to the interviewees’ personal bias, such as their emotional state during the interview (132). In the current thesis, hospital readmissions could, for example, have been considered a loaded issue, because one of the included municipalities had high readmission rates compared to other healthcare services at the time of the data collection. This could further have resulted in self-preserving answers or reactivity among the interviewees (132). Although the informants seemingly spoke freely and were in a relaxed state of mind during interviews, these are factors, which need to be considered as possible biases. In addition, some of the physicians did not have Norwegian as their mother tongue. This sometimes led to challenges in terms of understanding what was being said during the transcription of the interviews. To address this challenge, the interviews were listened to several times, to ensure correct transcription. Lastly, the physician interviews were, as previously stated, conducted as focused interviews. Due to the physicians busy work schedule this was the best option. This meant that the interviews lasted for approximately 30 minutes. Length is often set as a quality indicator for qualitative interviews, however, Kvale (152) argues that short interviews rich in meaning may be achieved, if the interviewer has knowledge of what to ask for, why one is asking and how to ask.

Focus group interviews present similar issues to the interviews, but also include other potential challenges related to group dynamics, for example in terms of introvert vs extrovert participants and restraint in sharing personal opinions due to the presence of others. To address these issues, the moderator was accompanied by an experienced facilitator, managing the group dynamics to allow all voices to be heard. Furthermore, the interviews were conducted in the nurses’ work place in order to create a safe and relaxing environment. The groups were also fairly homogenous in terms of occupation (nurses), gender (female) and work tasks, with some variation in age, years of experience and previous work experience. This endorsed sharing and discussion within the group as well as providing diversity in the shared perspectives (151). Lastly, interviews with the nursing home leaders were conducted separately to avoid any restrictions for both leaders and nurses in sharing opinions. In one of the focus groups, we were only able to recruit three participants, limiting the total range of experiences in this group: on the other hand, small groups enhance each persons’ ability to share their opinions (151).
Lastly, being a PhD student and an early career researcher will have an impact on the choices of methods, theories, fieldwork and the presentation of results. This may present biases, which needs to be taken in consideration when reading the thesis results. However, I received close supervision, guidance and support from three senior researchers throughout all phases of the research, contributing to limitation of potential biases.
6 Conclusions

This thesis explored hospital readmissions from the primary healthcare services. To conclude, the thesis showed great agreement between various healthcare workers in terms of what they believed affected hospital readmissions and how they experienced the organization of the healthcare service. Many of these factors were tightly connected to changes introduced by the Coordination Reform. Hospital discharges were believed to be too early by all healthcare groups, and by hospital physicians responsible for discharging patients. The surge of patients to primary care had become greater, the patients more resource demanding and their needs more complicated, but organization of the primary healthcare service, including competence and capacity to handle this surge, was not adequately in place. This had a retroactive effect on the hospital which struggled with full wards, and patients staying unnecessary long in hospitals. To avoid unnecessary hospital readmissions, adaptations by healthcare personnel were needed within each of the investigated healthcare services, as well as in the interface between the healthcare services.

Despite the massive scope of readmission research, qualitative research from the primary healthcare service perspective has been a systematically omitted subject. This thesis showed that qualitative research is necessary to provide in-depth knowledge about hospital readmissions, particularly about the distinction between necessary and unnecessary readmissions, which is an essential factor related to the patient safety perspective. Health personnel’s knowledge of hospital readmissions has an untapped potential for improving service provision and reducing unnecessary readmissions. The thesis also demonstrated the significance of the primary care perspective in hospital readmissions. And finally, the thesis took an integrated approach in an attempt to increase the understanding of the complexity of hospital readmissions in contrast to previous research, which has typically been characterized as fragmented, focusing on isolated aspects of the hospital readmission issue.

In its entirety, this thesis broadens the understanding of hospital readmissions both on a systemic and individual level, showing the complexity of the readmissions phenomenon and further, how closely hospital readmissions are tied up with the context in which they occur.
Conclusions

6.1 Implication for practice and future research

The results of this thesis reveal important aspects of the hospital readmission issue, which need to be recognized and considered by policy-makers, leaders and researchers. The results further demonstrate potential measures, which could contribute to the reduction of unnecessary hospital readmissions.

Implications for practice:

- Improved communication and better shared knowledge of how the primary care and hospital physicians work, through a shared meeting point, supported by financial means and allocated time.
- Quality assurance of the discharging physicians, including improved support for inexperienced physicians.
- Improved conditions for physicians writing the hospital stay summaries, including improved routines for the distribution of the summary.
- A support system for inexperienced primary care physicians, facilitating easy access to peers to discuss difficult cases, including a mentoring scheme for novice physicians.
- Allocated time and resources for upgrading primary care physicians’ competence.
- A joint plan with common goals for capacity building in nursing homes, with special attention towards long term nursing homes.
- A national focus on recruiting nurses to nursing homes to obtain the required nurse staffing.
- Recognize the transition the long-term nursing homes have had since the introduction of the Coordination Reform, and organize the service thereafter.
- Recognize that there is still a need for nursing home placements, and not all patients are candidates for receiving care at home.
- Obtaining hospital physicians’ (and potentially hospital nurses’) views on the primary healthcare service may be a methodical approach from which the field of practice may benefit.
- Develop a common medical record system that provides current physicians immediate access to necessary information.
- The definition of hospital readmissions used in the Norwegian quality indicator should be considered revised, although difficulties in differentiating between necessary/unnecessary and separating
readmissions based on index admissions and new readmission causes are acknowledged.

- Hospital readmissions as a quality indicator should be used with care as many of the underlying factors of hospital readmissions are neglected in this measurement, including the necessary hospital readmissions.

**Implications for further research**

- There is a need for more research to understand the readmission phenomenon by exploring larger samples in the municipalities, including in the homecare service.
- There is a need for more qualitative research, which illuminates the many aspects of the hospital readmission issue, such as individual experience, organization, structure and context.
- More involvement of the patients and the next of kin in further readmission research e.g. follow patients over time.
- Future research should explore the hospital readmission issue from different perspectives in one study (e.g. primary healthcare service, secondary healthcare service and the patient perspective).
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References


Part II
List of Papers

Paper I

Paper II

Paper III
Paper I
Exploring physicians’ decision-making in hospital readmission processes - a comparative case study

Malin Knutsen Glette1,2, Tone Kringeland1, Olav Raase3,4, and Siri Wiig3

Abstract

Background: Hospital readmissions is an increasingly serious international problem, associated with higher risks of adverse events, especially in elderly patients. There can be many causes and influential factors leading to hospital readmissions, but they are often closely related, making hospital readmissions an overall complex area. In addition, a comprehensive coordination reform was introduced into the Norwegian healthcare system in 2012. The reform changed the premises for readmissions with economic incentives enhancing early transfer from secondary to primary care, making research on readmissions in the municipalities more urgent than ever. General practitioners (GPs) and nursing home physicians, have traditionally held a gatekeepers function in hospital readmissions from the municipal healthcare service, as they are the main decision-makers in questions of hospital readmissions. Still, the GPs’ gatekeeper function is an under-investigated area in hospital readmission research. The aim of the study was to increase knowledge about factors that lead to hospital readmissions among elderly in municipal healthcare, with special attention to GPs’ and nursing home physicians’ decision making.

Method: The study was conducted as a comparative case study. Two municipalities affiliated with the same hospital, but with different readmission rates were recruited. Twenty GPs and nursing home physicians from each municipality were recruited and interviewed. Forty hours of observation were conducted during the huddles in one long-term and one short-term nursing home in each municipality.

Results: Seven themes describing how different factors influence physicians’ decision-making in the hospital readmission process in two municipalities were identified. Poor communication, continuity and information flow account for hospital readmissions in both municipalities. Several factors, including nurse staffing and competence, patients and their families, time constraints and experience affected physicians’ decision-making.

Conclusion: Communication, continuity and information flow contributed to hospital readmissions in both municipalities. The cross-case analysis revealed slight differences between municipalities. More research focusing on GPs’ and nursing home physicians’ decision-making, nursing home nurses and home care nurses’ experience of hospital readmissions and discharges is needed.

Keywords: Hospital readmissions, Patient safety, Hospital discharge, Patient handovers, Decision-making

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Background

Readmissions 30 days after hospital discharge are considered an international problem with readmission rates ranging from 10 to 30% across borders [1–4]. Hospital readmissions are associated with higher risk of adverse events, especially in elderly patients [5, 6]. Furthermore, hospital readmissions are an economic burden for the healthcare system and consume healthcare resources [7, 8].

Readmissions often result from a combination of disparate factors [9, 10]. High readmission rates can be indicative of suboptimal patient treatment and/or an unnecessary use of resources. For patients with acute deterioration as a part of their clinical picture, however, a low threshold for readmissions can be indicative of a higher quality of care [9]. There is a higher prevalence of readmissions in patients with chronic illnesses or conditions that limit their ability to perform their activities of daily living. Other factors that may influence hospital readmissions are patient age, availability of social support and access to adequate care after hospital discharge [7, 11].

The number of readmissions in Norwegian hospitals has, in accordance with international numbers, increased over the past years [12]. A national mapping of the prevalence of hospital readmission rates showed differences in readmission rates between municipalities linked to the same hospital, and with similarities in population and location in relation to the hospital [9]. Previous research on hospital readmissions does not explain these differences.

The role of general practitioners and nursing home physicians in hospital readmissions

In a Norwegian context, general practitioners (GPs) provide medical care in the municipal healthcare services (GP offices, nursing homes and emergency rooms) and are responsible for making hospital referrals as needed, making them the gatekeepers to the secondary healthcare service [13, 14]. Consequently, GPs play a significant role in hospital readmissions [15, 16]. Research has shown that other factors in physicians' decision-making -- other health personnel, colleagues, physicians' personal factors, patients and their families -- can influence the decision-making process [15, 17]. Most of the research on this topic has been conducted outside of municipalities.

Studies aiming to map reasons for hospital readmissions have tended to take a patient-or hospital-centered focus that excludes the perspectives of GPs and nursing home physicians [7, 11, 18, 19].

Case-based decision theory

The quality and costs of the healthcare services are based on healthcare professionals’ everyday decisions [17]. Medical decisions often include complex ethical problems involving numerous stakeholders (e.g., the patient, the family, physicians, physician colleagues) and decision outputs in form of an action such as a test, a treatment regimen or a hospital readmission.

Case-based decision theory (CBDT) suggests that people's actions are based on their previous actions in similar past situations [20]. It can be useful in understanding how GPs and nursing home physicians make their decisions. The decision-maker takes factors, both personal experience and that of others, into his or her decisions. The similarities with other decision-makers’ previous problems and the attributes that they share will affect the extent to which they are influenced when making decisions [20]. In the medical context, CBDT assumes that GPs’ working experience will affect their decision-making. Consulting other physicians and reading patient journals will be two ways of collecting the experiences of other decision-makers.

Purpose of the study

The purpose of this study was to increase knowledge of factors influencing hospital readmissions of elderly from a municipal healthcare perspective. We focused on how GPs and nursing home physicians make decisions about hospital readmissions. We wanted to investigate which and how different factors influence GPs' and nursing home physicians' decision-making in the hospital readmission process, and the contributions of other healthcare professionals.

Through qualitative interviews and observations of physicians’ decision-making, this study illustrated factors affecting hospital readmissions from a municipal perspective, thereby better enabling us to suggest future measures to reduce hospital readmissions among the elderly patient group.

Methods

Study design

This study was conducted as a contrasting comparative case study of two Norwegian municipalities. A case was defined as a municipality with affiliated primary healthcare services and the affiliated hospital. Two cases were included in the study (Fig. 1). The two municipalities were affiliated with the same hospital and were selected based on their different readmission rates at the time of recruitment (19.2% in Municipality A and 15.2% in Municipality B in 2014). As we assumed that these differences were robust, we decided to use the contrasting case design – anticipating contrasting results and a possible variation in factors influencing the decision-making process [21]. Further, the investigation of two cases allowed for comparison and the exploration of potential differences and similarities across and within cases [22]. The purpose was to recruit cases with contrasting rates but affiliated with the same hospital for a qualitative exploration, not to analyze the readmission rates over time.

Glette et al. BMC Health Services Research (2018) 18:725
Sample and recruitment of municipalities

The municipalities were recruited based on results from the national quality indicator “30 day readmission after hospital stay” published by the Norwegian Institute of Public Health [9]. The quality indicator calculates the risk-adjusted likelihood for readmissions within 30 days of hospital discharge for elderly somatic patients (67 years and older) within 11 diagnosis groups where the total indicator is calculated and published every year [9]. The municipalities were similar in a Norwegian context in terms of similar population size and proximity to the hospital (Table 1).

In each municipality, the head of the health department and the director of health provided the contact information of eligible informants. The researchers established contact by sending an information letter inviting all GPs and nursing home physicians in each of the two municipalities to participate. The first author made the second contact and scheduled the interviews. All informants had to work in either Municipality A or Municipality B. Municipal leaders collaborated in the recruitment of nursing homes. The first author met with the administrators of each nursing home to plan the research.

Context

The Norwegian healthcare service is grounded on the welfare model and includes publicly funded health services, equal social rights and equal access to healthcare services [23]. The healthcare service consists of separate primary and secondary services funded separately by the municipalities and the state.

<table>
<thead>
<tr>
<th>Table 1: Demographic Overview of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
</tr>
<tr>
<td>Distance from the hospital</td>
</tr>
<tr>
<td>Inhabitants</td>
</tr>
<tr>
<td>Physician Full Time Equivalent (FTE) per 10,000 inhabitants</td>
</tr>
<tr>
<td>Degree of nursing home coverage or coverage in institutions for persons 80 years and older as a percentage of the corresponding age group in the population</td>
</tr>
<tr>
<td>Emergency room</td>
</tr>
<tr>
<td>Municipal Emergency Bed Unit (MEBU)/Hospitals Emergency Bed Unit (HEBU) short-term nursing home/rehabilitation/palliative care</td>
</tr>
<tr>
<td>MEBU/HEBU distance to hospital</td>
</tr>
</tbody>
</table>

(Numbers from municipal – state reporting (KOSTRA), 2016)
Each municipality provides healthcare services to its citizens at its own discretion, within certain regulations, leading to differences in how the healthcare service is delivered (e.g., resources, nursing home coverage, staffing level and staff competence) in nursing homes [24]. The organization of the healthcare service is similar in the two municipalities considered here. Emergency room (ER) shifts are staffed by GPs with emergency room duties, but also interns, doctor temps and physicians working in small permanent positions. The two municipalities had similar institutional coverage (nursing homes) for persons 80 years and older (percentage of the corresponding age group in the population) (Table 1).

As coordination of healthcare professionals is essential in providing safe, high-quality healthcare [23] all municipalities are legally required to sign agreements of cooperation between the primary and the secondary healthcare services. This includes agreements on hospital admissions, hospital discharge and rehabilitation, to provide holistic healthcare service [24].

The Norwegian healthcare system underwent comprehensive changes following the implementation of the Coordination Reform in 2012 [25], that was designed to develop a more holistic healthcare service and better collaboration among the healthcare services. The result has been shorter hospital stays, heavier patient flow and greater pressure on the primary healthcare services. As a result of this, the municipalities must now pay the hospital mainly due to economic incentives favoring short hospital stays, heavier patient flow and greater pressure on the primary healthcare services. The two municipalities had similar institutional coverage (nursing homes) for persons 80 years and older (percentage of the corresponding age group in the population) (Table 1).

The first author conducted the interviews from September 2016 to February 2017. Each interview lasted for approximately 30 min. The interview guide (Additional file 1) was developed using case based decision theory and Systems Engineering Initiative for Patient Safety (SEIPS) model [29] and consisted of following topics: hospital admissions based on medical justifiability; external influences (e.g., patients, next of kin, other health care professionals); personal factors (e.g., experience, fear of consequences, personal relations/feelings). Our conceptualization of readmission was based on the definition of the quality indicator criteria (readmissions among elderly somatic patients > 67 years). However, no constraints were put on the interviewees in regard to certain types of hospital readmissions (diagnose specific hospital readmissions). The physicians were encouraged to talk about hospital readmissions in general to secure the richest possible data material on the factors affecting their decision-making in hospital readmissions. The interviews were recorded and later transcribed.

The first author conducted observations in the huddle of one long-term and one short-term nursing home in each municipality from December 2016 to June 2017. This resulted in approximately 40 h of observation. The four physicians leading the huddles during the observations were also interviewed. Observations and interviews were conducted at separate times to secure that the interaction data would be captured without any researcher involvement [30]. The purpose of the observation material was to fill in or support the interview material and strengthen the validity of the data material. The huddle was selected because it involves decision-making, cooperation between physician and nurses and the participation of patients and next of kin in medical decisions. An observation guide (Additional file 2) was developed based on the following themes: interaction between GPs/nursing home physicians, physicians’ colleagues and other health personnel in questions of hospital readmissions, interaction between GP/nursing home physician and patients and family, and the readmission process. Observation notes were taken throughout the observations.

Data collection

We used semi-structured interviews and observations to collect data for this study.

Twenty participants were recruited to take part in the study: eight GPs, one nursing home physician and one physician working part-time in the ER and part-time in the nursing home in each municipality. The participants differed in their years of experience (Table 2) and medical specialties (e.g., geriatric competence, general practice, emergency medicine, psychiatry). Some of the participants had not had an internship, which is now required of all graduates, but were working as physicians with all rights and responsibilities.

Analysis of interviews and observation data

All interviews and observations were transcribed and analyzed according to UH Graneheim and B Landman [31] content analysis to map factors that can affect hospital readmissions.

The GPs’ and nursing home physicians’ experience of hospital readmissions was extracted from the interview material (the unit of analysis) in the form of meaning units. The meaning units were then condensed, coded
and organized under categories and subcategories as shown in Table 3. Seven themes in each municipality describing factors that influence physicians’ decision-making in hospital readmissions emerged.

The observation material was read through several times to arrive at a sense of the whole and divided into meaning units which were condensed. The underlying meaning of the condensed units was interpreted and divided into themes and subthemes, resulting in two themes in Municipality A and three themes in Municipality B [31].

The themes of the interview material were structurally introduced, and the themes of the observations were used to substantiate the results of the interview material.

The cases were first analyzed individually to identify factors affecting GPs’ and nursing home physicians decision-making. Second, a cross-case analysis was conducted across municipalities to map differences, similarities and patterns [22].

Results

Theme 1: Transference of responsibility from the hospital to the municipal healthcare service

GPs from both municipalities described a pronounced shifting of medical responsibility to the municipal healthcare service. Several GPs stated that patients had been discharged from the hospital with unresolved medical issues or incomplete treatment.

The problem is, they [the hospital doctors] exclude a bone fracture, but they don’t investigate any further why the patient had fallen in the first place. (GP, Municipality B).

It was clear that premature hospital discharge after completed intravenous (IV) antibiotic treatment was a factor in hospital readmissions in both municipalities. Patients’ medications were often changed from IV to oral antibiotic treatment on the day of discharge. The effect of the change in medication had therefore not been observed and the patients deteriorated, requiring readmission to resume IV treatment.

The patients were described as complex and in need of advanced treatment. Some of the GPs and nursing home physicians reported that they had to take on responsibilities for continued examinations, tests or referrals to other fields of expertise. Moreover, GPs in both municipalities had been urged to keep the patients in the municipal healthcare service when they wanted to refer the patient to the hospital.

We’ve received phone calls from the head physician at the hospital, explaining to us that the hospital is full and that we should re-hold all hospital admissions. But... this can be compared with them saying that we sometimes admit patients to the hospital for the fun of it... if you know what I mean. (GP, Municipality A).

Table 2 Distribution of physicians’ years of experience

<table>
<thead>
<tr>
<th>Years of experience</th>
<th>Included physicians (municipality A)</th>
<th>Included physicians (municipality B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>5-10</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10-15</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>&lt; 15</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Mean years of experience</td>
<td>9.6 years</td>
<td>15 years</td>
</tr>
</tbody>
</table>

Table 3 Content analysis municipality B, Theme 2

<table>
<thead>
<tr>
<th>Theme</th>
<th>Category</th>
<th>Sub-category</th>
<th>Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2</td>
<td>Lack of coordination, access to and continuity in the patient information flow</td>
<td>Communication between the municipal healthcare service and the hospital during hospital discharge, is not good enough</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Information exchange</td>
<td>Lack of coordination between primary and secondary healthcare services</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inadequate access to patient information</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lack of adequate information exchange within the municipal healthcare service, and between the hospital and the municipal healthcare service</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Medication lists which are not up-to-date leads to additional work for the receiving physician</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Status on resuscitation is not always clarified</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuity</td>
<td>Lack of continuity in the patient treatment</td>
<td>Physicians base their decisions on clinical assessment, the patient’s general condition and results from available measurements</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>It’s difficult to know about previous hospital admissions; if the patient’s medical problem is already known and how the patient coped after ended shift at the emergency room</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hospital admissions can become necessary because the nursing home physician doesn’t have the opportunity to do follow-ups during weekends and evenings at MEBUs</td>
<td></td>
</tr>
</tbody>
</table>
In Municipality A, some GPs and nursing home physicians reported that the hospital was trying to stop hospital admissions from nursing homes, on the grounds that elderly patients with multiple morbidities were less treatable. Some of the interviewees stated that the hospital physicians did not know which treatments could be executed at the nursing homes. Patients were, for example, discharged from the hospital back to the nursing home with orders for tests, such as daily liver blood samples, that could not be run at the nursing home. This resulted in a hospital re-admission for the required care.

In Municipality B, some GPs claimed that the hospital encouraged use of MEBUs when the GP referred a patient to the hospital. Some GPs also reported that the hospital physicians sometimes misused the MEBUs by asking the GP to admit the patient to a MEBU without the GP having the time or capacity to ascertain if this patient was such a candidate or to plan a course of treatment.

Theme 2: Lack of coordination, access and continuity in the patient information flow

Physicians in both municipalities complained about a lack of cooperation between the municipal healthcare service and the hospital during the discharge process. In Municipality A, there were questions about the criteria used to determine when a patient was ready for discharge. Further, the GPs wished for a better cooperation during the discharge process. Incidents like discharging a complicated patient on a Friday afternoon, knowing the limited nursing home resources at this time, was described as one problem. Some physicians found it unsettling to be excluded from medical discussions of patients that they had been treating for years. One physician described it as working in two different worlds, and stated that he missed being a part of a greater team around the patient.

I do believe, that in the relay race, when you pass the baton to the next sprinter, it should be a smooth transfer, not "here comes the stick," you know, "catch it if you can!"

(GP, Municipality B).

In Municipality B there were vigorous complaints about insufficient information exchange between healthcare institutions, such as the hospital, nursing homes and GPs. There was incomplete written information after stays at MEBUs and incomplete written information when the GP referred patients to MEBUs. Hospital stay summaries (HSS) were in many cases unsatisfactory and often received too long after the hospital stay, making it difficult to make informed decisions. Both municipalities reported this problem. The patients' medication summary was also often sent late and without sufficient description of changes of medication or indication for these changes. The nursing home observations showed several examples of the nursing home physicians not having access to necessary information about newly admitted patients (to MEBU), and needed to call the hospital to have the information transferred to the nursing home.

GPs working at the ER described not having access to the HSS or to patients' medical records. This could lead to difficulties, as most patients could not recall what examinations or assessments had been done at the hospital. Not having this information was cited as a reason for readmission, especially if the ER was busy.

We have to call the on-call physician (to get information) because the patients don't have the hospital stay summary along with them, and they don't remember what have been done and said at the hospital. And they're like "I got one pink pill and two green pills" and then I have to call, and that is annoying, especially if it is busy.

(GP, Municipality B).

She had a known heart condition and a GP would probably have handled it differently. But as an emergency room physician without information about the patient, a hospital admission was the only solution.

(GP, Municipality A).

Furthermore, the observation material showed limited continuity in the nursing homes due to low physician coverage, especially in the long-term nursing home of municipality A. Some physicians had arrangements with the nurses to be available by telephone in the afternoons and on weekends in the hope of preventing unnecessary hospital admissions.

If they can't get hold of me, and the emergency room doctor has to come, it can be an intern or a physician without nursing home experience. And he sees, you know, a blood pressure at 60 and a CRP counting over 100, and... they'll admit the patient to the hospital.

(GP, Municipality A).

Another popular topic in both municipalities was clarification of do not resuscitate-status (DRN), which is used to determine if a patient in cardiac arrest should receive cardiopulmonary resuscitation or not. There was a consensus on the importance of clarifying DRN-status in nursing home patients with multiple morbidities and to clarify how much invasive treatment an acute patient should receive. This clarification was meant to spare the patient unnecessary suffering and to make it easier for
physicians who are unfamiliar with the patient (as in the ER) to make treatment decisions. DRN-status and a planned course of treatment was a very important factor in questions of hospital readmissions, but such an assessment had not always been made.

**Theme 3: High workload and time pressure increase chances of readmission**

Physicians in both municipalities claimed that when there was a heavy workload combined with limited time, it was easier to admit the patient to the hospital than to find an alternative. This was especially a problem in the ER. Admitting patients to MEBUs required a diagnosis and a treatment plan, so hospitalization was faster. Looking up missing information about the patient was also time consuming, and a busy ER could result in a hospital admission.

In Municipality B, some GPs were concerned with a lack of nursing home placements. They found it hard to place the patients who needed it. They argued that the hospital had a greater impact when assignments of nursing home placements were being made, so admitting the patient to the hospital could help to secure the patient a bed in a nursing home.

**Theme 4: The importance of patient and the family preferences**

GPs and nursing home physicians in both municipalities insisted that the patients’ preferences and wishes were important factors in their decision-making. The patients’ wishes were not always medically justifiable, so although they were always given serious consideration, they could not always be respected. In addition, the patients were seen as sources of important information.

Seventy to 80% of our diagnostics is based on a comprehensive medical history, an anamnesis, so we have to listen to the patients!

(GP, Municipality A).

The patients’ family was another source of information. The family spoke on behalf of patients who were unable to speak for themselves. There was one example of the physician – next-of-kin relationship in the observation material, where the nursing home physician urged a patient’s husband to monitor his wife for side effects of a new medication. Some physicians viewed next of kin as exerting pressure on medical decisions, for example in regard to hospital readmissions.

The family wanted the patient to be admitted to the hospital no matter what. I believed that the patient was dying and wanted to give him palliative care at the nursing home. But after extreme pressure from the patient’s family, and with me as a novice physician not being confident enough to say “no, he cannot go to the hospital,” the patient was placed in an ambulance and passed away during transportation.

(GP, Municipality A).

The observation material in one long-term nursing home revealed how a patient’s family could demand hospital examinations that the nursing home physician had refused as medically unnecessary. In one example, a patient’s family wanted to prolong treatment. The patient’s own wishes were unclear, and the GPs and nurses’ assessments of the patient’s best interests were inconclusive. In this case, the family’s wishes took priority.

If there were disagreements between the patient and the family, the patient’s wishes came first. As much as his or her condition allowed, the patient was encouraged to participate in the decision process.

If the patient’s family’s demands are unreasonable, and they wanted us to do unnecessary examinations which could be a burden for the patient, then I wouldn’t admit the patient to the hospital on those terms.

(GP, Municipality B)

Lastly, social factors such as the patient living alone, not having a social network or a family, could be a reason for readmitting the patient to the hospital for the sake of the patient’s care and wellbeing. If available, in such a situation, the MEBUs could be an option.

**Theme 5: The nurses are the physicians’ extended ears and eyes**

In both municipalities there was an agreement that nurses were an important source of information. Especially in the nursing homes, nurses were described as the GPs’ eyes and ears. The nurses made valuable observations and gathered important information to make medical decisions. Sometimes the physicians’ decisions were largely based upon the nurses’ reports. Observations from the long-term nursing homes showed that the nurses were organizers, patient ambassadors, and information sources by monitoring the patients, keeping written records and making oral reports during huddles.

The nurses can do closer observations than the physicians can do. That is to say, they have a visual observational foundation and a symptomatic observational foundation which is better than ours maybe ... or more detailed ...

(GP, municipality A).

There were several examples in the observation material of the nurses’ importance as information source.
They reported changes in the patients’ condition, acute or over time (e.g. abnormal breathing, abnormal blood glucoses, rashes, abdominal pain), they reported effects or side effects of medication (need for medication changes, increased dosage or continued treatment) during the huddles. They informed the physician of reports that needed to be written, next of kin who wanted meetings and reminded them of planned examinations. At the same time, in both municipalities, nurses - especially nursing temps and night nurses - did not always have sufficient knowledge of the patients and their history. It was for example observed during a huddle, that a nurse could not answer a physician’s questions about a patient’s condition or the patient’s history as she was not familiar with that ward. The physicians described it as particularly difficult to get accurate information when they were doing their ER duties.

They [the nurses] are not necessarily familiar with the normal function level of the patient (...) I get plenty of telephones at the emergency room where they are telling me that the patient is ill, but they haven’t measured the blood pressure, not pulse, they don’t know anything else”.

(GP, Municipality B).

The physicians stated that the nurses were highly competent and that their competence had improved over the years. At the same time, variation in the nurses’ competence was described. If the nurses were not able to perform a necessary procedure on a patient, a hospital readmission could be required. If the nurses are very insecure, and if the tasks are too difficult, it can be a reason for hospital readmissions in my opinion.

(GP, municipality B).

The physicians also noted that there sometimes was a discrepancy between the needs of the patient and the resources of the nursing home. For example, not all nursing homes were, at all times, capable of offering round-the-clock care to a patient who needed constant supervision. Nurses often expressed these concerns, and the physician would decide whether or not to admit the patient to the hospital based on these concerns.

In Municipality A there were reports of staff shortages in nursing homes, especially a lack of nurses at night and on weekends. Not having enough nurses on each shift caused problems when patients needed specialized nursing care, such as administration of antibiotics or morphine.

It is a problem when the patient gets ill during an evening shift and you know he needs supervision during the night [when a nurse is not working]. Then it is tempting to admit the patient to the hospital, because I know there are no nurses on call. But this is not a reason for a hospital admission. I can’t tell the on-call hospital physician I am admitting because there is no nurse here. But I believe it is dangerous, it is a dangerous practice to not have a nurse working at all times.

(Physician, Municipality A).

Theme 6: The patients’ safety comes first

In both municipalities, novice GPs and those with more than two decades of experience agreed that experience affected their decision-making about hospital readmissions. The physicians stated that experience gave them a sharper clinical eye and made them more confident in their decisions. Moreover, experience offered awareness of personal limitations and a sense of knowing when to involve others in the patient treatment. Factors like unfamiliarity with the healthcare system and how it works, not knowing other options to hospital admissions and not knowing who to consult, were, by the included physicians, associated with inexperienced GPs or inconsistent GP coverage. Physicians in Municipality A reported that frequent GP turnover had been a problem.

Discussion

In the following, we discuss the results according to previous research and the Case Based Decision Theory [20].

Hospital readmissions

One of the purposes of the coordination reform was to decrease the demand for secondary healthcare services by enabling the municipalities to take on more of the
It has been documented that the reform has had this effect in the form of early hospital discharges and more complicated patients being discharged to nursing homes and home care services [33]. According to Kristoffersen and Colleagues [34] this is a natural consequence of the municipalities assuming more responsibilities. Despite this natural change in the patient group, the physicians in our study found that patients were being prematurely discharged. A reason for a too early hospital discharge can be explained by shift from a patient-centered to an economic perspective as a consequence of the Coordination reform [35]. Another explanation can be under-dimensioned capacity in the hospitals, forcing hospital physicians to discharge patients early, to open up beds for new patients or to stop hospital admissions due to high occupancy [36]. Lastly, hospital physicians can be trying to prevent unnecessary hospital readmissions. For example, hospital readmissions based on time constraints in the ER, GPs admitting patients to protect themselves (if inexperienced or insecure), cultural differences over when to admit or not, lack of knowledge of when to admit or not, or lack of agreement over which patients should be admitted [37]. There is a need to investigate the hospital physicians’ understanding of these matters to fully understand the factors that lead to hospital readmissions.

Our findings showing lack of coordination and continuity, and poor information flow between health service levels are supported by a recent report by Office of the Auditor General of Norway [38]. Much of the communication between the municipal healthcare service and the hospital is exchanged through written referral letters from GPs/nursing home physicians and through hospital stay summaries (HSS). Studies and reports have shown that HSS are sometimes received late [39], are of poor quality in descriptions of medical history, symptoms, medication and social network, and lack accurate documentation of test results [40, 41]. These challenges, which was also described in our results, could indicate that an improvement in written communication and better communication tools among health care services could reduce hospital readmissions. Still, the hospital discharge process is often executed under time pressure, leading to lack of time to provide proper HSS and adequate information to the receiving healthcare agency [42].

Inadequate communication and cooperation in planning of hospital discharges, have also been described by Holen-Rabbersvik et al. [43]. Such problems may result in hospital readmissions if the municipalities are not prepared to receive the discharged patients due to facilities, lack of competence or staffing, equipment or lack of institutional space [44]. Nevertheless, research has shown improved communication between the healthcare agencies in the wake of the Coordination reform, contradicting our results [45]. This can be indicative of differences between municipalities in coping with the new demands of the coordination reform. Such difference may also be reflected in readmission rates. Municipality A experienced a peak in their readmission rates shortly after the introduction of the Coordination reform (15.2% in 2009, 19.2% in 2014, 16.6% in 2015 and 15.9% in 2016) while municipality B remained stable (15.6% in 2009, 15.2% in 2014, 16.4% in 2015 and 15.9% in 2016).

Hospital physicians lacked knowledge of what treatment options were available in the municipal healthcare services. Research supporting these results shows that the hospital physicians do not always understand the role and function of the municipal healthcare service (31) and that GPs and hospital physicians have limited knowledge of challenges in hospital admission and discharge processes [46]. Better shared knowledge of the conditions under which the different health agencies are working could facilitate cooperation and coordination between the hospital and the municipalities.

Patient handover is a critical component of quality in care and patient safety [47]. An inconsistency in physician coverage, as shown in our study, can result in more patient handovers, increasing the risk for adverse events grounded in interruptions in the flow of information [48]. Then, the physicians’ access to information depends more on nurses’ ability to provide accurate and complete information, thus placing additional responsibility on the nursing staff.

Factors affecting physicians’ decision-making

The patient and the family

As enshrined in the Norwegian Patient and Users Rights Act § 3–1 [49], the patient has the right to contribute to decisions pertaining to his or her health and care services. Our results confirm the findings of other studies, showing that both the patient and the family are influential in physicians’ decision-making [50–53]. Like McDermot and colleagues [51] we found that the patient’s wishes were a key factor in the physician’s decision-making. Simultaneously, both the patient and the family could pressure the physician into conducting medical exams or admitting the patient to the hospital.

The nurses

The nurses were described as an important source of information, and their competence in caring for the patient and in conveying adequate information affected physicians’ decisions. As in our study, variation in nurse competence in Norwegian nursing homes has previously been described by Bing- Jonsson and colleagues [54]. However, the competence was perceived as improving over time in the included municipalities. This improvement could be explained by new and more demanding requirements on municipalities under the Coordination
Recent research echoes our study and shows that there is a higher threshold to get nursing home placements or homecare services after the introduction of Coordination reform [56]. Combined with older and sicker patients being discharged, it is likely that lower nursing home coverage could affect readmission rates. In their investigation of resource utilization and quality in the healthcare service, the office of the Auditor General of Norway found little or no increase in nursing home capacity after the introduction of the Coordination reform [57]. Meanwhile the number of patients in homecare has increased, the patients are sicker, and have a greater need for care than before [33]. The nurses in homecare are also meeting new challenges, and the GPs and ER doctors are facing a new patient population. This study has not investigated the home care service, but more research in this area is necessary to understand hospital readmissions in totality. Still, these findings reveal several human, technological, and organizational factors e.g. Carayon et al. [58] influencing hospital readmissions, and can be useful in the quality and safety work and in reduction of hospital readmissions.

**Limitations of the study**

The methodological limitations of case study research and qualitative research were under constant evaluation throughout the research period. Some confounders still need to be addressed when interpreting the results of the study. The cases of this study were selected through convenience sampling, meaning that the study could be vulnerable to selection bias. However, the study aimed to investigate two contrasting municipalities based on readmission rates at the time of recruitment, making convenience sampling appropriate. During data collection, publications of new readmission rates showed an equalization between the municipalities. This could be considered a limitation. The cases were, however, initially chosen based on contrasting rates to explore possible variations in the decision-making involved in readmission processes. Moreover, hospital readmissions were reported as a national and local problem, and there was a need for more knowledge about why differences between municipalities occur. Hence, the aim of learning more about what factors influence GPs’ and nursing home physicians’ decision-making in hospital readmissions in two municipalities affiliated with the same hospital was still relevant and followed throughout the research.

Further, it was difficult to recruit GPs and nursing home physicians because of their time constraints, and this limited our selection options. The convenience sampling and the limited selection options could have caused us to miss more experienced GPs in Municipality A, distorting our picture of the differences in GP experiences between the municipalities. During the interviews it was sometimes difficult for the GPs to distinguish hospital readmissions from hospital admissions, and necessary from unnecessary readmissions as their experience with these cases were retrospective. More extensive observations could have given more accurate data on specific types of readmissions. Lastly, some of the GPs came from outside of Norway, so there were some language difficulties when transcribing the recordings. Still, we believe that we have captured all crucial information.

**Implications for practice and further research**

The findings in this study reveals several factors that influence hospital readmissions, and can be useful in the quality and safety work and in reduction of hospital readmissions. Further, the findings give an understanding of the challenges facing physicians in the municipal healthcare service when making medical decisions. In accordance with our interpretation of CBDT, inexperienced physicians will more often be insecure in patient treatment, and could find it safer to admit the patient to the hospital sooner than experienced physicians would. This could indicate a need for a municipal support system for inexperienced physicians, since they make most
decisions without support from their more experienced colleagues. To obtain insight into hospital readmissions, there is a need for more research in municipalities, especially on GPs’ and nursing home physicians’ decision-making, and nursing home nurses’ and home care nurses’ experience of hospital readmissions and discharges. Also noteworthy are municipal leaders’ experience of hospital readmissions and hospital physicians’ view of discharging patients to the municipalities.

Conclusion
Lack of communication, inadequate continuity and poor information flow were problems causing hospital readmissions and decisions pertaining to hospital readmissions. The cross-case analysis showed only small differences between the two municipalities.

Additional files
Additional file 1: Interview guide GPs/nursing home physicians (DOCX 13 kb)
Additional file 2: Observation guide, physicians in nursing homes (DOCX 13 kb)

Abbreviations
CBDT: Cased-based decision theory; ER: Emergency room; GP: General practitioner; HEBU: Hospital emergency bed unit; HSS: Hospital stay summary; IV: Intravenous; MEBU: Municipal emergency bed unit

Acknowledgements
The authors would like to thank the participants in the interviews and observation for their kind contribution. The authors would like to thank the reviewers for their valuable comments to improve the manuscript.

Availability of data and material
The dataset analyzed during the current study are available from the corresponding author on reasonable request.

Funding
The implementation and publication of this study are funded by the Western Norway University of Applied Sciences.

Authors’ contributions
MKS contributed to the study design, was responsible for the ethical approval application, collected, analyzed and interpreted the data and was the main contributor in writing and revising the manuscript. TK and OR contributed to study design, supervised the project, guided the analysis and was a major contributor in writing and revising the manuscript. All authors read and approved the final manuscript.

Ethics approval and consent to participate
The study has been approved by the Norwegian Center for Research Data (NSD) (Reference number: 49331, Date: 01.08.2016). All participants signed written informed consent to participate in the study.

Consent for publication
Not applicable.

Competing interests
Author SW is a member of the editorial board (Associate Editor) of BMC health services research.

Publisher’s Note
Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

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Received: 22 January 2018 Accepted: 12 September 2018
Published online: 19 September 2018

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Paper II
Nursing home leaders’ and nurses’ experiences of resources, staffing and competence levels and the relation to hospital readmissions – a case study

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Abstract

Background: Thirty-day hospital readmissions represent an international challenge leading to increased prevalence of adverse events, reduced quality of care and pressure on healthcare service’s resources and finances. There is a need for a broader understanding of hospital readmissions, how they manifest, and how resources in the primary healthcare service may affect hospital readmissions. The aim of the study was to examine how nurses and nursing home leaders experienced the resource situation, staffing and competence level in municipal healthcare services, and if and how they experienced these factors to influence hospital readmissions.

Method: The study was conducted as a comparative case study of two municipalities affiliated with the same hospital, chosen for historical differences in readmission rates. Nurses and leaders from four nursing homes participated in focus groups and interviews. Data were analyzed within and across cases.

Results: The analysis resulted in four common themes, with some variation in each municipality, describing nurses’ and leaders’ experience of the nursing home resource situation, staffing level and competence and their perception of factors affecting hospital readmissions. The nursing home patients were described as becoming increasingly complex with a subsequent need for increased nurse competence. There was variation in competence and staffing between nursing homes, but capacity building was an overall focus. Economic limitations and attempts at saving through cost-cutting were present, but not perceived as affecting patient care and the availability of medical equipment. Several factors such as nurse competence and staffing, physician coverage, and adequate communication and documentation, were recognized as factors affecting hospital readmissions across the municipalities.

Conclusion: Several factors related to nurses’ and leaders’ experience of the resource situation, staffing and competence level were suggested to affect hospital readmissions and the municipalities were similar in their answers regarding these factors. Patients were perceived as more complex with higher patient mortality forcing long-term nursing homes to shift towards an acute care or palliative function, and short-term nursing homes to function as “small hospitals”, requiring higher nurse competence. Staffing, competence and physician coverage did not seem to have adjusted to the new patient group in some nursing homes.

Keywords: Hospital readmissions, Patient safety, Nurse staffing, Nurse competence, Financial resources
Background

Thirty-day hospital readmissions are challenging for healthcare services internationally, signalling an increased prevalence of adverse events, and reduced quality of care. They contribute to major strains on healthcare services’ resources and finances [1]. In Norway hospital readmissions have been an increasing problem over the past five years, with readmission rates ranging from 10.3 - 22.9% across different municipalities that provide primary health and social care [2]. Studies show that the incidence of hospital readmissions are higher among elderly patients compared to the general population, and patients with chronic illnesses and comorbidities are overrepresented [3, 4].

As a part of the Coordination Reform introduced to the Norwegian healthcare system in 2012, municipalities were required to take on more of the secondary healthcare services tasks, leading to earlier hospital discharges and more complex patients being discharged to the municipal healthcare services [5]. This has, in turn, led to increased pressure and new demands on nursing homes and homecare services, including the need for staff to perform more complex nursing tasks, and accept higher workloads, especially the amount of administrative work, leading to concomitant work pressures on staff [6].

In parallel with other countries, within the next decade, the proportion of elderly people in Norway will increase, with associated additional public health and economic burdens [7, 8]. Norwegian population projections are predicting an increase from four to 10 % in people aged 80 years or older by 2060 [9]. The aging population will create even more pressure on the resources of healthcare services and may further compound the problem of hospital readmissions. Therefore, it is important to gain a broader understanding of how hospital readmissions manifest and, more specifically, how resources in the municipal healthcare services may affect hospital readmissions.

Most studies of hospital readmissions focus on hospital readmission rates [1, 10], their predictors [3, 11, 12], attempts to reduce them [13, 14] and improvement measures [15, 16]. There has been less qualitative focus on understanding the factors that lead to hospital readmissions from the perspective of leaders and nurses working in primary care. Indeed, primary healthcare providers have mostly been omitted from readmission research, despite their important role in caring for the patient post hospital discharge. Therefore there is a need to investigate hospital readmissions from the perspective of primary healthcare services and to document the issues municipal healthcare personnel perceive as influencing hospital readmissions [25].

Aim and research question

The aim of the study was to examine how nurses and nursing home leaders experienced the resource situation, staffing and competence level in municipal healthcare services, and if and how they experienced these factors to influence hospital readmissions. The following research question guided the study: How do nurses and leaders in nursing homes experience the resource situation, staffing and competence level, and how do they consider these factors as possible reasons for hospital readmissions from their organization?

By illustrating nurses and nursing home leaders’ experiences of nursing home resources, and their perception of factors influencing hospital readmissions, this paper provides a broader insight in the hospital readmission problem and how resources may affect hospital readmissions.

Methods

Study design

This research was conducted as a comparative embedded case study of two Norwegian municipalities. The municipalities were selected for comparison because they were affiliated with the same hospital, and had differences in their readmission rates at the time of recruitment (19.2% in Municipality A and 15.2% in Municipality B in 2014), consequently anticipating contrasting results and variation between the municipalities (contrasting case selection) [17]. However, during the research period and prior to the recruitment of the included participants, the differences between the selected municipalities evened out (Fig. 1.) [2]. Nevertheless, of two cases allowed for exploration of similarities and differences between the included municipalities [17].

Context

The Norwegian healthcare system is divided into primary and a secondary healthcare services (Fig. 2), each separately financed by public funds. The municipalities are responsible for providing primary healthcare services such as general practitioners (GPs), emergency rooms (ER), nursing homes and home care services, and each has different funding sources (municipal taxes, user fees and state grants) [18]. Apart from the earmarked subsidies provided by the state, the municipalities have discretion in how to organize and fund the primary healthcare services within the scope of overarching national regulations, leading to differences in how healthcare services are delivered between them (e.g. such as in nursing home coverage and staffing mix) [19].

The organization of care in the two included municipalities was similar. The nursing home services were divided into long-term- and short-term nursing homes. The short-term nursing homes were further divided into
specialized wards like palliative care, rehabilitation, municipal emergency bed units (MEBUs) and hospital emergency bed units (HEBUs). MEBUs are placements for patients with conditions not requiring hospitalization where the municipality itself can examine, treat or provide care for the patient. HEBUs are beds for patients discharged from the hospital in need of further short-term treatment in the municipality [20]. The specialization of the short-term nursing home and the development of the MEBUs and the HEBUs came as a consequence of new demands imposed by the Coordination Reform. These reform measures also obligated the municipalities to co-finance municipal patients’ treatment in the secondary healthcare service, based on Diagnosis Related Groups (DRGs). Further, the municipalities have to pay the hospital costs for patients not in need of further hospital care. When the hospital physician assesses the patient as ready for discharge, the municipalities are contacted to provide further care within 24 h or pay the hospital per day fee of 4505 Norwegian kroner (USD$555) [21].

The nursing home physician coverage differed between the nursing homes and the municipalities. In the long-term nursing home in Municipality A, they had a regular physician present one day a week, while in Municipality B, three regular physicians were present four days a week. In both short-term nursing homes the physician was present five days a week. Common for all nursing homes was that the municipal emergency room (ER) doctor was responsible when the nursing home physician was not present during the day, afternoons, nights and weekends [25]. Apart from physician coverage, the total staffing per patient were similar but with some variation (Table 1). There were, however, larger differences in the distribution of nurses, certified nurse assistants (CNA), and assistants within and between the municipalities (Table 1).

Sample and recruitment of municipalities
Municipality A and B were recruited based on readmission rates reported by the Norwegian Directorate of Health in 2014 [22]. Once municipalities were identified, the head of the care department in each was approached and asked to provide contact information for suitable nursing homes and nursing home leaders. The nursing homes needed to be located within the included municipalities, and the leaders were selected based on their position in the included nursing homes. Further contact with the nursing homes was made by the first author. One short-term- and one long-term nursing home in each municipality was included in the study. The nursing homes were similar in organization but had differences in size and structure (Table 2). In cooperation with the first author, the recruited nursing home leaders invited nurses in their departments to participate in focus group interviews and scheduled the interviews based on the nurses’ working schedule. To be eligible for inclusion in the study, the nurses needed to work in a 50% position or more and have daily patient contact.

Data collection
Data collection consisted of semi-structured interviews with nursing home leaders and focus group interviews with nurses. One nursing home leader and one ward manager from each nursing home participated in interviews, with the exception of the long-term nursing home in Municipality B, where only the leader was available, making a total of seven leaders. Participants had variable levels of experience as leaders, but all had previously worked as nurses. Four focus groups (one for each
nursing home) were conducted with groups of 3–6 nurses, resulting in a total of 17 participants. The nurses had differences in total work experience, work experience at the current nursing home and in their specialized backgrounds.

The interviews were conducted from September–October 2017. The focus group interviews with nurses were based on an interview guide (Additional file 1) with questions related to: available resources and patient care; organizational structure and patient safety; changes in the organization; and implications of the Coordination Reform. One moderator (first author) and one observer (third author) with healthcare backgrounds were responsible for conducting the focus group interviews. The interviews took place in the current nursing homes and lasted for approximately one hour.

Semi structured interviews with the leaders were conducted from October–November 2017 by the first author and covered similar, but slightly different topics to the nurse focus groups (Additional file 2), including: available resources and finances; organizational structure and readmissions; changes in the organization; and implication of the Coordination Reform. The interviews were conducted in the current nursing homes and lasted for approximately one hour. All interviews were audio recorded and transcribed by the first author.

Data analysis
The data material was analyzed using Granheim and Lundmans' qualitative content analysis approach [23, 24]. The first author (MKG) was responsible for the analysis with input from SW, TK, and OR who read transcripts and discussed theme development throughout the analysis period. JB and KC took part in discussions regarding theme development and refinement, and offered advice. Within-case analysis in each municipality was conducted. The embedded units (nurses and leaders in each nursing home) [25] were analyzed separately in accordance with Granheim and Lundmans' approach, to capture information within each unit [23]. Meaning components were extracted from the text and further condensed, coded and categorized with a focus on the manifest content [23, 24]. The categories from each embedded unit were later pooled together based on common characteristics and sorted under four sub-themes in each municipality showing small differences between the municipalities. An example of the analysis process in theme 1 is showed in Table 3. Next, the eight sub-themes were sorted under four common themes for the two municipalities with focus on similar features (Table 4). A cross-case analysis of the categories in each municipality was also conducted to find similarities and differences between the two municipalities [17]. These similarities and differences are considered in the results.

Results
The analysis of the data material resulted in four common themes for both municipalities describing staffing and competence, organization and cooperation, economic factors.
and perceived predictors of hospital readmissions (Table 4). Variation and similarities were found across nursing homes and municipalities. Results below are reported following common themes for the municipalities.

**T1: High nursing demands – Variation in staffing and competence**

*Complex patients*

There was a mutual agreement among nurses and leaders in both municipalities that the nursing home patients had become sicker and more complex following the Coordination Reform. A nurse in the short-term nursing home (STNH) of Municipality A described the patients as having "one foot in the grave" when receiving nursing home placement. Nurses in the long-term nursing home (LTNH) in the same municipality talked about complex nursing procedures and multi-morbid patients and that long-term patients were not necessarily long-term patients anymore because they often passed away a short time after arrival. Their leaders commented on this too:

(...) We get new patients, they live for a month, and then there is new patients and then they live...well, they live for a very short time [after arrival]. And the month that they are here [at the nursing home], they require an extreme amount of follow-up. (Leader LTNH, Municipality A)

In Municipality B, the nurses in the LTNH described their nursing home as a "small hospital" with advanced procedures and advanced patients. Their leader emphasized the complexity of the patients and described their conditions as being more time-consuming than before.

Nurses and leaders in both municipalities had a perception that patients were being discharged too early, and without completed treatment. Participants questioned whether patients were actually ready for hospital discharge due to the severity of their condition, especially in the STNH in Municipality B. In the LTNH of Municipality A, they had a perception that the hospital disclaimed all responsibility when they perceived the patient as ready for discharge. The nurses and leaders of the STNH in Municipality B also had thoughts about the complexity of the patients they discharged to the home care service.

We got an admission to the MEBU. A lady with malnutrition and dehydration. When she came here, she both ate and drank herself and didn’t need any fluid treatment. She just needed the care (...) She thrived at the MEBU and was flourishing. Then she got discharged, and we were thinking, we need to be a little bit on the alert in this case. So we notified the need for close nutritional follow-up to the home care service. A week passed, and the patient was readmitted here at the ward, malnourished and dehydrated (nurse STNH, Municipality B).

*Capacity building*

Capacity building was a focus in both municipalities. In the LTNH in municipality A, capacity building involved educating nurses and encouraging Assistants to take on

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<th>Table 1</th>
<th>Overview of staffing-to-patient ratio</th>
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<td>Nursing home</td>
<td>Nurse to Patient ratio</td>
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<td>Municipality A</td>
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<th>Table 2</th>
<th>Organization and structure of included nursing homes</th>
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<td>Municipality A</td>
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<td>Total nursing homes in the municipalities</td>
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<td>Municipality B</td>
<td>Nursing home</td>
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<td>Total nursing homes in the municipalities</td>
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<td>Theme</td>
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<td>T1: High nursing demands – variation in staffing and competence</td>
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<td>Acceptable staffing (LST)</td>
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<td>Varying competence (LLT)</td>
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formal education to become certified nurse assistants (CNA). There was variation across nursing homes in Municipality A as to whether leaders were the driving force in capacity building or if nurses themselves took responsibility such as by attending courses or starting continuing educations. Nurses in Municipality B described mostly taking responsibility for their own capacity building by learning from each other and seeking external competence (e.g. from hospital nurses within relevant wards) when necessary. However, the leaders in both nursing homes in Municipality B talked about having current formalized capacity building plans. In the long-term nursing home their plan revolved around increasing assistant competence, in the STNH they wanted to educate nurses within certain areas, such as palliative care or rehabilitation.

In Municipality B the leaders of the STNH described the nurses’ competence to be varying, yet most of the employed nurses had completed one or several continuing education programs within relevant areas. The leader of the LTNH described the competence to be good on all levels and strongly believed that the patients were being well taken care of.

Staffing
There were variations in perceptions of staffing between and within municipalities. In Municipality A, in the fall of 2016 they had received instructions from the municipality’s administrators to cut staffing. Leaders in the STNH stated that the overall staffing was seen as reasonable to cover the needs of the patients despite these cuts. The nurses were, however, dissatisfied with the staffing levels during weekends, because they were sometimes unpredictable as nurses on sick leave were replaced by assistants. The leaders supported this claim and described the nurse coverage as satisfactory in some, but not all, wards. They further described limitations in hiring in extra personnel for patients needing one-to-one supervision.

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Competence
In Municipality A, the nurses of the STNH reported that the nursing home competence was high, and they found security in “always having someone to ask”. The leaders also agreed that competence was high; they perceived the nursing home to have one of the highest competence levels in the municipality. Leaders in the LTNH had experienced an increased need for nurse competence over the past six years, as a consequence of changes in the patient groups. They were still trying to meet this change in demand by increasing already existing nurse positions or changing CNA-positions in to nurse positions. The current competence of the existing nurses was described as varying.

It's people – like in other societies there are variations (...) some are fierce and seek new knowledge constantly, while others are at work, and then they go home... and... it varies. (leader STNH, Municipality, A).

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<table>
<thead>
<tr>
<th>Common Themes</th>
<th>T1: High nursing demands – variation in staffing and competence</th>
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<td>ST2: Reasonable staffing and competence (Municipality B)</td>
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<td>ST3: Opposing thoughts on economic limitations (Municipality B)</td>
<td>ST4: Predictors of hospital readmissions as perceived by nurses and leaders (Municipality B)</td>
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<td>ST3: Economic limitations do not affect access to medical equipment (A)</td>
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totally beat when I get home. I’m starting to feel that this isn’t right! It shouldn’t be like this at a work place (nurse LTNH, Municipality A).

The nurses further experienced an increased amount of administrative work after a change in the leadership structure of the nursing home. They also often reported being the only nurse during a shift, causing even more pressure and insecurity. The leaders confirmed these problems and were constantly trying to balance finances and quality of care.

In Municipality B the nurse staffing levels were described as satisfactory in both nursing homes most of the time, but vulnerable during weekends or if nurses were on sick leave. The leader of the LTNH was still working on increasing the nurse coverage and, even though recruitment had become easier after the increased nurse density in the nursing home, there were still some struggles in attracting new nurses.

**Physician coverage**

The physician coverage was reported as high in the short-term nursing homes of both municipalities. In the LTNHs there was some variation. In Municipality A, physicians in both municipalities were involved a lot of moving of the patients to find suitable rooms, or if two patients did not get on well together, this now two patients in a room originally designed for one. The nurses described it as cramped as there were single rooms were converted to double rooms, leaving an entire ward empty. With all patients gathered in one ward, less personnel were needed to take care of the patients. The nurses described it as cramped as there were now two patients in a room originally designed for one. If a patient arrived who was unable to stay in a double room, or if two patients did not get on well together, this involved a lot of moving of the patients to find suitable solutions.

In Municipality B they further experienced patients in need of hospital care being wrongfully admitted to the MEBU, and then transferred to the hospital a short time after arrival.

In Municipality A there were also reports of patients arriving from the ER without the nurses being notified ahead of time or this information not reaching the nurses at the moment of arrival. The time of arrival from the hospital was sometimes seen as inappropriate.

It is fun [ironically] when they arrive [from the hospital] a Friday night and there is no physician on call during weekends ... Yeah, and on Monday they get readmitted to the hospital, or the next day, on Saturday. (nurses STNH, Municipality A).

**Patient flow and patient composition**

The patient flow was experienced as an organizational challenge by the leaders of the STNH in Municipality A. They were having problems discharging patients in need of further care due to lack of nursing home placements, causing a bottleneck situation. Consequently, MEBUs, which are a 72-h offer, were filled up, occupying beds for patients in acute need of care placement. In Municipality B, they had experienced pressure to discharge patients out of the short-term placements due to full wards. Further, the patient composition was sometimes seen as a challenge in the MEBUs in both municipalities:

We are a reception ward [MEBU] and are supposed to take care of all kinds of patients. That can be a challenge sometimes. Patients with disruptive behavior inside a ward where... where people [have] chronic obstructive pulmonary disease (COPD) for example. People are terminal, they’re having panic attacks, and they hear people in the hallway screaming and shouting and... yeah ... yelling at the staff. (leader STNH, Municipality A).

**Organization and cooperation**

The STNH of Municipality A was struggling with saving measures introduced by the municipal leaders, where single rooms were converted to double rooms, leaving an entire ward empty. With all patients gathered in one ward, less personnel were needed to take care of the patients. The nurses described it as cramped as there were now two patients in a room originally designed for one. If a patient arrived who was unable to stay in a double room, or if two patients did not get on well together, this involved a lot of moving of the patients to find suitable solutions.

In Municipality B, there were different opinions and focuses around the organization in the two nursing
homes. Firstly, leaders in both nursing homes found co-location of short-term and long-term services positive. The leader of the STNH highlighted the stability the patients experienced when they were coming to the same place every time they needed a short-term stay. The leader of the LTNH suggested that the managing of one service led them to being more focused and effective and the services becoming more specialized. The leader was, however, not satisfied with the new cooperation agreement between the health trust and municipalities developed after the Coordination Reform and claimed that some guidelines imposed by the state went against their previous agreement, making the coordination between the services more challenging. However, the nurses in the LTNH described the cooperation between the hospital and nursing homes when the patients were discharged as good.

I remember last time, when we were learning how to use the BiPAP [Bi level positive airways pressure] machine. The patient was hospitalized and they were waiting to discharge the patient until we let them know that we've had training in using the machine... It helps when they give us time (nurse LTNH, Municipality B).

T3: Economic limitations
Access to medical equipment did not seem to be an issue affecting hospital readmissions in Municipality A. Although leaders in both nursing homes reported financial limitations, access to medical equipment was perceived as sufficient. Leaders in the LTNH admitted that the equipment budget could have been larger, but they managed to buy what they needed and invested in equipment where necessary. The leaders in the STNH of Municipality A, reported having “plenty” of medical equipment after the start of a new patient safety project. The financial costs of this equipment were covered by grants that went beyond the usual budget as it was linked to a patient safety project.

In Municipality B, the leaders agreed that economic factors and the need for cost savings had always been a common issue in primary care.

Finances and professional soundness are always a theme and a dilemma. To find a resource use that secures a good night’s sleep and at the same time doesn’t cost so much that it destroys your sleep, I guess that is what it is all about (leader LTNH, Municipality B).

Leaders in the STNH of Municipality B stated that the financial situation was improving and that saving measures most commonly affected the staff’s access to external courses and did not affect the patient care or the equipment needed to provide proper care. The nurses in the same nursing home disagreed with this perspective and reported that economic factors in fact did affect the patients’ access to medical equipment such as bandages. Some nurses further suggested that money was prioritised over patients’ needs and that they were told to give the patients good care, but not the best care.

In this job, I early on sensed that the nursing profession and the healthcare services’ economy often are in conflict. And I am realizing how fast we are adapting to the economic constraints. We become very obedient to the organization, and sometimes we are in conflict with ourselves and we are contradicting our own professional assessments based on the economy we have … (nurse STNH, Municipality B).

The leader of the LTNH in Municipality B compared access to technical helping aids with EHS (Environment, Health and Safety), and indicated that helping aids were ordered as needed to avoid sick leave. The nurses in the LTNH were satisfied with the access to equipment.

T4: Perceived predictors of hospital readmissions
Nurses and leaders within the LTNH, in both municipalities, reported that there was an overall focus in avoiding hospital admissions and readmissions and that hospital readmissions were seen as highly necessary when they occurred.

A number of factors were perceived as influencing readmissions in the two municipalities. First, high nurse competence in the nursing homes was stated as an important aspect in avoiding the need for hospital readmissions.

I believe that competence is alpha omega [fundamental] in avoiding hospital readmissions. The more competence we have, the more [patients] we can take care of here [in the nursing home]. And we have the equipment to do so! (leader LTNH, Municipality A).

The leader further suggested that if the nurses were unsure of their ability to handle complex patients, it could lead to hospital readmissions. In Municipality B, nurse staffing was mentioned as another important factor. The leader of the LTNH expressed that it was of importance that the nurses had nurse colleagues to discuss daily issues with; the threshold for contacting the ER doctor if problems occurred...
became higher when there was room for professional discussions between nurses.

Physician coverage and physician competence was seen as important in both municipalities. In the LTNH of Municipality B the nurses stressed the importance of having a physician present, as they had most days of the week. Their leader further suggested that the more often a physician was present at the nursing home, the more his or her knowledge of the patients would increase, as would the possibility of having a good dialogue with the patients’ next of kin, which could lead to the prevention of hospital readmissions. In Municipality A, they emphasized good communication between the physicians in the municipality as a key factor. Participants suggested that the nursing home physicians should provide and document clear guidelines for the treatment of the nursing home patients so that other physicians involved in the patient treatment could access this information easily. In Municipality B, they talked about the importance of good cooperation between the health service agencies in general. More interdisciplinary cooperation was also mentioned as a factor preventing hospital readmissions.

When I started to work here last year, we had physiotherapist and an occupational therapist present every day. We sensed that this was a good tool in preparing the patient for discharge. Now, we only have them here a couple of hours a week, and that is very little. Things are being discontinued in regards to rehabilitation and preparation for discharge and in preventing hospital readmissions (nurse STNH, Municipality B).

Nurses and leaders in both municipalities believed that longer hospital stays were important in preventing hospital readmissions. Further, the leaders in the STNH of Municipality A strongly believed that the care they provided was a preventive measure against hospital readmissions.

If they [patients] had been sent home straight after [a hospital stay], they wouldn’t have had the strength to, in a way, do that much, they would have been in a greater risk of being readmitted if they were to come home [instead of STNH] (leader STNH, Municipality A).

Pressure from the patient’s family was, in the STNH of Municipality B, seen as a factor leading to hospital readmissions. If the patients’ family put a lot of pressure on getting the patient admitted to the hospital, for example, because they believed that the patient could get better treatment there, it was hard to resist.

Lastly, the leader of the LTNH in the same municipality reported that physical distance to hospital affected hospital readmissions. If the nursing home was closer to the hospital, it would be easier to admit a patient to be “sure”, while it would be a much bigger constraint for the patient if the hospital was further away. The leader also mentioned the media and the attention of the media on all the things going wrong in the healthcare service, which was putting pressure on the physician in charge in deciding whether to admit or not.

Discussion

From the nurses’ and leaders’ perspective, the nursing homes patients had become sicker and more complex after the introduction of the Coordination Reform, consequently demanding greater nursing competence. The access to resources in terms of staffing, competence and physician coverage varied across nursing homes, however, capacity building was an overall focus. Organizational difficulties were mostly detected in the short-term nursing homes, but organizational changes had also had positive effects. As seen by the nurses and leaders, economic limitations and municipal attempts at cost savings were present, but did mostly not affect patient care and the ability to access medical equipment. Several factors were perceived as affecting hospital readmission by nurses and leaders (e.g. nurse staffing, competence, physician coverage, nursing home documentation, early hospital discharges). All of this concertedly influences measures which have to be considered to prevent hospital readmissions.

Nurse staffing and physician coverage

In all nursing homes, there were descriptions of increasing complexity in the care needs of nursing home residents, forcing the nursing homes to function as small hospitals. This increase in complexity has previously been described [6, 25], and was stated as a natural development in accordance with the new directions of the Norwegian Coordination Reform [26]. The acuity of the patients has been reported to be too high in previous research, making hospital admissions or readmissions necessary due to the lack of adequate nurse competence or resources [27]. Nurses and nursing home leaders in the current study described caring for patients who had become so deteriorated when arriving to the LTNH that the long-term care function had shifted towards a short term acute function, with high mortality rate of admitted patients. These findings are supported by a recent Norwegian study showing an increase in mortality among nursing home patients since the introduction of the Coordination Reform [28]. Despite
this shift in the patient group, the LTNHs in this study had lower physician and nurse coverage than the STNH, and one could question if these new conditions had not been taken into consideration by municipal leaders. Previous research has shown that unstable nurse coverage and low nurse staffing in nursing homes is a factor increasing the propensity for hospital admissions and readmissions [29, 30]. A previous study, within the two case municipalities, showed that extensive use of ER doctors was another factor increasing the chance of hospital readmissions, as the ER doctors were not familiar with the patients and their clinical status [27]. Higher levels of continuity of care in doctors have also proven to be associated with lower mortality rates [31]. Previous research demonstrated connections between low nurse staffing and direct/indirect adverse patient events in hospitals [32]. There is, however, little knowledge about staffing and adverse events in the municipal healthcare service, but the results here support the view that unsatisfactory nurse staffing can lead to greater risk of adverse events and, further, hospital admissions and readmissions. With that in mind, the overall aim in reducing hospital readmissions [33] is at odds with current physician and nurse staffing levels in the LTNH, unstable weekend nurse staffing across nursing homes and the recent staff cuts experienced, particularly in Municipality A.

Competence and capacity-building

Capacity-building was a focus in all nursing homes, but competence seemed to mean different things to the participants of the study. Where the nurse staffing was perceived as unsatisfactory, competence first of all meant increasing the nurse coverage. In all nursing homes competence meant increasing the number of CNAs and decreasing the numbers of assistants. Another overall understanding of competence was to have nurses with continuing education (e.g. geriatric nurses or wound nurses). The nurses in the STNH of Municipality B reported desiring more competence from other fields of expertise (e.g. physiotherapists and occupational therapists). These nurses had one or several continuing education programs, which could indicate varying focuses in capacity building depending on current competence holdings in the nursing home. Variation in nurse competence [34] and unsatisfactory competence in nursing homes [27] have also been recognized in previous research. The participants in the current study (nurses and leaders) and the participants in a previous study (GPs and nursing home physicians) [27] had an overall belief that nurse competence in the municipal healthcare service was a crucial factor in reducing hospital readmissions. Romøren at al. (2017) further showed that organized training in specific nurse procedures (intra venous antibiotic treatment) in nursing homes increased the nursing home’s ability to care for the patients onsite [35].

Nursing home organization

Organizational difficulties were most often reported by participants from the STNHs. In both municipalities there were issues associated with the admission process to MEBUs (e.g. undiagnosed patients, missing treatment plan, wrongly placed patients, time of admission) which could lead to hospital readmissions. These difficulties can be connected to the novelty of the MEBU institution, and may have been caused by routines not being inculcated among the physician population, or unclear rules in the application of the beds [36]. A report describing the function of the MEBUs also shows that the criteria for admitting patients to the MEBUs are inconclusive and highly subjective, making it difficult for the physicians to make accurate decisions [37]. Lastly, these difficulties can be a result of understaffed or busy ERs with limited time to do the necessary preparatory work before admitting patients to MEBUs [25]. Another organizational problem described in the MEBUs (a 72-h stay) manifested in the difficulties in providing further care for patients in need of long or short-term institutional care after their stay. Problems in providing nursing home placements and the negative effect this has on hospital readmissions have been described elsewhere [25, 38].

Human factors and system perspective

Overall, our study shows that nursing home leaders and nurses perceive multiple factors contributing to work practice in nursing homes and decisions about whether a patient can be treated in a nursing home or if a hospital readmission is required. Our results can be interpreted using a human factors and systems perspective, which focuses on the interactions between the environment and the individuals within it [39]. Healthcare personnel have tasks that need to be conducted with the help of different tools or instruments such as hospital stay summaries or appropriate medical equipment. These tasks are conducted within a specific physical environment under specific organizational conditions, which in our study include increasingly complex patients, reduced capacity (staffing, competence, beds) to receive patients and sometimes limited access to physicians. Five components of a human factors perspective as described by Carayon et al. [39]—person, task, tool/instrument, physical environment, and organizational conditions—all interact with, and affect, each other, and produce diverse outcomes such as performance, safety,
work life, quality and health. All parts in an organization affect and depend on one another. Changes, such as the Coordination Reform or cuts in staffing, can therefore affect organizational outcomes [39]. More specifically, a human factors perspective can be suitable for understanding the organization and context of primary health-care services and how this affects variation in readmission rates [40]. Our study shows that the readmission rates have evened out during the period of study and factors that might explain why, relate to competence level, staffing level, physician coverage, time of discharge from hospital, interaction between hospital and nursing home, and nursing home organization (Fig. 3).

**Strengths and limitations of the study**

This study is the first of its kind to explore nurses’ and nursing home leaders’ experience of the resource situation, staffing and competence level in relation to the readmission issue from the perspective of nursing home nurses and leaders, and particularly in the context of a major reform to primary and hospital services (the Coordination Reform). As to the limitations, rather than demonstrating causation, the study provides insight into the possible associations between variables. The study also consisted of a small sample of staff and nursing homes in two municipalities limiting the scope and generalizability [41]. This was particularly true in LTNH in Municipality B, where despite efforts they were only able to recruit one leader. Nevertheless, it provides an in-depth insight into the selected municipalities and establishes a logic that could be applicable to other similar contexts [42].

Other limitations relate to methods of recruitment and data collection. The nurses included in the study were selected by their leader, with the risk of selection bias or unintended pressure to participate in the study. All the participants were, however, informed about their right to withdraw from the study at any time. Nurse selection by leaders was necessary to combine interview time with work schedules and staffing in the wards. Focus group interviews may introduce bias related to group dynamics [41], for example, that participants have different degrees of introversion and extroversion, making some opinions potentially more dominant than others. This was taken into consideration during the focus group interviews by directly asking questions to “silent participants”.

The overview of staffing to patient ratio in the nursing homes (Table 1) are based on the total amount of employees in the nursing homes. This table do not provide information about the ratio on each shift, vacant positions, part time positions, patient overlay or unoccupied beds, and can therefore not provide a complete picture of the staffing situation.

**Implications for practise and further research**

This paper provides an insight into nursing home staff’s perspectives on resource situation, staffing and competence level and factors affecting hospital readmissions, and suggests measures that could prevent hospital readmissions (e.g. improved documentation in the nursing homes, adequate staffing and competence, better
coordination between the health service levels). The paper further shows that there is a complex interaction between the constituent factors in hospital readmissions, which is not yet fully understood, demonstrating a need for further research. More research on readmissions from a municipal or primary care perspective, involving the home care service and the hospital physicians' experience of readmissions from the municipalities is needed.

Conclusions
The findings suggest that nurses and leaders experienced an increasingly complex patient group which required improved competence in the nursing homes. In line with the changed patient group, patients had become more demanding and mortality among nursing home residents were perceived to have increased, producing a shift in staffing, competence and physician coverage did not seem adjusted to the new demands in all the nursing homes. Access to medical equipment was seen as satisfactory, and patients were mostly not affected by ongoing attempts at savings in the municipalities. Several factors were suggested to affect hospital readmissions (e.g. high nurse competence, nurse and physician staffing, early hospital discharge) and the municipalities were similar in their answers regarding the importance of these factors. The cross-case analysis showed differences in nurse staffing and physician coverage and that capacity building had different meanings in the institutions, depending on their resource situation.

Additional files

Additional file 1: Interview guide, focus group interview, nurses in nursing homes. (DOCX 15 kb)
Additional file 2: Interview guide, individual interviews, nursing home leaders. (DOCX 15 kb)

Abbreviations
DRG: Diagnosis related groups; EHS: Environment, health and safety; ER: Emergency room; GP: General practitioner; HEBU: Hospital emergency bed unit; LTT: Leaders long-term; LPN: Licensed practical nurse; LST: Leaders short-term; LTNH: Long-term nursing home; NLT: Nurses long-term; NST: Nurses short-term; STHM: Short-term nursing home

Acknowledgements
The authors want to thank the participating nurses and leaders for their contribution to the study, and the municipal leaders for helping organize the recruitment of nursing homes. We would also like to thank Ole-Jørn Borum for graphical design on Figs. 2 and 3. And lastly, the reviewers for their comments to improve our article.

Funding
The implementation and publication of this study is funded by the Western Norway University of Applied Sciences. The funding body was not involved in the research process (design of the study, data collection, analysis, or interpretation of data) or in writing the manuscript.

Availability of data and materials
The dataset analyzed during the current study are available from the corresponding author upon request.

Authors’ contributions
MHO contributed to the study design, was responsible for ethical approval application, collected and interpreted the data and was the main contributor in writing and revising the manuscript. TK contributed to the study design, participated in the focus group interviews, guided the analysis of the data, and the writing and revising of the manuscript. OR contributed to study design, guided the analysis of the data and the writing and revising of the manuscript. JR contributed to writing and revising the manuscript, and discussed the theme development and refinement. KC contributed to writing and revising the manuscript and discussed the theme development and refinement. SW contributed to study design, supervised the project, guided the analysis and was a major contributor in writing and revising the manuscript. The final manuscript was approved by all authors.

Ethics approval and consent to participate
The study has been approved by the Norwegian Center for Research Data (NSD) (Reference number: 49331, Date: 01.08.2016). All participants signed written informed consent to participate in the study.

Consent for publication
Not applicable.

Competing interests
Author SW is a member of the editorial board (Associate Editor) of BMC Health Services Research. Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

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Received: 9 July 2018 Accepted: 26 November 2018

Published online: 12 December 2018

Available from:

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Paper III
ABSTRACT

Objectives To explore hospital physicians’ views on readmission and discharge processes in the interface between hospitals and municipalities.

Design Qualitative case study.

Setting The Norwegian healthcare system.

Participants Fifteen hospital physicians (residents and consultants) from one hospital, involved in the treatment and discharge of patients.

Results The results of this study showed that patients were being discharged earlier, with more complex medical conditions, than they had been previously, and that discharges sometimes were perceived as premature. Insufficient capacity at the hospital resulted in pressure to discharge patients, but the primary healthcare service of the area was not always able to assume care of these patients. Communication between levels of the healthcare service was limited. The hospital stay summary was the most important, and sometimes only, form of communication between levels. The discharge process was described as complicated and was affected by healthcare personnel, by patients themselves and by aspects of the primary healthcare service. Early hospital discharges, poor communication between healthcare services and inadequacies in the discharge process were perceived to affect hospital readmissions.

Conclusion The results of this study provide a better understanding of hospital physicians’ views on the discharge and hospital readmission processes in the interface between the hospital and the primary healthcare service. The study also identifies discrepancies in governmental requirements, reform regulations and current practices in municipalities and hospitals.

BACKGROUND

Hospital readmissions are a well-known problem in healthcare services worldwide with the hospital discharge process as an influential factor. Hospital discharge procedures play a critical role in the quality of transitional care, specifically on the continuity of information about patients’ treatments, or recommendations for further care. Hospital discharges require communication and coordination among stakeholders and multidisciplinary teams within a hospital, and often communication and coordination with stakeholders in a primary healthcare service, such as nursing home personnel, homecare personnel and general practitioners (GPs).

In 2018, readmission rates varied from 11.8% to 18% in Norwegian hospitals. A reduction in readmission rates and the implementation of well-coordinated transitions between healthcare services have been common goals of Norwegian healthcare services. Reducing readmission rates and coordinated transitions are also overall aims of the Norwegian Ministry of Health and Care Services in terms of the quality of services offered and guaranteeing patient safety. This became particularly evident after the introduction of an extensive health reform (the Coordination reform) in the Norwegian healthcare service in 2012. The reform has led to changes, such as shorter hospital stays, increased pressures on primary healthcare services and a suspected increase in readmission rates.
Different ways of overcoming risks in care transitions and reducing readmissions may exist worldwide. In Norway, the Coordination reform was an attempt to provide seamless transitions by obligating all municipalities responsible for the provision of primary healthcare services to form cooperative agreements with their respective health trusts. These agreements must stipulate who is responsible for healthcare tasks and state guidelines for cooperative efforts in hospital admissions, discharges and rehabilitation. They must also outline cooperative processes for patients who are ready for hospital discharge but in need of further primary healthcare services (e.g., nursing home, home care service and primary care physicians) in a municipality.

Hospital readmissions, hospital discharges and transitional care have previously been well investigated. However, most of the research have separated the three entities, and examined them at each level of the healthcare service. For example, factors affecting hospital readmissions have been explored within the realm of primary healthcare services (e.g., nurse turnover, nurse staffing and performance and care quality) or secondary healthcare services (e.g., staff responsiveness, length of stay and medication-related events). In two previous studies of hospital readmissions, we found that patients with more complex medical conditions were discharged from the hospital earlier, increasing the responsibilities of primary care physicians (e.g., nursing home physicians and GPs) and creating a need for increased competence among the primary care nursing staff. However, nurse competence varied within the primary healthcare services, as did physician staffing and experience. Cooperation and information exchange between the hospital and the primary healthcare services in the municipalities were both seen as insufficient, especially during the discharge process.

To paint a more comprehensive picture of hospital readmissions from primary healthcare services, we explored the discharge process from the hospital physicians’ perspective and investigated their views on hospital
readmissions from the primary healthcare service. Knowledge about the discharging physicians’ views on the primary healthcare service to which a patient is being discharged as well as how factors of primary healthcare and the discharge process affect hospital readmissions could be helpful in understanding the overall process of hospital readmissions.

Context
Norway has a primary healthcare service (eg, nursing homes, home care service and GPs) and a secondary healthcare service (eg, hospitals and psychiatric facilities); each with separate sources of funding. Norwegian municipalities, which are geographically limited areas or communities with some degree of independence from higher government bodies, are by law responsible for ensuring primary healthcare services for their citizens. The Norwegian state has the main responsibility for secondary healthcare services through four regional health trusts, which are responsible for running the hospitals within their respective regions. Improving the cooperation and coordination between the two services has been an important governmental goal for the past decade. Efforts to ensure holistic patient care culminated in the introduction of the Coordination reform in 2012.

The Coordination reform includes target strategies, such as preventive healthcare, earlier treatment and better cooperation, offering the right treatment at the right time and place, and a holistic and coordinated patient-centred healthcare service. Consequently, more healthcare responsibilities have been transferred from the hospital to the municipalities. When a hospitalised patient is assessed as ready for discharge by the hospital physicians, any further responsibility for treatment or rehabilitation lies with the municipality. The municipality has the authority to decide what care services a patient will receive after discharge from a hospital; health professionals in a decision office unit exercise this authority. If a municipality is not able to provide adequate care at this point, an expense of US$750 per day will be levied on the municipality until it can fulfill its obligations. The overall average length of a hospital stay in the investigated area was 7.3 days in 2018. The average length of stay for patients after being deemed as ready for discharge was 4.1 days in the same year.

Following the Coordination reform, systems for electronic communication were implemented to secure adequate communication between healthcare services. Electronic communication is principally nurse-to-nurse communication between the hospital, primary healthcare services (nursing homes or home care personnel) and the decision office. Hospital physicians use electronic communication when sending hospital stay summaries (HSSs) or outpatient notes to GPs. However, the physicians cannot send these documents electronically to nursing home physicians or nurses. There are multiple reasons for this: The establishment of electronic documentation and communication has been a governmental goal connected to the Coordination reform. However, finding suitable solutions for all communication lines has been a process that is not yet complete. In Norway, there are over 400 different municipalities, all of which have their own documentation systems. Moreover, physician staffing arrangements vary between nursing homes (eg, regular nursing home physicians may be available during office hours but not weekends; several GPs may share nursing home tasks; different nursing home wards may have different physicians). It is therefore difficult for a hospital physician to know which nursing home physician should receive the HSS. Additionally, there are usually no common electronic addresses for a nursing home, so the HSS needs to be addressed to a specific physician. Consequently, patient HSSs are sent to the GP who is responsible for coordinating their ongoing care. A temporary solution for sending short messages between a primary healthcare service and a hospital has been introduced in some parts of the healthcare system, pending a national scheme.

AIM OF THE STUDY
The aim of this study was to explore hospital physicians’ views on the readmission and discharge processes for elderly patients in the interface between the hospital and municipalities. The following research questions guided our study:

1. What factors inside and outside the hospital do hospital physicians believe affect the hospital discharge process?
2. How do hospital physicians reflect on reasons for hospital readmissions?

METHODS
Study design
This study was conducted in accordance with Yin’s description of case study research, and it explored hospital readmissions from a primary care perspective.

A case was defined as a municipality and an affiliated hospital. Two municipalities were included. The study focused on readmissions from the perspective of physicians working at the hospital that served the two included municipalities. Standards for reporting qualitative research (SRQR) guidelines (see online supplementary file 1) were used in this article.

Sample and recruitment
Fifteen hospital physicians from different medical and surgical fields (table 1) in a medium-sized Norwegian hospital were recruited. Eligible participants were either consultants or residents involved in both the treatment and the discharge of patients, working in wards with a large proportion of elderly patients. Physicians working in wards where involvement with elderly patients was limited (eg, paediatric wards or maternity wards) were not invited to participate in the study. The hospital physicians were
recruited with help from the hospitals’ administrative staff (Coordination consultant). In addition, snowball sampling was used because recruited hospital physicians encouraged their colleagues to participate. Some physicians were recruited through social networks and personal contacts.\(^1\)\(^2\) Two physicians volunteered to participate after an oral presentation of the study was given at a morning meeting.

**Data collection**

Semistructured interviews were conducted with 15 hospital physicians between August 2018 and January 2019. Each interview took approximately 30 min, depending on participant responses. The interviews covered several subjects in an interview guide (see online supplementary file 2), and the participants were informed prior to the interviews that the study targeted elderly patients. The interviews were audio recorded and transcribed by the first author. Saturation assessment during the data collection period included a valuation of the adequate sample size for our aim, each participant’s information power (participants had characteristics highly specific for our aim, and our various recruitment methods led to the inclusion of participants with a range of experiences) and the quality of dialogue during each interview (most interviews were rich in information and the interviewer had had previous experience with the healthcare service).\(^2\) We further evaluated the interview content at the end of the interview period, and we made certain that little or no new information was added. We continued with two more interviews to ensure that a correct decision had been made about achieving saturation.

**Data analysis**

The interview data were analysed according to Graneheim and Lundman’s approach to content analysis, where the unit of analysis (the transcribed interviews) was divided into meaning units, condensed, coded and sorted into subcategories, categories and themes.\(^3\)\(^4\) We used the analysis programme NVivo 12 Pro at the lower analysis levels (extracting meaning units, coding and enunciating of subcategories). MKG read through the interviews several times, highlighting and sorting relevant meaning units. TK, OR and SW read through the interviews separately to get an overview of the content. Initially, tentative codes were generated to help sort the data material into different units. These codes were changed and reorganised several times during the analysis process to give a suitable overview of the data material. The higher abstraction levels (categories and themes) were analysed manually. The codes and meaning units were copied into a Microsoft Word document and organised in tables. The meaning units were condensed and translated into English. The reorganisation of meaning units and codes continued until they were all sorted adequately. Subcategories emerged during this process, and they were also reorganised several times. Two versions of the coding were sent to TK, OR and SW for discussion and provided a basis for a consultation on the most appropriate solution. During this process, thoughts about possible themes emerged. MKG wrote several summaries in an attempt to understand the underlying meaning of the data material (latent content)\(^5\)\(^6\) and also brought in an outsider to provide an alternative view of the content. Suitable themes were discussed among all the authors. The analysis of the data material resulted in three main themes (an example of the analysis process of theme 1 is shown in table 2).

In addition to the interview data, central elements from the Commissioner’s documents for the Regional Health Authorities from 2012 to 2018 (113 pages) were downloaded and extracted. These documents are publicly available on the internet, are issued once a year and contain requirements from the Ministry of Health and Care Services pertaining to the tasks that are to be carried out in the following year. The Commissioner’s documents have two main purposes: to set management requirements for the regional health authorities and to formally make available funds from the Parliament’s budget decisions to regional health authorities.\(^7\)

The downloaded documents were analysed to provide a sound contextual understanding and to identify requirements stated in the interface between the hospital and municipality concerning hospital readmissions and the discharge processes.

The main features found in the Commissioner’s documents were that there should be established holistic patient care pathways and a clear distribution of tasks between the health trust and municipalities. Healthcare services should offer patients similar or better services than those offered prior to the Coordination reform, which would require close cooperation among the health trusts, the municipalities, the patients and the patients’ next of kin. The healthcare services should be restructured to synchronise patient flow between the two levels, and the intention was to implement the changes when municipalities were ready. The health trusts were tasked with offering support and supervision to the municipalities so that they could provide healthcare services in accordance with laws, regulations and agreements.

**Patient and public involvement**

No patients, patients’ next of kin or healthcare personnel other than physicians participated in this study.

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**Table 1** Overview of included physicians

<table>
<thead>
<tr>
<th>Medical ward</th>
<th>Surgical ward</th>
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<tbody>
<tr>
<td>Fellow</td>
<td>Fellow</td>
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<td>Resident</td>
<td>Resident</td>
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<tr>
<td>Years of experience</td>
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<tr>
<td>18–38</td>
<td>5–28</td>
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<td>1–3</td>
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<table>
<thead>
<tr>
<th>Theme 1 Category</th>
<th>Subcategory</th>
<th>Code</th>
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<tbody>
<tr>
<td>The unforeseen ripple effects of a changed healthcare system</td>
<td>Physicians, next of kin and the patients believe that the hospital discharge is too early</td>
<td>Patients are discharged early</td>
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<tr>
<td></td>
<td></td>
<td>Decreasing hospital stay days has been taken too far</td>
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<td></td>
<td>Early hospital discharges can be difficult for patients</td>
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<td></td>
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<td>It’s too early; we know they’ll come back soon</td>
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<td></td>
<td>Patients with more complicated health conditions are being discharged to the municipalities</td>
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<td></td>
<td></td>
<td>Patients are being discharged earlier than before</td>
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<td></td>
<td>Patients may be discharged too early due to a wrong assessment of their medical condition</td>
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<td>Some patient groups are discharged too early</td>
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<td></td>
<td>Thinking that the discharge was too early in retrospect</td>
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<td></td>
<td></td>
<td>Longer hospital stays</td>
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<td>Next of kin working to keep the patient in the hospital longer</td>
<td>Next of kin can exert pressure on the discharging physician</td>
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<td>Next of kin are insecure</td>
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<td>Next of kin can affect the length of stay</td>
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<td>Next of kin do not affect the discharge data</td>
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<td></td>
<td>Next of kin do not always understand the decisions we make</td>
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<td></td>
<td>Next of kin provide information</td>
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<td>Next of kin should be involved in the discharge meeting</td>
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<td>Some next of kin have more impact than others</td>
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<td>The patient wishes to stay longer</td>
<td>The patients do not want to be discharged</td>
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<td>Negotiation with the patients</td>
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<td>Patients can affect the discharge date</td>
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<td>Patients do not affect the discharge date</td>
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<td>Patients need to be prepared for discharge</td>
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<td>Pressure to discharge</td>
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<td>Pressure lowers the threshold for discharging the patient</td>
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<td>Pressure to make room for new patients</td>
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<td>Setting the discharge date creates pressure</td>
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<td>The system is pressuring us</td>
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<td>Pressure does not affect the medical soundness of discharge decisions</td>
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<td>Deficit of hospital beds</td>
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<td>Pressure does not affect the medical soundness of decisions</td>
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<td></td>
<td></td>
<td>Pressured and busy wards</td>
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<td></td>
<td></td>
<td>Reducing hospital beds</td>
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<tr>
<td>Hospitals are at overcapacity, and nursing home patients are taking up beds</td>
<td>Pressure to discharge</td>
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<td>Pressure lowers the threshold for discharging the patient</td>
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<td>Hospital capacity</td>
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<td>Pressure does not affect the medical soundness of decisions</td>
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<td>Pressured and busy wards</td>
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<td>Reducing hospital beds</td>
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<td>Seeing the patient despite pressure</td>
<td>Not being captivated by the system</td>
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<tr>
<td>Nursing home patients are taking up beds</td>
<td>It is frustrating when the ward is full and patients are not being discharged</td>
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<td>Theme 1</td>
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<td>The municipalities’ differences in preparedness to take on complicated patients affect readmissions</td>
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<td>Being prepared to take on the new patient group</td>
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<td>Reasons for and measures to reduce hospital readmissions from the municipalities on the healthcare professional level</td>
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Overall, the hospital physicians believed that patients were being discharged too early, setting up a situation which, in their opinion, could lead to hospital readmissions. Patients and patients’ families could in some cases attempt to prolong a hospital stay to avoid discharge on the scheduled date. Criteria for medically acceptable discharges had changed as a consequence of the Coördination reform. Patients with more complicated health conditions were being discharged to primary care earlier now instead of continuing hospitalisation, and there were limitations in the hospital’s capacity to admit new emergency patients, which put pressure on the physicians to discharge patients. At the same time, municipalities were not always able to take on patients who were ready for discharge, causing patients to overstay in the hospital. The physicians detected differences in preparedness between primary healthcare services in taking on complicated patients (staffing, competence and capacity). HSSs were perceived to be the most important aspect of the dialogue between healthcare service levels, and thoroughness in generating the HSSs was seen as important. Other types of dialogue were limited. Hospital discharges involved different healthcare personnel, were affected by several factors and needed careful planning. In the following text, we present the findings on our three themes.

**RESULTS**

**Disagreement about care decisions**

There appeared to be a conflict between decision makers in the municipalities (the decision office) and hospital physicians in regard to what level of care would be needed following hospital discharge. Physicians had a certain level of understanding about the capacity issues in the municipalities, and some believed that the responsibility for allocation rightly rested with the municipality.

Several physicians reported that they perceived the care levels offered to patients after discharge to be unsatisfactory. Further, they believed that they had little or no influence in care decisions and sometimes sensed that their assessment of the patient’s condition had been overruled, despite the fact that the physicians had direct contact with the patients and had observed them closely. This could result in them keeping patients hospitalised longer, to ensure their safety.

Sometimes we have to take into account... if the municipality offers home care, and we perceive the patient as in need of a nursing home placement, it happens that we keep the patients here longer... we can’t justify sending them home with home care services. It’s not the way it’s supposed to be... Consultant, medical ward

**Hospital capacity**

The physicians described the limits of hospital capacity, with too few beds and too many ‘halfway patients’ (for whom beds had been placed in a hallway because all rooms were full). Full hospital wards create a pressure to discharge patients in order to free up beds for incoming patients. The nurses were described as exerting the most pressure to have patients discharged. They were responsible for the organisation of the ward, including making beds available so they could handle incoming patients. Moreover, physicians felt pressured to schedule a discharge date on the day that a patient arrived, and by the management who wanted to keep hospital stays short and live up to national guidelines. Some described this pressure as a force that caused them to adjust the threshold for when they perceived it reasonable to discharge a patient. Others reported that medical justifiability was not compromised but that it would have been better for patients to stay a few extra days.

The patients get, so to speak, squeezed out right after they are off the CPAP [continuous airway pressure to ease breathing] treatment or the NIV [non-invasive ventilation – breathing support] treatment, and they can get up on to their own feet and can chew and all that, but the anxiety hasn’t quite let go, and their infection hasn’t quite let go either. Consultant, medical ward

**Primary care capacity and preparedness**

The hospital physicians noted that the municipalities were not always able to take on patients who were ready for discharge, causing patients to overstay in the hospital. The patients get, so to speak, squeezed out right after they are off the CPAP treatment or the NIV treatment, and they can get up on to their own feet and can chew and all that, but the anxiety hasn't quite let go, and their infection hasn’t quite let go either. Consultant, medical ward

Patients get, so to speak, squeezed out right after they are off the CPAP treatment or the NIV treatment, and they can get up on to their own feet and can chew and all that, but the anxiety hasn’t quite let go, and their infection hasn’t quite let go either. Consultant, medical ward

**T1: the unforeseen ripple effects of a changed healthcare system**

**Early hospital discharges**

A large proportion of the participants found hospital discharges to be too early and considered them a reason for hospital readmissions. The hospital discharges were described as sometimes being ‘on the edge,’ especially for elderly patients with chronic diseases. Some claimed that there were too many early hospital discharges and that patients were not being kept long enough in the hospital. According to one physician:

We discharge them too soon, really... And you know they’ll come back sooner or later. The patients say so themselves: ‘You discharge us too soon; we’ll be back in five days anyway’... Resident, medical ward

The patients being discharged to primary care were described as having more complicated health issues than such patients in the past, and the criteria for medically acceptable discharges had changed. Sometimes patient’s family members pressured physicians to prolong the hospital stay because they did not feel ready to take care of the patient at home. In addition, according to the hospital physicians, patients, especially elderly ones, did not always want to be discharged on the scheduled date. The physicians described negotiating the discharge date with these patients and stressed the importance of preparing patients for the discharge day to avoid shocking or angering them. The patients’ opinions did affect physicians’ decisions to discharge; it was easier to let patients stay longer if there was room in the ward.
for discharge and needed nursing home placement. This resulted in nursing home patients who did not need specialised healthcare taking up beds. These patients sometimes stayed unnecessarily for days and often demanded much in the way of resources because they needed extensive care. This combination of a hospital population of nursing home patients and overflowing wards created frustration. Physicians worried that the hospitalised patients could get infections and then would need to prolong their stay even more.

We had a patient here before Christmas, admitted for pneumonia. He was supposed to be discharged to [primary care], and waited here [at the ward], for a week. Then he caught pneumonia again, and we had to cancel the discharge and start up treatment again.

When he was treated [for the second time], he over-stayed for another week – [got a] new pneumonia. It continued like this for six weeks, so he had pneumonia four times… Resident, medical ward

The physicians detected variations in the municipalities’ ability to take on patients in need of nursing home placements. In addition, they perceived a variation in the primary healthcare service’s preparedness to provide care for these complicated patients. The physicians also saw differences in primary healthcare physician coverage and competence, in nurse competence and in primary care capacity. These were regarded as reasons for hospital readmissions from the municipalities, with a special concern about inconsistent physician coverage in nursing homes and emergency rooms (ERs). For instance, some described the ER as a ‘substitute service,’ with a lack of capacity for proper follow-up care and run by inexperienced physicians who were unfamiliar with the healthcare system. The physician coverage in nursing homes was described as inconsistent, and holistic follow-up care was perceived as difficult to organise.

The hospital physicians suggested that stable ER services, stable physician coverage and an increased capacity in homecare and nursing home services could reduce the number of hospital readmissions.

T2: a vulnerable communication line between cooperating healthcare services

Communication between healthcare services

HSSs were the most important, and sometimes only, form of communication between the hospital and the primary healthcare services. Concise HSSs were highlighted as important and influential in hospital readmissions. However, some difficulties with using the HSSs for communication were reported. HSS was routinely sent to a GP when it was completed, but if a patient was going to a nursing home, where the patient would be under the supervision of a different physician, there was no guarantee that the summary would reach that physician.

Our routine is to send the hospital stay summary to the GP, even if they are going to a nursing home. In addition, we send a copy with the patient. But if the [nursing home] physician in charge is not present, and it is not the GP [who is the nursing home physician], the physician won’t get the papers. (…) Resident, surgical ward

Communication, cooperation and hospital readmissions

Several physicians argued that improved communication and cooperation between the healthcare services could reduce hospital readmissions. Some suggested the creation of a shared documentation system, where the primary care and hospital physicians could have access to each other’s notes, the records of medication changes and the nurses’ reports. One physician said:

If the nursing home physician can enter [our documentation program] and see what has already been said, which medication has been discontinued and approved, and can continue the treatment we have started here, we don’t have to write it up [in another document] and waste everyone’s time. And [it’s] the same when they come back [to the hospital]; we don’t have any information either! The interns tell me they spend 40 min filling out the medication list. Consultant, medical ward

The hospital physicians further suggested that the primary care physicians should contact them more for advice and consultation to increase communications and decrease hospital readmissions. Despite difficulties with getting in touch with the right hospital physician, this contact was the most common point of dialogue after HSSs.
Hospital discharges were reported to be affected by numerous factors, requiring several planning steps and the input of numerous healthcare workers. Medical assessment was the essential factor in discharge decisions, including the assessment that the patient no longer needed further specialised treatment. A non-medical factor was the type of care the patient was going to need following discharge. If the treatment could be continued in the primary healthcare service, it could lead to an earlier hospital discharge. Some physicians reported that they made sure that continuation of care in the primary healthcare service was possible, whereas others expected the receiving institution to have the competence needed to handle a discharged patient. The patients’ functional level and ability to engage in self-care at home were also considered in the decision.

The discharge decision was made by a team of health personnel, such as consultants, residents, nurses, physiotherapists and occupational therapists. The nurses were obviously extensively involved because they had comprehensive knowledge about the patient’s functional level. Residents described involving consultants for complicated patients. After regular business hours, however, residents were often left alone to make these decisions. Time constraints could limit the ability to perform multi-disciplinary assessments before discharge.

Occasionally, one can be a bit quick to write, ‘is to be followed up by the GP.’ Sometimes if it is very busy, it happens that we point out in the hospital stay summary ‘further assessment by the GP.’ But the ideal would be to, sort of, remove that link and refer the patients ourselves. Maybe after a phone call with a geriatrician or something. For it to go a bit faster. Resident, surgical ward.

The discharge process and hospital readmissions

The discharge process was seen as closely related to hospital readmissions. Physicians insisted on the importance of proper discharge planning, ensuring that the patient was capable of self-care following hospital discharge and scheduling a follow-up appointment. One physician stated that it would be an advantage to know more about the offerings in the primary healthcare services. Another physician claimed that increased use of outpatient clinics had reduced hospital readmissions in their ward. A third physician suggested that some sort of transitional care, between a hospital and a nursing home, would be an advantage (eg, a ward for oncology patients staffed by experienced nurses).

Not all hospital readmissions should be avoided

There was a consensus that many hospital readmissions were necessary. Avoiding hospital readmissions was not always a desirable end in itself. There could be fluctuations in the course of an illness, complications or simply a deterioration of a patient’s condition that would mandate specialised treatment. One physician stated that hospital readmissions were sometimes encouraged because physicians wanted to perform their own assessments before starting, for example, antibiotic treatment.

DISCUSSION

The discharge process and the decision to discharge were described as complex processes involving several people (eg, the patient, the patient’s family, nurses and physicians). Although medical considerations had first priority, organisational factors both within and outside the hospital also affected the decisions. Within the hospital, early hospital discharges and a poor communication system were perceived to affect hospital readmissions. Primary care capacity, primary care competence and unstable physician coverage in nursing homes and ERs were factors affecting hospital readmissions outside the hospital. In the interface between the hospital and the primary healthcare services, poor communication and a lack of cooperation were perceived to be the main reasons for hospital readmissions.

Early hospital discharges

According to the regulations, a physician should report that the decision on care level was unsatisfactory. Reporting that they kept patients a few days longer if they found that the decision on care level was unsatisfactory. La Rocca and Hoholm examined the role of Decision officers in disagreements on care level post hospital discharge. Physicians in our study perceived discrepancies between their close knowledge of the patient and their lack of influence in such decisions with some physicians in our study reporting that they kept patients a few days longer if they found that the decision on care level was unsatisfactory.
discharge were perceived as problematic by decision officers. The perceptions of physicians and decision officers indicates a difficult relationship between the two parties, contradicting one of the main purposes of the Coordination reform. However, the reasons for these differences in assessments are poorly explained and merit further investigation. Including the views of nurses and other health personnel involved in patient care would be beneficial in this regard.

A newly published Norwegian report investigating accessibility and quality of care for the elderly found that decision officers often lacked relevant information about a patient’s functioning, wishes and needs when making care decisions, resulting in poorly justified decisions. Further, sometimes, decisions seem to have been affected by the decision officers’ personal factors; so decisions could vary within municipalities and between different municipalities. This supports our finding that there are differences among municipalities in the allocation of primary healthcare services, something that is potentially inconsistent with the hallmark of the Norwegian welfare state: equal rights to welfare benefits.

Pressure on healthcare services
A new report of Norwegian hospitals stated that approximately 46,000 patients were overstaying for at least 24 hours after being assessed as ready for discharge in 2018. This was an increase of 5000 patients from 2017, indicating that overstays remain an ongoing national problem. This problem, which places even more pressure on wards, is also described in our results.

Despite the increased patient load in the municipalities, there has been a minimal increase in primary care resources. With this in mind, it can be questioned if the pressure on primary healthcare service resources is clouding the assessment on post hospital discharge care, implying incorrect care assessments and consequently more hospital readmissions. Nevertheless, the results of this study describe a complex web of interacting elements in the two healthcare services, caused mainly by the regulations of the Coordination reform. This has some identified undesirable consequences for both the primary healthcare service and the hospital (figure 2).

Communication between healthcare services
The information exchange system between the primary and secondary healthcare services was fragile, especially for nursing home patients. Previous research supports these findings, reporting poor routines in forwarding information to nursing home physicians. Consistent with existing literature, the physicians in our study believed that poor communication could lead to hospital readmissions. The hospital physicians believed that a common documentation system could resolve these difficulties. Such a system has shown to improve the quality of care and access to clinical information, decrease healthcare costs and reduce hospital readmissions, or physicians believe it has this effect. In 2015, the National Network for Implementation of the Coordination reform recommended a common documentation system. Although it has been a governmental goal since 2012, as of 2019, most hospitals still do not have it.

Work as imagined and work as done
The Commissioners’ documents require hospitals to establish holistic care pathways, with a clear distribution of tasks between healthcare services. In order to achieve this, close cooperation between all the relevant parties (patient, hospital and the primary healthcare service) is encouraged. However, according to our results, changes have not been made in the system that might fullfil these requirements. For example, there continues to be a lack of communication tools, a lack of a common documentation system and insufficient time for cooperation. This indicates a gap between the requirements of the Commissioners’ documents and the current work practice.

This gap is closely related to the terms work-as-imagined (WAI) and work-as-done (WAD) in the resilience health-care literature. Hollnagel describes WAI as an idealised view of how tasks should be performed in a system, where there is an assumption that work tasks can be completely analysed and prescribed, as, for example, has been done in the Commissioners’ documents. However, in reality, where the tasks are being performed, conditions are constantly changing (eg, in workload), creating a discrepancy between the WAI and WAD. In relation to the Commissioners’ documents, the results from the current study suggest that the context in which care decisions are made has not been considered. This could be related to an exclusion of healthcare workers from the formulation of these requirements. Similar gaps can also be seen in the Coordination reform, the main goals of which have shown difficult to fulfil and where there have been unforeseen consequences of organisational changes. Figure 2 illustrates the WAD in accordance with our results, and figure 3 depicts the WAI according to the aims of the Coordination reform, demonstrating the complexity of the WAD compared with the WAI in a small cross section of the Norwegian healthcare system. A possible way to close the gap between the WAI and WAD could be to invite more health personnel to contribute to the development of such requirements. We believe that such an approach may lead to requirements that are closer to practice and to the possibility of adjusting practice (eg, providing better tools) to meet the requirements.

Suggestions for future interventions
There have been reports of several successful interventions developed to reduce hospital readmissions. For example, the Hospital Readmissions Reduction Program (HRRP), introduced to American hospitals in 2012, aimed to reduce readmission by reducing hospital payments with excess readmissions. HRRP has been shown to have a positive but limited effect on hospital readmission rates, depending on the current patient group. Other hospital-based interventions such as the introduction of
Figure 2  Work as done.

discharge protocols (medication reconciliation, scheduling of appointments after discharge and nurse-led telephone follow-up) have been shown to reduce hospital readmissions. Interventions in primary care have also been demonstrated as successful (eg, skilled training for nurses in long-term facilities and readmission reduction tools for nursing home personnel). Our study provides a foundation for targeted interventions in Norway by identifying problems that healthcare workers find predictive of hospital readmissions (eg, early hospital discharges; preparedness, competence and capacity in the primary healthcare services; and poor communication and coordination). More research on the possibility of implementing interventions used elsewhere in a Norwegian context could be useful.

Limitations
The limitations of the current study are primarily methodological. The physicians in our study had a tight work schedule and were, therefore, difficult to recruit. As the audio-recordings of interviews were of high quality with little room for misinterpretation and to reduce extra work
for the informants in fear of informants losing interest, we decided not to share the transcripts with the physicians before the analysis process started. Moreover, this decision was based on reports in the literature describing the unclear impact of sharing transcripts with informants. It is possible that not sharing the transcripts could have led to insufficient validation of data.

The scope of this study included the perspectives of hospital physicians but not patients, nurses or other health personnel working in hospital wards. Their inclusion could have provided important perspectives on the discharge process and hospital readmissions from the municipalities. On the other hand, focusing only on interactions with primary healthcare services allows for more precise results. In case study research, bounding the case is an important term. It is related to distinguishing the right unit of analysis to answer the research question from other groups within a case. Bounding the case is important to avoid a scope that is too broad or too narrow. This paper reports from a case study including three substudies. In this case study, nursing home nurses, nursing home leaders, GPs and hospital physicians (in the current paper) were assessed to fulfill the research aim most successfully. Research on patients, patients’ next of kin and nurse perspectives and more focused studies on hospital readmissions should be prioritized in further research.

Lastly, because this study focused on hospital readmissions and discharges of elderly patients, the definition of elderly was important. The participants were informed...
about the focus, but they could have had different perceptions than we did about the definition of elderly. It can also be difficult for the physicians to remember the specific age of a patient when talking about experiences with readmissions and discharges in general. This is a common weakness when collecting lived experiences data in qualitative research. It could lead to having information about other age groups than elderly persons being included in the data material. However, we believe that the context (interviewing physicians in wards with a large proportion of elderly patients) and the information given them about the scope before the interview resulted in appropriate data.

CONCLUSION AND IMPLICATIONS

The current study identified a gap between the Commissioner’s requirements and Coordination reform regulations and the current practices in municipalities and hospitals. The results give a broader understanding of hospital physicians’ views of the discharge process and hospital readmissions in the interface between the hospital and the primary healthcare service. We recommend improved communication systems and more shared decision-making processes between service levels as a way of improving dialogue and sharing knowledge and expertise to reduce the number of unnecessary readmissions and ensure that each patient is transferred after discharge to a proper level of care. This may imply the use of shared time for healthcare professionals in hospitals and the primary healthcare services. Based on our results, this would be likely to reduce pressure on the system and on patients caused by unnecessary overstays, readmissions or the reception of an inappropriate level of care after discharge. Future research should look to test and improve care coordination from a multilevel perspective, including patients as key stakeholders.

Acknowledgements The authors want to thank the participating physicians for their contribution to the study and the hospitals’ coordination consultant for help in the recruitment of informants. Further, we would like to thank Ole-Jørn Borum for the graphic design of figures 1 to 3, Dr Elizabeth Austin from the Australian Institute of Health Innovation (AIHW) for proof reading and contributing to language quality improvement and the reviewers of BMJ Open for helping us to improve our manuscript with valuable comments and questions.

Contributors MKG contributed to the study design; submitted the ethical approval application; collected, analysed and interpreted the data; and was the main contributor in the writing and revision of the manuscript. TK and OR contributed to the study design, supervised the project, guided the analysis and was a major contributor to the writing and revising of the manuscript. All authors have approved the final manuscript.

Funding The implementation and publication of this study is funded by the Western Norway University of Applied Sciences.

Disclaimer The funding body was not involved in the research process (design of the study, data collection, analysis or interpretation of data) or in writing the manuscript.

Competing interests None declared.

Patient consent for publication Obtained.

Ethics approval The study has been approved by the Norwegian Center for Research Data (NSD) (Reference number: 49331, Date: 01.08.2016).

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available upon reasonable request.

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Appendices
Interview guide, primary care physicians
Intervjuguide –
fastleger/Sykehjemsleger

**Introduksjon**
- Formålet med studien
- Bruk og lagring av data
- Anonymitet og konfidensialitet
- Varighet og struktur på intervju
- Samtykke til å spille inn intervjuet

**Bakgrunnsinformasjon**
- Tidligere arbeidserfaring
- Fartstid som lege
- Fartstid i nåværende stilling

**Reinnleggelser basert på medisinsk forsvarlighet**

1. Hva opplever du som de vanligste årsakene til at du velger å reinnlege en pasient til sykehuset?
2. Når du er usikker på om en reinnleggelse er riktig beslutning, hva gjør du da?
3. Hvilken informasjon trenger du for å ta en avgjørelse om reinnleggelse? Har du denne (lett) tilgjengelig?

**Reinnleggelser basert på ytre påvirkning**

4. Hvilke andre årsaker, enn pasientens helsetilstand, kan være avgjørende i spørsmålet om reinnleggelser etter din mening?
5. Blir avgjørelse om å reinnlegge en pasient utelukkende gjort av deg, eller er det andre som påvirker avgjørelsen, i så fall hvem og på hvilken måte

**Oppfølgingsspørsmåler**
- Hvilken påvirkning har pasienten på avgjørelsen om reinnleggelse?
- Hvilken påvirkning har pårørende på avgjørelsen om reinnleggelse?
- Hvordan påvirker kolleger (i samme institusjon eller sykehusleger) avgjørelsen om reinnleggelse?
6. Hvordan påvirker annet helsepersonell (sykepleiere, ambulansemedarbeidere, hjelpepleiere) avgjørelser om reinnleggelse? Er informasjonen (lett) tilgjengelig?

7. I hvilken grad mener du at bemanning og kompetanse i kommunehelsetjenesten (sykehjem) påvirker avgjørelser om reinnleggelse?

Oppfølgingsspørsmål:
Hvordan påvirker bemanning og kompetanse i kommunehelsetjenesten (sykehjem) din avgjørelse om reinnleggelse?

8. Hvordan støtter annet helsepersonell deg i beslutningen om en reinnleggelse?

Reinnleggelser basert på personlige faktorer

9. Hvordan tror du at din arbeidserfaring påvirker dine avgjørelser om å reinnlegge en pasient?

Oppfølgingsspørsmål:
Opplever du forskjeller mellom erfarne og uerfarne leger? På hvilken måte?

10. Kan du beskrive noen faktorer i vurderingen av en pasient, i forbindelse med en reinnleggelse, som kan gjøre at en avgjørelse blir vanskelig å ta?

11. Hvilken rolle spiller pasientens erfaringer/ønske i dine beslutninger om reinnleggelser?

12. Hvordan involverer du pasienter og pårørende i beslutninger om reinnleggelser?

13. Har du noen gang, i etterkant av en reinnleggelse, tenkt at den var unødvendig? Hva var årsaken?

14. Har du noen gang, i etterkant av en reinnleggelse, tenkt at du har vært for tilbakeholden med en reinnleggelse? Hva var årsaken?

Reinnleggelser basert på organisatoriske faktorer - samhandlingsreformen
15. Har du merket noen endringer i reinnleggelsesprosessen i forbindelse med innføringen av samhandlingsreformen?

**Oppfølgingsspørsmål:**
Har du merket noen endringer i forhold til behov for reinnleggelse i forbindelse med samhandlingsreformen?

16. Hvilken betydning tror du det har at pasienter skrives tidligere ut fra sykehus med tanke på reinnleggelse?

17. Har du noen oppfatning av om antallet reinnleggelser har økt etter innføringen av samhandlingsreformen?

18. Det finnes store forskjeller i reinnleggelsestall mellom kommuner som hører til samme sykehus. Basert på din erfaring, hva tenker du kan være årsaken til det?

**Oppfølgingsspørsmål:**
Har du noen eksempler?
Er det noen tiltak som du tenker kunne redusert reinnleggelser?

**Oppsummering**

19. Er det noen dere mener er relevant vedrørende beslutninger om reinnleggelse som ikke er berørt i intervjuet?

- Gjennomgang av de viktigste punktene som kom frem under intervjuet
- Avklare eventuelle misforståelser
- Mulighet for ytterligere kommentarer
Observation guide, nursing homes
Observasjonsguide – leger i sykehjem

Introduksjon

- Formålet med studien
- Bruk og lagring av data
- Anonymitet og konfidensialitet
- Samtykke til deltakelse ved legevisitter

Feltnotater tas fortølpende

Samhandling mellom sykehjemslege/fastlege, andre legekolleger og annet helsepersonell i forbindelse med reinnleggelser.

- Hvilken rolle spiller legekolleger i avgjørelser om reinnleggelser? Og hvor stor rolle spiller de?
- Hvilken rolle spiller annet helsepersonell, slik som sykepleiere og hjelpepleiere, i avgjørelser om reinnleggelser? Og hvor stor rolle spiller de?
- Hvordan samhandler legen med sine kolleger (legekolleger og annet helsepersonell) i spørsmål om reinnleggelser?
- Hvordan influerer legekolleger og annet helsepersonell legens avgjørelse i spørsmål om reinnleggelser?
- Hvilken informasjon etterspørres fra pasienter/pårørende/legekolleger/annet helsepersonell i spørsmål om reinnleggelser, og hvordan oppbevares denne informasjonen.
- Hvilke datateknisk verktøy brukes i informasjonsutvekslingen og samhandlingen mellom de ulike aktører som er deltakende i spørsmålet om en eventuell reinnleggelse? Og på hvilken måte?

Samhandling mellom sykehjemslege/fastlege og pasient/pårørende

- Hvordan foregår samhandlingen mellom pasient/pårørende og lege i spørsmål om reinnleggelser?
- Hvordan influerer pasienter/pårørende avgjørelser om reinnleggelser?
Reinnleggelsesprosessen

- Hvordan foregår selve reinnleggelsesprosessen?
- Er reinnleggelsesprosessen lik hver gang?
- Er reinnleggelsesprosessen ulik leger i mellom?
- Hvilke tilpasninger gjøres mellom ulike pasienter?
- Ligger det andre ting til grunn enn rent medisinske årsaker, når det tas en avgjørelse på om pasienten skal reinnlegges?

Oppsummering

- Gjennomgang av feltnotater med informant (member check)
- Avklare eventuelle misforståelser
- Mulighet for ytterligere kommentarer.
Interview guide, focus group interview with nurses
Intervjuguide – sykepleiere
(Fokusgruppe)

Introduksjon

- Formålet med studien
- Bruk og lagring av data
- Anonymitet og konfidentialitet
- Varighet og struktur på intervju
- Hvorfor fokusgruppeintervju
- Samtykke til å spille inn intervjuet

Bakgrunnsinformasjon

- Tidligere arbeidserfaring
- Fartstid som sykepleier
- Fartstid i nåværende stilling

Hvert medlem i fokusgruppeintervjuet introduserer seg selv med navn, hvilken avdeling de jobber i, hvor lenge de har arbeidet som sykepleier, hvor de har arbeidet før og hvor lenge de har arbeidet på nåværende arbeidsplass.

Til stede: Moderator og observatør

Endringer i organiseringen av institusjonen • samhandlingsreformen

1. Hvordan vil dere beskrive pasientgruppen dere jobber med? Har den endret seg etter innføringen av samhandlingsreformen?

**Oppfølgingsspørsmål:**
Kan dere beskrive noen endringer i pasientens sykdomsbilde, alder, funksjonsnivå?
Hva mener dere om at pasientene skrives tidligere ut fra sykehuset nå enn før? Har det noen innvirkning på pasientgruppen dere har ansvar for, på hvilken måte?

2. Kan dere fortelle om noen endringer i organiseringen av sykehjemmet som har påvirket deres arbeid som sykepleiere på en eller annen måte?

Oppfølgingsspørsmål:
Har disse endringene skjedd i forbindelse med samhandlingsreformen? På hvilken måte?

Tilgjengelige ressurser og sykepleier til pasienten

3. Kan dere fortelle om situasjoner der dere har følt dere utrygge eller usikre på grunn av manglende kompetanse, i forbindelse med behandling og pleie av en pasient? Hva var årsaken?

4. Kan dere fortelle litt om hvordan dere som sykepleiere, gjennom arbeidsplassen, kan bli bedre rustet til å ivareta pasienten på best mulig måte i alle situasjoner?

Oppfølgingsspørsmål:
Hvordan opplever dere at deres kompetanse strekker til i den daglige pleien av pasientene? Hva syns dere om tilgjengeligheten på kurs eller utdannelser? Hvordan er kulturen for kompetanseøkning i avdelingen og blant ledelsen?

5. På hvilken måte opplever dere at spørsmål om økonomi påvirker deres arbeid i det daglige?

Samhandlingen mellom lege og sykepleier

6. Hvordan samarbeider dere med lege/legevakt når en reinnleggelse vurderes?
Oppfølgingsspørsmål:
Hva er deres rolle i reinnleggespørsmål?
Har denne rollen endret seg?

7. På hvilken måte tenker dere at dere har innflytelse i spørsmål om reinnleggelse i sykehus?

8. På hvilken måte influerer pasienter eller pårørende dere i reinnleggespørsmål?

9. Finnes det noen verktøy dere bruker når dere vurderer/rapporterer pasientens tilstand til legen? Kan dere i så fall fortelle litt om hvordan det brukes, og hva dere tenker at hensikten med det er?

Organisatorisk struktur og pasientsikkerhet?

10. Har dere noen eksempler der pasientens sikkerhet ble godt ivaretatt ved sykehjemmet, og eksempler på det motsatte? Hva var årsaken?

11. Har det skjedd noen strukturelle endringer etter samhandlingsreformen (endring i kompetanse, organiseringen rundt pasienten, bemanning)? I så fall, hvilken betydning har det hatt for pasientsikkerheten?

12. Basert på deres erfaring, hvorfor tror dere at det er forskjeller i reinnleggelse mellom to kommuner som hører til samme sykehus?

Oppfølgingsspørsmål:
Tror dere at det finnes spesifike årsaker?
Kan dere tenke dere noen tiltak som kunne vert igangsatt for å redusere reinnleggelse?

13. Hvordan syns dere den nåværende sammensetningen og organiseringen av helsepersonell på de ulike avdelingene fungerer?
Oppsummering

14. Er det noe dere mener er relevant vedrørende de temaene vi nå har vert gjennom, eller andre tema vedrørende reinnleggelsel, som ikke er berørt i intervjuet?

- Gjennomgang av de viktigste punktene som kom frem under intervjuet
- Avklare eventuelle misforståelser
- Mulighet for å tilføye noe, hvis det er aktuelt.
Interview guide, nursing home leaders
Intervjuguide- ledere ved sykehjem

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Bakgrunnsinformasjon
- Tidligere arbeidserfaring
- Fartstid som leder
- Kort beskrivelse av oppgaver som en leder ved den aktuelle institusjonen innehar.

Tilgjengelige ressurser og økonomi
1. Kan du fortelle litt om den økonomiske situasjonen ved sykehjemmet?

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2. Hva tenker du om forholdet mellom tilgjengeligheten av ressurser (plass, utstyr, kompetanse etc.) og pasientens sikkerhet?

<table>
<thead>
<tr>
<th>Oppfølgingspørsmål:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hvordan vurderer du situasjonen slik den er her?</td>
</tr>
</tbody>
</table>

3. Hvilken betydning tror du ressurser har for reinnleggelser?

4. Kan du fortelle om en situasjon der du har følt at økonomi eller ressurser har satt pasientsikkerheten i fare, hvis en slik situasjon har funnet sted?

5. Hvordan opplever du legedekning samt sykepleiedekning ved sykehjemmet? Er den tilstrekkelig?

<table>
<thead>
<tr>
<th>Oppfølgingspørsmål:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kan du gi noen eksempler?</td>
</tr>
</tbody>
</table>

6. Hvordan opplever du kompetansen til arbeidstakerne?

7. I hvilken grad mener du at det finnes tilstrekkelig kompetanse og bemanning ved sykehjemmet?
Oppfølgingspsørsmål:
Hva er eventuelle tilleggsbehov?

Organisatorisk struktur og reinnleggelser

8. Hva tror du er vanlige årsaker til at pasienter blir reinnlagt til sykehuset fra sykehjemmet?

9. Det finnes betydelige forskjeller i reinnleggelsestall blant kommuner som hører til det samme sykehuset. Hva tror du kan være årsaker til det?

10. Basert på din erfaring, på hvilken måte tenker du at organiseringen av sykehjemmet kan redusere reinnleggelser?

Oppfølgingspsørsmål:
Hvordan syns du at det er samsvar mellom behov for kompetanse og kapasitet og dagens organisering og ressurser?

Endringer i organisasjonen - samhandlingsreformen

11. Kan du beskrive noen endringer som ble gjort i organiseringen av sykehjemmet i forbindelse med innføringen av samhandlingsreformen?

Oppfølgingspsørsmål:
Hvilke endringer i organiseringen av sykehjemmet eller avdelingen som ble gjort i forbindelse med innføringen av samhandlingsreformen, opplever du som mest utfordrende? Hvorfor?

12. Hvilken betydning har samhandlingsreformen hatt for kvaliteten på tjenesten slik du ser det?

Oppfølgingspsørsmål:
Har det vert positiv eller negativt?
Kan du gi noen eksempler?
Tror du at det kan ha noen betydning for reinnleggelser?

Oppsummering
- Gjennomgang av de viktigste punktene som kom frem under intervjuet
- Avklare eventuelle misforståelser
- Informanten får mulighet, hvis han/hun ønsker å legge noe til.
Interview guide, hospital physicians
Intervjuguide- sykehusleger

Introduksjon
- Formålet med studien
- Bruk og lagring av data
- Anonymitet og konfidensialitet
- Varighet og struktur på intervju
- Samtykke til å spille inn intervjuet

Bakgrunnsinformasjon
- Tidligere arbeidserfaring
- Fartstid som lege
- Fartstid som sykehuslege ved aktuell avdeling

Utskrivelsespraksis og organisatorisk struktur
1. Kan du fortelle litt om faktorer som legger til grunn når du tar en avgjørelse på at en pasient er utskrivelsesklar?
2. Kan du beskrive en situasjon der du i etterkant av, eller ved en utskrivelse, tenkte at utskrivelsen burde funnet sted på et senere tidspunkt?
3. Hvordan har kompetanse og kapasitet i kommunehelsetjenesten som pasienten skal skrives ut til en påvirkning på din utskrivelsespraksis?

Utskrivelse basert på samarbeid med andre yrkesgrupper
4. Hvilket samarbeid har du som sykehuslege, med leger i kommunehelsetjenesten og med kommunehelsetjenesten generelt?
5. Blir avgjørelse om å skrive ut en pasient utelukkende gjort av deg, eller er det andre som påvirker avgjørelsen, i så fall hvem og på hvilken måte

Oppfølgingsspørsmål:
- Hvordan påvirker kolleger (i samme institusjon eller leger i kommunehelsetjenesten) avgjørelsen om utskrivelse?
- Hvordan påvirker annet helsepersonell (sykepleiere, hjelpepleiere) avgjørelser om utskrivelse?

6. Hvordan involverer du annet helsepersonell i avgjørelser om utskrivelser?
7. Hvordan og av hvem får du informasjon når du skal ta en beslutning om en utskrivelse?

**Pasienter og pårørendes påvirkning i spørsmål om utskrivelser**

8. Hvilken påvirkning har pasienten i avgjørelsen om utskrivelse?

9. Hvilken påvirkning har pårørende i avgjørelsen om utskrivelse?

10. Hvordan involverer du pasienter og pårørende i spørsmål om utskrivelser?

**Utskrivelser fra sykehus med fravær av reinnleggelser**

11. Basert på din erfaring, hva tror du skal til for å unngå at en pasient blir reinnlagt etter en utskrivelse?

12. Det finnes store forskjeller i reinnleggelsestall mellom kommuner som hører til samme sykehus. Basert på din erfaring, hva tenker du kan være årsaken til det?

13. Hvilke forskjeller ser man, fra sykehusets side, mellom ulike kommuner i forhold til pasienter som reinnleggelser?

<table>
<thead>
<tr>
<th>Oppfølgingsspørsmål:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hva tror du er grunnen?</td>
</tr>
<tr>
<td>Hvilke tiltak tenker du at kunne settes inn for å redusere reinnleggelser?</td>
</tr>
</tbody>
</table>

**Tilpassing av utskrivelsespraksis etter innføringen av samhandlingsreformen**

14. Hvordan tror du at innføringen av nye retningslinjer i forbindelse med samhandlingsreformen har påvirket din utskrivelsespraksis?

<table>
<thead>
<tr>
<th>Oppfølgingsspørsmål:</th>
</tr>
</thead>
<tbody>
<tr>
<td>På hvilken måte møte syns du at samhandlingsreformen har påvirket din arbeidsplass?</td>
</tr>
<tr>
<td>På hvilken måte møte syns du at samhandlingsreformen påvirker din arbeidssituasjon?</td>
</tr>
</tbody>
</table>
15. Hvordan påvirker pasientens tilgang på videre helsehjelp etter endt sykehusopphold din utskrivelsespraksis?

**Oppfølgingsspørsmål:**
- Hvordan påvirker tilgangen på kommunal helsehjelp avgjørelser om utskrivelse?
- Hvordan påvirker pasientens sosiale nettverk avgjørelser om utskrivelse?
- Hvordan påvirker pasientens bosituasjon avgjørelser om utskrivelse?

16. Påvirker pasientens bostedskommune (den kommunen han skal skrives ut til) din avgjørelse om hvilket tidspunkt pasienten skal skrives ut?

**Oppfølgingsspørsmål:**
- Hvilket kjennskap har du til de ulike kommunenes tilbud til pasientene?

**Oppsummering**

17. Er det noen dere mener er relevant vedrørende utskrivelsespraksis og reinnleggelser som ikke er berørt i intervjuet?

- Gjennomgang av de viktigste punktene som kom frem under intervjuet
- Avklare eventuelle misforståelser
- Mulighet for å legge til opplysninger ved behov.
NSD approval
TILBAKEMELDING PÅ MELDING OM BEHANDLING AV PERSONOPPLYSNINGER

Vi viser til melding om behandling av personopplysninger, mottatt 01.08.2016. Meldingen gjelder prosjektet:

49331 Exploring differences in hospital readmission rates across municipalities – A comparative case study
Behandlingsansvarlig Høgskolen Stord/Haugesund, ved institusjonens øverste leder
Daglig ansvarlig Malin Knutsen

Personvernombudet har vurdert prosjektet, og finner at behandlingen av personopplysninger vil være regulert av § 7-27 i personopplysningsforskriften. Personvernombudet tilråd at prosjektet gjennomføres.

Personvernombudets tilråding forutsetter at prosjektet gjennomføres i tråd med opplysningene gitt i meldeskjemaet, korrespondanse med ombudet, ombudets kommentarer samt personopplysningsloven og helseregisterloven med forskrifter. Behandlingen av personopplysninger kan settes i gang.


Personvernombudet vil ved prosjektets avslutning, 01.09.2021, rette en henvendelse angående status for behandlingen av personopplysninger.

Vennlig hilsen

Kjersti Haugstvedt

Siri Tenden Myklebust

Kontaktperson: Siri Tenden Myklebust tlf: 55 58 22 68
Vedlegg: Prosjektvurdering
Det fremgår av meldingen at prosjektet er en nasjonal samarbeidsstudie. Høgskolen Stord/Haugesund er behandlingsansvarlig institusjon. Personvernombudet forutsetter at ansvaret for behandlingen av personopplysninger er avklart mellom institusjonene. Vi anbefaler at det inngås en avtale som omfatter ansvarsfordeling, ansvarsstruktur, hvem som initierer prosjektet, bruk av data og eventuelt eierskap.

FORMÅL
Formålet med prosjektet er å øke kunnskapen rundt legers rolle i reinnleggelser, samt hvordan organisering av utskrivningspraksis i sykehus, og organisering i primærhelsetjenesten påvirker reinnleggelsestall.

Personvernombudet legger til grunn at ledelsen ved sykehusene godkjenner prosjektet.

UTVALG OG REKRUTTERING
Utvalget består av helsepersonell og pasienter. Personvernombudet minner om at rekruttering av deltakere via sykehus må gjennomfares slik at taushetsplikten ikke er til hinder, og slik at forskningsdeltagelse oppleves som frivillig. Eventuell taushetsplikt må avklares. Vi anbefaler at forespørselen formidles av noen som har naturlig tilgang til kontaktopplysninger om pasienten (uten hinder av taushetsplikt), men som ikke står i et direkte behandlingsforhold til vedkommende (f.eks. avdelingsleder).

INFORMASJON OG SAMTYKKE
Utvalget informeres skriftlig om prosjektet og samtykker til deltakelse. Informasjonsskrivene er godt utformet, men vi ber imidlertid om at følgende setninger slettes, jf. telefonsamtale med forsker 24.08.2016:
- “Informasjon om deg vil bli anonymisert eller slettet senest fem år etter” prosjektslutt (år 2025).
- “Prosjektet er godkjent av Regional komite for medisinsk og helsefaglig forskningsetikk, saksnr. 2016/1256.”

DATAMATERIALET
Datamaterialet samlas inn gjennom intervju med helsepersonell, observasjon og journaldata. Pasientene samtykker til at prosjektleder gis innsyn i journalopplysningene.

OBSERVASJON VED INSTITUSJONER
Vi legger til grunn at det ikke registreres personopplysninger ifm. observasjon, og at taushetsplikten ikke er til hinder for gjennomføring av datainnsamlingen. Vi forutsetter at forsker tar kontakt med ledelsen ved sykehuset for å avklare dette. Som regel vil det være nødvendig at forsker søker tillatelse fra ledelsen ved institusjonen til å gjennomføre observasjonene.

SENSITIVE PERSONOPPLYSNINGER
Det behandles sensitive personopplysninger om helseforhold.
INFORMASJONSSIKKERHET
Personvernombudet legger til grunn at forsker etterfølger Høgskolen Stord/Haugesund sine interne rutiner for datasikkerhet. Dersom personopplysninger skal sendes elektronisk, skal opplysningene krypteres tilstrekkelig.

PROSJEKTSLUTT
Forventet prosjektslutt er 01.09.2021. Ifølge prosjektmeldingen skal innsamlede opplysninger da anonymiseres. Anonymisering innebærer å bearbeide datamaterialet slik at ingen enkeltpersoner kan gjenkjennes. Det gjøres ved å:
- slette direkte personopplysninger (som navn/koblingsnøkkel)
- slette/omskrive indirekte personopplysninger (identifiserende sammenstilling av bakgrunnsopplysninger som f.eks. bosted/arbeidsted, alder og kjønn)
- slette digitale lydopptak

REK nord har i vedtak datert 26.07.2016 vurdert prosjektet som ikke-fremleggelsespliktig.