Transfer care system performance in relation to resource scarcity

Implications for sustainability of the healthcare system performance

by

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Abstract

The Netherlands is experiencing a significant increase in its aging population. Multi morbidity and a rapidly growing shortage of healthcare personnel are putting pressure on the healthcare system, leading to capacity issues. The capacity problems of care have medical, safety, social, and economic consequences. Policy measures are needed to address these challenges and improve the transfer care system. Therefore, the research question is: *On which factors should policy interventions by the Ministry of Health, Welfare, and Sport be aimed, to improve the performance of the Dutch transfer care system?* This study uses qualitative System Dynamics (SD), a method that uses causal loop diagrams, to analyze the relationships between factors that influence the transfer care system performance, such as the demographic changes and workforce shortage. The goal is to find strategies and solutions for a sustainable healthcare system. A visual SD model is used to highlight the complexity of the transfer care system and to reveal inter dependencies, interactions, and feedback loops, aiming to understand system dynamics. A literature review, multiple interviews and case studies have revealed factors and interactions that are modeled in a causal loop diagram. This qualitative System Dynamics analysis revealed both unidirectional (+ or -) and different polarity (+/-) interactions/feedback loops between/among the indicators, which implicates that certain policy interventions (mentioned in Dutch policy notes and other publications) may not achieve the intended results. Based on the interactions found, the Ministry of Health, Welfare and Sport can start using a bundle of interventions aiming on reducing workload/number of admissions and simultaneously keeping availability of aftercare constant. Additionally, the Ministry can improve other indicators, when keeping workload constant. However, to determine how many additional interventions are needed to keep workload and availability aftercare constant and to determine the net total effect of interactions with different polarities, quantitative System Dynamics is needed. In addition, quantitative System Dynamics is needed to be able to prioritize policy interventions, because qualitative System Dynamics is not able to determine the net effect of feedback loops. However, this qualitative System Dynamics study provides a solid foundation with which researchers (and the Ministry of Health, Welfare and Sport) can proceed to construct a quantitative model.

Transfer care system, qualitative System Dynamics, causal loop diagram, case study approach, interviews, policy interventions, patient safety.

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1 Introduction

1.1 Context

In the Netherlands, aging and double aging are becoming increasingly common (Centraal Bureau voor de Statistiek, 2022). In 2022, three million people had the age of over-65 years, and 117 thousand people over-90 years (Centraal Bureau voor de Statistiek, 2022). This will only get worse. A recent study has claimed that the proportion of over-65s will increase by 55% and the share of over-90s will increase even more, by 191% (Centraal Bureau voor de Statistiek, 2022). According to Ministry of Health, Welfare and Sport, aging has a major impact on the healthcare system, because the number of people with chronic conditions will increase, which increases the complexity and demand for healthcare (Nederlandse Zorg Autoriteit and Zorginstituut Nederland, 2020; Rijksinstituut voor Volksgezondheid, 2018). It is predicted that in 2040 54% of the population will have at least one chronic condition and that more than 30% will have multi-morbidity, which means that people have two or more chronic conditions simultaneously (Rijksinstituut voor Volksgezondheid, 2018). In addition to the consequences of aging, also the predicted scarcity on the labor market will put pressure on the quality of the Dutch healthcare system (Ajrovic and de Ruiter, 2022). According to research by NOS (a Dutch news institution), it is expected that the shortage of healthcare workers will increase to 135 thousand employees in 2031 (NOS, 2021). The consequences of aging and the (expected) shortage of healthcare workers lead to multiple capacity problems in the Dutch Healthcare system. For example, multiple emergency rooms are temporarily closed, because the staff could not cope with the increase in care demand due to an aging population (e.g., Kiers, 2016; van der Plaat, 2022; Het Parool, 2022). Another issue is that the waiting lists increase. According to the Dutch Healthcare Authority, around hundred thousand patients wait for their surgery (Zurhake, 2022). In addition, the waiting lists for nursing homes increase drastically (Ministerie van Volksgezondheid, 2020). An actual waiting list, shows that there are currently seventeen thousand people waiting for a place in a nursing home, which approximately increases by more than 400 people per month (Actiz, 2021a, 2021b). It can be concluded that the current Dutch healthcare system cannot cope with future demand increases, which will form a major social issue for Dutch citizens (NOS, 2021). Multiple agencies, like the Ministry of Health, Welfare and Sport, Dutch Healthcare Authority, healthcare institutions and healthcare insurers, are engaged in raising awareness of this issue.

Now the general problem is explained, there can be focused on transfer care system. The transfer care system can be divided into three parts: 1) inflow of patients; 2) throughput of patients and 3) outflow of patients. First of all, it is desirable to prevent the number of admissions whenever possible. For instance, if a patient has a lower risk of falling and needing admission to a hospital/rehabilitation center with the assistance of a walker, it is advisable for older individuals to use a walker. Due to the consequences of aging, there are many elderly that are not able to go

or to stay at home and need a form of aftercare, such as a nursing home, rehabilitation centres or palliative facility. The need for aftercare can cause problems in the inflow and throughput/outflow of the transfer care system. Firstly, the number of social admissions in hospitals is increasing (van de Water et al., 2017). This means that a patient ends up in hospital without a medical assessment, because aftercare is unavailable and home is no longer an option. These patients will occupy hospital beds that do not need hospital care. In addition, the throughput/outflow will be complicated since a lack of aftercare capacity (increasing waiting lists) hinders the ability to relocate/discharge patients (Actiz, 2021a, 2021b). Because patients are waiting for a place in the correct aftercare placement, again hundreds of hospital beds are occupied by patients who no longer need hospital care (RTL Nieuws, 2023; van Tillert, 2020). This problem is called the "wrong bed problem" (van Soelen and de Clerck, 2020). According to RTL Nieuws (another Dutch news institution), last year more than 200 thousand beds were occupied by a patient who no longer needed hospital care (van Soelen and de Clerck, 2020). The "wrong bed problem" is a sign of a transfer care chain that is getting stuck. This has both human and economic consequences. On the one hand, staying in a hospital is five times more expensive than staying in a nursing home (NOS, 2016). Additionally, this problem leads to physical, mental and social damage (Meinardi and Groeneweg, 2021; SJG Weert - St. Jans Gasthuis Weert, n.d., delayed care (delayed operations/treatments) and EDs being closed (refusal of patients and ambulances) (RTL Nieuws, 2023). Due to delayed care, 320,000 years of good health have been lost (AD, 2021) and even worse, people have died (Rijksinstituut voor Volksgezondheid, 2022).

Policy interventions are needed to optimize the transfer care system performance to enhance a sustainable healthcare system and provide solutions for the problems that arise from an aging population. With the help of a qualitative simulation method (qualitative System Dynamics), the relationships between the consequences of an aging population, shortage of healthcare workers and other factors within the Dutch transfer care system can be investigated. Based on this qualitative model, a quantitative analysis can eventually be performed in the future.

1.2 Previous research and knowledge gaps

Previous studies [1]. did research on improving home-, elderly- and nursing care to optimize the healthcare system as a whole. For example, Choi et al., (2017) and Ohwaki et al., (2008) studied how the use of "in-home services" and the factors that influence this could affect the "rate of institutionalization", with the aim of decreasing the amount of care that is provided in hospitals and nursing homes to reduce the pressure on the healthcare system. In addition, a study of Pereira-Morales et al., (2020) examined the relationship between burden of caregivers and the effectiveness of "home-based palliative care" for elderly. A third example is that the study of Wolff and Kasper, (2004) focused on factors of caregiver with respect to the "hospitalization experiences" of the patients (such as discharge delay-time etc.), which is also related to healthcare system efficiency/effectiveness. So, multiple studies provide a valuable starting point to explore the complexities of the consequences of aging and how this may impact the healthcare system.

[1] A literature review has been performed to identify the knowledge gaps. The searching process and overview of articles is presented in Appendix A

However, a great number of studies has been dedicated to pinpointing particular elements that exert pressure on specific aspects of the healthcare system (such as, home-, elderly- and nursing care), but no study focused on the relationships between factors within the transfer care system. The majority of studies utilize qualitative approaches such as interviews and questionnaires, but studies that use a systems approach in the field of transfer care is still lacking.

In addition, only a few studies researched the Dutch healthcare system. This leads to an additional knowledge gap, because the healthcare infrastructure in the Netherlands differs from that of other countries, leading to different challenges and solutions (Houtepen and Elshof, 2016).

1.3 Research Objective

The goal of this study is twofold. On the one hand, the scientific goal is to obtain understanding of the Dutch transfer care system, given an aging population and shortage of healthcare workers. Qualitative research is limited within the field of the Dutch transfer care system, making this a valuable scientific contribution. Additionally, the social goal of this research is to provide proposals to the Ministry of Health, Welfare and Sport based on the insights attained from the qualitative analysis, to cope with the consequences of aging and the shortage of healthcare workers.

1.4 Research question and sub-questions and research flow

The research problem and research objective have been converted into the following main research question: *On which factors should policy interventions by the Ministry of Health, Welfare, and Sport be aimed, to improve the performance of the Dutch transfer care system?*

This main research question is supported by the multiple sub-questions. These sub-questions are:

1. *What elements and patient flows constitute the Dutch transfer care system?*
2. *What potential obstacles or enhancers influence the (Dutch) transfer care system performance?*
3. *What leverage points can be revealed for policy interventions by the Ministry of Health, Welfare and Sport to improve the transfer care system performance?*

First, it should be clear what elements and patient flows constitute the Dutch transfer care system (SQ1). This data will be gathered by means of a literature review. When it is clear what elements and patient flows constitute the Dutch transfer care system, data about potential obstacles and enhancers can be gathered (SQ2). for this, both new and existing data will be used. Existing data will be gathered by means of a literature review and new data will be gathered by means of interviews with experts in the field of transfer care and by a case study approach. The results of the first and second sub-question will be used to create a qualitative System Dynamics model. This model will be verified and validated by two experts. An expert in the field of System Dynamics will verify the model and an expert in the field of the Dutch transfer care system

will validate the model. Once the model is verified and validated, the qualitative model will be used to gain insight into potential leverage points that can improve the transfer care system performance (SQ3).

1.5 Methodology

This study uses, along with interviews and a case study approach, qualitative System Dynamics (hybrid causal loop diagram). By using qualitative System Dynamics, important gains could be made compared to (other) conventional methods. For example, qualitative System Dynamics (SD) offers valuable benefits for representing complex dynamic systems, including healthcare systems, by utilizing causal, non-linear thinking, which enables the identification of reinforcing and balancing feedback loops (Luijben and Pruyt, 2019; Maidstone, 2012. In addition, this approach allows for the structured inventory of relevant factors, visualization, and the identification of intervention points to assess system behavior and inform potential interventions or policies (Luijben and Pruyt, 2019; Maidstone, 2012; Vunderink et al., 2012). Chapter 3 will discuss the methods used more in detail.

1.6 Structure of the report

This thesis report is divided into five phases, which is presented in Figure 1.1. The first phase is the exploratory phase. This phase is represented by the first three chapters and the beginning of the fourth chapter. In chapter 2, a conceptualisation will be executed and the system of interest will get narrowed down. Chapter 3 will discuss the methodologies used in this study. The exploratory phase ends with the beginning section of the fourth chapter (see Section 4.2.1) in which the main elements and patient flows of the transfer care system are identified by means of literature review (SQ1). The second phase is the analysis phase, in which the rest of chapter 4 will identify potential obstacles and enhancers (SQ2) by means of literature review, interviews and case studies. The third phase is the simulation phase. This phase (see chapter 5) uses qualitative System Dynamics to identify potential leverage points that can improve the transfer care system performance (SQ3). Note that the results of chapter four serve as input for chapter five. The penultimate phase is the the concluding phase (see Chapter 6). This phase provides insight on what factors interventions should focus on to improve the Dutch transfer care system (main research question). Finally, the discussion phase will discuss the results (see Chapter 7).

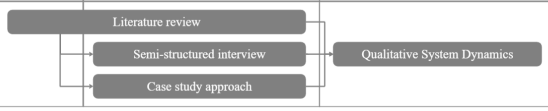
Part 1: Exporatory phase	Part 2: Analysis phase	Part 3: Simulation phase	Part 4: Concluding phase	Part 5: Discussion phase
Chapter 2: Conceptualisation Chapter 3: Methodology Chapter 4: Enhancers and obstacles	Chapter 4: Enhancers and obstacles	Chapter 5: Leverage points	Chapter 6: Conclusion	Chapter 7: Discussion
SQ1 Elements and patient flows that constitute the Dutch transfer caresystem.	SQ2 Potential obstacles and enhancers of the (Dutch) transfer caresystem.	SQ3 Leverage points to im-prove the transfer care system's performance.	MQ Factors where interventions should focus on to improve transfer care system	
				

Figure 1.1: Research flow diagram shows the structure of the thesis report

2 Conceptualisation and theory

This chapter will provide more detailed information on the Dutch transfer care system. First the definitions of theoretical concepts will be clarified, because Dutch concepts may be Dutch specific (see section 2.1). In the subsequent section (2.2), the Dutch transfer care system will be demarcated using IDEF. This demarcation will be used consistently throughout the entire study. Finally, this chapter discusses the most important institutions that apply for the Dutch transfer care system (see Section 2.3). This helps understanding the main (financial) components of the Dutch transfer care system, which is essential for understanding the rest of the study. Appendix B provides more additional and detailed information of the involved parties (see Appendix B.1), financial flows (see Appendix B.2), and values (see Appendix B.3). This information is discussed only in the Appendix, because the details of the involved parties, financial flows, and values are not necessary to comprehend the rest of the study.

2.1 Definitions of theoretical concepts in Dutch healthcare system

Firstly, an understanding of theoretical concepts is necessary before delving deeper into the elements of the transfer care system. In the field of transfer care, multiple concepts can be found in literature and policy notes that appear to mean the same thing. Most commonly used concepts are: chain care (in Dutch: ketenzorg), transmural care (in Dutch: transmurale zorg), transfer care (in Dutch: transferzorg) and aftercare (in Dutch: vervolgzorg).

Transfer care includes transfers from primary to secondary care [1], and vice versa (SGE, n.d.). Transmural care is also referred to as chain care (Medicalgroep, 2022). This is a dynamic form of care, which is provided by multiple healthcare providers (Medicalgroep, 2022). Intramural care and extramural care are combined in transmural care. The definition of transfer care is the definition that suits the purpose of this thesis. Therefore, this definition will be used throughout the report.

2.2 System boundaries of the Dutch transfer care system

This section will demarcate the system of interest (the Dutch transfer care system). Because conceptual models are used to define/represent the system boundaries, the Dutch transfer care system will be visualized by means of IDEF. IDEF is a form of a simple process model that can give insight into the different processes within a system. Since the Dutch transfer care system consists of different subsystems/processes taking place, this is a meaningful tool to represent the system.

[1] Primary care is the initial and ongoing care provided by general healthcare practitioners, while secondary care involves specialized medical services and consultations typically accessed through referrals for more complex health issues

A block represents a process. The incoming arrow indicates the input, and the outgoing arrow indicates the output. The process converts the input into the output. In addition, the arrow from the top is the control for the process. The arrow from the bottom provides the support needed to carry out the process. Only the subsystems that are within the system boundaries will be included in the IDEF diagram.

Since it is for understanding the boundaries of the Dutch transfer care system, only the A1 level will be presented. The diagram is shown in Figure 2.1.

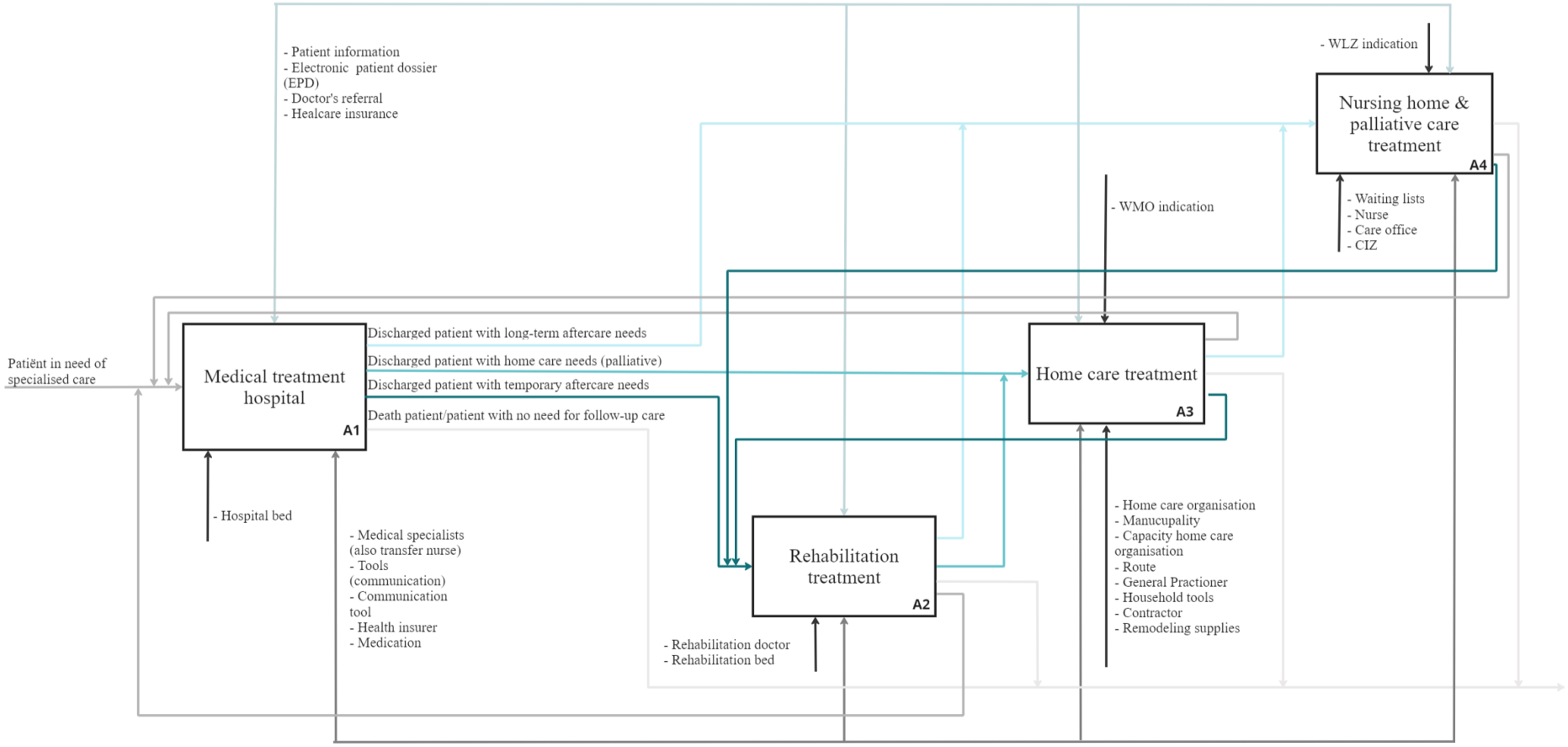


Figure 2.1: A1 level of IDEF diagram of sub-processes of Dutch transfer care system

The transfer care system consists of four subsystems: 1) hospital care; 2) rehabilitation care; 3) homecare and 4) nursing home/palliative care. The first sub-process is hospital care. A patient that needs specialised care gets admitted to hospital. When the treatment has ended, the patient will get discharged from hospital. The patient has several options to go to. One option is that the patient does not need any follow-up care or has died. Another option is that the patients only needs temporary geriatric rehabilitation care. Furthermore, the patient may need homecare, long-term nursing care in a nursing home or palliative care. When the patients gets discharged to a rehabilitation care centre (second subsystem), the patient might either go home (with homecare) or go to a nursing home/ palliative care. In case a patient gets discharged to palliative care (fourth subsystem), the patients can flow out the system if the patient dies. This is the end station in a patient's life. In case a patient gets discharge to a nursing home, the patient can only go to a rehabilitation care centre, be readmitted to hospital care or die and flow out the system. Note that in all situations (except for palliative patients), patients can be (re)admitted to hospital. In addition, the patient can always flow out the system if the patient dies.

2.3 Institutional analysis: Relevant legislation for the Dutch transfer care system

To be able to understand the Dutch transfer care system, one must be aware of the three different health care acts. This is Dutch specific and plays an important role, since these care acts make up the (financial) rules for the health care system. There are three regulations that are of high importance. These are: 1) Health Insurance Act (in Dutch: Zorg Verzekerings Wet (ZVW)); 2) Social Support Act (in Dutch: Wet Maatschappelijke Ondersteuning (WMO)) and 3) Long-Term Care act (in Dutch: Wet Langdurige Zorg (WLZ)).

Starting of with Health Insurance Act. The Health Insurance Act (ZVW) regulates the basic healthcare insurance. There are two types of health insurance: the basic insurance (in Dutch: basisverzekering) and the supplementary insurance (in Dutch: aanvullende verzekering) (Ministerie van Volksgezondheid, Welzijn en Sport, 2022a). The basic insurance covers standard care from, for example, a general practitioner, hospital or pharmacy (Ministerie van Volksgezondheid, Welzijn en Sport, 2022a). The government determines which care must be provided and what the amount of the deductible and health care allowance is (Ministerie van Volksgezondheid, Welzijn en Sport, 2022a). For certain care, no deductible applies (in Dutch: eigen risico) and sometimes additional contributions (in Dutch: eigen bijdrage) may also apply for care (Ministerie van Volksgezondheid, Welzijn en Sport, 2022a). The premium of a policy is the same for everyone and insurers have a duty of care. A supplementary insurance covers (part of) care that is not included in the basic package. The health insurer determines the conditions and reimbursements (Ministerie van Volksgezondheid, Welzijn en Sport, 2022a). The government has no influence on the supplementary insurances and it is not mandatory.

The Social Support Act states that municipalities provide support to their residents to remain independent and participate in society (Cak, 2023). The municipality provides general facilities,

such as shopping assistance and social housing (Cak, 2023). In addition, there is a custom-made provision that is tailored to the patient (Ministerie van Volksgezondheid, Welzijn en Sport, 2022c). The custom-made provision also includes aids that patients can request. Patients can apply for support from the WMO to the municipality, where it is determined with the municipality which care provider will provide this (Ministerie van Volksgezondheid, Welzijn en Sport, 2022c). Municipalities can request their own contribution for the WMO provision, with a maximum of 19 euros per month (Cak, 2023). Another option is to choose to purchase care outside the municipality with the help of individual budgets (in Dutch: Persoonsgebondenbudget (pgb)). A personal budget (pgb) is an amount with which you can purchase care yourself. This gives more freedom than care in kind (in Dutch: zorg in natura) purchased by the municipality (Ministerie van Volksgezondheid, Welzijn en Sport, 2022b). So it is essential to understand that patients need a care assessment to make use of the Social Support Act. Additionally, it is important to comprehend that the municipality is funded by, among other things, contributions from the central government (see Appendix B.2).

The Long-Term Care Act (in Dutch: Wet langdurige zorg, WLZ) is intended for people with a chronic illness or disability who need continuous 24-hour surveillance or care (Ministerie van Volksgezondheid, Welzijn en Sport, 2023b). In some cases, intensive care does not always fall under the Long-Term Care Act, namely in the case of: 1) the patient can indicate when help is needed; 2) the patient can call for help with an alarm button/phone; 3) the patient can wait for the necessary help and 4) the help is not needed for life (Ministerie van Volksgezondheid, Welzijn en Sport, 2023b). Different forms of care are possible under the Long-Term Care Act. Which care you receive depends on the situation of the patient. Examples of care that are possible under the Long-Term Care Act are: stay in an institution, food/drinks, housekeeping, nursing, treatment, aids, transport and personal care (Ministerie van Volksgezondheid, Welzijn en Sport, 2023b). To receive the care of the Long-Term Care Act, the patient needs an care assessment. This can be requested from Centre for Care Assessment and Eligibility (in Dutch: Centrum Indicatiestelling Zorg, CIZ) (Ministerie van Algemene Zaken, 2022). In the event that the patient receives an care assessment, the patient can choose to stay in a care institution or at home. If the patient chooses to stay at home, the care office must determine that the home situation is safe enough and that this care does not cost much more (Ministerie van Volksgezondheid, Welzijn en Sport, 2023b). The Long-Term Care Act care can be provided at home in the following ways: 1) a care institution provides the care completely at home (in Dutch: volledig pakket thuis, vpt); 2) the patient buys the care himself with the help of a personal budget; 3) the patient chooses which components to take from the care profile (in Dutch: modulair pakket thuis, mpt) or 4) a combination of personal budget and modular package at home (Ministerie van Volksgezondheid, Welzijn en Sport, 2023b). It is essential to understand that a patient requires an care assessment to be eligible for long-term care. Without such a care assessment, a patient cannot access long-term care. Furthermore, it is important to realize that if a patient is expected to (partially) recover, they are not eligible for long-term care and will remain excluded from it.

3 Methodology

This chapter will discuss the different methods used in this study. First, this study uses a literature review to gather textual data to identify what elements and patient flows constitute the Dutch transfer care system (SQ1) and potential obstacles and enhancers (SQ2). Second, empirical data will be collected by means of semi-structured (expert) interviews (see section 3.2.2) and by means of a case-study approach (see section 3.2.3) to also identify potential obstacles and enhancers (SQ2). The results of the literature review, interviews and case studies will form input for last phase. The last phase uses a simulation modelling method (qualitative System Dynamics) to identify leverage points for policy interventions to improve the Dutch transfer care system (SQ3) (see Section 3.3). The relationship between the various methods is depicted in Figure 3.1. Now, the methods will be discussed.

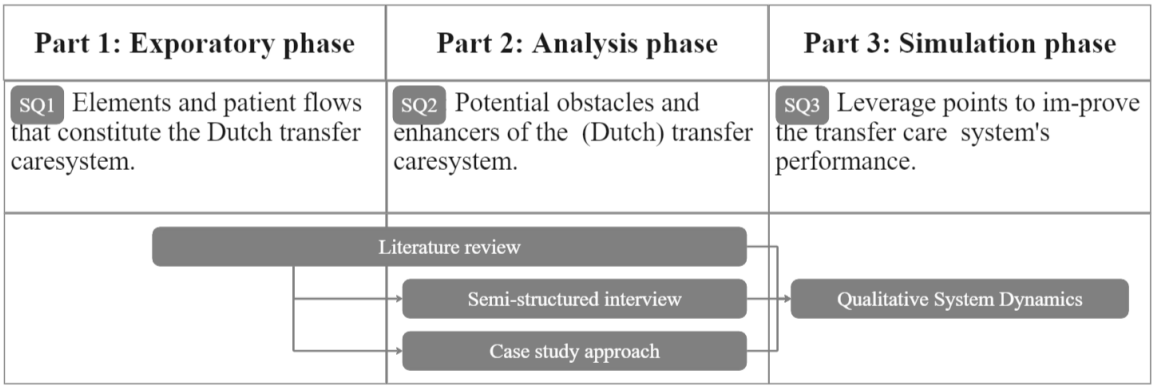


Figure 3.1: The relationships between methods

3.1 Phase one: Exploratory phase

This phase identifies the elements and patient flows that constitute the Dutch transfer care system (SQ1). Textual data will be gathered by means of informally reviewing literature. No further explanation will be given.

3.2 Phase two: Analysis phase

This section will discuss the analysis phase. In this phase, potential obstacles and enhancers will be identified. Both textual and empirical data will be gathered by means of three different methods: 1) literature review; 2) interviews and 3) case study approach. The first subsection will discuss the searching strategy of the literature review. The results can be found in Chapter 4.) The second subsection will discuss the interviews and the last subsection will delve deeper into the case study approach.

3.2.1 Literature review: search strategy

This subsection will discuss the searching strategy used in the literature review. To obtain an objective and scientifically review of relevant literature, a method proposed by Centre for Reviews and Dissemination is applied (Tacconelli, 2010). First, a searching process has been performed by using several selection criteria. Thereafter, a set exclusion and inclusion criteria was used to end up with a smaller set of literature studies. Lastly, a snowballing technique was used to include other relevant articles that felt out of the searching strategy. The whole searching process is visualized in Figure 3.2).

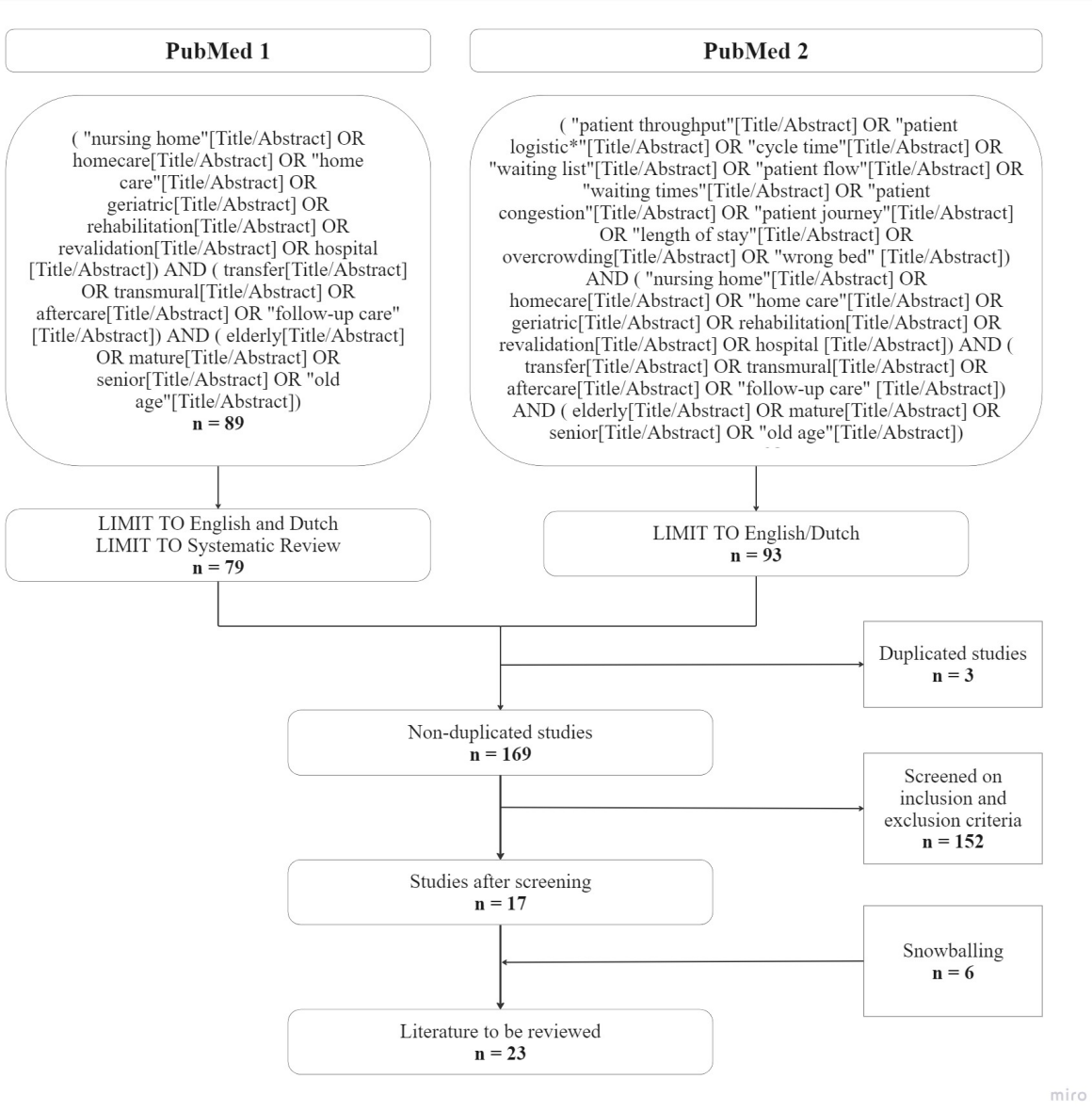


Figure 3.2: Flow chart of screening and selection process

Searching literature process: searching terms

First, the search has been conducted from April till June 2023 using the PubMed database. With the help of one of the supervisors that is advanced in doing systematic reviews (Dr. S. (Saba)

Hinrichs-Krapels), a search strategy has been designed. The search has started with combining terms of the four domains presented in Table 3.1. The four domains are: 1) Performance of system; 2) System of Interest; 3) Transfer care and 4) Patients. The operator OR was used within each domain and the operator AND was used for search terms between the different domains.

Table 3.1: Search terms and domains

Performance	**System of Interest**	**Transfer care**	**Patients**
Patient throughput	Nursing home	Transfer	Elderly
Patient logistics	Homecare	Transmural	Mature
Patient cycle time	Geriatric rehabilitation	Aftercare	Senior
Patient-flow / patient flow	Hospital	Dischargement from hospital	Aged
Waiting lists / waiting times		Follow-up care	Old
Patient congestion			Ancient
Patient journey			
Length of stay			
Overcrowding			
Wrong bed			

Two searching strategies are used. The first strategy used all the domains and the second strategy used all the domains except for the "Performance of System" domain, since not all relevant literature mention these keywords in the title or abstract. For the first strategy, to scope down the amount of output, only (systematic) reviews are included.

Both searching strategies resulted in a set of articles that is too large (n=169) to review (see Figure 3.2). Therefore, inclusion and exclusion criteria are used to exclude irrelevant articles. This will be discussed in the next subsection.

Screening literature process: inclusion and exclusion criteria

To exclude irrelevant articles, inclusion and exclusion criteria are used. Table 3.2 specifies the inclusion and exclusion criteria. Seventeen studies are selected after the searching and screening phase.

Table 3.2: Screening literature process: Inclusion and exclusion criteria

	Inclusion criteria	**Exclusion criteria**
Study setting	1. The study must have taken place in an upper-mid- or high-income country. 2. The study can include home care organisations, nursing homes, geriatric revalidation centre and hospitals. 3. The publication date should be later than 2000.	1. Studies that fall out of the setting
Type of publication	1. The literature review is limited to only journal articles that are written in English or Dutch. 2. A full-text version should be available.	1. Other types of publication such as: book chapters, reports, non-scholarly publications, reviews are excluded. 2. Only part of text is available 3. Other languages publications
Type of patients	1. Elderly patients (65+)	1. Young patients (<65y)

Snowballing technique

The seventeen studies that resulted from the searching and screening phase were analysed for other useful literature. By using the snowballing technique, another seven studies were selected to review. In total twenty-three articles will be reviewed.

The results of the literature review are presented in chapter 4.

3.2.2 Semi-structured interviews

In addition to reviewing literature, semi-structured interviews were conducted to gather empirical data about potential obstacles and enhancers (SQ2). Interviewing is a suitable method, because it explores information that is not published, and it can verify or falsify information from literature (Siebers, n.d.). The downside of interviews is that these are "time consuming" and often only a small number of people can be interviewed, which causes "issues of representativity and specifity" (Siebers, n.d.). However, experts and patients with different (professional) roles are interviewed to gain a variety of perspectives and avoid any potential issues of specificity.

Now, the coding strategy will be explained to extract only the most relevant data (see 3.2.2). The data of the interviews and informed consents are presented in Appendix C and the results (list of interviewees) of the interviews will be discussed in chapter 4.

Coding strategy

The content of the interviews can be found in Appendix C.1. To structure the data and extract relevant information, a coding technique [1] was used. Because the interviews are qualitative, the following phases have been carried out: 1) Transcribing; 2) Open coding, and 3) Axial coding. Transcribing involves writing down word for word what was said in the interview. The "open coding" phase involves the process of connecting the transcribed interview with labels/codes to text fragments. These codes indicate the main theme of each fragment. The last phase is the "axial coding" phase. This involves comparing the assigned codes and combining codes that belong together into an overarching code. After structuring the data from interviews by means of this coding technique, the results can be discussed (see chapter 4).

3.2.3 Case-study methodology: the Yin approach

In addition to the interviews, a case study approach has been used to gather empirical data about potential obstacles and enhancers (SQ2). In order to maximize the information obtained from the case study, it has been conducted in a systematic manner. First, the case study design will be discussed (see 3.2.3). Secondly, the case study data collection process will be explained (see 3.2.3). Finally, an explanation of the data analysis technique will be provided (see 3.2.3). More detailed information can be found in Appendix D and results of the case studies will be discussed in Chapter 4.

Case study design

The case studies lasted for five days. One day was spent on the geriatric ward on the nursing floor in the Albert Schweitzer hospital in Dordrecht and four days were spent on the transfer/nursing department in Albert Schweitzer hospital, Reinier de Graaf hospital in Delft, Deventer hospital and Amstelland hospital in Amstelveen. Based on this information, it can be concluded that this case study has both a holistic and an embedded design. It is a holistic study, because the geriatric department will only be studied within one hospital. Additionally, it is an embedded study, because the transfer department will be studied in four hospitals. Furthermore, patients and the decisions that are made around the care of these patients form the "case of analysis".

First, more information of the hospitals will be offered. The locations of the hospitals are shown in a population density map of the Netherlands (see Figure 3.3). As shown, three hospitals (numbers 1, 3, and 4) are located in the Randstad (a highly urbanized area where various agglomerations with their own central cities are connected or expanding), while one hospital (number 2) is situated in a much less densely populated part of the Netherlands, far outside the Randstad. Before delving deeper into the case studies, a discussion of the data collection process will be provided.

[1] This coding technique was performed manually in Microsoft Word and Excel, without the use of an analysis tool. This has the disadvantage of not being repeatable, meaning the process cannot be easily replicated or automated. Consequently, it may be more susceptible to human bias and may not offer the same level of consistency and efficiency as automated coding methods.

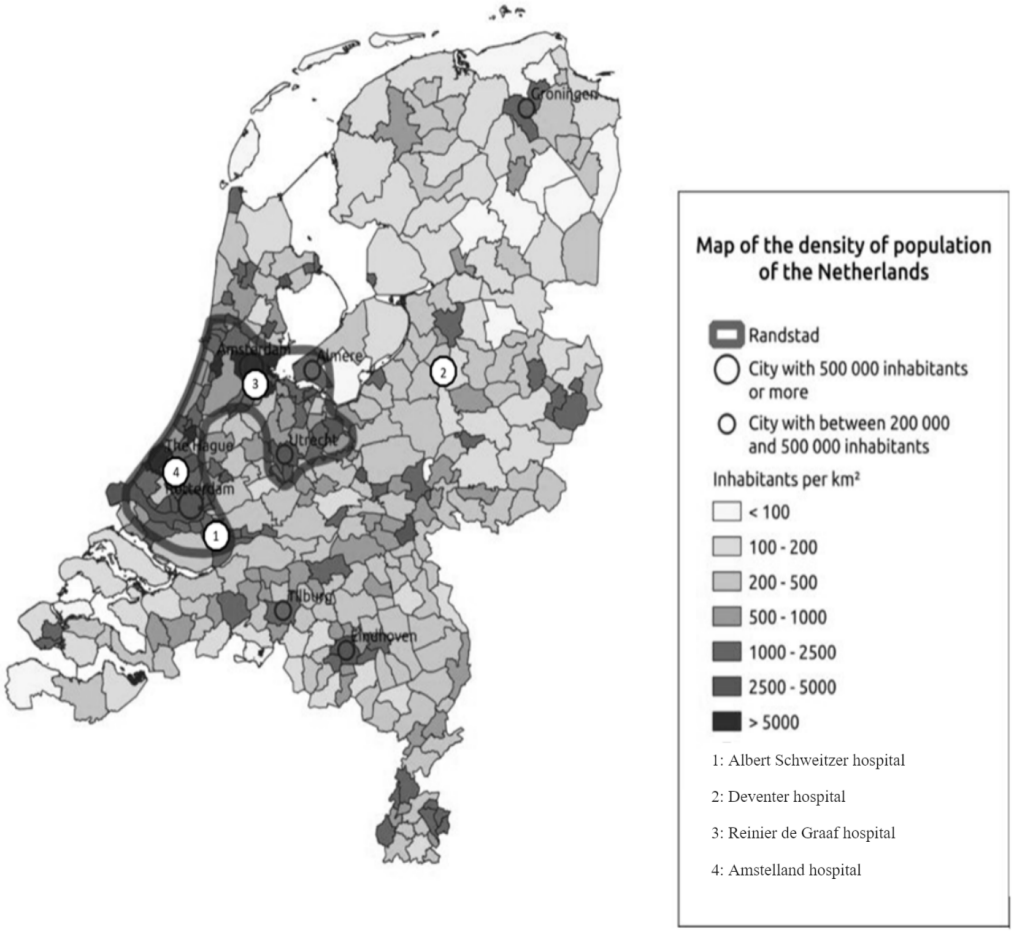


Figure 3.3: Locations of hospitals and the density of population ("Population of The Netherlands", 2020)

Case study data collection

There are multiple sources of evidence when performing a case study. The sources that can be used are 1) direct observations in the field setting and 2) interviews. Direct observations can be used to focus on human actions, the physical environment and real-world events, such as the patients (care), care givers/doctors, and organizational decisions. Additionally, interviews can be used to reveal relevant insights of the transfer care system. This case study approach primarily involved doing observations and engaged with experts at four hospitals. First, more information on the hospitals will be provided.

Albert Schweitzer hospital

At Albert Schweitzer Hospital in Dordrecht, knowledge was acquired by shadowing on multiple days across various departments. This included shadowing on the geriatric department, transfer department, and the nursing department. On the geriatric department, a Resident Doctor and a Geriatric Internist were shadowed. Visits were made to both the outpatient clinic and the inpatient ward. Patient records were discussed, patient visits were conducted, and an outpatient clinic session was attended. As both the Resident Doctor and Geriatric Internist encountered numerous issues in their daily practice, the problem could be comprehensively understood from

their perspectives. Moreover, the transfer department and nursing ward were observed closely. Two nurses showed a lot of information about what is going well and what could improved.

Deventer hospital
At Deventer Hospital, observations and meetings took place within the transfer care department. Around eleven o'clock, a multidisciplinary meeting took place among doctors, nurses, and transfer nurses. The purpose of this meeting was to discuss patients and, where possible, to identify bottlenecks to improve patient flow. The meeting was led by a doctor and took place in a room equipped with a projector, which facilitated a highly structured discussion.

The transfer department was located in two different areas within the hospital: the first spot was on the hospital's support floor on the first level, while the other spot was right next to the entrance, behind a separate counter. This counter served as a check-in point for patients with planned upcoming admissions. The positioning of the transfer department within the hospital itself enabled transfer nurses to easily move to various departments to communicate with doctors and patients as needed.

The reason that the hospital in Deventer and Dordrecht were included in the case study approach, is due to the significant difference in patient flow between Albert Schweitzer Hospital, where patient flow was less efficient, and Deventer Hospital, where patient flow was more streamlined. By examining cases with both effective and less effective systems, a comprehensive insight could be gained into factors that hinder or promote patient flow.

Reinier de Graaf hospital
At Reinier de Graaf Hospital (Delft), the transfer care department was observed. Here as well, a conversation took place among the transfer nurses (no multidisciplinary meeting). The same topics were discussed as at Deventer Hospital. The hospital in Delft has a separate transfer department located in a building adjacent to the hospital itself (unlike Deventer, where it is within the hospital). Despite this, transfer nurses in Delft can still quickly reach doctors and other nurses by calling or walking to the department (within a maximum of 5 minutes).

The difference compared to Deventer Hospital and Albert Schweitzer is that these transfer nurses spend an hour on the department each day. This allows them to directly interact with patients or engage in conversations with doctors and nurses. This keeps communication lines short, which in turn enhances collaboration and communication.

Amstelland hospital
Lastly, the transfer department of Amstelland Hospital (Amstelveen) was observed. Here as well, the workflow did not differ significantly from the previously mentioned hospitals, and the transfer department is located within the hospital itself. The only difference was that there was no meeting during the observation.

Case study data analysis

Following the case study data collection process, there is a subsequent process of data analysis. There exist multiple techniques for analyzing case study data. The goal of this case study is

to identify potential obstacles and enhancers of the transfer care system (SQ2). Therefore, the technique will be directed at this question. Since this case study did not have initial propositions, but only an open-ended research questions, the most suitable technique is explanation-building technique. There is no strict protocol and no detailed guidance, but in most studies the explanation is focused on the research question. Based on this information, notes were taken of all (relevant) observations. This data is coded and structured in the same manner as the interview results were. The results of the case study data can be found in chapter 4.

3.3 Phase three: Simulation phase

Now the simulation phase and simulation modelling technique will be elaborated. Firstly, it will be argued why the simulation modelling approach is applicable to the goal of this thesis study (see 3.3.1). Secondly, the different simulation modelling techniques will be discussed (see 3.3.2). Thereafter, it will be explained why System Dynamics is the most suitable simulation technique (see 3.3.3). Finally, the verification and validation process will be discussed (see 3.3.4).

3.3.1 Accountability of a simulation modelling approach

The modelling approach consists of different types of models. This study uses a simulation modelling approach, because it can help to analyze behaviour in a real system which also enables testing the influence of certain scenarios (Maidstone, 2012). Also constructing a simulation model can be useful in achieving greater understanding of the healthcare system by means of visualising the system (Borshchev and Filippov, 2004; Maidstone, 2012; Siebers, n.d.). These beneficial features can help to get understanding in the relationship between the consequences of aging and the functioning of the transfer care system. However, a simulation modelling approach also has disadvantages. One disadvantage is that the researcher often tends to model the system with a simulation method that might not be the most useful methods, but with the method that is most comfortable to work with (Maidstone, 2012). However, the next subsection will do research to the most appropriate simulation technique.

3.3.2 Different Simulation Modelling Approaches

There are many different simulation modelling approaches that are used in Operational Research, but there are three main ones: Discrete Event Simulation (DES), System Dynamics (SD) and Agent Based Simulation (ABS).

Discrete Event Simulation (DES) is a modelling technique that allows studying complex systems by simulating the operation of the system as a discrete sequence of events in time (Robinson, 2014). Each event occurs at a particular rate and shows a change of state in the system (Robinson, 2014). DES models consist of entities (objects that move through the system), events (processes) and resources (triggers of events) (Maidstone, 2012).

Agent Based Simulation (ABS) is a "computational model" that studies the coherence of individual components/entities (Grimm and Railsback, 2013). An ABS model consists of autonomous agents that follow certain rules to achieve their goal and interact with each other and their

environment (Maidstone, 2012). ABS can be used to model situations in which the entities have some crude intelligence.

System Dynamics is developed to provide insight in complex systems (e.g., healthcare system) and enables analyzing impacts of interventions into the system (Luijben and Pruyt, 2019). System Dynamics (SD) focuses on flows around networks rather than queueing systems what DES is focusing on. SD simulates the real-life system and its processes in terms of "stocks, flows between the stocks and delays" (Maidstone, 2012; Borshchev and Filippov, 2004). These "objects" depend on general constants (Maidstone, 2012). The "system behaviour" will be modelled using "interacting feedback loops, balancing, reinforcing and delay structures" (Maidstone, 2012 & Luijben and Pruyt, 2019).

3.3.3 Most useful Simulation Modelling Approach

Now the most suitable simulation modelling approach will be addressed. To differentiate between SD and DES, DES is often employed to model systems consisting of queues and networks with probability distributions on a micro level (Maidstone, 2012). In contrast, SD focuses more on flows and larger systems where flows are a good approximation (Maidstone, 2012). These flows are continuous and occur on a macroscopic level. When differentiating ABS and DES/SD, the main difference is that agents in ABS have their own goal, and entities in DES are presumed passive (determined by the system) (Maidstone, 2012). Additionally, DES focuses on queues as essential elements, while Agent-based Simulation ABS does not (Maidstone, 2012). Furthermore, SD follows a top-down approach, whereas ABS follows a bottom-up approach (Maidstone, 2012). Lastly, ABS is stochastic, whereas SD models are generally deterministic.

Following up from this distinction, it can be argued that SD is the most suitable approach for this study. This study researches the Dutch transfer care system, which consists of continuous flows of patients, and the system is more on a macroscopic level. When the focus was on subsystems within a hospital itself, a DES approach could have been more suitable. In addition, the focus is not on an individual patient and its behaviour (set of rules), but more on the system itself. Therefore, ABS is a less suitable approach.

Because this study has a limited time frame, only qualitative System Dynamics (hybrid causal loop diagram) is used. This model consists of factors, stocks, flows and the direct causal relationships between them (Auping et al., 2023). The stocks represent accumulative quantity or a reservoir of a particular entity/factor and the flows represent the rates at which resources/entities move into or out of a stock in a dynamic system (Auping et al., 2023).

3.3.4 Verification and validation

After the model was created, the model was verified and validated. Because this study only uses qualitative SD, there was no formal rigorous verification and validation. Nevertheless, expert meetings/interviews were used to check if the model does not contain wrong relationships and assumptions.

First, the model was verified by Dr.ir. W.L. Auping working at the TU Delft that is specialized

in the impact that profound uncertainty has on the way we develop and use simulation models. He is advanced in developing causal loop diagrams and quantitative System Dynamics. After going through the verification process, the model was validated. Finally, the model was validated by an geriatric internist working in the hospital of Dordrecht with extension knowledge of the Dutch transfer care system (see section 3.3.4). The expert prepared thoroughly for the validation meeting by getting an understanding in qualitative System Dynamics. The goal of this validation process was to examine whether the model does what it is intended to do and if the modeller interpreted the system correctly. This involved checking for missing variables, on the formulation of variables and examining the relationships between the variables. Finally, the expert was asked for advice on Key Performance Indicators (KPIs).

4 Enhancers and obstacles of the transfer care system

The aim of this chapter is to identify potential enhancers and obstacles obtained by the literature review, interviews and case study approach (SQ2). The first section provides an overview of the selected articles that are reviewed (see Section 4.1) The second section (4.2) shows the obstacles and enhancers found by means of the literature review. Section 4.3 will show the list of interviewees and Section 4.4 shows the obstacles and enhancers found by the interviews and case studies. Furthermore, the fifth section provides a comparison of the two case studies: 1) Deventer hospital and 2) Albert Schweitzer hospital in Dordrecht (see Section 4.5). Finally, an interim conclusion and a discussion of the added value of qualitative System Dynamics will be provided (see Section 4.6).

4.1 Results: overview of selected articles reviewed

This section presents an overview of the selected articles. In total, twenty-three studies are selected for the review analysis. These are shown in Table (4.1). From all studies, the author, publication date, context, design and study setting is presented.

Table 4.1: Overview literature

Author	Context	Design	Aim of study
(Sun et al., 2023)	17 studies from US, Turkey, Canada, Australia, Tran, Norway, Italy, UK and Ireland	Systematic evaluation and meta-synthesis of qualitative research	The primary objective of this study is to gain a deeper understanding of the factors that either enabler hinder the transition process of older adults as they move from the hospital to their homes. By adopting Meleis' transition theory, the aim is to provide a comprehensive perspective and support the development of evidence-based interventions for effective care transitions.

Continued on next page

Author	Context	Design	Aim of study
(Laugaland et al., 2012)	Focus on elderly patients (65) who have been discharged either home or to a nursing home from tertiary care hospitals	Systematic literature search	The main focus of this paper is on interventions that aim to enhance patient safety during the transitional care of elderly individuals. The objective of this study is to identify and assess the impact of interventions on the effectiveness and efficiency of care processes.
(Lamantia et al., 2010)	We included articles that studied patients aged 65 years or older transitioning between nursing homes and hospitals in either direction	Systematic review	This study has to aims: (1) Can a clinical intervention improve transmission of accurate and appropriate medication lists for adults aged 65 years or older in transition between nursing homes and hospitals? and (2) Has an intervention been shown to improve communication of advance directives for these patients between settings?
(Joo and Liu, 2022)	This study was limited to qualitative studies published between 2012 and 2021, which focused on hospital-to-home transitions	Systematic review	This study analyzed qualitative studies of the experiences and perceptions that individuals with chronic condition(s) and their caregivers had about hospital-to-home transitions. The specific question was "What experiences and perceptions with transitions from healthcare facilities to other settings did individual(s) with chronic condition(s) and their caregivers have?"
(Lemoyne et al., 2019)	Of all acute transfers of NH residents to an ED, 4 to 55% were classified as inappropriate	Systematic review	The purpose of this systematic review is to define the characteristics of ED transfers of NH residents, to describe definitions of appropriateness and to identify factors associated with a reduction in inappropriate transfers.

Continued on next page

Author	Context	Design	Aim of study
(Fassmer et al., 2020)	GPs Bremen and Lower Saxony (Germany) and NH staff (preferably nursing staff managers) from all over Germany	Two cross-sectional studies were conducted as surveys, descriptive statistics and Mann-Whitney U tests	The objective of this study was to compare the viewpoints of general practitioners (GPs) and nursing home staff regarding hospital transfers among residents, and to highlight potential strategies for enhancing the transfer process.
(Høy and Ludvigsen, 2018)	The review will consider studies that include older adults who have experienced patient involvement in transitional care between hospital and home	Systematic Review Protocol	The objective of this review is to identify and synthesize older adult's experiences of patient involvement in transitional care between hospital and home. The purpose is to build theory to inform future research and clinical practice.
(Coleman and Boult, 2003)	Patients transfer between different locations or different levels of care within the same location	Special Article	The objective of this study is to improve the quality of transitional care for persons with complex care needs.
(Hestevik et al., 2019)	Older persons' experiences adapting to daily life at home after hospital discharge	Meta summary of qualitative findings using Sandelowski and Barroso's method	Older persons' experiences of adapting to daily life at home after hospital discharge

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Author	Context	Design	Aim of study
(Mistiaen et al., 2007)	Reviews between 1994–2004 to find relevant reviews that focus on adult patients that get discharged from hospital to home	Meta-review	The objective of this study was to conduct a comprehensive review and assessment of existing literature reviews, with the purpose of evaluating the effectiveness of discharge interventions in addressing after care challenges among adults who are discharged to their homes from acute general care hospitals. Alongside investigating issues related to patient functioning after discharge, the study aimed to gather evidence on the effects of discharge interventions on discharge status, utilization of healthcare services, and after care costs.
(Hesselink et al., 2014)	Interviews with patients, relatives, involved hospital and community care providers	Intervention Mapping framework, interviews and systematic review	This study sought to systematically create a comprehensive framework that can guide the development of interventions to enhance the effectiveness of patient handovers from hospitals to primary care. This framework is intended to support care providers and policy-makers in improving the quality and efficiency of the handover process.
(Bauer et al., 2009)	Frail older people	Literature review	This paper examined the available evidence concerning hospital discharge practices for frail older people and their family caregivers and what practices were most beneficial for this group.
(Halasyamani et al., 2006)	Hospital setting	Literature review	The goal is to develop a checklist to enhance the discharge process.

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Author	Context	Design	Aim of study
(Griffiths et al., 2014)	It focuses on transitions of residential aged care facilities to emergency departments	Literature review	The objective of this literature review was to examine communication practices during transitional periods and to investigate the specific patient information that is considered vital for effectively managing residents in the emergency department.
(Fakha et al., 2021)	Transitional care innovations	Scoping review	The objective of this review is to determine the factors that impact the implementation of transitional care innovations.
(Aahlin et al., 2023	Interviews with senior managers at the world's leading hospital	Qualitative interviews	Therefore, the purpose of this study is to (1) identify effective strategies for achieving efficient patient flows within hospital organizations and (2) create a framework that can provide guidance for enhancing patient flows throughout the entire hospital system.
(Åhlin et al., 2022)	Hospital patient through-put	Literature review	This paper presents a systematic literature review that examines the barriers to patient process throughput across hospitals. By consolidating a substantial number of studies conducted in individual settings, this review offers a comprehensive perspective on the challenges and obstacles that exist at the hospital-wide level.
(Manville et al., 2014)	St Joseph's Hospital in Comox, BC	Before-and-after structured retrospective chart audit	The aim of this study is to compare the clinical outcomes and costs of providing interdisciplinary care on a transitional care unit (TCU) versus standard hospital care for elderly patients classified as alternate level of care (ALC).

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Author	Context	Design	Aim of study
(Considine et al., 2019)	The study took place in 22 wards across eight sub acute care hospitals located in five major health services in Victoria, Australia	Prospective cohort study	The objective of this study is to examine the attributes of inter-hospital transfers from sub acute to acute care, specifically focusing on early transfers (occurring within 1 day) and late transfers (taking place after 1 day) following admission to sub acute care.
(Kuluski et al., 2020)	Co-designing components of an intervention with patients, caregivers and providers to address delayed hospital discharge challenges	A qualitative study, which entailed working groups and co-design sessions	The objective of this study is to actively involve patients, caregivers, and care providers in a collaborative process to develop various aspects of an intervention that seeks to enhance the experiences related to delayed hospital discharge.
(Cadel et al., 2022)	Ontario, Canada 2019-2020	Descriptive qualitative study; semi-structured interviews and inductive data analysis	The aim of this study is to examine the strengths and challenges of formal care team-based discharge processes in order to identify areas for improvement and provide recommendations on how teams can effectively support transitions for patients facing delayed discharge situations.
(Crotty et al., 2005)	Three public hospitals in Southern Adelaide	Randomised controlled trial	To assess the effectiveness of moving patients who are waiting in hospital for a long term care bed to an off-site transitional care facility.

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Author	Context	Design	Aim of study
(New et al., 2013)	Post acute care involving psychiatrists, aged-care physicians and senior nursing clinicians	Survey and literature analysis	This study employs an iterative consultation and feedback process involving psychiatrists, aged-care physicians, and senior nursing and allied health clinicians to establish a definition of barriers to discharge from post-acute care and categorize their underlying causes.

All twenty-three studies focused on the transfer care system of high- and medium income countries. In addition, the studies examined factors that impede/improve patient flow within the transfer care system. Some of these studies focused on a specific intervention, for example a transitional care unit (Manville et al., 2014) or the design of a checklist (Halasyamani et al., 2006), while other studies explored causes and consequences within the transfer care system (Aahlin et al., 2023; Åhlin et al., 2022) or factors that impact the implementation of innovations within the transfer care system (Fakha et al., 2021). Additionally, some studies were systematic reviews, indicating that more research has been conducted on the transfer care system.

Next section will discuss the outcomes of the literature review.

4.2 Obstacles and enhancers found in literature

The twenty-three studies are reviewed and many obstacles and enhancers are found. To provide a systematic description of the findings, the obstacles and enhancers are categorized into different themes. These themes are based on the similarities of the obstacles and enhancers. The themes are:

1. Regulation, protocols, routines and checklists;
2. Coordination and collaboration;
3. Patient and family behaviour and response;
4. Healthcare providers capacity, quality and flexibility;
5. Follow up care and evaluation;
6. Information and Communication Technology.

To determine whether a factor is an obstacle, or an enhancer it is useful to know how the performance of the system can be measured. The performance of the transfer care system can be discussed using the four pathways.

4.2.1 Elements and patient flows that constitute the Dutch transfer care system

The four pathways that constitute the transfer care system are: 1) the transition from hospital to home; 2) the transition from hospital to intermediary care places to a final destination; 3) the transition from hospital or home to nursing residential care facilities and 4) transition from nursing facilities or home to hospital (Fakha et al., 2021).

The first pathway encompasses the transition from hospital to home, the transition from hospital to nursing residential and the transition from hospital to intermediary care places to the final destination. The system performance is enhanced when a patient is relocated to the correct destination when the patient is ready for discharge. It is also important that the patient becomes transferable as quickly as possible and that there are no delays that would cause the patient to become transferable later than could have been achieved. Another pathway is about the transition from nursing facilities to the hospital and the transition from home to the hospital. This pathway pertains to the inflow/readmissions of patients. The system performance improves when the number of patient admissions or readmissions is prevented whenever possible. The last transition is from home to nursing residential care facilities. The system performance is enhanced if the patient patients can move from home to a nursing home without the need for hospital admission. In addition, preventing a nursing home admission is desirable when an admission can be prevented.

Based on this information, obstacles and enhancers can be identified.

4.2.2 Regulation, protocols, routines and standards

The first theme entails regulations, protocols, routines and standards. This theme can be divided into various sub-themes that will be discussed now and are shown in Table 4.2 and the enhancers are shown in Table 4.3.

Standards, routines and checklists

Obstacles belonging to standards, routines, checklists show that a lack of clear routines, protocols, standards or guidelines cause an inefficient (discharge) process(es). Standards, routines and checklists can also be seen as enhancers. They all aim to provide guidance which can empower efficiency, but the level of formality, specificity, and scope can vary between routines, protocols, standards, and guidelines. Additionally, some enhancers focus not only on discharge processes but also on hospital readmissions. For example, having standardized medication reports lead to fewer medication errors. In addition, having standardized hand-offs, patients get informed well and get all the information that is needed for aftercare. A reduction in medication errors and having standardized hand-offs can reduce the number of readmissions. Furthermore, having clear guidelines, checklists, standardized hand-offs, and routines contributes to a more effective discharge process, which is a significant component of the transfer care system.

Doctors approval assessments

Factors that belong to doctors approval assessment are mostly enhancers. Most of these enhancers focus on the discharge of patients. A thorough doctor's assessment ensures that the patient's (after)care needs can be accurately determined. This can promote patient discharge because appropriate post-acute care can be sought. For example, an assessment may reveal that the patient has impaired cognitive functioning, which influences the choice of facility for the patient. Additionally, a comprehensive assessment ensures that no crucial information is missing, which could hinder the discharge process.

Advance directives and legal matters

A theme that can be overlooked by healthcare providers is the issue of advance directives. When it comes to care for the elderly, there may be a situation where treatment is no longer desired by patients. Patients with dementia, for example, often choose not to be treated. Another example is that older adults who frequently experience falls may choose not to undergo procedures such as hip or knee replacements. However, when an older individual is admitted to the hospital or emergency department, he/she is typically treated regardless of their preferences. If older adults consider in advance whether treatment is desirable, it can reduce hospital admissions. Therefore, having an advance directive can have a positive influence on the number of hospital admissions. Additionally, it is essential to respect and honor advance directives in order to realize the benefits they provide.

Management, organizational factors and leadership

The last sub-theme is about management an organizational factors & leadership. This sub-theme identified many enhancers. Some enhancers are more frequently mentioned in the literature than other factors. A commonly mentioned enhancer is having a low level of conflicting opinions among healthcare providers. This can hinder the flow of elderly patients. Another commonly mentioned enhancer is shortening decision-making cycles. Shortening decision-making cycles can be achieved through team meetings and hospital rounds. This can help improve efficiency and help streamline the decision-making process. Furthermore, having a coordinator, go-to-person, and senior leader can enhance the transfer care system. For instance, having a go-to-person ensures that patients receive comprehensive information and fosters coordination, leading to better continuity of care. It can also help reduce medication and treatment errors, thereby reducing the likelihood of extended stays and readmissions. Additionally, having a senior leader contributes to better relationships among staff members and improved team performance, which can enhance the transfer care system. Moreover, defining clear roles is associated with the enhancer mentioned earlier. A strong connection between front-line providers and management can also reduce tensions, including differing opinions, resulting in improved team performance.

The entire list of enhancers and obstacles of this theme is shown in Table 4.2 and 4.3.

Table 4.2: Obstacles: Regulation, protocols, routines and standards

Obstacle	References
Lack of standards and routine	(Aahlin et al., 2023; Sun et al., 2023)
Lack of systems (e.g. guidelines for access to services) to support discharge	Bull and Roberts, 2001; Tracey et al., 1998) as cited in (Bauer et al., 2009
Insufficient discharge routine	(Aahlin et al., 2023)
Lack of communication and clear routines	(Amato-Vealey et al., 2012; Ardagh et al., 2011; Attarian et al., 2013; Bhatt et al., 2014; Blouin-Delisle et al., 2018; Furterer, 2018; Improta et al., 2018; Kodali et al., 2014; Martin et al., 2011; Morales-Contreras et al., 2020; Murphy et al., 2014; Platzke and Andrabi, 2012; Reddy et al., 2015; Vose et al., 2014 Bhatt et al., 2014; Blouin-Delisle et al., 2018 as cited in Åhlin et al., 2022)
Late internal discharge planning causes lack of readiness of caregivers	(Destino et al., 2019; Hamline et al., 2020; Khalifa, 2017 as cited in Åhlin et al., 2022)
Hard-to-understand checklists	(Fakha et al., 2021; Røsstad et al., 2015)
Non-standardized or detailed protocols	(Fakha et al., 2021; Nurjono et al., 2019)
Legal considerations: Nurses are more inclined to choose a hospital transfer than doctors	(Kada et al., 2011; Laging et al., 2015 as cited in Fassmer et al., 2020)
Not explicit advance directives	(Fassmer et al., 2020; Lamantia et al., 2010)
Disrespected explicit advance directives	(Lemoyne et al., 2019)

Table 4.3: Enhancers: Regulation, protocols, routines and standards

Enhancer	References
Use standards and guidelines (standardized discharge letter, planning, medication reconciliation)	(Hesselink et al., 2014)
Clear daily routines and prioritization schemes will ensure all necessary activities are synchronized/finished in time	(Åhlin et al., 2022 as cited in Aahlin et al., 2023)
Standardized hand-offs, pre-defined destinations for patients with certain diagnoses	(Aahlin et al., 2023)
Checklists: A checklist encourages critical thinking and promotes collaboration	(Halasyamani et al., 2006)

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Enhancer	References
Standardized medication reports/discharge summary	(Laugaland et al., 2012)
Evaluation occupational therapy home assessment on time	(New et al., 2013)
The patient requires a neuropsychological assessment to evaluate decision-making capacity before considering discharge options	(New et al., 2013)
Good Comprehensive geriatric assessment (CGA) that can lead to less readmissions/emergency cases	(Laugaland et al., 2012)
Complex process of patient assessment looking to patients care needs and prepare for discharge	(Bauer et al., 2009)
Discharge readiness: Comprehensive geriatric assessment and treatment in a geriatric specialized unit or by a specialized team promote discharge readiness	(Bauer et al., 2009)
No lack of information about health situation	(Andreasen et al., 2015; Dossa et al., 2012; Knight et al., 2013; Perry et al., 2011; Slatyer et al., 2013 as cited in Hestevik et al., 2019)
Few conflicting opions between different service providers	(Dilworth et al., 2012; Dossa et al., 2012; Knight et al., 2013 as cited in Hestevik et al., 2019)
Clear roles for everyone involved in transfer	(Aahlin et al., 2023)
One strong mandate	(Aahlin et al., 2023)
Aligned organization	(Aahlin et al., 2023)
Key coordinator can facilitate better information exchange and transfer, leading to fewer readmissions and reduced medical errors	(Laugaland et al., 2012)
Setting Transitional Care Coordinator and deciding together (patients/family and healthcare providers) what is needed/decided	(Sun et al., 2023)
Defining clear roles and responsibilities for key team members implementing the TC innovation facilitated its implementation	(Naylor et al., 2009 as cited in Fakha et al., 2021)

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Enhancer	References
Shortening the duration of decision-making cycles, such as hospital rounds and team meetings, can help improve efficiency and streamline the decision-making process	(Ahmad et al., 2011 as cited in New et al., 2013)
Understanding and reducing system-related variation in healthcare processes	(Litvak and Dentzer, 2010; Wheeler, 1993 as cited in New et al., 2013)
A connect between front line providers and management resulted in less tensions and stronger team dynamics	(Cadel et al., 2022)
Having a senior leader who was dedicated to addressing delayed discharges enhanced communication between front line providers, senior management and community partners can lead to improved relationships and team functioning	(Cadel et al., 2022)
Assigning a designated person to the patient/caregiver as their 'go-to person' can provide continuity of care and enhance communication and coordination	(Kuluski et al., 2020)

4.2.3 Coordination and collaboration

This theme encompasses coordination and collaboration factors. This theme can be divided into various sub-themes, which will now be discussed. The list of obstacles is shown in Table 4.4 and the enhancers can be found in Table 4.5.

Coordination and Collaboration

This sub-theme consists of many enhancers. The most commonly mentioned enhancers include interdisciplinary/multidisciplinary teams and collaboration among healthcare providers. Two successive themes, namely "communication among healthcare providers" and "communication between healthcare providers," are closely related to the collaborative component. In these themes, factors such as collaboration, partnerships, team-based approaches, and connections between healthcare providers are highlighted, demonstrating their interconnectedness.

Communication among healthcare providers

Another sub-theme is about communication among healthcare providers. Both obstacles and enhancers have been found in literature. The most commonly mentioned obstacles were poor/inadequate/insufficient communication and disrupted information flows. The literature demonstrated that poor communication could increase the likelihood of readmission and treatment errors, both of which have negative consequences for the transfer care system. Furthermore, it

was noted that the literature primarily focuses on communication between and within healthcare providers. It was often suggested that poor communication led to delayed discharge and ineffective handovers, which are significant aspects of transfer care. In addition to the previously mentioned obstacles, also enhancers were identified. These enhancers can be grouped under a shared name: inter-professional collaboration/communication, which leads to lower rates of inappropriate transfer. Inappropriate transfers refer to situations where care in a lower-cost setting (such as a nursing home) would be equally safe and less disruptive than care in a higher-cost hospital setting (Lemoyne et al., 2019). This encompasses all streams of patients (1-4).

Communication between healthcare providers and patients & family

The sub-theme about communication between healthcare providers and patients mostly revealed obstacles instead of enhancers. There are roughly three obstacles that can be distinguished: 1) poor communication between patients/families and healthcare providers; 2) failing to identify and address the patient's care needs, and 3) insufficient information provision to families. All of these obstacles contribute to poorer transfer care. They can increase the likelihood of readmission, hinder the discharge process from the hospital, and have negative effects on both the patient and their family. The patient may not receive the necessary care, and the family may be left unaware of the situation and what to expect. In addition, when patient their needs are not identified/ ignored, the patient may not get the right treatment leading to a delay in discharge.

Capacity variation, utilization, coordination

For the theme of capacity variation, utilization and coordination, both obstacles and enhancers have been found. The obstacles mainly pertain to internal processes within the hospital. One obstacle is about an inefficient capacity utilization in an Emergency Department, which can lead to waiting times and, consequently, inefficient flow. Inefficient capacity utilization refers to the sub optimal use of resources (personnel and, for example, beds). Another internal obstacle is the inefficient coordination of hospital beds' capacity. This can also hinder the transfer care system. A more general obstacle is the lack of accessible patient flow and large capacity utilization variation.

Enhancers related to the theme of "capacity variation, utilization and coordination" focus on both internal and more general factors regarding capacity, utilization, and coordination. One enhancer is optimizing capacity utilization through various strategies. This includes, implementing buffer systems to accommodate peak moments, managing occupancy rates, and using command centers to monitor and optimize capacity. These enhancers aim to improve the flow of patients and enhance the efficiency of the transfer care system. Through capacity planning, forecasting, and strategic resource allocation, healthcare institutions can better anticipate variations in demand and capacity, allowing them to proactively respond to changes. The use of data and analytics can help identify trends and patterns, enabling capacity decisions to be informed. Furthermore, it is crucial to have effective coordination and communication among different departments. By implementing streamlined processes, clear guidelines, and efficient information exchange, the coordination of capacity and care pathways can be improved. The use of central command centers

or coordination points can assist in monitoring and coordinating capacity at an organizational level.

Pharmacy involvement, medication lists and medication checks

In literature, many enhancers have been found related to the involvement of pharmacists and medication lists and checks. It is evident that having accurate medication lists and conducting medication checks can lead to fewer medication errors, thereby improving the transfer care process. This can reduce the length of hospital stay and the number of Adverse Drug Events, which will result in less hospital (re)admissions. In addition, regular physician engagement and a good relationship between physicians and other healthcare providers also help improving the system.

The entire list of enhancers and obstacles of this theme is shown in Table 4.4 and 4.5.

Table 4.4: Obstacles: Coordination and collaboration

Obstacle	**References**
Fragmented communication	Joo and Liu, 2022; Sun et al., 2023
Inadequate communication of information between hospitals and other healthcare providers	(Halvorsen et al., 2016 as cited in Hestevik et al., 2019)
Poor communication between patients and their caregivers and between healthcare providers leads to errors treatment	(Andreasen et al., 2015; Bagge et al., 2014; Dilworth et al., 2012; Dossa et al., 2012; Knight et al., 2013 as cited in Hestevik et al., 2019)
Poor communication between hospital and primary care providers, and between care providers and patients leads to increase in readmissions and ineffective handovers	(Hesselink et al., 2014)
Insufficient communication with the ED	(Khalifa, 2017; Tortorella et al., 2013 as cited in Åhlin et al., 2022)
Lack of communication between healthcare sectors (hospital and community) and healthcare regions leads to additional confusion for discharge planners	(Kuluski et al., 2020)
Disrupted information flows, communication or relationship between multiple healthcare providers and between organizations	(Brody et al., 2019; Couture et al., 2016; Hung and Leidig, 2015; Masters et al., 2008; McNeil et al., 2016; Van Mierlo et al., 2015 as cited in Fakha et al., 2021)
Poor communication between patients, family and health professionals	(Bull and Roberts, 2001; Tracey et al., 1998 as cited in Bauer et al., 2009)

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Obstacle	References
Poor communication with patients and caregivers hinders the understanding of their preferences and care goals, as well as the assessment of potential obstacles such as housing issues and other social factors	Kuluski et al., 2020
Lack of attention given to these persons' special needs and inadequate involvement of them and their families in their own care process	(Bynum et al., 2014; Efraimsson et al., 2006; Foss and Hofoss, 2011; Rustad et al., 2016 as cited in Hestevik et al., 2019)
Insufficient information provision to family leads to less smooth transition hospital to home	(Driscoll, 2000; Haesler et al., 2006 as cited in Bauer et al., 2009)
Bad patient/caregiver healthcare provider relationship	Sun et al., 2023
Failing to identify and/or address a patient's care needs in the discharge planning process results in a higher risk of readmission and often leads to a longer hospital stay	(Hegney et al., 2002; Shyu, 2000 as cited in Bauer et al., 2009)
Lack of capacity statistics	(Aahlin et al., 2023; Åhlin et al., 2022)
Inefficient capacity coordination How available capacity at hospitals is utilized and how those resources (i.e. staff, beds, equipment, rooms, tools, time) are coordinated	(Aahlin et al., 2023; Åhlin et al., 2022)
Lack of accessible patient flow status	(Irvine et al., 2020; Scott, 2010 as cited in Aahlin et al., 2023)
Large capacity utilization variation	(Aahlin et al., 2023)

Table 4.5: Enhancers: Coordination and collaboration

Enhancer	References
Open and collaborative culture	(Aahlin et al., 2023)
Strong collaboration between hospitals and aftercare services and the presence of external staff to expedite the transfer of patients	(Aahlin et al., 2023)
Interdisciplinary teams	Cadel et al., 2022; Manville et al., 2014)
Multidisciplinary team to reach consensus on care transitions through meetings	Laugaland et al., 2012; Sun et al., 2023)

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Enhancer	References
Multidisciplinary collaboration, communication between a wide range of health settings and involvement of patient and caregiver to reduce readmissions	(Driscoll, 2000 as cited in Bauer et al., 2009)
Working collaboratively to ensure timely discharges, facilitating coordination of care, improving patient outcomes and reducing readmissions	(Agency for Healthcare Research and Quality (AHRQ), 2017; Gonçalves-Bradley et al., 2022 as cited in Cadel et al., 2022)
Connections between healthcare providers: Regular meetings (as mentioned earlier), communication tools, and mutual trust among healthcare providers to quickly support and respond to each other	(Sun et al., 2023)
Team-based approaches, including integrated discharge teams and multidisciplinary rounds, have been recommended to improve the discharge planning process	(Emes et al., 2019; Meo et al., 2018; Patel et al., 2019 as cited in Cadel et al., 2022)
Lean thinking and the Six Sigma paradigm, inspired by production techniques and operations research, focus on eliminating non-value-added activities and waste, and improving processes	(Caldwell et al., 2008 as cited in New et al., 2013)
Coordination contributes to shorter turnaround times in departments	(Schefft et al., 2020; Sharma et al., 2017; Zhao et al., 2018 as cited in Åhlin et al., 2022)
Partnerships will less hinder coordination and tensions between the hospital and the community	(Cadel et al., 2022)
Bidirectional communication between clinical professionals is essential to ensuring high-quality transitional care	(Coleman and Boult, 2003)
Improved communication between individual hospital based health professionals and between acute and community health sectors to better share information and coordinate discharge support services	(Bauer et al., 2009)
Good communication between nursing staff and GP	(Fassmer et al., 2020)

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Enhancer	References
Improve inter-professional collaboration and communication to lower inappropriate transfer	(Arendts et al., 2010; Hullick et al., 2016; Marshall et al., 2016; O'Connell et al., 2013; Stokoe et al., 2016; Trahan et al., 2016; Wofford et al., 1993 as cited in Lemoyne et al., 2019)
Ensure physical capacity capabilities	(Aahlin et al., 2023)
Hospitals might consider opening aftercare services to ensure downstream bed capacity	(Aahlin et al., 2023)
Peak census management	(Aahlin et al., 2023)
Create flexibility by investing in spaces/places to enable greater buffer systems	(Aahlin et al., 2023)
A more common solution is to invest in home-care solutions for higher discharge predictability	(Aahlin et al., 2023)
Optimize capacity utilization and occupancy rates	(Aahlin et al., 2023)
Track real-time occupancy rates in the ED, ICU or OR	(Johnson and Capasso, 2012; Scott, 2010 as cited in Aahlin et al., 2023)
Command centres to track and optimize daily capacity and to identify and act on arising bottlenecks, daily meetings	Aahlin et al., 2023)
Accurate medication lists	(Lamantia et al., 2010)
Medication report reduced the need for medical care due to medication errors	(Laugaland et al., 2012)
Medical reconciliation	(Hestevik et al., 2019)
Regular physician engagement	(Cadel et al., 2022)
Medication assessment, discharge guidance, and telephone follow-up by a pharmacist were associated with fewer hospital admissions/Adverse Drug Events (ADEs)	(Laugaland et al., 2012)
Medication list review by a pharmacist following patient transfer can enhance appropriate medication use	(Lamantia et al., 2010)
Medication assessment, discharge guidance, and telephone follow-up by a pharmacist were associated with a significantly lower number of preventable adverse events within 30 days of discharge	(Laugaland et al., 2012)

4.2.4 Patient and family behaviour and response

Like the previous themes, this theme can also be divided into sub-themes. These will now be discussed and the obstacles of this theme are shown in Table 4.6 and the enhancers can be found in Table 4.7.

Informal caregivers

Many factors were mentioned related to the sub-theme of informal caregivers. The obstacles primarily revolved around the skills of family caregivers, leading to a lack of appropriate support and care. Another factor that played a role was the unpreparedness of family caregivers and financial problems. The absence of a prepared family caregiver who can provide the necessary care to the patient, negatively impacts the transfer care system. This increases the likelihood of readmission and hampers safe aftercare. In addition to the obstacles, many studies identified enhancers. The enhancers suggest that having a family caregiver can contribute to better understanding of information and the performance of daily activities.

Education patients and self-management

Patient education and self-management were also commonly mentioned sub-themes, and literature identified several enhancers in this area. Many enhancers focused on improving medication management, symptom evaluation, self-motivation, self-care skills and self-management. These factors lead to better prepared patients for discharge. Patient education and self-management also contribute to improved after care and can reduce the need for home care. By empowering patients to take an active role in their healthcare, they become more capable of managing their conditions and promoting their own well-being.

Family characteristics and influences

Another, often discussed, sub-theme is the family and their influence on the transfer process. The family can hinder the transfer process by exerting pressure on nursing staff, stating that the patient cannot be treated in a nursing home but should be transferred to a hospital. This results in an increase in admissions to the Emergency Department (ED), which is not beneficial for patient inflow. Additionally, the family can also have a positive impact on the intake and discharge of patients. For example, the family can provide support, which facilitates the discharge of a family member and prevents readmission. In cases where the family disagrees with the chosen post-acute care facility, the discharge process may be delayed. Therefore, when the family provides support, it can promote patient discharge.

Patient disease progression, variation care demand of incoming patients

The last sub-theme actually encompasses the most important factor that influences the transfer care system. Multiple obstacles are identified for this theme. The progression of the patient's disease is a crucial factor that influences the transfer care system. Healthcare providers can estimate the tentative discharge date to some extent, but not 100% correctly. The progression of a patients' disease can lead to changes in the planned aftercare, resulting in additional delays.

It can also happen that a patient who seemed medically ready experiences complications. This will cause delays. Additionally, patients contribute to changing demands and unpredictable inflow, which can pose challenges for the transfer care system. This can lead to capacity issues and complex planning, as the demand for care transfer can be unpredictable. Dealing with the unpredictable course of patients' illnesses and the challenges in patient inflow requires flexibility, proactive monitoring, and good communication among healthcare providers and healthcare institutions. It is essential to continuously align care planning and aftercare with the patient's needs, taking into account possible complications and changes in the patient's health

The entire list of enhancers and obstacles of this theme is shown in Table 4.6 and 4.7.

Table 4.6: Obstacles: Patient and family behaviour and response

Obstacle	**References**
Funding for informal caregivers: The patient is awaiting funding for informal caregivers to ensure safe care after discharge	(New et al., 2013)
Indecisiveness on the part of informal caregivers regarding their commitment to take on the caregiving role	(Bull and Roberts, 2001 as cited in Bauer et al., 2009)
Lack of care provided by family caregivers is believed to decrease the patient's recovery from acute illness and increase the likelihood of readmission	(Grimm and Railsback, 2013 as cited in Bauer et al., 2009)
Unprepared family caregivers	Bauer et al., 2009
Lack of access to appropriate support services for patient and family caregiver	Bauer et al., 2009
Family pressure	(Fassmer et al., 2020)
Widowed elderly living alone	(Sun et al., 2023)
The staff in nursing homes often feel pressure from family members of a dying resident to pursue or perform active treatments, such as resuscitation and transfer to the emergency room	(Amadoru et al., 2018; Arendts et al., 2010; Ouslander et al., 2016; O'Connell et al., 2013 Lemoyne et al., 2019)
Unpredictable variation caused by patients not adhering to booking agreements or arriving with unexpected complications	(Attarian et al., 2013; Brown et al., 2013; Coffey Jr et al., 2018; De la Lama et al., 2013; Hovlid et al., 2012; Kimbrough et al., 2015; Kodali et al., 2014; Lot et al., 2018; Meredith et al., 2011; Scott, 2010; Valsangkar et al., 2017; Walters et al., 2013 as cited in Åhlin et al., 2022)

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Obstacle	References
Changing demand is related to significant fluctuations in incoming medical referrals from primary care, which is caused by seasonal variability in referral volume	(Álvarez et al., 2019; Badreddin and Castillo, 2015; Eriksson et al., 2011 as cited in Åhlin et al., 2022)
Unpredictable inflow variation	(Åhlin et al., 2022)
Changing demand is partly associated with a general increase in patients requesting health care, which is related to an aging population, an increase in the number of patients with multiple chronic diseases and reduced access to primary care services	(Álvarez et al., 2019; Ardagh et al., 2011; Badreddin and Castillo, 2015; Furterer, 2018; Hussein et al., 2017; Irvine et al., 2020 as cited in Åhlin et al., 2022)

Table 4.7: Enhancers: Patient and family behaviour and response

Enhancer	References
Dependency on informal caregivers for medication and healthcare	(Bagge et al., 2014; Dilworth et al., 2012; Knight et al., 2013; McKeown, 2007; Neiterman et al., 2015; Rydeman and Törnkvist, 2010; Slatyer et al., 2013 as cited in Hestevik et al., 2019)
Dependency on family to manage daily activities at home	(Andreasen et al., 2015; Karlsson et al., 2016; McKeown, 2007; Neiterman et al., 2015; Perry et al., 2011; Reay et al., 2015; Slatyer et al., 2013 as cited in Hestevik et al., 2019)
Importance of strong, positive relationships with family caregivers	(Anderson et al., 2015; McKeown, 2007; Neiterman et al., 2015; Perry et al., 2011; Reay et al., 2015 as cited in Hestevik et al., 2019)
Dependent on informal caregivers to understand information	(Bagge et al., 2014; Knight et al., 2013; Rydeman and Törnkvist, 2010; Slatyer et al., 2013 as cited in Hestevik et al., 2019)
Informing patients about symptom evaluation, medication management, and activity restriction resulted in increased feelings of preparedness after discharge	(Almborg et al., 2009 as cited in Hestevik et al., 2019)
Encouraging and facilitating patients' participation in the discharge process helps develop their self-management skills	(Hesselink et al., 2014)
Mastering self-care skills, proactively seeking help from others, self-management and self-motivation	(Sun et al., 2023)

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Enhancer	References
Improving self-management: Discharge summaries and tools (in paper or electronic format) that provide detailed information about the patient have been found to support self-management during and after care transitions, thus enhancing the patient-caregiver experience	(Kuluski et al., 2020)
The importance of self-management education prior to discharge, a visit from a nurse coach, and follow-up training in self-management	(Aboumatar et al., 2019; Hoover et al., 2017 as cited in Joo and Liu, 2022
Standardized guidelines for self-management education are needed for nurse educators, patients, and their caregivers	(Joo and Liu, 2022)
Resilience in older adults involves the adoption of coping strategies by the patients themselves, including mastering self-care skills, proactively seeking help from others, and practicing self-management and self-motivation	(Sun et al., 2023)
Family caregiver support	(Allen et al., 2018; Backman et al., 2018; Dolu et al., 2021; Joo and Liu, 2022; Rijpkema et al., 2021

4.2.5 Healthcare providers capacity, quality and flexibility

This theme entails many interconnected sub-themes. The whole set of obstacles is shown in Table 4.8 and the set of enhancers can be found in Table 4.9.

Capacity care workers, time etc. and characteristics care workers

For the sub-theme of capacity care workers, time, and characteristics of care workers, many obstacles and a few enhancers have been found in the literature. A commonly mentioned obstacle is the shortage of healthcare personnel. This shortage can lead to increased waiting lists for care, a higher number of admissions, and a decrease in the quality of care. For example, a shortage of doctors can lead to an escalation in a patient's condition, leading to their admission to the emergency department. Furthermore, a shortage of home care or nursing home nurses can also impede the outflow of patients. In conjunction with the staff shortage, factors such as high workload and time pressure were often mentioned. These factors are closely related to the staff shortage. The risk of high workload is that healthcare providers may become overwhelmed, exacerbating the staffing shortage further. obstacles that focused more on the characteristics of care workers included differences in positioning of healthcare providers and different terminologies.

These factors can also hamper the flow problem. Beside the obstacles, enhancers were also identified, but they are closely related to the obstacles. For example, the enhancer of recruitment and more nursing staff conveys a similar message as the obstacle of staff shortage. Therefore, no detailed discussion on the enhancers will be offered.

Capacity accommodations and readiness aftercare providers

The sub-theme of capacity accommodations refers to the situation where the after care facility is not available yet. This causes a delay in discharge. A commonly mentioned obstacle is the unavailability of a house, indicating that necessary adaptations or renovations have not been completed on time. Additionally, a frequently mentioned obstacle is the availability of beds in nursing homes or other care facilities, causing a stagnation in outflow. It can also occur that patients are not in the hospital but need to be transferred from home to a nursing home. Even in such cases, this flow is impeded, which can ultimately lead to an increase in hospital admissions.

Capacity resources

Another sub-theme entails capacity factors of resources. The shortage of specialized equipment is mentioned multiple times. This hinders the transition from the hospital to home or a nursing facility, as well as from a temporary rehabilitation setting to home. For example, a patient may require a specific bed or catheter in order to be discharged, and delays can occur if these aids are not available or not delivered on time. One reason for this could be inadequate financial arrangements and logistics.

Temporary care unit (TCU)

The theme of a temporary care unit or transitional care unit (TCU) is a more specific sub-theme. It pertains to the presence of a TCU, which is identified as an enhancer in the literature. A transitional care unit serves as a bridge between acute care and a patient's return to their home or another care facility. Having a TCU can shorten the length of stay in the hospital and reduce the likelihood of readmission. Both of these factors promote the transfer care system.

Quality of nursing home care

A more obvious sub-theme is about the quality of nursing home care. This sub-theme is closely related to the education and training of healthcare personnel. Several enhancers have been identified. Since it concerns the quality of nursing home care, these factors primarily affect hospital admissions. When nursing home care is of higher quality, more treatments can be provided within the nursing home setting. Patients can be better monitored, allowing for timely interventions to reduce the risk of escalation, thus avoiding hospital (re)admissions.

Education care workers

Not only patients can benefit from education and training, but also care workers themselves. An important obstacle is insufficient training and education for healthcare providers (see Table 4.8). This can hinder the implementation of innovations, which in turn affect the improvement

of transfer care. A lack of training can also lead to more medication errors and other treatment mistakes, further compromising the effectiveness of the transfer care system. Moreover, this obstacle is closely related to the previous theme, as poorly trained healthcare providers may struggle to effectively educate and train patients. In addition to obstacles, many enhancers have been identified. Many enhancers address the importance of adequately training medical staff. This can result in fewer readmissions, thus reducing the inflow of patients into hospitals. In addition, better education and training for care workers can contribute to reducing the inflow of patients by minimizing deterioration. When care providers are well-trained and possess knowledge, they can effectively monitor and manage patients' conditions, identifying any signs of deterioration early on. This proactive approach can help prevent the need for hospitalization or further medical interventions. Furthermore, providing proper training to medical staff can also improve the discharge process and patient education, ultimately improving the outflow from hospitals. Exactly, better training of nurses in, for example, a Transfer Care Unit (TCU) can promote patient discharge. By enhancing their skills and knowledge, they are better equipped to assess and manage the care needs of patients effectively, thereby expediting patient flow.

The entire list of enhancers and obstacles of this theme is shown in Table 4.8 and 4.9.

Table 4.8: Obstacles: Healthcare providers capacity, quality and flexibility

Obstacle	**References**
Home modifications: The patient is awaiting home modifications that are essential to ensure safe access and care at home after discharge. This includes the funding and completion of the modifications	(New et al., 2013)
Accommodation: The patient does not have any suitable accommodation options available. / Alternative care setting: Waiting for high-level (nursing home) or low-level (hostel, supported residential service) residential care accommodation to become available	(New et al., 2013)
The residential distance of patients causes interruptions	(Sun et al., 2023)
Home not being prepared	(Andreasen et al., 2015; Dilworth et al., 2012; McKeown, 2007; Neiterman et al., 2015; Reay et al., 2015; Rydeman and Törnkvist, 2010 as cited in Hestevik et al., 2019)
An inefficient outflow process is caused by insufficient access to transit or discharge areas	(Irvine et al., 2020; Scott, 2010; Zhao et al., 2018 as cited in Åhlin et al., 2022)

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Obstacle	References
Inability to discharge patients during weekends: external providers accepting admittance only on weekday mornings.	(Ardagh et al., 2011; Johnson et al., 2020 as cited in Åhlin et al., 2022)
Transfer delays to external providers such as nursing homes and external care providers not being ready for patient transfers.	(Ardagh et al., 2011; Hamline et al., 2020; Johnson et al., 2020; Tortorella et al., 2013; Woods et al., 2020; Zeitz et al., 2012; Zhao et al., 2018 as cited in Åhlin et al., 2022)
Shortage of care facilities for aging patients	(Ardagh et al., 2011; Johnson et al., 2020 as cited in Åhlin et al., 2022)
Lack of specialised equipment	(Andreasen et al., 2015; Dossa et al., 2012; McKeown, 2007; Reay et al., 2015 as cited in Hestevik et al., 2019)
Insufficient funding and delivery of equipment	(New et al., 2013)
Long lead times	(Åhlin et al., 2022)
Time and workload constraints	(Sun et al., 2023)
Human resource limitations such as inadequate staffing, insufficient staff knowledge and skill level	(Sun et al., 2023)
Among other factors, a shortage of medical personnel can lead to long waiting times	(Hamline et al., 2020; Zhao et al., 2018 as cited in Åhlin et al., 2022)
A low staff capacity and a lack of dedicated personnel	(Plochg et al., 2005; Renehan et al., 2013; Van Mierlo et al., 2015 as cited in Fakha et al., 2021)
Heavy workload, time pressure, and work schedules also hindered the implementation and sometimes resulted in reduced staff engagement	(Ersek et al., 2018; Rask et al., 2017; Røsstad et al., 2015; Van Mierlo et al., 2015; Williams et al., 2014 as cited in Fakha et al., 2021
Use terminology in conversation, indifferent attitude	(Sun et al., 2023)
Different positioning of healthcare providers	(Sun et al., 2023)
Number of available staff members	(Lemoyne et al., 2019)
The lack of availability of a general practitioner was a possible explanation for the increase in emergency department transfers	(Amadoru et al., 2018; Carron et al., 2015; Codde et al., 2010; Jensen et al., 2009; Marshall et al., 2016; O'Connell et al., 2013 as cited in Lemoyne et al., 2019)
GPS availability	(Fassmer et al., 2020; Lemoyne et al., 2019)

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Obstacle	References
A lack of education to train healthcare professionals for transitional care, leading to fewer medication errors and inadequate patient education	(Laugaland et al., 2012)
Insufficient training and education provided to providers and staff hindered their ability to implement new transitional care innovations	(Ersek et al., 2018; Masters et al., 2008; Nurjono et al., 2019 as cited in Fakha et al., 2021)

Table 4.9: Enhancers: Healthcare providers capacity, quality and flexibility

Enhancer	References
More nursing staff	(Fassmer et al., 2020)
Better availability of medical resources in nursing homes	(Fassmer et al., 2020)
Better medical specialist availability	(Fassmer et al., 2020)
Recruitment and training of informal caregivers: Waiting for the recruitment and training of informal caregivers to ensure safe care after discharge	(New et al., 2013)
A TCU (Transitional Care Unit) to bridge the gap between acute care and a patient's return to their home or a long-term care facility. It also promotes health outcomes with group exercises and reduces the likelihood of readmission	(Manville et al., 2014)
Reactivation units (mild transitional rehabilitation) established in old hospitals specifically repurposed for ALC (Alternate Level of Care) patients, serving as a bridge between the hospital and their next care destination	(Kuluski et al., 2020)
Transitional care units for older adults waiting for long-term care placement reduce hospital length of stay	(Crotty et al., 2005; Manville et al., 2014)
The quality of primary care in nursing homes includes the availability and ability of nurses and physicians to manage chronic and acute conditions, end-of-life planning, and fall prevention	Codde et al., 2010; Faul et al., 2016; Hullick et al., 2016; Kada et al., 2011; Kirsebom et al., 2014; Marshall et al., 2016; Saliba et al., 2000 as cited in Lemoyne et al., 2019)

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Enhancer	References
Provide acute treatment in the NH whenever possible	(Lemoyne et al., 2019)
Careful monitoring, adequate documentation, and evaluation of fall risk factors are provided in nursing homes	(Faul et al., 2016; Gruneir, 2013; Gruneir et al., 2010; Ouslander et al., 2016 as cited in Lemoyne et al., 2019)
E-health literacy	(Sun et al., 2023)
Sufficient education in medical and nursing curricula is one of the consequences of a less suboptimal hospital discharge process	(Hesselink et al., 2014)
Provide sufficient and better educated nursing staff in the NH	(Amadoru et al., 2018; Bynum et al., 2011; Codde et al., 2010; Fan et al., 2015; Hullick et al., 2016; Jensen et al., 2009; Kada et al., 2011; Kirsebom et al., 2014; Manckoundia et al., 2016; McGregor et al., 2014; Morphet et al., 2015; Saliba et al., 2000, Stokoe et al., 2016 as cited in Lemoyne et al., 2019)
Qualification activities for nursing staff	(Fassmer et al., 2020)
Education to the patient and caregivers	(Bauer et al., 2009)
Education is vital for transitional care unit (TCU) physicians, as it enables them to improve by receiving training in diverse environments	(Manville et al., 2014)
Sufficient skills in assessing the initial signs of deterioration can lead to less deterioration	(Lamb et al., 2011 as cited in Fassmer et al., 2020)
Education in transitional care should be provided to all healthcare professionals involved in the transfer of patients across settings	(Coleman and Boult, 2003)
Clinical nurses and healthcare educators should also develop competence in assisting patients with self-management education and training	(Agomoh et al., 2020 as cited in Joo and Liu, 2022)

4.2.6 Follow up care and evaluation

The penultimate theme is related to follow-up/after care and evaluation. This is a standalone theme. Having proper follow-up care can reduce the number of readmissions. By providing appropriate after care, patients' health can be monitored, any issues can be addressed in a timely manner and necessary interventions can be implemented to prevent complications or relapses. This promotes continuity of care and contributes to better patient outcomes, ultimately improving the transfer care system.

The overview of all enhancers is shown in Figure 4.10.

Table 4.10: Enhancers: Follow up care and evaluation

Enhancer	References
Follow-up and evaluation	(Bauer et al., 2009)
Comprehensive discharge planning and follow-up at home	(Laugaland et al., 2012)
Follow-up appointments with the primary care physician/home care services result in fewer readmissions	(Laugaland et al., 2012)
Interventions included in the discharge support reviews were telephone follow-up, home visits, geriatric assessment and/or consultation, intensified after care	(Hestevik et al., 2019)
Comprehensive nursing and physical therapy assessment and follow-up result in fewer emergency admissions	(Laugaland et al., 2012)

4.2.7 Information and Communication Technology

The last, and standalone, theme is about information and communication technology. There are multiple obstacles (see Table 4.11) and enhancers (see Table 4.12) identified. Obstacles in ICT comprise limited interoperability between different systems. The lack of standardization and compatibility can lead to difficulties in exchanging and sharing information between healthcare providers and healthcare institutions. This can impede the continuity of care and patient transfer. Another important obstacle is the lack of digital skills among healthcare providers. Not all healthcare professionals are sufficiently familiar with the technological tools and systems used in healthcare. This can result in reduced use and utilization of ICT solutions, thereby not fully harnessing the potential benefits for the transfer of care. Additionally, enhancers have also been identified for the use of ICT in transfer of care. An important enhancer is the implementation of user-friendly and intuitive systems that are easy to understand and use for healthcare providers. This can enhance the acceptance and adoption of ICT solutions and improve communication and collaboration among healthcare providers. Furthermore, the development of a centralized and interoperable Electronic Health Record (EHR) (in Dutch: Elektronisch Patienten Dosier (EPD)) system can facilitate the exchange of medical data and improve the quality of care. The use of standardized IT systems for data exchange can ensure a more efficient and effective transfer of information between different healthcare providers and institutions. Furthermore, predictive analytics can be developed to anticipate demand patterns, future bed and staffing needs, etc., in order to optimize internal processes and promote the transfer of care. Finally, training and education programs (mentioned in the previous theme), aimed at enhancing digital skills among healthcare providers, can help promote the acceptance and effective use of ICT in transfer of care.

The entire list of enhancers and obstacles of this theme is shown in Table 4.11 and 4.12.

Table 4.11: Obstacles: Information and Communication Technology

Obstacle	References
Difficult-to-understand tools and ineffective data management	(Destino et al., 2019; Johnson and Capasso, 2012 as cited in Åhlin et al., 2022)
Lack of It fuction	(Aahlin et al., 2023)
Lack of a centralized, easily accessible repository of available resources	(Kuluski et al., 2020)

Table 4.12: Enhancers: Information and Communication Technology

Enhancer	References
Obstacles need to be removed and incentives need to be created to develop electronic communication systems that facilitate the appropriate transfer of essential clinical data between providers with heterogeneous information systems	(Coleman and Boult, 2003)
Shared electronic information exchange system	(Hesselink et al., 2014)
Technological help	(Aahlin et al., 2023)
Predictive analytics to anticipate demand patterns, future bed and staffing needs, emerging bottlenecks, organizational risks, and scenarios following strategic decisions	(Aahlin et al., 2023)
New IT systems can also rapidly connect and refer healthcare providers, accelerating the patient flow throughout the hospital	(De Regge et al., 2019 as cited in Aahlin et al., 2023)
Well developed electronic systems and written information to enhance care coordination uninterrupted transfer	(Sun et al., 2023)
Structured patient transfer records	(Lamantia et al., 2010)

4.3 Results: overview of list interviewees

To be able to discuss the obstacles and enhancers found during interviews and case studies, first, a list of interviewees will be presented. More information about the case studies is discussed in Chapter 3, because this relates to the case study design which is not part of the results.

In total, fourteen interviews were conducted. Assessing their gender and age, the diversity was somewhat limited. All interviewees, except for respondent R4, are woman between 25-55 years

old. This might cause issues of representativity and specifity. Nevertheless, the role of the interviewees and the organizations the participants work for are diverse (see Table 4.13). This allowed the problem to be examined from various perspectives.

Table 4.13: Overview Interviewees

Respondent	**Function**	**Department of organization**	**Name organization, location**
R1	Transmural care agency manager	Transmural care agency at hospital	Reinier de Graaf, Delft
R2	Geriatric internist	Geriatric at hospital	Albert Schweitzer, Dordrecht
R3	Coordinating transfer nurse	Transmural care agency at hospital	Reinier de Graaf, Delft
R4	Patient	Long term and short term after care	Houten
R5	Project coordinator	Transmural Care Association at hospital	Haga, Den Haag
R6	Head Nurse of the Neurocentre and Transfer Nurse and -Assistant	Transmural care department and neurocentre	UMC AMC, Amsterdam
R7	Transfer nurse	Transfer department at hospital	LUMC, Leiden
R8	Employee	CZ healthcare office	CZ, Zeeland
R9	Primary care nurse for the elderly	General practioner	Rotterdam
R10	Business Manager (Care Manager) of Medical Support Services.	Medical support services	Albert Schweitzer, Dordrecht
R11	Quality coordinator at a Hospital	Hospital	Albert Schweitzer, Dordrecht
R12	Employee	Employee of home care organization	Pieter van Foreest, Delft
R13	Procurement/ purchasing Long Term Care at healthcare insurance	Purchasing department	Zilveren Kruis
R14	Employee elderly team	General Practitioner	Sitis, North Holland

4.4 Obstacles and enhancers found during interviews and case study approach

This section will show potential obstacles and enhancers identified by the fourteen interviews and case studies. The data from interviews and case studies has been sorted into the the existing themes and several new themes have been identified and added to this list. The new themes are: Financial infrastructure; Advanced Care Planning (ACP); Preparation and prevention and Demography and healthcare demand. These new themes are more specific themes that apply for the Dutch transfer care system. For convenience, the themes are repeated once again, including the new identified themes:

1. Regulation, protocols, routines and checklists;
2. Coordination and collaboration;
3. Patient and family behaviour and response;
4. Healthcare providers capacity, quality and flexibility;
5. Follow up care and evaluation;
6. Information and Communication Technology;
7. Financial infrastructure;
8. Advanced Care Planning (ACP), preparation and prevention;
9. Demography, immigration and healthcare avoids/demand.

Because themes appear both in the literature and in interviews/case studies, a certain overlap will be noticeable. Now each theme will be discussed in more detail.

4.4.1 Regulation, protocols, routines and checklists

This theme can be divided into various sub-themes. Certain obstacles and enhancers will be addressed, while others will not be covered in detail. These factors are documented in the corresponding tables. The whole set of enhancers is shown in Table 4.14 and the set of obstacles can be found in Table 4.15.

Standards, routines and checklists

Within this sub-theme, enhancers include internal protocols, specific standards, and checklists to optimize processes. From the outset of admission, consideration must be given to the preliminary discharge date (linked to Advanced Care Planning). Additionally, protocols have been established for elective admissions to streamline the discharge process. An emerging workflow ensures that during first aid, patients are screened to determine if they can wait until Monday. Another form

of routine contributing to flow is the use of structured documentation style. This enhances mutual understanding among healthcare providers and reduces errors. In addition to enhancers, this sub-theme also encompasses obstacles. One of these is the frequent interruption of a healthcare provider's tasks. Another example is when healthcare providers do not follow the correct sequence, resulting in delays.

Doctors approval assessment

This sub-theme focuses on a doctors approval assessment. A patient needs to be screened and evaluated for their vulnerability. Without this assessment, a patient cannot be discharged. When a doctor is unavailable, this can hamper the patient flow. Other factors closely related to the assessment include the family conversation that must take place before discharge.

Advance directives and legal matters

Another sub-theme includes advanced care directives and legal matters. Advanced care directives can lead to reduced care demand. Conversations about when treatment is no longer feasible/desirable should commence at the general practitioner's clinic or geriatric outpatient clinic. In addition to this enhancer, there is an obstacle within this sub-theme. There are situations in which the patient refuses after care. In such cases, a court authorization must be obtained, which can result in a patient remaining in the hospital for weeks, awaiting the legal decision.

Management, organizational factors and leadership

Within this sub-theme, specific obstacles have been identified. One of these obstacles is the absence of a clear problem owner who takes responsibility. In this scenario, no single party holds ultimate responsibility for an optimal patient flow. Additionally, a lack of authority results in poorly coordinated discharges for certain patients. No single party has the mandate to relocate a patient to a specific post-care institution.

Many enhancers and obstacles of this theme overlap with the literature results. However, they are not exactly the same. A full overview of obstacles and enhancers within this theme, are shown in Table 4.14 and 4.15.

Table 4.14: Enhancers: Regulation, protocols, routines and checklists

Enhancer	References
1 & H3	Using the Lean methodology so that internal processes can be optimized.
1	Protocols can be developed to provide more hospital care at home. This reduces pressure on hospitals and enables aftercare to be delivered at home instead of in a nursing facility.
2 & H1	From the beginning of admission, start considering a tentative discharge date. A tentative discharge date can assist in preparing for aftercare. This allows a plan to be formulated in advance regarding the patient's needs and how they will be met.

Continued on next page

Enhancer	References
2	From the beginning of admission, also plan which aftercare needs to be arranged.
3 & H3	The family conversation must be scheduled in a timely manner, as discharge cannot occur without it.
6	Examine if the Emergency Department patient can receive an urgent placement to prevent admission, thereby saving a spot within the hospital. Additionally, this eliminates the need for the hospital to search for a follow-up placement, preventing prolonged hospital stays for patients.
6	Orthopedics are pre-registered. Protocols are used to predict the required care, allowing for optimisation of bed occupancy and influencing demand. Additionally, a follow-up placement can be arranged in advance.
6	Filtering the Emergency Department cases to determine if they can wait until Monday. This prevents patients from being admitted to the hospital.
7	Apply for the care assessment in a timely manner, so that the patient does not have to stay in the hospital longer than necessary.
5 & 7	Utilize internal protocols to enroll the patient for aftercare, facilitating the patient's prompt discharge. This can prevent delays.
H4	Documentation is done based on 4 axes, making it clear for all healthcare providers, thereby reducing ambiguities and preventing errors.
7, 8, 10 13, H1 & H4	Advanced care directives can lead to less care demand. Discussions about when treatment is no longer feasible and desirable should start at the general practioners clinic or geriatric outpatient clinic.

Table 4.15: Obstacles: Regulation, protocols, routines and checklists

Respondent/ case study	References
2	The assessment for a care assessment takes a few days to a few weeks.
2, 3 & H1	Lack of a clear problem owner: No one feels responsible for optimizing patient flow.
3 & 7	The family conversation still needs to take place, even though the patient is medically ready.
3	Transfer nurses are not following the correct sequence or are being careless in their work, causing delays.
7, H3 & H4	If the patient refuses on their own, you need to obtain an authorization, which leads to a significant delay.
7	If a patient is admitted, they no longer qualify for a crisis placement. As a result, the number of waiting days can increase.

Continued on next page

Respondent/ case study	References
7, 12 & H1	The patient is declared medically ready too quickly, which leads to the need for adjustments to the application or the rejection of the placement. In addition, sometimes the request is too early, which can be counterproductictive, as it might require subsequent cancellations.
10, 13 & H1	Lack of authority when a patient is frequently refused and falls into the category of long-stay patients. Referral assistance/nobody has the authority to relocate a patient. The absence of a mandate can disrupt progress.
H1	Often, discharge is awaited for too long before initiating the necessary processes. Initiating processes prior to discharge can facilitate the patient's transition to another care setting.
H1	Frequent interruptions to the work process of nurses often lead to errors and decreased efficiency.
H1	Incomplete patient histories are common, resulting in essential information missing for a proper referral.
H4	If a patient refuses care, a judicial authorization is required, which causes significant delays in the discharge process.

4.4.2 Coordination and collaboration

This theme can again be divided into various sub-themes. The enhancers are shown in Table 4.16 and the obstacles can be found in Table 4.17. Only the most important factors will be discussed in detail.

Coordination and Collaboration

Collaboration is by far the most frequently mentioned enhancer within this sub-theme. This includes multidisciplinary meetings, involving other parties, and having a joint referral point. Collaboration can lead to fewer errors, more efficient patient flow, and collaboration can ensure that vulnerable elderly are identified before admission. The last calls for strong collaboration with general practitioners aiming to identify their vulnerability on time to prevent for admissions. Furthermore, a joint referral point can expedite discharges and alleviate pressure on general practitioners. Lastly, discussions with health insurers, learning from other regions, and having multidisciplinary meetings also fall under the sub-theme of collaboration.

Communication among healthcare providers

The first obstacle related to this sub-theme is the time that it takes when parties attempt to communicate with each other. For instance, it takes approximately 1-2 days for the Care Assessment Centre (CIZ) to approve or reject a care assessment. But also the time that it takes if hospital wants to talk to an after-caregiver. Because aftercare facilities are not able to

communicate in weekends, this can cause delays. Alongside these obstacles, enhancers are also identified. For some transitions, communication between healthcare providers went well and the necessary information was exchanged.

Communication between healthcare providers and patients & family

Previous sub-theme discussed the communication among healthcare providers, while this sub-theme will elaborate on the communication with patients. One factor that has been mentioned is effective communication with patients to gather information about the patient, reduce tensions and enable advanced care directives.

Capacity variation, utilization, coordination

This sub-theme entails multiple enhancers. For example, an up-to-date referral aid to assess capacity can prevent for delays. In addition, care coordination centers can help improve the system by means of an authority to facilitate the placement of patients who are difficult to discharge. Another enhancer is about the appearance of a unified front. All factors will enhance the process of relocating a patient.

Pharmacy involvement, medication list and medication checks

The last sub-theme covers, among other factors, the need of medication checks. This can prevent avoidable complications, thereby avoiding readmission or deterioration.

Table 4.16: Enhancers: Coordination and collaboration

Respondent/ case study	**References**
2	Aligning the interests of the hospital and nursing home, focusing on improving patient flow instead of optimizing individual costs. For instance, adopting a model like Rivas, where the hospital and nursing home operate under one umbrella organization.
3, 7, 6, 10, 11, 13, 14, H1 & H3	Promote collaboration: Collaboration with nursing homes to prevent non-medical admissions to the hospital or to prevent for hospital admission after an Emergency Department visit. Collaboration with general practitioners and nursing homes to identify vulnerable elderly individuals, to assess the home situation, to prevent readmissions and limit admissions. In addition, the elderly care team can collaborate with general practitioners, case managers, and nursing homes to identify vulnerable elderly individuals as early as possible, aiming to prevent hospitalization.. Collaboration among healthcare providers is crucial for ensuring smooth patient flow. Lastly, another form of communication is between healthcare providers and the patient.

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Respondent/ case study	References
4	The transition from the hospital to the rehabilitation center went smoothly, as the rehabilitation center had the necessary information, enabling the treatment to commence promptly.
6	Consultation between doctors and the transfer department to optimize processes and promote patient discharge.
8	Providing nursing staff with comprehensive information about transfer options: if someone has long-term care insurance (WLZ), rehabilitation can be done under code 9b. However, this information might not be commonly known.
10	Discussing capacity issues with health insurance companies and regional healthcare authorities.
10 & 11	Encouraging hospitals and other healthcare providers to take the initiative in devising and implementing solutions that enhance patient flow. Providing financial support is crucial to enabling these initiatives to materialize. In addition, quality groups should be established within the department to promote innovation.
7 & 10	Recognizing patient flow as a shared challenge. Communication among health care providers can help to take on a more comprehensive chain-wide responsibility.
10, 11 & H3	Creating a unified front: establishing a joint referral point. Having a single organization that manages and allocates control over the waiting list. In the Delft region, a unique collaboration has been established: DSW. The uniqueness of the coordination center lies in the intensive cooperation among the VVT (Care and Welfare for the Elderly) parties, which facilitates quicker placement of care in the right location. The coordination center manages urgent admissions, crisis admissions, and involuntary admissions (IBS). Furthermore, it relieves the general practitioner of the task of searching for district nursing. The collaboration with DSW alleviates the workload for general practitioners, as they do not have to independently search for district nursing.
9 & 10	Effective communication with other healthcare providers regarding the patient.
10	Learning from other regions on how to address issues, rather than reinventing the wheel.
11	A Care Coordination Center with the authority to facilitate the placement of patients who are difficult to discharge.
11	After reviewing the medication list: medication verification. This can prevent unnecessary complications, thereby avoiding readmission or deterioration.

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Respondent/ case study	References
12	Government information provision: raise awareness in society about patient flow challenges and help seniors better prepare for aging.
12	Involve healthcare authorities and health insurers as stakeholders, demonstrating that the hospital is not solely responsible.
8 & 12	Health insurers can serve as mediators to assist in placing challenging patients.
7, 8, 9, 12, 14, H1 & H2	Regional multidisciplinary meetings are utilized to enhance coordination through improved communication, because care paths can be discussed to provide assistance. It can lead to improvement in patient flow.
H1	District nursing joins hospital teams to better understand each other's roles and perspectives.
H1	Upon discharge, the discharge letter is sent to the general practitioner to provide appropriate follow-up care.
H2	The transfer department assists general practitioners with home care and other follow-up care to alleviate their workload.
H3	There is a visibility pilot in progress: each transfer nurse spends an hour on the ward every day to improve communication and keep the lines of communication short.

Table 4.17: Obstacles: Coordination and collaboration

Respondent/ case study	References
2 & 7	Missing information to determine the appropriate final destination for a patient or insufficient accurate patient information available for proper referral.
2	Numerous parties are involved in the transfer and discharge of patients in and out of the hospital.
2	Doctors possess different information/knowledge compared to (transfer) nurses. Physicians often are not aware of the available options and the relevant laws and regulations.
2, 6, 7, H1 & H3	Responding time of health care providers: Transfer departments not responding to referrals within 2 hours. This can lead to delays and additional length of stay. Poor communication with the health care insurers. Reaching the insurer takes days.Health insurers often respond very late, leading to unnecessary delays. It often takes some time (mostly 48 hours) before the CIZ (Care Assessment Centre) has processed an application.

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Respondent/ case study	References
4	Intense competition among home assistance equipment organizations, coupled with bureaucracy, can lead to increased costs and longer duration for repairs and other processes.
10, 14 & H2	Conversely, when someone is discharged, the general practitioner is informed too late. Sometimes, transfer of information is completely missing during discharge. Lastly, there can be a lack of proper handover during admission.
11	Poor monitoring of waiting times in the hospital, separate from length of stay and lack of medical readiness registration.
14	Structured medication assessment is not consistently carried out everywhere, and pharmacies can play a role in this process as well. This can prevent people from ending up in the hospital due to incorrect intake or drug interactions.
H1	Keeping patient records up to date is challenging, leading to unnecessary requests and delays.
H1	There are many isolated entities within the chain that try to optimize individually, but this does not result in optimal chain-wide performance. Collaboration is necessary to optimize across the entire chain.
H3	Referral aid is used to assess capacity, but it is most of the time not up to date, which causes delays.
H4	In Amstelveen hospital, it is common for the CIZ to frequently reject the care assessment application, leading to the patient not being discharged, and alternative methods have to be sought to relocate the patient. This can occur due to incomplete completion of care assessments or incorrect patient assessments.

4.4.3 Patient and family behaviour and response

This theme also consists of multiple sub-themes. The enhancers of this theme are shown in Table 4.18 and the obstacles can be found in Table 4.19.

Informal caregivers

The first sub-theme encompasses informal caregivers. An informal caregiver can help alleviate the workload of healthcare providers. Therefore, it is essential to promote skills and education among informal caregivers, enabling them to deliver appropriate care effectively to their family members. In addition, informal caregivers can enhance after care quality and can help patients understanding discharge instructions. This will improve the discharge process.

Education patients and self-management

This sub-theme identifies education and self-management related enhancers. Frequently mentioned enhancers pertain to self-management, family help toolkit, and self-preparedness. These elements can contribute to greater patient independence, ultimately reducing the need for after care and number of (re)admissions.

Family characteristics and influences

Family characteristics also play a significant role in patient flow. Family can act as a obstacle if they disagree with the type of post-care the patient is receiving. They might become aggressive and refuse the follow-up placement. It is crucial to inform the family thoroughly about the expectations. Therefore, expectation management is a related enhancer. It is essential that the family has a clear understanding of the care the patient is eligible for.

Patient disease progression, variation care demand of incoming patients

A sub-theme that is less controllable is the illness and disease progression of a patient. This is also a frequently mentioned factor. Firstly, a multi-faceted issue can make it difficult to discharge a patient, necessitating complex after care. For instance, a patient with dementia requires complex after care. Additionally, patient progression is a commonly cited factor that can lead to earlier/later discharges and/or render the arranged post-care inadequate/unnecessary, potentially causing significant delays in the process.

Table 4.18: Enhancers: Patient and family behaviour and response

Respondent/ case study	References
1, 6, 8, 10, 11 & H1	Self-management, family help toolkit and self-preparedness: Self-preparedness needs to be promoted. Creating a toolkit for home can help this, so it needs to promote independence and reduce the need for home care. In addition, educating the patient during admission about how certain care tasks can be performed independently. This can attempt to minimize the need for home care by considering what the patient can do independently, whether there's a caregiver, and if there's technological assistance that can reduce the required amount of home care. Patients need to be trained and informed about enhancing vitality and prevention through aspects like nutrition, exercise, etc.
H1	Acceptance by the family is a major factor in determining whether the family can adjust to the idea of someone ending up in a nursing home.
H4	If a suitable spot becomes available, patients or families should not wait for another option elsewhere. This can help improve the flow.
7, 11, H1 & H3	Skills and education informal caregivers: Informal caregivers should receive more training in providing specific care needed for their family member.

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Respondent/ case study	References
4, 7, 9 & 11	Informal caregivers: An informal caregiver can alleviate the care demand. Families should take on a larger role as caregivers.
6, 8, 11, H1, H2 & H4	Expectation management and informing current generations about the changing healthcare landscape. Shifting towards a more patient and caregiver-centered approach. Expectation management is crucial because currently, families and patients often believe they can quickly secure a spot in a nursing home, while in reality, this may not be the case. In addition, patients should be aware of the fact that home care cannot provide all help they want to get. It is necessary to communicate to families and patients that there is a significant reliance on informal care-giving and self-management. The mindset of elderly individuals and their families must change towards taking more self-responsibility.

Table 4.19: Obstacles: Patient and family behaviour and response

Respondent/ case study	References
2, 3, 6, 7, H1	Patient progression: The patient's health condition changes, affecting the discharge date and/or required aftercare. The patient's condition changes, necessitating a restart of the entire application process. A patient deteriorates more quickly in a hospital. Since older adults often have unnecessary hospital stay days, they decline sooner, requiring more care.
2, 6, 7, 14, H1, H2, H3 & H4	Multi-faceted issues, psychological disorders, dementia-related issues and alcohol/drug addiction disorders pose a significant challenge to relocate, because they are often rejected.
3, 7 & 11	Family obstacle: The family decides not to proceed with the aftercare that was already initiated. Family becomes more aggressive and frequently refuses follow-up placements and other care options.
5, 7 & 9	Patients desires: Patients are allowed to express their preference for a follow-up placement. Individuals refuse to accept a follow-up placement
6	If patients have obesity, more healthcare providers are required.
9	Patient's mobility and mental well-being are declining (Primary Care Physician).
H1	If the discharge date changes, the situation can become chaotic.
H2	Informal caregivers becoming unable to provide care at home is a significant factor.
H3	The flow is hindered when it turns out that a patient cannot return home after temporary rehabilitation.

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Respondent/ case study	References
H4	Patients with complex care needs are unattractive to nursing home facilities because the reimbursement they receive in some cases is insufficient, and less complex care recipients are easier to manage.

4.4.4 Healthcare providers capacity, quality and flexibility

This theme also encompasses many sub-themes. Note that some sub-themes have not been identified in literature. Again, a list of all enhancers of this theme is presented in Table 4.20 and the obstacles can be found in Table 4.21.

Capacity, readiness and characteristics care workers & capacity accommodations

This sub-theme entails multiple capacity related enhancers/obstacles. The most often cited obstacle that impedes patient flow is the personnel capacity problem. There is a shortage of personnel, available doctors, nursing home/home care facilities, hospices, and resources for home care. Consequently, waiting lists increase, caregivers experience burnouts, and situations arise where home care cannot be provided. An inadequate number of available doctors/geriatricians leads to delayed screenings and assessments, further delaying patient flow. In situations where no hospice is available, palliative patients occupy space needed for medical patients, a situation that could have been avoided. Additionally, insufficient Elderly and Vulnerable Care (in Dutch: ELV) beds and rehabilitation spots create bottlenecks in patient flow. Furthermore, under-staffing in the transfer department hampers the optimal flow of patients. This capacity problem is driven by inadequate personnel numbers, compounded by staff attrition due to poor working conditions, low wages, and a decreasing sense of job satisfaction. Moreover, many personnel members do not work a full 40-hour week, further reducing capacity. Lastly, many institutions are only open on weekdays, contributing to sub-optimal patient flow. An easy approach to address capacity issues is to provide more care at home rather than in the hospital, like administering antibiotics through infusion. This ties in with self-management and overall expectation management. Finally, the ability for home care or nursing home care to interchange staff is important to minimize the problem of personnel shortages.

Capacity resources

This sub-theme shows the importance of available resources (houses, tools etc.). Resources need to be available in a timely manner to prevent for patient flow disruptions. In addition, equipment and tools should be delivered on time. Finally, home modifications for patients must be completed within the deadline. When this is not the case, the patient cannot be relocated.

Temporary care unit (TCU)

This sub-theme involves Temporary care units (TCU). The TCUs are highlighted by many respondents as an enhancer of elderly patient flow. The establishment of temporary care units in

partnership with hospitals and residential care facilities can release hospital beds for medical patients and lead to cost reduction. An illustrative case is found in Delft, where a temporary care unit operates in collaboration with a prominent nursing home in the area. This unit accommodates patients temporarily, particularly those without cognitive issues, resulting in accelerated discharges.

Education care workers

The sub-theme about education for care workers has been frequently mentioned. It is crucial that caregivers possess adequate skills and receive training. For instance, transfer nurses need to be well-informed about all the options regarding patient admission and discharge. Furthermore, it is important for doctors to understand the information required by transfer nurses for proper discharge.

Extra sub-theme: Delivering care at home

A newly emerging sub-theme is about the provision of specialized care to patients in their homes. An example of this is administering antibiotics via infusion at home, which saves a spot in a rehabilitation center or hospital. Additionally, chemotherapy treatments and catheter care can also be administered at home.

Extra sub-theme: Staffing requirements

The penultimate sub-theme concentrates on staffing requirements. Considering the personnel shortages, it might be a solution to assess whether all staff must meet the requirements to be qualified as healthcare personnel. In nursing homes, for instance, it might not always be necessary for all staff to have completed a medical education. If these requirements are somewhat relaxed, it could contribute positively to alleviating part of the personnel shortage.

Extra sub-theme: Staff dismissal rate

Staff dismissal rate related factors are part of the last sub-theme. There is a shortage of personnel in healthcare. Therefore, it is essential to retain the current staff. Reasons for staff leaving include inadequate salary and lack of job satisfaction. To make things more complicated, these are also interdependent. Steps can be taken to ensure that the staff receives better pay. Additionally, maintaining a challenging work environment is necessary to retain job satisfaction. For instance, long-stay patients who are medically ready contribute to reduced job satisfaction among the staff.

Table 4.20: Enhancers: Patient and family behaviour and response

Respondent/ case study	References
1, 5, 6 & 7	Capacity and shortages: Increasing capacity, decreasing staff shortage, can enhance patient flow. For example, increasing nursing home capacity or staffing levels in home care.
6, 11, 12 & H3	Opening temporary care units in collaboration with hospitals and residential care (VVT) to free up hospital beds for medical patients and reduce costs. For example, In Delft there is a temporary care unit in collaboration with a large nursing home in the Delft region, where patients can stay temporarily if they do not have cognitive problems. This allows for faster discharge.
4	Modifying houses to accommodate sufficient home care.
7	Providing information to the elderly about considering aging. What are their preferences, what is still feasible, and what preventive measures can be taken?
4 & 11	Resources should be available on time. Aids and equipment for home use were delivered promptly.
6, 11, 12, H1, H2 & H3	Assistive devices can reduce the need for home care services and can enable certain hospital care to be provided at the patient's home. During patient discharge, it is important to ensure that the appropriate assistive devices are provided. For instance, a patient with a catheter might unnecessarily return to the ER if a replacement catheter is not provided. If it were provided, home care could handle the replacement instead of it being done at the hospital.
12	In certain cases, hospitals can discharge patients to their homes instead of nursing homes. This can reduce costs.
12	Within long-term care insurance (WLZ), it is important to assess whether specialized medical care is truly necessary and consider alternative care options, especially when nearing the end of someone's life.
12	As healthcare providers, it is important to empathize with the background, culture, and beliefs of patients in order to guide them through the end of life. This includes discussing whether further treatment is desired or not.
13	Adjusting staffing requirements, assessing whether less skilled individuals can fulfill roles within Long-term Care Act. Not every situation requires a physiotherapist; sometimes a simple coffee session is enough.
13	Staff should be trained to understand patient's cultural backgrounds, for instance, being able to explain to Islamic patients that treatment might not always be advisable.
H2	Home care or nursing home care should be able to exchange staff when the situation improves.

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Respondent/ case study	References
H2	Home care services are becoming overwhelmed; exploring the possibility of different home care organizations collaborating could be a solution.
7, 11, H1 & H3	Skills and education formal caregivers: Training ward doctors to conduct thorough patient histories to gather all necessary information for patient discharge. it is important that transfer nurses are well informed about all protocols. Training is necessary to better educate nurses and doctors for transfers.

Table 4.21: Obstacles: Patient and family behaviour and response

Respondent/ case study	References
1	If the patient's home is not adapted, returning home is not feasible.
1, 5, 6, 7, 8, 9, 11, 12, 13, H1, H2 & H4	Shortage and capacity: There is a shortage of personnel, available doctors, nursing home/home care, hospices and resources (for home). This leads for example to increasing waiting lists for, among other things, nursing homes, to burnouts among caregivers, a situation in which care cannot be provided at home. When there is an insufficient number of doctors/geritricians available, screenings and assessments cannot take place which causes delays in the patient flow. In the case there is no hospice available, palliative patients occupy space needed for medical patients which could have been prevented. In addition, bottlenecks in patient flow will arise due to insufficient numbers of ELV (Elderly and Vulnerable Care) beds and rehabilitation spots. Also, when there is understaffing in the transfer department, the flow of patients is not optimal.
7	While continuous learning is important, we still need individuals who actually perform the work in healthcare. More care giving staff is needed.
7	Uncertified care providers that do not ensure good quality of care.
8	Nowadays, people are working less frequently for 40 hours per week.
11, 12 & H2	Office hours: Weekend admissions are rarely accommodated in nursing homes and home care and referral points are only open on weekdays. Patients experience delays in receiving home care. If they are ready to leave on a Friday, they end up staying in the hospital over the weekend due to the lack of transfers during weekends.
13	Certain initiatives may not actually reduce costs or improve patient flow. Thorough research into the consequences of an initiative is necessary.
13	Personnel shortages can hinder the time available for improvement.
14	Inadequate aftercare due to insufficient availability of rehabilitation spots, home care services, or lacking caregivers can lead to longer hospital stays.

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Respondent/ case study	References
14	Inadequate aftercare due to insufficient availability of rehabilitation spots, home care services, or lacking caregivers can lead to longer hospital stays.
14	Inadequate aftercare due to insufficient availability of rehabilitation spots, home care services, or lacking caregivers can lead to longer hospital stays.
H1	Staff is underpaid and the job becomes less attractive.
H1	Complex issues make the work more enjoyable. However, having many medically stable patients in the hospital reduces the job satisfaction of nurses and doctors, leading to staff turnover.
H1	Doctors and nurses do not always understand what is required for transfer nurses to arrange proper discharges. Often, they need to make calls to obtain necessary information.
H4	Patients can end up staying in the hospital longer than necessary if assistive devices are not delivered on time. The minimum ordering time is one day, so there needs to be anticipation regarding which assistive devices will be needed.

4.4.5 Follow up care and evaluation

The penultimate theme that has also been identified by literature is related to follow-up care and evaluation. For this theme, only a few obstacles have been identified. One factor was the inadequacy of aftercare instructions, leading to a higher likelihood of readmission. Additionally, an obstacle arises when a patient requires multiple types of aftercare, making it more challenging to effectively provide all of them. This is closely related to the underlying medical condition of the patient, which has been discussed earlier.

The entire list of enhancers are shown in Table 4.22.

Table 4.22: Obstacles: Follow up care and evaluation

Respondent/ case study	References
4	The patient requires various types of home care/post-care.
9	A lack of after care after leaving the hospital, assessing how things are going at home.
H1	Instructing the patient superficially about the necessary home care can prevent readmission or emergency room visits.

4.4.6 Information and Communication Technology

The last theme that also has been discovered during the literature review is about Information and Communication Technology (ICT). The enhancers primarily revolve around the advantages

of having an ICT system compared to using pen and paper. An ICT system can expedite the speed of requests, assist in allocating aftercare facilities, and provide better visibility into patient records. Furthermore, having a communication tool within an ICT system ensures quicker communication and reduced response times. Additionally, having a team of individuals to develop/update ICT systems is beneficial to optimize the ICT system performance. Lastly, a frequently discussed enhancer is the need of available data to discover bottlenecks and to improve transfer care processes. In contrast to enhancers, also obstacles are found. Not all healthcare providers use the same ICT systems, resulting in an inability to exchange information. In addition, many ICT systems are not up-to-date and do not function optimally. Finally, a lack of interoperability is an important obstacle.

The full set of enhancers and obstacles are shown in Table 4.23 and 4.24.

Table 4.23: Enhancers: Information and Communication Technology

Respondent/ case study	**References**
1	Quality of care and communication can be improved through effective digital systems that also allow for sharing with the primary care physician.
2, 8, H1 & H2	High-tech solutions, such as POINT, can promote speed of transfer processes and reduce costs, because it facilitates faster processing of requests and applications compared to using pen and paper.
3	Having a point of communication with other healthcare providers can save effort.
5	Every healthcare provider must use the same ICT system, such as ZorgDomein or POINT, so that it can interconnect with eachother.
5	IT system optimisation : automatic notification sent from the hospital to the primary care physician upon patient discharge.
5	Conversations and meetings with user groups to enhance IT systems.
8	Making the availability of beds and capacity visible can facilitate the process of patient discharge.
11 & 13	Updating IT systems to enable smoother transfer of information between the transfer department and other units.
10, 11, 12 & 13	Increasing availability of data for conducting research into potential bottlenecks, identifying where patient flow is impeded, and pinpointing capacity issues. In addition, collecting data can be used to create a chain control system for operations management.
H1	Referral assistance provides help with referring to aftercare facilities, as there is a website called Verwijshulp.nl specifically designed for referrers and healthcare professionals seeking an online, up-to-date overview of available spots in rehabilitation facilities, nursing homes, and residential buildings in the following areas.

Continued on next page

Respondent/ case study	References
H3	Bed coordination has improved over time to gain insights into patients who unnecessarily stay in the hospital for prolonged periods. This enables the identification of bottlenecks, which can then be addressed to enhance patient flow.

Table 4.24: Obstacles: Information and Communication Technology

Respondent/ case study	References
3, 5, 10, H1 & H3	Not everyone uses the same IT system, which hampers interoperability. There are two major IT systems which do not work optimally together, leading to a lot of redundant data entry and unwanted risk. Often, you have to manually re-enter parts of medical records, which can lead to delays.
10 & H2	Medical record exchange between general practitioners and hospitals is very poor. General practitioner's (GP) use systems that do not connect with the systems hospitals and nursing homes use.
12 & 13	The lack of accurate data on bottlenecks sometimes makes it unclear where the problem lies or where the highest yield can be achieved.
H1	Many nurses and doctors view administration as a minor task to quickly handle, while providing a proper description of the situation is crucial during discharge. Essential information is often missing from the records.
H3	Capacity insight in POINT is not always up to date, which can be inconvenient as it does not show where there is availability and where there is not.

4.4.7 Financial infrastructure

The first theme that has not been identified in literature entails financial infrastructure factors. This is a more Dutch-oriented theme. For simplicity, this theme will be divided into different sub-themes that will be elaborated on now. The complete list of enhancers and obstacles are presented in Table 4.25 and Table 4.26.

Conflicting interests

Conflicting interests is another important sub-theme. There exists competition among healthcare providers who prioritize minimizing their own costs rather than enhancing the flow of elderly patients. This is a major problem, because it increases the total costs of the healthcare sector. The interviews revealed some potential solutions to encounter this problem. For example, having a chain-wide financial system or using financial incentives/rewards to promote the optimisation

of total (chain-wide) costs. Conducting research is essential to determine what solution is feasible and effective.

Financial labeling and care assessment/ application system

Additionally, there is an ongoing debate about narrow thinking within the labeling and care assessment system in the Netherlands. There is a need for greater flexibility in the financial frameworks established, especially when a patient does not fit into a single category. Furthermore, patients might have to wait for a specifically labeled bed, even if care can be provided on a differently labeled bed. This situation can lead to financial complications when available space lacks funding. Moreover, disease progression can shift patients to different funding categories, causing delays. Home care organizations might reject individuals based on financial considerations and labeling. Furthermore, some patients do not align with predefined funding categories, leading to delays in the discharge process.

Cherry picking

An essential sub-theme is cherry-picking. This refers to the practice where nursing homes frequently reject admissions for complex patients. This occurs when nursing homes prefer to admit non-complex patients, because it is more profitable and it demands less from the staff. To cope with this, health insurers might need to take on the role of overseeing complex patients who are often denied placement. Insurers can help in a form of mediation in case a patient is rejected by an aftercare organization. Healthcare mediation by insurers can effectively mitigate cherry-picking issues. In certain situations, it becomes necessary to reimburse non-contracted care. This ensures that the patient can still be accommodated in an alternative setting.

Budget cap

Budget cap is another sub-theme that plays an important role. Health insurers have a predefined budget limit, and reaching this limit can impede the patient transfer process. However, when healthcare institutions engage in discussions with the health insurances, there is a possibility that the care can still be reimbursed in certain cases. However, budget caps are necessary to stimulate efficiency and innovation.

Fragmentation of care institutions

Fragmentation of health insurers creates challenges for transfer nurses. For instance, the lack of contracts with all healthcare providers due to this fragmentation results in delays and complications. This issue arises due to the extensive fragmentation of health insurers. Moreover, fragmentation among healthcare insurers can lead to drawbacks, such as recurrent discussions across various regions that delay patient discharges from hospitals. Additionally, fragmentation can also stimulate efficiency and innovation.

Table 4.25: Enhancers: Financial infrastructure

Respondent/ case study	**References**
1	The government should pay more to the healthcare workers.
3	It is better to wait for the right label/care assessment in a nursing home or at home rather than in a hospital.
5, 7 & 13	Health insurers should oversee complex patients who are often denied placement. The insurance needs to aid in mediating if a patient gets refused by the aftercare organisation. Healthcare mediation by insurers can reduce cherry-picking issues. In some cases, it is necessary to still reimburse non-contracted care. This ensures that the patient can still be placed elsewhere.
2, 5 & 7	Chain-wide financing is necessary. Competition between healthcare providers who aim to optimize their own costs instead of optimizing the flow of elderly patients.
5	Hospitals should bear the burden of extra hospital stay days; nursing homes should have the choice.
7	It would be beneficial if individuals who fall between two categories can temporarily wait for the right department.
7	Poverty leads to patients avoiding care, address this issue.
8	Funding for initiatives needs to be promoted.
8	Breaking down financial silos needs to be avoided, which will also happen with the new law
11	Health insurers should fund innovative projects.
12	Improved transparency regarding the returns of innovations.
13	Instead of chain-wide financing, a health insurer can also use incentives or rewards to encourage desired behavior, for example, sending patients who have had hip surgery home instead of to a nursing home. Rewards could potentially be used when optimizing chain-wide costs and care, rather than each institution having its own expenses and care procedures.
13	Funding initiatives is crucial for innovation to enhance patient flow.
13	Fragmentation among healthcare insurers stimulates competition and efficiency.
H2	Fewer providers lead to less complexity.
8 & H2	Providing necessary care instead of unnecessary care.
H3	More flexibility is needed in the financial frameworks set when a patient does not fit neatly into a single category.

Table 4.26: Obstacles: Financial infrastructure

Respondent/ case study	**References**
2	Profits primarily go to private clinics and health insurers, because less complex care often goes to private clinics, where hospitals can make a profit
2	Physicians are only paid for treating a patient, not for follow-up care.
2, 11	Cherry-picking: nursing homes often refuse complex patients.
3	Purchase limit for healthcare supply insufficient.
7	Difficulty arises when patients do not fit into predefined categories.
5	Reducing competitive incentives.
3, 6, 11, H1, H2 & H3	Narrow thinking based on categories, labels and care assessments. Patients may have to wait for the right labeled bed, even if care can be provided on a differently labeled bed. In some cases, bed labeling causes financial complications, because when space is available it can still lack funding. Another situation that causes delay in patient flow, is when disease progression move patients to a different funding category, causing delays. Home care organizations can reject individuals based on financial considerations and labeling Lastly, some patients do not fit into a predefined category for funding, it also causes delays in the discharge process.
6	Personal Budget (PGB): individuals want to purchase appropriate care, leading to delays.
7	Too many patients are admitted with social care assessments.
8	Care Assessment Centre rejects Long-Term Care Act care assessment if forms are incomplete or not filled out correctly, strict internal protocols.
10	Observation spots for PGB are hardly financially viable. These spots are very scarce.
3, 6, 8 &11	Budget caps are reached during the year. Budget cap often reaches prematurely, which decreases the ease of patient flow, because the care cannot be provided because fo a lack of finance.
7, 8, 13 & H4	Budget cap: Health insurers have a budget limit, and when this limit is reached, it can hinder the process of transferring patients. If the healthcare institution engages in discussions with the health insurer, the care can still be reimbursed in some cases, which improves the flow of patients. In addition, budget cap are needed to stimulate efficiency and innovation.
7	Budget cuts in nursing homes.
11	Funding is challenging because many patients transition from short-term aftercare (grz) to long-term care (Wlz), which lacks funding.

Continued on next page

Respondent/ case study	References
3 & 12	Fragmentation of healthcare providers and health care insurances. For example, small Long-Term Care (VVT) facilities are less efficient and can be more difficult to reach (because of opening hours), leading to poorer organization and slower response times.
12	Patient's co-payments (In Dutch: eigen bijdrage) can be too high.
12 & 13	Cross-chain financing is an extremely complex system, which is currently infeasible.
H1 & H4	There is a lack of financial incentive to optimize the flow throughout the entire chain.
13	If a hospital refers fewer patients to nursing homes, the hospital does not directly benefit. These advantages could be directed towards the hospital to encourage this practice. it is not only desirable to stimulate initiatives through funding but also by aligning goals.
3, 7, 13 & H3	Fragmentation of health insurers poses a burden on transfer nurses. One example is that because of fragmentation, not all healthcare providers are contracted, which causes delays and other difficulties. This is due to the high fragmentation of health insurers. Furthermore, fragmentation among healthcare insurers can have disadvantages: repeated discussions in different regions can cause delays in patient discharges from hospitals.
H1	When patients stay in the hospital for too long and are medically ready for discharge, they are often continued to be treated, even when it is not necessary. This leads to additional costs.

4.4.8 Advanced Care Planning (ACP), preparation and prevention

The second factor that has not been identified by the literature review is Advanced Care Planning (ACP), preparation and prevention. The total list of enhancers is shown in Table 4.27.

Prevention

Firstly, prevention related factors are identified. Numerous prevention strategies can be implemented, with a specific emphasis on reducing falls, adapting living spaces, performing dementia screenings/ identification screenings on vulnerability, facilitating after care placements, documenting individual preferences, and requesting the needed care assessments prior to admission. Comprehensive preparation of patients for their return home plays an important role in preventing nursing home admissions. Enhanced oversight for seniors can help prevent escalations. Lastly, patients should stimulate having a broader social network to provide the option of support from family and neighbors. Without a support network, elderly individuals may have fewer opportunities to return home.

Awareness

Furthermore, a sub-theme about raising awareness is important. Raising awareness about aging among the elderly is beneficial. Enacting policies to promote independent living at home for as long as possible is crucial. In addition to this, raising awareness among healthcare providers is also needed. The urgency of the problem can be lost. The issue should be clearly communicated to every healthcare provider and patient.

Advanced Care Planning (ACP)

The sub-theme about Advanced Care Planning is important to be able to optimize the patient flow. For planned admissions, a risk assessment can be conducted to prepare for discharge, because it is easier to predict what might be needed. Advanced Care Planning for planned admissions and common scenarios: for instance, in cases of a broken hip, a certain pattern of progression is assumed. Therefore, aftercare placements can be fixed before knowing the tentative discharge date. This can optimize the outflow patients of the hospital.

Housing market

The last sub-theme is about the housing market. There is a shortage of homes where elderly individuals can safely live (such as single storey, close to necessary facilities such as grocery shop and GP, etc.). Currently, too many elderly people still live in homes where they cannot safely live for long term. Therefore, the number of admissions will increase.

Table 4.27: Enhancers: Advanced Care Planning (ACP), preparation and prevention

Respondent/ case study	References
1, 6, 7, 9, 10, 11, 12, 13 & H2	Preventing Admissions: Numerous strategies for prevention need to be enacted, with a specific focus on mitigating falls, modifying living spaces, conducting dementia screenings and taking appropriate actions, facilitating relocations, documenting individual preferences, and seeking care assessments in advance of admissions when necessary. Proactively evaluating elderly patients through primary care physicians to deter admissions also constitutes a form of Advanced Care Planning. Thoroughly preparing patients for their return home is pivotal in averting nursing home admissions. "Healthy and Well" is an initiative centered on prevention, aimed at curbing the inflow of elderly individuals. Strengthened oversight for seniors can help forestall escalations. Patients are encouraged to assume greater self-responsibility for their own well-being. The importance of healthy lifestyles and preventive measures is underscored. So, proactively screening the elderly for vulnerability is needed to sustain independent living at home and prevent for admissions.

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Respondent/ case study	References
8	Preventively raising awareness about aging among the elderly. Implementing policies to enable independent living at home for as long as possible.
8, 12, 13, H1 & H2	General practioners, case managers and family must identify vulnerable elderly individuals to prevent hospitalization. They need to proactively address the situation when an elderly individual's condition deteriorates to prevent escalation.
H3	Efforts are being made to prevent unnecessary hospital admissions. In the past, non-medical patients arriving at the Emergency Department (ED) would often be admitted if they could not go home. Now, there's a stronger focus on avoiding such admissions by safely sending these patients home. In cases of urgent problems, immediate home-based care and support or a (temporary) admission may be required. Regional agreements have been established for this purpose, which are executed by the coordination point.
8, 9, 11 & H1	Patients should cultivate a broader social network to provide the option of support from family and neighbors.Without a support network, elderly individuals may have fewer opportunities to return home.
3, 6, 13 & H2	Planned admissions: For planned admissions, a risk assessment can be conducted to prepare for discharge, because it is easier to predict what might be needed. Advanced Care Planning for planned admissions and common scenarios: For instance, in cases of a broken hip, we assume a certain pattern of progression. Thorough preparation for planned care can result in a patient going home instead of to a nursing home.
6 & 8	The government should stimulate the housing market to enable older individuals to live in adjacent homes. In addition houses should be constructed to be suitable for the elderly.
2, 4 & 7	Implementing Advanced Care Planning where possible. Advanced care planning in Long-Term Care (VVT): addressing planned admissions, early identification of required post-care etc.
11	Advanced Care Planning: Understanding a person's care preferences, such as their stance on resuscitation, through discussions like AZP (Advance Zorg Planning) conversations.
6	Establishing community exercise groups.
9	Prioritizing the significance of a rollator (walker).
9	Efforts to deliver as much care as possible at home.
2 & H1	The urgency of the problem can be lost. The issue should be clearly communicated to every healthcare provider and patient.

Continued on next page

Respondent/ case study	References
H3	Patients with planned care tend to have shorter hospital stays compared to patients with unplanned care, as preparations can be made in advance and unexpected situations are more likely to be avoided.

4.4.9 Demography, immigration and healthcare avoids/demand

The last theme is about the demography, immigration and healthcare avoids/demand. Only obstacles are identified. Firstly, Refugees, homeless patients and immigrants are more challenging to place because they often lack a suitable home situation, appropriate insurance and social network. Secondly, the demand is increasing and care is becoming more complex due to aging, as more people are experiencing multi morbidity, which requires more intricate care.

All obstacles are presented in Table 4.28. Now that the potential obstacles and enhancers have been identified, a discussion of two case studies will take place.

Table 4.28: Obstacles: Demography, immigration and healthcare avoids/demand

Respondent/ case study	References
2, 8, 9 & 10	The demand is increasing and care is becoming more complex due to aging, as more people are experiencing multimorbidity, which requires more intricate care.
9	The absence of identifying healthcare avoiders.
12	Demand for hospital beds experiences spikes.
6, 13, H1 & H3	Refugees, homeless patients and immigrants are more challenging to place because they often lack a suitable home situation, appropriate insurance and social network.

4.5 Comparison Deventer and Dordrecht

This section reveals the differences observed in the hospital of Deventer and Dordrecht. A discussion of the differences between these two hospitals will be provided, because fewer issues were identified in the patient flow of the transfer care system at Deventer Hospital compared to Albert Schweitzer Hospital in Dordrecht. To reveal the differences, a five point likert scale is used. The categories are very low (1); low (2); neutral (3); high (4) and very high (5). Table 4.29 shows the differences. Note that this ranking is based on a few days of observation. In addition, no formal measurement study has been conducted, but these numbers are intended to only indicate differences.

Table 4.29: Differences observed in hospital of Deventer and Dordrecht

Factor	Dordrecht	Deventer
Fragmentation	5	2
Level of specialistic care at (nursing)home	4	4
Workload	5	2
Capacity caregivers	2	4
Documentation quality	2	4
Indication delay	4	2
Ability to relocate patients	2	4
Skills	5	5
Aging/ admissions	5	4
Collaboration	4	5
Standards, routines and checklists	5	5
ACP	4	5
Availability data	2	4
Quality (after)care	4	4
Availability (after)care	1	3
Number preventable activities	4	4
Performance IT system	4	4
Interruptions workflow	5	2
Likelihood rejection aftercare	5	3
Lack of problem owner	5	5
Performance inter-professions communication between institutions	3	5

The comparison of these two case studies illustrates regional differences, which may implicate that solving the problem is not possible by addressing just one single bullet, but that a bundle of interventions is required to improve the transfer care system. The last section of this chapter will provide an interim conclusion and will emphasize the added value of using System Dynamics.

4.6 Interim conclusion and added value qualitative System Dynamics

This section will provide an interim conclusion and will elaborate on the added value of qualitative System Dynamics (see chapter 5).

Firstly, literature, interviews and case studies are used to identify potential enhancers and obstacles that influence the (Dutch) transfer care system its performance (SQ2). The identified obstacles and enhancers are structured into the following themes: 1) Regulation, protocols, routines and checklists; 2) Coordination and collaboration; 3) Patient and family behaviour and response; 4) Healthcare providers capacity, quality and flexibility; 5) Follow up care and evaluation

and 6) Information and Communication Technology. Apart from these themes, interviews and case studies revealed obstacles and enhancers associated with three additional themes: 7) Financial infrastructure; 8) Advanced Care Planning (ACP), Preparation and prevention and 9) Demography, immigration and healthcare avoids/demand. Secondly, a comparison is conducted between two case studies, specifically the hospitals in Dordrecht and Deventer. This comparative analysis of the two case studies brought to light discrepancies observed in these two hospitals.

The results of the literature review (see Section 4.2), interviews and case studies (see Section 4.4) provide insight into which factors enhance or deteriorate system performance. In certain cases, it became evident why a factor positively/negatively affects the system, while for other factors, it was only clarified that they serve as obstacles/enhancers. In addition, the comparison of the two case studies (see Section 4.5) did illustrate that solving the problem might not be solved by addressing just one factor, but that a bundle of interventions may be required to improve the transfer care system.

However, an overview of the complexity of the transfer care system and relevant insights into the interactions between the factors and potential feedback loops are missing. To gain these insights, System Dynamics will be used. Firstly, the complexity of the transfer care system becomes more evident by using System Dynamics than by using literature review, interviews and case studies. This is because a high-level visualisation of the system can be made by using causal relationships and non-linear thinking (Luijben and Pruyt, 2019; Maidstone, 2012; Vunderink et al., 2012). Secondly, the interactions among the factors and feedback loops reveal information about the (stability of) system behaviour which literature, interviews and case studies cannot reveal (Luijben and Pruyt, 2019; Maidstone, 2012; Vunderink et al., 2012). Through systematic analysis of the system behavior, it can be determined whether desired development is taking place (Vunderink et al., 2012). So, unlike literature reviews, interviews, and case studies, System Dynamics has the ability to uncover interaction effects and feedback loops, allowing for the assessment of the impact of both new and existing policy interventions on the system behavior. This systems approach could reveal that potential measures may not achieve the intended effect on the system, because of the existence of undesirable interactions and feedback loops.

5 Leverage points to improve transfer care system performance

This chapter will use the results from the literature review, interviews and case studies (Chapter 4) as input for a qualitative System Dynamics model to reveal leverage points for policy interventions by the Ministry of Health, Welfare and Sport to improve the transfer care system performance (SQ3). In addition, the results of the qualitative System Dynamic analysis are needed to answer the main research question.

Before discussing the overview of the model and its subsystems, first an explanation on the defined key performance indicators (KPIs) will be offered that is needed to measure the system performance (see Section 5.1). The second section (5.2) will provide a discussion of the evidence of assumptions. Thereafter, the overview of the transfer care system will be examined (see Second 5.3). The subsequent sections will zoom in on the sub-systems (see Section 5.4 - 5.9). These subsystems include the: 1) Medical; 2) Demand-related; 3) Logistics/process; 4) Organizational; 5) Financial and 6) Information and Communication Technology subsystem.

5.0.1 Assumptions and the evidence of the assumptions

To be able to model the Dutch transfer care system, multiple assumptions are made. First, the model consists of multiple factors. Factors are only included if they are identified in literature, interviews, or case studies and are applicable to the Dutch transfer care system. Secondly, a hybrid causal loop diagram is used to model patient flows between various care facilities to improve the structural integrity. Some patient flows are not incorporated into the model, because this information is not relevant to identify leverage points to improve the Dutch transfer care system. For example, the outflow of death/recovered patients and the inflow of patients to palliative care are not modelled. This does not fall within the scope of the Dutch transfer care system.

5.1 Key Performance Indicators and system performance

Before discussing the overview of the model and its subsystems, first an explanation on the defined key performance indicators (KPIs) will be offered. A KPI is a measurable value or statistic used to assess the success or performance of a company, project, individual, or specific activity. KPIs will be used to measure the system performance. Before discussing the KPIs, it is useful to quickly return to discussion of the system performance (that is determined by the four pathways) (see Section 4.2).

To measure the system performance (points of interest), the following KPIs are drawn up:

1. **Patient relocation ability:** The "Patient relocation ability" focuses on relocating patients from the hospital or a rehabilitation center to an aftercare placement without avoidable delay. It is assumed that patients are not relocated from a palliative care facility because palliative care facilities serve as the final destination for patients. Additionally, it is assumed that patients are not relocated from a nursing home, as patients typically do not leave a nursing home except when they are admitted to a hospital. Nursing home patients that get readmitted to a hospital is comprised in the "number of readmission" factor. So, the "patient relocation ability" factor primarily concentrates on moving patients out of hospitals and rehabilitation centers, ensuring that the flow between the hospital and rehabilitation center is optimized. This KPI can be measured by using waiting times of patients in a care facility. So, not the length of stay, but the time that a patient waits for aftercare.

2. **Number of (re)admission:** These KPIs focus on preventing avoidable (re)admissions. The number of (re)admissions can be measured by counting the instances or events where individuals are admitted to a particular facility. Mostly, this can be done by using IT systems.

3. **Quality (after)care:** The "Quality aftercare" encompasses the quality of both general care and aftercare. This KPI ensures that the quality of care is maximized. This KPI might be difficult to measure, but proxy variables such as performance inter-prof collaboration, number of errors, performance caregivers/patients skills, standards, routines, checklists, level of physician engagement and magnitude of discharge summaries and tools give insight in the level of quality of care.

4. **Optimisation processes:** The "Optimisation processes" entails many factors that influence the degree of process optimisation . Factors such as the number of medical errors, number of process errors and optimisation of processes are part of this KPI. The level of process optimisation can be measured by counting the number of process and medical/process errors. A medical/process error is an unintended medical/process related incident that has resulted in harm or even the patient's death. Hospitals are legally obligated to report medical (and process) errors to the Healthcare Inspectorate (IGZ) within three days. This makes it easier to count the number of medical/process errors. In addition, the number of non-value added activities gives insight in the level of optimisation of processes and can also be monitored. How the non-value added activities can be measured, cannot be answered by this study.

5. **Workload caregivers:** Workload is a KPI that measures the workload of formal caregivers. This KPI is crucial for ensuring a workload remaining at an acceptable level. The workload can be measured in various ways depending on the context and the specific aspects of work being evaluated. One possibility is by using surveys where individuals rate their perceived workload on a scale.

6. **Availability aftercare/hospital care:** These KPIs are crucial metrics for assessing patient waiting times and patient flow. Again, this proxy variables give insight into the availability of aftercare/hospital care. For example, the waiting times/ length waiting lists,

number of after care facilities or hospitals, number of available beds can be used to measure the availability of after care or hospital care.

Note that this study cannot determine which KPIs should be used and are the best ones to use. In contrast, this study is only able to provide a proposal for KPIs that could be used. This study indicates that the above mentioned KPIs can be used to measure the system performance because these KPIs all represent crucial processes or parts of the transfer care system and will be employed. However, future research is needed to determine which KPIs should be used and whether these KPIs are feasible and measurable. From now on, a KPI will be referred to as an indicator or leverage points that measure points of interest, because the (key performance) indicators are compromised if the leverage points do not align with these KPIs. Note that a leverage point refers to a point or factor within a system where action can be taken to effect changes or improvements in that system. It is a point of intervention or a place where policymakers, organizations, or individuals can intervene to achieve certain outcomes or solve problems. In the context of the Ministry of Health, Welfare and Sport and the transfer care system, this means that the Ministry wants to know where they can make changes within that system or implement policies to improve the system performance.

5.2 Assumptions and the evidence of the assumptions

Before continuing with discussing the overview model (and the sub-model), the evidence of the assumptions will be clarified. Qualitative System Dynamic models consists of factors and causal relationships. These causal relationships have a direction and polarity marking. To provide evidence for the direction and polarity marking, colours are used for the causal relationships (see Figure 5.1). The relationships that are the lightest in color are based on information obtained from interviews and case studies. The ones with the medium blue color are based on information obtained from the literature. And the relationships with the darkest blue color are derived from both the literature review and interviews and case studies.

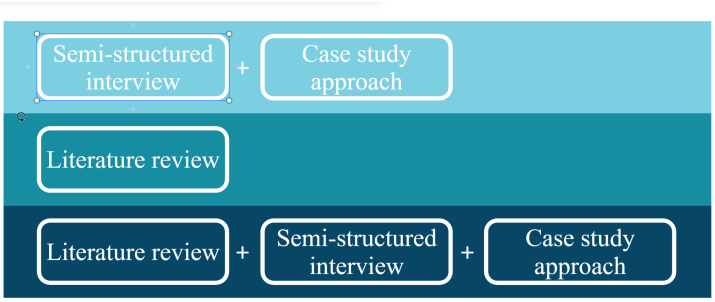

Figure 5.1: Causal Loop Diagram of overview transfer care system

Assumptions that pertain to the causal relationships with the most significant impact on the transfer care system (and are crucial for the main conclusions) will be examined in greater detail. This discussion can be found in the corresponding section of the (sub-)model (see Section 5.3.1).

5.3 Visualisation results: Overview of the system and interactions among and feedback loops of indicators

This section will provide an overview of the transfer care system by focussing on the relationships between the indicators (leverage points). This is essential, because these relationships can either strengthen or balance the system performance. For example, a factor may promote a specific (key performance) indicator, which in turn, automatically promotes another indicator. This can be beneficial for the entire system. Conversely, it may also be the case that a factor promotes an indicator, which in turn, negatively influences another indicator. This may appear less favorable for the system. The interactions between the indicators is shown in Figure 5.2 and Table 5.1. A magnified version of the figure can be found in Appendix F; Figure F.1.

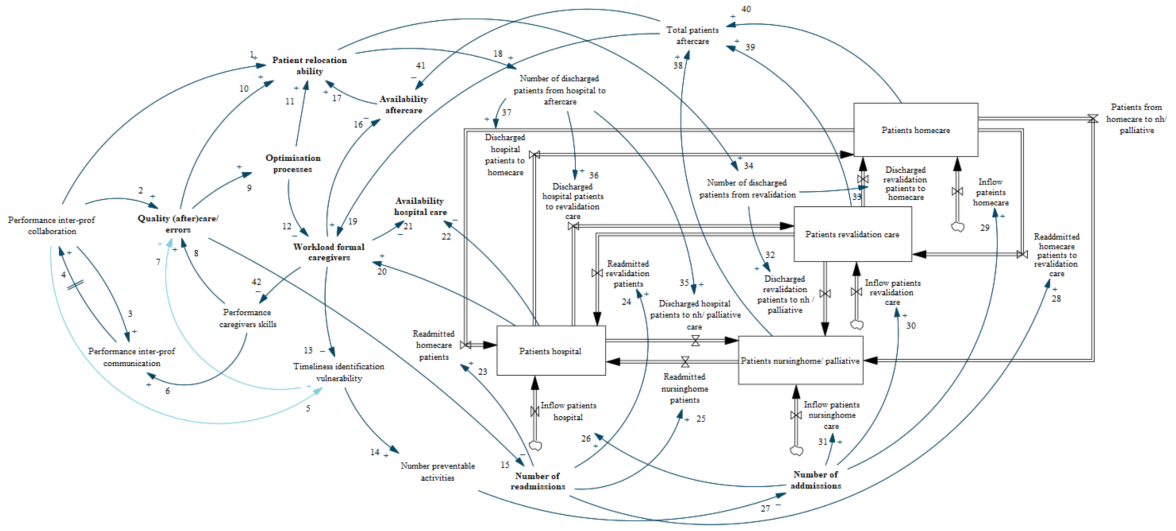

Figure 5.2: Causal Loop Diagram of overview transfer care system

Now the most relevant interactions will be discussed in detail. Some interactions are direct (without going via another indicator), while others are indirect interactions (going via another indicator). In addition, some indicators only have positive or negative interactions. These interactions have the same polarity (only + or only -). For example, if the workload or number of admissions decreases, the patient relocation ability, quality (after)care, optimisation processes, availability aftercare and number of (re)admissions will improve. Another example shows that an increase/improvement in quality (after)care and number of readmissions will improve the availability hospital care. In addition, an improvement/increase in optimisation processes and availability aftercare will improve the patient relocation ability. Lastly, an improvement in patient relocation ability will worsen the availability of aftercare. Note that this may hamper system performance. This will mean, that the availability of aftercare needs to be increased by focussing on other indicators.

In contrast to interactions with a single polarity (only + or only -), there are many interactions with different polarities (+/-). This applies to interactions that have not been discussed yet. Interactions with different polarities show that an improvement in one indicator can either

strengthen or deteriorate other indicators. In case the net effect is negative, this might deteriorate another indicator. Qualitative System Dynamics is not able to determine the net effect of the set of indirect interactions. However, the analysis has shown that all interactions with different polarities (except for the bold ones) are caused by an ambiguous influence on workload. Quantitative analysis can determine whether the net effect is positive or negative. However, assuming that the net effect on workload will be negative, additional policy interventions can aim to improve workload. Unfortunately, qualitative research cannot show how many interventions are needed to improve the workload or to keep workload constant. Therefore, quantitative System Dynamics is needed.

In addition to the interactions between the indicators, qualitative System Dynamics is capable of uncovering the feedback loops. However, it has turned out that the indicators are involved in many feedback loops that are both balancing (-) and reinforcing (+) in nature. Quantitative System Dynamics is needed to determine the overall effect of these different feedback loops. This insight is important to determine the impact of policy interventions. For example, the impact a policy intervention is dampened when the overall effect of the feedback loops is balancing. In contrast, if the overall effect of all feedback loops is reinforcing, the system will amplify this effect. For instance, if the net effect of all feedback loops related to workload is reinforcing (+), it signifies that when the workload is decreased, the system will naturally further decrease the workload, thus magnifying the effect of reducing the workload even further.

Table 5.1: Interactions among the indicators

Indicator	Patient relocation ability	Quality (after)care	Optimisation processes	Workload caregivers	Availability aftercare	Availability hospital care	Number admissions	Number readmissions
Patient relocation ability		Indirect +/- [1]	Indirect +/- [1]	Indirect +/- [1]	Indirect - [2]	Direct + and Indirect +/- [1]	[3]	Indirect +/- [1]
Quality (after)care	Direct + and Indirect +		Indirect +/- [1]	Indirect +/- [1]	**Indirect +/-** [4]	Direct + [5]	Indirect +/- [1]	Indirect +/- [1]
Optimisation processes	Direct + and Indirect +	Indirect +/- [1]		Direct - and Indirect +/- [1]	**Indirect +/-** [6]	Indirect +/- [1]	Indirect +/- [1]	Indirect +/- [1]
Workload caregivers	Indirect -	Indirect -	Indirect –		Direct - and Indirect -	Direct - and Indirect -	Indirect - [1]	Indirect -

Continued on next page

[1]The workload of caregivers will both be increased and decreased (+/-) by an improvement of this indicator. Because of this ambiguous influence, the interaction has different polarities.

[2]If patient relocation ability increases, then patients in aftercare will increase or stay the same. This will lead to an increase in workload which causes a decrease in availability of aftercare.

[3]The number of admissions will be influenced by the workload of caregivers that do not work in hospitals or aftercare facilities, because in these situations, the patient is already admitted (so admission cannot be prevented for). Because an increase in patient relocation ability will not influence the workload of these caregivers, it will also not influence the number of admissions.

[4]An increase in quality of care will both increase and decrease the availability of aftercare. For example, an increase in quality of care will lead to optimisation improvement, which will directly lead to a decrease in workload and increase in availability aftercare. In addition, if quality aftercare increases, the patient relocation ability increases, which will decrease availability of aftercare.

[5]An increase in quality of care will lead to an increase of hospital care availability. Example given, if quality (after)care increases, the process optimisation will increase, which will lead to a decrease in workload. This causes an increase in availability of hospital care. Furthermore, an increase in quality of aftercare can cause a decrease in the number of readmissions, which also will lead to an increase in availability of hospital care.

[6]If optimisation processes increases, the availability aftercare can both increase and decrease. For example, the workload will decrease directly, which causes an increase in the availability of aftercare. But if optimisation of processes increases, this will also lead to improved patient relocation ability, which will increase workload and availability aftercare.

Indicator	Patient relocation ability	Quality (after)care	Optimisation processes	Workload caregivers	Availability aftercare	Availability hospital care	Number admissions	Number readmissions
Availability aftercare	Direct +	Indirect +/- [1]	Indirect +/- [1]	Indirect +/- [1]		Indirect +/- [1]	Indirect +/- [1]	
Availability hospital							[4]	
Number admissions	Indirect -	Indirect -	Indirect -	Indirect +	Direct -	Direct -		Indirect +
Number readmissions	Indirect +	Indirect +/- [1] [1]	Indirect +/- [1]	Indirect +/- [1]	[7]	Direct -		

[7] If number of readmissions increases/decreases, the availability of aftercare will not directly increase/decrease in practice, because the spot will not be given to other patients directly. In addition, when the number of readmissions will decrease, the number of patients in hospital will decrease and the number of patients in aftercare will increase/stay the same. This will not increase the workload of aftercare workers, but will prevent a decrease in workload. So the aftercare availability will not decrease.

5.3.1 Evidence most important assumptions of the overview model

Now the interactions are elaborated, the evidence of the assumptions will be discussed. Assumptions that pertain to the causal relationships with the most significant impact on the transfer care system (and are crucial for the main conclusions) will be examined in greater detail. These causal relationships form the base for all upcoming sub-models. More details about the literature/interview/case study evidence is shown in Table 5.2. For simplicity, the causal relationships are numbered (see Table 5.2).

Table 5.2: Interactions among the indicators

Causal relationship	**Reference literature**	**Reference respondent/ case study**
1	(Andreasen et al., 2015; Arendts et al., 2010; Brody et al., 2019; Cadel et al., 2022; Couture et al., 2016; Dossa et al., 2012; Emes et al., 2019; Fakha et al., 2021; Gonçalves-Bradley et al., 2022; Halvorsen et al., 2016; Hesselink et al., 2014; Hestevik et al., 2019; Hullick et al., 2016; Hung and Leidig, 2015; Knight et al., 2013; Lemoyne et al., 2019; Marshall et al., 2016; McNeil et al., 2016; Meo et al., 2018; Patel et al., 2019; Perry et al., 2011; Slatyer et al., 2013; Stokoe et al., 2016; Trahan et al., 2016)	2, 6, 7, 8, 9, 12, 14, H1 & H2
2	(Åhlin et al., 2022; Andreasen et al., 2015; Arendts et al., 2010; Bagge et al., 2014; Brody et al., 2019; Cadel et al., 2022; Couture et al., 2016; Dilworth et al., 2012; Dossa et al., 2012; Driscoll, 2000; Hesselink et al., 2014; Hestevik et al., 2019; Hullick et al., 2016; Hung and Leidig, 2015; Knight et al., 2013; Kuluski et al., 2020; Lemoyne et al., 2019; Marshall et al., 2016; Masters et al., 2008; McNeil et al., 2016; Stokoe et al., 2016; Trahan et al., 2016)	2, 3, 4, 7, 6, 8, 10, 11, 13, 14, H1, & H3
3 and 4	(Amato-Vealey et al., 2012; Ardagh et al., 2011; Bhatt et al., 2014; Blouin-Delisle et al., 2018; Fassmer et al., 2020; Furterer, 2018; Halvorsen et al., 2016; Hestevik et al., 2019; Improta et al., 2018; Joo and Liu, 2022; Kodali et al., 2014; Laugaland et al., 2012; Martin et al., 2011; Morales-Contreras et al., 2020; Platzke and Andrabi, 2012; Reddy et al., 2015; Sun et al., 2023; Vose et al., 2014)	2, 3, 6, 7, 9, 10, 11, 12, 13, H1 & H3
5	No explicit evidence has been found in literature	3, 7, 6, 10, 11, 13, 14, H1 & H3
7	No explicit evidence has been found in literature	8, 12, 13, H1 & H2

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Causal relationship	Reference literature	Reference respondent/ case study
6 and 8	(Amadoru et al., 2018; Bynum et al., 2011; Codde et al., 2010; Fan et al., 2015; Fassmer et al., 2020; Hullick et al., 2016; Jensen et al., 2009; Kirsebom et al., 2014; Lamb et al., 2011; Laugaland et al., 2012; Lemoyne et al., 2019; Manckoundia et al., 2016; McGregor et al., 2014; Morphet et al., 2015; Saliba et al., 2000; Stokoe et al., 2016; Sun et al., 2023)	7, 8, 11, H1 & H3
9	(Aahlin et al., 2023; Åhlin et al., 2022; Destino et al., 2019; Fassmer et al., 2020; Hamline et al., 2020; Hesselink et al., 2014; Khalifa, 2017; Lamantia et al., 2010)	7, 11, H1 & H3
10	(Åhlin et al., 2022; Destino et al., 2019; Fakha et al., 2021; Hamline et al., 2020; Khalifa, 2017; New et al., 2013; Røsstad et al., 2015)	2, 3, 7, 12, H1, H3
11	(Aahlin et al., 2023; Ardagh et al., 2011; Bauer et al., 2009; Bull and Roberts, 2001; Cadel et al., 2022; Fakha et al., 2021; Hamline et al., 2020; Johnson and Capasso, 2012; New et al., 2013; Nurjono et al., 2019; Tortorella et al., 2013; Tracey et al., 1998; Woods et al., 2020; Zeitz et al., 2012; Zhao et al., 2018)	1, 2, 3, 5, 7, H1 & H3
12	(Aahlin et al., 2023; Hesselink et al., 2014; Joo and Liu, 2022; Laugaland et al., 2012)	1 & H3
13	(Amadoru et al., 2018; Carron et al., 2015; Codde et al., 2010; Fassmer et al., 2020; Jensen et al., 2009; Lemoyne et al., 2019; Marshall et al., 2016)	1, 5, 6 & 7
14	(Bynum et al., 2011; Efraimsson et al., 2006; Fassmer et al., 2020; Foss and Hofoss, 2011; Hesselink et al., 2014; Hestevik et al., 2019; Kuluski et al., 2020; Lamb et al., 2011; Laugaland et al., 2012; Rustad et al., 2016)	8, 12, 13, H1 & H2
15, 23, 24, 25, 28	(Aahlin et al., 2023; Åhlin et al., 2022; Almborg et al., 2009; Bauer et al., 2009; Cadel et al., 2022; Codde et al., 2010; Fakha et al., 2021; Faul et al., 2016; Grimm and Railsback, 2013; Gruneir et al., 2010; Hestevik et al., 2019; Hullick et al., 2016; Kada et al., 2011; Kuluski et al., 2020; Laugaland et al., 2012; Lemoyne et al., 2019; Marshall et al., 2016; New et al., 2013; Ouslander et al., 2016; Røsstad et al., 2015; Saliba et al., 2000)	10, 11, 14, H1 & H2

Continued on next page

Causal relationship	Reference literature	Reference respondent/ case study
16 and 21	(Ersek et al., 2018; Fakha et al., 2021; Lemoyne et al., 2019; Plochg et al., 2005; Rask et al., 2017; Renehan et al., 2013; Røsstad et al., 2015; Sun et al., 2023; Williams et al., 2014)	1, 5, 6, 7, 8, 9, 11, 12, 13, H1, H2 & H4
17	(Aahlin et al., 2023; Åhlin et al., 2022; Andreasen et al., 2015; Ardagh et al., 2011; Dilworth et al., 2012; Hestevik et al., 2019; Irvine et al., 2020; Johnson and Capasso, 2012; McKeown, 2007; New et al., 2013; Rydeman and Törnkvist, 2010; Scott, 2010; Zhao et al., 2018)	1, 5, 6, 7, 8, 9, 11, 12, 13, H1, H2, H3 & H4
19 and 20	(Åhlin et al., 2022; Álvarez et al., 2019; Ardagh et al., 2011; Badreddin and Castillo, 2015; Ersek et al., 2018; Fakha et al., 2021; Furterer, 2018; Hussein et al., 2017; Irvine et al., 2020; Rask et al., 2017; Røsstad et al., 2015; Williams et al., 2014)	1, 5, 6, 7, 8, 9, 11, 12, 13, H1, H2 & H4
26, 28, 29, 30 and 31	(Aahlin et al., 2023; Åhlin et al., 2022; Álvarez et al., 2019; Attarian et al., 2013; Badreddin and Castillo, 2015; Brown et al., 2013; Eriksson et al., 2011; Furterer, 2018; Hovlid et al., 2012; Hussein et al., 2017; Irvine et al., 2020; Kimbrough et al., 2015; Lot et al., 2018; Meredith et al., 2011; Scott, 2010; Valsangkar et al., 2017; Walters et al., 2013)	This was assumed as common knowledge.
27	(Fassmer et al., 2020; Lamb et al., 2011; New et al., 2013; Sun et al., 2023)	1, 6, 7, 8, 9, 10, 11, 12, 13, H1 & H2
42	(Amadoru et al., 2018; Carron et al., 2015; Codde et al., 2010; Fassmer et al., 2020; Jensen et al., 2009; Lemoyne et al., 2019; Marshall et al., 2016)	1, 5, 6, 7, 8, 9, 11, 12, 13, H1, H2 & H4

It can be concluded that the assumptions are based on multiple textual (literature) and empirical sources (interviews and case studies). Upcoming sections will elaborate on the sub-models. Only the direct influences of the factor on an indicator will be discussed, since the interaction among the indicators are already explained in in this section.

5.4 Visualisation results: Medical sub-model

The first sub-model focuses on the medical aspect of the entire system. This theme entails factors about (in)formal caregiver capacity, quality (after)care, skills of patient/caregivers, standards/routines & checklists, availability of tools and Advanced Care directives. The sub-model is shown in Figure 5.3 and a magnified version is shown in Figure F.2.

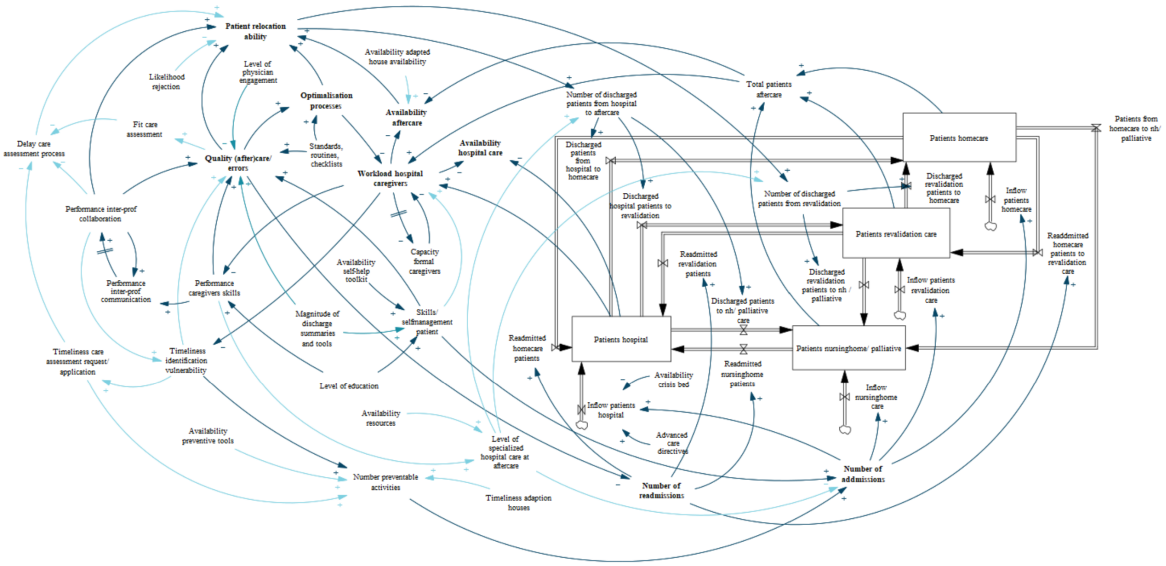

Figure 5.3: Causal Loop Diagram: sub-model of the medical

Capacity doctors, nurses and informal caregivers

This sub-model primarily encompasses the capacity of both formal and informal caregivers. The sub-model has another sub-model to visualize the interactions among factors (see figure 5.4).

The capacity of physicians and informal caregivers affects the workload. An increased capacity can result in a reduced workload, assuming that all other factors remain constant. The capacity of physicians and informal caregivers is influenced by various factors. Aging, for example, affects capacity. Due to aging, the number of people that are no longer working increases, while the number of workers decreases, resulting in a decrease in the capacity of informal caregivers and physicians. The capacity of formal caregivers is determined by other, more controllable factors. A higher dismissal rate, for example, leads to a lower capacity. The dismissal rate depends on the satisfaction rate and the overworked rate. If many physicians become overworked, the capacity decreases. The overworked rate also affects the capacity of informal caregivers. In addition to the overworked rate, the size of the social network also influences the capacity of informal caregivers.

Capacity has an impact on the workload of formal and informal caregivers. An increased capacity of informal caregivers can reduce the workload for both informal caregivers and physicians and nurses. Informal caregivers can take on tasks from doctors and nurses. An increase in capacity thus has a favorable effect on the system by positively influencing the workload. Furthermore, the capacity and workload of informal caregivers have direct relationships with the performance caregivers skills (and both (in)directly with quality (after)care) and with timeliness identification vulnerability (and indirectly with number of preventable activities). An increased capacity of informal caregivers can improve the quality of (after)care indirectly, because the performance of caregivers skills can improve. In addition, it can assist with following discharge instructions, administering medication, groceries, and so on. This also contributes to the quality of (after)care. Informal caregivers can also help to identify the vulnerability of patients, which can prevent for admissions.

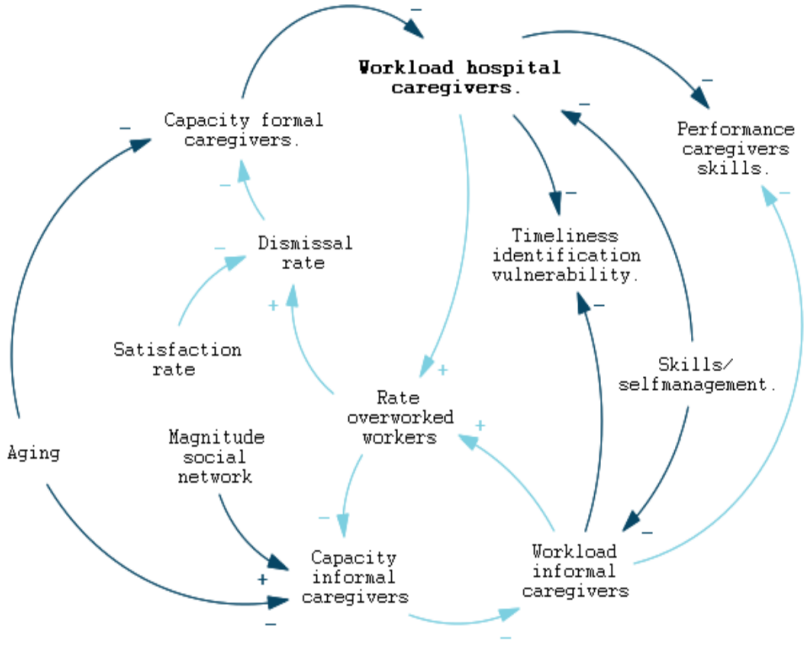

Figure 5.4: Causal Loop Diagram medical sub-model

Skills patient and caregivers and provision hospital care at home/ nursing home

Skills also play a significant role, because it directly improves the workload, quality (after)care and the number of admissions. In addition, by empowering patients to take an active role in their healthcare, they become more capable of managing their conditions and promoting their own well-being. To enhance skills, training and education are required, along with self-help tool kits to support self-management. In addition, without having the necessary self-help toolkit, self management can not function properly.

Education and training is also necessary to enhance the performance of the skills of caregivers. When the performance skills of caregivers improves, the system is influenced positively through various channels. Better skills result in better quality of aftercare. For example, when the performance of skills improves, process-related errors can decrease which improves the quality (after)care. Transfer nurses can be trained in the procedural steps required to facilitate transfers. A concrete example is the requirement for a family conversation to have taken place before discharge. If physicians and nurses are not aware of this requirement, it delays the transfer process. Furthermore, improved performance of skills lead to better fit care assessment . Physicians need to assess which care assessment to request for a patient. When a physician requests the wrong care assessment, it gets rejected, and the patient cannot be transferred. Additionally, improved performance of skills enables specialized hospital care to be provided at an aftercare facility. For example, antibiotics or chemotherapy can be administered at home via an IV. This increases the availability of hospital care and nursing home/rehabilitation care (in the case of home-based care). It is essential, however, that the necessary resources are available. Lastly, improved performance of skills of caregivers enhance the performance of inter-professional collaboration/communication,

which improves the quality of aftercare and the patient relocate ability.

Standards, routines and checklists

The next factor to be discussed is "standards and checklists." This factor includes standardized discharge letters, standardized hand offs, medication checklists, comprehensiveness of handovers and magnitude of discharge summaries and tools. Firstly, standards and checklists promote critical thinking. Moreover, medication lists can prevent individuals from being hospitalized due to incorrect intake or drug interactions (in addition with level of engagement physicians), which improves the quality of (after)care. Another way they help reduce errors is by streamlining the use of terminology in conversations. Enhancing the quality of after care can also be facilitated with the assistance of standards and checklists. Standardized discharge letters and standardized hand offs ensure that necessary information is provided, allowing it to be shared with the general practitioner or other caregivers to provide appropriate follow-up care. This will also enhance the quality of aftercare, but also the skills/ self management of patients. Without clear discharge summaries, patients do not know what to do, which will decrease their skills/ ability of self-management.

Quality (after)care: medical and medication errors

Quality (after)care is already discussed in the overview section. However, this indicator is influenced by multiple factors. Firstly, having standards, routines, and checklists influences this, as well as the skills of caregivers improve the quality (after)care. Additionally, the level of physician engagement can reduce the number of medication errors which improves the quality of (after)care. Furthermore, lower workload can help improve the performance of the skills of caregivers skill which will reduce medication and medical errors. Overworked staff tends to make more mistakes, which is undesirable. Another factor affecting medical and medication errors is the lack of information, which is influenced by the performance of collaboration and communication. It is not possible to provide the correct treatment and medication when relevant information is missing.

Availability of tools and houses

The availability of resources and housing is also a factor that should not be overlooked. Several factors have already been discussed. For example, the availability of resources is necessary for self-management, and having the resources to provide hospital care at home or in a nursing home. Other factors that have not been discussed yet include the availability and timeliness of an adapted house, preventive tools, and crisis facilities.

Firstly, having available houses is necessary to be able to send patients back home (with home care). In this regard, it is necessary that houses are adapted in a timely manner when needed. This can also help with the prevention of the need for hospital or rehabilitation care (so improvement for number preventable activities). For instance, preventive home modifications or early relocation to a single-story residence can help prevent the need for nursing home or hospital care. In addition, the availability of an adapted house influences the availability of homecare. Without an available

house, homecare is not an option. Furthermore, the availability and usability of preventive tools can also positively influence the prevention of the need for hospital, nursing home, or rehabilitation care. For example, having a walking cane or walker can reduce the risk of falls among the elderly. Lastly, the availability of crisis beds is important. When an elderly patient enters the hospital and can no longer stay at home (and cannot be sent back home), crisis beds are needed to transfer the patient. If there are no crisis beds available, the patient may have to be admitted to the hospital, even if they do not have a medical care assessment for it. This harms the availability of hospital care, which negatively impacts the system. Note that this is a negative reinforcing feedback loop.

Care assessment related processes

A more preventive factor is the identification of vulnerable elderly individuals, with general practitioners and case managers playing a significant role. Timely identification of vulnerability is crucial because it can ensure that care assessment s are requested in a timely manner. This can promote both patient transfers (ability capacity allocation) and the prevention of an emergency room (ER) hospital admission when a patient needs to move from home to a nursing home. If the assessment is requested too late, the patient may not qualify for nursing home care. However, when the patients can no longer stay at home, they unnecessarily enter the ER, which affects the availability of hospital care. Moreover, a general practitioner can provide an early diagnosis of dementia, enabling proactive measures to be taken and sparing the availability of hospital care. When identifying vulnerability, it is essential for general practitioners to have the time to do so and to act proactively. Therefore, there is a significant relationship between the workload of physicians and the identification of vulnerability. The other factor that can hinder the delay in patient transfers is the "fit care assessment ," which has already been discussed in the section on skills.

Advanced Care directives

Advanced care directives is the last factor of this theme. This factor ensures that patients accept care that is feasible and desirable. It is important for older adults to carefully consider what they still want and what is still desirable. For instance, if an 85-year-old with dementia breaks a hip, it is necessary for the patient and family to think in advance whether it is still desirable to undergo a hip operation, with all its associated risks. When patients think about this in advance, it can reduce the demand for care and improve the patient's well-being.

5.5 Visualisation results: Demand-related sub-model

The theme related to patients/demand aspects pertains to factors associated with patient inflow, patient flow, and barriers that may be raised by family members. These factors will be discussed in this section based on the visualization of the sub-model, which can be found in Figure 5.5 and an enlarged version can be found in Figure F.3.

Aging

The most important factor in the demand-related theme is aging. Aging is an uncontrollable factor but has a great impact on the KPIs and therefore the system performance. First and foremost, aging negatively affects the number of patients in hospital and aftercare. This is because of aging, more people will have (multiple) chronic diseases, which increases the demand for care. If the amount of patients in hospital/aftercare increases, the availability of hospital/after care will incline. In addition, aging reduces the capacity of (in)formal caregivers leading to increased workload. Furthermore, aging directly contributes to higher workload since the number of patients with chronic diseases rises, and older individuals require more complex care. Aging also influences the quality of aftercare, since it increases the number of medical errors due to the increased complexity of care. Another impact is on the likelihood of rejection aftercare. The risk of rejection increases as the number of chronic diseases and complexity rises with aging. Patients with more complex care needs, such as psychological issues, dementia, addictions, etc., face a greater risk of being refused, thus hindering ability capacity allocation. Finally, aging reduces the workload directly because the complexity of care increases.

Unpredictability change in demand/capacity

Firstly, a patient-related factor is the unpredictability of changes in capacity. This factor affects the ability to allocate capacity because it is difficult to transfer patients when capacity suddenly changes. Unpredictability is influenced by factors such as unpredictable inflow variation, such as unplanned admissions, seasonal variability, unpredictability in changes in disease progression, and accuracy in determining tentative discharge dates. Seasonal variability is an important factor that influences the inflow of patients. For example, admissions tend to be higher in the winter than in the summer, which can be anticipated with capacity allocation. When the change in capacity increases, it becomes more challenging to allocate capacity. In addition, the patients themselves contribute to changing demands and unpredictable inflow, which can pose challenges for the transfer care system. This can lead to capacity issues and complex planning, as the demand for care transfer can be unpredictable. Therefore, the unpredictability change in demand/capacity negatively (directly) influences the patient relocate ability. Another important factor that is influenced by the unpredictability is the accurateness of tentative discharge data that in turn influences the performance of ACP. This relationship will be discussed under the sub-model of logistic/process related factors.

Conflicting expectations/opions family and patients

This factor will be discussed in the organisational sub-model section.

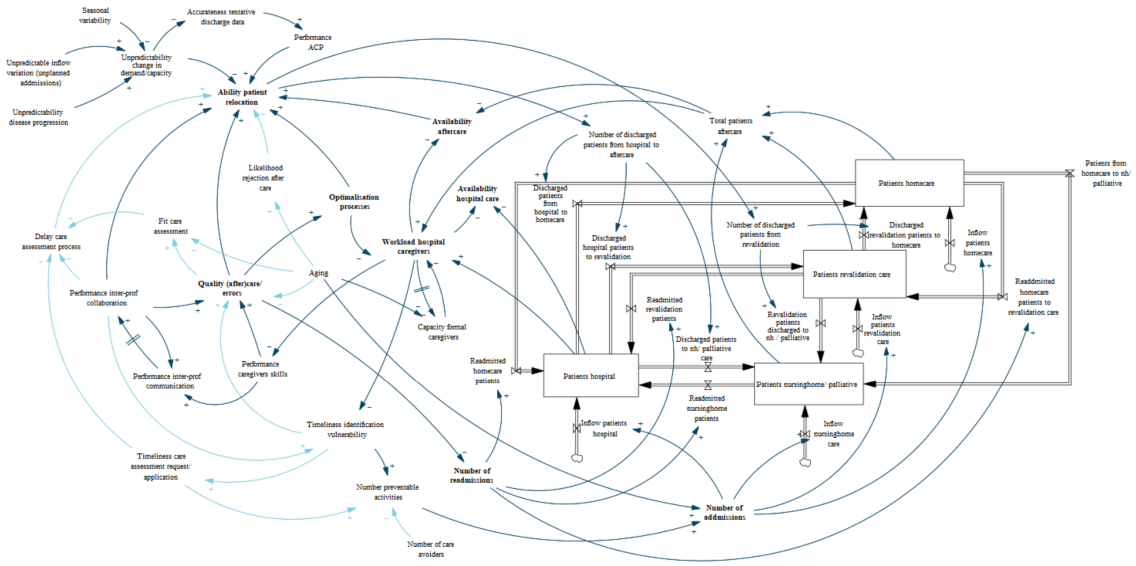

Figure 5.5: Causal Loop Diagram demand-related sub-model

5.6 Visualisation results: Logistics and process sub-model

In this section, factors related to the theme of processes and logistics will be discussed. Factors related to patient relocate ability, accurateness capacity information, unpredictability change in demand/capacity, accurateness tentative discharge data and performance ACP, optimisation processes and performance standards, routines and checklists. Some factors have already been mentioned, while others have not. This will be indicated during the discussion. The subsystem is presented in Figure 5.6 and enlarged in Figure F.4.

Patient relocate ability

Firstly, the patient relocate ability falls under this theme because it pertains to the logistics of patients. The factors accurateness capacity information, performance advanced care planning, delay care assessment process, performance collaboration, quality (after)care, availability (after)care, likelihood rejection and optimisation processes have an impact on the patient relocate ability. Not all relationships will be discussed in detail in this section. Only the factors that fall under the logistic/process theme will be discussed more in detail. The performance of advanced care planning (ACP) is an important factor of the logistic/process theme. ACP includes, among other things, ensuring that planned admissions are registered on time, with advance assessment of the necessary post-care. This means that, for example, in the case of a planned hip surgery, a rehabilitation spot and the necessary aids can be arranged in advance so that the patient can be discharged as quickly as possible. Furthermore, the accurateness capacity information influences the patient relocate ability. The subsequent section will dive deeper into this factor.

Accurateness capacity information, unpredictability change in demand/capacity, accurateness tentative discharge data and performance ACP

The accurateness capacity information is influenced by two factors. The first factor is the unpredictability change in demand/capacity. The second factor is the availability of data. The availability of data is explained more in detail in the ICT sub-model section. However, now the unpredictability change in demand/capacity will be explained. This factor influences the accurateness tentative discharge data, and the performance of advanced care planning. If the capacity change is more unpredictable, it is more difficult to determine the tentative discharge date. For example, if a patient gets unexpected complications, the unpredictability change capacity increases, which makes it harder to accurately determine a tentative discharge date. In addition, the unpredictability change in demand/capacity also directly influences the performance ACP. When the capacity unexpectedly changes in an aftercare facility, the planned process of relocating a patient there may not proceed as intended. Therefore, it cannot be arranged in advance where a patient will be placed, which complicates the performance of ACP.

Optimisation processes

The next factor pertains to the optimisation processes. This factor has already been discussed in the section on medical factors. But additional information will be provided here. First, reducing process-related errors will lead to improved process optimisation . Optimizing processes can be promoted by minimizing interruptions in workflow processes, thereby reducing the number of process-related errors. For example, a transfer nurse was frequently interrupted while working on patient transfers. To optimize processes, data is needed to identify potential bottlenecks. This aspect is not discussed further here as it falls under the IT theme, where it will be explained. Another way to optimize processes is by minimizing non-value-added activities, which can be achieved by applying a Lean thinking approach. Lean thinking and the Six Sigma paradigm, inspired by production techniques and operations research, focus on eliminating non-value-added activities and waste, and improving processes. it is essential to optimize processes to enhance both ability capacity allocation and efficiency. The last factor that contributes to the optimisation of processes is the quality of (after)care. When doctors and nurses provide higher quality of care (which also means minimal errors), the processes will be more optimal. The optimisation of processes influences the workload and patient relocate ability directly. When the processes are more optimal, the workload can decrease and the patient relocate ability improves. Other KPIs will only be indirectly influenced by optimizing processes.

Performance standards, routines and checklists

The number/performance of standards, routines and checklists is also related to the logistic/process theme. This is because this factor influences the performance ACP and the optimisation processes and patient relocate ability indirectly. Standards, routines and checklists can help the steps that need to be taken to deliver good advanced care planning. For example, if a planned admissions gets registered, standards, routines and checklists can help to identify the information that is needed to carry out a good advanced care plan.

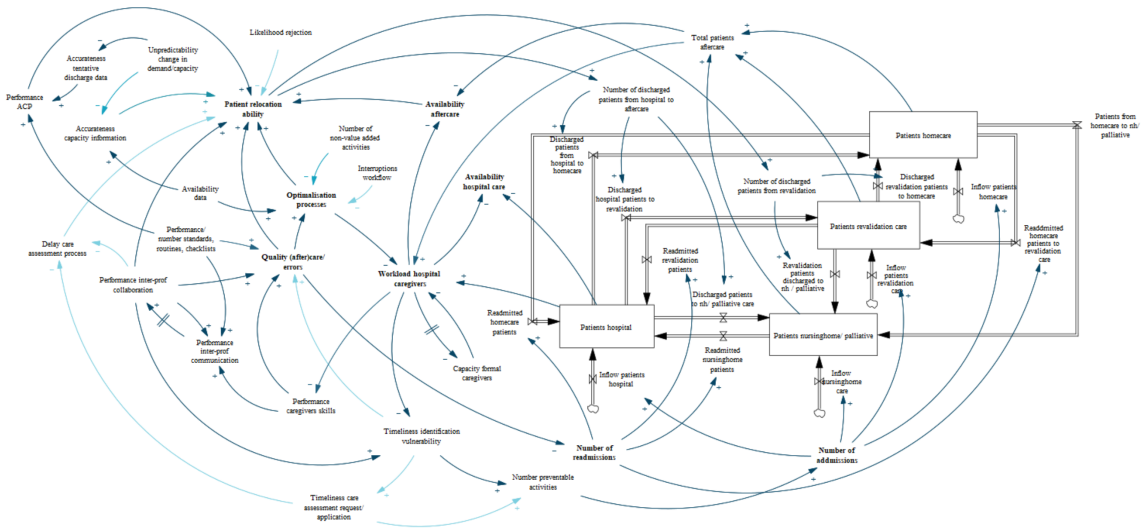

Figure 5.6: Causal Loop Diagram logistics and process sub-model

5.7 Visualisation results: Organizational sub-model

In this section, factors related to the organizational theme will be discussed. Factors related to this theme involve communication, collaboration, length of decision-making cycle, and documentation. The subsystem is shown in Figure 5.7 and a scaled-up version is shown in Figure F.5

Performance inter-professional communication, response time and length decision making cycle

First, the communication factor will be discussed. It is influenced by several factors. Firstly, communication is determined by the degree of fragmentation. This factor will be discussed later in the financial theme. The number of fragmented entities makes communication more challenging. Additionally, responding time is important in communication. Interviews revealed that it often takes days to receive a response to a question. Opening hours also play a role because many nursing homes do not communicate on weekends. This leads to patients who cannot go home unnecessarily being admitted to the hospital through the emergency department. Response time is also influenced by workload because answering questions becomes more difficult when a care worker has no time. Next to response time, also performance of the skills of caregivers (and quality of documentation) influence the performance of inter-professional communication. Furthermore, the performance of mandate/mediation plays a role. This factor also comprises the performance of leadership.Firstly, having a senior leader dedicated to addressing delayed discharges enhances communication between front-line providers, senior management, and community partners, leading to improved relationships and team functioning. Additionally, assigning a designated person to the patient/caregiver as their 'go-to person' can provide continuity of care and enhance communication and coordination. Finally, the performance of communication has a feedback loop with performance of collaboration. When the communication enhances, the collaboration will be enhanced either, this also applies the other way around. So if policy interventions aim to improve

the communication, also collaboration will improve. This is, among other things, because the amount of conflicting opions will reduce. Next to an improved performance of collaboration, also the length of decision making cycle will be shorter, which optimizes processes.The length of the decision making cycle is also influenced by the number of hospital rounds and performance of team meetings.

Communication with patients

Another factor related to communication is the performance of communication with patients/expectations. This factor concerns communication between healthcare providers and healthcare institutions but really focuses on communication between healthcare personnel and patients/families. Besides this explanation, this factor has also been discussed earlier in the demand-related factors. Communication with patients/families is an important factor that affects the number of conflicts with families and patients. The number of conflicting expectations and opions with family/patients causes court delay. In addition, the communication with patients/family is important to identify and pay attention to the patient their needs, which influences the quality of (after)care. When doctors/nurses do not know what the patient needs, they cannot provide the right care. This in turn results in a decreased patient relocate ability and an increase in the number of readmissions.

Length of decision cycle

The length of the decision-making cycle has been identified in the literature as an enhancer. This factor can be promoted by holding team meetings and hospital rounds. Also, the number of conflicting interests can influence the length of the decision-making cycle, which will be discussed later. It is important to optimize the length of the decision-making cycle to enhance the efficiency of processes.

Performance inter-professional collaboration

Performance in inter professional collaboration, like communication, is an important factor in the system. This factor is influenced by many factors, such as the level of trust, level of open collaborative culture, and the level of interdisciplinary in teams. When staff members have a high level of trust in each other, collaboration can improve. Furthermore, a collaborative culture is important for promoting teamwork. A higher level of interdisciplinary is also important for enhancing collaboration. Another crucial factor that promotes collaboration is communication. When communication within an organization improves, collaboration can also become more effective. Now that we have discussed the factors that influence collaboration, it is important to consider which KPIs are affected. Firstly, both efficiency and ability capacity allocation are positively influenced, both directly and indirectly. Other KPIs are only indirectly affected. For example, improved collaboration can result in less missing information, which enhances the quality of follow-up care, positively impacting KPIs like the number of preventable hospital admissions and the risk of hospital readmissions. It is desirable to promote collaboration in order to positively influence various KPIs.

Quality documentation A factor that is somewhat less central is the quality of documentation.

The case study approach revealed that when documentation is incomplete, the discharge process cannot be carried out effectively. For instance, doctors did not include all relevant information in a patient's record, which a transfer nurse needs to be able to discharge a patient and find an appropriate after care place. The performance of the skills of caregivers skills has an impact on the quality documentation that is depending on the workload. It was found that workload was a significant factor in not fully documenting all the necessary information. The quality of documentation affects both communication performance and the quality of (after)care.

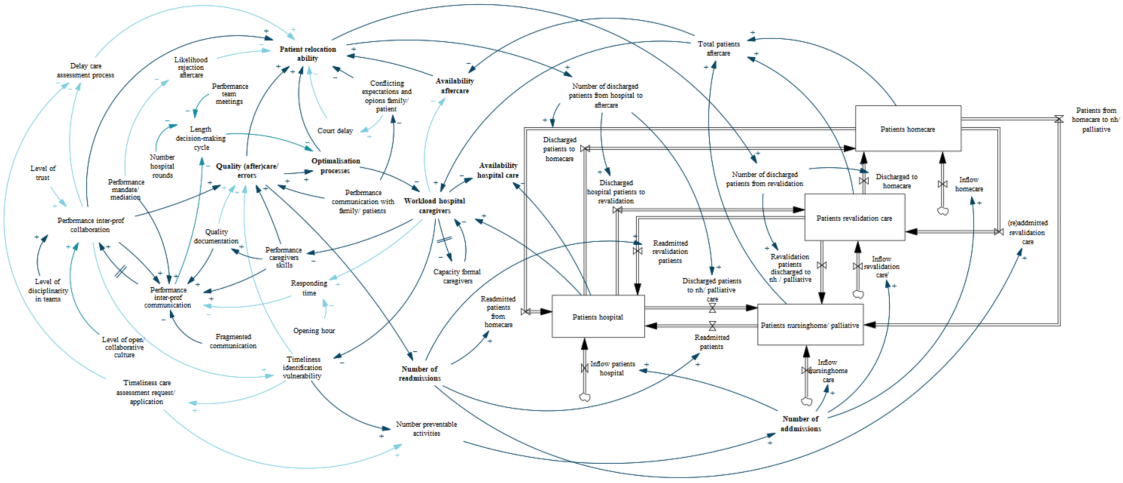

Figure 5.7: Causal Loop Diagram organizational sub-model

5.8 Visualisation results: Financial sub-model

The penultimate theme encompasses financial factors. This includes fragmentation of care institutions, budget cap, and assessment care assessment delay. It may not be immediately clear why these factors fall under the financial theme, but this will be explained in this section. The financial sub-model is presented in Figure 5.8 and a magnified version is presented in Figure F.6.

Conflicting interests among healthcare providers

Conflicting interests among healthcare providers also fall under the financial theme. This is perhaps the most critical factor in the system. This factor essentially describes the cherry-picking process, where after care facilities prefer less complex and medically stable patients. For example, a nursing home may find it more costly and challenging to care for a patient who requires both psychological and physical assistance. In such cases, institutions prioritize reducing their own costs rather than minimizing the total chain costs of the patient journey. For instance, if a patient is rejected (due to financial reasons), they may remain in the hospital for an extended period, which is much more expensive. The absence of a problem owner may be the most significant factor contributing to the persistence of conflicts. Having a problem owner can drive optimisation across the entire chain, which currently does not happen. Another factor that can influence the number of conflicts is the presence of financial incentives. These incentives can help avoid cherry-picking behavior. For example, if a nursing home accepts a complex patient, it may reduce overall costs

but might be financially disadvantageous for the nursing home. Financial compensation can be used to make it financially advantageous for the nursing home, thus optimizing chain costs. Poor communication can also increase the number of conflicts. Furthermore, the performance of mediation and mandate can help counteract the conflicting interests. In case the party that has the mandate to outplace a patient, can determine whether a aftercare facility is permitted to reject the patient. This does not remove the cause, but it does prevent the negative consequence. Finally, the degree of fragmentation, as discussed earlier, can influence the number of conflicts. Minimizing conflicts is essential because it directly improves efficiency and reduces the number of preventable hospital admissions. Indirectly, it can also enhance other KPIs (refer to the KPI sub-model).

Fragmentation care institutions

Another important factor is the degree of fragmentation among care institutions. In some regions, fragmentation is quite high, with tens of nursing homes and home care institutions. Additionally, there are many health insurers in the Netherlands, each with its contracted care institutions. As fragmentation increases, so does the number of care institutions that are not contracted. In such cases, a patient cannot be transferred unless a health insurer mediates and is willing to finance uncontracted care. Therefore, the patient relocate ability will be made more difficult when the degree of fragmentation is high. In addition to this, high fragmentation also leads to increased competition, where isolated entities within the chain try to optimize individually, but this does not result in optimal chain-wide performance, which decreases the patient relocate ability and increases conflicting interests. Moreover, high fragmentation results in the emergence of many small institutions that prefer less complex patients, increasing the likelihood of rejection. Furterhmore, fragmentation also poses collaboration challenges, as discussed in the previous theme. Another influence of fragmentation in care is its impact on process optimisation . The more smaller care institutions there are, the less they can optimize their processes.

Assessment process conflicts and delay

In the Netherlands, care assessment delay plays a significant role. This factor has been discussed earlier but will now be highlighted more from a financial perspective. In the Netherlands, it is necessary to perform a care assessment for after care. When a patient has dementia and needs to move to a nursing home, this requires a different care assessment than a patient who needs a few weeks of rehabilitation care. These care assessments must be requested to finance the care. The challenge, however, is that not all patients always fit neatly into a specific category of care assessment. This makes the fit of a certain care assessment more difficult, which will result in delays of care assessment process. It is important that doctors and nurses are aware of the different care assessment options, to maximize the care assessment fit. In addition to the influence of this internal factor, aging has a negative impact on the care assessment delay, because more patients have multiple chronic illnesses, making it more difficult to fit a patient into a single category. When patients do not fit into a predefined category for funding, it causes delays in the discharge process. In addition, the thinking is too narrowly based on categories, labels and care assessments. For example, patients may have to wait for the right labeled bed, even if care can be

provided on a differently labeled bed. In some cases, bed labeling causes financial complications, because when space is available it can still lack funding. It is important to find suitable solutions for addressing this issue and optimizing the delay in requesting a care assessment because it affects the ability capacity allocation. Lastly, the timeliness of care assessment requests play an important role. Because it takes several days/weeks to request and actually receive the care assessment, it is desirable for the care assessment to be requested as soon as it is clear which type of care assessment needs to be requested. An example is when dementia patients are admitted to the hospital without any care assessment. The general practitioner/case manager or family could have reduced the length of stay/wait time in the hospital if a care assessment had already been requested.

Budget cap

The final financial factor that plays a role, is the height of the budget cap that is determined by health insurers and offices. A budget cap determines how much care will be financed, indirectly affecting how much care is accepted or rejected by care institutions. When the budget cap is reached, no new patients can be treated or accepted. In the Netherlands, the budget cap is often reached before the end of the year, resulting in the rejection of patients. This will have a negative impact on the likelihood of rejection and therefore also on the patient relocate ability to the correct place for aftercare. In cases where the budget cap is reached before the end of the year, it is crucial for health insurers to mediate and still provide funding above that cap. This allows patients to receive the necessary care. Therefore, it is essential to ensure that the budget cap is not reached before the end of the year to prevent disruptions in patient care.

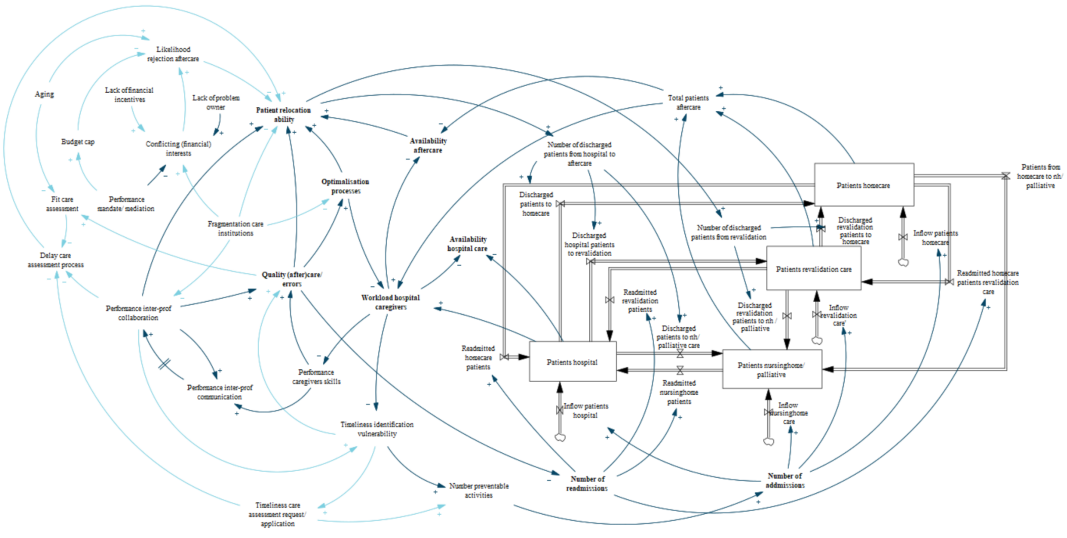

Figure 5.8: Causal Loop Diagram financial sub-model

5.9 Visualisation results: Information and Communication Technology sub-model

The very last theme for the sub-models is ICT. This theme comprises two crucial factors: firstly, the performance of IT systems, and secondly, data availability. In this section, we will discuss these factors. The sub-model is depicted in Figure 5.9 and enlarged in Figure F.7.

Performance IT systems

The performance of IT systems is another factor that can help improve system performance. When there are IT systems that work correctly (good interoperability, up-to-date, etc.), it can enhance communication because IT systems can provide communication tools. For instance, it is convenient if transfer departments can communicate within the program with other healthcare providers, allowing everyone to see the conversation, enabling healthcare workers to respond quickly, and understand the inquiry. Additionally, having well-functioning IT systems can aid in sharing patient records, reducing the lack of information. This makes the exchange of medical reports easier (if interoperability is good), and the IT system can assist with the completeness of documentation. The IT system can provide a structured format for documentation and ensure that no relevant information is missed. This enhances the communication and performance of collaboration which in turn influences the quality (after)care. Another impact of the performance of IT systems is that it can enhance the availability of data. The next subsection will discuss this more in detail.

Availability data

Data availability is a factor that can be categorized under the ICT theme because many ICT systems are needed to collect data. Data can aid in process optimisation . For instance, the absence of accurate data on bottlenecks can sometimes obscure the root of the problem or the areas with the greatest potential for improvement. In addition, the lack of accurate data on bottlenecks sometimes makes it unclear where the problem lies or where the highest yield can be achieved. Furthermore, inadequate monitoring of waiting times in the hospital, separate from length of stay and lack of medical readiness registration, is a cause for not being able to optimize processes. Next to the optimisation of processes, the patient relocate ability is influenced by the availability of data. For example, gathering data can contribute to establishing a chain control system for effective operations management. In addition, when data about capacity of aftercare facilities is up to date, available and accurate, transfer nurses can relocate patients faster. When there are not capacity statistics available, this can hinder the relocation process. It is, therefore, crucial to have access to available data.

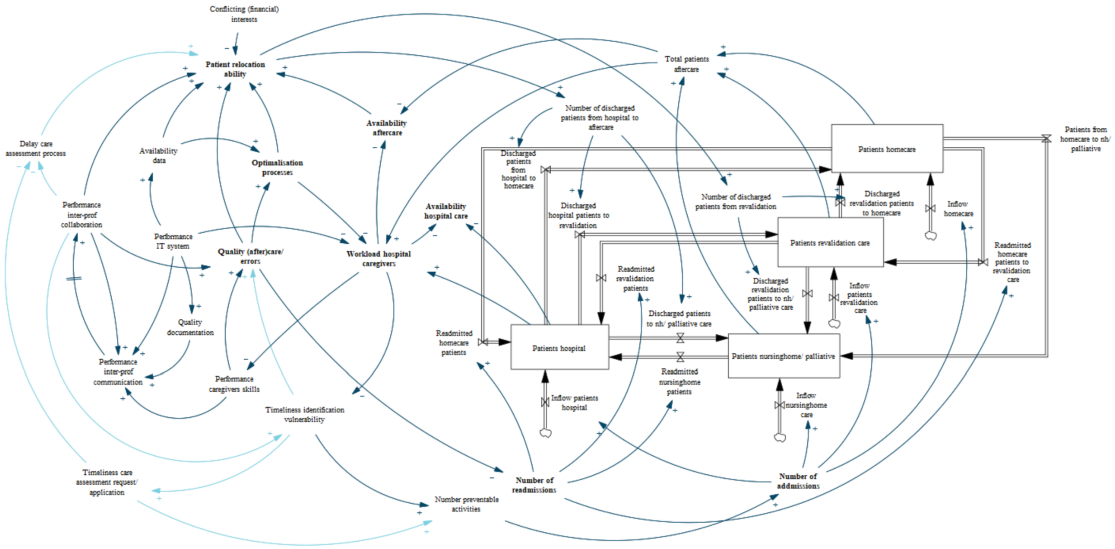

Figure 5.9: Causal Loop Diagram ICT sub-model

6 Conclusion

First, it must be clarified that the (Dutch) transfer care system consists of four pathways for care transitions (Fakha et al., 2021). The four pathways are: 1) the transition from hospital to home; 2) the transition from hospital to intermediary care places to a final destination; 3) the transition from hospital or home to nursing residential care facilities and 4) transition from nursing facilities or home to hospital.

Interviews, case studies and literature research have revealed that the (Dutch) transfer care system consists of multiple obstacles/enhancers (factors) that could be structured into the following themes: 1) Regulation, protocols, routines and checklists; 2) Coordination and collaboration; 3) Patient and family behaviour and response; 4) Healthcare providers capacity, quality and flexibility; 5) Follow up care and evaluation; 6) Information and Communication Technology; 7) Financial infrastructure; 8) Advanced Care Planning (ACP), Preparation and prevention and 9) Demography, immigration and healthcare avoids/demand. Noteworthy is that there was substantial agreement between the findings from the literature and those from the interviews and case studies, with no conflicting results. Only, themes 7-9 were not mentioned in literature but mainly identified by interviews and case studies because these sub-themes are Dutch oriented.

The obstacles and enhancers identified by literature review, interviews and case studies are modelled in a qualitative System Dynamic model (hybrid causal loop diagram). Interactions between and feedback loops among the obstacles and enhancers form a coherent system. Indicators have been designated to represent key processes in the Dutch transfer care system that aim to improve system performance.

The system performance can be explained using the four pathways. The first pathways encompasses the transition from hospital to home, the transition from hospital to nursing residential and the transition from hospital to intermediary care places to the final destination. The system performance is optimal when a patient is relocated to the correct destination when the patient is ready for discharge. It is also important that the patient becomes transferable as quickly as possible and that there are no delays that would cause the patient to become transferable later than could have been achieved. Another pathway is about the transition from nursing facilities to the hospital and the transition from home to the hospital. This pathway pertains to the inflow/readmissions of patients. The system performance improves when the number of patient admissions or readmissions is prevented whenever possible. The last transition is from home to nursing residential care facilities. The system performance is enhanced if the patient patients can move from home to a nursing home without the need for hospital admission. In addition, preventing a nursing home admission is desirable when an admission can be prevented.

Based on this information, the following (key performance) indicators have been formulated: patient relocate ability, quality (after)care, optimisation processes, workload caregivers, availability

hospital care, availability aftercare, number admissions and number of readmissions. Because all (key performance) indicators represent important processes that aim to improve system performance, they can be labelled as leverage points where policy interventions must focus upon. If the leverage points do not align with these indicators, they will be compromised, which will deteriorate system performance. Therefore, the indicators serve indirectly as so-called leverage points. These leverage points indicate where the Ministry of Health, Welfare and Sport can make changes within that system. Now that the indicators/leverage points have been identified, the potential interactions between these indicators and feedback loops can be examined.

Qualitative SD has revealed multiple unidirectional (only + or only -) interactions and interactions that do not have the same polarities (+/-) (see Table 6.1). As a starting point, the insights based on the unidirectional interactions will be discussed.

The first unidirectional interaction (between patient relocation ability and availability aftercare) indicates that improving patient relocation ability leads to decreased aftercare availability. A decrease of availability of aftercare can deteriorate other indicators, which hampers system performance (as indicated by the red relationship in the table 6.1). Therefore, in cases where patient relocation ability is enhanced, additional interventions may be necessary to maintain or increase aftercare availability.

Secondly, the qualitative SD analysis implicates that policy makers can start focus on reducing the workload and the number of admissions. Reducing the workload and the number of admissions will have a favorable effect on all indicators, thereby improving system performance. Only, a decrease in workload and admissions improves patient relocation ability, which may lower aftercare availability. However, a decrease of workload and the number of admissions directly increase aftercare availability, so it is predicted that the availability of aftercare will not be reduced. Nevertheless, quantitative research is needed to determine if aftercare availability will increase or decrease. If availability aftercare will decrease, a bundle of interventions is needed to enhance the availability of aftercare through an alternative approach.

In contrast to unidirectional interactions, qualitative System Dynamics also revealed interactions with different polarities (+/-). All interactions with different polarities (except for the bold interactions see Table 6.1) can obtain a favorable unidirectional polarity when workload is reduced or maintained. For example, when the number of readmissions is reduced, both the quality of (after)care and optimization processes are improved and worsened simultaneously. This is because a reduction in the number of readmissions results in both higher and lower workloads. Workload is increased on one hand because a decrease in the number of readmissions leads to an increase in the number of patients in aftercare, which raises the workload of aftercare personnel. On the other hand, the workload of hospital personnel is reduced because the number of patients in the hospital decreases. So, a bundle of interventions is needed to both promote the respective indicator and simultaneously maintain workload constant, by for example, reducing the dismissal rate of caregivers, encouraging patient skills/self-management or by involving informal caregivers.

To determine how many additional interventions are needed to keep workload constant and to determine the net total effect of interactions with different polarities, quantitative System

Dynamics is needed. In addition, quantitative System Dynamics is also needed to be able to prioritize policy interventions. For example, one intervention (such as reducing workload) may have a much greater impact on the system than another measure (for example improving the quality of aftercare). The magnitude of the impact depends on the presence and polarity of feedback loops. For instance, if the total effect of the feedback loops for workload is reinforcing, it will have a more substantial beneficial impact than if the total effect is balancing. The qualitative SD analysis has shown that the indicators are involved in a great number of feedback loops with different polarities (both balancing (-) and reinforcing (+)). Again, quantitative System Dynamics is needed to determine the net total effect of these feedback loops in order to determine on which policy interventions the Ministry of Health, Welfare and Sport should place their focus.

Table 6.1: Interactions among the indicators

Indicator	**Patient relocation ability**	**Quality (after)care**	**Optimisation processes**	**Workload caregivers**	**Availability aftercare**	**Availability hospital care**	**Number admissions**	**Number readmissions**
Patient relocation ability		Indirect +/-	Indirect +/-	Indirect +/-	Indirect -	Direct + and Indirect +/-		Indirect +/-
Quality (after)care	Direct + and Indirect +		Indirect +/-	Indirect +/-	**Indirect +/-**	Direct +	Indirect +/-	Indirect +/-
Optimisation processes	Direct + and Indirect +	Indirect +/-		Direct - and Indirect +/-	**Indirect +/-**	Indirect +/-	Indirect +/-	Indirect +/-
Workload caregivers	Indirect -	Indirect -	Indirect –		Direct - and Indirect -	Direct - and Indirect -	Indirect -	Indirect -
Availability aftercare	Direct +	Indirect +/-	Indirect +/-	Indirect +/-		Indirect +/-		Indirect +/-
Availability hospital								
Number admissions	Indirect -	Indirect -	Indirect -	Indirect +	Direct -	Direct -		Indirect +
Number readmissions	Indirect +	Indirect +/-	Indirect +/-	Indirect +/-		Direct -		

7 Discussion

This discussion will first provide compare the findings of this study with previous existing studies. Thereafter the limitations will be discussed, which will be used to provide recommendations for future research. The discussion ends with the breaktrough of this study.

7.1 Interpretation findings and compared to existing policy notes

This section will delve into existing policy documents and other informal literature. Firstly, we will examine the similarities and differences with the obstacles and enhancers that have been identified, and whether these studies approached the issue from a system perspective. Additionally, we will explore whether current reports discuss the importance of regional variations. Lastly, we will delve into a study that has also used qualitative System Dynamics to map and improve a portion of the Dutch healthcare system.

7.1.1 Overlap in obstacles and enhancers

This study examined a literature review, interviews, and case studies. However, there are already multiple policy documents discussing potential enhancers and barriers that could improve the transfer care system. A comparison with the existing policy documents can provide insights into whether the enhancers and barriers identified in this study align or conflict with existing policy documents.

Various policy reports, government letters, and other (informal) publications showed significant overlap with the results of interviews, case studies, and literature reviews. For instance, reducing regulatory burdens (Bos, 2016; Helder, 2022a; Rijksoverheid, 2023), promoting data exchange (Minister van Volksgezondheid, Welzijn en Sport, 2022), and reducing administrative burdens (Asmoredjo et al., 2022) were mentioned under the theme of regulation, protocols, routines, and checklists. Under the second theme, coordination and collaboration, overlapping factors were also identified, such as chain-based collaboration (Asmoredjo et al., 2022; Burhenne, 2023; de Bruin et al., 2020; de Ruiter and Achterberg, 2021; Directie Langdurige Zorg (DLZ), 2021; Helder, 2022c; Minister van Volksgezondheid, Welzijn en Sport, 2022; Ministerie van Algemene Zaken, 2022; "Onderbouwing doeltreffendheid, doelmatigheid en evaluatie (CW3.1)", 2021; van der Wal, 2022; VNG, 2020; Wallenburg et al., 2021) and the sharing of knowledge (de Jonge, 2022b) and mediation by health insurers (De juiste zorg op de juiste plek, 2023) as enhancers. Factors related to solutions for labor shortages (de Bruin et al., 2020; Helder, 2022a, 2022c; Minister van Volksgezondheid, Welzijn en Sport, 2022; Ministerie van Volksgezondheid, Welzijn en Sport, 2020; Ministerie van Volksgezondheid, Welzijn en Sport, 2023a; Rijksoverheid, 2018; VNG, 2020; Wallenburg et al., 2021) , the number of TCU (Transitional Care Units) slots (Minister van Volksgezondheid, Welzijn en Sport, 2022), promoting healthcare quality (Asmoredjo et al., 2022;

Helder, 2022c; Rijksoverheid, 2023; Rijksoverheid, 2018) , increasing numbers of houses (and adaptations) (de Jonge, 2022a, 2022b; Helder, 2022b; Minister van Volksgezondheid, Welzijn en Sport, 2022; Rijksoverheid, 2018; VNG, 2020), the availability of (technological) tools (de Jonge, 2022a, 2022b; Helder, 2022a, 2022c; "Onderbouwing doeltreffendheid, doelmatigheid en evaluatie (CW3.1)", 2021), conflicting interests (Asmoredjo et al., 2022; Helder, 2022c) and efficiency (Asmoredjo et al., 2022) were mentioned under the theme of healthcare providers' capacity, quality, and flexibility. These factors also exhibited significant overlap with this study. The theme of ICT also showed overlap, as a well-functioning ICT system (Bos, 2016; Helder, 2022c), effective information exchange (Minister van Volksgezondheid, Welzijn en Sport, 2022; Ministerie van Volksgezondheid, 2023a, 2023b), and a shared ICT system (Asmoredjo et al., 2022; de Bruin et al., 2020) were mentioned. Financial factors were again mentioned in the financial theme, which overlapped with this study. Factors such as budget (de Jonge, 2022b), fragmentation among healthcare providers (de Bruin et al., 2020; Minister van Volksgezondheid, Welzijn en Sport, 2022; VNG, 2020), competition (de Bruin et al., 2020), financial incentives (VNG, 2020), and a labeling system (Wallenburg et al., 2021) were highlighted. Lastly, for the ACP (Advance Care Planning), preparation, and prevention theme, again many overlapping factors were discussed. These included prevention (van der Wal, 2022), ACP (Minister van Volksgezondheid, Welzijn en Sport, 2022), positive health and awareness (de Ruiter and Achterberg, 2021; Directie Langdurige Zorg (DLZ), 2021; "Onderbouwing doeltreffendheid, doelmatigheid en evaluatie (CW3.1)", 2021), E-health (de Jonge, 2022b; Directie Langdurige Zorg (DLZ), 2021; Helder, 2022c; Minister van Volksgezondheid, Welzijn en Sport, 2022; Ministerie van Algemene Zaken, 2022; Rijksoverheid, 2023), delivering hospital care at home (Asmoredjo et al., 2022; Langedijk, 2023; VNG, 2020), promoting patient networks (Directie Langdurige Zorg (DLZ), 2021), clearly establishing a patient's preferences in a timely manner (Directie Langdurige Zorg (DLZ), 2021), the need of geriatricians (de Bruin et al., 2020; juiste zorg op de juiste plek, 2021; Minister van Volksgezondheid, Welzijn en Sport, 2022), self reliance (Andersson, 2022; Directie Langdurige Zorg (DLZ), 2021; Helder, 2022c; Minister van Volksgezondheid, Welzijn en Sport, 2022; Ministerie van Volksgezondheid, Welzijn en Sport, 2020; Ministerie van Volksgezondheid, Welzijn en Sport, 2023a) and early detection (van der Wal, 2022).

So, it has become clear that many policy documents and other informal literature share significant overlap in potential barriers and enhancers that influence the transfer care system. In addition, many publications did discuss measures to promote certain aspects of the transfer care system. For example, there are publications that focus on improving collaboration or addressing high work pressure and limited staff capacity. In these cases, there were already discussed highly specific solutions. In addition, in some cases, only points of intervention that enhance one factor were discussed, while other studies proposed a set of intervention points to address multiple aspects of the system simultaneously to improve system performance. However, none of these policy documents or informal literature addressed the interconnectedness of all factors and feedback loops. Conversely, this thesis study highlighted the importance of mapping all interactions and feedback loops to understand system behavior comprehensively. Based on the results of the qualitative System Dynamic analysis of this thesis, it can be concluded that the Dutch transfer care system is a complex system where policy interventions may not achieve the intended results,

because of existing interaction effects and feedback loops. Therefore, this study will be a valuable addition to existing documents, with quantitative System Dynamics providing even greater value in improving the transfer care system. Reasoning from a systems perspective is required to be able to develop a set of policy interventions that do improve the performance of the Dutch transfer care system.

7.1.2 Understanding the importance of regional differences

Moreover, an examination will be conducted to determine if existing reports address the significance of regional differences. It is interesting to observe that existing policy documents and other informal publications advocate for a regional approach. It was discussed that understanding regional differences is necessary to promote the system. A concrete example was that the number of small providers/independent contractors in home care nursing and the extent to which these parties are contracted by health insurers vary significantly by region, which can influence the system (Vektis, 2020). Another concrete example is the research conducted by the Netherlands Environmental Assessment Agency (Planbureau voor de Leefomgeving - PBL) in 2019, titled "Zelfstandig Thuis op hoge Leeftijd" (Independent Living at an Advanced Age), which delves into regional differences and their limitations for local policies (Tweede Kamer der Staten-Generaal, 2020). This also aligns with this thesis study as well. Interviews and case studies revealed differences in the level of fragmentation of healthcare providers, workload caregivers, capacity caregivers, indication delays etc (see Table 4.5). These differences may indicate that a regional approach is more effective and that a bundle of measures is needed.

7.1.3 Qualitative System Dynamics study to improve sustainability healthcare system

This last subsection will show a study that also used qualitative System Dynamics to examine the differences/agreements. A Dutch government agency (RIVM) has used qualitative System Dynamics to enhance parts of the Dutch healthcare system. This study focused on inventorying factors influencing the relationship between "vital elderly individuals" and the "sustainability of healthcare" and studying their interplay. Furthermore, it aimed to examine potential leverage points for policy measures to enhance the role of elderly individuals' vitality in healthcare. The conclusion here was also that measures or mechanisms, on one hand, have positive effects on vitality or sustainability, but, on the other hand, may lead to undesirable side effects. This demonstrates that a qualitative System Dynamics evaluation may not always be sufficient to formulate specific policy interventions to improve the system. Furthermore, this research by the RIVM illustrates that healthcare systems can be highly complex, where quantitative simulations can be useful in better understanding system functioning, ultimately enabling the formulation of effective policy interventions.

7.2 Limitations and recommendations

This study has some practical limitations. The first limitation of this study concerns the sample of respondents that are interviewed. It is desirable to maximize the variation in background

characteristics, such as age, income, place of residence, organisation, region, sort of care institution etc. Therefore, a recommendation for future research is to first determine for which background characteristics the greatest possible variation is desired and second to determine who will be interviewed based on this insight.

The second limitation is about the case study approach. Due to the time frame of this study, only four hospitals (cases) were included. These hospitals are distributed across the regions in the Netherlands. However, not all regions were included in the case study. Since different regions are subject to different (values of) factors, it is necessary to map out all regions in future research so that they can be compared. Additionally, it is desirable to include healthcare institutions other than hospitals. In this study the problem was mainly examined through a hospital viewpoint, but other perspectives are needed to reveal other relevant information on system elements and interactions. Therefore, future research should involve all relevant healthcare institutions in the case studies related to the transfer care system. This includes health insurance companies, government entities, home care institutions, rehabilitation centers, palliative care facilities, general practitioner practices, district nursing, municipalities, and more. This comprehensive approach ensures that the problem can be studied from all necessary perspectives.

The third limitation pertains to the evidence of the assumptions and the verification & validation method used for the causal loop diagram. Many causal relationships are based on multiple literature sources, interviews and case studies. However, some causal relationships are only based on interviews and case studies. Additional literature must be reviewed to provide formal evidence for all causal relationships. Furthermore, this study did not perform a rigorous and formal verification and validation study. In this study, the model is verified by an System Dynamics expert and the model is validated by an expert in the transfer care from a hospital perspective. However, the verification and validation can be enhanced if more experts have a look to the model and if other verification/ validation methods are used.

The fourth limitation involves the capability of qualitative System Dynamics to determine the overall effects of interactions and feedback loops. The qualitative System Dynamics analysis showed multiple interactions and feedback loops with different polarities (+/- and balancing/reinforcing). However, qualitative System Dynamics cannot determine the net effect of these interactions and feedback loops. This information is essential, because knowing the size of interactions and the effect of policy interventions is needed to draw up and prioritize policy interventions. To determine the net effects, quantitative System Dynamics is needed. Quantitative System Dynamics requires data to create a dynamic simulation of the transfer care system. The qualitative System Dynamics study forms a solid foundation for the quantitative study, because key leverage points for system performance improvement are identified.

The fifth recommendation builds upon the fourth recommendation and focuses on the provision of regional data. In this study, both a hospital from the Randstad and a hospital from the Deventer region were part of the case studies. These regions differ in several factors, as shown in Section 4.5. This leads to variations in how the system operates in different regions. Therefore, future research should examine whether policy interventions should be centralized or decentralized.

It is crucial that regional data is made available to perform a quantitative System Dynamics evaluation and examine how the system functions in different regions. This also relates to the question who needs to be responsible for an optimal patient flow.

7.2.1 Follow-up research questions

Follow-up research can focus on the following (sub)questions: 1) What interaction effects and feedback loops can be identified in the Dutch transfer care system?; 2) What is the net effect of these interaction effects and feedback loops in the Dutch transfer care system, and what does this mean for policymakers aiming to improve the system?; 3) Which differences in system functioning can be attributed to regional variations and require decentralized policy interventions?; 4) On which factors should central and decentralized policy interventions be aimed to improve the performance of the Dutch transfer care system? and 5) Who needs to be responsible for optimal patient flow? Additionally, it is desirable to reiterate and answer the research questions of this study using improved interview and case study approaches.

7.3 Breakthrough of study

Overall, this study has some critical limitations. Nevertheless, the qualitative systems approach on the Dutch transfer care system represents a breakthrough that demonstrates the value of systems thinking. So far, no study has adopted a systems approach to improve the Dutch transfer care system. In contrast, this study did adopt a systems approach, which has shown that policy interventions (mentioned in Dutch policy notes and other publications) may not achieve the intended results, because no account has been taken of existing interaction effects and feedback loops. The results of the systems approach revealed that just focussing on improving patient relocation ability, optimisation processes, quality of (after)care or number of readmissions can cause deterioration in other parts of the transfer care system. In particular, the qualitative systems approach revealed that the Ministry of Health, Welfare and Sport can start using a bundle of interventions that focus on reducing workload or/and number of admissions and simultaneously focus on enhancing the availability of aftercare. So, this study showed that a systems approach is needed to furnish the Ministry of Health, Welfare, and Sport with guidance on what factors policy interventions should be aimed. Moreover, a quantitative dynamic System Dynamics analysis holds even more promise in pinpointing policy interventions that can enhance the Dutch transfer care system and provide recommendations regarding which policy interventions will have a greater impact on the system. This qualitative research provides a solid foundation with which researchers (and the Ministry of Health, Welfare and Sport) can proceed to construct a quantitative model.

Bibliography

Aahlin, P., Almstrom, P., & Wänström, C. (2023). Solutions for improved hospital-wide patient flows–a qualitative interview study of leading healthcare providers. *BMC Health Services Research*, *23*(1), 1–17.

Aboumatar, H., Naqibuddin, M., Chung, S., Chaudhry, H., Kim, S. W., Saunders, J., Bone, L., Gurses, A. P., Knowlton, A., Pronovost, P., et al. (2019). Effect of a hospital-initiated program combining transitional care and long-term self-management support on outcomes of patients hospitalized with chronic obstructive pulmonary disease: A randomized clinical trial. *Jama*, *322*(14), 1371–1380.

Abtan, R., Rotondi, N. K., Macpherson, A., & Rotondi, M. A. (2018). The effect of informal caregiver support on utilization of acute health services among home care clients: A prospective observational study. *BMC Health Services Research*, *18*(1), 1–7. https://doi.org/10.1186/s12913-018-2880-9

Actiz. (2021a, October). Nieuwe registratie wachtenden nog geen reden tot juichen. https://www.actiz.nl/nieuwe-registratie-wachtenden-nog-geen-reden-tot-juichen

Actiz. (2021b, November). Verdere toename wachtlijsten verpleeghuizen in oktober. https://www.actiz.nl/verdere-toename-wachtlijsten-verpleeghuizen-oktober

AD. (2021). Door uitstel van zorg in ETZ kregen zeker 68 patiënten complicaties en zeven overleden. https://www.ad.nl/binnenland/door-uitstel-van-zorg-in-etz-kregen-zeker-68-patienten-complicaties-en-zeven-overleden~ad2ca98b/

Agency for Healthcare Research and Quality (AHRQ). (2017). Strategy 4: Care transitions from hospital to home: Ideal discharge planning. *Agency for Healthcare Research and Quality Website*.

Agomoh, C. J., Brisbois, M. D., & Chin, E. (2020). A mapping review of clinical nurse leader and nurse educator transitional care skills and competencies. *Nursing Outlook*, *68*(4), 504–516.

Åhlin, P., Almström, P., & Wänström, C. (2022). When patients get stuck: A systematic literature review on throughput barriers in hospital-wide patient processes. *Health Policy*, *126*(2), 87–98.

Ahmad, A., Purewal, T. S., Sharma, D., & Weston, P. J. (2011). The impact of twice-daily consultant ward rounds on the length of stay in two general medical wards. *Clinical Medicine*, *11*(6), 524.

Ajrovic, S., & de Ruiter, M. (2022, May). Krapte op de arbeidsmarkt breekt records, maar leidt nog niet tot vaste contracten. https://www.volkskrant.nl/nieuws-achtergrond/krapte-op-de-arbeidsmarkt-breekt-records-maar-leidt-nog-niet-tot-vaste-contracten~bdb3ae19/?referrer=https\%3A\%2F\%2Fzorgenstelsel.nl\%2F

Allen, J., Hutchinson, A. M., Brown, R., & Livingston, P. M. (2018). User experience and care for older people transitioning from hospital to home: Patients' and carers' perspectives. *Health Expectations*, *21*(2), 518–527.

Almborg, A.-H., Ulander, K., Thulin, A., & Berg, S. (2009). Patients' perceptions of their participation in discharge planning after acute stroke. *Journal of clinical nursing*, *18*(2), 199–209.

Álvarez, J. A., Flores, R. F., Grau, J. Á., & Matarranz, J. (2019). Process reengineering and patient-centered approach strengthen efficiency in specialized care. *Am J Manag Care*, *25*(2), e50–e57.

Amadoru, S., Rayner, J.-A., Joseph, R., & Yates, P. (2018). Factors influencing decision-making processes for unwell residents in residential aged care: Hospital transfer or residential inreach referral? *Australasian journal on ageing*, *37*(2), E61–E67.

Amato-Vealey, E. J., Fountain, P., & Coppola, D. (2012). Perfecting patient flow in the surgical setting. *AORN journal*, *96*(1), 46–57.

Anderson, J. E., Ross, A. J., Lim, R., Kodate, N, Thompson, K, Jensen, H, & Cooney, K. (2019). Nursing teamwork in the care of older people: A mixed methods study. *Applied Ergonomics*, *80*, 119–129. https://doi.org/10.1016/j.apergo.2019.05.012

Anderson, M. E., Glasheen, J. J., Anoff, D., Pierce, R., Capp, R., & Jones, C. D. (2015). Understanding predictors of prolonged hospitalizations among general medicine patients: A guide and preliminary analysis. *Journal of hospital medicine*, *10*(9), 623–626.

Andersson, E. F. (2022). *Wijkgerichte preventie en vroegsignalering* (tech. rep.). https://open.overheid.nl/documenten/ronl-a6762a6fade868babbf081b4fb63aac11784b66a/pdf

Andreasen, J., Lund, H., Aadahl, M., & Sørensen, E. E. (2015). The experience of daily life of acutely admitted frail elderly patients one week after discharge from the hospital. *International journal of qualitative studies on health and well-being*, *10*(1), 27370.

Ardagh, M. W., Tonkin, G., & Possenniskie, C. (2011). Improving acute patient flow and resolving emergency department overcrowding in new zealand hospitals–the major challenges and the promising initiatives. *The New Zealand Medical Journal (Online)*, *124*(1344).

Arendts, G., Reibel, T., Codde, J., & Frankel, J. (2010). Can transfers from residential aged care facilities to the emergency department be avoided through improved primary care services? data from qualitative interviews. *Australasian Journal on Ageing*, *29*(2), 61–65.

Asmoredjo, J, Reckman, de Bekker, A, & van der Heide, J. (2022). *Ervaringen en lessen bij de ontwikkeling van herkenbare en aanspreekbare wijkverpleging* (tech. rep.). Rijksinstituut voor Volksgezondheid en Milieu. https://open.overheid.nl/documenten/ronl-a48e80a38445537182e9d9726fc9a3a906b82e6b/pdf

Attarian, D. E., Wahl, J. E., Wellman, S. S., & Bolognesi, M. P. (2013). Developing a high-efficiency operating room for total joint arthroplasty in an academic setting. *Clinical Orthopaedics and Related Research®*, *471*, 1832–1836.

Auping, W, d'Hont, F., van Daalen, C, Pruyt, E, & Thissen, W. (2023). *System Dynamics The Delft Method* (tech. rep.). https://brightspace.tudelft.nl/d2l/le/content/499869/viewContent/3032115/View

Backman, C., Stacey, D., Crick, M., Cho-Young, D., & Marck, P. B. (2018). Use of participatory visual narrative methods to explore older adults' experiences of managing multiple chronic conditions during care transitions. *BMC Health Services Research*, *18*, 1–10.

Badreddin, O., & Castillo, R. Patient flow management-combining analytical and observational data to uncover flow patterns. In: In *Healthinf*. 2015, 32–39.

Bagge, M., Norris, P., Heydon, S., & Tordoff, J. (2014). Older people's experiences of medicine changes on leaving hospital. *Research in Social and Administrative Pharmacy*, *10*(5), 791–800.

Bauer, M., Fitzgerald, L., Haesler, E., & Manfrin, M. (2009). Hospital discharge planning for frail older people and their family. are we delivering best practice? a review of the evidence. *Journal of clinical nursing*, *18*(18), 2539–2546.

Bhatt, A. S., Carlson, G. W., & Deckers, P. J. (2014). Improving operating room turnover time: A systems based approach. *Journal of medical systems*, *38*, 1–8.

Blouin-Delisle, C. H., Drolet, R., Gagnon, S., Turcotte, S., Boutet, S., Coulombe, M., & Daneau, E. (2018). Improving flow in the or: How lean process studies can lead to shorter stays in the recovery ward. *International Journal of Health Care Quality Assurance*, *31*(2), 150–161.

Borshchev, A., & Filippov, A. From system dynamics and discrete event to practical agent based modeling: Reasons, techniques, tools. In: In *Proceedings of the 22nd international conference of the system dynamics society. 22*. Oxford, England. 2004, 25–29.

Bos, S. (2016). *(Ont)Regel de Zorg* (tech. rep.). Ministerie Volksgezondheid, Welzijn en Sport. https://open.overheid.nl/documenten/ronl-0ce61c6a-91b4-48d6-b884-409ea26477ab/pdf

Brody, A. A., Arbaje, A. I., DeCherrie, L. V., Federman, A. D., Leff, B., & Siu, A. L. (2019). Starting up a hospital at home program: Facilitators and barriers to implementation. *Journal of the American Geriatrics Society*, *67*(3), 588–595.

Brown, M. J., Kor, D. J., Curry, T. B., Marmor, Y., & Rohleder, T. R. (2013). A coordinated patient transport system for icu patients requiring surgery: Impact on operating room efficiency and icu workflow. *Journal for Healthcare Quality*.

Bull, M. J., & Roberts, J. (2001). Components of a proper hospital discharge for elders. *Journal of advanced nursing*, *35*(4), 571–581.

Burhenne, K. (2023, February). Acht voorbeelden van triage is opbrengst van regionale samenwerking - waardigheid en trots voor de toekomst. https://www.waardigheidentrots.nl/verslagen/regionale-samenwerking-triage-indrukwekkend/

Bynum, J. P., Andrews, A., Sharp, S., McCollough, D., & Wennberg, J. E. (2011). Fewer hospitalizations result when primary care is highly integrated into a continuing care retirement community. *Health Affairs*, *30*(5), 975–984.

Bynum, J. P., Barre, L., Reed, C., & Passow, H. (2014). Participation of very old adults in health care decisions. *Medical decision making*, *34*(2), 216–230.

Cadel, L., Sandercock, J., Marcinow, M., Guilcher, S. J., & Kuluski, K. (2022). A qualitative study exploring hospital-based team dynamics in discharge planning for patients experiencing delayed care transitions in ontario, canada. *BMC Health Services Research*, *22*(1), 1472.

Cak. (2023). CAK - De Wmo in 2023. https://www.hetcak.nl/regelingen/wet-maatschappelijke-ondersteuning/wmo-in-2022/uitleg-wmo

Caldwell, C., Butler, G., & Poston, N. (2008). *Lean six sigma for healthcare: A senior leader guide to improving cost and throughput*. Quality Press.

Carron, P.-N., Dami, F., Yersin, B., Toppet, V., Burnand, B., & Pittet, V. (2015). Increasing prehospital emergency medical service interventions for nursing home residents. *Swiss medical weekly*, *145*.

Centraal Bureau voor de Statistiek. (2022, October). Ouderen. https://www.cbs.nl/nl-nl/visualisaties/dashboard-bevolking/leeftijd/ouderen

Chen, Z., Yu, J., Song, Y., & Chui, D. (2010). Aging beijing: Challenges and strategies of health care for the elderly [Ageing Research in Chinese Societies]. *Ageing Research Reviews*, *9*, S2–S5. https://doi.org/https://doi.org/10.1016/j.arr.2010.07.001

Choi, J.-K., Kang, M., & Joung, E. (2017). The impact of in-home services utilization on the institutionalization of older people in korea. *Journal of Aging Social Policy*, *29*. https://doi.org/10.1080/08959420.2017.1319318

Codde, J., Arendts, G., Frankel, J., Ivey, M., Reibel, T., Bowen, S., & Babich, P. (2010). Transfers from residential aged care facilities to the emergency department are reduced through improved primary care services: An intervention study. *Australasian Journal on Ageing*, *29*(4), 150–154.

Coffey Jr, C., Cho, E. S., Wei, E., Luu, A., Ho, M., Amaya, R., Pecson, M., Dalton, F. V., Kahaku, D., Spellberg, B., et al. (2018). Lean methods to improve operating room elective first case on-time starts in a large, urban, safety net medical center. *The American Journal of Surgery*, *216*(2), 194–201.

Coleman, E. A., & Boult, C. (2003). Improving the quality of transitional care for persons with complex care needs. *Journal of the American Geriatrics Society*, *51*(4), 556–557.

Considine, J., Street, M., Hutchinson, A. M., Bucknall, T., Rawson, H., Hutchison, A. F., Dunning, T., Duke, M. M., Mohebbi, M., & Botti, M. (2019). Timing of emergency interhospital transfers from subacute to acute care and patient outcomes: A prospective cohort study. *International Journal of Nursing Studies*, *91*, 77–85.

Couture, M., Sasseville, M., & Gascon, V. (2016). Facilitators and barriers to implementing transitional care managers within a public health care system. *Journal of gerontological social work*, *59*(4), 364–377.

Crotty, M., Whitehead, C. H., Wundke, R., Giles, L. C., Ben-Tovim, D., & Phillips, P. A. (2005). Transitional care facility for elderly people in hospital awaiting a long term care bed: Randomised controlled trial. *Bmj*, *331*(7525), 1110.

de Bruin, S, Lemmens, L, Beijer, M, & Scheepens, M. (2020). *Netwerken integrale ouderenzorg: wat is de stand van zaken in Nederland?* (Tech. rep.). Ministerie van Volksgezondheid, Welzijn en Sport. https://open.overheid.nl/documenten/ronl-05e58e2f-32f9-4df8-8180-78fabb3c4a90/pdf

de Jonge, H. (2022a). Stand van zaken uitvoering actieplan hulpmiddelen [Letter of government 2344629-1006773-DMO].

de Jonge, H. (2022b). Stand van zaken wijkverpleging; zorgverlener in de eerstelijns- en ouderenzorg [Letter of government 1705062-206913-DMO].

de Ruiter, A, & Achterberg, K. (2021, March). Eindrapportage Project Samen beslissen in de wijkverpleging. https://www.rijksoverheid.nl/onderwerpen/zorg-en-ondersteuning-thuis/documenten/rapporten/2021/06/30/eindrapportage-project-samen-beslissen-in-de-wijkverpleging

De juiste zorg op de juiste plek. (2023). Vervolgzorg regelen op de transferafdeling. https://www.dejuistezorgopdejuisteplek.nl/thema%27s/samenwerken/in-de-wijk/vervolgzorg-regelen-op-de-transferafdeling/

De la Lama, J, Fernandez, J, Punzano, J., Nicolas, M, Nin, S, Mengual, R, Ramirez, J., Raya, A.-L., & Ramos, G. (2013). Using six sigma tools to improve internal processes in a hospital center through three pilot projects. *International Journal of Healthcare Management*, *6*(3), 158–167.

De Regge, M., Gemmel, P., & Meijboom, B. (2019). How operations matters in healthcare standardization. *International Journal of Operations & Production Management*, *39*(9/10), 1144–1165.

Destino, L., Bennett, D., Wood, M., Acuna, C., Goodman, S., Asch, S. M., & Platchek, T. (2019). Improving patient flow: Analysis of an initiative to improve early discharge. *Journal of hospital medicine*, *14*(1), 22–27.

Dilworth, S., Higgins, I., & Parker, V. (2012). Feeling let down: An exploratory study of the experiences of older people who were readmitted to hospital following a recent discharge. *Contemporary nurse*, *42*(2), 280–288.

Directie Langdurige Zorg (DLZ). (2021). *Dialoognota Ouder Worden 2020 - 2040* (tech. rep. No. 130317). Ministerie van Volksgezondheid, Welzijn en Sport. https://www.waardigheidentrots.nl/wp-content/uploads/2021/04/Dialoognota-Ouder-worden-2020-2040.pdf

Dolu, İ., Naharcı, M. İ., Logan, P. A., Paal, P., & Vaismoradi, M. (2021). A qualitative study of older patients' and family caregivers' perspectives of transitional care from hospital to home. *Research and theory for nursing practice*.

Donnelly, S., Reginatto, B., Kearns, O., Mc Carthy, M., Byrom, B., Muehlhausen, W., Caulfield, B., et al. (2018). The burden of a remote trial in a nursing home setting: Qualitative study. *Journal of medical Internet research*, *20*(6), e220.

Dossa, A., Bokhour, B., & Hoenig, H. (2012). Care transitions from the hospital to home for patients with mobility impairments: Patient and family caregiver experiences. *Rehabilitation Nursing*, *37*(6), 277–285.

Driscoll, A. (2000). Managing post-discharge care at home: An analysis of patients' and their carers' perceptions of information received during their stay in hospital. *Journal of advanced Nursing*, *31*(5), 1165–1173.

Efraimsson, E., Sandman, P.-O., & Rasmussen, B. H. (2006). 'they were talking about me'–elderly women's experiences of taking part in a discharge planning conference. *Scandinavian journal of caring sciences*, *20*(1), 68–78.

Emes, M., Smith, S., Ward, S., & Smith, A. (2019). Improving the patient discharge process: Implementing actions derived from a soft systems methodology study. *Health Systems*, *8*(2), 117–133.

Eriksson, H., Bergbrant, I.-M., Berrum, I., & Mörck, B. (2011). Reducing queues: Demand and capacity variations. *International Journal of Health Care Quality Assurance*, *24*(8), 592–600.

Ersek, M., Hickman, S. E., Thomas, A. C., Bernard, B., & Unroe, K. T. (2018). Stakeholder perspectives on the optimizing patient transfers, impacting medical quality, and improving symptoms: Transforming institutional care (optimistic) project. *The Gerontologist*, *58*(6), 1177–1187.

Fakha, A., Groenvynck, L., de Boer, B., van Achterberg, T., Hamers, J., & Verbeek, H. (2021). A myriad of factors influencing the implementation of transitional care innovations: A scoping review. *Implementation science*, *16*, 1–24.

Fan, L., Hou, X.-Y., Zhao, J., Sun, J., Dingle, K., Purtill, R., Tapp, S., & Lukin, B. (2015). Hospital in the nursing home program reduces emergency department presentations and hospital admissions from residential aged care facilities in queensland, australia: A quasi-experimental study. *BMC health services research*, *16*, 1–9.

Fassmer, A. M., Pulst, A., Spreckelsen, O., & Hoffmann, F. (2020). Perspectives of general practitioners and nursing staff on acute hospital transfers of nursing home residents in germany: Results of two cross-sectional studies. *BMC family practice*, *21*(1), 1–10.

Faul, M., Stevens, J. A., Sasser, S. M., Alee, L., Deokar, A. J., Kuhls, D. A., & Burke, P. A. (2016). Older adult falls seen by emergency medical service providers: A prevention opportunity. *American journal of preventive medicine*, *50*(6), 719–726.

Foss, C., & Hofoss, D. (2011). Elderly persons' experiences of participation in hospital discharge process. *Patient education and counseling*, *85*(1), 68–73.

Furterer, S. L. (2018). Applying lean six sigma methods to reduce length of stay in a hospital's emergency department. *Quality engineering*, *30*(3), 389–404.

Gonçalves-Bradley, D. C., Lannin, N. A., Clemson, L., Cameron, I. D., & Shepperd, S. (2022). Discharge planning from hospital. *Cochrane database of systematic reviews*, (2).

Griffiths, D., Morphet, J., Innes, K., Crawford, K., & Williams, A. (2014). Communication between residential aged care facilities and the emergency department: A review of the literature. *International journal of nursing studies*, *51*(11), 1517–1523.

Grimm, V., & Railsback, S. F. Individual-based modeling and ecology. In: In *Individual-based modeling and ecology*. Princeton university press, 2013.

Gruneir, A. (2013). " avoidable" emergency department transfers from long-term care homes: A brief review. *Healthcare quarterly (Toronto, Ont.)*, *16*(2), 13–15.

Gruneir, A., Bell, C. M., Bronskill, S. E., Schull, M., Anderson, G. M., & Rochon, P. A. (2010). Frequency and pattern of emergency department visits by long-term care residents—a population-based study. *Journal of the American Geriatrics Society*, *58*(3), 510–517.

Haesler, E., Bauer, M., & Nay, R. (2006). Factors associated with constructive staff–family relationships in the care of older adults in the institutional setting. *International Journal of Evidence-Based Healthcare*, *4*(4), 288–336.

Halasyamani, L, Kripalani, S, Coleman, E, Schnipper, J, Van Walraven, C, Nagamine, J, Torcson, P, Bookwalter, T, Budnitz, T, & Manning, D. (2006). Transition of care for hospitalized elderly patients—development of a discharge checklist for hospitalists. *Journal of Hospital Medicine*, *1*(6), 354–360.

Halvorsen, K., Eide, H. K., Sortland, K., & Almendingen, K. (2016). Documentation and communication of nutritional care for elderly hospitalized patients: Perspectives of nurses and undergraduate nurses in hospitals and nursing homes. *BMC nursing*, *15*(1), 1–10.

Hamline, M. Y., Rutman, L., Tancredi, D. J., Rosenthal, J. L., of California Davis Children's Hospital Discharge Quality Improvement Working Group, U., Warren, S., Marin, A., Shingara, S., Boehmer, J., Neal, D., et al. (2020). An iterative quality improvement process improves pediatric ward discharge efficiency. *Hospital Pediatrics*, *10*(3), 214–221.

Hegney, D., McCarthy, A., de la Rue, M. B., Fahey, P., Gorman, D., Martin-McDonald, K., Pretty, G., & Sundin-Huard, D. (2002). Discharge planning from the acute sector for people over the age of 65. *Collegian*, *9*(3), 15–21.

Helder, C. (2022a). Antwoorden op Kamervragen van het lid Werner (CDA) over personeelstekorten in de wijkverpleging [Letter of government 3380901-1029114-CZ].

Helder, C. (2022b). Betreft Commissiebrief Tweede Kamer inzake Reactie ministers VWS en BZK vragen op Initiatiefnota Wonen en Zorg van de leden Ellemeet en Smeulders (beiden SP) [Letter of government 2020Z12960].

Helder, C. (2022c). Stand van zaken wijkverpleging; zorgverlener in de eerstelijns- en ouderenzorg [Letter of government 3551323-1045087-CZ].

Hesselink, G., Zegers, M., Vernooij-Dassen, M., Barach, P., Kalkman, C., Flink, M., Ön, G., Olsson, M., Bergenbrant, S., Orrego, C., et al. (2014). Improving patient discharge and reducing hospital readmissions by using intervention mapping. *BMC health services research*, *14*(1), 1–11.

Hestevik, C. H., Molin, M., Debesay, J., Bergland, A., & Bye, A. (2019). Older persons' experiences of adapting to daily life at home after hospital discharge: A qualitative metasummary. *BMC health services research*, *19*, 1–13.

Het Parool. (2022, September). Ambulances tot maandagochtend niet welkom bij spoedeisende hulp vumc vanwege personeelsuitval. https://www.parool.nl/amsterdam/ambulances-tot-maandagochtend-niet-welkom-bij-spoedeisende-hulp-vumc-vanwege-personeelsuitval~b14202df/?referrer=https\%3A\%2F\%2Fwww.google.com\%2F

Hoover, C., Plamann, J., & Beckel, J. (2017). Outcomes of an interdisciplinary transitional care quality improvement project on self-management and health care use in patients with heart failure. *Journal of gerontological nursing*, *43*(1), 23–31.

Houtepen, J, & Elshof, W. (2016). Slimmer afstellen van ons zorgstelsel versus grootscheepse verbouwing? https://www.ag-ai.nl/view/32326-24-2-art.Houtepen+Elshof.pdf

Hovlid, E., Bukve, O., Haug, K., Aslaksen, A. B., & von Plessen, C. (2012). A new pathway for elective surgery to reduce cancellation rates. *BMC health services research*, *12*(1), 1–9.

Høy, B., & Ludvigsen, M. S. (2018). Older adults' experiences of patient involvement in transitional care: A qualitative systematic review protocol. *JBI Evidence Synthesis*, *16*(4), 860–866.

Hullick, C., Conway, J., Higgins, I., Hewitt, J., Dilworth, S., Holliday, E., & Attia, J. (2016). Emergency department transfers and hospital admissions from residential aged care facilities: A controlled pre-post design study. *BMC geriatrics*, *16*, 1–10.

Hung, D., & Leidig, R. C. (2015). Implementing a transitional care program to reduce hospital readmissions among older adults. *Journal of Nursing Care Quality*, *30*(2), 121–129.

Hussein, N. A., Abdelmaguid, T. F., Tawfik, B. S., & Ahmed, N. G. (2017). Mitigating overcrowding in emergency departments using six sigma and simulation: A case study in egypt. *Operations Research for Health Care*, *15*, 1–12.

Improta, G., Romano, M., Di Cicco, M. V., Ferraro, A., Borrelli, A., Verdoliva, C., Triassi, M., & Cesarelli, M. (2018). Lean thinking to improve emergency department throughput at aorn cardarelli hospital. *BMC health services research*, *18*, 1–9.

Irvine, S, Awan, M, Chharawala, F, Bhagawati, D, Lawrance, N, Peck, G, Peterson, D, Banerjee, S, & Camp, S. (2020). Factors affecting patient flow in a neurosurgery department. *The Annals of The Royal College of Surgeons of England*, *102*(1), 18–24.

Jensen, P. M., Fraser, F., Shankardass, K., Epstein, R., & Khera, J. (2009). Are long-term care residents referred appropriately to hospital emergency departments? *Canadian Family Physician*, *55*(5), 500–505.

Johnson, M., Burgess, N., & Sethi, S. (2020). Temporal pacing of outcomes for improving patient flow: Design science research in a national health service hospital. *Journal of Operations Management*, *66*(1-2), 35–53.

Johnson, M., & Capasso, V. (2012). Improving patient flow through a better discharge process. *Journal of Healthcare Management*, *57*(2), 89–93.

Joo, J. Y., & Liu, M. F. (2022). The experience of chronic illness transitional care: A qualitative systematic review. *Clinical Nursing Research*, *31*(2), 163–173.

juiste zorg op de juiste plek, D. (2021). *Stappenplan Regiovisie en innovatie in de wijk* (tech. rep.). https://www.dejuistezorgopdejuisteplek.nl/actueel/nieuws/stappenplan-helpt-regiopartners-innovatie-wijkverpleging/

Kada, O., Brunner, E., Likar, R., Pinter, G., Leutgeb, I., Francisci, N., Pfeiffer, B., & Janig, H. (2011). From the nursing home to hospital and back again... a mixed methods study on hospital transfers from nursing homes. *Zeitschrift fur Evidenz, Fortbildung und Qualitat im Gesundheitswesen*, *105*(10), 714–722.

Karlsson, V., Bergbom, I., Ringdal, M., & Jonsson, A. (2016). After discharge home: A qualitative analysis of older icu patients' experiences and care needs. *Scandinavian journal of caring sciences*, *30*(4), 749–756.

Khalifa, M. Reducing length of stay by enhancing patients' discharge: A practical approach to improve hospital efficiency. In: In *Icimth*. 2017, 157–160.

Kiers, B. (2016, May). SEH slibt dicht met kwetsbare ouderen. https://www.zorgvisie.nl/seh-slibt-dicht-met-kwetsbare-ouderen/

Kimbrough, C. W., McMasters, K. M., Canary, J., Jackson, L., Farah, I., Boswell, M. V., Kim, D., & Scoggins, C. R. (2015). Improved operating room efficiency via constraint management: Experience of a tertiary-care academic medical center. *Journal of the American College of Surgeons*, *221*(1), 154–162.

Kirsebom, M., Hedström, M., Wadensten, B., & Pöder, U. (2014). The frequency of and reasons for acute hospital transfers of older nursing home residents. *Archives of gerontology and geriatrics*, *58*(1), 115–120.

Knight, D. A., Thompson, D., Mathie, E., & Dickinson, A. (2013). 'seamless care? just a list would have helped!'older people and their carer's experiences of support with medication on discharge home from hospital. *Health Expectations*, *16*(3), 277–291.

Kodali, B. S., Kim, D., Bleday, R., Flanagan, H., & Urman, R. D. (2014). Successful strategies for the reduction of operating room turnover times in a tertiary care academic medical center. *journal of surgical research*, *187*(2), 403–411.

Kuluski, K., Ho, J. W., Cadel, L., Shearkhani, S., Levy, C., Marcinow, M., Peckham, A., Sandercock, J., Willison, D. J., & Guilcher, S. J. (2020). An alternate level of care plan: Co-designing components of an intervention with patients, caregivers and providers to address delayed hospital discharge challenges. *Health Expectations*, *23*(5), 1155–1165.

Kuusisto, A., & Asikainen, P. (2018). Development of elderly service system on the basis of big data. *Studies in health technology and informatics*, *250*, 264. http://europepmc.org/abstract/MED/29857457

Laging, B., Ford, R., Bauer, M., & Nay, R. (2015). A meta-synthesis of factors influencing nursing home staff decisions to transfer residents to hospital. *Journal of advanced nursing*, *71*(10), 2224–2236.

Lamantia, M. A., Scheunemann, L. P., Viera, A. J., Busby-Whitehead, J., & Hanson, L. C. (2010). Interventions to improve transitional care between nursing homes and hospitals: A systematic review. *Journal of the American Geriatrics Society*, *58*(4), 777–782.

Lamb, G., Tappen, R., Diaz, S., Herndon, L., & Ouslander, J. G. (2011). Avoidability of hospital transfers of nursing home residents: Perspectives of frontline staff. *Journal of the American Geriatrics Society*, *59*(9), 1665–1672.

Landelijk Coördinatiecentrum Patiënten Spreiding (LCPS). (2022, July). Over ons - LCPS. https://lcps.nu/over-ons/

Langedijk, H. (2023, May). Omslag voor ouderenzorg: zelf als het kan, thuis als het kan, digitaal als het kan - waardigheid en trots voor de toekomst. https://www.waardigheidentrots.nl/actueel/wozo-wonen-ondersteuning-zorg-ouderen/

Laugaland, K., Aase, K., & Barach, P. (2012). Interventions to improve patient safety in transitional care–a review of the evidence. *Work*, *41*(Supplement 1), 2915–2924.

Lemoyne, S. E., Herbots, H. H., De Blick, D., Remmen, R., Monsieurs, K. G., & Van Bogaert, P. (2019). Appropriateness of transferring nursing home residents to emergency departments: A systematic review. *BMC geriatrics*, *19*(1), 1–9.

Litvak, E., & Dentzer, S. (2010). Managing patient flow in hospitals: Strategies and solutions. *(No Title)*.

Lot, L. T., Sarantopoulos, A., Min, L. L., Perales, S. R., Boin, I. d. F. S. F., & de Ataide, E. C. (2018). Using lean tools to reduce patient waiting time. *Leadership in health services*, *31*(3), 343–351.

Luijben, A., & Pruyt, E. (2019). Een verkenning van de toepasbaarheid van systeemdynamische modellering bij het uitvoeren van impactanalyses.

Maidstone, R. (2012). Discrete event simulation, system dynamics and agent based simulation: Discussion and comparison. *System*, *1*(6), 1–6.

Manckoundia, P., Menu, D., Turcu, A., Honnart, D., Rossignol, S., Alixant, J.-C., Sylvestre, F.-H., Bailly, V., Dion, M., & Putot, A. (2016). Analysis of inappropriate admissions of residents of medicalized nursing homes to emergency departments: A prospective multicenter study in burgundy. *Journal of the American Medical Directors Association*, *17*(7), 671–e1.

Manville, M., Klein, M. C., & Bainbridge, L. (2014). Improved outcomes for elderly patients who received care on a transitional care unit. *Canadian Family Physician*, *60*(5), e263–e271.

Marshall, E. G., Clarke, B., Burge, F., Varatharasan, N., Archibald, G., & Andrew, M. K. (2016). Improving continuity of care reduces emergency department visits by long-term care residents. *The Journal of the American Board of Family Medicine*, *29*(2), 201–208.

Martin, M., Champion, R., Kinsman, L., & Masman, K. (2011). Mapping patient flow in a regional australian emergency department: A model driven approach. *International Emergency Nursing*, *19*(2), 75–85.

Masters, S., Halbert, J., Crotty, M., & Cheney, F. (2008). Innovations in aged care: What are the first quality reports from the transition care program in australia telling us? *Australasian journal on ageing*, *27*(2), 97–102.

McGregor, M. J., Abu-Laban, R. B., Ronald, L. A., McGrail, K. M., Andrusiek, D., Baumbusch, J., Cox, M. B., Salomons, K., Schulzer, M., & Kuramoto, L. (2014). Nursing home characteristics associated with resident transfers to emergency departments. *Canadian Journal on Aging/La Revue canadienne du vieillissement*, *33*(1), 38–48.

McKeown, F. (2007). The experiences of older people on discharge from hospital following assessment by the public health nurse. *Journal of clinical nursing*, *16*(3), 469–476.

McNeil, D., Strasser, R., Lightfoot, N., & Pong, R. (2016). A "simple" evidence-based intervention to improve care transitions for frail patients with complex health conditions: Why didn't it work as expected? *Healthc Q*, *19*(2), 67–72.

Medicalgroep. (2022, October). Transmurale zorg. https://www.medicalgroep.nl/belangrijke-begrippen-in-de-zorg/transmurale-zorg

Meinardi, M, & Groeneweg, J. (2021, September). Probleem van verkeerde bed schreeuwt om een oplossing. https://www.medischcontact.nl/nieuws/laatste-nieuws/artikel/probleem-van-verkeerde-bed-schreeuwt-om-een-oplossing

Meo, N., Paul, E., Wilson, C., Powers, J., Magbual, M., & Miles, K. M. (2018). Introducing an electronic tracking tool into daily multidisciplinary discharge rounds on a medicine service: A quality improvement project to reduce length of stay. *BMJ open quality*, *7*(3), e000174.

Meredith, J. O., Grove, A. L., Walley, P., Young, F., & Macintyre, M. B. (2011). Are we operating effectively? a lean analysis of operating theatre changeovers. *Operations Management Research*, *4*, 89–98.

Minister van Volksgezondheid, Welzijn en Sport. (2022). *Oud en zelfstandig in 2030 Een reisadvies* (tech. rep.). https://open.overheid.nl/documenten/ronl-c2d7f150-e264-477e-b45f-e481e0e60ad0/pdf

Ministerie van Volksgezondheid, W. e. S. (2023a, April). Eerste Kamer stemt vóór wetsvoorstel elektronische gegevensuitwisseling in de zorg. https://www.rijksoverheid.nl/onderwerpen/digitale-gegevens-in-de-zorg/nieuws/2023/04/18/eerste-kamer-stemt-voor-wetsvoorstel-elektronische-gegevensuitwisseling-in-de-zorg

Ministerie van Volksgezondheid, W. e. S. (2023b, February). Gegevensuitwisseling. https://www.gegevensuitwisselingindezorg.nl/gegevensuitwisseling

Ministerie van Volksgezondheid, W. e. S. (2020, December). Langdurige zorg: Druk neemt toe, maar meeste mensen krijgen tijdig zorg. https://www.nza.nl/actueel/nieuws/2020/12/02/langdurige-zorg-druk-neemt-toe-maar-meeste-mensen-krijgen-tijdig-zorg

Ministerie van Algemene Zaken. (2022, October). CIZ Centrum Indicatiestelling Zorg. https://www.rijksoverheid.nl/contact/contactgids/centrum-indicatiestelling-zorg-ciz

Ministerie van Algemene Zaken. (2023, January). CAK. https://www.rijksoverheid.nl/contact/contactgids/centraal-administratie-kantoor-cak#:~:text=Taakomschrijving\%20CAK&text=is\%20verantwoordelijk\%20voor\%20de\%20financiering,buiten\%20het\%20Nederlandse\%20zorgstelsel\%20vallen.

Ministerie van Algemene Zaken. (2022, April). Reacties op 'Oud en zelfstandig in 2030. Een reisadvies'. https://www.rijksoverheid.nl/onderwerpen/zorg-en-ondersteuning-thuis/documenten/rapporten/2020/06/30/reacties-op-oud-en-zelfstandig-in-2030.-een-reisadvies

Ministerie van Volksgezondheid, Welzijn en Sport. (2020). *WOZO Programma Wonen, Ondersteuning en Zorg voor Ouderen* (tech. rep.). Rijksoverheid. https://www.rijksoverheid.nl/documenten/kamerstukken/2022/07/04/brief-inzake-programma-wonen-ondersteuning-en-zorg-voor-ouderen-wozo

Ministerie van Volksgezondheid, Welzijn en Sport. (2022a, August). De Zorgverzekeringswet (Zvw). https://www.regelhulp.nl/onderwerpen/zorgverzekeringswet-zvw

Ministerie van Volksgezondheid, Welzijn en Sport. (2023a). *GALA Gezond en Actief Leven Akkoord* (tech. rep.). https://open.overheid.nl/documenten/ronl-e8e739b2e77bf92b7bfed78d4569ae4ecbce8dac/pdf

Ministerie van Volksgezondheid, Welzijn en Sport. (2022b, December). Pgb voor Wmo-ondersteuning. https://www.regelhulp.nl/onderwerpen/wmo/pgb

Ministerie van Volksgezondheid, Welzijn en Sport. (2022c, December). Wat is de Wmo? https://www.regelhulp.nl/onderwerpen/wmo/wat-is-de-wmo

Ministerie van Volksgezondheid, Welzijn en Sport. (2023b, March). Zorg vanuit de Wet langdurige zorg (Wlz). https://www.regelhulp.nl/onderwerpen/wlz/wat-is-wlz-zorg

Mistiaen, P., Francke, A. L., & Poot, E. (2007). Interventions aimed at reducing problems in adult patients discharged from hospital to home: A systematic meta-review. *BMC health services research*, *7*, 1–19.

Modin, S., & Furhoff, A.-K. (2004). The medical care of patients with primary care home nursing is complex and influenced by non-medical factors: A comprehensive retrospective study from a suburban area in sweden. *BMC Health Services Research*, *4*(1), 1–10.

Morales-Contreras, M. F., Chana-Valero, P., Suárez-Barraza, M. F., Saldaña Díaz, A., & García García, E. (2020). Applying lean in process innovation in healthcare: The case of hip fracture. *International journal of environmental research and public health*, *17*(15), 5273.

Morphet, J., Innes, K., Griffiths, D. L., Crawford, K., & Williams, A. (2015). Resident transfers from aged care facilities to emergency departments: Can they be avoided? *Emergency Medicine Australasia*, *27*(5), 412–418.

Murphy, S. O., Barth, B. E., Carlton, E. F., Gleason, M., & Cannon, C. M. (2014). Does an ed flow coordinator improve patient throughput? *Journal of Emergency Nursing*, *40*(6), 605–612.

Naylor, M. D., Feldman, P. H., Keating, S., Koren, M. J., Kurtzman, E. T., Maccoy, M. C., & Krakauer, R. (2009). Translating research into practice: Transitional care for older adults. *Journal of evaluation in clinical practice*, *15*(6), 1164–1170.

Nederlandse Zorg Autoriteit & Zorginstituut Nederland. (2020, November). Samenwerken aan passende zorg: de toekomst is nú. https://www.zorginstituutnederland.nl/publicaties/adviezen/2020/11/27/advies-samenwerken-aan-passende-zorg-de-toekomst-is-nu

Neiterman, E., Wodchis, W. P., & Bourgeault, I. L. (2015). Experiences of older adults in transition from hospital to community. *Canadian Journal on Aging/La Revue canadienne du vieillissement*, *34*(1), 90–99.

New, P. W., Cameron, P. A., Olver, J. H., & Stoelwinder, J. U. (2013). Defining barriers to discharge from inpatient rehabilitation, classifying their causes, and proposed performance indicators for rehabilitation patient flow. *Archives of Physical Medicine and Rehabilitation*, *94*(1), 201–208.

NOS. (2021, September). Huidig zorgbeleid is niet houdbaar, waarschuwt adviesorgaan WRR. https://nos.nl/artikel/2397835-huidig-zorgbeleid-is-niet-houdbaar-waarschuwt-adviesorgaan-wrr

NOS. (2016, November). Kwetsbare ouderen in het verkeerde bed. https://nos.nl/nieuwsuur/artikel/2144861-kwetsbare-ouderen-in-het-verkeerde-bed

Nurjono, M., Shrestha, P., Ang, I. Y. H., Shiraz, F., Yoong, J. S.-Y., Toh, S.-A. E. S., & Vrijhoef, H. J. M. (2019). Implementation fidelity of a strategy to integrate service delivery: Learnings from a transitional care program for individuals with complex needs in singapore. *BMC health services research*, *19*(1), 1–14.

Ohwaki, K, Hashimoto, H, Sato, M, Tamiya, N, & Yano, E. (2008). Predictors of continuity in home care for the elderly under public long-term care insurance in Japan. *Aging Clinical and Experimental Research*, 1–6. https://doi.org/10.1007/BF03324922

Onderbouwing doeltreffendheid, doelmatigheid en evaluatie (CW3.1). (2021). https://open.overheid.nl/documenten/ronl-11d6dcf9f315e50b6936be01f6697d1bd2d5d09c/pdf

Ouslander, J. G., Naharci, I., Engstrom, G., Shutes, J., Wolf, D. G., Alpert, G., Rojido, C., Tappen, R., & Newman, D. (2016). Lessons learned from root cause analyses of transfers of skilled nursing facility (snf) patients to acute hospitals: Transfers rated as preventable versus nonpreventable by snf staff. *Journal of the American Medical Directors Association*, *17*(7), 596–601.

O'Connell, B., Hawkins, M., Considine, J., & Au, C. (2013). Referrals to hospital emergency departments from residential aged care facilities: Stuck in a time warp. *Contemporary nurse*, *45*(2), 228–233.

Patel, H., Yirdaw, E., Yu, A., Slater, L., Perica, K., Pierce, R. G., Amaro, C., & Jones, C. D. (2019). Improving early discharge using a team-based structure for discharge multidisciplinary rounds. *Professional case management*, *24*(2), 83–89.

Pereira-Morales, A. J., Valencia, L. E., & Rojas, L. (2020). Impact of the caregiver burden on the effectiveness of a home-based palliative care program: A mediation analysis. *Palliative & Supportive Care*, *18*(3), 332–338.

Perry, M., Hudson, S., & Ardis, K. (2011). "if i didn't have anybody, what would i have done?": Experiences of older adults and their discharge home after lower limb orthopaedic surgery. *Journal of Rehabilitation Medicine*, *43*(10), 916–922.

Platzke, S. M., & Andrabi, I. A. (2012). Focusing on white space to improve patient throughput: An ohio hospital improved care delivery processes by creating better coordination between departments and focusing on patient outcome milestones. *Healthcare Financial Management*, *66*(8), 102–108.

Plochg, T., Delnoij, D. M., van der Kruk, T. F., Janmaat, T. A., & Klazinga, N. S. (2005). Intermediate care: For better or worse? process evaluation of an intermediate care model between a university hospital and a residential home. *BMC Health Services Research*, *5*, 1–12.

Population of The Netherlands. (2020). https://worldinmaps.com/country/netherlands/population/

Rask, K. J., Hodge, J., & Kluge, L. (2017). Impact of contextual factors on interventions to reduce acute care transfers ii implementation and hospital readmission rates. *Journal of the American Medical Directors Association*, *18*(11), 991–e11.

Reay, P. A., Horner, B., & Duggan, R. (2015). The patient's experience of early discharge following total hip replacement. *International journal of orthopaedic and trauma nursing*, *19*(3), 131–139.

Reddy, A. J., Pappas, R., Suri, S., Whinney, C., Yerian, L., & Guzman, J. A. (2015). Impact of throughput optimization on intensive care unit occupancy. *American Journal of Medical Quality*, *30*(4), 317–322.

Renehan, E., Haralambous, B., Galvin, P., Kotis, M., & Dow, B. (2013). Evaluation of a transition care cognitive assessment and management pilot. *Contemporary Nurse*, *43*(2), 134–145.

Rijksinstituut voor Volksgezondheid. (2018, June). Aandoeningen | Volksgezondheid Toekomst Verkenning. https://www.vtv2018.nl/aandoeningen

Rijksinstituut voor Volksgezondheid. (2022). Corona kost 320.000 gezonde levensjaren door uitgestelde operaties | RIVM. https://www.rivm.nl/nieuws/corona-kost-gezonde-levensjaren-uitgestelde-operaties

Rijksinstituut voor Volksgezondheid. (2018, April). Synthese | De impact van de vergrijzing. https://www.vtv2018.nl/impact-van-de-vergrijzing

Rijksoverheid. (2023). *De praktische hoofdlijnen uit het Hoofdlijnenakkoord Wijkverpleging* (tech. rep.). Rijksoverheid. https://open.overheid.nl/documenten/ronl-454370cbc178477d4858ffb4413515aac343b pdf

Rijksoverheid. (2018). *Pact voor de ouderenzorg* (tech. rep.). https://open.overheid.nl/documenten/ronl-63dcf232-6e33-4df7-8806-6915191400fa/pdf

Rijpkema, C. J., Verweij, L., Jepma, P., Latour, C. H., Peters, R. J., Scholte Op Reimer, W. J., & Buurman, B. M. (2021). The course of readmission in frail older cardiac patients. *Journal of Advanced Nursing*, *77*(6), 2807–2818.

Robinson, S. (2014). *Simulation: The practice of model development and use*. Bloomsbury Publishing.

Røsstad, T., Garåsen, H., Steinsbekk, A., Håland, E., Kristoffersen, L., & Grimsmo, A. (2015). Implementing a care pathway for elderly patients, a comparative qualitative process evaluation in primary care. *BMC Health Services Research*, *15*(1), 1–9.

RTL Nieuws. (2023, January). Drukte in ziekenhuizen: operaties uitgesteld door volle bedden. https://www.rtlnieuws.nl/nieuws/nederland/artikel/5360963/drukte-ziekenhuizen-operaties-uitgesteld-door-volle-bedden

Rustad, E. C., Furnes, B., Cronfalk, B. S., & Dysvik, E. (2016). Older patients' experiences during care transition. *Patient preference and adherence*, 769–779.

Rydeman, I., & Törnkvist, L. (2010). Getting prepared for life at home in the discharge process–from the perspective of the older persons and their relatives. *International Journal of Older People Nursing*, *5*(4), 254–264.

Saliba, D., Kington, R., Buchanan, J., Bell, R., Wang, M., Lee, M., Herbst, M., Lee, D., Sur, D., & Rubenstein, L. (2000). Appropriateness of the decision to transfer nursing facility residents to the hospital. *Journal of the American Geriatrics Society*, *48*(2), 154–163.

Schefft, M., Lee, C., & Munoz, J. (2020). Discharge criteria decrease variability and improve efficiency. *Hospital Pediatrics*, *10*(4), 318–324.

Scott, I. A. (2010). Public hospital bed crisis: Too few or too misused? *Australian Health Review*, *34*(3), 317–324.

SGE. (n.d.). Project Transferzorg - SGE. https://www.sge.nl/zorgprogrammas/kwetsbare-ouderen/project-transferzorg

Sharma, G., Wong, D., Arnaoutakis, D. J., Shah, S. K., O'Brien, A., Ashley, S. W., & Ozaki, C. K. (2017). Systematic identification and management of barriers to vascular surgery patient discharge time of day. *Journal of vascular surgery*, *65*(1), 172–178.

Shyu, Y.-I. L. (2000). The needs of family caregivers of frail elders during the transition from hospital to home: A taiwanese sample. *Journal of advanced nursing*, *32*(3), 619–625.

Siebers, P.-O. (n.d.). Simulation in a Nutshell. https://www.cs.nott.ac.uk/~pszps/bemoossig/slides/BEMooSSIG-Siebers2013-06-18.pdf

SJG Weert - St. Jans Gasthuis Weert. (n.d.). Verkeerd bed. https://sjgweert.nl/patienten/folders/algemeen/verkeerd-bed

Slatyer, S., Toye, C., Popescu, A., Young, J., Matthews, A., Hill, A., & Williamson, D. J. (2013). Early re-presentation to hospital after discharge from an acute medical unit: Perspectives

of older patients, their family caregivers and health professionals. *Journal of Clinical Nursing*, *22*(3-4), 445–455.

Song, P., & Tang, W. (2019). The community-based integrated care system in japan: Health care and nursing care challenges posed by super-aged society. *Bioscience trends*, *13*(3), 279–281.

Stokoe, A., Hullick, C., Higgins, I., Hewitt, J., Armitage, D., & O'Dea, I. (2016). Caring for acutely unwell older residents in residential aged-care facilities: Perspectives of staff and general practitioners. *Australasian journal on ageing*, *35*(2), 127–132.

Sun, M., Liu, L., Wang, J., Zhuansun, M., Xu, T., Qian, Y., & Dela Rosa, R. (2023). Facilitators and inhibitors in hospital-to-home transitional care for elderly patients with chronic diseases: A meta-synthesis of qualitative studies. *Frontiers in Public Health*, *11*, 376.

Tacconelli, E. (2010). Systematic reviews: Crd's guidance for undertaking reviews in health care. *The Lancet Infectious Diseases*, *10*(4), 226.

Tortorella, F., Ukanowicz, D., Douglas-Ntagha, P., Ray, R., & Triller, M. (2013). Improving bed turnover time with a bed management system. *The Journal of Nursing Administration*, *43*(1), 37–43.

Tracey, F, Taylor, I., & McConnell, J. (1998). A prospective study of the process of assessment and care management in the discharge of elderly patients from hospital. *The Ulster medical journal*, *67*(1), 36.

Trahan, L. M., Spiers, J. A., & Cummings, G. G. (2016). Decisions to transfer nursing home residents to emergency departments: A scoping review of contributing factors and staff perspectives. *Journal of the American Medical Directors Association*, *17*(11), 994–1005.

Tweede Kamer der Staten-Generaal. (2020, October). Kamerstuk 31765, nr. 518 | Overheid.nl > Officiële bekendmakingen. https://zoek.officielebekendmakingen.nl/kst-31765-518.html

Valsangkar, N. P., Eppstein, A. C., Lawson, R. A., & Taylor, A. N. (2017). Effect of lean processes on surgical wait times and efficiency in a tertiary care veterans affairs medical center. *JAMA surgery*, *152*(1), 42–47.

van Soelen, C, & de Clerck, D. (2020, February). Zorginfarct: elke dag minstens 560 ziekenhuisbedden onnodig bezet. https://www.rtlnieuws.nl/nieuws/nederland/artikel/5015691/zorginfarct-verkeerde-bedden-personeelstekort

van Tillert, M. (2020, February). Toename van oudere patiënten in 'verkeerde' bedden. https://www.medischcontact.nl/nieuws/laatste-nieuws/nieuwsartikel/toename-van-oudere-patienten-in-verkeerde-bedden-

van de Water, W, van den Bremer, J, & van Loevezijn, A. (2017). Meer noodbedden voor kwetsbare ouderen nodig. https://www.medischcontact.nl/actueel/laatste-nieuws/artikel/meer-noodbedden-voor-kwetsbare-ouderen-nodig

Van Den, B. I., Nje, V. V., Steenkamer, B., Kemper, P. F., & Rj, H. (2018). Regio's in beweging naar een toekomstbestendig gezondheidssysteem : Landelijke Monitor Proeftuinen –reflectie op 5 jaar proeftuinen. *RIVM rapport*. https://doi.org/10.21945/rivm-2018-0140

van der Plaat, R. (2022, May). 'Ziekenhuizen komen in verzet als SEH's sluiten'. https://hartvoorzorg.nl/nieuws/ziekenhuizen-komen-in-verzet-als-sehs-sluiten/

van der Wal, D. (2022, March). Handreiking netwerksamenwerking en samen indiceren in de wijk. https://www.rijksoverheid.nl/documenten/rapporten/2022/03/16/handreiking-netwerksamenwerking-en-samen-indiceren-in-de-wijk

Van Mierlo, L., Bootsma-Van der Wiel, A, Meiland, F., Van Hout, H., Stek, M., & Dröes, R. (2015). Tailored mental health care after nursing home admission: Improving transfers of people with dementia with behavioral problems. an explorative study. *Aging & Mental Health*, *19*(10), 902–911.

Vektis. (2020). *Niet-gecontracteerde aanbieders wijkverpleging: een analyse naar verschillen tussen regio's en stedelijkheid* (tech. rep.). https://open.overheid.nl/documenten/ronl-223b0fda-8e27-4b1b-af78-7d45a15c144d/pdf

VNG. (2020). *Bijgestelde VNG reactie op het advies van de commissie Bos "Oud en zelfstandig in 2030, een REIS advies van de Commissie Toekomst zorg thuiswonende ouderen"* (tech. rep.). VNG. https://open.overheid.nl/documenten/ronl-045ac860-e60c-4c95-8411-46cb288ee3b3/pdf

Vose, C., Reichard, C., Pool, S., Snyder, M., & Burmeister, D. (2014). Using lean to improve a segment of emergency department flow. *The Journal of Nursing Administration*, *44*(11), 558–563.

Vunderink, L, Karssen, B, van Hooff, P, & Koster, L. (2012). Vitale ouderen en de houdbaarheid van de zorg Kwalitatieve systeemanalyse. https://zoek.officielebekendmakingen.nl/blg-241171.pdf

Wallenburg, I, van Pijkeren, N, Schuurmans, J, & Bal, R. (2021). *Specialist Ouderengeneeskunde naast de Huisarts in de Eerste Lijn: Arts op de Juiste Plek?* (Tech. rep.). Erasmus School of Health Policy; Management. https://www.rijksoverheid.nl/documenten/rapporten/2021/11/30/specialist-ouderengeneeskunde-naast-de-huisarts-in-de-eerste-lijn-arts-op-de-juiste-plek

Walters, J. L., Mackintosh, S. F., & Sheppard, L. (2013). Snakes and ladders: The barriers and facilitators of elective hip-and knee-replacement surgery in australian public hospitals. *Australian Health Review*, *37*(2), 166–171.

Wheeler, D. J. Understanding variation. In: In *The key to managing chaos*. Spc Press, 1993, p. 1993.

WHO Regional Office for Europe. (2017). *Environmentally sustainable health systems: a strategic document* (tech. rep.). https://www.euro.who.int/__data/assets/pdf_file/0004/341239/ESHS_Revised_WHO_web.pdf

Williams, M. V., Li, J., Hansen, L. O., Forth, V., Budnitz, T., Greenwald, J. L., Howell, E., Halasyamani, L., Vidyarthi, A., & Coleman, E. A. (2014). Project boost implementation: Lessons learned. *South Med J*, *107*(7), 455–465.

Wofford, J. L., Schwartz, E., & Byrum, J. E. (1993). The role of emergency services in health care for the elderly: A review. *The Journal of emergency medicine*, *11*(3), 317–326.

Wolff, J. L., & Kasper, J. D. (2004). Informal caregiver characteristics and subsequent hospitalization outcomes among recipients of care. *Aging clinical and experimental research*, *16*(4), 307–313.

Woods, R., Sandoval, R., Vermillion, G., Bates-Jackson, B., Nwankwo, A., Canamar, C. P., & Sarff, L. (2020). The discharge lounge: A patient flow process solution. *Journal of Nursing Care Quality*, *35*(3), 240–244.

Yin, R. K. (2009). *Case study research: Design and methods* (Vol. 5). sage.

Zeitz, K. M., Carter, L., & Robinson, C. (2012). The ebbs and flows of changing acute bed capacity delays. *Australian Health Review*, *37*(1), 66–69.

Zhao, E. J., Yeluru, A., Manjunath, L., Zhong, L. R., Hsu, H.-T., Lee, C. K., Wong, A. C., Abramian, M., Manella, H., Svec, D., et al. (2018). A long wait: Barriers to discharge for long length of stay patients. *Postgraduate medical journal*, *94*(1116), 546–550.

Zo Werkt De Zorg. (n.d.). Zó werkt de zorg. https://app.zwdz.nl/

Zorginstituut Nederland. (2022, September). Medisch-specialistische zorg (Zvw). https://www.zorginstituutnederland.nl/Verzekerde+zorg/medisch-specialistische-zorg-zvw

Zorgkantoor. (n.d.). Langdurige zorg regelt u met het zorgkantoor. https://zorgkantoor.nl/

Zorgverzekeraars Nederland. (n.d.). Ambitie 2025 - Zorgverzekeraars Nederland. https://www.zn.nl/over-zn/ambitie-2025

Zurhake, S. (2022, June). 'Buitenlandse ziekenhuizen hard nodig bij wegwerken inhaalzorg en wachtlijsten'. https://nos.nl/artikel/2431635-buitenlandse-ziekenhuizen-hard-nodig-bij-wegwerken-inhaalzorg-en-wachtlijsten

Appendices

A Literature review process and articles reviewed

The introduction showed the need for policy interventions to improve the throughput of after-hospital care chain, given the consequences of aging. This is needed to enhance an overall sustainable healthcare system. This chapter will provide a small literature review to identify knowledge gaps on this topic. Resulting from this, the research question will be introduced.

A.1 Literature review process of preparation

Before reviewing literature to identify several knowledge gaps, the procedure of finding this literature will be discussed. The first subsection will elaborate on the searching strategies and selection procedure. The second subsection will provide an overview of exclusion and inclusion criteria. Lastly, the third subsection will show the articles that result from the searching strategies.

A.1.1 Searching strategies and selection

To begin with, the searching is conducted in two databases (see figure A.1) *PubMed* and *Scopus*. PubMed is used, because all topics are medical related, and this database is most up to date with regard to medical publications. In addition, Scopus is used, because it is a major database, that also includes a lot of health related literature.

Two searching strategies have been used. Both searches started with combining OR/AND operators in combination with keywords (see figure A.1). The keywords should be mentioned in the abstract or title, since these keywords describe the main topic. The first searching strategy is used to examine whether publications regarding ageing and logistics (of moving to care homes) exist. The second strategy has been used to determine whether other scientists have used a quantitative modelling approach (such as SD) for this problem. Both searching strategies will result in knowledge gaps.

In addition to the searching strategies discussed above, other strategies are used. One strategy is by looking to a study that was published by the RIVM, since this is an interesting study in the field of healthcare system and System Dynamics. Finally, a systematic review was published about applying SD in healthcare system, when I was searching on Scholar to examples of SD models in this field. This report was published only a few weeks ago and is not published on PubMed/Scopus (yet) (**buildings12091491**).

A.1.2 Exclusion criteria

Since the searching strategies resulted in less relevant references also, downscoping was needed (see figure A.1). First, the literature review is limited to only literature that is written in English or Dutch. Secondly, the study must have taken place in an upper-mid- or high-income country,

because these healthcare systems are more comparable to the Dutch healthcare system than low income countries do. A final exclusion was done by screening abstracts and selecting articles that focused on hospitals and/or nursing home care, since that is part of the after-hospital care system. Lastly, studies that focused on a specific clinical picture were excluded.

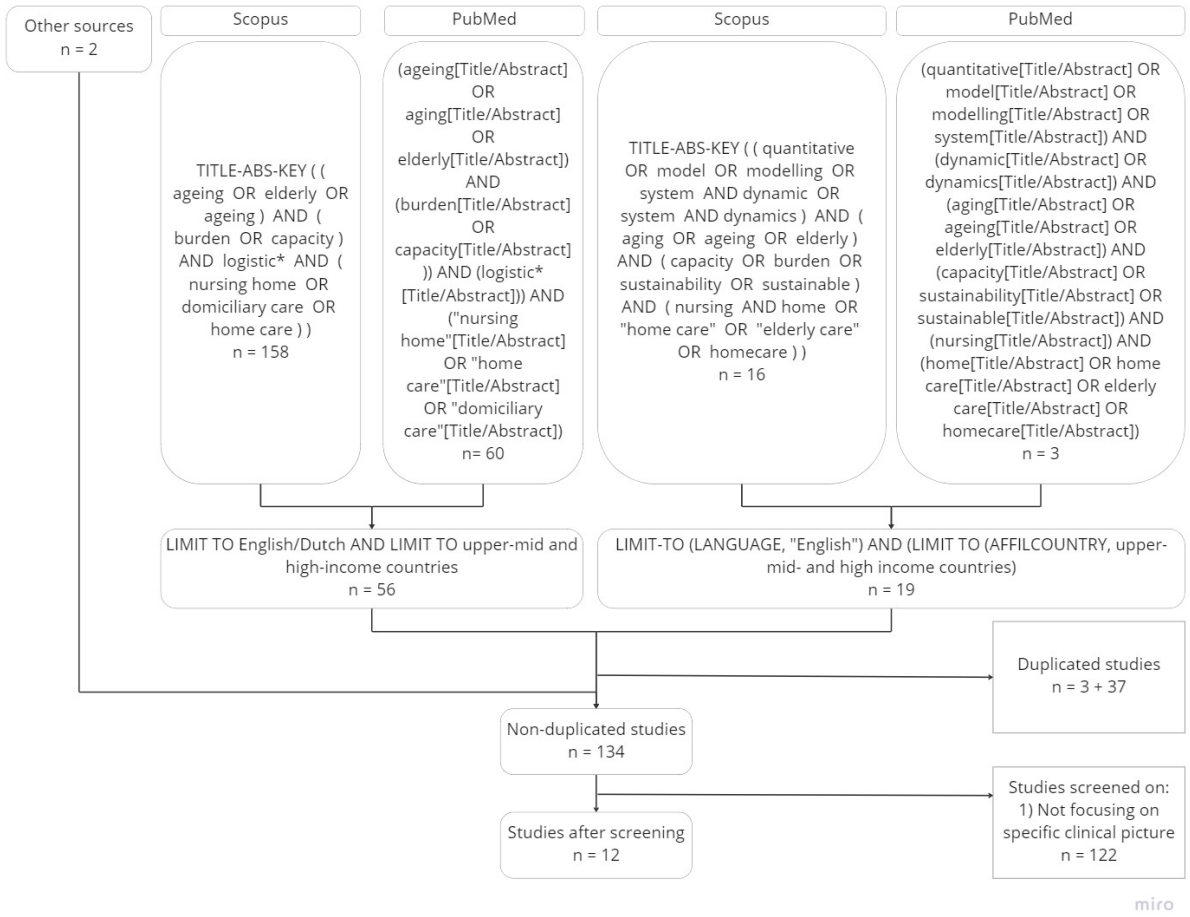

Figure A.1: Process of literature review

A.2 Articles reviewed

Table A.1 shows the articles that are reviewed.

Table A.1: Overview of articles that are reviewed

Reference	Context	Aim of study	Methods
Ohwaki et al., 2008	Japan elderly home care	The aim of this research was to investigate how social involvement, disability, family structure, and formal support services affect the longevity of home care for elderly individuals.	Data gathering by means of longitudinal design. After that they performed a logistic regression analysis to predict the continuity in home care.
Donnelly et al., 2018	Nursing home in Dublin.	This research investigated the burden of a distance trial in a nursing home setting.	Qualitative data, trial conducted in nursing home in Dublin. Also, semi structured inter views with staff.
Abtan et al., 2018	Toronto Central Community Care Access Centre (CCAC), Canada	This study examined whether having an informal caregiver was linked to reduced emergency department visits and hospitalizations (EDVH) among those with dementia living in a long term care facility.	Multiple regression techniques were used to identify factors that relate to Emergency department visits and hospitalizations (EDVH).
Anderson et al., 2019	Three wards for elderly in London teaching hospital.	This research explored the dynamics of nursing teamwork and how they relate to the quality of care provided to elderly individuals. It also investigated the connection between perceived team work and the perceived quality of care, as well as delving into the experiences of those working in nursing teams.	Qualitative questionnaires and creating a Care model. In addition, SPSs was used to perform multiple statistical analysis and a coding framework based on the deductive and inductive analysis was also developed and applied to all the interviews.

Continued on next page

Reference	Context	Aim of study	Methods
Kuusisto and Asikainen, 2018	Hospital district in Finland	This study aimed to create a customer-oriented plan for elderly services in one Finnish hospital district by utilizing anonymous Big Data concerning the aging population and their functional capacity. The results of the research were used to create action proposals and improve the quality of life for growing older populations.	Data was gathered from Sotkanet.fi. The data was analyzed by using descriptive statistical Methods.
Chen et al., 2010	China Beijing municipal government and geriatrics medical services and its healthcare system.	This literature review examined the challenges and opportunities of elderly healthcare in China in order to create a sustainable financial development and social harmony. It concluded that it was urgent to establish a healthcare system for the elderly.	Reviewing the pilot: the Beijing municipal government has been building up a geriatrics medical service and healthcare system.
Vunderink et al., 2012	Dutch Health Care system	The aim of the study was to make an inventory of the factors that influence the relationship between 'vigorous elderly' and 'sustainability of care' and indicate how these factors interact. In addition, the purpose was to identify what interventions can be executed to increase the role of the vitality of the elderly in care.	Desk research, interviews with experts, open System Dynamics-sessions.

Continued on next page

Reference	Context	Aim of study	Methods
Song and Tang, 2019	"Community-based Integrated Care System" in Japan	This study provides a review of a "Community based Integrated Care System" that aims to ensure the provision of health care, nursing care, preventive care, housing, and livelihood support.	Reviewing the community-based Care system.
Pereira-Morales et al., 2020	Colombia	The purpose was to determine "the extent of caregiver burden as a possible mediator on the effectiveness of a home-based palliative care programs"	Pilot observations, home-based palliative care program.
Wolff and Kasper, 2004	USA	The objective of this research was to examine caregiver attributes with respect to recipients' hospitalization experiences. This can lead to a more efficient healthcare system.	Generalized estimating equations, logistic regression models, surveys
Choi et al., 2017	Korea	The aim of the study was to explore the impact of in-home service utilization on institutionalization.	Logistic regression models
Modin and Furhoff, 2004	Suburban area of Stockholm	The aim of the study was to identify the care, in addition to primary health care, of patients with primary-care home nursing to give a comprehensive view of their care and to investigate how personal, social and functional factors influence the use of specialized medical care.	Data sampling and non-parametric statistical methods, and the Mann-Whitney test, and conditional logistic regression

B Conceptualisation

This Appendix provides an actor analysis, a presentation of financial flows and a discussion of values.

B.1 Actors analysis: Relevant actors for the Dutch transfer care system

There are many actors involved in the Dutch transfer care system. Not all actors have the same interests, role, and power. First, three groups of actors will be distinguished to show the most important actors.

The first group that can be distinguished are the medical actors. Medical actors are: first and second line caregivers, pharmacists and transfer nurses. In addition to the medical group of actors, there is also a group that falls under the social domain. Actors that belong to this domain are the Ministry of Health, Welfare and Sport, National Institute for Public Health and Environment (in Dutch: RIVM) municipality, National Coordination Center for Patient Dispersal (in Dutch: LCPS), informal caregivers and interest organizations for the elderly. The third group comprises financial actors. These actors include the Care Assessment Centre (in Dutch: Centrum Indicatiestelling Zorg (CIZ)), health insurer, Social Insurance Bank (in Dutch: SVB) Central Administration Office (in Dutch: CAK) Dutch Healthcare Authority (in Dutch: Nederlandse zorgautoriteit (NZA)) and healthcare office (in Dutch: zorgkantoor).

In addition to sorting by role, a distinction can be made of the most important actors in terms of their degree of power and degree of interest. This distinction can be visualised by means of a Power-Interest grid. This grid shows the power and interests of the most relevant stakeholders involved (see Figure B.1).

The actors that are included are:

- **Ministry of Health, Welfare and Sport:** The Ministry of Health, Welfare and Sport (VWS) is the government ministry of the Netherlands responsible for setting policy and legislation in the areas of health, welfare and sport. The ministry sets the strategy, guidelines and policy that form the basis for the distribution of funds and resources. The ministry is responsible for providing financial support to healthcare institutions and promoting collaboration between all stakeholders in healthcare. The ministry also sets the annual budget for healthcare, including budgets to health insurers and healthcare institutions.
- **Dutch health insurance companies:** Health insurance companies provide coverage for medical costs, such as doctor's visits, hospital stays, medications, and other treatments. This is depicted in the Health Insurance Act. The ambition of the Dutch healthcare

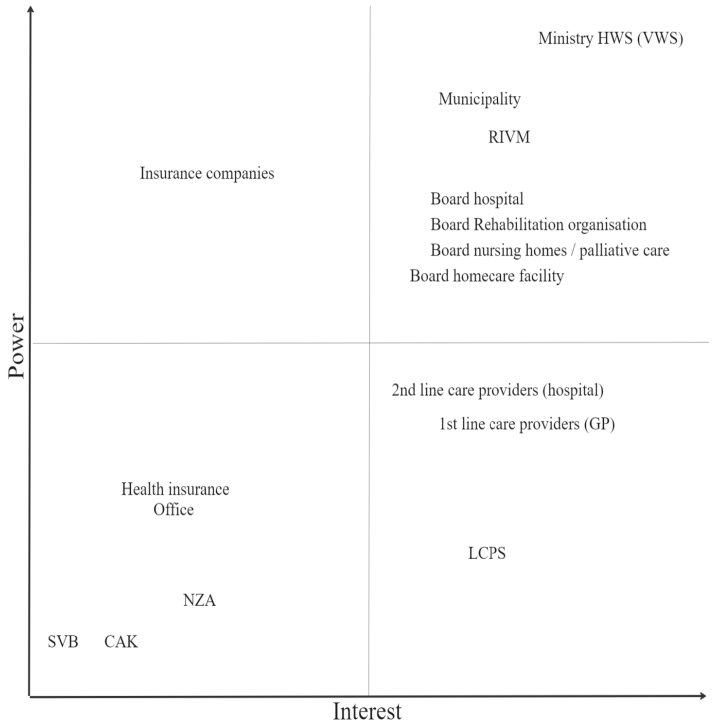

Figure B.1: Power-Interest grid

insurance companies is: sustainable care that is person-centered, compassionate, and effective, delivered in networks around the patient and managed responsibly to ensure equity and solidarity with premium funds (Zorgverzekeraars Nederland, n.d.). In the Netherlands, multiple healthcare insurance companies exist. The four biggest healthcare insurance companies are Achmea, CZ, Menzis and VGZ. Healthcare insurance companies have a lot of power, because hospitals, rehabilitation centra, nursing homes and home care organisations yearly contract with healthcare insurance companies. This affects the capacity and the options for a patient to go to. Especially for nursing homes this plays a major role, because if a patient has a contract with for example CZ, and the nursing homes nearby are contracted with Menzis, than the patient needs to go further away from home. Especially in the last phase of a person's life, this can be unpleasant. In addition to their power, they also have a certain amount of interest.

- **Board hospital/ nursing home/ palliative care/ homecare:** The boards of these care institutions have multiple responsibilities. For example, strategic planning, capacity planning, governance, quality and safety oversight etc. Therefore, these boards have high power and interest.

- **Municipality:** Municipalities are also important actors in the transfer care system, since municipalities support people with illness or disability and seniors living at home. The aim is to ensure that people can live independently for as long as possible and participate fully in society. This is regulated by the Social Support Act (WMO) (Ministerie van Volksgezondheid, Welzijn en Sport, 2022c).

- **First and second line care providers:** The most relevant first and second line care providers for the Dutch transfer care system are: transfer nurses, geriatric nurses/doctors, home care providers, nursing home caregivers, rehabilitation doctors and the general practitioner. The care providers do not have a lot of power, since they have to act according to institutions and cannot make up their own rules. However, these actors can affect the work processes within their organisation, but still their power is not high. In the Power-Interest grid, the care providers are visualised separately.

- **National Coordination Center for Patient Dispersal (in Dutch: Landelijk Coördinatiecentrum Patiënten Spreiding (LCPS)):** The LPCS works closely with healthcare organizations to map out the demand for care and healthcare capacity. This helps to ensure that patient care in the Netherlands continues as smoothly as possible, even in times of crisis and scarcity of certain healthcare capacities (Landelijk Coördinatiecentrum Patiënten Spreiding (LCPS), 2022).

- **National Institute for Public Health and Environment (in Dutch: RIVM):** The National Institute for Public Health and the Environment is a knowledge and research institute in the Netherlands, focused on promoting public health and a healthy and safe environment. The RIVM also does research to transfer care system in the Netherlands (Van Den et al., 2018). The RIVM has not much interest nor power, since they execute objective research.

- **Interest group for elderly:** This actor represents elderly (patients) in the Netherlands. This actor has high interest, but minimal power.

- **The Dutch Care Authority (in Dutch: Nederlandse Zorg Autoriteit):** This actor makes rules where necessary. In addition, the NZA supervises care providers, health insurers and care offices. The NZA is therefore an involved party but not the most relevant party in this system.

- **Social Insurance Bank (in Dutch: Sociale Verzekerings Bank):** The Social Insurance Bank pays the healthcare providers who provide healthcare to citizens with a personal budget. Therefore, this actor does not have much power/interest.

- **Central Administration Office (in Dutch: CAK):** The CAK collects the personal contributions for the WMO and the WLZ and implements several regulations such as the regulation for late payers and the regulation for uninsured (Ministerie van Algemene Zaken, 2023).

- **Health insurance office:** Healthcare insurance offices have the responsibility of guaranteeing that individuals who are eligible for long-term care (including the elderly, individuals with disabilities, or those with chronic illnesses) have access to the essential care and support required, while also ensuring that the quality of this care is of a high standard. If patients require long-term care in the region where they live, the patient can apply for it at the Care Assessment Center (in Dutch: Centrum Indicatiestelling Zorg (CIZ)). After assessing your eligibility, the care office will make arrangements for the care you need based

on the care you have received previously. This could include care at home or at a healthcare provider (Zorgkantoor, n.d.). This type of care is financed by the Long Term Care act (WLZ). Because this actor is more an enforcing actor, it has not much power/interst.

B.2 Financial flow healthcare system in the Netherlands

In the Dutch healthcare system, multiple financial flows apply that are related to the three institutions discussed in previous section. The information about the financial flows is based on the website of Zo Werkt De Zorg (n.d.).

The first act is the Health Insurance Act. The main actors are the citizens, government, health insurance companies, care providers, healthcare institution and employers. These actors all pay and/or receive money. The financial flow is shown in Figure B.2. First, citizens pay nominal premiums to health insurers for the mandatory basic healthcare insurance. If consumers choose to purchase supplementary insurance, they must pay supplementary premiums to health insurers. Generally, there is a personal contribution, for which they are not insured, and a deductible. Additionally, they pay an income-dependent contribution if they are self-employed or receive pension, old-age pension or alimony. Furthermore, consumers pay taxes to the government. In addition to consumers, employers and benefit providers also play an important role. For example, municipalities pay the income-dependent contribution for people receiving welfare and the UWV pays the income-dependent contribution for people receiving unemployment or disability benefits. Employers pay the income-dependent contribution for employees. The government sets the estimated Expenditure Ceiling for Care, the amount of the deductible and the income-dependent contribution and healthcare allowance. In the case of people with low incomes, the government provides a healthcare allowance to cover the nominal premium and deductible. Another important actor is the government. The government pays the cost of the nominal premium for children to the Healthcare Insurance Fund. The second-to-last actor who plays a role in this financial flow is the health insurer. Depending on the policy conditions, insurers reimburse healthcare providers or insured individuals for the provided care. Finally, the Healthcare Institute is an important actor. The Healthcare Institute pays equalization and availability contributions to insurers from the Healthcare Insurance Fund.

The second act is the Social Support Act. The main actors are the citizens, government, CAK, municipality, Social Insurance Bank and care providers. These actors all pay and/or receive money. The financial flow is shown in Figure B.3. First of all, consumers pay income- and asset-dependent personal contributions to the Central Administration Office (CAK) in certain cases. Another important actor is the government. The government finances municipalities through the integration allowance for the social domain (in the Municipal Fund). Municipalities then pay providers for provided support in kind or transfer the personal budget to the SVB. Furthermore, the CAK collects the personal contributions from people and transfers them to municipalities. Lastly, the SVB pays the providers who provide support to people with a personal budget.

The third act is the Long-Term Care Act. The main actors are the citizens, government, care

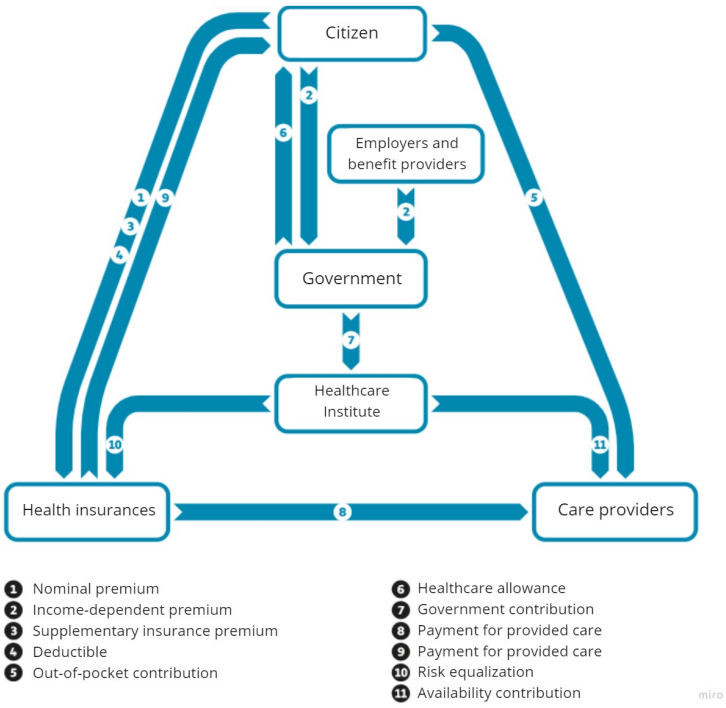

Figure B.2: Financial flow of Health Insurance Act (Zo Werkt De Zorg, n.d.)

providers, healthcare institute, CAK, Social Insurance Bank and employers. These actors all pay and/or receive money. The financial flow is shown in Figure B.4. The first actor involved are citizens again. Citizens pay an income- and asset-dependent personal contribution for care to the CAK and an income-dependent WLZ premium if they are self-employed or receive pension, old-age pension or alimony. Furthermore, every consumer pays taxes. Lastly, consumers pay healthcare providers themselves for care outside of their closed healthcare insurance. In addition to consumers, employers and benefit providers also play an important role. Municipalities pay the income-dependent WLZ premium for welfare recipients. The UWV pays the income-dependent WLZ premium for people receiving unemployment or disability benefits. Employers pay the income-dependent WLZ premium for employees. In addition to these important actors, the government also plays a large role. First of all, the government determines what the WLZ care may cost (macrobudget). Secondly, the government determines what care procurement (contractual space) and the pgb may cost by care offices jointly. Thirdly, the government sets the rules according to which the CAK can calculate the personal contribution of consumers. Fourthly, the WLZ premiums are handed over to the Healthcare Institute of the Netherlands. And lastly, the government can supplement fund deficits with a government contribution from general funds. Another, more detached, actor is the NZA. The NZA distributes the contractual space over the care office regions and the maximum rates for claiming WLZ-reimbursed care. A more involved actor is the Healthcare Institute. The Healthcare Institute manages the Long-term Care Fund and the Personal Budget Fund. The Healthcare Institute also transfers the money for care entitlements and for pgb to the CAK and SVB. The SVB then pays the healthcare providers using the pgb. In addition to these actors, care offices are also involved. Care offices instruct the CAK to pay healthcare providers for provided care. Lastly, the CAK is an involved actor. The

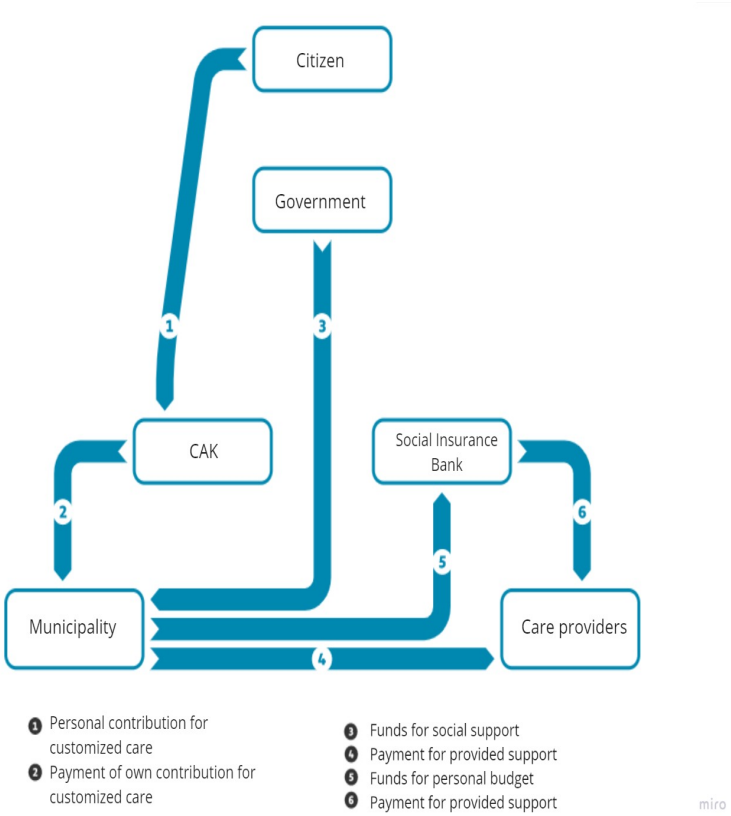

Figure B.3: Financial flow of Social Support Act (Zo Werkt De Zorg, n.d.)

CAK deposits the personal contribution of consumers into the Long-term Care Fund. The CAK pays the healthcare providers on behalf of the care offices.

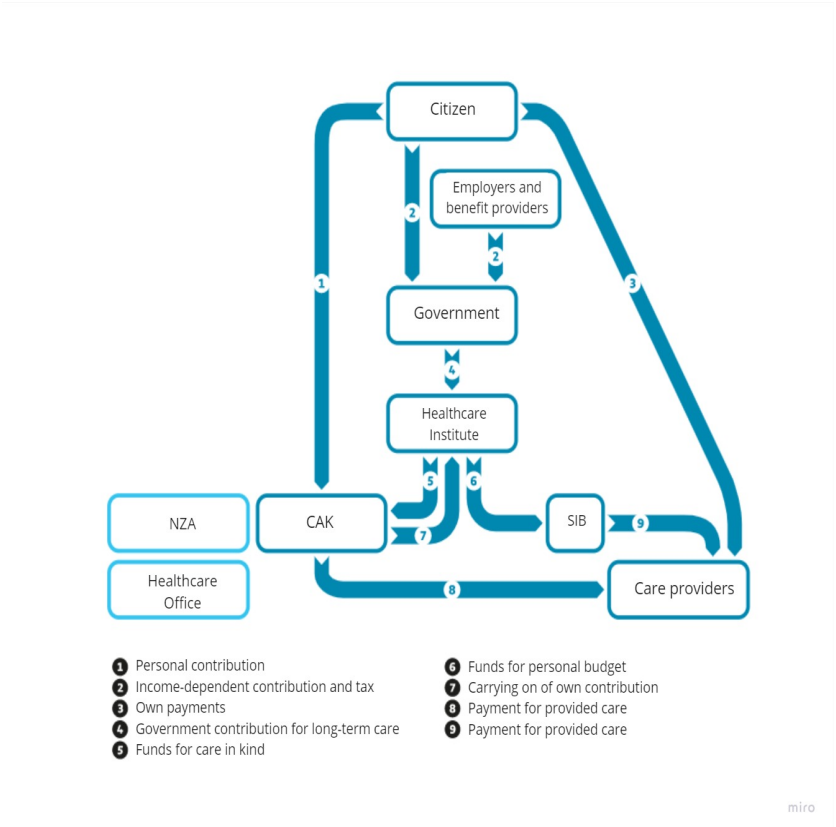

Figure B.4: Financial flow of Long-Term Care Act (Zo Werkt De Zorg, n.d.)

B.3 Values

In addition to actors, institutions and financial flows, there are relevant values in the context of the Dutch transfer care system. Here is a list of important values that can play an important role:

- **Accessibility:** Accessibility is about the fact that patients experience no barriers to care and have equal access to care that is suitable for him.
- **Efficiency and innovation:** It should achieve higher levels of technological progress, since that can make services more efficient.
- **Affordability:** Affordable healthcare means that everyone can afford the healthcare that is needed.
- **Effectiveness:** The effectiveness is about the care must be in line with the latest scientific and practical standards. The Healthcare Institute has developed a framework to evaluate if a treatment is compliant with these standards (Zorginstituut Nederland, 2022).
- **Safety:** Patient safety is the goal of minimizing the risk of unintended physical or psychological harm to patients during treatment in a healthcare facility. It is of great importance that the safety of the healthcare will be enhanced.
- **Shared responsibility:** Since the after-hospital care system is a chain of subsystems, with

each different parties involved, shared responsibility is required to enhance good quality of service (podcast).

- **Well-being:** The well-being of the patients is very important. Since it covers mainly elderly, it is important that their well-being is respected/improved/maintained. Some of the old patients are about to die, so in that case it is important that the last mile of their life is as good as possible.
- **Sustainability:** Sustainable health is about promoting health while minimizing any detrimental effects on the environment and taking advantage of opportunities to restore and improve the environment to the benefit of the health and well-being of people now and in the future (WHO Regional Office for Europe, 2017). Additionally, sustainability can also refer to the healthcare system's ability to sustain the quality and accessibility of healthcare over the long term.
- **Accessibility:** Having access to healthcare is the ability to receive health services, including preventive measures, diagnosis, treatment and management of diseases, illnesses, medical conditions and other factors that affect one's health.
- **Equity:** In healthcare, equity means providing access to care that is fair and equitable to all, regardless of gender, race, ethnicity, religion, age, income level, or other factors.

The above list of values are all applicable to healthcare and are interrelated to each oter. These values will relate to transfer care system performance, which will be discussed later.

C Data of interviews

This appendix shows the data obtained from the interviews. In addition, a reference to informed consents will also be provided.

C.1 Data from interviews

This section will discuss all information obtained by interviews during the case study.

C.1.1 Results interview respondent 1

What care is crucial when it comes to the discharge of elderly patients from the hospital? So how would you outline the system, if you had to summarize it in a figure?

The government's objective is to enable people to remain in their homes for as long as possible. There are ample home care organizations, so obtaining home care services is generally manageable with minimal waiting times. However, there is a shortage of beds in nursing homes for the group of patients who require this level of care. As people age and continue to reside at home, they often confront escalating health issues, including an increase in multimorbidity and occurrences of conditions like hip fractures.

In cases where individuals have homes that are not adapted to their needs or transitioning to an apartment is not feasible, hospitals step in to address these challenges. Consequently, some patients end up being placed in nursing homes, where they may remain for several weeks. This has resulted in a significant upsurge in demand for nursing home care.

The healthcare system operates as a chain of interconnected care services. During the flu season, particularly around the turn of the year, the system experiences additional strain due to an influx of patients with conditions like fractures and an overall rise in elderly individuals requiring care. This can lead to bottlenecks within the healthcare network, including temporary closures of the Emergency Department, which, in turn, affects the entire care chain. This often necessitates the shifting of patients between different beds within the hospital.

Who play a significant role in transmural care, and what is their function? Does this differ from general chain care?

1. From the Emergency Department to the moment of discharge from the hospital, various healthcare professionals are involved, including doctors, nurses, paramedical services, and specialized nurses, depending on the department where the patient is located;
2. Health insurance companies are responsible for procuring healthcare services. This puts pressure on hospitals, as health insurance companies allow limited growth, and the budget

remains constant;

3. Currently, there is a shortage of available spots in nursing homes, partly due to government policies aimed at allowing seniors to stay in their own homes longer and avoiding extended hospital stays.

In what way is the current transfer system organized? What protocols are in place? So, how does the discharge process work, etc.?
First, nursing home beds can be more efficient. Second, develop new protocols to administer chemotherapy at home instead of in the hospital. Home care organization. Developments. Immunotherapy at home, more oncology challenges, the right care in the right place. Third, Aging healthily (in Dutch: Gezond en wel ouder worden): acooperation between the emergency department and transfer nurse. Fourth, Multidisciplinary teams for the elderly (in Dutch: Multi team ouderen): outpatient clinic goes wrong, geriatrician visits at home, the welfare department of the municipality creates a treatment plan. Staying at home together for as long as possible.

What strengths can you identify in the transmural care system?
Increasing collaboration. Innovation. Social work with the municipality. Additionally, strong partnerships help to manage the care. Summarized on that chart.

What measures do you believe can be taken to improve the flow of this system?

1. Internal steps to identify areas for improvement;
2. Increase capacity
3. "Gezond en wel" (Healthy and Well) plan.
4. Some things can also be resolved individually, such as promoting vitality and prevention through factors like nutrition. Collaborate with each other; not everything needs to be rushed. Ask yourself, "Do I really need this today?"

What role do you believe the government plays in improving the flow, or what role can the government play?
Patients should take personal responsibility for their own health. Healthy living can prevent many issues, and the government should actively promote this, particularly in addressing the growing issue of obesity. In addition, the government needs to emphasize and support healthcare professionals more. The balance between the business sector and healthcare is skewed, and the government should take responsibility for addressing this.

What values do you believe play the most significant role in this system? Quality of care and information transfer. Digital systems, such as getting information to GPs, are improving and making the process more efficient and cost-effective.

C.1.2 Interview results respondent 2

What care is important when it comes to the discharge of elderly patients from the hospital? (home care, nursing care, etc.?)

There are several options: Going home with home care, facility (short-term and long-term care) with different arrangements. Care office WLZ care assessment for long-term. For short-term, something is arranged so that you can return home for rehabilitation or palliative care. Dying in the hospital.

What is their role? Does this differ from integrated care in general?
Defining the right place from various perspectives. A patient receives treatment, and when the treatment is complete, the patient needs to be discharged. The question is, who decides where the patient should go next? It depends on several factors:

A young, vital group may be able to return home without needing home care. Some patients are on the edge: they might go home with home care or informal care. it is essential that they can take care of themselves, like eating and using the restroom. Patients who are confused, struggle with transfers, or require a lot of structure may not be able to go home. This can be either short-term or long-term care. Sometimes, an observational placement is necessary if there's uncertainty about the patient's condition.

The decision about the next step should be made at the beginning of the hospital admission, not delayed. Some patients will be ready for discharge medically, but it might take weeks to arrange a suitable place, complete applications, or obtain a long-term care (Wlz) care assessment , which can take 4-5 days. it is better to assess the situation early on and make an estimate because the patient's condition can change during the process.

The receiving party also plays a crucial role. They have a vested interest, often financially. For example, a nursing home might not want a patient who was previously living alone, had an alcohol problem, and did not take care of themselves. The nursing home may have certain principles, like a no-alcohol policy. In some hospitals, when a patient is discharged, they receive a box of chocolates. As the box gets empty, the least favorite chocolates remain. it is similar in a hospital; the right place is not clearly defined, and there's an oversupply of certain types of patients. Profit motives may influence where the least attractive patients are placed.

The compulsory care question arises: who should receive it? Suppose we are the managers of a nursing home, and we are offered a 60-year-old patient with a hip issue or a 60-year-old who has been addicted for 15 years and has been neglected. The insurer calculates based on the number of patients with Wlz care assessment s. Determining the right place depends on who the patient is and from which perspective we are looking."

In what way is the current transfer system organized? (Can you be very specific about the process?) and what protocols are in place? So, how does the discharge process work, etc.? Are there different steps to distinguish, etc.?
Steps: process question: we look at inflow, throughput, and outflow. All three factors are important. If you receive 60-year-old cyclists, it is a different population than neglected alcoholics. It depends on what you receive. Aging in place leads to a higher risk of bringing in care systems in the hospital. So, multimorbidity, aging, worthless flour to bake with, that is the inflow. And then throughput, how are we going to do that? Far from optimized. Foresight is key.

Who makes that decision, physiotherapists can have an opinion, treatment providers can have an opinion, family can have an opinion, assistants differ. The process seems very simple, but there are many parties involved. Do the actors know what they need to choose the right destination? Medical specialists do not know what options there are. Medical specialists are paid only for diagnostics, but not for what comes after. Hired for treatments, but not for afterward. Multimorbid patients have complex care needs, a lot of demand is involved. That is the hospital's perspective, and nursing homes cherry-pick the best cases. They have a large pool of people to choose from. They have no incentive to regulate this properly, who does have an incentive. Supervision. Output: how do you look at next. Bakery.

What specific strengths can you identify in the transfer process?
Awareness has been growing, since 2019 already. More and more people are becoming concerned. Titanic boat. Very good healthcare system, delivering high-quality care, but now profits go to private clinics. Hospitals hear that grumbling. If the patient chooses a private clinic, as a hospital, you make a profit on that. Inequality. This way, you deviate from the social principle of healthcare: that an alcoholic and a cyclist lie in the same room, with the same opportunities and equal care. Socially vulnerable individuals need more help, but now they are the victims.

High-tech solutions. How are we going to manage that pot of money? Delft University of Technology, high-tech solution, is only a small part of what goes wrong. What role do doctors play? Code black team. In elderly care, a lottery system was used, a care transfer problem. It collapsed due to insufficient effectiveness. No one wanted the patient, system failure, doctors cannot solve this. That we have to use a lottery.

Who is the problem holder?
This is a major issue. There is capacity, but it is not optimally utilized, due to financial constraints.

What specific bottlenecks can you identify in the transfer process? According to you, which components cause the current flow to stall or could stall? (in situations where it is going well)

1. The patient is the problem holder, unable to advocate for themselves. There is no problem owner. Who is responsible? Outcome-focused care: what outcomes are we measuring? Who are the stakeholders? Shared decision-making success was celebrated. Their own hospital in Timbuktu, government. All organizations were involved in meetings, making videos; they considered it a great success. What success is being celebrated?

2. Problem owner: This is a major issue. There is capacity, but it is not optimally utilized, due to financial constraints. Chain-wide financing. The insurer must benefit.

3. Why can I make a chemical plant safer, bring in a product with specifications? If it does not meet the specifications, the process must be adjusted, like Russian gas. it is difficult to determine what kind of flour you are getting. Also, the end product. In healthcare, it is not clear when we consider a healthcare system to be failing. What is that, then?

How could we measure improvement? What KPIs can you identify to test whether possible measures have the desired effects?
How many people are on waiting lists? (Availability), Demographics, How many spots are available?, Wait times in hospitals, Emergency room stops, Stops in other areas, How many private clinics are in the area?

If you get that data, you can calculate the merci principle. Their operations. This is what it is about. This cannot be! Profiting from optimal care. Optimal care is not well-defined. Vitality and survival.

C.1.3 Interview results respondent 3

What care is important when it comes to the discharge of elderly patients from the hospital? (home care, nursing care, etc.?)

1. Starting point is the individual patient: see what they need. When care is needed, it goes through the transfer office. Doctors and nursing care professionals assess the patient's needs, determine the approach, whether it is home care or a nursing home, etc., and they make a request. And they take it from there.
2. All kinds of requests: home care, also arrange for outpatient care, not admitted but only seen in the outpatient clinic. A wound. Or chemotherapy. Home care or temporary stay, for those who cannot go directly from the hospital to home, they go to a temporary nursing home for rehabilitation. Temporary. The goal is to return.
3. People with ongoing care needs
4. Palliative group in the hospital for less than 3 months. Hospice, nursing home unit.

Who plays an important role in the transfer process? What is their role? Does this differ from general care coordination?

1. It starts with the doctor. Do not involve others without the doctor's guidance. We call the family, but then...
2. Nursing care on the ward, they know more about the patient. They assess what kind of transfer is needed, home care or a nursing home, and then we get involved.
3. Transfer nurse
4. Government: he government sets the conditions: that iswhere it starts. How market competition and health insurers organize the government.
5. Long-term care organization (VVT), they allocate the care.
6. Health insurance companies: they play a larger role, with more fragmentation in health insurance. Only contract care providers. Where does the patient live, where are they insured? An annual list, which home care is contracted? What are the conditions? Will I end up far away because of the conditions? What impact does it have?

7. Care authority: WLZ. Needs an care assessment . Financing flows. Need home care: health insurance, but will you be eligible for WLZ?

8. Municipality: WMO for home care. Initiating household help cannot be done, it is the municipality's responsibility. They send an email to the WMO office. Priority. No commitment. Arrange equipment at mediopoint, palliative care equipment. The nurse assesses it initially. And we have a conversation with the patient, all the underlying thoughts.

Are there conflicts of interest among the parties involved, or other things that could have adverse effects on the transfer process?
Insurance is causing delays. Signal a EU expert first, contact them, approval for temporary placement, etc. They count 5-7 working days, so patients end up waiting in the hospital unnecessarily. Because it is getting stuck there.

Financial issue with antibiotics in the bloodstream, to be used for 6 weeks, upon discharge. Nursing home, I'll only take them in if the hospital covers the cost of antibiotics. The hospital says no, then I will not take them. Haggling. No one stayed in the hospital unnecessarily. They were all kept in unnecessarily.

VVT evaluates every request, when I refer someone, based on the file whether they fit realistically for rehabilitation. If it is not realistic, they're not put on that care assessment . Not sent home, need to find a permanent place, not enough traffic in rehabilitation, the flow should be high, but it is low. One person thinks they fit as a rehab patient, another thinks they should be on WLZ, etc. Difficult cases, especially those with something special, psychiatric history, do not fit into the boxes. Stable for 20 years, no expertise, just a nursing home. People with addiction (history) are sometimes immediately rejected. Homeless, healthcare foreigners, sometimes for weeks/months. The government should have a place where you can report this, a signaling function. Mr. WLZ, rejected everywhere due to a history. Care office, obliged to take them in, they do not do it. In the meantime, mobility has improved, no WLZ waiting list, 1 year, in the meantime, home care, in a small village, no care providers had a route, so he stayed longer. In the Netherlands, everything is put in boxes, stamps, which makes it difficult. Prefer that they should go to a nursing home, just be admitted. Then, look under which heading they fit best, for the financial part. Front-end, is it suitable? No, we will not do it, make money, get the right amount for the work. Hospital. Different pots, someone's in the hospital. It happens anyway.

How is the cooperation between the involved parties?
Seek partnerships, Tuesday with VVT care provider account manager in Rijswijk. Certain group of patients with health insurance, care provider, if we get someone, can we refer them to you

Care provider collaboration. Transfer nurse in the ER, prevent unnecessary hospitalization. Not medically ready and not going home, we call them, nursing home. Prevent unnecessary hospitalization.

In motion: same budget. Are there treatments/patient groups not in the hospital or at home, or the general practitioner. Start with the government to fix health insurers. No one feels

responsible.

C.1.4 Results interview respondent 4

Can you start by explaining your care history after discharge from the hospital with complications from a spinal cord injury?
From the age of 60, I had annual check-ups with the cardiologist. After 2 years, I skipped a year. In May 2020, a spontaneous aneurysm occurred. After 7 months, I went to the Hoogstraat rehabilitation center.

Rehabilitation at home, no wounds, just working on my condition. In January 2021, an agreement was finally reached with the municipality regarding the cost of renovation. The renovation started in February, with the bathroom being the first to be completed.

In 2021, I gradually recovered at home. During the lockdown, there were no issues with COVID-19. In May 2022, we celebrated my grandma's birthday, and that iswhen the wound issues began. It got worse, and I had to go to the hospital for another reason. The care and wound care were not good. I needed a specialist. I did not receive any care until 10 PM. The ER should have communicated better. I had to explain everything myself. I filed a complaint. The hospital department sent me home. The wound was subcutaneous and infected, but it escalated as I was always lying on my back. At first, I received wound care at home. Home care came twice a day, but they could not handle it. Who was responsible? The wound care specialist insisted that it should be done.

Zorgspectrum was aware of everything, with internal records. They took good care of me. Hoogstraat had its waiting time, but after pushing a bit, they allowed me in, four weeks ago, for rehabilitation. At the end of December, it happened again. The second time within 6 months.

What values are most important to you?

1. Service quality: having people who know what they're doing;
2. Kindness: being friendly and sociable. Personal contact.
3. Promptly reporting when something is beyond their capability. Home care, district nursing, wound care, or the general practitioner. I have my preferences but I'm not the ultimate decision-maker.

At the time of discharge, what kind of aftercare did you need? (Think of home care, informal care, nursing care, rehabilitation care, or a care hotel)
After discharge, I needed permanent home care and nothing more. WMO, ZVW. Costs from Zilveren Kruis also cover the cost of home care. A wound specialist. Bed delivery and such: the municipality through the WMO. They cover those expenses. There was also physiotherapy and speech therapy. Wound care by a home care organization and care from the practice nurse specializing in wound care, through the general practitioner. Different organizations. They also provide home care, but that is not our usual practice. Nevertheless, it went well. Good collaboration.

When did the transfer process begin, on the day you were supposed to go home or earlier? Hoogstraat was well-prepared. They started contacting the municipality after 3 weeks because they knew it would take a long time. Hoogstraat measured me for a wheelchair, and there was advice from the building specialist and the municipality. Hoogstraat handled it well. Just before discharge, there were good transmural care discussions. They provided addresses of physiotherapists and the necessary information.

There was not anything in the first 7 weeks; you receive medium care. Occasionally, I used a wheelchair. There was a wound on my coccyx. It was messy. No provisions, no care. Psychologist, medium care. Either a nursing home or Hoogstraat. It was chaotic. Antibiotic treatment, whether I could leave or not. The treatment worked, and within a day, they decided I could go to Hoogstraat. My family was well-informed.

How did the transfer process go? Who was involved?
The transfer was uncertain; it was not clear if I could go home. Going to Hoogstraat was a "now or never" decision. There was no transfer nurse, only regular nurses. When I was ready to leave Hoogstraat, they began discussing the municipality and the upcoming home care. The social worker took care of that. The occupational therapist also took care of the wheelchair, measurements, and ordering it. They contacted the WMO. They also discussed the renovations with the occupational therapist. In your case, Mieke is a caregiver. It went reasonably well.

Did you stay in the hospital longer than necessary?
No. Hoogstraat immediately took me in. I was given medium care for the first 7 weeks. I was occasionally in a wheelchair. There was a wound on my coccyx. The wheelchair was problematic. There were no facilities or care. A psychologist was involved in the medium care. The decision whether I would go to a nursing home or Hoogstraat was chaotic.

What challenges did you encounter when you were discharged from the hospital?
The hospital handed over everything smoothly, including the option of going to a nursing home or the nursing department at Hoogstraat. Hoogstraat was the best option, and I was given a letter. At Hoogstraat, they helped me regain my mobility and did a lot of preparation. They coordinated the handover to home care, the building adaptations, the equipment, and the municipality.

Can you think of situations that would have helped improve the continuity of care?
The hospital's handover process could be improved. They should do more than just provide a list of medications and a letter; they should actively facilitate the transition.

When I was discharged from Hoogstraat to go home, there were no complaints. It was a good experience. They did a great job. I have heard from other patients about the bureaucracy of the municipality. It takes a long time. When the municipality's budget is depleted, they outsource the provision of aids. At one point, it was going to transition to Belzorg in January. They won the contract for my wheelchair. Bureaucracy, it is all about paperwork. Changing the label. Money, not helpful.

What was the decision-making process like for you between receiving nursing care and renovating or moving? Were the healthcare workers in favor of one of the

options?
The occupational therapist came with me to my home. She noted many issues that made it difficult for me to stay at home. Moving would be costly. The municipality suggested that I should move, but there were various apartments to choose from, none of which were adapted to my needs. I wanted to stay at home and had the support of a psychologist, a general practitioner, an occupational therapist, and others. They lobbied for it. It was crucial to have a lift installed. Many recommendations were made, and it worked out.

In your opinion, who should have more responsibility for the transition from the hospital to home/nursing home?
There's no central authority. The organizations that are dealing with you should be able to collaborate better. They lack the authority. Who's in charge? Is it decentralized or the government in The Hague? He does not know. Privatization and market competition have complicated things. Everyone has their own budget. The government provides budgets and guidelines, but it is not enough and not practical. Some more flexibility should be allowed. Civil servant, an office, they cannot do it. The general practitioner, healthcare organizations, and the municipality need to coordinate things.

The financial flows need to be managed to keep innovation and affordability in check. The system is not fair. If you change things, costs increase, and expensive solutions are pushed through due to cost disputes. It used to be simpler in the past, with fewer organizations and less market competition. Costs have risen.

C.1.5 Results interview respondent 5

Who plays important roles in transmural care, and what are their functions? Does this differ from general chain care?
It depends on the transfer. There are three different streams.

1. At home: the general practitioner is medically responsible, from specialist to general practitioner. Without home care, you can call home care. The responsibility for medication lies with the pharmacy. The general practitioner receives the plan through the patient's record within 24 hours. I know that these agreements are not always met, especially when it comes to elderly patients being discharged. I'm not sure about the responsibility. Information flows are complex.

2. The longest waiting lists are in nursing homes. Patients may have preferences. Sometimes there are no available beds. The question is whether moving is desirable.

3. It is easier when transitioning to an institution; everything goes to the same place.

4. The one who sends it is the transfer point. A special department that arranges aftercare. They review the patient's record and, together with a nurse, determine the necessary care. Then the phone calls begin

Which rules/laws play an important role in daily practice in transmural care?

WMO (Social Support Act), WLZ (Long-Term Care Act): for nursing homes. Extra hospitalization days under the Health Insurance Act.

Possibilities: ZorgDomein for referrals to follow-up care. From the general practitioner to the hospital, but there's an extra follow-up care module. You are bound by the agreements you make. You receive an answer within 2 hours. These agreements are not always adhered to. Extra hospitalization days. Patients can express their preferences, in accordance with the AVG (General Data Protection Regulation).

How is the current transfer system organized? What protocols are in place? So, what is the process of discharge, etc.?
Protocols are very important in hospitals. Haga and HMC both have their lists of preferences based on their experience with transfer nurses. Human factors also play a role. Sometimes there's a good rapport.

How is the collaboration between the involved parties?
We chose to switch to ZorgDomein. First, we did it manually. It became too complex for hospitals. You would not know what you've offered. We made working agreements. We also keep developing it. New requirements come up over time, like automatically notifying the general practitioner when a patient is discharged. These features have not been implemented yet. There's a user group that meets four times a year for VVT (Nursing and Care for the Elderly) using ZorgDomein, and everyone is invited. They get the opportunity to discuss their wishes with ZorgDomein.

You can also communicate with other regions through POINT, but it is only per dossier. So, they can still use it. Basalt Rehabilitation Center and Pernasia work in other regions where POINT is the first choice.

Nationwide, there should be one program: it should be straightforward. Ideally, the patient should have access to it. As for monopolistic positions, they already have ZorgDomein for referrals from the general practitioner to the hospital, and it is well-established. The government is not a threat to their position.

What are the strengths you can identify in the transmural care system?
In 2015, there was decentralization and market competition in home care, similar to ANWB Zorg. In their region, competing nursing homes and home care providers did not want to share patients. They collaborated somewhat but preferred buying out everyone instead of cooperating. In 2016, it did not get better. Transfer nurses carefully examine the patient's records within 2 hours, taking comorbidity into account. For example, for a new hip, it is also addiction – they will send those patients away. Patients who are in good shape are welcome. Problematic cases get stuck. They look at individual cases with insurers and a few home care organizations to determine what is needed, and the insurer genuinely participates. The insurer allows for a certain number of admissions per year.

Factors related to culture: HMC was created from another hospital, which creates a different dynamic now that there are only two hospitals. They have to work together to compete with

LUMC. They cooperate and know where to find each other. They have informal agreements like "You handle bone fractures, and I'll take care of heart failure."

What weaknesses can you identify in the transmural care system? What components do you think cause the current flow to become congested or potentially clogged? (For cases where it does go well)

Agreements made among stakeholders. Waiting lists for institutional care. Patients may express preferences, but they cannot always be met. The goal is to ensure that patients end up in the right place.

System limitations: there's a pilot project in progress, solving things through ZorgDomein. Everyone can indicate their capacity, and ZorgDomein will place patients accordingly, instead of dealing with patient records. In the pilot in Scheveningen, two large care organizations participate, along with case management for dementia. The cherry-picking problem is difficult to eliminate. The consent of a specialist in geriatric medicine is required for other care assessment s. That is not going away. Home care solutions, I need someone for showering. It does not matter if they're an alcoholic or not, unlike in other cases.

Are the above issues the ones you believe contribute the most to the problem of incorrect bed utilization? If not, what other issues can you identify?

1. Mainly on the nursing home side: also not in mental healthcare. Regular nursing home care gets congested. Not due to a shortage of beds, it is not about a lack of beds. There's not enough staff who can take care of the patients in those beds.
2. Labor migration.
3. Better collective labor agreements (CAOs).
4. On the other hand, wages are rising everywhere, but not many new people are entering the field because of the higher wages. it is a demanding profession.

What measures do you believe can be taken to improve the flow in this system?
Health insurers also look at the government. On the one hand, there's an issue with the care authority regarding the WLZ.

Funds from IZA and WOZO are available, and they should be fully utilized.

It is difficult for the government to remove competition incentives, which are essential for innovation and efficiency.

Hospitals feel responsible because they pay for extra hospitalization days. Nursing homes do not mind; they only accept patients they want, so they can choose their work.

What role does the government play in improving the flow, in your opinion? Or can it play a role?
1) Changing the entire system would take too long because of the impending tsunami of aging. Before experiencing new rules for the system, you need to spend at least five years thinking

about it. it is essential to think it over for a longer time. 2) Remove competition incentives in some areas. it is crucial for innovation and efficiency. 3) There are also many issues in home care. Many small agencies exist because they're not members of the VTV (Nursing and Care for the Elderly). They hire freelancers or have very few caregivers on staff. In terms of competition, that does not help much.

C.1.6 Results interview respondent 6

How is the current transfer system organized within the AMC (Academic Medical Center)? What protocols are in place? So, how does the discharge process work, etc.?

Admissions from the hospital, almost ready for discharge. An care assessment is given. Based on that, we request information through POINT and VVT (Nursing and Care for the Elderly). Gathering information. Today's request, today's departure. Neurology has daily meetings to discuss admitted patients. It becomes more complex when discharging them. In the ER, we assess if the patient can be discharged the same day. We look at the urgency.

Which parties are involved in the transfer of a patient?

Departments, palliative teams, rehabilitation, physiotherapy, dietitians, nurses. The executing party for VVT is the patient themselves.

How is the collaboration between the involved parties?

Most of the parties are from Amsterdam. We know rehabilitation centers well. According to POINT, we can communicate with them. There are two nursing homes for accelerated discharge. They have diagnoses and action plans. For temporary stays. Patients who are too heavy, need infusion therapy, are homeless, or are migrant workers. They often arrive too late. We need to figure out their situation, involve social workers, and sometimes they need to go back to their home country for rehabilitation. They end up staying for a long time. Hospitals in Poland may not respond. Sometimes, it is just difficult to reach them. Contact is challenging. Some patients are temporarily uninsured. They do not want to return home anymore because they're homeless.

What strengths can you identify in the transmural care system?

First, the fast pass with those two nursing homes. No need for doctor-to-doctor contact. it is straightforward what needs to be done, it is short and clear. Even in trauma cases. Second, the system is user-friendly.

Third, orthopedics are efficient. There are protocols, and we know what happens after surgery. Reserving a spot for unpredictable cases. For predictable cases, you can plan quickly. Neurology is less predictable. Some patients are discharged, and those who are still in the outpatient clinic at home get priority. This does not apply to neurology. For instance, if someone with a stoma is sent home after two days, they may not manage on their own, which is a disadvantage for the patient, as they will not have any care.

What challenges can you identify regarding the discharge of elderly patients?

1. Changes in medical condition. We arrange for someone to go to a particular place, but if

their condition deteriorates, we have to start over.

2. Communication between doctors, nurses, and paramedics needs to be consistent. Many people are involved.

3. Availability of spots, both for home care and nursing care, especially for permanent care under WLZ (Long-Term Care Act). After finding a spot under WLZ, you still need to find another one. There's a shortage of home care, and the minimal guidance is increasing. it is a capacity issue.

4. Homelessness, illegal immigration, and burnout among caregivers who say, "I cannot handle it anymore." They're overwhelmed, and too much responsibility is placed on their shoulders.

5. Substance abuse, alcoholism, and rehabilitation centers that do not want to take these cases. It should follow a different process.

6. Bed labeling, VVT, 12 beds financially available, but not for specific cases.

7. At the end of the year, health insurers say their budget is exhausted. They need more staff.

8. Psychiatric cases are challenging, and obesity cases require special beds that can handle up to 130 kg. Heavier cases, like 180 kg, require multiple people and special accommodations.

9. PGB (Personal Budget) is also an issue. If someone has arranged their own care and does not want home care, but their condition changes and they need different care, it can result in longer stays. Family members are left to handle it, which works against them. The problem is that we need to take a stronger stance and eliminate PGB. Doctors are often intimidated, and there have been cases of PGB fraud. Entire families quit their jobs to care for their fathers. A family caregiver can earn 5k to 6k euros. The welfare state should address this and require professional care setups. Families might not be equipped to care for neurological patients. Repeated admissions with recommendations for nursing homes result in subpar care.

What measures do you believe can be taken to improve the discharge of elderly patients?

1. A significant portion of the length of stay is due to a lack of decisions, as the patient is medically ready but waiting for PGB.

2. Reduce the inflow of elderly patients. Phase out care facilities as it is not working at home anymore. It does not necessarily have to be a nursing home; there should be options for older adults. Reducing loneliness is essential. There's too much independence, and families are not adequately prepared. PGB should not be a profit model. It should not be part of pension insurance, etc. People should be in salaried positions, but the existing arrangements should be maintained.

3. There's a lack of oversight, control. More resources should be allocated. Good housing options are needed. There's a high rate of sick leave due to burnout. Families with

two children are struggling. Full-time work, balance, and caregiving. There are many contradictions, and it has been increasing over the last three-quarters of a year.

4. Choices like rehabilitation should be made within the same facility. A bed is a bed. Expectation management is essential. You cannot expect to have an academic-level bed for your preference. Requirements need to be clear. Discharge policies should be documented. If there's no available spot, a transfer to another hospital like VU should not be refused. They cannot refuse three times.

What measures can be taken to reduce the inflow or better manage it?

1. More facilities need to be created.
2. Increased oversight is necessary.
3. Fall prevention. Malnutrition assessments should also be done at intake. More exercise and fall prevention training for the elderly.
4. General practitioners also play a crucial role; the ER should act as a filter and wait for Mondays if necessary.
5. In the community, a lot has been done, such as exercise groups, physiotherapy exercises, and community organizations.
6. Shortages are a new trend. Chemotherapy at home makes patients feel more comfortable. Dialysis and intravenous antibiotics at home. They're looking into what can be done.

What role do you believe the government plays in improving the flow? Or can it play a role?
The government should have a more significant role. The government should address PGB fraud, the issue of labor migrants, the fact that it does not work in families with caregivers, and what health insurers should or should not cover at home. A spot is a spot. The minister who emphasizes technology and domotics for older adults, who cannot leave their homes. They should focus on ground-floor housing. And more.

They should address household imbalances. They're tackling sheltered housing, and empty assisted-living apartments are being exchanged. Good salaries and housing market flow.

C.1.7 Results interview respondent 7

Who plays a significant role in transmural care, and what is their function? Does this differ from general chain care?

1. There are two financing streams: ZVW (Health Insurance Act) and WLZ (Long-Term Care Act). Under ZVW, there are nursing homes and SOG (General Practitioner Care Elderly) doctors who are responsible for accepting patients. Geriatric Rehabilitation (GRZ) is involved, and the goal is to work on rehabilitation and then discharge patients home. SOG discusses this with the family doctor, and the transfer is arranged by the specialist.

Many disciplines are involved, including occupational therapy, physiotherapy, psychologists, etc., who work together to plan the return home.

2. Home care is not done through the family doctor but via district nursing. Sometimes, we call the family doctor to inquire about the home situation. Too many people are admitted with social care assessment s, but they refuse care, waiting for the situation to escalate, which is a common issue. This happens in Dordrecht as well. Care avoiders are a problem. If they had acted earlier, for example, for dementia with family involvement, diagnosis, ideal family doctor, case manager, or day care, this could have been done to prevent escalation. The hope is to request an care assessment in a timely manner and then transition from home to residential care. However, there are waiting lists for residential care, and people want to stay in their own village and wait for an available spot, which does not align with the government's goal of "aging in place." With over 70-year-old children of 50 years old, there are often two wage earners in a family. There's a need for professional district nursing.

3. Everyone needs to continue learning, but you also need people who can do the work in healthcare. Caregivers are needed.

How is the current transfer system organized? What protocols are in place? So, how does the process of discharge work, etc.?

1. There are guidelines on how they should register with us and the conditions for eligibility. Work processes. If you qualify under WLZ, then someone goes through recovery and rehabilitation.

2. The most challenging part is that people do not fit into a single mold because they're living at home longer, and their care needs become increasingly complex, both psychologically and somatically. Sometimes, there's no available care. If someone is mentally competent and refuses care, there's nothing we can do. If someone would accept guidance, it might prevent escalations. But if someone says they do not want it, that is the end of the discussion. People are unique. They have different home situations, and the care they need varies.

3. We use POINT and HIX hospital systems for communication, either with healthcare providers or through email.

4. It starts with registering, and the multidisciplinary team tries to get an application as soon as possible, but not too quickly; it depends on the case. For instance, for outpatient trauma surgery or low-complexity day treatment, we aim for 2-3 days. If more problems arise, we wait 1.5 weeks before applying. Lumc (Leiden University Medical Center) cases are more complex. Even when medically ready, situations can change regularly. We wait for moments of contact if there is not a stable situation. We only apply when there is reasonable stability, as applying too early often results in cancellations, especially when the specialists are busy. This has happened less frequently recently.

What components do you believe contribute to the current backlog in patient flow or have the potential to cause one? (in situations where things are going well)

1. Insufficient capacity at care providers, leading to waiting lists.

2. At Lumc, there's a shortage of paramedical staff, such as physiotherapists, occupational therapists, and rehabilitation physicians. The lack of a complete evaluation makes it difficult to refer someone. The SOG component does not provide sufficient information. It slows down the process because we cannot assess someone's muscle strength, for example.

3. Incorrect information provided by the department in the application, premature applications, lack of contact with family to understand the home situation. Anamnesis speeds up the process. Family, home care, and family doctors are contacted. We only receive and accept applications for well-documented patients, not those who do not have a regular physician. Continuity with the same ward doctors is important. Before we apply, the story needs to be complete. Patients who meet these criteria are accepted without many follow-up questions about their history. This has been the practice for about 12 years, with ongoing learning and development within the team. Sometimes, we wait for information, call the doctor for details, mobilize to prevent falls, but these situations are challenging to address and often result in interruptions. it is exhausting, especially in an academic hospital with a different doctor every week. Certain specialties, like neurology, have mastered discharge care, while doctors-in-training do not receive much information about discharge care. The rotation of doctors creates uncertainty, and there's no focus on deepening their understanding of discharge processes. If a well-documented anamnesis and a contact person are involved, the process is expedited. Clinical lessons are crucial.

4. Waiting for a nursing home spot, WLZ-5 patients living at home with dementia, awaiting a care spot, which often leads to escalation and hospitalization. Their preferred nursing home might not have a spot, so they end up in crisis care, which is no longer available once they're admitted. Often, this involves discussions with the family, looking for a temporary solution. The delay occurs when the family agrees to the transition. Conversations with the doctor, a few days pass, and complaints and conflicts may arise. The doctor needs to express their views, and a supervisor may become involved. This happens frequently, and family members can become more aggressive.

5. Patients who do not want care. Some patients wait and see when they notice their parents' deteriorating health, but no one raises the alarm. Home adaptations, such as installing a stairlift, should be made proactively, considering future needs. Documenting what someone has, what they want, and discussing it can prevent hospital admissions.

6. More personnel is needed in home care, but there's a shortage of personnel.

7. Especially in the summer period, when someone urgently needs to go home, the insurance company assists in finding a place. They go through the same cycle with non-contracted care providers, hoping they will not have to pay out of pocket. The client needs to sign an agreement for reimbursement through a settlement scheme, which takes days to process. The transfer could be faster if the insurance company could be reached sooner.

8. In September, there's a ceiling where they do not accept any more patients in the GRZ

beds; CZ has reached its limit. Some people find a spot, but it is under the wrong insurance. Increasing capacity is not on the agenda, although the transfer departments report it. The care offices and health insurers report it too. Nine out of ten times, nothing happens. In other regions, they still accept patients, but not in this one. Patients end up staying in the hospital longer.

9. Fraud, with uncertified care providers.

10. People at Marente rehabilitation in Oegstgeest need cognitive screening; they may be confused. There's a special department within the hospital for those who have experienced a stroke and are confused.

C.1.8 Results interview respondents 8

What is the role of a care office in long-term care?
When someone receives an care assessment for long-term care under the Long-Term Care Act (WLZ) through the Care Assessment Centre (CIZ), once the care assessment is issued, it is reported to the region. If it falls within one of our six regions, our care coordination team takes it from there. We contact the client, and the coordination process begins.

The procurement department negotiates agreements with care providers. For the Health Insurance Act (ZVW), you can provide care without a contract, but for the WLZ, you must have a contract. These contracts are designed to ensure the care is tailored to the client's needs.

In terms of administration, there are two forms of care: care in kind and personal budget (PGB). We handle the PGB side of things. We are legally obligated to check if the future budget holder is capable of handling a PGB and, in some cases, perform home visits to ensure the PGB is being used appropriately. PGBs can also be obtained through the municipality, but we handle them for WLZ clients.

How is the collaboration between other stakeholders (care providers, government, health insurers) organized?
We enter into contracts with care providers. We have a new procurement policy in place, which involves discussions with them. Agreements should be concluded by November 1st, specifying the amount and type of care. This information is submitted to the Netherlands Healthcare Authority (NZa), which processes it, allowing care providers to invoice for services rendered.

Regarding healthcare advice with specific requirements, we receive signals and requests. We coordinate this with procurement. If there is a gap in services within a particular region, we try to address it. We also have regular contact with NZa and the Ministry of Health, Welfare, and Sport (VWS), as they determine our budget and allocate the funds.

We work closely with municipalities to facilitate people staying at home for as long as possible. We also have extensive contact with hospitals. When nursing homes are at full capacity, emergency rooms become crowded, and we end up with patients who cannot be placed. We collaborate to find solutions. There are regional discussions where various parties come together to explore potential

solutions. it is not about competition; it is about addressing shared problems and challenges. The growing elderly population, combined with a shortage of personnel, puts additional pressure on the system.

We also consider technology as a potential solution to help care for people more efficiently. However, technology cannot replace the need for personnel entirely.

Where should individuals go with their financial questions: the health insurer or the care office?
For financial questions, individuals should typically contact their health insurer. However, in the case of long-term care, the care office or zorgkantoor is usually responsible for handling these matters.

The hospital in Amstelveen has experienced more frequent rejections of WLZ (Long-Term Care Act) care assessment s. Do you have any idea why this might be happening? The Care Assessment Centre (CIZ) determines access to the WLZ. They follow strict procedures. One reason for rejections could be incomplete or incorrectly filled-out application forms. Additionally, WLZ care assessment s are primarily granted when someone requires 24-hour care in close proximity. If this level of care is not needed, the care assessment may be rejected. This is because the WLZ covers the most expensive form of care, and the budget for long-term care is substantial. Sometimes, applications are made too quickly or for cases where they may not be necessary. Nevertheless, the number of WLZ clients continues to grow by about 10% each year, despite expectations that it should be lower considering demographic changes.

Do you have any policies or measures in place to help with this situation?
We encourage people to take preventive measures through education and awareness. Our care advisors inform new patients about available options.

We also have discussions in hospitals, particularly with transfer nurses, to explore alternative solutions when someone needs to transition to a nursing home. We advise care providers to reconsider if hospitalization is always necessary. For instance, for certain health issues like hip fractures or urinary tract infections, hospitalization might not always be the best solution. Clear communication and mutual understanding between stakeholders are essential to determine the most appropriate care path.

In Tilburg, the local government distributed leaflets to residents aged 55 and over, encouraging them to plan for their aging and seek help if needed. They also provide neighborhood coaches who can assist seniors in staying at home for as long as possible. These types of initiatives aim to prevent escalation in hospitals and nursing homes.

What interventions does the care office undertake to promote the flow of elderly individuals?
Our primary focus is on providing information. Our care advisors inform new patients about available options. We also hold discussions in hospitals, particularly with transfer nurses, to explore alternative solutions when someone needs to transition to a nursing home. We advise care providers to reconsider if hospitalization is always necessary. Clear communication and mutual

understanding between stakeholders are essential to determine the most appropriate care path.

What factors do you believe contribute to the current backlog or potential backlog in patient flow (even when things are running smoothly)?
There are several factors that can lead to patient flow issues:

1. Insufficient Care Facility Capacity: There may not be enough available beds in care facilities, resulting in patients waiting for placement.
2. Lack of Intermediate Care Options:** Some patients may require care that falls between hospital care and traditional nursing home care, and there might not be suitable intermediate care facilities available.
3. Complex Health Needs: Patients with complex health needs, such as those with severe mental health issues or substance abuse problems, might require specialized care that is not readily available.
4. Personnel Shortages: A shortage of healthcare personnel, including nurses and caregivers, can lead to delays in patient placement.
5. Administrative Issues: Administrative hurdles, such as paperwork errors or delays in processing applications, can also contribute to patient flow problems.
6. Inefficient Communication: Inefficient communication between different healthcare providers and organizations can lead to delays in patient transfers and admissions.

What measures do you think can be taken to improve the flow within this system?
To improve the flow within the healthcare system, several measures can be considered:

1. Increase Care Facility Capacity: Investing in the expansion of care facilities or creating additional intermediate care options can help accommodate more patients.
2. Specialized Services: Develop specialized services and facilities for patients with complex health needs, such as those with mental health or addiction issues.
3. Personnel Recruitment: Implement strategies to recruit and retain healthcare personnel, including offering competitive salaries and creating supportive work environments.
4. Streamline Administrative Processes: Simplify administrative processes and reduce paperwork to speed up patient admissions and transfers.
5. Enhanced Communication: Improve communication and coordination between healthcare providers, hospitals, and care facilities to ensure a smoother patient flow.
6. Technology Integration: Invest in healthcare technologies and telemedicine solutions to enhance remote patient monitoring and care delivery.
7. Collaborative Initiatives: Encourage collaborative initiatives among healthcare stakeholders, local governments, and patient advocacy groups to address patient flow challenges collectively.

8. Educational Efforts: Increase public awareness and education about healthcare options, preventive care, and planning for aging to reduce unnecessary hospitalizations.

9. Government Support: Governments can provide financial support and incentives for healthcare facilities and organizations to implement patient flow improvement initiatives.

10. Data-Driven Decision-Making: Use data analytics to identify bottlenecks and areas of improvement within the healthcare system, allowing for evidence-based decision-making.

it is important to recognize that improving patient flow in the healthcare system requires a multifaceted approach involving various stakeholders, including healthcare providers, policymakers, and the community. Collaboration and ongoing efforts are essential to address these challenges effectively.

C.1.9 Results interview respondent 9

What is your role in the flow of elderly patients from the hospital to home and vice versa? Elderly care practitioner, screening elderly individuals aged 75 and older to determine if they are vulnerable or not. Hospital admissions are often observed. When they return, either the general practitioner or I check if the discharge went well and if the provided assistance is appropriate. All healthcare providers in home care and institutions are quite busy. To offer the right care, we need to proactively screen them by inviting them. We'd like to have a complete overview of all elderly patients in the practice. What can we do to keep them living independently at home? We also respond to reports from neighbors, family, or the police.

Who plays an important role in this flow of elderly patients? With whom do you work, and what is their role?
Internally: 1) Assistant for identifying issues; 2) Front desk and telephone personnel; 3) The general practitioner assesses patients during office hours who have experienced cognitive decline. We use this to initiate cognitive screening; 4) Geriatric mental health support practitioner, who identifies depression.

Externally: 1) District nurses: A social worker for the elderly in Rotterdam, who receives reports from institutions, conducts an initial intake, and addresses the medical aspects; 2) Our practice functions effectively with streamlined communication; 3) However, there are issues such as delayed admissions and the absence of district nurses; 4) District nurses provide medical care, including bathing and dressing, and install emergency alarms; 5) There is occasional interaction with the transfer bureau, but it does not happen very often. Sometimes, it is challenging to determine if care is already in place. For instance, when someone has been in the hospital for three days, and Careyn, a healthcare provider, cannot confirm the existing care or when there is no social network. In such cases, a second care provider is arranged without their knowledge. There's already care in place for admission, including bathing and dressing, but the elderly individual cannot communicate this; 6) Transfer nurses arrange placement when patients cannot return home. If it is a home situation, they handle it. If it is too early to go home or there are no available spots; 7) They contact home care organizations. For admissions, we have "verwijshulp.nl" for

rehabilitation or crisis admissions. Often, it is not up to date. Last week, a lady had fallen with a compression fracture and dementia. She could still live at home to some extent. We needed to find placement through "verwijshulp," but there were no available spots, and it was a dead end. Fortunately, there was a place in a nearby care hotel, although it was unsettling. We had to arrange medications to keep her calm.

We review discharge letters the same day to see what happened, how the patient is going home, and what kind of help is needed. We call the patient on the same day or the next day to check on them. If we notice any unusual signals, we investigate immediately.

What factors contribute to the need for elderly patients to undergo crisis admissions?
Delirium, urinary tract infections, or pain. In addition, severe pain in patients who are unable to mobilize at home, leading to arrangements for geriatric rehabilitation and admission to a rehabilitation center.

How do you try to prevent a crisis admission or hospitalization?
We try to proactively assess vulnerability and identify potential pitfalls. We arrange support from family caregivers, home care, and various institutions to maintain stability for as long as possible.

For falls, we involve physiotherapy to maintain mobility and occupational therapy to make home adjustments. We emphasize the importance of using a walker, even if it can be a bit cumbersome.

What does providing the right care in the right place mean for your work, and how do you contribute to this goal?
We genuinely try to arrange care at home as much as possible. We arrange hospital admissions and request a CZ care assessment to determine whether assistance should be provided at home or if admission is necessary.

What factors hinder the delivery of the right care in the right place?
1) Shortages of home care; 2) Lack of a social support network; 3) Mobility and cognitive decline; 4) Regulation/care assessment :

This should be different: There was a man who had been cared for by his wife for 25 years. His wife could no longer provide care, and it was not possible for him to stay at home anymore. We applied for a Wlz (Long-term Care Act) care assessment , but there are only a few care providers authorized to offer care, and there were no available spots. Setting up a personal budget (pgb) to arrange care can be very stressful for everyone involved. Sometimes, there are no options.

In this case, we can arrange a crisis admission, preferably not too far from the region. However, sometimes the only available crisis spot might be in a subpar location in Rotterdam, with minimal care, even though the patient requires more. We try to help them stay at home, either through crisis admission or transitional care until they can go to the place of their choice. This can involve moving three times before settling in a suitable location. A crisis admission typically lasts for 6-12 weeks, and when that bed needs to be vacated, the patient may be moved to another facility or crisis spot if they cannot return home. The care coordinator has to ensure another

suitable placement.

Do you often encounter situations where a patient's family could have approached the general practitioner earlier to prevent hospitalization?
Yes, definitely. Sometimes, we come across family members who have not had much contact but suddenly call us because they're worried, often related to cognitive decline. These issues should have been addressed a year or a year and a half ago. When you visit the patient's home and find a situation where they can no longer care for themselves, you wonder where the family has been.

Factors contributing to this issue include the need for more proactive screening. Many patients are reluctant to admit that they need help. Even when we send them a letter and make a phone call with a compelling message, they often say everything is fine, so sometimes it is difficult to intervene. We promote these services on our website and Facebook page, so we are making an effort.

What factors do you believe lead to the current flow becoming blocked or potentially blocking? (In situations where it is running smoothly)

1. Staff shortages.
2. Family members themselves: family caregivers sometimes think they can manage for a bit longer and underestimate the situation.
3. Patients themselves may insist on staying in their own homes and need to overcome the barrier of accepting that they need assistance.
4. We sometimes arrange visits to highlight vulnerable points and help patients accept the need for care

What factors work well in this regard?

1. Collaborative teamwork among three parties makes it workable.
2. At this time of year, people often pass away, opening up spots for new patients.
3. Efficient communication and short lines of communication are very effective. Every two months, we schedule a multidisciplinary meeting where we discuss all high-risk patients. This includes input from occupational therapists, physiotherapists, district nurses, geriatricians, pharmacists, home care providers, etc. We discuss what we can do, share tips and tricks, and adjust medications as necessary. We also aim to have the same healthcare providers adhere to a consistent schedule.

C.1.10 Results interview respondent 10

With which parties do you collaborate (e.g., do you work with case managers, general practitioners, transfer bureaus, or elderly care practice nurses)? For patient discharge, we primarily collaborate with home care organizations. For patient intake, we work with general practitioners and general practitioner groups specializing in vulnerable elderly patients over the

age of 75, conducting vulnerability assessments. The goal is to proactively implement preventive measures to keep patients from being admitted to the hospital. This collaboration is expanding, and advanced care planning is an instrument to avoid crisis situations. The challenge is how to exchange data between the hospital, general practitioners, and practice nurses, as it is a complex process. While we can log into their systems, it is challenging in the emergency department where time is limited. Data needs to seamlessly transfer into the system. Transfer documents containing medical and nursing information are sent to the referral point to ensure patients go to the right organization. This often requires manual data entry.

Transfer documents must be available for incoming patients.

What factors come into play when you are unable to provide home care for a discharged patient?

1. Limited availability of care services
2. Rapidly increasing demand due to demographic shifts.
3. Increasing complexity of patients' care needs makes it more challenging to find suitable placements. Patients with dementia or obesity present unique challenges.
4. There is a shortage of dementia care facilities, especially for observation units. Observation placements are scarce, and the reimbursement does not cover the actual costs.
5. While we can usually find a placement for a patient who's been refused once, the issue is with long-term patients. We have weekly meetings for long-term patients, but we do not have the authority to transfer patients directly to home care. Home care providers have to agree to take on the patient, and this can be a challenge.
6. We are improving data collection to identify bottlenecks and capacity issues. We're in discussions with insurance companies to purchase more care slots. We want to ensure that we can meet the increased demand.
7. There are limits for certain types of care, and we're already nearing those limits. Patients have preferences, and shortages can cause delays.

Do you think a more proactive approach by general practitioners and elderly care practice nurses can help address the issue of patients staying at home for too long and being admitted to the emergency department?

1. Reducing hospital admissions.
2. DrechtDoctors' Vulnerable Elderly Program.
3. Coordinating with Azp (Amphia Hospital) to align our approach. Specialists often see patients who may not necessarily need certain treatments. Not all treatments are always necessary.
4. Recently, a VVT (long-term care) organization opened a unit within the hospital for

patients who come to the emergency department but do not need hospital admission. They can recover there for up to 9 days. This somatic unit operates until 11:00 PM daily, offering 24/7 support. It often serves patients with extended stays.

5. The VVT organization demonstrated initiative and used trainees to staff the unit. They established decision trees and protocols for referrals, with contracts in place for reimbursement. The hospital covers any excess costs beyond the ELV (Extramural Treatment Capacity) reimbursement. Discussions are ongoing with health insurers.

6. This approach is financially beneficial, but it involves a significant amount of money per day.

7. Collaboration: When I started, I noticed that collaboration was not working well. During the COVID-19 pandemic, there was more cooperation, but there were still challenges, including a lack of mutual trust and understanding of each other's perspectives. The hospital operates on a short-term basis, with rapid logistics and changes, while elderly care involves long-term relationships with patients and different backgrounds for professionals. Decisions about transferring patients often came from the hospital rather than VVT.

8. We established structured executive-level meetings. There are discussions between managers and frontline staff. Trust has grown over time. We view it more as a joint problem to solve. it is a structural issue about allocating scarce resources to where they're needed most. Relationships have been strengthened, and we have a shared agenda.

9. There have also been significant changes in collaboration within the VVT sector. They now have a unified referral point and a shared waiting list, taking control of the waiting list. This has led to positive outcomes. When an elderly care specialist provides an care assessment , there is less interference from other parties.

10. Patients no longer wait without knowing which department is most appropriate. Once a decision is made, there is no debate. Precise care assessment s are given.

11. The process of making care assessment s has become more consistent, with a better understanding of the sector and the differences between categories.

Have you looked at examples from other regions or institutions on how they manage patient flows between hospitals and VVT?
We have adopted and adapted some practices. Instead of reinventing the wheel, we often learn from other hospitals and regions.

We also collaborate with other hospitals and learn from their experiences. There's a mutual exchange of ideas. There's an initiative in Limburg as well.

I have also personally been involved in improving collaboration in Brabant, particularly in the context of the Amphia Hospital. We've gained a lot of experience from this.

We're also trying to reduce requests for home care. There's a shortage of healthcare workers, and Aafje Rotterdam has a better staff composition than our region. We're working with district

nurses to determine who really needs home care, especially for tasks like putting on compression stockings. We're also looking at how we can prepare patients for their return home. For example, asking about the availability of family caregivers before orthopedic surgery to reduce the need for home care. Patients with planned care will be prioritized for home care.

For admissions, we try to arrange home care in advance. We've reserved capacity for geriatric rehabilitation based on weekly schedules, and we quickly refer patients to these slots.

Some information about data:
We use a chain control system to monitor the capacity across all types of care and allow hospitals to make adjustments. Unfortunately, data is not centralized in one system, making it challenging to view the entire process as a whole. Amphia Hospital is quite advanced in this area, providing a complete overview of the entire chain. We're aiming to reach that level. We also have capacity managers who help us make better decisions. For example, we've redesigned the surgery schedule to distribute surgeries more evenly throughout the week. We used to have a peak in surgeries on Thursdays, followed by lower demand on weekends. Now, we have a more consistent bed occupancy rate. Knowing how many clinical patients we have allows for smoother operations.

C.1.11 Results interview respondent 11

This was a more open interview. The conversation outcomes are shown in this section.

Information of the inflow:

- Diverting from the emergency department. Patients with no admission care assessment remain at home. Patients in the emergency department without an care assessment for admission and who cannot go home now go to nursing homes. Collaboration with VVT (long-term care) institutions: somatic care. No confusion, no addiction issues, no dementia.
- Not adequately monitoring social care assessment s. Also, antibiotics and such for those who are weakened.
- Discharging patients from the emergency department without a clear plan, which is uncountable. Expecting that this group can also be accommodated there.
- A maximum of 9 days there. Then they go home with care if further care is needed.
- Registration during office hours, up to 8 p.m. If that goes well, it extends to weekends and evenings. To see if 24/7 is feasible.
- It would be great if it could also be extended to dementia.
- AZP (Advanced Care Planning): Elderly individuals should be aware of what they want or do not want. More AZP and what they do want. Advanced care planning: when people are well at 73, have diabetes, consider if they want resuscitation or ICU admission. It often remains limited to "What do you want?" In the hospital, in outpatient clinics, gradual decline can be part of AZP. No need to refer.

- Fall prevention is something the hospital has limited influence on; it is something the general practitioner or home care can address.

The medical readiness registration project was poor. No idea how many people here who should not be. Medical readiness registration is now in order, at 80%. Incorrect bed days are very expensive. There has been a lot of urgency, discussions in VVT and among executives. We have so many people, averaging 45, which is more than before. We need to improve patient flow. The emergency department is always full, and the operating rooms are too. it is an old building; we cannot even fit a table, let alone provide the care needed.

People are waiting for home care. If they come in on a Friday and have family care over the weekend, they still might not get home care until Monday. Expectation management. We're going to arrange it for you, maybe you can request it through your general practitioner. In the meantime, you are at home. it is a mindset. We're used to doing it all. Compression stockings, families can do it once. Is home care needed for everything? Reduce the number of requests. Toolbox for self-sufficiency at home. Teach drains or injections ideally. Teach caregivers where it is not possible. Habit, culture, luxury. What we're used to, and what nurses think about it. Walk around the neighborhood, better adaptation together.

- Nurses dare to have conversations, do you think you can handle this?
- The hospital arranges home care, except for terminal care. Simple things should be done yourself. Eye drops and glasses.
- What came out of it: Train patients and caregivers, reduce requests, change the waiting mindset.

More inpatient care at home?
Caregivers who are overwhelmed. They need to realize that things need to change. Care is scarce. Explaining nationally. Many tools are coming to market. Here, we are sorting it out if the hospital staff does not do the intake and teaching. Working together.

Everything we want now does not fit into one pot. Innovation itself does not happen naturally. We hope that health insurers will cover it. it is partially arranged, but for care that has to be provided within 9 days, it is just slightly more than the ELV (Extramural Treatment Capacity). That is where the strength lies. Deteriorating at home is even worse. Agreements have been made among ourselves, but discussions are ongoing with health insurers. Home monitoring gets reimbursement. Old regime. Give us a pot of money.

Some information about Cherry-picking:
Hospitals have an obligation to admit patients. They cannot go home if it is not feasible. VVT can reject patients.

- Should not be allowed to reject patients.
- Even if they help, the reimbursements are very low. Very little is reimbursed for the patients they admit.

- Ceilings: institutions already hit the ceiling in August. We had joint discussions to resolve it.
- Ceilings are not reimbursed.
- Financing is problematic. it is hard to predict how it will go. Something could happen tomorrow. Nursing homes are shifting to WLZ (Long-Term Care Act) from GRZ (Short-Term Care Act) for too many patients. The front end, how likely is it for WLZ?

Expecting good care for everything. Make it more accessible from within, but also many people who think they're entitled to care. But is that really the case?

EHR (Electronic Health Record) post-care module is being set up. Hix. Look at optimizing the process. Department and transfer department point. What we have not implemented is post-care in Hix. it is hard to see the status and what needs to be done. You need to transfer well, and this will work well with it. One referral point, ZorgDomein. ZorgDomein transition requirements. Point or ZorgDomein, new one under development. Not all care providers have a point. The post-care module cannot connect with ZorgDomein. In Hix, nurses have to type in the point manually. The transfer should help. Medical history can also be uploaded immediately. Nurses end up typing everything from Hix into the point three times. Transfer to VVT in the point. Post-care can also create a medical letter. Often, medical handover does not reach VVT, but it goes to the general practitioner. So often, everything goes wrong. Paper handover is given during transfer.

Medication verification: outpatient point. When they're going and when the medication should be ready. Doctors need to be followed up with. Verify, they enter it into the point. We do not have it on time. Equipment? Patients going home go there, then they're sent to the home pharmacy.

Palliative care, hospice, and terminal home care are not being done in-house anymore. Capacity is not sufficient. Sometimes, cooperation is needed.

Increasing the capacity of people. Not good at assessing how it is in VVT. Of course, better pay. How do you handle the workload? Come up with ideas yourself. They also help just as well. How does that work?

Quality groups, nurses determine themes to see if we can do things better. They cannot do it alone.

VMVN is trying to do that, Magnet too. No problem with personnel. How does that happen?

Market dynamics and DBC systematics, financing. The system does not cooperate. The government demands transparency from hospitals, tariffs become known. Total agreement. Negotiation. Health insurers. More transparency. Doctors are paid based on incentives; that is how it works in the system. A lot is not filled by DBC, what should DBC fill. Care we want to receive, 10 minutes for a bad news conversation. Visits do not yield much. DBC

C.1.12 Results interview respondent 12

What is your role exactly in the flow of elderly individuals?
Customers department and care mediation department. Inflow and outflow of long-term care and temporary stays. Referred by the general practitioner with the aim of returning home.

What challenges do you encounter that hinder the flow of elderly individuals? For example, when transferring a patient from the hospital? And what factors actually contribute to the flow? For example, technology or providing hospital care at home, etc.?

1. No suitable bed: they request a specific type of care, and there's no available space for it. There may be another bed with a different label available, but it mixes different patient groups. Allowing the client to come anyway is not beneficial for other clients. Bed availability.
2. Referral help desk: they set up temporary beds for availability.
3. Not closing when it is not necessary; they have to provide care because they receive payment for it.
4. The hospital is very concerned about this: they have issues with each other. Opening a transition department with the hospital, regardless of the type of care (PG/Somatic/ELV/WLZ), so that a bed becomes available in the hospital temporarily. It becomes a challenge to improve the flow.
5. Temporary stays often have vacancies, or during the summer, or a peak at the end of September when there's an enormous demand for care, causing a bottleneck. It helps to have a transition model in place and place clients there temporarily. It does not always have to be full to handle peaks.
6. A lot of contact with the transfer bureau in Delft; we tell them what is available, and they inform us about their availability. it is good for quick coordination.
7. During COVID-19, a department in an empty hospital was set up to create a transition department, which was more expensive than VVT (home care). it is a joint responsibility. It seems easy. How long can they stay, do we start the care there, what wait status do they get?
8. Weekend admissions: they do take them, but under certain conditions. The referral needs to be made before 12 PM on Friday. For 24-hour organizations, there are fewer doctors and caregivers on weekends, which makes admissions different. Highly complex patients do not come on weekends as it would create chaos for care provision. Both the healthcare organization and the hospital need to find solutions. Operating a 24-hour service is costly. On one hand, we need to implement something, and on the other hand, it is not funded enough. And there's a shortage of staff.
9. Staff shortages.

10. More effective collaboration. Central coordination point and possibly merging from four to one service.

11. Care coordination in Roas regions, divided into Roas areas. Ernst Kuipers is working on a care coordination center. it is much broader and includes ambulance care, etc. All regions are already involved in this. Something is supposed to start next year. We say, do not dismantle what is working well and strengthen each other.

12. COVID-19 has led to increased collaboration and necessity. Delft is reasonably straightforward, with one major VVT and one hospital. it is an understandable region. Having more parties at the table has its pros and cons. When there's a bed shortage, everything comes to Pieter (the speaker). If we do not have it, there's little room for maneuver.

13. Smaller VVT is challenging and less efficient. The dynamics are very different, and Argos in Rotterdam is in a more complicated situation regarding clarity

What interventions have you implemented yourselves to improve the flow? For example, collaborations, technology, etc.

1. Very accessible contact.

2. The coordination point is helpful because they have the authority to place patients. Transition departments.

3. Seeking out regional collaborations that are feasible for everyone.

4. The HAP (General Practitioner Support) could make more known what is possible in the region. Raise awareness of what they do together. What options a general practitioner can have. Many doctors do not know it exists; the information does not reach the right people. it is hard to reach small practices. Communication is crucial everywhere to keep the flow going.

5. Two streams: one manages quickly, it is not necessary to wait on the waiting list with caution. Ideally, nobody should be on that list; you do not accumulate waiting time. Go through a case manager and home care. it is allowed.

6. And clients who avoid care, we arrange it ourselves with family and partners. You have to pay your own contribution. We will manage with our network, but if something happens there, it disrupts everything, and crisis admission is intense. So afraid in a place that can be anywhere in the entire region. Uncertainty. Ensure that there's an care assessment and that it indicates where you want to go and think ahead.

7. Waiting for preferences is very common; they were in line and say it is not time yet. It costs them a lot of work. Then they appear on the waiting list or have a conversation. If they refuse again, they are put on another waiting list. To keep waiting for a preferred location, you are placed on a preferred waiting list. Otherwise, they might think the waiting time is one and a half years when it is actually much shorter. In the past six months, they've been working hard to clean up the waiting list.

8. Care avoiders will always be there. Then they're in the system, and a lot changes in the situation. People have to stay at home longer, so crises occur earlier. Priority should be given to people who have managed things on time. They suffer because of that.

Government's Role?
They have given clear frameworks, which are clear in that regard. We know when to do what. It is more about supporting care offices so that they can use care offices that have a mediation department. They do not have to solve everything themselves; make them a delegate. They have broader information about other organizations and can apply pressure, involve care offices where necessary.

Acute care, Ernst Kuipers is providing guidance, they are given space, and things are imposed. it is a bit rigid, and it is unclear where it is headed. The government is getting involved, which can be a push in the right direction or a loss of control. Ensure that you can still provide customization. Don not make it uniform.

Challenges with CAO (Collective Labor Agreement) increases are great. But it is a challenge for organizations to finance it. Money is not being added. The support for healthcare is not good. it is not wrong for them to provide direction, but leave regional freedom.

Information told by interviewee:
For temporary stay applications, referrals come from general practitioners via ZorgDomein or via the hospital's POINT system. They are registered under specific care products. ELV (Low Complexity, High Complexity) or GRZ (Short-Term Care). Trajectories are fixed. Or they come in by phone. Triage is conducted: they assess whether the patient is suitable for the applied care product. For GRZ, a doctor must also perform triage. They provide the doctor with their assessment, and the doctor makes the final decision. A client can be accepted or rejected. it is coordinated with the general practitioner or the hospital, and then the client is scheduled for admission a few days later. They cannot handle too many admissions, as it would create disruption on the ward. Every week, there's a multidisciplinary meeting where care paths are discussed. Care mediation comes into play when patients are ready to return home. If they cannot go home and need an care assessment , they intervene. They coordinate with general practitioners and hospitals in the region for GRZ. Reinier de Graaf is the main supplier. They also receive applications from Zoetermeer and The Hague.

Care mediation has planners responsible for scheduling admissions and arranging outflows to maintain an overview. For WLZ (Long-Term Care Act), when a client is referred by a general practitioner or the hospital, they indicate their preferences and receive an allocation of the care assessment . The dossier holder is responsible for placing the client. When it becomes a crisis, they take over. If a client's record is under care mediation, they take over. The hospital is responsible for the outflow. If a client goes to another organization, that organization is still the dossier holder.

For preference waiting, they wait for a specific location. Waiting for precaution, in view, no admission wish. Actively place them while waiting for a preferred location where the wait is

long, where something has changed in the home situation, or there's a pending crisis at home, within three months of placement. The right to a preferred location lapses. Then they can be placed elsewhere. Urgent placements need to move from hospitals, they have a higher priority than being at home. Or temporary departments within VVT. This can block the entire chain. Urgent placements have a waiting status, there's also a waiting list for them. The care allocation is a huge package, with new statuses since 2021.

When clients come and care assessment s are assigned, and they are on waiting lists, they sometimes have to wait 1-2 years. They keep in touch with clients, inquire about the home situation, whether there have been any changes, whether there's still a wish for admission, and if other locations have become available. Regular contact with clients.

If clients have an encounter center or a home care case manager, they coordinate with healthcare providers. If it is no longer possible at home, they also contact them to adjust the status, expedite the process. Close communication with case managers and home care to expedite.

They also have a coordination point: WSD. All applications for urgent beds, ELV crisis beds are made there, and they have the authority to place some VVT clients directly without consultation. They also coordinate with home care. If a general practitioner needs home care, they try to arrange it, but if it does not work out, they report it to WSD. The coordination point: the general practitioner must first try for an urgent bed, increase home care, or provide other support. Do we need an urgent bed now? Involuntary treatment order (IBS) also goes through the coordination point. The general practitioner reports it, and they have information on bed capacity.

C.1.13 Results interview respondent 13

What is the role of a health insurer in the flow of elderly individuals, both admission to the hospital and discharge to nursing homes/home care?
Two-fold: 1) Duty of care: ensuring accessible care so that patients can receive the appropriate care. Flow issues, such as patients staying in the wrong beds for longer, can lead to fewer surgeries and other admissions. It hinders both at the front end and at the locations where patients are transferred. Do we have enough beds in ELV (Elderly and Rehabilitation) and enough beds in WLZ (Long-Term Care Act)? Capacity needs to be sufficient. 2) Ensuring not only accessibility but also affordable care. When flow is not optimal, affordability decreases. How can we make care as appropriate as possible and prevent unnecessary healthcare costs? If care is needed, it should be as efficient as possible.

What are the ceilings aimed at, and what do you do if the ceilings are reached before the end of the year?
With hospitals, they have ceiling agreements, a budget, and then they need to arrange care. Estimate patient populations. We know that if we do not manage the total budget, we will always need more money. Healthcare is becoming more expensive. On one hand, healthcare costs are increasing, while on the other hand, there is a budget to work more efficiently or not to provide care that does not add value. The initial reaction is often to increase bed capacity, but that is usually not a solution due to a shortage of personnel to provide care. The funding pool is

not insufficient; it is about reorganizing it differently.

There are eleven health insurance regions, and each health insurer determines the ceilings in their region. What is really different is that in the Health Insurance Act (ZVW), they are financially responsible, whereas in WLZ (Long-Term Care Act), the Ministry of Health, Welfare, and Sport (VWS) is responsible. They feel just as responsible, but because they're not financially responsible, the dynamics are different. it is an advantage for nursing homes as they feel less commercial, but it is a disadvantage for the entire Netherlands because there is less entrepreneurship and it tends towards the idea that the government must provide extra funding as a last resort. There are many more benefits in ZVW, with a greater focus on money and results.

If there's an initiative from hospitals and VVT (Elderly and Long-Term Care) institutions, for example, like opening a bridging department in Dordrecht, are you willing to invest in such initiatives? If yes, why, and what are the requirements?
What they see in Amsterdam is a blueprint that could be rolled out in more places, an intermediate form. There are complexities to consider, such as whether it actually delivers results. If you are not smart enough, there's a risk of incurring extra healthcare costs. For example, in GRZ (Geriatric Rehabilitation): if you send people temporarily to a nursing home, it is not cheap either. They're looking at how to make it attractive but not too large, as it could become too big. So, they are definitely working on it.

For 10% of GRZ beds used for elective orthopedic surgeries, they've observed that some hospitals no longer send patients to nursing homes but home with good preparation and assistance. VVT and hospitals are working together to understand why there's such a big difference, and perhaps it is no longer necessary. A significant amount of GRZ capacity can be made available, providing a solution to another problem, which improves the flow.

They are also examining GZSP (Medical Care for Specific Patient Groups): basic insurance. This means that nursing home doctors or geriatricians can declare consultations and treatment for people in home situations who are not yet in WLZ. When it comes to improving the flow, because they are not well-documented and not anticipated, they end up in the hospital when they break a hip and deteriorate rapidly. The solution is to collaborate and create a care path between hospitals and VVT to quickly assess vulnerability and prevent hospitalization. They encourage GPs and nursing homes to have the opportunity to identify vulnerable elderly people and prevent hospitalization. This is still a challenge to scale up. A societal issue is that patients and caregivers take control of their own situations, and that is a much broader societal theme.

Making real choices about what you no longer want to do. If you are 85, you cannot always have everything fixed.

There are also professorial trajectories from hospitals and GPs showing that doing nothing for the elderly population over 80, including no options, is also a good choice. The quality of life does not necessarily decline.

Orthopedic consultants, for instance, have made changes. Previously, everyone with a broken hip was operated on in the ER. Now, geriatricians come to the ER, and 15

Why is not there a chain financing system that optimizes the costs of the patient's journey from hospital admission to the final destination?
Funding is structured differently. Chain financing is also complex and matrixed. Some are in the chain, and others are not. Single financing is sufficient in some cases, but not in others. For example, the Emergency Department (ED) uses care bundles. They have conducted research into value-based healthcare, but the vision is very complex, and it will take a lot of time to implement it fully.

They are looking for ways to optimize smartly and are working on national initiatives. In addition to financing in line with objectives, there's also the option of working with new knees and hips to see if the hospital can make fewer referrals. The benefits do not accrue to the hospital but to the nursing home. It requires agreements or rewards to the hospital. Sometimes, changing financing is not necessary; changing incentives is enough.

How can a health insurer prevent cherry-picking at VVT institutions?
The care mediation function helps to place patients. They make agreements: you get 100 million, but we also base the price per procedure. The WLZ daily rate is 300 euros, and often they negotiate based on efficiency. They make calculations for a broad target group and focus on the right mix rather than a fixed 300, so they might receive 320.

They establish strategies and profile choices with institutions beforehand to determine what kind of care they want to provide, and it is the health insurer's task to see if the profile fits the region. Agreements are made based on multi-year perspectives. Complex cases are known to them, but they always remain challenging. Special individuals or those with complex issues are difficult, and that is why coordination centers are increasingly used. They provide more regional visibility and help solve issues collaboratively. it is about bringing providers together when it is an extremely heavy burden, how can they jointly tackle it. By doing this, they find solutions faster next time. Nobody has a mandate; it is about the capacity of available beds, where space is available, and where specializations exist. it is a single point where you can inquire. Coordination centers are used more by the primary care sector than by hospitals.

What challenges do you face as a health insurer that hinder the flow of the elderly?
Having data and figures about the healthcare chain and the costs within that chain will be helpful. Orthopedics is an area where patients stay briefly. Sometimes they only have 2 days in the hospital, which is efficient for the hospital. But if they then spend another 7 days in GRZ, it is not just 2 days; it is 9 days. Data is not available, and figures are needed.

Alignment and control across the chain are crucial. They have data but want to engage with parties at hospitals to make it transparent. There has been an alignment process from IZA (Healthcare Insurance for Government and Education) that looks at the entire chain, including WMO (Social Support Act) and WLZ, as a total package, to understand the dynamics.

Shortage of personnel creates a unique dynamic. It leads to choices that would not be made otherwise, such as reducing care. On the other hand, the workload also leaves little time for improvement and working out solutions. Complex issues are not their domain. They are discussing

how they can contribute and stimulate institution recruitment and retention to address personnel shortages. There's a beautiful development in WLZ where they see that they need to organize care differently, shifting from a medical perspective to a focus on well-being. Different types of staff with different backgrounds are needed, focusing more on well-being than on healthcare.

The solution is not necessarily more beds but doing things differently.

WLZ staff recruitment is high, which is a fantastic development. Unskilled and caring staff provide a lot of perspective. It also helps healthcare professionals who are under immense pressure to have less workload.

Fragmentation of healthcare insurers and healthcare providers?
For the fragmentation of healthcare providers in home care, they have developed policies. Many small providers have emerged, which hinders discharge to home. Their policy encourages collaboration and the promotion of larger organizations. In ELV, GRZ, and VVT, they see financial challenges coming, often with larger institutions. The fragmentation is not too severe yet, and they see a lot of collaborations to remain financially healthy. Fragmentation of health insurers: competing and working hard to be efficient but not as hard when there's only one. The disadvantage is that an institution has to have the same conversation and negotiation four times. They have organized the regional IZA regions into 11 regions and take the lead in organizing cooperation. This allows them to have someone in the lead per region, avoiding the need to deal with multiple parties.

What factors can you identify that promote the flow that health insurers can implement?
Having data can help identify where the bottlenecks lie in the patient flow. Treating a broken hip is the easiest and least needed. These patients are generally more comfortable.

Immigrants: They have taken courses on end-of-life care in Islam, which can prevent many problems. Having a good conversation can prevent issues. In Islam, certain things are not allowed, and the focus is on treatment, which is going to happen, but adapting to these rules, they can provide pain relief. They look at how to support families.

COVID: Managing COVID situations in immigrant communities is challenging. Trying to address it from their perspective is essential.

C.1.14 Results interview respondent 14

Here's the translation of the provided text into English:

What challenges do you encounter in your daily practice that hinder the flow of elderly individuals? (This could include situations where elderly individuals are hospitalized when it could have been prevented, or when an elderly individual is discharged from the hospital, and the aftercare is inadequate, leading to extended hospital stays.)

1. Treatment preferences and boundaries of the elderly are not well-documented or known by

everyone.

2. ICT issues due to each having their own system and privacy concerns.

3. Medication review is not conducted systematically everywhere, and pharmacies can play a role in this. This can lead to hospitalizations due to incorrect medication intake or interactions.

4. Challenges related to time and funding. In 2006, the HARM (Hospital Admissions Related to Medication) study showed that incorrect medication usage often leads to additional hospital admissions. It revealed that 2.4% of hospitalizations are medication-related, and 46% of these are potentially avoidable. Subsequent research on medication safety indicates that medication-related hospitalizations occur four times more frequently in individuals aged 65 and older than in those between 18 and 65. The flow is also hindered because there are not enough ELV (Elderly and Rehabilitation) beds and rehabilitation spaces available. Sometimes patients are sent through the Emergency Department (SEH).

5. Inadequate post-care due to insufficient availability of rehabilitation spots or home care, or having no caregivers, leads to longer hospital stays. Conversely, someone may be discharged, but the general practitioner is notified too late. For example, on a Friday afternoon, it can be very challenging to arrange medication or handover for the weekend. This is not convenient due to the busy practice. Or an elderly individual is at home and initially seems quite independent. It occasionally happens that a caregiver picks up the elderly person from the hospital, and an hour later, it turns out not to be going well. The expectations of the hospital and the caregiver are not aligned.

6. General practitioners complain that the Emergency Department (ED) is closed in the weekends, nights, and evenings due to a shortage of beds. Unfortunately, the work of general practitioners never stops, and they need a lot of time and calls to transfer someone to another hospital. This is a waste of time because they could be seeing many people at the general practitioner's office during this time. This leads to increased waiting times at the general practitioner's office.

What factors contribute to the flow of elderly individuals (limiting/preventing hospital admissions and increasing discharges)?
See above for the challenges.

What interventions do you undertake yourselves to promote the flow?
We conduct a TIM (Time-Is-Muscle) when things go wrong so that we can learn from it. We have MDOs (Multidisciplinary Meetings) for coordination. We have identified vulnerable individuals and their caregivers and understand their needs and treatment preferences.

Have you ever experienced situations where the patient/family could have taken preventive measures to avoid hospitalization or to be discharged from the hospital earlier (e.g., by applying for a WLZ care assessment)?
We try to address this through MDOs, which also involve the relevant district nurse and case

manager.

Which parties are involved in the flow of elderly individuals?
ELV coordination center, crisis center, general practitioner's office, Geriant (specialist in elderly medicine), case managers, home care, informal caregivers, (geriatric) physiotherapists, dietitians, speech therapists, WMO (Social Support Act), volunteers in healthcare and welfare, ambulance services, Safe at Home, police.

How is the collaboration between your team and the hospital/nursing home/home care?
The collaboration with home care is very close; the collaboration with the hospital is now improving, but there is room for improvement in the nursing home sector. An ICT system around the patient where everyone can see what each other is doing would be beneficial.

C.2 Informed consents

The informed consents are included in a separate file for privacy reasons. Please refer to the 'Informed Consent' file.

D Case study Approach

This Appendix shows the discussion of the framework of case studies, according to the Yin approach.

The first step for a case-study methodology is the research design, which can be defined as a "logical plan for getting from here to there" (Yin, 2009). Here implicates the initial set of questions, and there stands for the conclusions (answers to these questions). In the process of getting from here to there, multiple steps are involved.

Before designing a case study, the study question must be made clear. For this thesis, the case study is needed to answer the following sub-questions: What elements, relationships and interactions constitute the Dutch transfer-care system? and 'What potential obstacles or enhancers influence the Dutch transfer-care system's performance?'

Taking this into consideration, now the design phase of the case study can be discussed. To systematically use the case study approach, three main steps provide a helpful framework for the minimal design work (Yin, 2009). This framework exists of:

1. Defining a case
2. Selecting one of the four types of case study designs
3. Using theory in design work

Firstly, the case will be defined. The definition of a case is a bounded entity (organisation, person etc.) with a boundary between the context and case itself (Yin, 2009). The case will form the unit of analysis. For this thesis, the case study will be about a common/everyday phenomenon. Namely, patients will form the unit of cases and the hospital department, involved actors, institutional framework, home and other care organisations will form the context.

The next step is to determine if the case study should include one or multiple cases, which is calls a single- or multiple-case study. In addition, the case study can be holistic (single-unit of analysis) or embedded (multiple units of analysis). This study will use an embedded holistic case study design. It is an holistic study, because the geriatric and nursing department will only be studied within one hospital. Additionally, it is an embedded study, because the transfer department context of four hospitals will be studied, instead of just one hospital.

The last step involved, decides whether or not to use theory to help finish the essential methodological steps (developing research questions, selecting case study, identifying relevant date to be collected). In this case study, no theories will be used, because the purpose is about obtaining understanding of the transfer care process (exploratory study). In addition, often study propositions will be made. Only, case studies studies with the goal of exploration have

the legitimate reason to not have any propositions. Since this case study is exploratory, no propositions will be made.

E Data of case studies

This Appendix shows a summary of the key findings of the diary notes of the case studies.

E.1 Hospital 1: Dordrecht

Much of the information from this case study was obtained through interviews. These are discussed in Appendix C.1.

However key findings of diary notes will be presented in this section.

Patients should cultivate a broader social network to provide the option of support from family and neighbors.Without a support network, elderly individuals may have fewer opportunities to return home.

Frequent interruptions to the work process of nurses often lead to errors and decreased efficiency.

Complex issues make the work more enjoyable. However, having many medically stable patients in the hospital reduces the job satisfaction of nurses and doctors, leading to staff turnover.

If the discharge date changes, the situation can become chaotic

Multi-faceted issues, psychological disorders, dementia-related issues and alcohol/drug addiction disorders pose a significant challenge to relocate, because they are often rejected.

Incomplete patient histories are common, resulting in essential information missing for a proper referral.

High-tech solutions, such as POINT, can promote speed of transfer processes and reduce costs, because it facilitates faster processing of requests and applications compared to using pen and paper.

Acceptance by the family is a major factor in determining whether the family can adjust to the idea of someone ending up in a nursing home

Skills and education informal caregivers: Informal caregivers should receive more training in providing specific care needed for their family member.

General practitioners, case managers and family must identify vulnerable elderly individuals to prevent hospitalization. They need to proactively address the situation when an elderly individual's condition deteriorates to prevent escalation.

Instructing the patient superficially about the necessary home care can prevent readmission or emergency room visits.

Self-management is important.

District nursing joins hospital teams to better understand each other's roles and perspectives.

Collaboration needs to be enhanced.

Not everyone uses the same IT system, which hampers interoperability. There are two major IT systems which do not work optimally together, leading to a lot of redundant data entry and unwanted risk. Often, you have to manually re-enter parts of medical records, which can lead to delays.

Often, discharge is awaited for too long before initiating the necessary processes. Initiating processes prior to discharge can facilitate the patient's transition to another care setting.

Narrow thinking based on categories, labels and care assessments. Patients may have to wait for the right labeled bed, even if care can be provided on a differently labeled bed. In some cases, bed labeling causes financial complications, because when space is available it can still lack funding. Another situation that causes delay in patient flow, is when disease progression move patients to a different funding category, causing delays. Home care organizations can reject individuals based on financial considerations and labeling Lastly, some patients do not fit into a predefined category for funding, it also causes delays in the discharge process.

Lack of a clear problem owner: No one feels responsible for optimizing patient flow

Staff is underpaid and the job becomes less attractive.

When patients stay in the hospital for too long and are medically ready for discharge, they are often continued to be treated, even when it's not necessary. This leads to additional costs.

Lack of authority when a patient is frequently refused and falls into the category of long-stay patients. Referral assistance/nobody has the authority to relocate a patient. The absence of a mandate can disrupt progress

The urgency of the problem can be lost. The issue should be clearly communicated to every healthcare provider and patient.

Doctors and nurses don't always understand what is required for transfer nurses to arrange proper discharges. Often, they need to make calls to obtain necessary information.

E.2 Hospital 2: Deventer

This section provides the notes of Deventer case study.

Medical record exchange between general practitioners and hospitals is very poor. General practitioner's (GP) use systems that do not connect with the systems hospitals and nursing homes use.

Home care or nursing home care should be able to exchange staff when the situation improves.

Providing necessary care instead of unnecessary care can reduce healthcare demand.

High-tech solutions, such as POINT, can promote speed of transfer processes and reduce costs, because it facilitates faster processing of requests and applications compared to using pen and paper.

Office hours: Weekend admissions are rarely accommodated in nursing homes and home care and referral points are only open on weekdays. Patients experience delays in receiving home care. If they are ready to leave on a Friday, they end up staying in the hospital over the weekend due to the lack of transfers during weekends.

Planned admissions: For planned admissions, a risk assessment can be conducted to prepare for discharge, because it is easier to predict what might be needed. Advanced Care Planning for planned admissions and common scenarios: For instance, in cases of a broken hip, we assume a certain pattern of progression. Thorough preparation for planned care can result in a patient going home instead of to a nursing home.

General practitioners, case managers and family must identify vulnerable elderly individuals to prevent hospitalization.

Narrow thinking based on categories, labels and care assessments.

Preventing Admissions: Numerous strategies for prevention need to be enacted, with a specific focus on mitigating falls, modifying living spaces, conducting dementia screenings and taking appropriate actions, facilitating relocations, documenting individual preferences, and seeking care assessments in advance of admissions when necessary

Shortage and capacity: There is a shortage of personnel, available doctors, nursing home/home care, hospices and resources (for home). This leads for example to increasing waiting lists for, among other things, nursing homes, to burnouts among caregivers, a situation in which care cannot be provided at home.

Informal caregivers becoming unable to provide care at home is a significant factor.

Assistive devices can reduce the need for home care services and can enable certain hospital care to be provided at the patient's home.

The transfer department assists general practitioners with home care and other follow-up care to alleviate their workload.

Conversely, when someone is discharged, the general practitioner is informed too late. Sometimes, transfer of information is completely missing during discharge. Lastly, there can be a lack of proper handover during admission

Multi-faceted issues, psychological disorders, dementia-related issues and alcohol/drug addiction disorders pose a significant challenge to relocate, because they are often rejected.

Expectation management and informing current generations about the changing healthcare landscape. Shifting towards a more patient and caregiver-centered approach. Expectation management is crucial because currently, families and patients often believe they can quickly

secure a spot in a nursing home, while in reality, this may not be the case. In addition, patients should be aware of the fact that home care cannot provide all help they want to get. It is necessary to communicate to families and patients that there is a significant reliance on informal care-giving and self-management. The mindset of elderly individuals and their families must change towards taking more self-responsibility

Regional multidisciplinary meetings are utilized to enhance coordination through improved communication, because care paths can be discussed to provide assistance. It can lead to improvement in patient flow.

E.3 Amstelland hospital

This section provides main insights of the Amstelland case study.

Patients are frequently unable to be relocated because they are refused. Psychiatric and dementia patients are the most challenging to relocate, while rehabilitation patients are more easily placed.

CIZ often rejects indications.

Patients can end up staying in the hospital longer than necessary if assistive devices are not delivered on time. The minimum ordering time is one day, so there needs to be anticipation regarding which assistive devices will be needed.

A lot of information has been gathered about various indications and protocols. Managing expectations is crucial because families and patients should not expect the hospital to handle everything. If a patient refuses, a court order is required, leading to additional delays.

Placements must be accepted. Insights were provided on why patients are declined by aftercare facilities. The care ceiling also contributes to the need for patient refusals. An explanation of financial flows clarifies the interests of various parties.

Evaluating whether continued care is still desirable is essential for reducing the demand for care. Timely application for indications is necessary to reduce delays. Sometimes, there is a shortage of doctors and transfer nurses, causing delays.

Expectation management and informing current generations about the changing healthcare landscape. Shifting towards a more patient and caregiver-centered approach. Expectation management is crucial because currently, families and patients often believe they can quickly secure a spot in a nursing home, while in reality, this may not be the case. In addition, patients should be aware of the fact that home care cannot provide all help they want to get. It is necessary to communicate to families and patients that there is a significant reliance on informal care-giving and self-management. The mindset of elderly individuals and their families must change towards taking more self-responsibility.

Shortage of personnel can form obstacles.

Advanced care directives can lead to less care demand. Discussions about when treatment is no

longer feasible and desirable should start at the general practitioners clinic or geriatric outpatient clinic.

Documentation is done based on 4 axes, making it clear for all healthcare providers, thereby reducing ambiguities and preventing errors. The four axes are: 1) somatic; 2) cognitive; 3) functional; and 4) social.

In the Amstelveen hospital, it is common for the CIZ to frequently reject the care assessment application, leading to the patient not being discharged, and alternative methods have to be sought to relocate the patient. This can occur due to incomplete completion of care assessments or incorrect patient assessments.

If a suitable spot becomes available, patients or families should not wait for another option elsewhere. This can help improve the flow.

If a patient refuses care, a judicial authorization is required, which causes significant delays in the discharge process.

In some regions, there are insufficient care providers, and in others, fragmentation is extensive, hindering patient relocation.

Budget cap: Health insurers have a budget limit, and when this limit is reached, it can hinder the process of transferring patients. If the healthcare institution engages in discussions with the health insurer, the care can still be reimbursed in some cases, which improves the flow of patients. In addition, budget cap are needed to stimulate efficiency and innovation.

There is a lack of financial incentive to optimize the flow throughout the entire chain

If the patient refuses on their own, you need to obtain an authorization, which leads to a significant delay.

E.4 Reinier de Graaf hospital in Delft

This section presents the notes taken at the hospital in Delft.

The patient list is initiated with a focus on verifying their medical readiness and determining if a family meeting needs to be scheduled. Often, Wlz (Long-Term Care Act) indications are necessary, but there are frequently waiting lists associated with these. These can be requested and checked. Nurses can also contact the department to see if the meeting has already taken place. It usually takes an average of 48 hours for the CIZ (Center for Indication in Healthcare) to approve or reject an indication.

In cases where a patient cannot be transferred to a contracted aftercare facility with their healthcare insurer, the insurer can mediate, and in some instances, the care may still be covered.

Patients who leave the hospital prematurely tend to remain in the hospital for an extended period because they require complex aftercare and cannot be placed elsewhere. These patients are often declined. Additionally, asylum seekers, individuals with addiction issues, and patients

with dementia are challenging to relocate. They are refused and continue to stay in the hospital without a medical indication.

Home care agencies are frequently limited in their capacity. Unplanned care is more challenging to coordinate, leading to longer hospital stays.

Bed coordination is currently managed through the WSD. The national GP point, however, is not involved. Patients' worklists are created around 9 AM for discussion among transfer nurses. Additionally, quicker implementation of IBS (Social Support Act) is required, along with execution requests.

Patients with planned care tend to have shorter hospital stays compared to patients with unplanned care, as preparations can be made in advance and unexpected situations are more likely to be avoided.

Furthermore, practical solutions could be implemented, such as providing an extra catheter to patients to avoid unnecessary trips to the Emergency Department for replacement. This service can also be offered by home care providers.

Refugees, homeless patients and immigrants are more challenging to place because they often lack a suitable home situation, appropriate insurance and social network.

Often, once a patient is medically ready for discharge, they must wait for necessary medical aids, causing undue delays.

Moreover, there is a visibility pilot, where an hour is spent on the nursing ward every day. This helps streamline communication. Additionally, discharge can be managed by a transfer nurse who can provide accurate information.

Internally, doctors need to input data into POINT and follow the correct process sequence to prevent delays. Internal processes can be expedited, and doctors must accurately assess the required aftercare and set provisional discharge dates.

HIX is an internal hospital system, while POINT is the ICT system used for transfers. Unfortunately, these two systems do not work well together.

Data is tracked to identify patients in the hospital who should not be there, shedding light on the inappropriate bed usage issue.

Rotterdam uses a regional center for patient relocation, while Delft Hospital manages this process internally.

Patients cannot negotiate; they must accept the placement offered. Care mediators help facilitate patient flow. Sometimes, capacity is not up-to-date and easily accessible. Medical aids must be delivered promptly to reduce hospital admissions.

Efforts should be made to deliver care at home whenever possible, and self-management should be encouraged. Medical handovers should be complete and timely.

The hospital in Delft offers transitional care beds to expedite patient discharge. Insurance companies often respond very slowly.

E-Health technologies can help reduce admissions. When the discharge date changes, the transfer department must repeat various tasks, which can cause delays.

In cases where a patient does not fit into one of the standard care indication categories, they may be relocated later than desired. Cognitive indications are easier to place. More flexibility should be allowed to provide care that aligns with different categories for patients originally categorized differently.

Involving families can help reduce tensions and determine possibilities and limitations. LEAN methodologies can be utilized to optimize internal processes.

Collaboration between healthcare providers and patients should be encouraged. In Delft, there is trans-societal work and collaboration with the municipality. Establishing good communication with the patient's GP is crucial for effective handovers.

Capacity insight in POINT is not always up to date, which can be inconvenient as it does not show where there is availability and where there is not.

F Visualisations qualitative System Dynamics models

This chapter presents magnified versions of the causal loop diagrams. There will be no additional information.

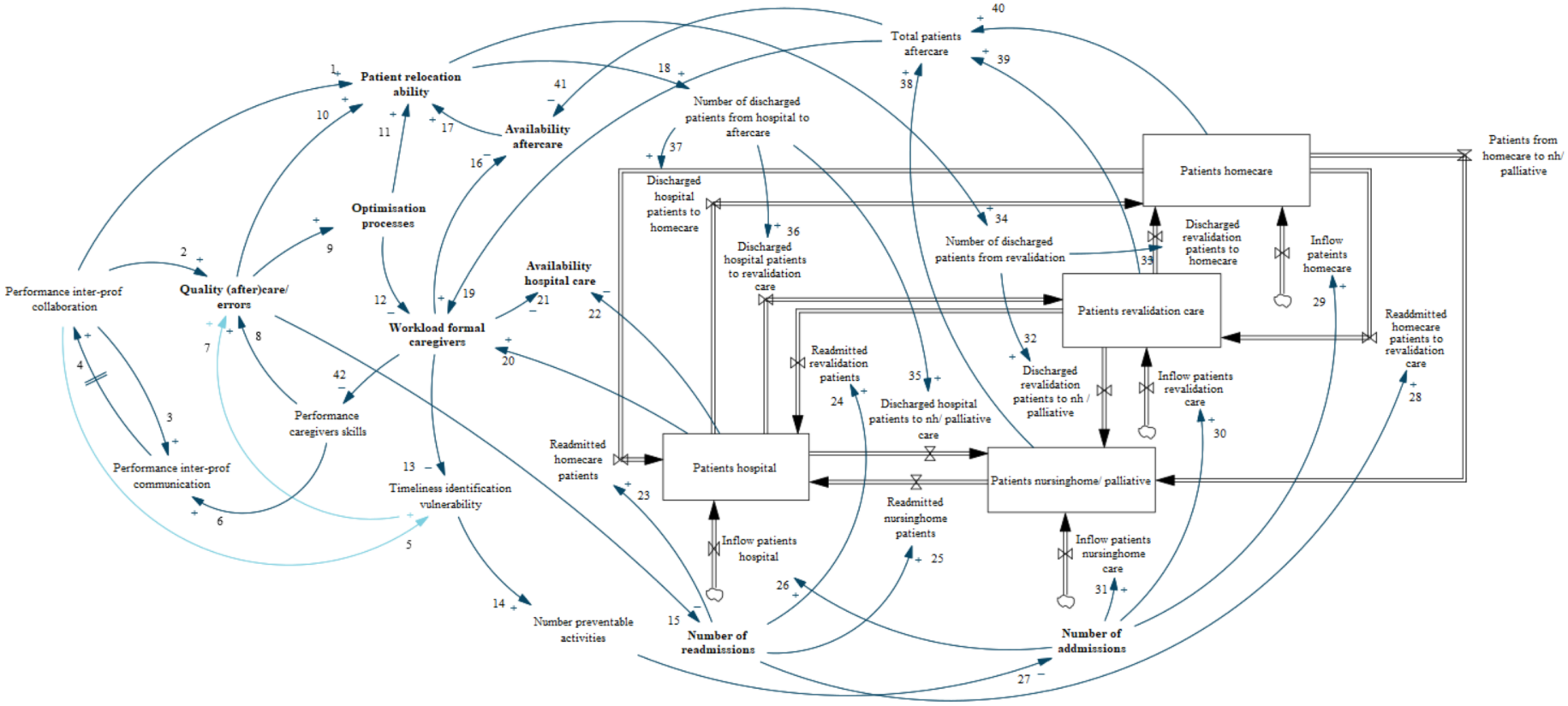

Figure F.1: Causal Loop Diagram overview transfer-care system

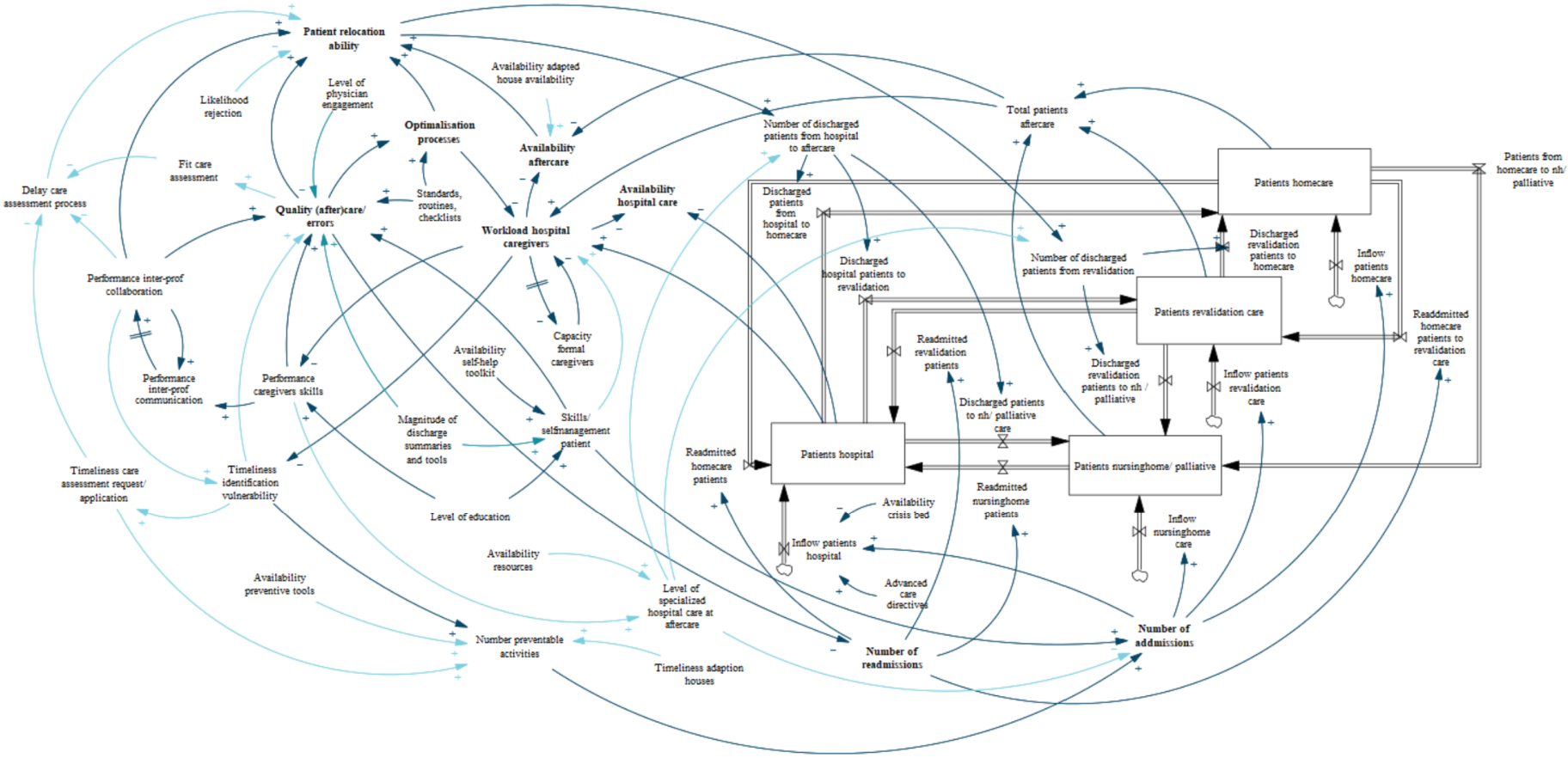

Figure F.2: Causal Loop Diagram medical sub-model

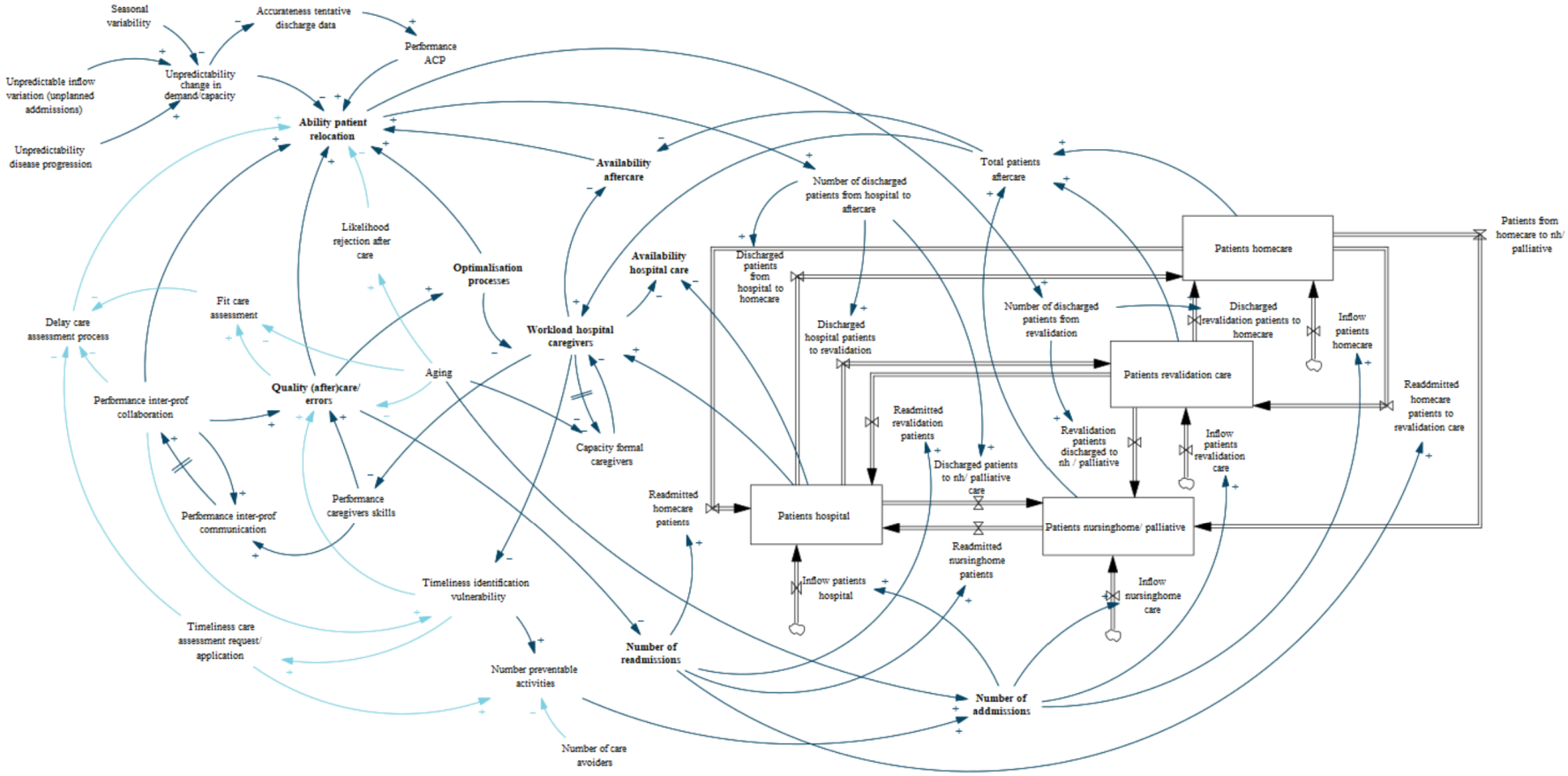

Figure F.3: Causal Loop Diagram demand-related sub-model

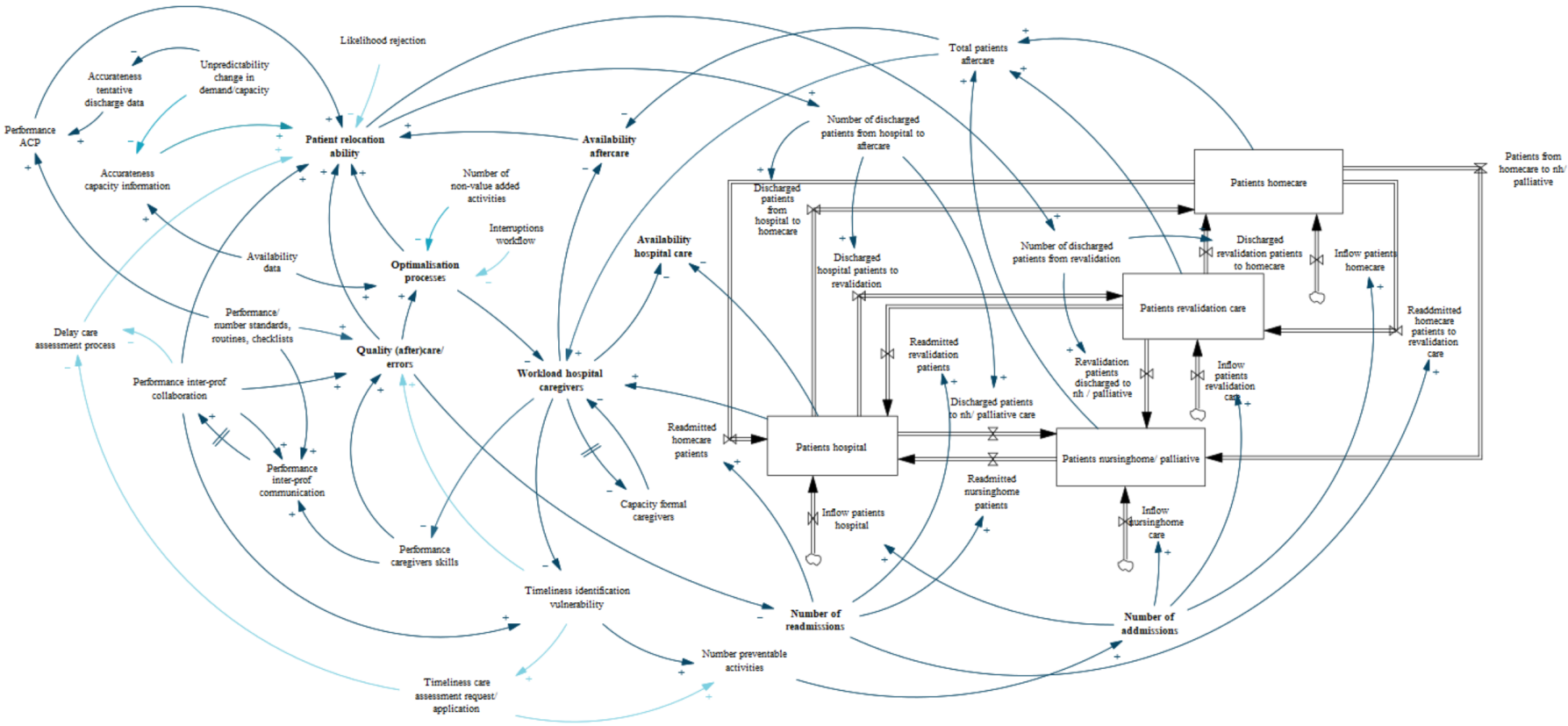

Figure F.4: Causal Loop Diagram logistics and process sub-model

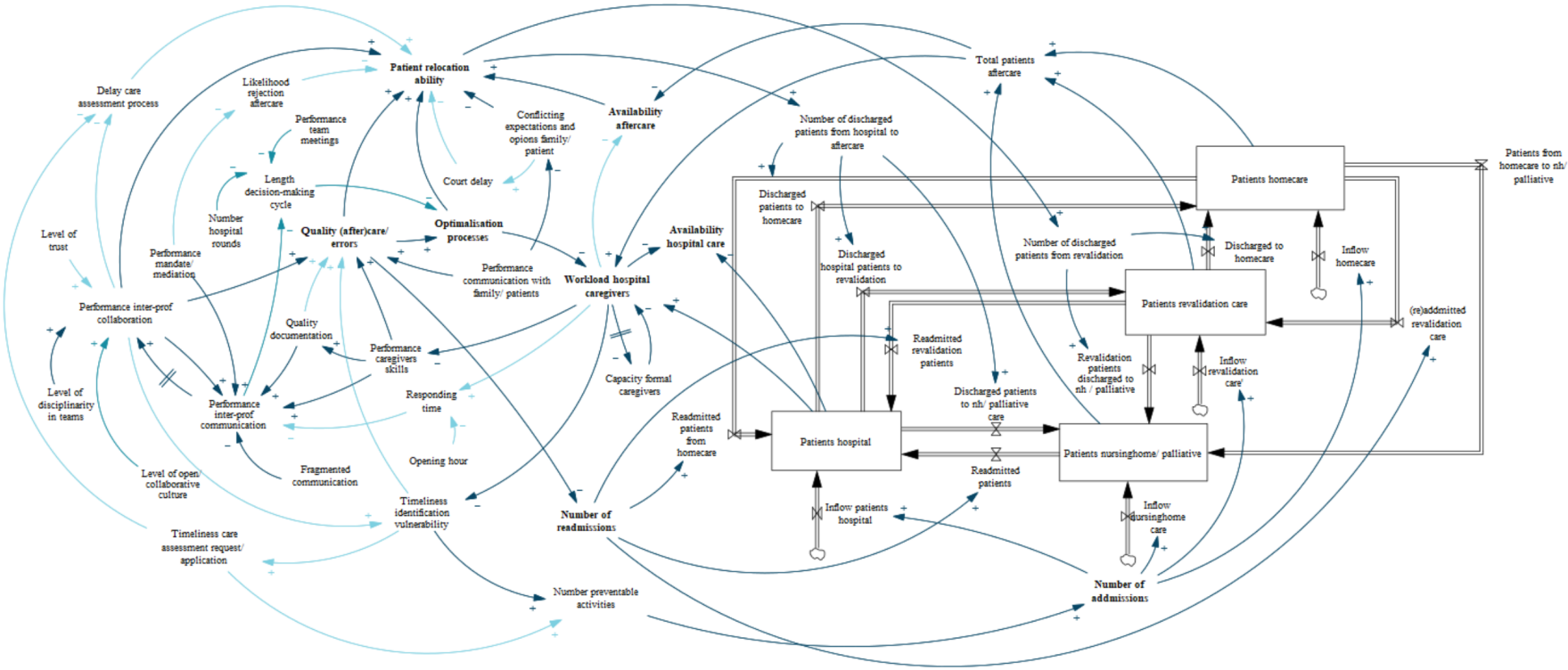

Figure F.5: Causal Loop Diagram organizational sub-model

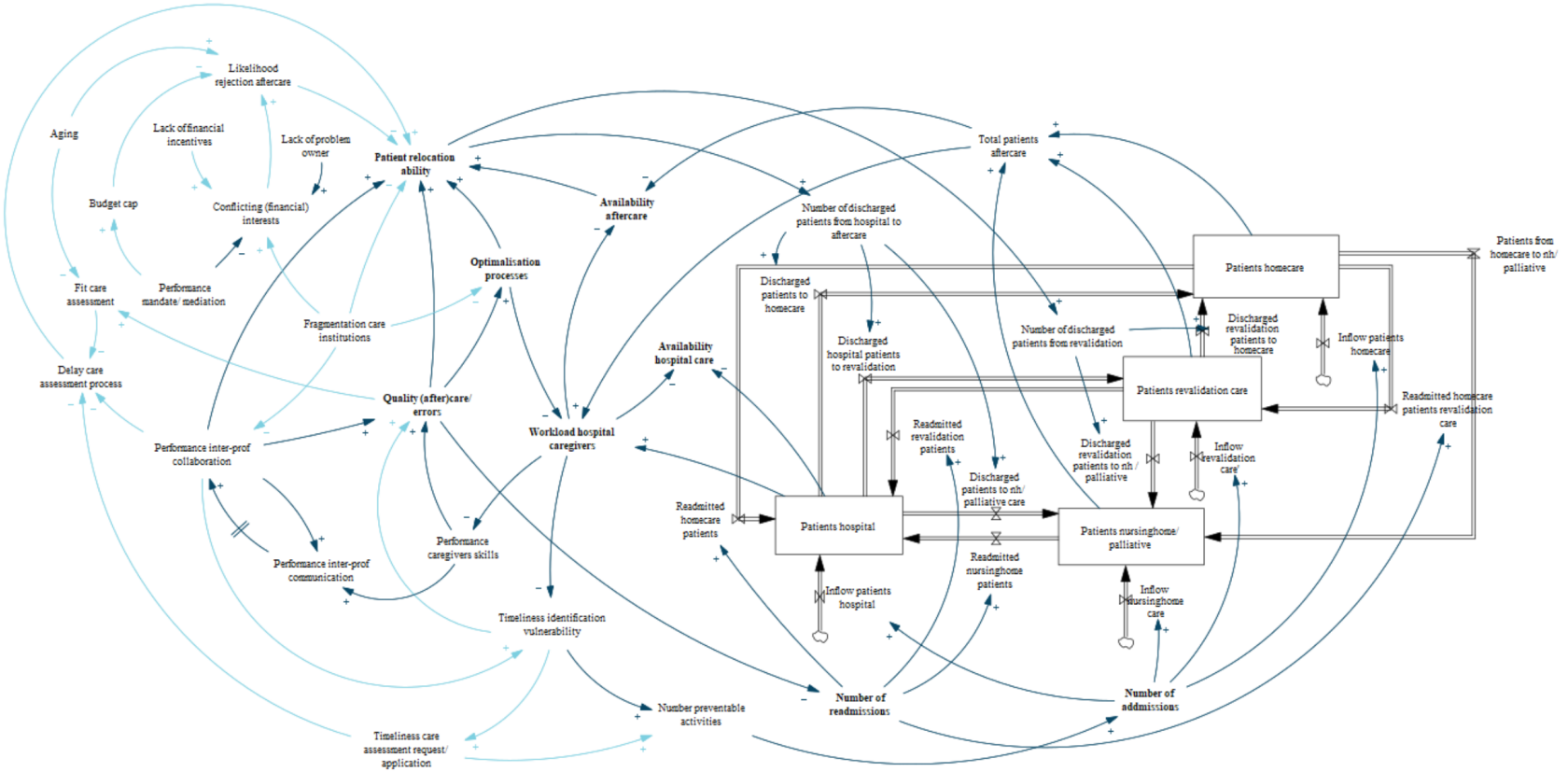

Figure F.6: Causal Loop Diagram financial sub-model

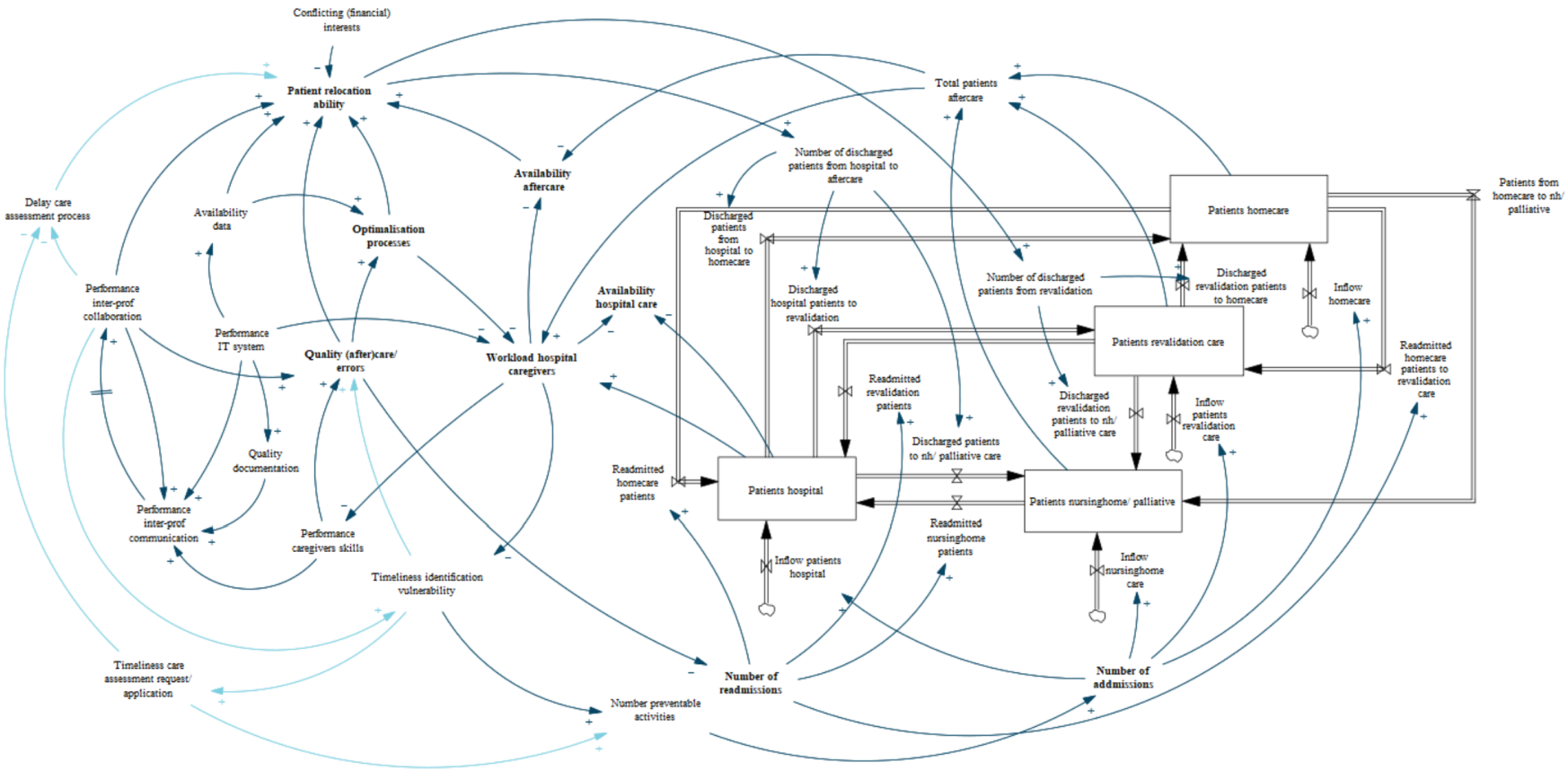

Figure F.7: Causal Loop Diagram ICT sub-model