NTNU

Norwegian University of
Science and Technology

# Institutionalizing Lean in a Norwegian Public Hospital

The same-day surgery process at SI Lillehammer


**Signe Braadland Rustøen**

**Alvilde Storbråten**



Industrial Economics and Technology Management
Submission date: June 2017
Supervisor: Jonas Alexander Ingvaldsen, IØT
Co-supervisor: Marte Daae-Qvale Holmemo, IØT



Norwegian University of Science and Technology
Department of Industrial Economics and Technology Management

# Problem description

The aim of this thesis is to study the institutionalization of a Lean initiative at SI Lillehammer, a Norwegian public hospital. Our goal is to describe how the surgical department at SI Lillehammer managed to institutionalize the same-day surgery process, a Lean initiative, as well as point out some guidelines as to how other Norwegian public hospitals can institutionalize similar Lean initiatives in the future.

# Preface

This master thesis was written during the spring of 2017 at the Department of Industrial Economics and Technology Management, and is the concluding work of our Master of Science degree at the Norwegian University of Science and Technology (NTNU). The thesis is written as a part of the Lean Management project.

First of all, we would like to thank our supervisors Marte Daae-Qvale Holmemo and Jonas A. Ingvaldsen for always being available, challenging us to reach our full potential as well as providing valuable input during our work with this thesis. Secondly, we want to thank Ellen Pettersen for putting us in contact with the right people in the same-day surgery process. Furthermore, we would like to thank Embjørg Lie and Mari Einemo Grimsrud for inviting us to visit SI Lillehammer, finding informants for us, and arranging all the interviews. Additionally, we wish to thank all the interviewees for taking the time to talk to us.

We also wish to thank Hege Andersen at the University of Tromsø, Norway, for inspiring the key question of our thesis, and Merete Postmyr, a project manager working with Lean and clinical pathways at the University Hospital of North Norway, for valuable input early on. Lastly, we want to thank the RSHU group at St. Olavs Hospital in Trondheim for allowing us to visit them, and Aud Hiller for organizing different meetings for us there.

Thank you!

Norwegian University of Science and Technology
Trondheim, 06.06.2017

Signe Rustøen Alvilde Storbråten

# Abstract

In line with population growth, the need for public health services increases. In order to meet this increase in demand, greater financial support for public healthcare services is required. However, the economic frames are not increasing as rapidly as the demand for healthcare, and hospitals are therefore forced to spend less on more people. As a result, several Norwegian health organizations are trying to introduce methods of process improvement derived from industry, in order to increase efficiency and cut costs. One example of this is the same-day surgery process at SI Lillehammer, a Lean initiative. As one of very few Norwegian hospitals, SI Lillehammer has succeeded in institutionalizing the change, which is why we have chosen to conduct a qualitative, single case study of this particular process. By using a framework presented by Kuipers et al.'s (2014), originally developed by Pettigrew (1985), we have studied how the *context*, *content*, *process*, *leadership* and the interaction between these factors have shaped the outcome of the change.

The main findings of this study include that the external context in many ways has facilitated the same-day surgery process, and that the internal context of the surgical department at SI Lillehammer has been adjusted to fit with the change. At the same time, the concept of Lean has been adapted to fit with the internal context. Instead of relying on external consultants, they have had an internal consultant, with knowledge of both Lean and the healthcare sector, to assist the change. Furthermore, the leaders of same-day surgery process have facilitated employee involvement. The process has been implemented gradually, and the process leaders have stayed highly dedicated to Lean and the same-day surgery process over many years, despite employee resistance. Thus, the coherence between the framework factors have led to the successful institutionalization of this change.

To our knowledge, no studies have been published that look at successful Lean processes in Norwegian public hospitals. We believe the findings in this study may be used as an instrument by other Norwegian public hospitals aiming to succeed with institutionalization of Lean initiatives, and hope this thesis will be a pointer for further research in the field.

# Sammendrag

I takt med befolkningsveksten øker behovet for offentlige helsetjenester. For å kunne møte dette økende behovet for offentlige helsetjenester kreves mer økonomisk støtte til helsevesenet. De økonomiske rammene øker derimot ikke like raskt som etterspørselen etter helsetjenester, og sykehusene tvinges derfor til å "bruke mindre på mer". Dette har ført til at flere norske helseforetak nå forsøker å innføre metoder for prosessforbedring hentet fra industrien, for å øke effektiviteten og kutte kostnader. Et eksempel på dette er sammedagskirurgiprosessen på Sykehuset Innlandet (SI) Lillehammer, et Lean-initiativ. Som en av få norske sykehus har de på SI Lillehammer lykkes med å institusjonalisere denne endringen, og vi har derfor valgt å studere denne prosessen empirisk gjennom et kvalitativt, enkelt case-studie. Ved å bruke et rammeverk presentert av Kuipers et al. (2014), opprinnelig utarbeidet av Pettigrew (1985), har vi sett på hvordan *konteksten*, *innholdet*, *prosessen*, *ledelsen* og samspillet mellom disse har vært viktig for utfallet av endringen.

De viktigste funnene i oppgaven er at den eksterne konteksten på mange måter har fasilitert sammedagskirurgiprosessen, og at den interne konteksten på kirurgisk avdeling på SI Lillehammer har blitt tilpasset endringen. Samtidig har innholdet i Lean blitt tilpasset den interne konteksten. I stedet for å bruke eksterne konsulenter, har de hatt en intern konsulent med kunnskap om både Lean og helsesektoren til å bistå i endringsprosessen. Videre har lederne i sammedagskirurgiprosessen i stor grad involvert de ansatte i prosessen. Prosessen har blitt implementert gradvis, og lederne har vært dedikert til Lean og sammedagskirurgiprosessen i mange år, tross motstand blant de ansatte. På denne måten ser vi at samspillet mellom faktorene i rammeverket har ført til en vellykket institusjonalisering av endringen.

Så vidt vi vet er vellykkede Leaninitiativer i norske offentlige sykehus ikke studert tidligere. Vi tror funnene i dette studiet kan være et instrument for andre norske sykehus som ønsker å lykkes med å institusjonalisere Lean, og håper at dette vil være en pekepinn for videre forskning på feltet.

# Table of contents

# List of figures



# List of tables

# 1 Introduction

## 1.1 Background

The Norwegian population is growing, and experiencing a substantial increase in chronic and complex health problems due to a higher average age of the population, increased incidence of lifestyle diseases, and longer life expectancy, among other causes (Andersen, 2015). Simultaneously, we are capable of better treating a greater number of diseases, which in turn results in higher expectations for potential treatments among the country's citizens (Andersen, 2016). This increase in health services offered leads to a definite increase in costs. However, the needs, and hence the costs, of healthcare services are increasing at a higher pace than the economical frames (Kjekshus, 2003). This results in the need of higher operational efficiency, which in turn presents great challenges for Norwegian public hospitals, as a greater number of patients and more complicated cases must be treated with less money and fewer hands in the years to come (Andersen, 2015).

In an effort to improve operational efficiency, Norwegian public hospitals are implementing well-known process improvement methodologies from the private sector, such as *Lean* (Andersen, 2015). Lean is a production method derived from the Japanese manufacturing industry. The concept of Lean were identified in the 1990's, and is continuously developed and changed (Hines et al., 2004). As a result of Lean's ambiguity, there exist no common definition of the concept (Modig & Åhlström, 2012). Inspired by a wide range of definitions presented in the literature, we define Lean as "a set of tools and thinking that aim to maximize value for customers by reducing variation, creating flow and continuously improving operational processes".

The long-term success of the Lean initiatives in Norwegian public hospitals have to a limited degree been studied. Radnor and Osborne (2013) emphasize that although Lean appears to have had a successful impact within public services, the actuality has been one of easy successes and a lack of durability and resilience in the benefits achieved. Andersen and Røvik (2015) underpin this, by saying that, historically, the evidence for the Lean healthcare interventions' long-term success is scarce.

Although it is an important strategic imperative for many organizations to embed and maintain changes and their contribution to performance, the problem of *institutionalization* has attracted little attention in healthcare (Buchanan et al., 2005). We argue that in order to achieve a successful change outcome, the change has to be institutionalized. Cummings and Worley (2015) define institutionalization as a process for maintaining a particular change for an appropriate period of time. The amount of literature concerning already implemented Lean processes and their long-term effects is rather limited (Moraros et al., 2016). This is the reasoning behind our choice to study at the same-day surgery process at SI Lillehammer, which was initiated in 2013. In 2016, the process was awarded "Lean Project of the Year" by Lean Forum Norway, and can to a large degree be characterized as institutionalized using the definition presented by Cummings and Worley (2015).

## 1.2 Research question

The popularity of Lean in Norwegian public hospitals, combined with the lack of literature concerning Lean healthcare initiatives' long-term success, brings us to the key research question (RQ) of our thesis:

**RQ***: How did SI Lillehammer succeed in institutionalizing the same-day surgery process, a Lean initiative?*

To the extent possible, we have employed literature specific to the Norwegian context. As of 2014, very few Norwegian studies have looked at the use of Lean in Norwegian hospitals (Rolfsen, 2014, p. 180). One exception is perhaps Hege Andersen, who has published articles together with Røvik and Ingebrigtsen that take Lean initiatives at the University Hospital of North Norway as their point of departure. As a result, our sources on Lean in hospitals are mostly international, mainly conducted in the US and Europe. However, we believe these sources are applicable in order to indicate some of the contextual characteristics and processes that occur within Norwegian public hospitals.

## 1.3 Structure of the paper

In the following chapter, a description of the case studied will be presented. In chapter 3, the framework of the paper will be introduced, followed by theoretical chapter, presenting theory relevant for the discussion. In chapter 5 and 6, the methodology and the findings will be

presented respectively. The findings in chapter 6 supplements the empirical findings presented in chapter 2, and aims to combine our empirical findings with the theory presented in chapter 4. Chapter 6 is structured in the same manner as the theoretical chapter. Our discussion and conclusion is presented in chapter 7. In this chapter, we discuss how the different factors of the framework have influenced each other and contributed towards the successfulness of the changes.We also provide a concluding answer to the research question, and point out how this change may be an instrument for other Norwegian public hospitals. Finally, we present practical implications, as well as implications for further research.

# 2 Case description

In this chapter, a description of the case studied, which is the same-day surgery process at SI Lillehammer, will be given. This description is based on publicly available information, internal documents and information provided by informants. We refer to our informants as Leaders, Physicians and Nurses, based on their occupation, in order to provide anonymity. This will be further elaborated on in section 5.3.2. Firstly, the hospital SI Lillehammer with focus on the surgical department will be described with respect to structural features and the introduction of Lean at the hospital. Secondly, the same-day surgery process in particular will be elaborated upon, as this is the focus of this thesis. In particular, we will present the background for the change, as well the ball bin and the process improvement group, two important characteristics of the same-day surgery process. Lastly, the achievements tied to the process are presented.

## 2.1 The surgical department at SI Lillehammer

Sykehuset Innlandet (SI) Lillehammer is one out of ten divisions at Innlandet Health Trust (Sykehuset Innlandet, n.d.). Every division is managed by its own division manager and is further sub-organized into departments and units. The surgical department at the hospital is the focus of this study.

The surgical department is one out of seven departments at SI Lillehammer, and treats patients in need of orthopedic, gastric and urological surgery (Sykehuset Innlandet, n.d.). The department consists of a surgical policlinic, a day surgery unit, two wards, as well as a manned patient hotel (Sykehuset Innlandet, n.d.). Approximately 300 individuals are employed at the department, and the department performs about 3.200 planned operations yearly, according to internal documents.

The surgical department is led by a management team that consists of a department manager and an assisting department manager, as well as both nurses and physicians with managerial responsibilities within the department.

### 2.1.1 Introduction of Lean

In 2009-2010, SI Lillehammer decided to implement Lean as an improvement methodology. The hospital top management initiated this introduction of Lean by contacting Innovation Norway to

get funding. The awarded funding was used to employ consultants from SINTEF Raufoss Manufacturing, who were engaged at the hospital for about a year. SINTEF Raufoss Manufacturing is a National Centre of Expertise within manufacturing, and has extensive experience in terms of assisting companies in the manufacturing industry become more effective (SINTEF Raufoss Manufacturing, n.d.). Most of their clients are largely industrial. Within SI Lillehammer, these external consultants were first and foremost guides and mentors, who provided the hospital management with knowledge about Lean, and contributed with input and advice when necessary.

In the spring of 2012, the surgical department was chosen to be one of two pilot projects with regards to implementing Lean at the hospital. A group of employees at the surgical department, including the surgical management team, received education and training in Lean by the SINTEF Raufoss Manufacturing consultants. Some of the Lean concepts the consultants introduced at the hospital were 5S, Value Stream Mapping (VSM) and the PDCA cycle, three commonly used Lean tools (see description of the tools in section 4.2.1). All of these tools have been made use of in the same-day surgery process, which will be described in the following section.

## 2.2 The same-day surgery process

Concurrently with Lean being implemented at the hospital, the management at the surgical department had decided to introduce same-day surgery at the department. Same-day surgery implies that all the necessary examinations before a surgery have already been carried out in advance, so that on the operation day, the patient just has to show up at the hospital, ready for his or her operation. All elective surgical patients are candidates for same-day surgery. Elective surgery is surgery that is scheduled in advance because it does not involve a medical emergency. Thus, the same-day surgery process does not involve patients in need of emergency surgery. In addition to the surgical department, the same-day surgery process comprises other units in the hospital, such as the anesthesia unit, the laboratory and the radiology unit (Sykehuset Innlandet, n.d.).

As an extension of the Lean pilot project that was currently taking place at the surgical department, the surgical department management team decided to employ Lean in the same-day surgery process. The management at the surgical department started out small-scale with the same-day surgery process in 2013, including only some of the elective surgery patients, and expanded the process gradually. The process has been internally led by the surgical department

management team. Except for the education and training received by the SINTEF Raufoss Manufacturing consultants before the process initiation and some follow-up education during the process, it has been carried out without further use of external consultants. However, it should be noted that one of the managers has undergone additional education within Lean, and is described by Leader 5 as *"a Lean expert"*.

### 2.2.1 Background

According to the managers interviewed, the background for the same-day surgery process was multi-purposed. Feedback from the patients indicated long waiting times and poor structure in connection to the preparations for the operation. The day of preliminary examinations was poorly structured, unpredictable, and clearly not arranged with the patient in mind. Before the initiation of the same-day surgery process, all patients were examined by a specialist prior to their operation, and put on a waiting list if they are eligible for surgery. Weeks or months could go by before the patient received a letter from the hospital including their official operation date. The patient was not included in this decision, and the date was thus inconvenient for the patient in many cases. Sometimes, this resulted in patients choosing to be operated at another hospital than SI Lillehammer.

In addition, the department's waiting list was poorly organized in terms of the number of patients, degree of urgency and type of operation. The patient was admitted to the hospital the day before the operation to take blood samples, EKGs, X-rays, and to talk to and be examined by a surgeon as well as by an anesthetist. These activities were performed in six different locations, on different floors, within the hospital. For old and injured patients, it was problematic to move around. An additional problem was that some of the patients got lost at the hospital, and the nurses would have to waste valuable time searching for them.

Sometimes, anomalous findings and changes to the patient's medical conditions could result in the operation being cancelled and him or her having to travel back home. This was often problematic, as many of SI Lillehammer's patients live quite far away from the hospital, and the surgery often entails some preparations for the patients:

> *Usually, when patients come to the hospital to undergo surgery, they take time off from work, get neighbors to watch their cats and dogs, empty their refrigerators, and so on.*

*It is kind of like going on vacation, really, and the bigger the regret when the operation is cancelled for some reason.* (Leader 5)

Upon cancellation, it was also difficult for the department to summon a new patient on such short notice. This resulted in extra bed-days for the patient and a wasteful utilization of the operative resources. Furthermore, this was not just a concern for patients, but for employees as well: "*The employees did not like it either. They did not like to having to always apologize to the patient for having to wait too long, or worse, the operation being cancelled"* (Leader 2).

In addition, according to internal documents, national requirements demand 90 % same-day surgery. It should be noted that 100% same-day surgery is not possible to achieve, because even if all examinations are carried out prior to the operation, the health condition of patients may have changed during the time between the initial examinations and the operation. For instance, their blood pressure may have increased, making the operation dangerous to perform. The aim of this requirement is that Norwegian public hospitals should be more predictable, knowing earlier how many operations are going to be carried out and when they are to take place. Furthermore, the Government aimed to increase efficiency by reducing the number of bed-days for patients, in order to cut costs (Stortinget, n.d.). Thus, by introducing the same-day surgery process, the surgical department aimed to complete 90 % of all preliminary examinations the same day as the patient was assessed by the surgeon, and to perform all of these examinations in one single location.

The surgical department management have introduced several Lean-inspired tools and techniques in order to achieve their goal of 90% same-day surgery, such as the ball bin, the list of initiatives and the checklists. They also put together a process improvement group, to follow up on the process over time, and gradually make improvements to it. These measures will be described in further detail below.

### 2.2.2 The ball bin

A tool used by the surgical department managers to continuously improve the-same day surgery process, is *the ball bin*, illustrated in Figure 1. A 'ball' in the ball bin represents an improvement initiative related to the same-day surgery process. According to management, it has been important to them that managers own these processes, because it is the managers who have

authority: *"It is important for process owners to be able to make some demands in terms of giving these employees time off to contribute to these processes"* (Leader 1). Naturally, it is easier to give employees time off as a manager than as a regular employee. Thus, each ball is marked with a set of initials, indicating which manager that is responsible for that specific ball. A manager can be, and usually is, responsible for more than one ball at the time.

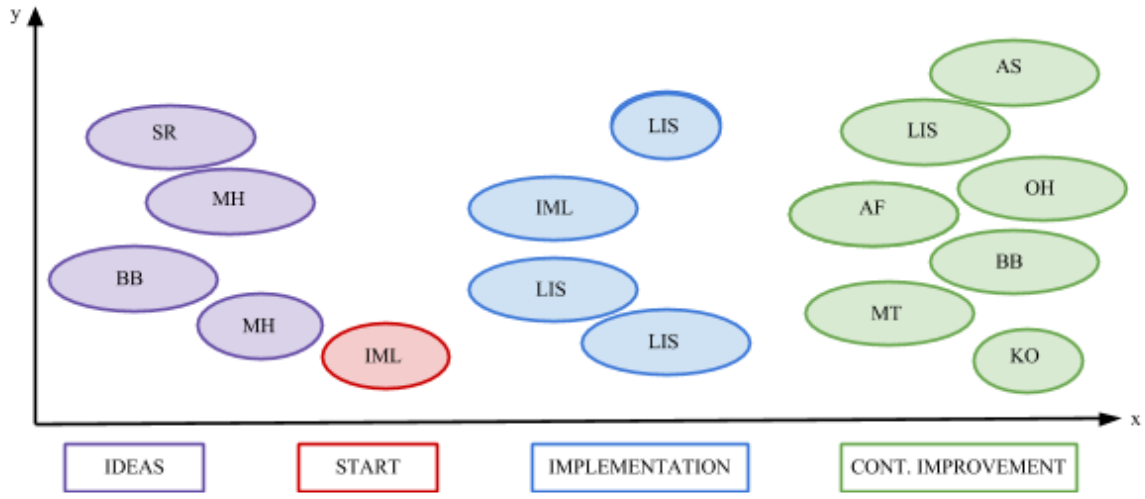



***Figure 1: An example of a ball bin inspired by the one used in the same-day surgery process at SI Lillehammer (Reproduced with permission from SI Lillehammer)***

Referring to Figure 1, the x-axis explains where a ball currently is in the implementation process, whereas the y-axis says something about the number of initiative balls in each of the four phases; *Ideas*, *Start*, *Implementation* and *Continuous Improvement*. Ideas indicates that a initiative is suggested, but has not yet been moved to Implementation, whereas Start indicates that the initiative is in the starting phase of implementation. Implementation indicates that the initiative is currently being implemented, whereas Continuous Improvement indicates that it is implemented, and thus must be continuously improved. Every initiative ball starts in Ideas and moves through all the steps to reach the Continuous Improvement step.

The ball bin is updated during the surgical department management meeting that is held every quarter of a year. During these meetings new initiatives may be proposed added as balls to Ideas. Balls that are already in other phases may move to other phases. Whereas some initiatives may be relatively easy to initiate, other initiatives are more complicated, demanding management support and involvement of other departments. In these cases, it is decided in the

management meeting that they focus especially on one specific process the next six months, as that process is in need of extra support from the management team. Leader 2 describes it like this:

> *When we choose a process like that, we go all in on it. Even if we as managers don't own that process, or have anything to do with it at all, we can do our best to push it forward. (...) We don't implement all the balls simultaneously, but choose to secure one, before starting another*. (Leader 2)

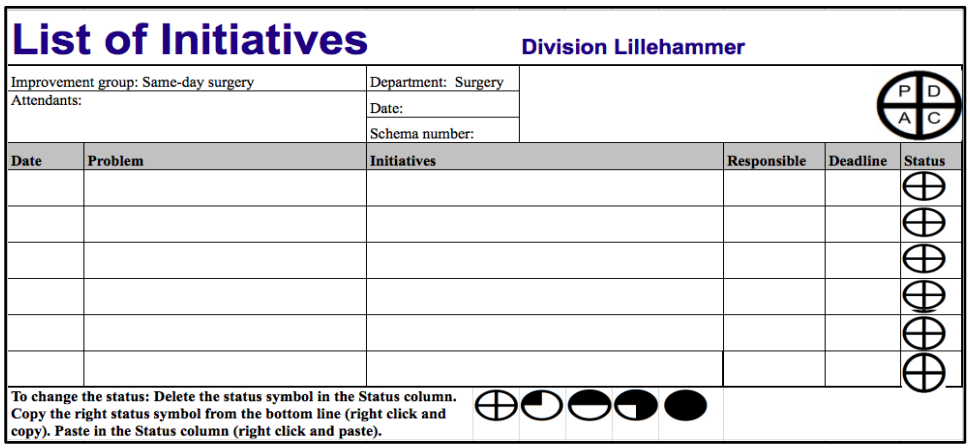
### 2.2.3 The process improvement group

In conjunction with the same-day surgery process, the surgical management team established a same-day surgery process improvement group with representatives from different occupational groups, departments and units. A senior charge nurse, who had received Lean training by the SINTEF Raufoss Manufacturing consultants previous to the same-day surgery process, was assigned process manager of the improvement group. Her assignments included being responsible for coordinating and convening meetings with the improvement group members, preparing minutes, assigning members with different responsibilities and holding group members accountable. The management team was also represented in the improvement group, by the surgical department manager and the management advisor. The current manager of the same-day surgery improvement group had to step in on short notice, as the former process manager fell ill in the fall of 2015. Thus, the current process manager has not taken any part in the same-day surgery process since its initiation in 2013, but entered into what she termed "an already well-established improvement process".

Early on in the process, the same-day surgery process improvement group was responsible for mapping and improving the elective surgical patient's path through the hospital, by conducting a Value Stream Mapping (VSM). According to internal documents, the VSM made employees more aware of their colleagues' work tasks, as well as revealed root causes of problems that have frustrated many employees for several years. As the majority of the work associated with the same-day process is performed in the surgical department, the majority of the members of the process improvement group were representatives from the surgical department. However, other departments and units such as the laboratory, the anesthesia unit and the intake office were involved as well, as they expanded the process of mapping and improving the value

stream. When a new department was involved in the process, representatives from this department were added to the improvement group. Likewise, if they considered the work within one department to be adequate, the representatives from this department would leave the group. The representatives in the improvement group were responsible for updating the other employees in their department about the work performed in the group.

In addition to performing a VSM, one of the main responsibilities of the improvement group was to update the list of initiatives, which enables employees to make improvement suggestions. According to internal documents, this list of initiatives operationalizes big problems down to smaller, more manageable initiatives, of which the responsibility could be delegated to a single employee. Using this tool, the members of the improvement group can bring forward problems, and propose solution(s) to these problems as an initiative on the list of initiatives. Furthermore, the list of initiatives incorporates continuous improvement into the day-to-day tasks of most employees in the department, and these lists are used actively by members of the improvement group in particular. The original list of initiatives used by the improvement group is illustrated in Figure 2.



**List of Initiatives** Division Lillehammer

Improvement group: Same-day surgery | Department: Surgery
Attendants: | Date:
Schema number:

P D A C

| Date | Problem | Initiatives | Responsible | Deadline | Status |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

To change the status: Delete the status symbol in the Status column. Copy the right status symbol from the bottom line (right click and copy). Paste in the Status column (right click and paste).

***Figure 2: The list of initiatives used in the same-day surgery process (Reproduced with permission from SI Lillehammer)***

As shown in Figure 2, the list of initiatives is an Excel sheet that includes the date the problem was brought forward, a short description of the problem, one or more initiatives or suggested solutions to this problem, the initials of the individual responsible for carrying out the initiative, a deadline for when the initiative must be carried out, as well as a status in the form of the PDCA cycle. When the status of an initiative changes, the PDCA cycle is updated accordingly.

The list of initiatives is reviewed at each meeting with the same-day surgery improvement group, which are held approximately every six weeks. The problems and potential solutions included in the list of initiatives have a smaller scale than those in the ball bin, and employees without managerial responsibility can be responsible for following up the initiatives. An example of a problem brought forward could be that "Intern doctors discover specific findings in a patient that could be valuable to the anesthetic." A possible solution, or initiative, could be that it is included in the checklist for the intern doctors that they have to inform the anesthetic about these findings.

One of the main changes with respect to the same-day surgery process, as compared to how the elective surgery pathway looked before, was to introduce checklists. The checklists provide guidelines for the examinations and tasks that have to be performed for each individual patient, as well as what order these need to be performed in. The lists include a column for the one responsible for carrying out a task, a short description of the task to be carried out, a column to check if the task has been carried out, as well as a column for the signature of the one responsible, to be signed after the task has been carried out. The checklists are filled out by surgeons, the accompany nurse, intern doctors, anesthetics, nurses, representatives from the the admissions office, as well as by secretaries at the surgical department. Information that needs to be filled out by the surgeon is for instance the diagnosis of the patient, degree of urgency of the operation, and whether or not information about the procedure has been communicated to the patient. These lists are to be filled out and signed, and should follow the patient at all times. They have been developed and improved over time by the same-day surgery improvement group; initiatives are suggested in the list of initiatives, usually by the employees affected by them, and suitable changes in the checklists are made.

## 2.3 Achievements

Winning the "Lean Project of the Year" award in 2016 indicates that the same-day surgery process has been a success. The award is handed out by Lean Forum Norge during their yearly conference. Participants in the contest present their project as a poster during the conference, which is evaluated by conference attendants, as well as by a jury of experts, who subsequently vote for the project they believe should win the award (Lean Forum Norge, n.d.). It should be noted that this award is based partly on the opinions of conference participants and their first impression of the project. In turn, the award can be characterized as somewhat subjective.

Consequently, being awarded the "Lean Project of the Year" award is not synonymous with successfully institutionalizing Lean. The award provides, however, some indication that the same-day surgery process is a successful Lean initiative. The successfulness of the initiative will be further justified throughout this paper, and concluded in section 6.5.

Today, most preliminary examinations of the patients are carried out on the same day as the patient is assessed for operation by a surgeon at the hospital, and the patient can show up at the hospital ready for his or her operation on the operation day. Even though the goal of 90 % same-day surgery is not yet reached, the results are improving:

> *It is motivating to see that we have almost reached the goal of 90% same-day surgery. We will never reach 100% because all patients cannot be same-day surgery patients. However, in week 5 in 2017, 82% of patients were same-day surgery patients. This is the most impressive number we have reached since we started out with this process, and that is just amazing.* (Leader 5)

In addition, the work of the surgical management team and the same-day surgery group has resulted in a new position at the surgical department, *the accompany nurse*, as well as a new room that has been dedicated to same-day surgery patients, *the same-day surgery room*. The accompany nurse is responsible for coordinating patients and employees with respect to the preliminary examinations. The same-day surgery room is where all the examinations take place on the examination day. By setting up this room, the different locations where the patient shows up have been reduced from six to two; the same-day surgery room on examination day and the ward on the operation day.

In turn, the employees involved in the preliminary examinations now come to the patient, instead of the patient coming to them. After being assessed by a surgeon and all preliminary examinations have taken place, the patient is informed of his or her operation date, and is free to leave the hospital. Patients no longer have to be admitted to the hospital the day before their operation, but can instead show up on their scheduled operation date. This has reduced the time required for preparing a patient for surgery has from 24 hours to 1 hour and 40 minutes.

Moreover, the patient is now given the operation date at the examination day instead of receiving it per post. That way, the patient has the opportunity to choose an available date that

is suitable for him or her. In addition, a patient satisfaction survey has been conducted, creating a formal information channel for the patient to give feedback. One of the managers emphasizes that the patient satisfaction has increased as a result of these changes: *"This is really a win for us, because we have a patient survey, and we see that patients are pleased that everything is ready when they come in for surgery"* (Leader 2) .

Furthermore, the share of same-day surgery has tripled in the years from 2012 until 2016. Simultaneously, a larger number of patients from SI Lillehammer's catchment area choose to have these surgeries performed at the hospital than before. In 2012, 168 patients chose to be operated at another hospital than SI Lillehammer, whereas in 2016, only 14 patients did the same. In addition, the number of cancellations on operation day has decreased from 10% to 7%. Lastly, the number of bed-days a year has been reduced by 864.

### 2.3.1 Employee perception of the current situation

Behaviors associated with the same-day surgery process among other things include filling out the checklist for each admitted patient. This is mandatory, and is frequently followed up on by management. In the beginning, some surgeons would resist the changes implied by the same-day surgery process by avoiding to admit patients to this particular care pathway. Instead they registered patients as regular list patients. However, this is no longer the case, and that employees now see the benefit of the performed changes. According to one of the employees, using these tools, and performing the behaviors required by the process has become *"the new truth in a way, the way it is. All the employees are aware of this and accept it"* (Nurse 4).

The employees seem to agree that the change has been for the better, and that the surgical department functions better now than it did before same-day surgery was introduced. Although there was a lot of resistance against the changes early on, this seems to be a thing of the past. The employees seem to agree that the department has benefitted from the changes. One employee puts it like this:

> *I don't think there is much resistance. The outpatient department functions more effectively. I believe that has been a premise for this change's success, that it hasn't lead to any extra work, but has instead facilitated things.* (Physician 2)

# 3 Analytical framework

In this chapter, we will present the framework used to systemize the the upcoming theory and findings chapters. As stated in chapter 1, Lean is an ambiguous concept, which is understood differently in different contexts. We perceive a vast amount of literature on Lean healthcare to be concerned with how Lean is adjusted to the healthcare sector. That is, how the *content* is fitted to the *context*. However, it is also stated in chapter 1 that Lean is a concept which is continuously changed and developed. Thus, we argue, in line with Pettigrew (1985) that the *process* of implementing Lean, must be taken into consideration too. Furthermore, as we study how SI Lillehammer succeed in institutionalizing the same-day surgery process, we are interested in the *outcome* of change, as well as what has led to this particular result.

Pettigrew (1985) cautions against looking for single causes and simple explanations, and points to the many related factors influencing the nature and outcomes of change (Buchanan et al., 2005). Since a changing process is dynamic, unfolding in time and space, it should be studied in a dynamic sense too. The purpose of a processual analysis is to account for and explain how these factors are linked over time (Pettigrew, 1997). We have chosen to apply a framework presented by Pettigrew (1985, 1987, 1990) and Pettigrew et al. (2001), which will be described in 3.1, to study the same-day surgery process. Subsequently, our adaptation and interpretation of his framework will be presented in 3.2.

## 3.1 Pettigrew's framework

Pettigrew et al. (2001) argue that the *outcome* of a change is a result of the interaction between the *context*, *content* and *process* of change together with their interconnections over time. Context involves the situation, setting or organization in which the change is deployed, whereas content describes the 'what of change'. Process is defined as a sequence of individual and collective events, actions, and activities unfolding over time in a context (Pettigrew, 1997). Pettigrew's framework should be understood in a dynamic sense, in which the factors mutually influence and shape each other over time. In the following, an explanation of the interconnections is provided.

Pettigrew (1997) claims that the context of any given process shapes the flow of events and is in turn shaped by them. Hence, he argues that studying the surrounding context is a necessary

part of the process and content of investigation. However, the change process occurs not just in a nested context, but also alongside other processes. Where workplace change fails to transform existing organizational patterns, the reasons may stem less from the nature of the innovations than from the processes that surround and shape their introduction (Vallas, 2003).

Actions are embedded in contexts which limit their information, insight and influence (Pettigrew, 1997). To understand the processes of change, Pettigrew argues we must also be able to locate organizations, and the processes of management, within the wider context which in various ways serves to promote and/or condition the scope of human action (Collins, 1998, p. 68). Just like the process is shaped and being shaped, so is the context and content of the change. The subjective interpretations of actors perceiving, learning, and remembering help shape the process (Pettigrew, 1997). What happens, how it happens, why it happens, and what results it brings about is dependent on when it happens, the context in which it happens, and the events taking place before and after (Pettigrew, 1997). Thus, processes are deeply embedded in the contexts that produce and are produced by them, and can only be studied as such (Pettigrew, 1997).

## 3.2 Adaptation and interpretation

For the purpose of this thesis, we have chosen to both adapt and interpret the framework presented above. Firstly, we have adapted the framework by adding an additional factor, *leadership*, to Pettigrew's framework. This is in line with Kuipers et al. (2014). Leadership is concerned with the managers and leaders' role and leadership style during the changing process. Kuipers et al. (2014) argue that leadership is a key factor in organizational change processes, and is regarded as an important driver of change in the literature on change in the public sector. Furthermore, within the literature on Lean, leadership is perceived as an decisive aspect in terms of sustaining Lean initiatives (e.g. Liker & Convis, 2011; Mann, 2005; Poksinska et al., 2013).

Since we perceive leadership to be an important aspect of the same-day surgery process, we have applied Kuipers et al.'s (2014) adaption of the framework. Secondly, we have chosen to interpret Pettigrew's framework by choosing to study each of the factors in depth, before discussing their interconnections. Our adaptation and interpretation of the framework is illustrated in Figure 3. The figure is inspired by the one presented by Holmemo (2017).

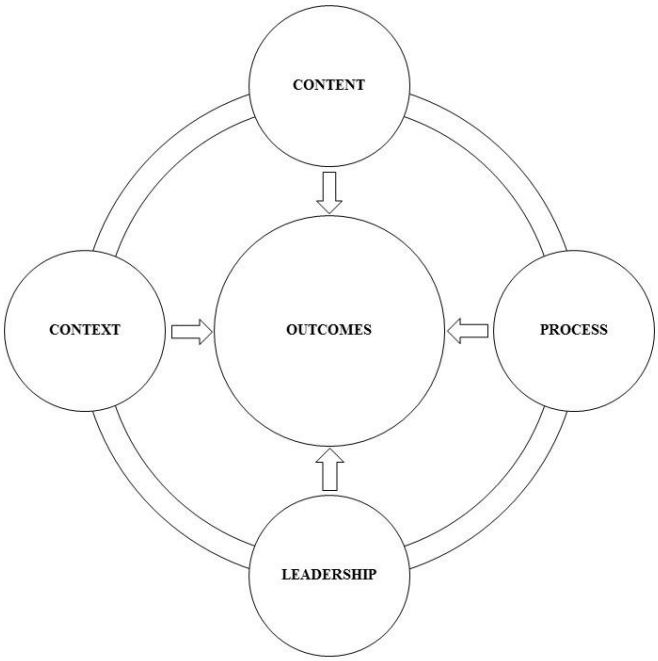



***Figure 3: Adaptation and interpretation of Pettigrew's framework***

Referring to Figure 3, the circle connecting context, content, process and leadership represents how these factors influence and interact with each other, as described above. The arrows from the factors to outcomes, represent that these factors and their interconnections influence the outcome of change. In the following chapter, we have chosen to structure the relevant theory with respect to the factors, and in turn separated the chapter into five sections, each one concerning one of the factors of the framework. The findings presented in chapter 6 are structured in the same manner, in order to analyze the case in a structured way. The coherence between the factors as well as how the interconnections between them have contributed towards the successfulness of the changes, will be discussed in chapter 7.

# 4 Theoretical foundation

In the upcoming chapter, theory relevant to our findings will be presented. In section 4.1 Context, we will look at some characteristics of the external and internal context of Norwegian public hospitals. In section 4.2 Content, we will elaborate on the Lean methodology, as well as some challenges of implementing Lean in the healthcare sector. In section 4.3 Process, three common distinctions of the implementation process will be presented, followed by theory on internal communication and resistance to change. In section 4.4 Leadership, leadership styles and powers will be presented, as well as the The Lean Leadership Development Model. In the final section, section 4.5 Outcomes, Cummings and Worley's (2014) five criteria on institutionalization will be presented.

## 4.1 Context

In this section, the factors describing the external and internal context of the same-day surgery process will be presented. The external context includes the economic, social, political, competitive and sectoral environments in which the organizations are located, while the internal context refers to the inner patterns of the organizations (Pettigrew, 1997). As we study a Lean process within a Norwegian public hospital, we see the structural, cultural and political environments influencing the same-day surgery process as the external context, and the specific environment within the surgical department as the internal context.

### 4.1.1 External context

**Political influence**

Norwegian public hospitals are public service organizations, which implies that the information and incentives of the economic market are partly absent. These hospitals cannot choose to serve certain market segments the way private organizations can, because the Government serves all citizens (Scorsone, 2008). Furthermore, public hospitals are exposed to more external scrutiny and accountability, and their goals are more numerous, intangible and conflicting (Perry and Rainey, 1988). Part of the context facing public managers and elected officials is the set of laws they must operate under which to a large extent constitute the goals of the organization (Scorsone, 2008).

Norwegian public hospitals are characterized by strong regulations through the National Health Policies. The Ministry of Health and Care Services has supervisory responsibility for all hospitals in Norway, and the state owns the public hospitals (Ministry of Health and Care Services, n. d.). According to Kjekshus (2003), the Ministry of Health and Care Services aims to provide clear goals and guidelines for the management of hospitals, employing clinical guidelines, quality indicators, as well as detailed steering documents to a larger degree.

According to the National Health and Hospital Plan (2016-2019), the quality of care, effectiveness and waiting time for patients varies significantly between Norwegian hospitals, illustrating the potential for different hospitals to learn from each other (Helse- og Omsorgsdepartmentet, n.d.). According to Kjekshus (2003), the variation in quality is especially attributable to lack of knowledge amongst practitioners. The National Health and Hospital Plan calls for standardizing care pathways to remedy this development, involving more extensive use of guidelines based on a systematic collection of compiled knowledge and professional medical advice (Kjekshus, 2003). This can be understood as a trend towards more standardized healthcare services.

**Stakeholders**

Furthermore, public organizations are characterized as multifunctional organizations, implying that they should secure partly conflicting considerations, like political steering, control, representation and participation of various stakeholders, participation of staff, responsiveness to users, transparency in decision-making processes, predictability, service equality and quality, academic independence, political loyalty, as well as cost effectiveness (Christensen et al., 2010).

Thus, Norwegian public hospitals have a long list of stakeholders. Because hospitals are primarily funded by the taxes that individuals and businesses pay, it is in the best interest of all tax-paying Norwegian citizens that their tax money is spent as efficiently as possible, and that the health services provided are of sufficiently high quality. The quality of care provided is even more important for already admitted patients and their relatives. The providers of healthcare services, such as physicians and nurses, are other important stakeholders. Labor unions for the different occupational groups employed in a hospital, such as the Norwegian Union of Municipal and General Employees (*Fagforbundet*), the Norwegian Medical Association (*Legeforeningen*) and the Norwegian Nurse Organization (*Norsk*

*sykepleierforbund*) as well as patient- and user organizations, are important and powerful stakeholders as well. The Norwegian Government and the hospital management administer healthcare services on different levels, and are both concerned with cost efficiency, funding and resource allocation, making them important stakeholders too.

Multiple stakeholders make the value equation quite complicated for decision-makers who are assessing the potential costs and benefits from adopting a Lean process (Scorsone, 2008). This is emphasized as one of the challenges of implementing Lean in section 4.2.2. Since the value stream must account for a wide spectrum of interested parties in the outcome of the service, the value equation may contain multiple goals. Efficiency is only one part of the value equation in the public sector, with an additional, and often conflicting, aspect being to ensure certain rights as a citizen regardless of the cost (Scorsone, 2008). Thus, the value equation in the public sector can be more difficult to understand than the one in the private sector.

**Conflicting goals**

The hospital can be presented as an organization where two fundamentally different rationalities meet. According to Rotar et al. (2016), hospital governance is notoriously strained due to its dual organizational structure with the co-existence of both managerial and professional decision-making structures. This perspective distinguishes between an economic-administrative and medical type of logic, based on the criteria that are prevalent in their decision-making systems. Eliot Freidson (2001), as recounted in Rotar et al. (2016), theorized that whereas clinicians predominantly organize their practice following the logic of professionalization, managers follow the logic of management science. These conflicting logics often lead to straining the relationship between clinicians and hospital managers (Rotar et al., 2016). Scott (1982) refers to hospitals as autonomous professional organizations, and claims that in organizations of this type, physicians perform the key patient care tasks within hospitals which administrators maintain. It is important however to keep in mind that each hospital department is part of an economic-administrative system, and is not just bound by logic established by medicine (Scott, 1982). Thus, the micro-macro dilemma, which will be elaborated on next, is closely linked to the conflicting goals of managerial and professional decision-making structures.

**The micro-macro dilemma**

Scott (1982) underlines that physicians are under economic pressures to service the needs of the society and, to some extent, the wishes of their individual patients. The focus on the needs of an individual client may benefit one patient at the expense of others. Illustrated by an example; *A treatment which can extend a dying patient's life with one month costs 10 million NOK. Should the patient receive the treatment?* If the customer is specified as the patient, the answer is likely to be 'yes'. However, if the customer is specified as the taxpayer, the answer may also be 'no', because spending money one place, means spending less money somewhere else.

Thus, from a market economic view there is a tradeoff between the cost of the treatment and the utility of it (Scott, 1982). Within healthcare, this is manifested as the micro-macro dilemma (Scott, 1982). Whereas micro care is focused on the needs and interests of individual patients, macro care focuses on the characteristics of populations of patients. The clinical orientation of physicians is micro, as it places great emphasis on individual patient needs, their assessment and satisfaction (Scott, 1982), whereas the managerial functions can be seen as macro as they are expected to pay greater attention to cost containment.

Scott (1982) stress that micro and macro principles may conflict, as the latter is not simply an aggregated version of the former but represents a new and different basis for determining the distribution of services. The author exemplifies this conflict as 'the macro-level rule specifying that a given proportion of hospital beds be set aside for Medicare patients may conflict with admission criteria focusing on the needs of individual patients'. Further, Scott (1982) emphasizes that the micro-macro distinction is related to the trade-off between cost and quality. If resources are unlimited, then micro concerns about individual patient care are less likely to impinge on macro issues relating to the distribution of care. Thus, restrictions on costs cause micro-level care choices to be increasingly interdependent with macro-level care issues (Scott, 1982).

### 4.1.2 Internal context

**Complexity**

Being public organizations, hospitals are complex with competitive goals and values (Christensen et al., 2010), and a high degree of political steering (Kjekshus, 2003). The

complexity of hospitals can be said to reveal itself in various dimensions. Firstly, some parts of hospitals, such as the emergency department, face great uncertainty over demand for their services. The number of patients arriving in any given time period is highly variable, and a considerable portion of these patients are unpredictable (Gaynor & Andersen, 1995). Secondly, many specialists and employees with different educations and training work in a hospital, and to a large degree have to cooperate in terms of delivering high quality healthcare (de Souza and Pidd, 2011). Thirdly, Norwegian public hospitals must treat a wide range of diseases. This complex structure limits communication and interaction within the hospital (de Souza and Pidd, 2011).

**Function-based structure**

Norwegian public hospitals are function-based, which implies that they consist of several functional units that may have their own individual control logic (Rolfsen, 2014, p. 178). This means that patients are categorized and served in terms of functional specialties, so that for instance cardiac patients are served by the cardiac department in the hospital. Poksinska (2010) and Andersen et al. (2014) refer to this kind of structure as silos in the organization, implying that these different departments are rather loosely coupled to each other. On the one hand, silos are favorable in terms of creating an expert environment within each department. On the other hand, however, the silos impose a major barrier to the flow of patients, goods and information between the departments (de Souza & Pidd, 2011), which in turn complicates the cooperation between the departments. Spear (2006) argues that function-based organization of hospitals results in ambiguity about exactly who is responsible for exactly what, when, and how. The trouble is that the system often lacks reliable mechanisms for integrating the individual elements into the coherent whole required for safe, effective care (Spear, 2006).

**Decentralization of power**

The organizational structure of a hospital can be characterized by a strong operative core and a weak top management (Jacobsen, 2012). Physicians' duties are characterized by a high degree of both *responsible autonomy* as well as *choice autonomy* (Drotz & Poksinska, 2014). Responsible autonomy concerns "the extent to which an employee has responsibility and decision-making authority", whereas choice autonomy concerns "the extent to which an employee has freedom concerning work procedures and timing" (Drotz & Poksinska, 2014). The physicians' responsibilities, as well as decision-making powers, include most of the processes affecting the patient travelling through the hospital (Scott, 1982). Whereas

physicians have insisted on their prerogative to assume control over output goals, that is, goals related to patient care, administrators have tended to accept the definition of their own work domain as limited to organizational support and maintenance objectives (Scott, 1982). The physicians work independently and to a large degree make autonomous decisions when dealing with patients.

**Status hierarchy**

Most of the employees in a hospital belong to specialized occupational groups (Kjekshus, 2003), or different professions. Freidson (2001) explains *professionalism* as institutions that allow their members of a specific occupation to get paid while controlling their own work (Billett et al., 2014, p. 36). A profession achieves a high social and economic status, because it is too specialized to be accessible for everyone, and is difficult to standardize and rationalize. A part of the profession's ideology is to justify their own position (Freidson, 2001, as referred to in Billett et al., 2014). This attitude qualifies them to establish their own policies, as well as control over their own work.

Within hospitals, various occupational groups with differing but extensive education and training work together within each hospital department. Together, physicians and nurses attend meetings regarding day-to-day operations, as well as work to deliver high quality patient care. However, hospital employees have a very strong sense of identity with the professional groups (Drotz & Poksinska, 2014). As pointed out earlier, Drotz and Poksinska (2014) claim physicians to a large degree are the dominant decision makers at a hospital. This dominant power is tied to clinicians' specialized medical knowledge. Regardless, knowledge contributions from the different professional occupations are valued differently, and employees from other occupational groups than physicians are seldom encouraged to give their opinions when decisions are made (Tucker and Edmondson, 2003). Drotz and Poksinska (2014) argue that this evident hierarchy by which physicians have more influence and power than other professions can lead to distinct boundaries between different professional groups and minimal cooperation between them.

**Mintzberg's organizational typology**

Using Mintzberg's (1980) organization typology, a hospital can be categorized as a *professional bureaucracy,* as it relies on highly trained professionals who demand control of their own work, and is characterized by highly specialized but minimally formalized jobs, that require a large

amount of knowledge and training to be performed (Mintzberg, 1980). This in turn, implies that much of the formal and informal power of the professional bureaucracy rests in its operating core (Mintzberg, 1980). Lean, on the other hand, was developed in a japanese manufacturing firm, which according to Mintzberg's (1980) typology can be characterized as a *machine bureaucracy*. This configuration is characterized with highly specialized, routine operating tasks and formalized procedures (Mintzberg, 1980). The machine bureaucracy is associated with simple and stable environments, where the demand can be predicted (Mintzberg, 1980). The implementation of Lean in organizations which are not machine bureaucracies, like public hospitals, has been widely discussed in the literature. Some authors claim that the organizational differences make implementing Lean in hospital challenging. A description of some common challenges of implementing Lean in hospitals is given in section 4.2.2.

## 4.2 Content

In this section the content of the changing process will be studied. Using Pettigrew's (2001) definition, the content factor represents the *what* of change, which in this study concerns implementing Lean in a hospital setting. In section 4.2.1, a brief overview of the Lean concept will be given, followed by some challenges of implementing Lean in healthcare settings in section 4.2.2.

### 4.2.1 Lean tools and thinking

The concept of Lean originates from the car manufacturer Toyota and its production system, known as TPS (Womack and Jones, 1996). Lean is defined and understood differently by different people, and today, there exists no common definition of the concept (Modig and Åhlström, 2012). In this thesis, a suitable definition is the one first presented in the Introduction; "a set of tools and thinking that aim to maximize value for customers by reducing variation, creating flow and continuously improving operational processes".

A distinction between Lean *thinking* and Lean *tools* is well-established within the Lean literature. Hines et al. (2004) refer to the distinction as *strategic* and *operational* Lean, whereas Holmemo et al. (2016) make a similar distinction between *soft* and *hard* Lean, respectively. Lean thinking, on the one hand, is concerned with pursuing the five principles of Lean (Bateman et al., 2014; Hines et al., 2004); (1) to specify customer value, (2) to understand the

value stream, (3) to establish flow, (4) to implement a pull-based production system and (5) to work to perfection by continuously improving operational processes (Womack & Jones, 1996). Through the principles, it is argued that Lean thinking centres around configuring operational processes, as well as fostering behavioural cultural change by focusing on customer value creation (Radnor & Osborne, 2013). Lean tools, on the other hand, are methods and techniques used to create flow and reduce waste in the value chain (Poksinska, 2010). The Lean tools relevant for this study will be described in the following.

**5S**

5S is a workplace organizational technique used to create work flow. The 5S's represent five steps: (1) *sort*, (2) *set in order*, (3) *shine*, (4) *standardize* and (5) *sustain*, that should be performed in that specific order. 5S is often employed to store rooms in order create space and save staff from unnecessary frustration (Edwards, 2015).

**Value Stream Mapping (VSM)**

By defining what the customers want, the value chain can be standardized by first dividing it into value adding and non-value adding process steps (Poksinska, 2010). The standardization process, called Value Stream Mapping (VSM), is concerned with detecting value-adding activities that contribute directly to creating a product or service a customer wants, and non-value-adding activities that do not contribute to the value creation, and are thus deemed waste (Moraros et al., 2016).

**The PDCA cycle**

The Plan-Do-Check-Act (PDCA) cycle is a four-step model for carrying out change (Cheng, 2008). *Plan* concerns identifying and a problem or an opportunity and developing a solution hypothesis. *Do* is about testing the potential solution, ideally on a small scale, and measuring the results. *Check* concerns studying the result, measuring the effectiveness and deciding whether the the hypothesis in the first step was supported or not. *Act* is concerned with implementing this solution if it was successful. If not, the cycle should be repeated with a different plan (Cheng, 2008). The PDCA cycle is repeated over and over to continuously improve a process (Cheng, 2008).

The literature emphasizes that both Lean tools and thinking should be present when employing the Lean methodology in any organization (Bhasin & Burcher, 2006; Hines et al., 2004;

Holmemo et al., 2016; Modig & Åhlström, 2012). However, it is emphasized that when Lean is adopted to sectors outside manufacturing, like healthcare, the tools should be chosen consciously, as they may be strongly context dependent (Hines et al., 2004; Poksinska, 2010). Poksinska (2010) suggests an adaptation-oriented approach with focus on finding ways that are consistent with the specific healthcare context and suit the specific healthcare culture. According to Poksinska (2010), the active choices concerning this, can improve the chances of achieving long-term sustainable improvements.

In addition, it is argued that the principles of Lean have been designed for manufacturing environments, and that "if lean is to be successfully applied beyond this conventional organisational context, then its fundamental principles will need to be reviewed and adapted to suit the specific needs of the host organisation" (Bateman et al., 2014). Bateman et al. (2014) demonstrate in their paper that lean can be successfully applied in a public service context, with only modest modifications to its core principles. These modifications mainly concern how customer demand (pull) is managed. The authors propose three propositions related to the Lean principles when applied in the public service sector, such as public hospitals; (1) the value proposition, (2) the value stream, waste and flow proposition and (3) the pull proposition.

The first proposition is concerned with the first principle of Lean; customer value. Bateman et al. (2014) suggest "that the concept of value holds true in the public sector, but needs to be considered broadly to include the wide variety of stakeholders and what they value". This proposition is widely discussed in the literature on Lean healthcare. The main points in this discussion are presented in the section 4.2.2, under the third challenge.

The second proposition is concerned with the second and third principles of Lean (Bateman et al., 2014). In public service organisations, like in a hospital, the customer supplies, or is, the input to the process and so there is less predictability over the work to be done (Bateman et al., 2014). The authors thus argue that this less predictable input to the value stream can cause variation, and in turn waste.

The third proposition is concerned with the fourth principle of Lean. Bateman et al. (2014) argue that the underlying ideas of pull are appropriate for the public sector. However, the fourth principle of Lean should be renamed "demand readiness" when discussing public sector organizations, such as hospitals. In hospitals, the demand is less predictable, and thus instead

of pulling demand, the system should be ready to operate when customer demand occurs. The authors argue that this fits with the original idea behind pull because it meets the needs of the customer. When evaluating to which degree the principles of Lean are pursued in chapter 6 Findings, we understand the principles in light of these three propositions.

### 4.2.2 Challenges of implementing Lean in hospitals

The concept of Lean introduced in healthcare settings has been widely discussed, mainly because of the concept's origin in the business of private car manufacturing. In a literature review, Poksinska (2010) identified some common challenges that hospitals are faced with when implementing Lean. These challenges will be presented in the following section.

**Challenge 1: Care services are compared to car assembly lines**

According to Fillingham (2007), Lean production is often considered as an automotive manufacturing notion that resists the knowledge transfer to the healthcare sector. This can create negative reactions of the healthcare staff, who provide the argument: "We are not Japanese and we do not make cars" (Fillingham, 2007; as recounted in Drotz & Poksinska, 2014). Some healthcare professionals also argue that every patient is different (de Souza & Pidd, 2011), and therefore that the standardization Lean entails does not fit with the medical goal of treating patients. According to Poksinska (2010) health care staff believe that their organizational settings and problems are unique and cannot simply be solved by implementing methods coming from the manufacturing industry. Poksinska (2910) argues, however, that when the employees receive training and knowledge about Lean, they commonly understand that it can provide great benefits by reducing waste in work processes.

**Challenge 2: Lack of consultants with roots in the healthcare sector**

According to Poksinska (2010), there is a lack of educators and consultants who have their roots in the healthcare sector and can provide support by sharing experience and giving examples from real-life applications of Lean in healthcare. Usually, educators and consultants are hired from the manufacturing sector, and they do not have knowledge and experience of the organization and culture of healthcare (Dickson et al., 2008; Raab et al., 2006; as recounted in Drotz & Poksinska, 2014). As presented in section 4.2.1, it is emphasized that when implementing Lean, the principles, tools and methods should be adapted to the specific context, when implementing Lean. This in turn requires knowledge about the specific context.

**Challenge 3: 'Customer value' is complicated to define**

Determining customer value is one of the five Lean principles, and is thus an important aspect of Lean (Hines et al., 2004). What is considered customer value is defined by the customer, not the organization (Radnor and Osborne, 2013; Hines et al., 2004). Within production companies in the private sector, the customer and the commissioner of the produced product are likely to be the same person, which makes the customer easy to define. In public hospitals, however, the customer and commissioner of public services are not the same (Poksinska, 2010; Andersen, 2015; Radnor and Osborne, 2013). The person who pays, commissions and receives a treatment may be three different individuals; the taxpayers, the Government and the patient, respectively (Radnor et al., 2012). This makes defining the customer, and in turn identify customer value, problematic.

Commonly, the patient is referred to as the customer when Lean is adopted to hospitals (Poksinska, 2010; Radnor and Osborne, 2013), as the patient is the one receiving treatment. However, from a market economic view the payer of the treatment, being the taxpayer, can be understood as the customer (Kollberg, Dahlgaard og Brehmer, 2006). These two views of who the customer is are linked to the micro-macro dilemma in presented in section 4.1.1, and may conflict. Consequently, specifying customer value more complicated in public hospitals than in private manufacturing companies.

**Challenge 4: Lean challenges the status hierarchy**

As presented in section 4.1.2, a Norwegian public hospital can be characterized as a professional bureaucracy with an evident status hierarchy among the professions. Professional knowledge is organizational power, and physicians are the dominant decision makers in hospitals (Poksinska, 2010). According to Poksinska (2010), physicians are trained to act with autonomy, without much focus on skills such as teamwork, collaboration and good communication. Lean, however, requires teamwork between the professions that builds on collaboration and open communication (Poksinska, 2010). Increased collaboration between the occupational groups may challenge the autonomy of physicians, and thus challenge the hierarchical structure at the hospital, which may again lead to resistance among the physicians.

**Challenge 5: Improve the entire value stream**

Finally, as pointed out in section 4.1.2, hospitals are complex organizations, characterized by interdependent departments and units, working in functional silos. Value streams at hospitals commonly cross the borders between these departments and units, which, according to Poksinska (2010), makes it challenging to improve the entire value stream, and not just optimize the performance of individual departments. There is also a risk that an improvement in one department, leads to a problem in another department. Therefore, Poksinska (2010) emphasizes that it is important to take an holistic approach, taking into account the impact of actions in other departments and units.

## 4.3 Process

In this chapter, we will elaborate on the process of how Lean initiatives are commonly implemented in Norwegian public hospitals. The process factor describes the interventions and processes that are involved in the implementation of change (Kuipers et al., 2014). To our knowledge the focus on process is lacking in the literature on Lean healthcare. Thus, we attempt to use general change management theories on change implementation processes in this chapter. In section 4.3.1, some dilemmas linked to the process of implementation is elaborated upon. Further, theory regarding internal communication is presented in section 4.3.2, followed by theory concerning resistance towards Lean, as well as how to handle this, in section 4.3.3.

### 4.3.1 Initiation process

In this section, we will elaborate upon different approaches in terms of initiating change. In particular the dilemmas between use of external consultants or not, top-down versus bottom-up initiation and revolutionary versus evolutionary change will be discussed.

**Use of consultants**

A change agent can be described as an individual who discovers organizational features in need of improvement, and thereupon sets relevant change processes in action to attain potential improvements (Jacobsen, 2012). Jacobsen (2012) distinguishes between *internal* and *external* change agents. Internal change agents are employed within the organization where the change is to take place, such as owners, management at different levels, and frontline employees. External change agents, on the other hand, are not employed within the organization (Jacobsen, 2012). An example of this is external consultants.

External consultants are frequently used in healthcare (Drotz and Poksinska, 2012). On the one hand, external consultants have the advantage of specialized knowledge within a given field, a holistic perspective of the organization, and an objective standpoint (Jacobsen, 2012). On the other hand, a disadvantage with the use of external consultants is their often limited understanding of the complex healthcare context (Fillingham, 2007; recounted in Drotz and Poksinska, 2014), as pointed out in section 4.2.2. This makes the use of external consultants somewhat ambiguous. Eklund et al. (2014) and Holmemo et al. (2016) emphasize that external consultants can be valuable in terms of providing the organization with knowledge about Lean early on in the process.

Based on Eklund et al.'s (2014) findings, external consultants are often needed in order to bring knowledge about Lean into organizations when they introduce the concept. However, in some cases too much reliance on external consultants in combination with passive management, restricts the development of Lean competence, and can result in a subsequent lack of trust and legitimacy for management (Eklund et al., 2014). Furthermore, Eklund et al. (2014) found that when the consultants eventually left the organization, the result was competence drainage. Eklund et al. (2014) emphasized that sustainability was supported when consultants were not given the responsibility of running the change process, but instead were used as management support as long as needed.

**Change initiation**

The literature on change commonly distinguishes between a top-down and a bottom-up approach to change. A top-down initiated change represents an implementation initiated by the formal leaders of an organization, whereas a bottom-up initiated change is regarded as an incremental change approach that represents an emergent process cultivated and upheld primarily by frontline workers (Stewart et al., 2015). Top-down implementation approaches are characterized as efficient and providing the management with a superb overview of the change taking place, whereas the bottom-up approach allows for more experimentation, instills a larger sense of empowerment and local autonomy in the frontline employees and heightens their level of engagement (Stewart et al., 2015).

In terms of implementing Lean at a hospital, top-down change efforts can be driven by the Government, chief executive officers at the hospital, chief nursing officers, or by directors of

quality (Andersen, 2015). Research has revealed that many Lean initiatives are actually top-down, driven by policy and public spending necessities, rather than bottom-up, based on expressed needs (Radnor and Osborne, 2013). According to Cummings and Worley (2015, p. 224), the presence of a powerful sponsor who can initiate, allocate, and legitimise resources for the intervention is an important factor affecting institutionalization of organizational change. Using their definition of sponsorships, top-down implementations, initiated by high-level hospital managers, can be said to be more likely to lead to institutionalization. However, Ballé and Régnier (2007) emphasize the importance of developing an organizational culture in which employees are empowered and encouraged to make improvements. Thus, the need for top-down imposition and bottom-up initiative are conflicting demands that are difficult for managers to meet at the same time.

Stewart et al. (2015) advocate a third combination approach to change, combining the top-down and the bottom-up approach, where the process is initiated and supported by management, at the same time as many details regarding the implementation process were left to frontline staff. The optimal balance between aspects of top-down and bottom-up approaches depends significantly on the context and needs of the situation. A a top-down emphasis is effective for enacting rapid change, but a bottom-up emphasis potentially has a more lasting effect (Lorinkova et al., 2013; Stewart et al., 2012; as recounted by Stewart et al., 2015).

### C**hange approach**

Literature on change management typically categorizes change processes as either *evolutionary* or *revolutionary*. The magnitude and pace of change decides whether we characterize the change as the former or the latter. The magnitude of change refers to the size of the steps being undertaken in the strategic change process, and the pace of change refers to the relative speed at which the steps in the change process are taken (deWit & Meyer, 2014). If a change has a small magnitude of change and a low pace of change, it can be characterized as evolutionary (deWit & Meyer, 2010). All the changes are made gradually and in small incremental steps. On the other hand, a change with great magnitude and high pace means that major changes are made in a short time span, and the change can be characterized as revolutionary (deWit & Meyer, 2010).

A revolutionary change process is often necessary when the organization is so rigid that the only possible way of changing it is to radically break with the past. These rigidities include

psychological, political and cultural resistance to change (deWit & Meyer, 2010). An evolutionary change process, on the other hand, is appropriate to stimulate the evolutionary nature of learning. Time is needed to experiment, reflect, discuss and test. Moreover, in some organizations the power tends to be too dispersed for revolutionary changes to be imposed upon the organization (deWit & Meyer, 2010). Furthermore, organizations must be flexible to ensure continuous learning. Evolution can be lead from the top, but not imposed from the top (deWit & Meyer, 2010).

### 4.3.2 Internal communication

According to Klein (1996), organizational changes often fail because not enough strategic thought is given to communicating the rationale, the progress and the impact of the change. This is in line with Elving (2005), who claims that communication is vital to the effective implementation of organizational change. One of the main purposes of change communication should be to inform the organizational members about the change, and how their work is altered because of the change (Elving, 2005). The author claims this informative function of communication will have an effect on the *readiness* for change.

Armenakis et al. (1993) distinguishes readiness for change from resistance to change, by saying that readiness for change can evolve into either resistance to, or support for, a change effort. The authors describe readiness for change in terms of the organizational members' beliefs, attitudes and intentions. According to Weiner (2009), organizational readiness for change refers to organizational members' change commitment and change efficacy. In change commitment lies a shared resolve to implement a change, whereas change efficacy constitutes a shared belief in their collective capability to do so. Organizational readiness for change is a function of how much organizational members value the change (Weiner, 2009). High organizational readiness for change thus implies that organizational members are more likely to initiate change, apply greater effort and persistence, and display more cooperative behavior.

The main mechanism for creating readiness for change among members of an organization is the message for change, which should communicate the discrepancy between the desired end-state and the present state, and thus the need for change (Armenakis et al., 1993). Weiner (2009) emphasizes the importance of highlighting the discrepancy between current and desired performance levels, fomenting dissatisfaction with the status quo, and creating an appealing

vision of a future state of affairs. The author claims this will increase organizational readiness for change by increasing the degree to which organizational members perceive the change as needed, important, or worthwhile. Klein (1996) further highlights that publicizing successes is especially important during the changing process.

According to Armenakis et al. (1993), persuasive communication and active participation are two appropriate strategies employed to increase readiness for change among organizational members. Persuasive communication could be either oral, as in in-person speeches or communication at meetings, or written, as in documents prepared by the organization, such as newsletters or annual reports. The form of persuasive communication sends symbolic information regarding the commitment to, prioritization of, and urgency for the change effort. Hence, in-person communication is favored because it portrays commitment, is more personal, and provides immediate feedback. However, Klein (1996) emphasizes that repetition of the message through more than one medium increases people's memory of it.

Active participation allows organizational members to learn through their own activities (Armenakis et al., 1993). One form of active participation is directly involving individuals in activities which are rich in information pertaining to potential discrepancy and efficacy messages, such as participating in formalized strategic planning activities, or answering customer complaints. According to Weiner (2009), end-user involvement in change design and implementation planning can be a powerful way of helping people to see why the change is needed, important, and worthwhile. Furthermore, problems should be rectified through feedback and adjustment by developing communication structures that encourage the discussion of problems and potential solutions (Klein, 1996).

### 4.3.3 Employee resistance

According to de Souza and Pidd (2011), resistance towards change deserves special attention from those attempting to implement Lean. Staff empowerment, a key issue in Lean theory, is needed for engaging healthcare professionals (de Souza and Pidd, 2011). The decentralized power within hospitals may make employee commitment to change even more essential. Furthermore, many of the activities employed to implement Lean, like VSM, require employee participation (de Souza & Pidd, 2011). Holden et al. (2015) emphasizes this by suggesting that Lean's ultimate success is greatly influenced by frontline staff perceptions and acceptance.

The Lean healthcare literature illustrates that resistance towards Lean amongst hospital employees is multidimensional (Waring & Bishop, 2010). Firstly, one of the most frequently mentioned barriers to Lean implementation in healthcare is the staff's disbelief that Lean can be applied in a healthcare setting despite its origin in the automobile industry (Drotz & Poksinska, 2014). This is one of the challenges of implementing Lean in hospitals, presented in section 4.2.2.

Secondly, Holmemo et al. (2016) points out that, when implementing Lean, external consultants are likely to use a rhetoric that resembles the contemporary concept of a soft Lean organization. However, what is implemented in practice is often a tool-based understanding of Lean (Holmemo et al., 2016). Andersen and Røvik (2015) refers to this as an 'introductory sale', explained as a conscious sell-in of the least controversial parts of Lean by management. This can be exemplified as staff being told that the primary goal of Lean is quality improvements for the patients, whereas Lean is actually implemented with economic savings as the ultimate goal (Andersen & Røvik, 2015). Stark (2001), as recounted in Vallas (2003), argues that combining distinct and conflicting logics at one and the same time, may give rise to inherently contradictory regimes. Thus, the management claiming to implement something while really implementing something else can contribute to producing cynicism and distrust among the workers concerning management's real priorities (Vallas, 2003).

Thirdly, many physicians are skeptical towards Lean because they fear the standardization Lean entails will deprive them of their professional autonomy (Wiener, 2004; as recounted in Rolfsen, 2014, p. 177). Standardization is associated with low choice autonomy since the ability to decide how to perform tasks in the daily work is reduced. Thus, standardization has a negative connotation in healthcare, and can cause negative reactions among physicians (Timmermans and Berg, 2003; as recounted in Drotz & Poksinska, 2014). The standardization of work processes makes the system much less dependent on individuals, and implies changes in the role of employees, from highly skilled individuals who act on their own decisions in order to treat patients, to members of a collective who follow more standardized procedures. There is also a difficulty and resistance to overly far-reaching standardization of tasks that include contact with the patient, since all patients have different needs (Drotz & Poksinska, 2014).

Lastly, Lean may have ramifications not just for the autonomy of clinical professions, but also for role boundaries and the balance of power between groups more generally (Kirkpatrick et al., 2011). Drotz and Poksinska (2014) found that the implementation of Lean in healthcare settings had a great influence on the roles, responsibilities and job characteristics of the employees. The authors claim that, from a sociotechnical perspective, Lean automatically triggers changes in job characteristics and employee wellbeing. As emphasized as one of the challenges of implementing Lean in section 4.2.2, Lean implementations in hospitals shift the focus from healthcare professionals to process improvement and teamwork (Drotz & Poksinska, 2014). This increased focus on teamwork leads to a re-configuration of occupational boundaries. Clinical autonomy and professional skills, traditionally thought to be the guarding principles of patient care, are replaced with a greater reliance on teamwork, involving not just clinicians, but also other occupational groups (Drotz & Poksinska, 2014).

According to Ford and Ford (2009), resistance can be irrational and self-serving, but it is still an important form of feedback, and should not be dismissed when implementing change. Instead, resistance should be seen as a resource. According to the authors, by treating employees' communications with respect, and by being willing to reconsider some aspects of the change, resistance can be used to effect change more productively.

First of all, in terms of handling resistance, it is important to boost employees' awareness of the change effort, instead of suppressing dialogue (Ford & Ford, 2009). This will make it easier to gain employees' buy-in. Secondly, Ford and Ford (2009) emphasize the importance of not just focusing on communicating the what of the change, but also on the change's purpose. Thirdly, people who are outspoken about their objections to a change are often those who genuinely care about getting things right and who are close enough to the inner workings of an organization to recognize a plan's pitfalls (Ford & Ford, 2009). Hence, management must listen to these employees' objections, and hear their alternative ideas. Fourth, building participation and engagement by letting employees get something they feel is at least partly their own, increases the likelihood of employee buy-in. Lastly, it is important to keep in mind that the rate of success for change efforts is dismal, and people expect history to repeat itself (Ford & Ford, 2009). Thus, as employees listen to new proposals, they remember previous experiences, and may resist new change efforts as a result. Hence, it is important to acknowledge these failures in past change efforts.

## 4.4 Leadership

In this section, we will present theory on the topic of *leadership.* First, we describe six different leadership styles. Secondly, the different powers leaders possess, as well the organizational arenas in which they exert their influence will be introduced. Subsequently, Lean leadership in particular will be presented using the Lean Leadership Development Model as our point of departure.

### 4.4.1 Leadership styles

A leader's leadership style concerns the way a manager motivates direct reports, gathers and uses information, makes decisions, manages change initiatives, and handles crises (Goleman, 2000). According to Goleman (2000), there are six basic leadership styles, that each work best in particular situations and affects the organizational climate in different ways. These leadership styles include *coercive*, *pacesetting*, *authoritative*, *affiliative*, *democratic* and *coaching*.

The first of these leadership styles is the coercive one, in which the leader demands immediate compliance. According to Goleman (2000), the coercive leadership style can be very effective in a turnaround situation, or when working with problem employees. However, the style's overall impact on climate is negative, as it in most situations will inhibit organizational flexibility and decrease employee motivation. Another of the leadership styles that can have a negative impact on the organizational climate is the pacesetting style, in which the leader sets high standards for performance and exemplifies them himself. This leadership style can have a very positive impact on employees who are self-motivated and highly competent, but other employees may be overwhelmed by these demands (Goleman, 2000).

The authoritative leadership style on the other hand, has the most strongly positive impact on organizational climate, according to Goleman (2000). An authoritative leader mobilizes people toward a vision. She states the overall goal, but gives her employees the freedom to choose their own means of achieving it. This leadership style is most effective when changes require a new vision, or when a clear direction is needed, but is less effective when the leader is working with a team of experts who are more experienced than he is. The affiliative leader creates harmony and builds emotional bonds by putting her employees first. This leadership style is particularly useful for building team harmony, or increasing morale, and has an overall

positive impact on organizational climate. However, the focus on giving employees praise, and rarely offering them advice, can allow poor performance to go uncorrected, and leave employees confused (Goleman, 2000).

The two last leadership styles are the democratic style and the coaching style that both have an overall positive impact on organizational climate. Democratic leaders give workers a voice in decisions, and through this build organizational flexibility and responsibility and help generate fresh ideas. The democratic style can be used to build buy-in or consensus, or to get valuable input from employees. However, this leadership style's impact on the organizational climate is not as high as one might imagine, as it might result in endless meetings and employees who feel confused and leaderless. The coaching style focuses on developing people for the future, and thus more on personal development than on immediate work-related tasks. The style is used to help an employee improve performance or develop long-term strengths, and thus works well when employees are already aware of their weaknesses and want to improve. However, it may not work as well when employees are resistant to changing their ways (Goleman, 2000).

According to Goleman's (2000) research, the most effective leaders use a combination of these distinct leadership styles, each in "the right measure, at just the right time". He emphasizes in particular that being able to switch between the authoritative, affiliative, democratic and coaching styles as conditions dictate optimizes the organizational climate, as well as performance.

### 4.4.2 Leadership powers

There are multiple sources for leaders to achieve power. In 1958, French and Raven identified five different bases of power through a study conducted on power in leadership roles. Primarily, leaders can derive potential influence from their position, as well as from their person, known respectively as *position power* and *personal power*. Position power is a result of the leaders' formal function in the organization whereas personal power is associated with the leader's specific character, knowledge, skills and relationships (French & Raven, 1958). In order to achieve the influence most leaders desire, leaders will have to exert a mix of these powers (De Wit & Meyer, 2014).

French & Raven (1958) divides position power into *reward power*, *coercive power* and *legitimate power*. Reward power is defined as power whose basis is the ability to reward (French & Raven, 1958). In other words, it concerns the ability to offer something of value to a person in return for compliance, such as promoting employees or giving praise. Coercive power comes from the belief that a person can punish others for noncompliance. Legitimate power is formal authority to determine certain organizational behaviors, such as assigning work to certain employees.

Personal power, on the other hand, can be subdivided into *expert power* and *referent power*. Expert power is gained through the leader's skills and knowledge, as these factors enable you to understand a situation and use solid judgement, make employees listen to you, trust you and respect what you say. As an expert on a subject, your thoughts will have value, and others will look to you for leadership in that area. Referent power is a result of a leader's perceived attractiveness and worthiness. It comes from the employee liking and respecting the leader, and identifying with her or him in some way. The stronger the identification of the employer with the leader, the greater the referent power.

According to de Wit and Meyer (2014), this influence that leaders have on their employees can be exerted on different organizational arenas. There are three main organizational arenas where leaders can exert their influence: the *political*, *cultural* and *psychological* arena. These arenas partly overlap, and are the parts of the organization most resistant to change (de Wit & Meyer, 2014). In order to exert influence on the political arena, leaders need to build a coalition of supporters, and gain commitment from important figures within the organization. To exert influence on the cultural arena, leaders must be able to change both people's beliefs, as well as their associated behavioral patterns. On the psychological arena, leaders have to gain the respect and trust of their colleagues to exert influence. Furthermore, a leader needs to exert certainty, clarity and continuity in times of change (de Wit & Meyer, 2014).

In the upcoming section we will narrow the scope to *Lean leadership* in particular. Although quite a lot of literature describing Lean leadership can be found, only a rather small amount of literature on Lean leadership in the hospital sector is found. Consequently, we will use a more general model, known as the *Lean Leadership Development Model* presented by Liker and Convis (2011), as our point of departure. Although this model may have some shortcomings,

it is commonly referred to in the literature, and provides some guidelines on what Lean leadership is concerned with. The model will be explained in the following section.

### 4.4.3 The Lean Leadership Development Model

Lean leadership is a central aspect in implementing and sustaining a Lean improvement program (Poksinska et al., 2013). The approach to leadership needs to change when introducing Lean, both in the way managers act, interact and communicate with workers, as well as in how they make decisions (Hines et al., 2008; Liker, 2004; Mann, 2005; as recounted in Poksinska et al., 2013).

In 2011, Liker and Convis published the today well-known book *The Toyota Way to Lean Leadership*, in which they presented the Lean Leadership Development Model. The model describes the most important characteristics of Toyota leadership, consisting of four stages. According to the authors, the model accurately captures the Toyota approach to leadership - both what it means to be a leader at Toyota, as well as how to go about developing leaders. In the following, we will describe each of the four stages consecutively, as depicted in Figure 4. Note that these stages are considered to be cyclical, repeating over and over throughout a person's career (Liker & Convis, 2011). This is illustrated by the PDCA-circles in the figure.

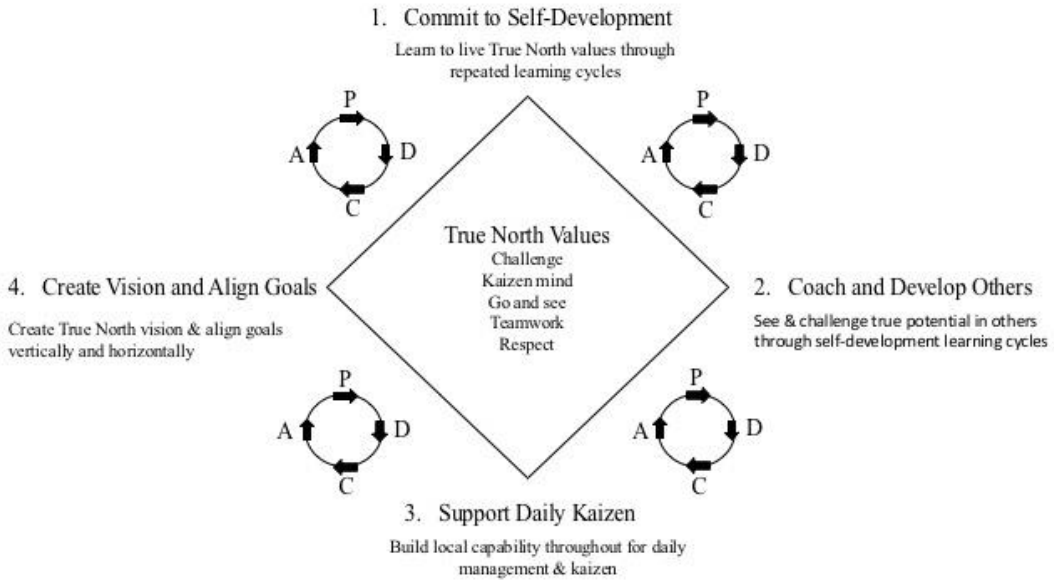



***Figure 4: The four stages of the Lean Leadership Development Model***

**Stage 1: Commit to self-development**

The first stage involves Lean leaders developing themselves before they go about teaching others the philosophy. In this stage, leaders need to understand and learn to live the *True North values* through repeated learning cycles. The True North values include the (1) spirit of challenge, (2) kaizen, (3) genchi genbutsu, (4) teamwork and (5) respect. These are the five defining values of the Toyota Way (Liker & Convis, 2011).

The spirit of challenge is concerned with leaders taking on successively greater challenges and reflecting at each of these steps with the aim of developing themselves, whereas kaizen is a mandate to continuously improve performance (Liker & Convis, 2011). Genchi genbutsu is another defining value of the Toyota Way, and calls for going and seeing to deeply understand. Teamwork is about all employees needing to understand the goals and work together to achieve them. Every member of a team is given opportunities as well as accountability to achieve results. The last value is concerned with respect for all employees, both in terms of what they contribute, as well as for who they are.

**Stage 2: Coach and develop others**

The second stage involves coaching and developing others, as Lean leaders should communicate and teach the values and cultural norms of the Lean organization (Liker & Convis, 2011). The Lean organizational structure is often illustrated using an inverted pyramid, with managers at the base and employees at the top, signifying that the primary role of managers is to serve and meet the needs of front-line workers (Liker and Convis, 2011). Lean transformations require continuous effort from managers, and in the beginning, the implementation activities are very dependent on managerial push (Poksinska et al., 2013). A very important aspect of achieving sustainable Lean improvements is to build a supporting culture and system that guides the behavior and thinking of employees. According to Poksinska et al. (2013) over time, this effort will replace managerial push with employee pull, and the system will continue without dependence on the individual leader.

Leaders take on an important role in terms of stepping up and solving problems discovered along the way, by putting employees in challenging situations and then coaching them through the problem-solving process. The employees who perform the best can then get broader responsibility and more challenges. Thus, Lean initiatives are sustained by developing leaders

who can develop employees (Liker & Convis, 2011, p. 120). These leaders need to get involved in the changes, and be patient in order for the changes to be sustained.

**Stage 3: Support daily kaizen**

Lean leaders should also support daily kaizen and encourage participation and engagement for improvement activities (Liker & Convis, 2011). This constitutes the third stage. According to Dombrowski and Mielke (2013), the key success factor in maintaining a sustainable continuous improvement process is the involvement of employees in daily improvement. The leader should not force kaizen from the top down, but rather enable, encourage and coach kaizen from the bottom up (Liker & Convis, 2011). This includes holding everyone accountable for meeting Lean commitments through regular, direct involvement (Mann, 2009).

Poksinska et al. (2013) studied managerial practices and leadership in Lean organizations, using data from five case studies conducted in both manufacturing and healthcare organizations. During their research, the authors found that the supporting structure and culture for continuous improvement was weaker in the healthcare organizations than in the manufacturing firms, and thus that the successes of improvement programs in healthcare organizations is likely to be more strongly dependent on managers' ability to keep employees committed and motivated.

**Stage 4: Create vision and align goals**

The fourth stage involves creating the organization's philosophical objective and long-term improvement goals. This stage then involves *hoshin kanri*, which concerns setting aligning the direction of all the individual kaizen activities to the long-term improvement goals (Liker & Convis, 2011, p. 183). Kaizen activities will take place in different parts of the organization, and it is important that these activities do not contradict each other. Thus, consensus goals have to be set for long-term improvement and management then needs to decide on the best allocation of effort and resources to reach those common goals.

Lean initiatives require a consistent Lean management approach. Mann (2009) stresses that Lean is a high-maintenance approach that requires a surprisingly high level of attention. There are two reasons for this. Firstly, processes are designed to highlight problems and secondly, without an ongoing and consistently reinforced set of behaviors that replace our habits, we revert (Mann, 2009). A Lean process is not a set-it-and-forget-it proposition. Lean designs

require attention to the faults, their root causes, and root cause corrective actions. Otherwise, "temporary patches morph into permanent fixtures, the design degrades, and practices revert to the way we've always done things" (Mann, 2009). Thus, Lean initiatives require consistent leadership over an extended period of time (Liker & Convis, 2011).

The Lean Leadership Development Model illustrates how the primary role of managers using the Lean methodology becomes to motivate, coach, and develop individuals and teams. Sustained Lean success requires a change in mindset and behavior among leadership, and then gradually throughout the organization. Lean success occurs when senior leaders put appropriate structures and processes in place and get personally involved in sustaining the Lean conversions, learning Lean, and developing other Lean thinking leaders throughout the enterprise. Eventually, a Lean culture will grow from this consistent effort, and striving for perfection will become "the way we do things here" (Mann, 2009).

## 4.5 Outcomes

In this section the theory on *Outcomes* will be presented. In the following sections, the concept of institutionalization will be elaborated upon, using five indicators of institutionalization presented by Cummings and Worley (2015). We will revisit these indicators again in chapter 7.5, where we will use them to determine the degree of institutionalization of the changes at SI Lillehammer.

According to Cummings and Worley (2015), institutionalization is not an all-or-nothing concept, but reflects degrees of persistence in a change. Institutionalization entails maintaining successful changes as a normal part of the organization for an appropriate period of time (Cummings & Worley, 2015, p. 221). Thus, such changes are not dependent on any one person but exist as a part of the culture of an organization. As pointed out in the Introduction, we regard an institutionalized change to be successful. Cummings and Worley (2015) claim the extent to which five given factors are present or absent indicates the degree of institutionalization. These factors include *knowledge*, *performance*, *preferences*, *normative consensus*, and *value consensus*, as shown in Figure 5. In this section we will explain what each of these factors imply.


***Figure 5: The five factors indicating the degree of institutionalization***

*Knowledge* involves the extent to which organization members have knowledge of the behaviors associated with an intervention (Cummings & Worley, 2015). If organization members know how to perform the behaviors related to the intervention, and also what the consequences of performing these actions are, the knowledge factor can be said to be present.

*Performance* is concerned with the degree to which intervention behaviors are actually performed. Assuming organization members have knowledge of the behaviors associated with an intervention does not necessarily imply that people are actually performing these behaviors. We can measure this factor in the share of employees performing the behaviors, or in the frequency with which the new behaviors are performed (Cummings & Worley, 2015).

*Preferences* involves the degree to which organization members privately accept the organizational changes. Private acceptance is not acceptance based mainly on organizational sanctions or group pressures, but rather on that individual's positive attitudes toward the changes. We can measure this factor by the intensity of these attitudes across the members affected by the changes (Cummings & Worley, 2015).

*Normative consensus* is focused on the extent to which people agree about the appropriateness of the changes (Cummings & Worley, 2015). If the changes can be said to be part of the normative structure of the organization, normative consensus is present.

*Value consensus* is concerned with whether there is social consensus on values consistent with the organizational changes among the members of the organization (Cummings & Worley, 2015). If members of the organization widely share values relevant to, or associated with, the changes, value consensus can be said to be present.

The five indicators of institutionalization, as presented by Cummings and Worley (2015), can be used to assess the sustainability of the changes, or said in other words, the degree to which

they persist. The authors also claim that these five factors build upon each other as shown in Figure 5. The knowledge factors is a prerequisite for the performance factor being present, the performance factor is a prerequisite for the preferences factor being present, and so on. Members of the organization must first understand the changes in order to perform the behaviors required by the changes. Likewise, people's preferences for these changes are affected by their ability to effectively perform the behaviors required by the changes. Normative consensus requires individual members of the organization to have a positive attitude toward the changes. If there is normative consensus about the appropriateness of the changes, this will likely over time facilitate value consensus on the values related to the changes.

Even though institutionalization reflects degrees of persistence in a change, an organizational change is fully institutionalized only when all these five factors are present (Cummings & Worley, 2015). In section 6.5, the degree of institutionalization of the same-day surgery process at SI Lillehammer will be evaluated.

# 5 Methodology

In this chapter, we will present the methodology of the thesis. Firstly, we will describe our research strategy in section 5.1. This is followed by a description of the research design in section 5.2, and the research method in section 5.3.

## 5.1 Research strategy

A qualitative research strategy is taken in this paper, meaning that words are used over numbers in the collection and analysis of data (Bryman, 2012). The goal of qualitative research is to explore the meaning of social phenomena, as experienced by those involved. When studying a process, a qualitative research strategy is more convenient than a quantitative research strategy (Bryman, 2012). We are interested in studying the same-day surgery process from its beginning in 2013, and until today, which involves how the factors presented in the framework have affected each other during this time. This makes a qualitative research strategy the most suitable.

Whereas the research criteria in quantitative research are well-defined, the ones for qualitative research are much debated. Lincoln and Guba (1985) and Guba and Lincoln (1994) as referred to in Bryman (2014) propose two primary criteria for assessing qualitative research: *trustworthiness* and *authenticity*. Trustworthiness parallels internal and external validity, as well as reliability and objectivity in quantitative research (Bryman, 2014). One way to increase the trustworthiness of a qualitative study is through *triangulation*, which is defined as using 'multiple observers, theoretical perspectives, sources of data and methodologies' when studying a social phenomenon (Bryman, 2014, p. 392). Authenticity, on the other hand, is concerned with the political and ethical integrity of the social researcher (Bryman, 2014). One way to increase the authenticity of a study is through *fairness*, which concerns 'that the research represents different viewpoints among the members of the social milieu' (Bryman, 2014, p. 393). Through this chapter, we aim to underpin how the choices we have made has increased the quality of the study, using these two criteria.

### 5.1.1 The relationship between theory and data

The relationship between theory and data can be described as either *deductive* or *inductive* (Bryman, 2012). A deductive relationship between theory and data generates research out of

theory and is in opposite to an inductive relationship between theory and data, which generates theory out of research (Bryman, 2012). Deductive theory represents the commonest view of the nature of the relationship between theory and social research (Bryman, 2012, p. 24). The reasoning often starts out with a theory or a set of hypotheses to test, before observations are collected to test these hypotheses. Inductive reasoning moves from specific observations to broader generalizations and theories (Bryman, 2012). The researcher often begins with some specific observations, detects some patterns, formulates the tentative hypotheses to explore, and ends up with general conclusions or theories. According to Bryman (2012), the distinction between the two approaches should be thought of more as strategies than a straightforward choice of one over the other. Even though qualitative studies are predominantly inductive (Bryman, 2012), both inductive as well as deductive steps are undertaken in this study.

Since our knowledge on the field studied was limited when we initiated the research process, we started out in a deductive manner. In the literature review we identified some factors at the hospital that could challenge the sustainability of Lean processes in hospitals. In the empirical study later on, we aimed to test whether these factors were indeed challenging in terms of sustaining Lean at SI Lillehammer. This can be considered a deductive approach. However, some of the concepts in the Lean healthcare literature that are not yet well-developed. Examples of such concepts are 'sustainable Lean' and 'successful Lean'. Since we study a successful Lean initiative in a Norwegian public hospital, and there exist no or very few studies on this, we also aim to generate new theory from empirical data. This can be considered an inductive approach. Thus, the relationship of theory and data in this study can be characterized by an interplay of inductive and deductive steps.

## 5.2 Research design

### 5.2.1 Case company study design

A research design can be viewed as a framework for collecting and analyzing data (Bryman, 2012). The chosen research design highly depends on the key question of the thesis and the resources available. The research method is a technique for collecting data, and thus is a part of the research design (Bryman, 2012). Based on Yin (2014), there are three conditions for when to use different research strategies: (1) the type of the research question posed, (2) the extent of control an investigator has over actual behavioral events, and (3) the degree of focus

on contemporary as opposed to historical events (p. 10). Based on these three conditions a case study seemed suitable, as elaborated upon next.

According to Yin (2014, p. 10) *how* and *why* questions are likely to lead to the use of a case study, history, or experiment as the preferred research method, as such questions deal with operational links needing to be traced over time. As our research questions has the form of a *how* question and no control over the behavioral events is required, a case study or a history are the preferable choices. Yin (2014, p. 12) emphasizes that a case study is preferred when examining contemporary events, but when the relevant behaviors cannot be manipulated. Even though we evaluate a process in retrospect, the individuals who have been involved in the process are still possible to interview. In the historical method, on the other hand, the researcher deals with the "dead" past, basing the research on documents and artifacts as main sources of data (Yin, 2014). A case study is thus the preferable choice as it gives us the ability to deal with a full variety of data, including interviews.

Although a longitudinal study may be best suited to study changes over time, our limited timeframe prohibited us from doing so. We therefore chose to study a well-documented process that was initiated several years ago. This gave us the opportunity to study and analyze the process in retrospect.

### 5.2.2 Single case study

We have chosen to conduct a *single* case study, as this type of study entails the detailed and intensive analysis of one single case (Bryman, 2012). Single case studies can be divided into *intrinsic* and *instrumental* case studies (Stake, 2000). An intrinsic case study is provided if the aim of study is to understand that particular case better, whereas an instrumental case study is used to provide insight into an issue (Stake, 2000). The same-day surgery process at SI Lillehammer was mainly chosen due to the fact that it was awarded the "Lean Project of the Year" award in 2016, as discussed in 2.3.

As the same-day surgery process can be viewed as a successful Lean initiative in a Norwegian public hospital, the case is quite unique. We decided to study this case with the intention of using the empirical findings as a guideline or 'instrument' for other departments and hospitals on how to successfully implement Lean. Thus, this case study can be categorized as

instrumental. As pointed out earlier, the study is qualitative, thus the research design in this study can be described as a qualitative, instrumental, single case study.

## 5.3 Research method

### 5.3.1 Data collection

Our main source of data has been interviews. All the interviews have been conducted at SI Lillehammer. Yin (2014) recommends relying on at least two or more sources of data in a case study design. We have therefore included internal documents from SI Lillehammer, as well as publicly available information, in order to provide triangulation.

**Interviews**

In this study, semi-structured interviews are conducted. When planning the interviews, it is difficult to know in advance how many interviews you need to conduct in order to achieve theoretical saturation, the point where the category is saturated with data (Bryman, 2012). However, Bryman (2014) further emphasizes that "as a rule of thumb, however, the broader the scope a qualitative study and the more comparisons between groups in the sample that are required, the more interviews will be needed to carry out".

Based on our theoretical study, we are under the impression that there can be dissimilar understandings of Lean based on the formal positions in the organization. Thus, our aim was to interview employees with, and without, managerial functions within the same-day surgery process. In addition, it is pointed out in the theory that the resistance to Lean varies among the occupational groups. In turn, we aimed to interview representatives from the different occupational groups, primarily physicians and nurses. This increases the authenticity of the study, as we have aimed to get different viewpoints of the social setting. In order to achieve this, we provided our contact person at SI Lillehammer with the above-mentioned guidelines and criteria, and subsequently our contact person chose suitable interview objects for us. According to Bryman (2014) this non-probability sampling method can be categorized as purposive, as the participants were chosen a-priori based on how they suited the case.

The interviews were conducted separately, except from the one with the assistant department manager and the management advisor. It was important for us to only speak to one person at a

time, so that the interviewees felt comfortable speaking out, giving us honest answers. In addition, we found it important to compare the answers in order cross reference and corroborate information. Using more sources to underline our conclusions, serves as source of data triangulation, which is important in case study research (Yin, 2014). This increase the trustworthiness of the study. All the interviews were recorded and transcribed, with approval from the informants, as recommended by Bryman (2012). This made it more convenient to follow the informant's line of thought, instead of concentrating on writing notes. Furthermore, it gave us the opportunity to ask follow-up questions. In addition, transcribing the interviews made it possible to perform the following data analysis in a more structured manner which will be presented in section 5.3.2.

In Table 1 presented below, the interviews are sorted by date of the interview. In total, we interviewed 12 individuals, which resulted in approximately seven hours of interview material. Four of the interviewees were physicians, and eight were nurses. Five of the informants have held management responsibilities related to the same-day surgery process from 2013 until 2016 and the remaining seven have not. One of the interviews conducted was not transcribed nor used as a source of data, as the interviewee had not been involved in the same-day surgery process at all, and therefore was not relevant to our case. All the other interviews were transcribed within three days after the interview.

***Table 1: Overview of interviews***

| Informant | Date | Duration (min) |
|---|---|---|
| Management advisor and assistant department manager (2 interviewees) | 20.02.2017 | 88 |
| Nurse working at the admissions office | 14.03.2017 | 31 |
| Intern | 14.03.2017 | 24 |
| Anesthetic nurse | 15.03.2017 | 19 |
| Accompany nurse | 15.03.2017 | 32 |

| | | |
|---|---|---|
| Ward nurse | 15.03.2017 | 18 |
| Senior charge nurse/Former leader of the improvement group | 16.03.2017 | 52 |
| Doctor in specialization | 16.03.2017 | 18 |
| Former department manager/Former leader of the same-day surgery process | 16.03.2017 | 60 |
| Current leader of the improvement group | 17.03.2017 | 35 |
| Anesthetic doctor | 17.03.2017 | 29 |

The length of the interviews varies from 18 minutes to 88 minutes. The longest interview however, was not conducted with the same interview guide as the other interviews. This interview was conducted at an early stage in the research process and was to a large degree dedicated to get an overview of the case. In the other interviews, we had a time limit on one hour per interview.

The interview guide was separated into six parts. First, we asked some general question about the interviewee, such as his or her name, title and connection to the same-day surgery process. Second, some questions on knowledge of Lean were asked. Third, questions specific to the same-day surgery process process and the informants involvement were asked. Fourth, we asked about institutionalization. Fifth, we asked about the roles in same-day surgery process, and how these had changed over time. Sixth, we asked some questions about leadership. The interview guide for these interviews can be found as a whole in Table A1 in Appendix.

As we interviewed employees from different departments and occupational groups, the questions were quite open-ended, and minor adjustments was made before each interview. The interview guide was constructed through several iterations. A preliminary interview guide was created based on our theoretical findings concerning challenges on implementing Lean in

Norwegian public hospitals. The guide was later evaluated by our supervisor, and small adjustments were made according to her suggestions.

**Documentation**

Our secondary source of data is documentary information, mainly documents about Lean used to educate the employees, as well as documents explaining the same-day surgery process improvement. According to Yin (2014), the most important use of documents is to corroborate and augment evidence from other sources. During this study, documentary information was found through two different sources. Our main source was administrative documents, such as progress reports, checklists, PowerPoint presentations and internal records. We also received the application letter for the "Lean Project of the Year"-award, which thoroughly explained the case and its achievements. These document were given to us by the internal management advisor and the assisting department manager by email.

The second source of documentation is publicly available information. Access to information about the hospital and the case online, was limited. This made fieldwork prior to the study somewhat difficult. However, some information about the dedication to the patient could be found. In addition, when visiting the hospital, we were given booklets with information usually given to individuals treated as same-day surgery patients.

### 5.3.2 Data analysis

"Data analysis consists of examining, categorizing, tabulating, testing or otherwise recombining evidence, to produce empirically based findings" (Yin, 2014, p. 132). In this section we give an overview of how the data analysis during this study was performed.

**Analytic techniques**

There are few well-defined techniques to analyze case study evidence yet, and instead much depends on the researcher's own style of rigorous empirical thinking, along with the sufficient presentation of evidence and careful consideration of alternative interpretations (Yin, 2014). Yin (2014) suggests to start analyzing by playing with the data and searching for promising patterns, insights and concepts, with the goal of defining your priorities for what to analyze and why.

Further, Yin (2014) emphasized four other research strategies (1) to rely on theoretical propositions, (2) work your data from the "ground up", (3) develop a case description and (4) examine rival explanations. Any of these four strategies can be used in practicing different techniques for analyzing case studies. By relying on theoretical propositions, one follows the propositions that led to the case study in the first place (Yin, 2014), which is what we have done in this study. Our case study took the proposition that Lean is hard to institutionalize in Norwegian public hospitals, as its point of departure. Thus, preexisting theories formed the basis of our theoretical orientation, shaped our data collection plan, and therefore yielded analytic priorities.

The main analytical technique used in this study is *pattern matching*, as this the one of the most desirable techniques to use (Yin, 2014). Such a logic combines an empirically based pattern with a predicted one made before the collection of data (Yin, 2014). Mattern patching can be further divided into subcategories such as *explanation building* and *logic models* (Yin, 2014). Explanation building is a special type of pattern matching, where the goal is to analyze the case study data by building an explanation about the case. Logic models, on the other hand, consist of matching empirically observed events to theoretically predicted events (Yin, 2014). By using these techniques, the trustworthiness of the study is increased.

After transcribing all of the interviews, we coded each one separately. Firstly, we coded the interviews without any code restrictions, based on what the informant told us. Simultaneously, we wrote down all the codes that we used in an Excel-document. After coding all the interviews, we assessed the different categories and figured out which of the categories that could be merged into a more general category, referred to as main categories. This was done together, in order to reduce inconsistencies due to individual bias, and increase the trustworthiness of the study. One Excel spreadsheet was made for each main category. In all of these spreadsheets, we wrote down quotes from the interviews suitable for that main category.

In order to structure the theoretical and analytical chapter, the inductive categories identified in the coding were categorized into the Pettigrew framework. During our first, initial interview with two of the leaders at the surgical department we were under the impression that leadership played an important role in the success of the same-day surgery process. We decided to study this in more depth by including questions about leadership in the subsequent interviews, and

added leadership as an additional factor in the original framework, creating a framework much like the one presented in Kuipers et al. (2014). Simultaneously, some concepts that we originally thought would be important, turned out to be less important and were dismissed.

**Anonymity**

In terms of statements and direct quotes, we have chosen not to refer to our interview objects by name, nor their title. This was agreed upon with all the informants before the interviews were held. All of our informants have different roles within the same-day surgery process, and thus the title of a member of the surgical department at SI Lillehammer would be easily identifiable. More so knowing who were interviewed during our days at the hospital. In some cases, it is of the reader's interest to know if a statement is given by an employee in a leading position or not. In those cases, we will refer to the informant as Leader 1, 2, 3, 4 or 5. In other cases, it is of the reader's interest to know whether an employer is nurse or physician by education. In this cases we will refer to the nurses as Nurse 1, 2, 3 or 4 and physicians as Physician 1, 2 or 3. Every interviewee refers to one of these aliases. We do not believe our choice of not identifying the interview objects by name, nor title, affects our conclusion.

# 6 Findings

In this chapter we will explain how each of the factors presented in our framework have contributed towards the institutionalization of the same-day surgery process. This entails analyzing how our empirical findings in this case study can be seen in relation to the theoretical foundation presented in chapter 4. In order to present these findings in a structured manner, we have chosen to structure this chapter in the same way as the theoretical chapter. Thus, we have divided this chapter into the same sections we used in chapter 4. In particular, we will analyze how the same-day surgery process has changed and influenced each of the factors over time, from the initiation of the process in 2013 until today. In the subsequent chapter, we will discuss how the factors have influenced each other over time.

## 6.1 Context

### 6.1.1 External context

SI Lillehammer is, like all Norwegian public hospitals, owned by the state of Norway, and is thus characterized by strong regulations through the National Health Policies. As explained in 4.1.1, there seems to be a movement in the Norwegian health care system towards more standardization of the health services they provide. The introduction of several new care pathways, and the requirement of 90% same-day surgery, are just two illustrations of this. Thus, the same-day surgery process at SI Lillehammer must be seen in light of these developments.

As pointed out in section 4.1.1, public hospitals are characterized by having a long list of different stakeholders, both internal and external to the organization. This is said to complicate the value equation, as the different stakeholders are likely to have differing interests. In this case, however, the interests of the different stakeholders have been fairly aligned. On the one hand, the target of 90% same-day surgery was set forth by the Norwegian Government, and the Government are thus positive towards the process initiated at the surgical department at SI Lillehammer. When the same-day surgery process was initiated, the top management at the hospital had already introduced Lean as an improvement methodology. The top management at the hospital were therefore positive towards the same-day surgery process as well.

Furthermore, one of the central motives behind the same-day surgery process was to cut costs. During the first years of the same-day surgery process however, it was challenging to convince the top management at the health trust that the earnings from the process wouldn't come at once, and that the process was going to be time-consuming. The management at the surgical department emphasizes that the changes were made without an increase in their budget. When investments were made, like buying an extra EKG for cardiology tests, they had to apply for financial means in the regular way. One of the leaders describes the situation like this:

> *The point of departure is that "there is no money", so the decisions we make have to be within the budget we control, and we can't spend too much. And not too often. In principle, it should not cost anything at all.* (Leader 1)

Regardless, one of the aims of the same-day surgery process was to cut costs, which to a large degree is in line with the wishes of both the Government and the hospital top management.

On the other hand, improving patient value, which according to both informants and internal documents is another central aim of the same-day surgery process, is largely aligned with the interests of patients, as well as of employees. One of the process leaders emphasizes that same-day surgery process is about improving the quality for the patient, rather than to create an efficient care pathway, and that this is thus what has been communicated to employees: *"We have never spoken of improving efficiency. That is a no-word around here. (...) There is enough talk about financials and red numbers as it is."* (Leader 2). Thus, even if the main aim of some stakeholders is to cut costs through this process, and others focus mainly on the aspect of increasing patient value, the same-day surgery process has aimed to do both of these things at the same time, thus to a large degree aligning the interests of important stakeholders. As a result, there is also no clear micro-macro tradeoff in this case. However, one of the physicians expressed concerns about the increasing focus on hospital earnings:

> *I without a doubt see a trend in the health sector where the services offered to the patient are increasingly dependent upon how favorable performing these services are to the hospital. For instance, we see that prosthetic surgery is given priority. Smaller surgical procedures, such as hand surgery, that are time-consuming, yet very important for the patient, are given less priority. Thus, offering a service to a patient is*

> *increasingly a question of how much the hospital will earn by performing this service.* (Physician 3)

Thus, prioritizing one patient group over another as implied by Physician 3 illustrates that the micro-macro dilemma is present in the Norwegian health sector. However, we argue this is not specific to the same-day surgery process, but rather a result of effort-based financing (Kjekshus, 2003), and we do not consider the same-day surgery process in the surgical department to contribute further to this micro-macro dilemma. On the one hand, the same-day surgery process aims to provide a better service to individual patients, by making their visits to the hospital as effective as possible without affecting their care. On the other hand, because the same-day surgery process makes the surgical department at SI Lillehammer more effective, it also services the needs of society. The increased efficiency allows them to reduce surgery queues, as well as cut costs, which is likely to be in the best interest of the Norwegian population.

### 6.1.2 Internal context

The surgical department at SI Lillehammer is described by management as a large and heavy department, which to a large degree coincides with Mintzberg's characterization of professional bureaucracies. Furthermore, before the introduction of the same-day surgery process, the departments at SI Lillehammer, like for most Norwegian public hospitals, could be characterized as silos, both in terms of location and culture. The departments collaborated to a small degree with each other and only had limited knowledge about each other's tasks. In addition these departments were, and still are, geographically spread out, located on different floors at the hospital.

> *Before we introduced Lean, we used to work in silos. We had the surgical policlinic in one place, and the ward in another place, and we were all caught up in our own worlds. That is the difference between Lean, and not Lean. Lean forces you in a way to work across these boundaries. And if you are to improve something, you have to. So you remove these silos and these partitions, and in a way finally see each other, and this makes working so much more fun as well.* (Leader 3)

Previously, the patients have had to deal with these silos, by moving from department to department for the different examinations and procedures to be executed. One of the managers describes the former situation like this:

> *In Norway, many people think it is the physician's time that is precious, and that everyone else should always come to where the doctor is, and not the other way around, and that was kind of the situation with same-day surgery as well.* (Leader 1)

Today, as a result of the same-day surgery process, the departments and units are organized around the patient instead. The same-day surgery process has thus seemingly contributed to facilitate cooperation between the departments, and tearing down the silos that characterize many hospitals. As pointed out in section 2.3 the surgical department now has a same-day surgery room with a single location within the hospital, and representatives from all the sub-departments and units are localized close to each other in the surgical policlinic. This means that the patient only has to show up at a single location on the day of examinations, making the visit at the hospital significantly easier. Thus, the employees have organized their work with the patient in focus, not the other way around.

Other characteristics of professional bureaucracies include highly autonomous professional groups and an evident hierarchy by which physicians have more influence and power than other professions. It is our impression that the clinicians at Lillehammer, and chief attending physicians in particular, are to a large degree highly autonomous, as well as powerful. Employees at SI Lillehammer describe how the physicians are used to doing whatever they want, and deem best, in given situations. As one of the managers put it, physicians *"are used to doing what they feel best"* (Leader 1). Both managers and nurses emphasize that getting the physicians onboard this process has been challenging, as they are used to being the ones in charge at the hospital, and this process to some degree may threaten this power and autonomy: *"The physicians were challenged in terms of no longer necessarily being at the top of the food chain, since all employees are to be valued equally in the same-day surgery process"* (Leader 1).

The checklists, that are used to standardize the sequence of activities involved in this process, is one of the tools used as part of the process. However, the checklists only provide an order for tasks to be carried out, and, for instance, do not provide guidelines as to how an operation

should be performed. Thus, we perceive that this standardization does not in particular challenge the clinicians' autonomy, but simply ensures that all the required examinations are carried out. According to management, new hires are positive towards having this set of guidelines as well. Furthermore, none of the physicians in our sample expressed dismay with this standardization, but rather saw these standards as helpful in performing their day-to-day tasks.

Moreover, when visiting the surgical department at SI Lillehammer, and talking to our informants, it became evident that there has, and still does, exist power relations between the different professions employed in the department. Employees seem to have a strong sense of identity with their professional group, physicians in particular. In the past, employees from other occupational groups have expressed that when decisions are made, they have been less encouraged to share their opinions, and thus that contributions from different professional groups have been valued differently. However, after the same-day surgery process initiation these power relations seem to be less evident. For example, one of the process leaders said this about including all occupational groups when performing a VSM:

> *When doing a VSM, all occupational groups are included. The cleaning personnel or the secretaries are not always the first ones to raise their hand and ask questions or make suggestions. So in the VSMs, where everyone gets to sit in their own peace and quiet and think, nothing is too small or too stupid. This creates respect for, and a sense of accomplishment in these employees, and make them feel like an important part of the puzzle.* (Leader 5)

It should be noted that physicians still seem to have more influence and power within the department than other professions. However, Lean requires cooperation between different occupational groups, and this was also the case with the same-day surgery process at SI Lillehammer. In the literature on Lean initiatives in healthcare organizations, some authors claim these boundaries between occupational groups are one of the most prominent impediments for these initiatives' success, as presented in the fourth challenge in section 4.2.2. Nevertheless, cooperation between the different professional groups have increased as a result of making use of the various tools and techniques of Lean in the same-day surgery process, and this cooperation has to a large degree been successful. One of the physicians says another positive effect of this increased collaboration has been the following: *"I believe this new insight*

*into the day to day work tasks of other employees has been very useful."* (Physician 3). Thus, the increased collaboration between the professions has increased awareness of what the tasks of other professional groups are, as well as these groups' significance in delivering patient value.

Several employees as well as managers have emphasized that Lean and the same-day surgery process has provided a greater respect for the occupational groups that felt overlooked before. According to Leader 2, *"there is way more respect for the occupational groups that may not have felt seen at all previously"*. Introducing Lean in the department has led to a cultural change according to Leader 5, in which the different occupational groups increasingly collaborate, as well as respect each other:

> *Lean has given us a lot in terms of attitudes, values, teamwork, and how we approach each other. There is more openness to discuss, both things that are positive as well as negative. The culture at the department has changed.* (Leader 5)

This cultural change is likely a result of the change in routines that has led to both increased cooperation between the occupational groups, as well as some employees becoming more powerful than they were before the change. One example is the establishment of the accompany nurse, a position that did not exist within the surgical department before the same-day surgery process was introduced. One of the nurses at the hospital who has gained power as result of the same-day surgery process said the following about this shift in power relations:

> *You know, chief attending physicians don't want anyone telling them what to do. They are used to making their own decisions, and then suddenly, they're supposed to listen to me, right. So calling them and nagging at them when I need them to do something isn't always easy.* (Nurse 3)

**To summarize**, the external and internal context of Norwegian public hospitals presented in chapter 4.1 portrays implementing Lean in hospitals as challenging. However, our empirical results indicate that the presented external and internal context factors that make Lean challenging to implement in hospital may not entirely apply to the surgical department at SI Lillehammer. This will be further discussed in chapter 7. First of all, the different stakeholders in a hospital are likely to have differing interests. However, the interests of the stakeholders of the same-day surgery process seem to have been fairly aligned. This is tied to how management

have communicated the change to employees. Instead of talking about efficiency, they have focused on how the process will contribute to increasing patient value. Furthermore, we did not find that the same-day surgery process contributed further to the micro-macro dilemma, which will be further discussed in section 6.2.2.

The description of the surgical department before the introduction of the same-day surgery process fits nicely with Mintzberg's characterization of professional bureaucracies. The implementation of Lean at the surgical department at SI Lillehammer has influenced the roles of employees and has led to increased collaboration between the different occupational groups, as well as increased power and respect for the non-physician occupational groups. The silos between different hospital departments have been partly removed by involving all the units tied to the value stream in the process and introducing the same-day surgery room as well as the accompany nurse. Thus, the relevance of many of the contextual challenges described in 4.1 have decreased as a result of the same-day surgery process.

## 6.2 Content

### 6.2.1 Lean tools and thinking

The literature emphasizes that focusing solely on Lean tools, without incorporating elements of Lean thinking, often leads to failure. As a result of implementing tools like VSM, 5S and PDCA, which are both tools associated with Lean on an operational level, one could characterize the implementation of Lean at SI Lillehammer as operational rather than strategic (referring to section 4.2.1). However, we claim that Lean thinking is present as well. Referring to Hines et al.'s (2004) understanding of Lean thinking presented in chapter 4.2.1, Lean thinking concerns pursuing the five principles of Lean; (1) to specify customer value, (2) to understand the value stream, (3) to establish flow, (4) to implement a pull-based production system and (5) to work to perfection by continuously improving operational processes. In the following, we argue that each of these five principles are present in the same-day surgery process.

At SI Lillehammer, the patient is defined as the customer, making the first principle of Lean 'to specify patient value'. According to a member of the management team, *"Lean is not just a set of tools, it is a way of thinking. Patient first, patient first, patient first"* (Leader 2). In the

same-day surgery process this has been done by turning the organization from being centred around the employees' day-to-day tasks, to being centred around the patient, and his or her needs, as explained in 6.1.2. Today, the patient, who is often old and frail, or in any case in need of surgery, can have all his or her examinations carried out at a single location. This makes the patient's visit to the hospital much less of a struggle than it was before. In addition, they have created a patient satisfaction survey, in order to identify value for the patient and in turn improve the same-day surgery process with respect to the patient.

By carrying out a VSM, and thereby identifying and improving the value stream, the process leaders and employees have accomplished the second principle of Lean. This has been done by involving the employees in relevant departments who work with the activities that are being mapped. The aim of the VSM is to remove non-value adding activities in the work flow, which brings us over to the third principle of Lean. In order to create flow, 5S and checklists have been used with the intention of making the daily work in the same-day surgery process run as smoothly as possible.

The fourth principle of Lean is to 'establish pull'. This principle is challenging within a hospital as the pull-based scheduling methods in Lean are developed and adjusted to high-volume and repetitive demand settings, as described in 4.2.1. In line with Bateman et al. (2014) the broader idea of pull in service organizations like hospitals is demand readiness, which entails providing a service as and when the service is required by the customer. As the patient has the possibility to influence which day he or she is to be operated on, patients have some say as to when the service is to be provided, and in line with Bateman et al. (2014), some pull from patients has been established. In addition, only a small proportion of operations are cancelled, and this is usually done upon the patient's request, implying that most patients are operated on their scheduled operation day.

However, there is still waiting lists for these operations, so many patients are likely to have to wait longer than they would have liked for their operation. Thus, the fourth principle of Lean is only partly present in the same-day surgery process. However, as pointed out in section 4.2.1, it should be noted that the degree of demand predictability and variation differs between hospital departments and processes. The same-day surgery process is characterized by relatively predictable demand and stable demand. In turn, one could argue that the same-day

surgery may be an especially well-suited process with respect to a Lean implementation. This will be discussed further in chapter 7.

The fifth principle is to 'seek perfection' by continuously improving the processes. Encouraging participation and engagement for improvement activities has been highlighted as very important by all of the leaders. According to one of the process leaders, *"it is important to set standards, and evaluate the meeting of these standards continuously, to ensure employees don't depart from the set path"* (Leader 3). Some of the employees have been invited to participate in the process directly by participating in the same-day surgery improvement group. Others have been encouraged to make suggestions via their representative in this group. The checklists and list of initiatives are evaluated during these meetings, using the PDCA cycle explained in section 4.2.1.

Responsibility for continuous improvement is to a large degree delegated to the same-day surgery improvement group. However, the management team at the surgical department plays an important role with respect to continuous improvement as well, through the work with the ball bin. As explained in section 2.2.2, the ball bin includes the more comprehensive initiatives and guides the further development of the same-day surgery process. When a ball is implemented, it moves to the continuous improvement stage, and is evaluated in the management meetings every quarter of a year.

Even though all of the principles of Lean can be said to be present to some degree, it is our impression that it is primarily the process leaders who are concerned with Lean thinking. Especially one of the leaders shows great knowledge of Lean thinking, by emphasizing that all the actions taken in the same-day surgery process are embedded in "*creating value for the patient*" (Leader 2), in line with Radnor and Osborne (2013). Many of the employees, on the other hand, seem to have sufficient knowledge of the tools that affect their own day-to-day activities, but only have limited knowledge of what lies in Lean thinking. This will be elaborated on in section 6.5.

### 6.2.2 Challenges of implementing Lean in hospitals

In section 4.2.2, a set of challenges of implementing Lean in healthcare organizations were identified. These challenges include: (1) care services are compared to car assembly lines, (2) lack of consultants with roots in the healthcare sector, (3) 'customer value' is complicated to define, (4) lean challenges the status hierarchy and (5) improve the entire value stream. In the following, we will analyze how these challenges have been handled in the same-day surgery process.

Referring to the first challenge, some of the employees involved in the same-day surgery process have expressed concerns against the Lean methodology being made use of at the hospital, because of its origin in the automotive industry, and its focus on standardizing tasks. However, many of the employees at the surgical department did not know what Lean was before it was introduced by management, and were thus not skeptical towards the concept before its introduction. Moreover, many of these employees still do not have extensive knowledge as to what Lean is, and are thus not inclined to have an opinion as to whether or not it can be applied in a healthcare setting. Therefore, we believe these concerns are first and foremost directed towards organizational change in general, as well as the broader trend towards increased efficiency and standardization in the national healthcare system, as described in section 4.1.1.

With regard to the second challenge, SINTEF Raufoss Manufacturing is deeply rooted in the manufacturing sector, and thus their consultants have limited experience from the healthcare sector. Thus, during their education and training of managers at SI Lillehammer, there may have been a lack of examples from real-life applications in healthcare, and the second challenge seems to be present. However, one of the managers can be characterized as an internal consultant holding a supplementary education within Lean methodology. The internal consultant has extensive knowledge of the healthcare sector, as she has worked as a nurse at the hospital for several years before continuing her education. Her connection to the healthcare sector and SI Lillehammer may have made employees more susceptible to her suggestions and ideas.

As discussed in section 6.2.1, SI Lillehammer refers to the patient as the customer, and thus customer value translates to patient value, in line with the Lean healthcare literature. This

may also be a natural consequence of the Health Department's focus on creating the 'patient's health service' (Helse- og Omsorgsdepartementet, 2015). We are not aware of any conflicting views with respect to this definition within the the same-day surgery process. This may either be a pointer that this challenge is more of a theoretical challenge than an empirical challenge, or that the same-day surgery process is a convenient process for Lean because the interests of the stakeholders to a large degree are aligned, as discussed in section 6.1.2, and further in section 6.2.1. This will be elaborated on in the discussion in chapter 7.

The fourth challenge mentioned was indeed present when Lean was introduced in the same-day surgery process. Both employees and leaders emphasized that physicians are used to doing things their own way, and not having to cooperate to a large degree with members of the other occupational groups. However, the establishment of the same-day surgery group has facilitated such teamwork across the occupational groups. Members from every occupational group have been involved in these meetings, and management have emphasized that they are viewed as peers during these meetings, and that their opinions thus are to be valued equally. The fourth challenge was overcome by first choosing physicians with an already positive attitude towards Lean to participate in the same-day surgery process improvement group, and giving them responsibility for initiatives on the list of initiatives. For the more skeptical physicians, it was still possible to admit the patients as lists patients rather than to the same-day surgery pathway. This will be further discussed in chapter 7. After the implementation of Lean in the same-day surgery process started showing promising results, many skeptical physicians have largely changed their attitude towards becoming more positive towards the new methods of working, including the aspect of teamwork.

> *Being able to plan the anesthesia beforehand, and the patient no longer showing up unprepared the day before the operation, these are great improvements for us. And it is becoming more and more visible that people in the department agree on this subject. When the storm finally quiets down around all the practical matters, people manage to see the positive aspects as well. Because in the beginning phase it is easy to identify the negative aspects, but hard to see the end state.* (Physician 1)

The fifth and last challenge mentioned is concerned with improving the entire value stream, instead of just optimizing the performance of one department. In the case of the same-day surgery process, the surgical department has been the starting point of improvement. However,

other departments and units have been included in the work of VSM and the improvement group as well. All the departments that contribute to this given patient pathway are included in the process, and have introduced Lean. Thus, from the perspective of the patients visiting the surgical department they have attempted to optimize the entire value stream by including all the departments and units that contribute to this particular patient pathway.

**To summarize**, the same-day surgery has applied Lean tools like 5S, VSM and the PDCA cycle. In addition, each of the five principles of Lean can be said to be somewhat present in the same-day surgery process. In particular, to establish pull may be challenging within hospitals, as demand often varies and is unpredictable. Within the same-day surgery process, however, demand readiness is established to some degree. In turn, both Lean tools and Lean thinking can be said to be present in the same-day surgery process. In section 4.2.1 this is emphasized as decisive for the successful outcome of a Lean initiative.

The literature identifies many challenges in terms of implementing Lean in hospitals. The preceding findings imply that the challenges tied to implementing Lean in hospitals have been handled well in the same-day surgery process. The first challenge has been handled through training and education in Lean prior to the same-day surgery process. Through this training, both managers and employees were convinced that Lean could facilitate their work and in turn offer the patient a better service. The second challenge has been overcome by having an internal consultant, who was very dedicated to the process and had knowledge of both Lean and the specific hospital context in terms of culture and structure. The third challenge can to a low degree be characterized as challenging in the same-day surgery process, as customer value translates to patient value, in line with the literature in the subject. The fourth challenge presented was handled by involving the physicians that were positive towards Lean to begin with. When the process showed promising results, other physicians were gradually involved. The fifth and last challenge was overcome by including all relevant departments in the improvement group.

## 6.3 Process

### 6.3.1 Initiation process

The management at the surgical department did not make any significant use of external consultants during the same-day surgery process. However, the consultants did play a significant role in educating and training the management team at the surgical department before the same-day surgery process was initiated, and the process was in many ways initiated using lessons learned from SINTEF Raufoss Manufacturing. As emphasized in 2.1.2, the consultants from SINTEF Raufoss Manufacturing provided support for management when necessary, but were not involved in running the change process. The same-day surgery process was thus initiated in-house, by internal stakeholders, and none of the employees had much recollection of consultants ever being involved in the process.

Bringing the knowledge of consultants into the organization when introducing Lean, like they did at SI Lillehammer, is in line with Eklund et al. (2014). When the consultants left the hospital, this did not lead to competence drainage, likely because the consultants were never made responsible for leading the change process. Instead, the leaders of the same-day surgery process made themselves responsible both for educating and training their own employees in Lean, as well as for running the change process. Thus, the change was internally led, and the surgical department developed their own capability.

The introduction of Lean at the hospital, as well as the same-day surgery process, were both initiated from top level management. This ensured top level support for the changes, which according to the literature on the subject is one of the most important elements in terms of sustaining organizational changes, as noted in 4.3.1. However, as explained in 4.3.1, top-down initiation can also lead to less commitment and enthusiasm from employees. The surgical department solved this by leaving many details regarding the implementation process to the frontline staff through involvement, in line with Stewart et al. (2015).

The same-day surgery process leaders have largely included employees in the process of figuring out how to make all same-day surgical activities run as smoothly as possible, congruent with a bottom-up approach to change, as described in section 4.3.1. Thus, the process initiation can be characterized as a combination of the top-down and bottom-up change

approaches. According to several of the leaders, involving the employees in the process has been important in terms of handling resistance, as well as in securing persistence of the changes:

> *The main idea behind Lean at the surgical department is that it is to be a step-by-step process, and that people should have the opportunity to participate. It is not just something forced upon them by leadership. Suggestions made by patients and employees at the surgical department need to be taken into consideration, because they are the ones who know where the shoe pinches.* (Leader 5)

Many of our informants have been, or are, part of this improvement group, and most of them feel they have been actively included in the changes, though in different ways. When the VSM was performed early on, for instance, representatives from every occupational group were included. Another important way of including employees in the improvement process has been through the meetings with the same-day surgery improvement group. As described in section 2.2, employees from all occupational groups have been involved in the process improvement group, where they to a large degree have had the opportunity to contribute to shaping the process, in particular through making suggestions for the checklists and list of initiatives. At these meetings, employees have been encouraged to express their opinions, and if they have had suggestions for improvement, they have been allowed to test these ideas in practice:

> "[Leader 1] *always had an overview of everything during the same-day surgery process improvement meetings. If I wanted to say something, if there was something I wanted to express, that I thought worked well, or not, she listened. And if there was something I wanted to try out, she encouraged me to do so, and also facilitated it."* (Nurse 3)

Those involved in the process from the beginning underline that not knowing where they were heading forced them to use the method of trial and error. This further resulted in a piecemeal change, which some of the informants claim that has been one of the change's most important success factors. One of the managers emphasize that the process leaders were aware of the fact that this was going to be a lengthy process, and *"decided early on that this was not going to be a revolution"* (Leader 2). In addition, Leader 5 emphasized that making changes in the surgical department is time-consuming. However, as result of the fact that there was no clear idea of

how exactly same-day surgery would work when it was first introduced, there were quite a few issues tied to logistics in the beginning:

> *It was a bit difficult in the beginning to get organized and we did not know exactly how we would physically manage, where patients would sit and wait and which room we were to have the examinations. Whether or not we had any room for them. We had some practical issues at the very beginning.* (Nurse 2)

One of the things that has become quite obvious during our time at the hospital, is that the process to a large degree can be characterized as an evolutionary change. They have begun in the small and proceeded gradually. The employees have played an important role in terms of figuring out the direction of the change, and because employees have been involved to a large degree, they have also had a voice in terms of setting the pace of the process. This trial and error approach has also allowed both employees and management to learn from any mistakes made, and contribute to the process running as smoothly as possible.

### 6.3.2 Internal communication

The surgical department management also emphasized the importance of communicating information about the same-day surgery process to employees on a regular basis, in order to keep the employees engaged and motivated. One of the managers state that "*the number one action taken to keep the employees excited about the change has been to explain the reasoning behind it, and to provide them with information about the change's progress*" (Leader 4).

According to internal documents, this information has been communicated to the employees through many different channels and in different ways, depending on the employee's involvement in the process. The meetings with the improvement group has been an important communication channel in order to spread this information, in part because the employees involved in the improvement group have been responsible for distributing the information discussed at these meetings to coworkers in their department. This has also been an arena for the employees to express their frustration, ask for advice and discuss their experiences with managers. Other communication channels used include various other meetings with members of the departments, different seminars, weekly emails as well as department meetings with the entire surgical department.

The meetings with the same-day surgery improvement group have thus represented both an opportunity to involve the employees in the process, as well as to spread information. During these meetings, attendees have had the opportunity to give feedback on the checklists, make adjustments to them, and streamline them for their medical field. They have also had the opportunity to propose new initiatives for the list of initiatives. According to one of the nurses: *"The meetings have been held once a month, and during these meetings we have expressed a lot of frustration, and communicated to management what works, as well as what does not"* (Nurse 3). Thus, these meetings have facilitated two-way communication between employees and management, and encouraged the discussion of both problems and respective potential solutions. Furthermore, these post-implementation adjustments have signaled responsiveness to staff concern. Feeling heard and included in this manner is likely to have contributed to building respect and a sense of accomplishment in the employees.

Furthermore, members of management emphasize that it has been very important to talk about Lean and same-day surgery in a positive manner to the employees. The aim has been to spread the word, and maintain necessary employee commitment. Lean and the same-day surgery process has thus been communicated as a means to create value for the patient and ensure better working routines for the employees. Management have persistently communicated that this change process is necessary, as well as beneficial, for all stakeholders involved. The top management at the surgical department has consistently showed up for meetings concerning the process and engaged in two-way communication with employees. Furthermore, according to one of the managers, it has been important to communicate and celebrate their achievements during the process, line with Klein (1996): *"It has been important to appreciate and celebrate everything we have accomplished underway, and marking the bigger victories. That makes everyone involved an important part of the process."* (Leader 1). Communicating with employees face-to-face has allowed employees to provide feedback then and there, facilitating discussion about the employees' concerns, as well as potential solutions.

Some employees, and most managers, have also received training and education in terms of Lean and the same-day surgery process. However, the education and training one has received is dependent upon how involved a given employee has been in Lean-related processes. Most managers as well as some employees have received training and education in Lean tools such as 5S and VSM by the consultants from SINTEF Raufoss Manufacturing in Lean tools. They

have informally been responsible for extending this information to members of his or her department. Most employees however, have in some way been involved in the process, or at least been affected by it, and thus learned about the Lean tools through this. One manager puts it like this: "*You don't get educated in Lean through coursing; rather you get involved in what's going on, and learn through that"* (Leader 3).

Although the department has routines for training new employees in relation to the actual same-day surgery process, members of management admit they have a way to go when it comes to training the employees in Lean. However, the management at the surgical department at SI Lillehammer have begun efforts to train and educate all employees in Lean, and expect to be finished within 2018. This training and education involves what they call the *Education room*, where employees work their way through a training program with different modules. These modules include general training and education, a 5S-package, a VSM-package, as well as a leadership-package that is currently under development.

### 6.3.3 Employee resistance

As described in section 4.3.3, resistance among employees towards organizational change is commonplace, and the same-day surgery process is no exception. One of the managers describes it like this: *"There have been trying times here too, you know. We've had to have some tough conversations with individuals who are not at all doing what they are supposed to. Borderline sabotage."* (Leader 5). A nurse puts it like this: *"Excitement about the change was lacking in the beginning. It is always like that when you change things. And you notice it most with the physicians."* (Nurse 2). However, the decentralized power within hospitals, and staff empowerment being a key issue in Lean theory, to a large degree necessitates engaging healthcare professionals in order to succeed with Lean in a hospital setting.

In section 4.3.3, we discussed what we perceive to be the four most important reasons for employee resistance to Lean initiatives in Norwegian public hospitals: (1) staff disbelief that Lean can be applied in a healthcare setting, (2) management claiming to implement soft Lean while really implementing hard Lean, (3) concern that standardization will threaten their professional autonomy, and (4) concern that Lean will transform the nature of interprofessional boundaries and relationships. The first reason for employee resistance is tied to the first challenge that was presented in section 4.2.2, and is discussed there.

The management at the surgical department can be said to have sold their employees the soft version of Lean, while in many ways implementing hard Lean, by avoiding to talk about the efficiency aspect of the Lean initiative, and only presenting the 'patient value' part of it. However, most employees were aware of the fact that Lean was used in part to increase efficiency and reduce costs, regardless of whether management had emphasized this or not. This, however, did not appear to affect employees' opinion of the process to a large degree, and will be further elaborated upon in chapter 7.

A few employees also expressed some concerns towards the standardization that Lean initiatives entail. However, most of our informants were to a large degree positive towards this standardization, largely represented by the checklists described in section 6.2.1. None of the employees we talked to expressed that this standardization challenged their professional autonomy, and some even emphasized how it simplified their day-to-day operations. Furthermore, standardization of care was not introduced at SI Lillehammer through the same-day surgery process. Again, the same-day surgery process must be seen in relation to the trend towards standardization that has taken place in the Norwegian healthcare system for many years already, as described in section 4.1.1.

Lastly, it is our impression that the different occupational groups at the surgical department have had to work more together as a result of the same-day surgery process. Some employees have been very positive towards this development, but have expressed that others may not share their enthusiasm. Despite the relationship between the different occupational groups depicted in section 4.1.2, we found that these different groups to a large degree expressed the same amount of resistance, tied mostly to the same elements of the same-day surgery process. Though this increased collaboration between the different occupational groups have required an adjustment period for some, over time it seems to have functioned well.

Furthermore, one of the managers emphasizes that the resistance against the same-day surgery process for the most part has been tied to resistance against change in general, and not towards the same-day surgery process specifically: *"All changes are met with resistance. If employees feel or experience that a change entails extra work on their part, you will naturally experience greater resistance"* (Leader 3). Another source of resistance has thus been the extra work the same-day surgery process entailed for many employees in the initial phases of the process.

However, the general opinion at present seems to be that the same-day surgery process has lightened the load on employees:

> *The process entailed a lot of work for the physicians in the beginning, and they did not really see the benefit of it. They were used to going up to the ward to talk to the next day's patients after they were done with their daily tasks. However, after a while, benefits started to appear.* (Leader 1)

> *We experienced some resistance from the nurses at the policlinic tied to the extra workload in the beginning of the process, as they were not used to having to order blood samples and so on. And thus having to inform the patient, follow up on the checklists, order blood samples, make sure the patient is where he or she is to be at all times, as well as communicating with the intake office, all these things take time (...) We realized early on that we needed an accompany nurse, and as a result, the situation has improved.* (Leader 3)

As pointed out in section 6.3.1, the front line staff have to a large degree been involved in the process and been allowed to shape the process going forward. In addition to being allowed to contribute towards shaping the process, responsibility has also been delegated to the employees. This employee participation has without a doubt been important in terms of reducing resistance towards the change. According to management and internal documents, involving all occupational groups, delegating responsibility and making manageable initiatives, has created both diversity and employee ownership.

**To summarize**, the same-day surgery process can be characterized as a piecemeal change, where management have used a method of trial and error, and proceeded with the change gradually. The use of external consultants in the same-day surgery process has mainly been limited to bringing knowledge into the organization when introducing Lean. The same-day surgery process was initiated from the top management at the surgical department, ensuring top level support for the changes. However, employees have been allowed to participate to a large degree, as many details regarding the implementation process to the frontline staff.

Information about the process has been communicated to the employees through many different channels and in different ways, depending on the employee's involvement in the

process. The same-day surgery process improvement group has been the main communication channel between management and employees. Furthermore, there has been quite a lot of resistance towards the change for various different reasons, especially in the beginning. However, it seems over time employees have seen the value in it. Involving the employees in the process has been important in terms of handling resistance, as well as in securing persistence of the changes.

## 6.4 Leadership

### 6.4.1 Leadership styles

To place leaders within one of the leadership categories presented in section 4.4.1 is challenging, as the leaders are likely to have used elements of several of the presented styles. Moreover, we have identified more than one leader in this process, and these leaders have used different combinations of leadership styles during the same-day surgery process. However, none of the leaders have used the coercive or pacesetting leadership styles to a large degree during the process. They have not told employees what to do in combination with how to do it, as in the coercive leadership style, and they have not demanded as much from their employees as in the pacesetting style.

In terms of what has been done by the management to sustain these changes, leaders and employees alike first of all emphasize the dedication of the group of leaders to the change. A common understanding among the employees interviewed is that the same-day surgery process can be distinguished from many other organizational changes that have occurred at SI Lillehammer, in that the process to a large degree has been followed up on over time. One of the employees describes it like this:

> *This is the first time I have experienced that management have followed up on a change initiative for many years in a row. They have been very good at it this time, and that hasn't happened before. It used to be just projects, and then half a year passes, and the project is forgotten. Such change initiatives never turn out well.* (Physician 3)

Manager 2 emphasizes that the same-day surgery process is *"not a project, but a process with no end-date",* and that it is important to stay committed to the changes in order to make them stick.

As opposed to the coercive and pacesetting leadership styles, the authoritative leadership style has been used actively by the process leaders. The management at the surgical department have given employees a clear direction, but have at the same time largely involved employees in the process of figuring out how to get there, as described in section 6.3.1. One of the leaders in particular falls within this category of leadership style, and is described by most of our informants as being above average dedicated to the same-day surgery process. Several people have also called this manager the "driving force" behind the change.

Aspects of the affiliative leadership style can also be found in the group of leaders, but perhaps to a more limited degree. The process leaders have provided employees with positive feedback when merited. According to Nurse 3, members of management were *"good at giving feedback, telling me that I did a good job. I really appreciated it. Not all managers do that."* However, poor performance has not gone uncorrected, and the leaders have not been reluctant to give negative feedback to employees when necessary. Leader 1 emphasizes that her leadership style has included constantly following up on employees and their involvement in the process, and requesting results whenever they have been delegated a task and not delivered on time. The managers have put employees on the spot when needed, asking questions like: *"Why hasn't this been followed up on? This should have been done by now."* (Nurse 1).

The process has required strict focus, as well as discipline from the process leaders. Their role as leaders has involved attending frequent meetings with the same-day surgery improvement group, and holding employees accountable for meeting Lean commitments through direct involvement and regular evaluations. The leaders have consistently showed up for the improvement process meetings, and have been responsible for many of the initiatives, despite their other responsibilities also demanding their time. Thus, the same-day surgery process has been highly prioritized by the leaders, and has required a lot of work. Some of them have described the effort of leading the same-day surgery process as a test of patience: *"It required a lot of time, a lot of information, and a lot of listening to employees, which involved hearing both their positive as well as their negative thoughts about the changes"* (Leader 3).

Employees have been involved in the decision-making in the same-day surgery process, and their opinions have been highly valued according to members of management. This is likely to have contributed to employees supporting the process. According to several of the employees, they have not only been given opportunities to propose new initiatives for the list of initiatives, or feedback on the checklists, as described in 6.3.2, but have also been encouraged to do so, as described in 6.3.1.

Thus, the democratic leadership style can also be said to have been used. However, we would argue that because the overall direction was set by management and not by employees, the leadership style is more similar to the authoritative one. Based on our empirical findings, the employees have had at least one very clear leader throughout this process, and at no point felt leaderless. Additionally, the coaching leadership style has been used. The coaching leadership style is tightly linked to Lean leadership as presented in 4.4.3. By involving employees in the process to a large degree, management have given them goals and responsibilities instead of specific tasks. This is in line with a coaching leadership style, as it facilitates the employees' personal development. Through this, they have encouraged and enabled organizational learning and creativity to support the organization's goals.

In line with Goleman (2000), the process leaders have used a combination of the authoritative, affiliative, democratic and coaching leadership styles during the same-day surgery process. We perceive that the authoritative leadership style has been the most prominent one, but this is perhaps a result of the change in itself. The direction in which they were moving was set early on, yet the process has relied on input from employees both in terms of making the process flow as smoothly as possible and to minimize employee resistance. The employees emphasize that the process leaders have played an important role by going all-in on this process, in spite of the various difficulties and employee resistance encountered along the way. Based on our interviews the employees seem satisfied with the way the leadership has been carried out. Thus, the process leaders seem to have balanced the use of these different leadership styles well.

### 6.4.2 Leadership powers

Most of the leaders of the same-day surgery process hold position power by holding formal managerial positions in the department hierarchy. In terms of this form of power, process leaders have particularly made use of reward and legitimate power. Reward power has been

exerted by including employees that have a positive attitude towards Lean in the improvement processes. One example is involving and empowering the physicians with a positive attitude towards Lean and change, by inviting them to participate in education and training by consultants from SINTEF Raufoss Manufacturing and by delegating them responsibilities for change initiatives, as described in 6.2.2. One of the managers in particular has made use of her legitimate power by taking on a central role in determining how the same-day surgery process should go forward, and assigning various responsibilities to different employees. Furthermore, if a responsibility was delegated, and the task was not finished in time, this manager would confront the responsible employee and ask him or her why the task was not completed, at the same-day surgery improvement group meeting.

In terms of personal power, it is reasonable to assume that expert power is particularly important in professional bureaucracies, as the employees are highly skilled and knowledgeable. It is our impression that several of the process leaders possess these powers. All of them received education and training by consultants from SINTEF Raufoss Manufacturing, and thus have extensive knowledge of Lean. One of the managers also gained comprehensive knowledge about Lean by educating herself on the topic, in addition to the training received by the consultants, as described in section 2.1.1. The leaders' skills and knowledge within this area allows employees to regard them as a trustworthy source when it comes to Lean, and increases employee respect for the leaders.

As emphasized in section 6.4.1, our informants spoke very positively when describing leaders of the same-day surgery process. Most of the employees regard members of the management highly, identify with them, as well as respect them. The employees also feel respected and involved by their leaders. Furthermore, they seem to trust their ability to lead, and seem confident that they have the greater good of the surgical department and the patients in mind. Thus, we consider the leaders to also have referent power.

Thus, the same-day surgery process leaders derive their power from their position, as well as from their person, in terms of their charisma and their actions. Leaders exert a mix of position and personal powers in order to achieve the influence they desire. Nonetheless, the same-day surgery change process has been subject to some resistance among the employees, and thus it has been very important for the management team to exert their influence on the political,

cultural and psychological arena. Our empirical findings suggest that is has been particularly important to exert influence on the political arena.

Building a coalition of supporters and gaining commitment from important figures within the organization is necessary in order to exert influence on the political arena. Through our interviews with members of the management team, it was made clear to us that they felt it was essential to have supporters both within the management team, and among the employees, during the tougher times of the change process. Several of the process leaders also emphasize how important it was to be supported by the top management at the hospital, especially in terms of institutionalizing the change. To illustrate; when asked about premises for the process' success, on of the process leaders said the following: *"Having support during a process like this is very important. And I had the support of the managers above me."* (Leader 1).

Convincing the employees that the change is necessary has been important as well, in terms of reducing employee resistance. Several of the process leaders also underline that they have been very conscious as to how to communicate Lean to the employees. This has been important in terms of changing the employees' beliefs and their associated behavioral patterns, and thus to exert their influence on the cultural arena. An important part of this has been to talk positively about Lean in the hospital hallways. Instead of talking about red numbers, they have talked about increasing value for the patient, as described in section 6.1.1.

In order to exert influence, leaders need to earn respect and trust among the employees. This is important in terms of exerting power on the psychological arena. It is our impression that the leaders achieved this respect early on in the process, and that it still remains. The management team has shown that they are reliable and continuous in times characterized by a lot of change, which the employees seem to be in need of.

### 6.4.3 The Lean Leadership Development Model

In line with the first stage of the model, all of the presented Lean leaders have had extensive training and education in Lean before taking on a management role. This group of leaders had significant knowledge of Lean before entering into their leading positions within this process, as described in section 6.3.1. Furthermore, our impression is that all of these leaders have

knowledge of the values associated with Lean. Thus, they can be said to have developed themselves before teaching others the philosophy.

In line with genchi genbutsu, all of the included leaders have participated actively in the change processes, for instance by attending all of the process improvement meetings. In line with the values of teamwork and respect, leaders have empowered and encouraged their employees to participate and contribute in these change processes as well. Improvement efforts and contributions to continuous improvement by employees have been highly valued, also in line with kaizen.

Lean leaders should also teach and educate their employees on the values and cultural norms of the Lean organizations. The employees seem to have good knowledge of the Lean tools used in their department, such as 5S and the list of initiatives. However, as described in section 6.3.2, the management team still has a way to go in terms of educating employees on the Lean methodology, including both Lean tools and thinking.

Nevertheless, the second stage does not just concern training and educating employees. Sustained Lean success requires a change in mindset and behavior among leadership, and then gradually throughout the organization. This stage is also connected to the coaching leadership style presented in 6.4.1. The leaders portrayed in this thesis have illustrated a continuous and consistent effort to encourage their employees to change their mindset as well as their behaviors. They have been clear this change is not a project, but rather a process, as described in 6.4.1, and have encouraged their employees to participate in continuous improvement efforts, as described in 6.3.1. They have challenged their employees in terms of problem-solving, gotten involved themselves, and coached their employees through these processes. Involving employees is perceived as important by management in terms of ensuring the best and most successful change possible. Furthermore, if the employees don't feel involved, they are more likely to resist, as described in 4.3.2.

In terms of the third stage of the Lean Leadership Development Model, this is tightly linked to the fifth Lean principle, and is hence discussed in section 6.2.2. The management team at the surgical department have also been responsible for establishing the process' long-term improvement goals. As far as we can tell, the same-day surgery process has no clear-cut vision. However, they have an ambitious long-term goal of admitting 90% of their patients to the same-

day surgery process. Furthermore, in the long term, SI Lillehammer aims to become a Lean hospital. The surgical department management team updates their long-term goals every five years, and follows up on all the different improvement initiatives through the ball bin. Hence, they have an overview of the different kaizen activities that take place. This enables the management team to ensure that the different kaizen activities do not contradict each other, as well as that these activities are aligned with the long-term improvement goals.

**To summarize**, the different process leaders have used differing combinations of the authoritative, affiliative, democratic and coaching leadership styles during the same-day surgery process. Based on our interviews the employees seem satisfied with the way the leadership has been carried out. The process leaders possess both position, as well as personal, power. They have exerted a mix of these powers on the political, cultural and psychological arenas in order to achieve the influence they desire. The leaders are generally well-liked and respected within in the department, which we believe has contributed towards the same-day surgery process' success. In terms of the Lean Leadership Development Model, process leaders seem to have an idea of what Lean Leadership implies, as they to a large degree follow the guidelines provided by the model. However, they have a way to go in terms of teaching and educating their employees in the Lean philosophy. This will be further discussed in section 6.5.

## 6.5 Outcomes

As discussed in 4.5, Cummings and Worley (2015) claim the degree to which *knowledge*, *performance*, *preferences*, *normative consensus* and *value consensus* are present or absent indicate the persistence of organizational changes. In this section, we aim to explain why the same-day surgery process at SI Lillehammer to a large degree can be characterized as institutionalized.

It is our impression that the employees at the surgical department at SI Lillehammer to a large degree have knowledge of the behaviors associated with the same-day surgery process. The process was initiated several years ago, and so the employees at the surgical department seem to have extensive knowledge as to what changes same-day surgery implies. All employees in the surgical department have been affected by these changes, and most of them have had to perform tasks associated with the same-day surgery process for many years. Thus, they have

knowledge as to what their role in the process is, and the consequences of performing the actions associated with the change.

In terms of employees' knowledge of Lean, this varies greatly from employee to employee, just like the employees' understanding of Lean. The knowledge of Lean also varies greatly with employees' involvement and experience with Lean tools. A central figure in the same-day surgery process admits she did not know the same-day surgery process was a Lean initiative until the department was awarded the prize for "Lean Project of the Year 2016". Another informant said the following when asked what Lean is: *"Lean is a Toyota principle applied to cut all unnecessary stuff in order to make the production as effective as possible"* (Physician 2).

Although some of the employees did not seem to significantly associate the same-day surgery process with Lean, every informant had knowledge of the Lean tools that were used in the same-day surgery process. In addition, most of the employees that we interviewed emphasized that the initiation of the same-day surgery process concerns 'increasing patient value', which is the core of Lean thinking, when the patient is understood as the customer. However, most of the employees without managerial responsibilities interviewed did not know much about Lean thinking, the philosophy behind Lean. Leader 1 emphasizes that she believes that this level of knowledge among the employees is sufficient:

> *I think that as a leader, you need to have some knowledge of what Lean is and its main elements, but this does not mean that all employees have to know all of the tools and concepts related to Lean, or all the different aspects of it. They should, however, be able to contribute to a Lean way of thinking.* (Leader 1)

First of all, employees need to have knowledge about what routines the change involves. Secondly, employees need to choose whether or not to perform the tasks required by the change, in the way they were intended. In the beginning, some surgeons would admit their patients as list patients, bypassing the same-day surgery process altogether, as noted in 6.2.2. As of today, however, the employees involved in the same-day surgery process do not only have knowledge about the process, they also choose to follow the associated routines. Thus, the performance factor also seems to be present in the same-day surgery process. The question

then becomes why employees choose to perform the tasks required by the change, and not resist.

In terms of preferences, our informants to a large degree expressed satisfaction with the same-day surgery process on a personal level. None of the subjects said they felt the department functioned better before the changes took place. Individually, the employees at the surgical department seem positive about the changes that have taken place. They use the tools associated with the same-day surgery process actively, and see the value of using them in their day-to-day work. All of the informants talked about the initial resistance toward the changes, but only a few of them admitted to have been skeptical to start with. Regardless, the employees at the department seem to take a positive stance on the process at present, as well as view future improvement initiatives within this process positively. Therefore, we regard the preferences factor to be present.

Viewing the workforce as a whole, we are confident that they see the value of the same-day surgery process. The changes were initially met with a great deal of resistance, but this resistance to a large degree seems to be a thing of the past. In terms of resistance against Lean as a methodology, this may be more widespread. However, we believe this resistance against Lean to a large degree can be tied to their lacking knowledge of the concept. Furthermore, it is our impression that many of the employees at the surgical department do not clearly associate the same-day surgery process with Lean.

There may very well still be resistance against the same-day surgery process as well, both in the surgical department, or in other affected departments. However, those resistant seem to be outnumbered by those satisfied with the changes, and thus normative consensus appears to be present. It is our impression, based on our interviews and time spent at SI Lillehammer, that the people there agree about the appropriateness of the changes, and therefore that these changes have become part of the normative structure of the organization. Using this reasoning, we believe the normative consensus factor to be present as well.

Of the five factors of institutionalization, value consensus is probably the hardest to establish presence or absence of. The first thing that needs to be established in order to discuss whether or not there is social consensus on values consistent with the organizational changes among the members of the organization, is what values there should be consensus about. However, this is

may be complicated, as some values are chosen deliberately by a leader, while other values are more implicit in the organizational culture. Secondly, it is not always easy to know what the personal values of one's informants really are. This is both because the term 'value' takes on different meanings, and because questions about values is not necessarily something a regular employee will reflect on on a day-to-day basis, and thus know how to answer. The personal values of employees are thus based on the impressions we were left with after conducting our interviews.

According to internal documents, the established values for the same-day surgery process include responsibility, team spirit and role model. The employees have a responsibility towards patients in terms of giving them the best possible care. Team spirit entails that all the employees at the surgical department have to work together in order to provide the best possible services to their patients. Lastly, the surgical department at SI Lillehammer wish to act as a role model for other hospitals in terms of same-day surgery.

However, there are more than just these three values that can be said to be associated with the same-day surgery process. Seeing as the same-day surgery process is a Lean initiative, Lean values can also be said to be relevant to the process. We regard patient value and continuous improvement as the main values of Lean in healthcare. All of our informants were medical personnel, and, as anticipated, agreed that increasing patient value is one of their most important aspirations. As already established, everyone we talked to at the department believed that the same-day surgery process has contributed to increasing patient value. Because continuously improving is a part of the same-day surgery process, this is naturally an important aim for those involved. Furthermore, is our impression that everyone at the surgical department agrees that it is their responsibility to maintain or increase the quality of care. The employees at the surgical department seem to agree that they have to work together in order to accomplish this task. By working towards these aims, the surgical department at SI Lillehammer can act as a role model towards surgical departments at other hospitals.

Thus, it is our impression that the employees in the surgical department to a large degree share values associated with the the same-day surgery process and Lean. Thus, based on what we have defined as the values associated with the change, value consensus can be said to be present.

**To summarize**, based on the institutionalization factors presented by Cummings and Worley, we believe the change can be characterized as institutionalized. The knowledge, performance and preferences factors can be said to be present. Measuring consensus on the other hand, is challenging, in particular because we have only talked to a small sample of the employees at the surgical department. However, it is our impression that there is general agreement within the department that these changes have been for the better, as well as that the values associated with the change are in line with the values of the employees.

# 7 Discussion and conclusion

In order to reduce the rapid increase in costs tied to healthcare, while at the same time meeting an increasing demand for these services, many hospitals across the country strive to streamline their operations by making use of methods and techniques that derive from the industrial sector, such as Lean. However, few, if any, Norwegian public hospitals have succeeded in institutionalizing such changes in the past. The same-day surgery process at SI Lillehammer is one of the few Lean initiatives that can be said to have succeeded in institutionalizing these changes. In this study, we have analyzed the same-day surgery process in order to discover what they have done to achieve this, as well as what other Norwegian public hospitals can learn from their experiences.

As pointed out in the Introduction, we argue that in order to achieve a successful change outcome, the change has to be institutionalized. Thus far, we have established the change as institutionalized, by using the five criteria for institutionalization presented by Cummings and Worley (2014); *knowledge*, *performance*, *preferences*, *normative consensus* and *value consensus*, and arguing that they are all largely present. By employing our adaptation of Pettigrew's (1985) framework, we have also analyzed how the context, content, process and leadership of the same-day surgery process have shaped the change's outcome. In this chapter we will elaborate on how these factors have interconnected, as well how these interconnections have shaped the change's outcome. We argue, in line with Pettigrew, that none of these factors have led to a successful change on their own, but that these factors have interacted and shaped each other over time, and through this resulted in a successful institutionalization of these changes. Thus, in this chapter we aim to provide a concluding answer to the research question of our thesis:

*How did SI Lillehammer succeed in institutionalizing the same-day surgery process, a Lean initiative?*

Based on our findings, we believe there are some circumstances in particular that have contributed positively towards the institutionalization of the same-day surgery process:

1. The external context has in many ways facilitated the same-day surgery process, as the goals of the different stakeholders were aligned.

2. The internal context of the hospital has been adapted to fit with the change, by tearing down silos between the departments, and reducing the significance of the professional hierarchy.
3. The same-day surgery process may be particularly suited for Lean, as it is characterized by a relatively predictable and stable demand.
4. The concept of Lean was adapted to fit with the internal context of the surgical department at SI Lillehammer.
5. The implemented tools were adapted to the department context, and were easy to understand, facilitating employee involvement.
6. The same-day surgery process improvement group has facilitated employee involvement in the change and continuous improvement efforts.
7. Instead of relying on external consultants, they have had an internal consultant, with knowledge of both Lean and the healthcare sector, to assist the change.
8. When starting out, employees with positive attitudes towards Lean were primarily included in the same-day surgery group and given responsibilities.
9. The process leaders have chosen a step-by-step process, encouraging heavy employee involvement, and thus reducing resistance.
10. The process leaders have used a favorable combination of the authoritative, affiliative, democratic and coaching leadership styles.
11. The process leaders have stayed highly dedicated to Lean and the same-day surgery process over many years, despite employee resistance.
12. The process leaders have been able to positively influence the employees as a result of their personal power, enabling employee trust and commitment towards the change.

How the framework factors are interconnected and have shaped each other in order to contribute to the findings presented above, will be elaborated upon in the following.

The context factor is to a large degree the factor that lays the conditions for the change and provides it with certain frames. As described in section 4.1, the external and internal contextual conditions of a public hospital in many ways differ from the contextual conditions of a private manufacturing company. However, we argue that the internal and external conditions of the same-day surgery process is in many ways different from how it is portrayed in the literature on Lean healthcare.

First of all, we have found the goals of the stakeholders in the same-day surgery process to be fairly aligned. Two external contextual factors that have ensured top management as well as Government support for the change, is the trend towards standardization in the provision of health services, described in 4.1.1, and the requirement set forth by the Government of eventually achieving 90% same-day surgery. Support from the Government as well as from the top-level management at the hospital has largely facilitated the change process, as top-level support is considered one of the most important factors in terms of institutionalizing change, in line with Cummings and Worley (2015). However, the same-day surgery process has aimed not only to cut costs, but also to increase patient value, thus aligning the interest of stakeholders.

As emphasized in chapter 6, the management team at the surgical department has consciously chosen to communicate the aim of increasing patient value, and avoided to speak of cutting costs. However, most employees were aware of the fact that Lean was used in part to increase efficiency and reduce costs, and this did not appear to affect employees' opinion of the process to a large degree. This may have to be seen in relation to the extensive cost reductions that have taken place in the Norwegian healthcare system for many years already. If employees are under the impression that cost reductions already characterize hospital operations, they may not blame this development on the same-day surgery process specifically. Furthermore, the patient satisfaction, and in turn the patient value, has increased as a result of the process. This way, regardless of what the management implemented, "patient value" has increased.

Furthermore, we have not found the process to contribute further to the micro-macro dilemma, because even if the main aim of some stakeholders is to cut costs through this process, and others focus mainly on the aspect of increasing patient value, the same-day surgery process has aimed to do both of these things at the same time. Through the same-day surgery process, the top management at the hospital, as well as the process leaders, aim to make the patient's travel through the surgical department as effective as possible. In this particular process, an efficient treatment is also in the best interest of the patient. Using the example presented as a micro-macro dilemma in section 4.1.1, the same-day surgery process contrasts a life-prolonging treatment process, in which efficiency is not as likely to be highly valued by the patient. In this case, efficiency for the hospital management, the macro perspective, is to treat as many patients as possible during the least amount of time. Efficiency for the patient, the micro perspective, is to be operated as soon as possible, and thus the two perspectives coincide.

Moreover, the internal context of the department has subsequently been adjusted to the content and process of the change, for instance through tearing down departmental silos. The internal context was challenging initially in terms of facilitating teamwork across departments. However, the process leaders have included all the departments and units involved in the value stream in the process improvement group, and the internal context has in many ways been forced to adjust to the content and process of the change. For instance, a new role has been introduced through the accompany nurse, and the different locations for examinations have been brought together to one location through the same-day surgery room. Thus, the collaboration across departmental borders has increased, and the departments and units are increasingly organized around the patient.

However, the internal context was not just challenging initially in terms of facilitating teamwork across departments, but also across occupational groups. Lean requires teamwork, and this increased collaboration between occupational groups has contributed towards reducing the significance of the professional hierarchy in the department. This is an example of how the content of the same-day surgery process has influenced the change process, which again has influenced the internal context of the surgical department. Teamwork between different occupational groups was made possible through the same-day surgery meetings, where employees from all occupational groups were included. The meetings with the same-day surgery process improvement group have facilitated two-way communication between employees and managers. Furthermore, the same-day surgery process has led to increased respect for some occupational groups, as described in 6.1.2, further contributing to reducing the professional hierarchy.

In section 6.2.1, we found that both Lean tools and thinking were present in the same-day surgery process. In the literature on Lean healthcare, it is often emphasized that the third Lean principle is challenging within hospitals. In particular, to establish pull is challenging within hospitals, as demand is often unpredictable and variable. However, the demand in the same-day surgery process can be said to be relatively predictable and stable, and as a result, demand readiness is established to a certain degree.

The emergency department of a hospital is likely the department with the most unpredictable and least repetitive demand, as it is very difficult to predict the number of patients that will come in during a given day, when they will arrive, as well as what their medical condition may

be. However, the demand at the surgical department at SI Lillehammer is predictable to a large degree as representatives from the surgical department are responsible for organizing patient consultations at the hospital, as well as operation dates. Thus, the department can regulate the number of patients treated on any given day according to their capacity. Furthermore, they know in advance when patients will arrive, as well as what medical conditions and how many patients they will have to treat any given day.

Moreover, whereas emergency departments have a wide range of patients, which require different diagnostics procedures, the surgical department at SI Lillehammer provides more specific care services to several limited groups of patients, and the demand is thus more repetitive. Of course, no patient is the same, and so, neither will their operations be. For instance, complications during surgery can extend the surgery significantly. However, this is the exception rather than the rule, and because the surgical department often treats recurring medical conditions in medically similar patients, they will in most cases have some notion of how long a given operation will last. Thus, one could argue that the same-day surgery process is particularly suited for implementing Lean, because of its relatively stable and predictable demand. This makes the standardization of tasks and activities more convenient, than in for example a process in the emergency department.

One might think that because the content factor represents the 'what of change', and Lean has been implemented in the same-day surgery process, the content of the change is given, and thus cannot be significantly influenced by the other factors. However, Lean is an ambiguous concept, without a single, generally applicable definition. Hence, what is understood and implemented as Lean varies from industry to industry, and from organization to organization. The version of Lean that was initially implemented at SI Lillehammer, was influenced by their choice of using consultants from SINTEF Raufoss Manufacturing to bring knowledge of Lean into the organization. In this manner, the context as well as the process have affected the content of change. Being introduced to, and trained in Lean by consultants from SINTEF Raufoss Manufacturing, a firm with mainly industrial clients and thus a highly industrial and technical focus on Lean, may have had an effect on the version of Lean implemented at the hospital.

However, Lean understood in the same-day surgery process has to a high degree been adapted and adjusted to the internal context at the hospital, for instance by defining the patient as the customer, and aiming to increase patient value. Furthermore, the process leaders have chosen

Lean tools that are appropriate for the hospital context. They have made use of both traditional tools described in the Lean literature, as well as their own adaptations of Lean tools and techniques, such as the ball bin and the checklists. One might wonder as a result of this adaptation if the *what* of change can still be called Lean. We believe it can, because the change concerns patient value, and the tools contribute to continuous improvement, both of which we believe to be fundamental aspects of Lean.

Even though the process leaders were initially introduced to a very operational form of Lean through their collaboration with SINTEF Raufoss Manufacturing, they also have solid knowledge of the softer sides of Lean. The five principles of Lean, that represent Lean thinking, can be said to be present in the same-day surgery process. The what of change has thus not just concerned the operational aspects of Lean, but also the softer sides of Lean, such as continuous improvement. This is reflected in their choice of tools, such as the ball bin and the list of initiatives. Furthermore, management focuses mainly on patient value, in order to ensure that the measures that are set in motion increase value for the patient. Thus, both Lean tools and Lean thinking have contributed to the same-day surgery process' success, in line with e.g. Hines et al. (2004) and Poksinska (2010).

Additionally, the tools used in the same-day surgery process only require knowledge about one's own day-to-day tasks and routines. Our findings suggest that the simplicity of the tools have also made it easier to involve employees in the process. The fact that the introduced tools have been easy for employees to understand and use, is another way in which the content of the change has influenced the process of implementation. More advanced tools and techniques would require education and training of employees before they could get actively involved, making employee involvement more resource-demanding. Although the tools used have been determined by management, the staff have had considerable opportunity to influence how the tools are used. Furthermore, through using the tools determined by management, the employees have had ample opportunity to shape the content of the change, and what initiatives should be moved forward with. Thus, the content has affected the process of implementation at the same time as the process has influenced the content of the change.

Moreover, the same-day surgery process improvement group has been an important forum for employee involvement. Firstly, the members of the improvement group have had the opportunity to shape the process by suggesting problems and solutions to the list of initiatives.

Secondly, the members have been made responsible for initiatives on the list of initiatives by the process leaders, which has empowered the front line staff in the process. In addition, the work of the process improvement group has acted as an important facilitator for continuous improvement. This has been done by using the PDCA cycle to continuously evaluate the already implemented initiatives. This is an example of how process and leadership are interconnected and shape content.

An important aspect of the same-day surgery process is that it has been driven by internal change agents. The SINTEF Raufoss Manufacturing consultants were only involved in bringing knowledge about Lean into the organization, through training and education of employees. Instead, the surgical department has made use of an internal consultant with comprehensive knowledge of both Lean as well as of the healthcare sector. This helped the same-day surgery process overcome the second challenge presented in section 4.2.2, as the internal consultant had knowledge of the cultural and structural context at the hospital. We believe this to have affected the implementation process and content of change positively. Furthermore, we believe their choice of using internal, rather than external consultants, has affected the change's outcome favorably, in line with literature on the subject.

In section 6.2.2, we argued that the fourth challenge, which is concerned with teamwork across occupational groups, was overcome by first choosing physicians with an already positive attitude towards Lean to participate in the same-day surgery process improvement group. This exemplifies how leadership forms the process of change. One of the success criteria for this process has thus been to include and delegate responsibilities from early on to the employees most willing to change. At the same time, the more resistant employees were given an outlet, and thus, perhaps more time to become acclimated to the new ways of working. The leaders were patient, introduced the changes gradually, and did not give up on the process. This gave the more skeptical employees time to realize the change's benefits. In this way process was adjusted to the context.

When the same-day surgery process was initiated by top management, the process managers did not know exactly where they were going, nor how to get there. In addition, the department did not receive any additional funding to make necessary changes, implying that the department's context also shaped the process of implementation. These two factors have resulted in the changes being implemented gradually, as in an evolutionary change process.

The content of the change, in terms of the different tools, was also introduced gradually, in line with the step-by-step process implementation approach. Furthermore, the step-by-step implementation approach has facilitated and necessitated heavy employee involvement.

Seeing as the internal context of SI Lillehammer can be characterized as a professional bureaucracy, and a lot of the employees were skeptical towards the change to start with, the process leaders have had to deal with resistance from highly educated and professional employees. Thus, the context, content and process factors have influenced the leadership factor as well. This resistance has necessitated an inclusive leadership style, illustrated by their use of a combination of the authoritative, affiliative, democratic and coaching leadership styles. This inclusion of employees in decision-making is likely to have contributed to employees supporting the process, as well as encouraged them to come forward with valuable suggestions. At the same time, it has been necessary to take a hard line against employee resistance to get employees who don't prioritize tasks related to the same-day surgery process, to do so.

In terms of handling employee resistance to change, it is our impression that management have been very patient in terms of letting employees see the benefit of one initiative before moving on to the next one. Thus, the management team seems to have stayed dedicated to the change long enough to demonstrate to employees that the same-day surgery process is a definite improvement. The employees have taken note of the leaders' dedication and conviction that the same-day surgery process is for the better, and this is likely to have affected their motivation for the changes. By demonstrating own willingness to embrace change, managers have acted as important role models, and developed trust and collaboration in relation to their employees. Furthermore, the fact that the process leaders consciously communicated the importance of increasing patient value to the employees instead of the importance of increasing efficiency, may have helped overcome some of the resistance towards Lean. This illustrates how the leadership has influenced the process factors, as well as how interrelated these two factors have been throughout this process.

The process leaders also enjoy personal power, as they are very well liked by employees. On the one hand, it is important to remember that it is unlikely that our informants would express particular dismay with the process leaders. Despite our efforts to communicate their anonymity in this thesis, they may fear that this information will get back to the management team regardless. On the other hand, none of our informants had any incentive to praise the process

leaders lavishly. Thus, we perceive the leaders to have personal power, and as a consequence, the somewhat tough leadership style has not resulted in more resistance, but rather in more respect, both towards the leadership, as well as towards the same-day surgery process in general. Hence, not only has the process shaped the leadership style, but the leadership style has shaped the process. Thus, the factors can be said to have influenced each other in an iterative manner.

In chapter 6, it becomes clear that many of the employees at the surgical department eventually decided to support this change, despite initial resistance. In this thesis, we have to a large degree traced this back to leadership. However, one might argue that some of this support is a result of what is termed *work facilitation*. Work facilitation refers to "to actions centered on removing obstacles that inhibit worker performance and on the provision of resources that are instrumental for the achievement of worker goals" (de Treville & Antonakis, 2006). Hence, work facilitation concerns making the day-to-day work of employees easier. The situation at the surgical department before the introduction of the same-day surgery process is described as poorly structured for the patient as well as the employees, as described in section 2.2.1. By introducing tools such as 5S, that help organize the workplace, and the checklists, that standardize many of these employees' day-to-day tasks, this change can be said to a large degree to facilitate the work of employees at the surgical department.

Consequently, the reason that so many of the employees at the surgical department support the change as of today, may lie in the fact that this process has facilitated their day-to-day work, rather than the way leadership has been executed. However, it is important to notice that most Lean initiatives in hospitals fail to be institutionalized, even though the change facilitates the work in the same way as in the same-day surgery process. This in turn indicates that the way the process leaders have executed leadership most likely has been decisive for the outcome of the change.

The outcome is influenced by the context, content, process and leadership factors, as well as by their interactions over time. Prior to this study, we assumed that the process factor would be the most decisive one in terms of achieving a successful outcome, which reflected our choice of framework. However, despite our initial presumption, we perceive the context to have influenced the other factors the most. The external and internal context of the surgical department at SI Lillehammer have both facilitated as well as limited the application of Lean

in the same-day surgery process in many ways. It has affected which Lean tools have been implemented, that is, the content of change, as well as how the process of implementing the same-day surgery process could take place. This study further indicates that congruence between the content and the context factor may have been of particular importance in order to institutionalize the same-day surgery process. Some fundamental and widely discussed challenges of implementing Lean in hospitals, like defining 'customer value', were to a large degree overcome due to this compatibility. The context also impacted in what way process leaders could manage the process of implementation. As time passed and the process took shape, this context characterized by certain conditions, changed.

Furthermore, the study indicates that the leadership factor and the process factor are particularly tightly linked to each other, and the interaction between these factors has thus also been of importance in the same-day surgery process. The process leaders have handled resistance and facilitated employee involvement, whereas the process of implementation has influenced how the process leaders could lead their employees going forward. All the factors can be said to have influenced and shaped each other in an iterative cycle over time, in order to provide an institutionalized change. Thus, this study verifies that the outcome is not a result of any one of these factors seen in solitude, but rather the combination of all of them and their interconnections over time.

## 7.1 Implications for practice

We believe this study can be used as an instrument for other Norwegian public hospitals, in order to point out how Lean initiatives can be institutionalized. However, it is important to note that our findings can only *indicate* what other hospitals can learn from SI Lillehammer in terms of institutionalizing Lean initiatives. The findings cannot be used without reservations. More specifically, we believe that the same-day surgery process studied first and foremost is a pointer for Lean implementations in departments that are similar to the the surgical department at SI Lillehammer in terms of its external and internal context. In this case, the alignment of stakeholder goals as well as the partly predictable and stable demand, have been important in order to institutionalize in change. For other processes in other contexts, further studies must be conducted in order to provide fitting guidelines.

## 7.2 Implications for further research

In this thesis, it is argued that the context, content, process and leadership of change interact over time and that these interactions are decisive for the change outcome. In order to provide clarity as to how Lean can be institutionalized in Norwegian public hospitals, we recommend that further studies are conducted with respect to these factors. In order to capture these changing processes, longitudinal studies are recommended.

Furthermore, we believe that translating Lean with Norwegian public hospitals in general as the internal context is insufficient, because this context is too broad. There can be significant differences between Norwegian public hospitals, as well as departments, in terms of structure and culture. Lean requires local tailoring and modification. In particular, we suggest that the literature should distinguish between Lean initiatives in emergency and elective hospital departments. Some of the contextual characteristics of hospitals commonly presented in the Lean healthcare literature, such as unpredictable demand, are only fully valid for emergency departments, not elective departments. In turn, the content of Lean fits differently in the different kinds of departments. In this study, it becomes evident that Lean initiatives in elective departments can work. An interesting point of departure for further research, is thus to study if Lean can be useful in an emergency department, and if so, evaluate the degree of institutionalization.

As pointed out in section 7.2, the findings in this case study should only be perceived as an indicator on how to institutionalize Lean. We believe our findings are likely to be valid in processes similar to the same-day surgery process in terms of contextual characteristics. This hypothesis should however be tested in similar processes.

Another interesting point of departure, is whether or not the findings in this study are valid for processes slightly different from the same-day surgery process in terms of context. Many of the challenges associated with Lean in hospitals were avoided in the same-day surgery process, but may be present in other cases. By conducting more case studies, it will become evident if the same-day surgery process was institutionalized because the change was executed right, or merely because the process was particularly fitting for initiating Lean. If the main findings of this study apply in a broader context, it may indicate that some general guidelines for institutionalizing Lean initiatives in Norwegian public hospitals can be found. This in turn,

would be an important contribution towards increasing the efficiency of the Norwegian healthcare system, which we perceive to be more and more important in the years to come.

-

# List of references

**Andersen, H. (2015)** How to design lean interventions to enable impact, sustainability and effectiveness. A mixed-method study, *Journal of Hospital Administration*, 4(5). doi: 10.5430/jha.v4n5p18.

**Andersen, H. and Røvik, K.A. (2015)** Lost in translation: A case-study of the travel of lean thinking in a hospital, *BMC Health Services Research*, 15(1). doi: 10.1186/s12913-015-1081-z.

**Andersen, H., Røvik, K.A. and Ingebrigtsen, T. (2014)** Lean thinking in hospitals: Is there a cure for the absence of evidence? A systematic review of reviews, *BMJ Open*, 4(1), pp. e003873–e003873. doi: 10.1136/bmjopen-2013-003873.

**Armenakis, A. A., Harris, S. G., & Mossholder, K. W. (1993)** Creating Readiness for Organizational Change. *Human Relations, 46*(6), pp. 681-703. doi:10.1177/001872679304600601

**Ballé, M. and Régnier, A. (2007)** Lean as a learning system in a hospital ward, *Leadership in Health Services*, 20(1), pp. 33–41. doi: 10.1108/17511870710721471

**Bateman, N., Hines, P. and Davidson, P. (2014)** Wider applications for lean, *International Journal of Productivity and Performance Management*, 63(5), pp. 550–568. doi: 10.1108/ijppm-04-2013-0067.

**Bhasin, S. and Burcher, P. (2006)** Lean viewed as a philosophy, *Journal of Manufacturing Technology Management*, 17(1), pp. 56–72. doi: 10.1108/17410380610639506.

**Billett, S., Harteis, C. and Gruber, H. (eds.) (2014)** *International handbook of research in professional and practice-based learning*. Netherlands: Springer.

**Brännmark, M. and Benn, S. (2012)** A proposed model for evaluating the sustainability of continuous change programmes, *Journal of Change Management*, 12(2), pp. 231–245. doi: 10.1080/14697017.2012.672449.

**Bryman, A. (2012).** *Social research methods*. New York: Oxford University Press.

**Buchanan, D., Fitzgerald, L., Ketley, D., Gollop, R., Jones, J.L., Lamont, S.S., Neath, A. and Whitby, E. (2005)** No going back: A review of the literature on sustaining organizational change, *International Journal of Management Reviews*, 7(3), pp. 189–205. doi: 10.1111/j.1468-2370.2005.00111.x.

**Cheng, J.L. (2008)** Implementing Six Sigma via TQM improvement: an empirical study in Taiwan, *The TQM Journal*, Vol. 20 Issue: 3, pp.182-195, doi: 10.1108/17542730810867218

**Christensen, T., Lægreid, P., Roness, P.G. and Røvik, K.A. (2009)** *Organisasjonsteori for*

*offentlig sektor*. Oslo: Universitetsforlaget.

**Collins, D. (1998)** *Organizational change: Sociological perspectives*. London: Taylor & Francis.

**Cummings, T.G. and Worley, C.G. (2015)** *Organization development and change*. 8th ed. United States: South-Western College Pub.

**de Bleser, L., Depreitere, R., Waele, K. D., Vanhaecht, K., Vlayen, J., & Sermeus, W. (2006).** Defining pathways. *Journal of Nursing Management,* 14(7), pp. 553-563. doi:10.1111/j.1365-2934.2006.00702.x

**de Souza, L.B. & Pidd, M., (2011).** Exploring the barriers to lean health care implementation. *Public Money & Management*, 31(1), pp. 59–66.

**De Wit, B., & Meyer, R. (2014)** *Strategy: an international perspective*. Hampshire (UK): CENGAGE Learning.

**Dombrowski, U. and Mielke, T. (2014)** Lean leadership – 15 rules for a sustainable lean implementation, *Procedia CIRP*, 17, pp. 565–570. doi: 10.1016/j.procir.2014.01.146.

**Drotz, E. and Poksinska, B. (2014)** Lean in healthcare from employees' perspectives, *Journal of Health Organization and Management*, 28(2), pp. 177–195. doi: 10.1108/jhom-03-2013-0066.

**Ford, J. D. and Ford, L. W. (2009)** Decoding resistance to change, *Human Resource Management International Digest, 17*(6). doi:10.1108/hrmid.2009.04417fad.008.

**Edwards, S. (2015)** A Guide To The 5S Lean Production Method For Occupational Health And Safety. *Occupational Health,* 67(2), pp. 27-29. Print.

**Eklund, J., Lundkvist, A. H., & Lindskog, P. (2014)** Lean implementation, work environment and sustainability. *In:* Sustainable Development in Organizations / [ed] Elg, M., Ellström, P-E., Klofsten, M., and Tillmar, M, Edward Elgar Publishing, 2015, 29-41 p. doi:10.4337/9781784716899.00008.

**Elving, J.L.W. (2005)** The role of communication in organisational change, *Corporate Communications: An International Journal*, 10(2), pp.129-138, doi: 10.1108/13563280510596943

**Gaynor, M. and Anderson, G.F. (1995)** Uncertain demand, the structure of hospital costs, and the cost of empty hospital beds, *Journal of Health Economics*, 14(3), pp. 291–317. doi: 10.1016/0167-6296(95)00004-2.

**Goleman, D. (2000)** Leadership that gets results, *Harvard Business Review*, March-April, pp. 78-90.

**Helse- og Omsorgsdepartementet (2015)** *Meld. St. 11 Nasjonal helse- og sykehusplan (2016−2019)*. Available at: https://www.regjeringen.no/contentassets/7b6ad7e0ef1a403d97958bcb34478609/no/pdfs/stm201520160011000dddpdfs.pdf (Accessed: 10 October 2016).

**Hines, P., Holweg, M. and Rich, N. (2004)** Learning to evolve, *International Journal of Operations & Production Management*, 24(10), pp. 994–1011. doi: 10.1108/01443570410558049.

**Holden, R.J., Eriksson, A., Andreasson, J., Williamsson, A. and Dellve, L. (2015)** Healthcare workers' perceptions of lean: A context-sensitive, mixed methods study in three Swedish hospitals, *Applied Ergonomics*, 47, pp. 181–192. doi: 10.1016/j.apergo.2014.09.008.

**Holmemo, M.D.Q., Rolfsen, M. and Ingvaldsen, J.A. (2016)** Lean thinking: Outside-in, bottom-up? The paradox of contemporary soft lean and consultant-driven lean implementation, *Total Quality Management & Business Excellence*, , pp. 1–13. doi: 10.1080/14783363.2016.1171705.

**Holmemo, M. D. Q., (2017)** *Lean implementation in Norwegian public service sector*, Ph.D., Norwegian University of Science and Technology.

**Jacobsen, D.I. (2012)** *Organisasjonsendringer og endringsledelse*. Bergen: Fagbokforlaget.

**Kirkpatrick, I., Dent, M. and Jespersen, P.K. (2011)** The contested terrain of hospital management: Professional projects and healthcare reforms in Denmark, *Current Sociology*, 59(4), pp. 489–506. doi: 10.1177/0011392111402718.

**Klein, S.M., (1996)** A management communication strategy for change. *Journal of Organizational Change Management*, 9(2), pp.32–46.

**Kjekshus, L.E. (2003)** *Når sykehus blir butikk – effekter på styring, profesjoner og brukere*. Available at: https://www.idunn.no/nst/2003/04/nar_sykehus_blir_butikk_-_effekter_pa_styring_profesjoner_og_brukere (Accessed: 5 December 2016).

**Kollberg, B., Dahlgaard, J.J. and Brehmer, P.O. (2006)** Measuring lean initiatives in health care services: Issues and findings, *International Journal of Productivity and Performance Management*, 56(1), pp. 7–24. doi: 10.1108/17410400710717064.

**Kuipers, B.S., Higgs, M., Kickert, W., Tummers, L., Grandia, J. and Van Der Voet, J. (2013)** The management of change in public organizations: A literature review, *Public Administration*, 92(1), pp. 1–20. doi: 10.1111/padm.12040.

**Lean Forum Norge (n.d.)** *Leanprisene 2016*. [online] Available at: http://leanforumnorge.no/leanprisene/leanprisene-2016. [Accessed 1 June 2017].

**Liker, J. K., & Convis, G. L. (2011)** *The Toyota way to lean leadership: achieving and sustaining excellence through leadership development*. Maidenhead: McGraw-Hill

Professional.

**Mann, D. (2009)** The Missing Link: Lean Leadership, *Frontiers of health services management, 26*(1), 3-21. doi:10.1201/ebk1439811412-3

**Ministry of Health and Care Services (no date)** *Hospitals*. Available at: https://www.regjeringen.no/en/topics/health-and-care/hospitals/id10935/ (Accessed: 10 December 2016).

**Mintzberg, H. (1980)** Structure in 5's: A synthesis of the research on organization design, *Management Science*, 26(3), pp. 322–341. doi: 10.1287/mnsc.26.3.322.

**Modig, N. and Åhlström, P. (2012)** *This is lean: Resolving the efficiency paradox*. Stockholm: Rheologica Publishing.

**Moraros, J., Lemstra, M. and Nwankwo, C. (2016)** Lean interventions in healthcare: Do they actually work? A systematic literature review, *International Journal for Quality in Health Care*, 28(2), pp. 150–165. doi: 10.1093/intqhc/mzv123.

**Perry, J.L. and Rainey, H.G. (1988)** The public-private distinction in organization theory: A critique and research strategy, *Academy of Management Review*, 13(2), pp. 182–201. doi: 10.5465/amr.1988.4306858.

**Pettigrew, A.M. (1985)** *The awakening giant: Continuity and change in imperial chemical industries*. Oxford, United Kingdom: Blackwell Publishers.

**Pettigrew, A. M. (1987**) Context and action in the transformation of the firm, *Journal of Management Studies*, 24: 649–670. doi:10.1111/j.1467-6486.1987.tb00467.x

**Pettigrew, AM, (1990)** Longitudinal Field Research on Change, Theory, & Practice, *Organization Science*, 1:267:92

**Pettigrew, A.M., Woodman, R.W. and Cameron, K.S. (2001)** Studying organizational change and development: Challenges for future research, *Academy of Management Journal*, 44(4), pp. 697–713. doi: 10.2307/3069411.

**Poksinska, B. (2010)** The current state of lean implementation in health care, *Quality Management in Health Care*, 19(4), pp. 319–329. doi: 10.1097/qmh.0b013e3181fa07bb.

**Poksinska, B., Swartling, D., & Drotz, E. (2013)** The daily work of Lean leaders – lessons from manufacturing and healthcare. *Total Quality Management & Business Excellence, 24*(7-8), 886-898. doi:10.1080/14783363.2013.791098

**Radnor, Z.J., Holweg, M. and Waring, J. (2012)** Lean in healthcare: The unfilled promise?, *Social Science & Medicine*, 74(3), pp. 364–371. doi: 10.1016/j.socscimed.2011.02.011.

**Radnor, Z. and Osborne, S.P. (2013)** Lean: A failed theory for public services?, *Public Management Review*, 15(2), pp. 265–287. doi: 10.1080/14719037.2012.748820.

**Raven, B. H., and French, J. R. P. (1958)** Legitimate Power, Coercive Power, And Observability In Social Influence. *Sociometry*, 21(2), pp. 83.-97.

**Rolfsen, M. (ed.) (2014)** *Lean blir norsk*. Norge: Fagbokforlaget.

**Rotar, A.M., Botje, D., Klazinga, N.S., Lombarts, K.M., Groene, O., Sunol, R. and Plochg, T. (2016)** The involvement of medical doctors in hospital governance and implications for quality management: A quick scan in 19 and an in depth study in 7 OECD countries, *BMC Health Services Research*, 16(2). doi: 10.1186/s12913-016-1396-4.

**Scorsone, E.A. (2008)** New Development: What are the Challenges in Transferring Lean Thinking to Government?, *Public Money & Management*, 28(1), pp. 61–64. doi: 10.1111/j.1467-9302.2008.00621.x.

**Scott, W. R. (1982)** Managing professional work: Three models for control of health organizations, *Health Services Research*, 17(3), pp. 213– 240.

**SINTEF Raufoss Manufacturing (n.d.)** *Kompetanse*. [online] Available at: http://www.sintef.no/sintef-raufoss-manufacturing-as/kompetanser/. [Accessed 1 June 2017].

**Spear, S. J. (2006)** Fixing Healthcare From The Inside: Teaching Residents To Heal Broken Delivery Processes As They Heal Sick Patients, *Academic Medicine*, 81(10), pp. 144-149.

**Stake, R. E. (2000)** Case Studies. *In N. K. Denzin, Lincoln, Yvonna S. (Ed.), Handbook of Qualitative Research second edition (*pp. 134-164*).* Thousand Oaks, CA: Sage Publications, Inc.

**Stewart, G.L., Manges, K.A. and Ward, M.M. (2015)** Empowering sustained patient safety, *Journal of Nursing Care Quality*, 30(3), pp. 240–246. doi: 10.1097/ncq.0000000000000103.

**Stortinget (n.d.)** *Innst. 135 S (2013–2014)*, [online] Available at: https://stortinget.no/no/Saker-og-publikasjoner/Publikasjoner/Innstillinger/Stortinget/2013-2014/inns-201314-135/1/. [Accessed 4 June 2017].

**Sykehuset Innlandet (n.d.)** *Organisering*. [online] Available at: https://sykehuset-innlandet.no/om-oss/organisering [Accessed 20 April 2017].

**Tucker, A. and Edmondson, A. (2003)** Why Hospitals Don't Learn from Failures: Organizational and Psychological Dynamics That Inhibit System Change. *California Management Review*, 45(2), pp. 55-72.

**Vallas, S.P. (2003)** Why teamwork fails: Obstacles to workplace change in Four manufacturing plants, *American Sociological Review*, 68(2), pp. 223-250. doi:

10.2307/1519767.

**Waring, J. J., & Bishop, S. (2010)** Lean healthcare: Rhetoric, ritual and resistance. *Social Science & Medicine,* 71(7), pp. 1332-1340. doi:10.1016/j.socscimed.2010.06.028.

**Weiner, B. J. (2009)** A theory of organizational readiness for change, *Implementation Science,* 4(1). doi:10.1186/1748-5908-4-67.

**Womack, J.P. and Jones, D.T. (1996)** *Lean thinking: Banish waste and create wealth in your corporation*. New York, NY: Simon & Schuster.

**Yin, R. K. (2014).** *Case study research: design and methods*. London: Sage Publication.

# Appendix

***Table A1: Interview guide***

| Topic | Question |
|---|---|
| **Introduction** | 1. Is it okay if we record the interview? You can at any time ask us to stop recording or let us know if there is anything you don't want us to record.<br><br>2. Can you tell us a little bit about yourself and your role in the same-day surgery process? |
| **Lean** | 3. How do you understand Lean here at the surgical department?<br>*3a. How do you personally understand Lean?*<br>*3b. Do you believe you understanding of Lean is similar to other employees' understanding of it?*<br><br>4. What do you think is the purpose of using Lean? |
| **The same-day surgery process** | 5. What is the background for this change process?<br><br>6. How did you experience the transition from old to new work routines?<br><br>7. Did you participate in the change process? To what degree?<br><br>8. Did you meet any challenges during the change process?<br><br>9. Did you at any point experience resistance towards the changes among your colleagues?<br><br>10. What is the background for this change process?<br><br>11. How did you experience the transition from old to new work routines?<br><br>12. Did you participate in the change process? To what degree?<br><br>13. Did you meet any challenges during the change process? |

| | |
|---|---|
| | 14. Did you at any point experience resistance towards the changes among your colleagues? |
| **Institutionalization** | 15. Have you experienced any challenges in terms of sustaining the process?<br><br>16. Have any of your work routines disappeared, or new ones appeared?<br><br>17. Do you feel the surgical department functions better today than it did before the process was initiated?<br><br>18. Why do you believe the change process has been successful and still endures? |
| **Roles** | 19. How did the internal roles change as a result of the process, in terms of responsibilities, or more or less cooperation between different occupational groups?<br><br>20. How did your role and your areas of responsibility change as a result of the Lean implementation?<br>*20a. Did you have more, or less, responsibility?*<br>*20b. More, or less, freedom?*<br>*20c. How do you feel about this development?*<br><br>21. Do you feel that the new routines (and the standardization of tasks) affects your professional development? |
| **Leadership** | 22. Who initiated the change?<br><br>23. Who was your leader through the change process?<br>*23a. What was your impression of the leadership, and their leadership styles?*<br>*23b. What effect do you believe this leadership style has had on the process?*<br>*23c. Is the leadership more visible now than before?*<br><br>24. For leaders specifically: |

| | |
|---|---|
| | *24a. What kind of education and training did you receive before this process was initiated?*<br>*24b. How did you lead your employees through this change process?* |
| **Closing** | 25. To finish, is there anything you want to add, or feel we should have asked about?<br>26. Can we contact you if we have further questions? |