

# Using Quality Improvement science:

Improving theatre operations and minimising the cancellations  
on the day of surgery due to patients being declared unfit



Author:

Peter Bartels

Supervisors:

Professor Anneke Fitzgerald

Jennifer Kosiol

Professor Erwin Hans

Dr. Derya Demitras

# Abstract

**Introduction:** This research involves a quality improvement project that aims to develop a solution to gain a better understanding of the reasons for Day of Surgery (DoS) cancellations. The problem with regards to these type of cancellations is not fully understood, therefore problem identification is used to identify opportunities for improvement. A comprehensive stakeholder identification and classification is used to ensure integrity of input data for this problem identification since experiences of definitive stakeholders form the basis for the identification of the opportunities for improvement.

**Methodology:** The background for this research included literature on stakeholder identification and classification and a comprehensive context description. To gain a better understanding of the research problem, fifteen semi-structured face-to-face interviews and four field observations were conducted. Interview data was analysed using thematic analysis, the observational field notes were partly translated into a patient's journey and partly quantified and analysed. In addition, twelve months of historical data on cancellations on day of surgery were quantified and analysed.

**Findings:** This research adds to quality improvement science by emphasising the need for a thorough stakeholder identification and classification process in all quality improvement projects. In addition, opportunities for improvement are extracted from the thematic analysis of interviews, analysis of observational field notes and quantified historical data. Five systemic issues are identified from these opportunities for improvement: 1) communication between staff, 2) patient education, 3) pre-anaesthetic assessment, 4) pre-operative phone call, and 5) follow-up. Solution(s) are identified for each of these systemic issues. Revising the cancellation form is one solution that is considered to be easy to implement and have a high impact therefore, this solution is further developed.

**Conclusion:** Revising the cancellation form is the first step in assisting key personnel to gain a better understanding of the reasons for Day of Surgery (DoS) cancellations. Reporting on the category and subcategory of the cancellation and whether the cancelled patient visited the pre-admission and/or pre-anaesthetic clinic are two of the additions to the cancellation form believed to make a difference. These and other revisions of the cancellation form helps with more comprehensive reporting and allows for the identification of other quality improvement projects which can help minimise the amount of cancellations and eventually improve the health service delivery at the large public-healthcare organisation in South East Queensland.

**Keywords:** cancellations, day of surgery, unfit for surgery, quality improvement, stakeholder identification and classification, healthcare

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# Abbreviations

*Table 1 - List of abbreviations*

<b>AO</b>	Administrative Officer
<b>CCC</b>	Clinical Care Coordinator
<b>DoS</b>	Day of Surgery
<b>EMR</b>	Electronic Medical Record
<b>HBCIS</b>	Hospital Based Corporate Information System
<b>HCTM</b>	Health Care and Technology Management
<b>HOSEQ</b>	Healthcare Organisation South East Queensland
<b>IEM</b>	Industrial Engineering and Management
<b>ORMIS</b>	Operating Room Management Information System
<b>OT</b>	Operating Theatre
<b>QI</b>	Quality improvement

# Statement of authorship

This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

*P. H. G. Bartels (Peter)*

Peter Bartels

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*Peter Bartels*

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# **1 Introduction to the research**

The Industrial Engineering and Management (IEM) field aims to optimise organisational processes by redesign. Within the specialisation of Healthcare and Technology Management (HCTM), scholars focus on managing healthcare organisations, such as public hospitals. Quantitative and qualitative methods are used to support management in improving the healthcare delivery to patients, i.e. optimising healthcare processes (Universiteit Twente, 2017). This research sits firmly in the HCTM field because it aims to develop a solution to assist key hospital personnel to gain a better understanding of the reasons for patients being declared unfit and cancelled on the Day of Surgery (DoS).

Day of surgery cancellations occur after the patient has presented for surgery on the day of surgery. Cancelling the surgery at such a late stage is inefficient for theatre utilisation and can be distressing to patients and staff. Within the two hospitals that are part of a large public-sector healthcare organisation in South East Queensland (HOSEQ), namely Hospital A and Hospital B, it is unclear exactly why the patients are cancelled, when and by whom, and theatre managers within the HOSEQ suggested an improved tool for data collection was needed. However, before developing a tool, the exact problem or deficit needs to be identified and analysed. Getting a clear understanding of why patients are cancelled on the day of surgery, and to what extent it is a problem are important steps to improve the current deficit. Deficit resolution is the basic principle of quality improvement science (Ting, Shojania, Montori, & Bradley, 2009). Therefore, the purpose of this research is to get a clear understanding why patients are cancelled on the day of surgery and how these cancellations can be minimised in order to improve the health services delivery for patients of the HOSEQ. This chapter introduces the thesis, presents background on quality improvement science in Section 1.1 and introduces the research issues in Section 1.2. Also, Section 1.3 gives the justification of this research and Section 1.4 describes the methodology. Further, Section 1.5 presents the outline of this report and Section 1.6 discusses the definition of terms. In addition, this chapter discusses delimitations of the scope of this research in Section 1.7 and ethical considerations relevant within this research in Section 1.8.

## **1.1 Quality improvement science**

Quality improvement science is a research area that focusses on improving specific processes or services that are highly dependent on the internal context (Itri, et al., The science of quality improvement, 2017). The goal of quality improvement is to identify and implement promising interventions and thereby improve clinical practice (Baily, Bottrell, Lynn, & Jennings, 2006).

To improve clinical practice, people working in the clinical care setting are encouraged to use their experience to pinpoint promising ways to improve care (Baily, Bottrell, Lynn, & Jennings, 2006). Quality improvement science uses both qualitative and quantitative methods similar to the methods used in research projects to carry out systematic investigations on how processes or services could potentially be improved (Baily, Bottrell, Lynn, & Jennings, 2006). Therefore, quality improvement has evolved and is now considered a science using systematic processes for knowledge creation, data gathering and data analysis. It also requires proven control mechanisms, considers alternate perspectives, is generally grounded in theory, and has transparent bias assessments and fidelity measures. Thus, quality improvement is no longer only of interest to organisations, but also of interest to the academic community who advocate for applied science (Itri, et al., The science of quality improvement, 2017).

This research uses experiences from people working in the clinical care setting to identify promising interventions that can help reduce the occurrence of cancellations on the day of surgery. Therefore, this research is a quality improvement project.

## **1.2 Research issues and contributions**

The overall aim of this research is to improve health service delivery at the large public-sector healthcare organisation in South East Queensland (HOSEQ) and in particular help to minimise the amount of cancellations on day of surgery. Improving healthcare delivery in South East Queensland allows the consumers to have access to better quality of care and a reduction of cancellations of patients on day of surgery can lead to a reduction of resource waste. The initial problem stated by the problem owners, the operating theatre managers, is as follows:

*“We are the worst performing organisation with regards to cancellations on the day of surgery.”*

Once the problem as perceived by the operating theatre managers was identified, Information was gathered on this perceived problem, and soon it was discovered that this problem was not fully understood. The document which helped to shed some light on this issue was a report on Queensland Public Hospital Operating Theatre Efficiency (QPHOTE) by the Queensland Audit Office (QAO). The report indicated that HOSEQ was not the worst performing organisation with regards to cancellations on the day of surgery (QPHOTE - Volume I, 2016). A further investigation into the cancellations on the day of surgery resulted in a new perceived problem: the amount of patients being declared unfit for surgery and cancelled on the day of surgery. Although, it is unclear to the organisation and the researcher what the actual problem is with regards to patients being declared unfit for surgery on the day of surgery. Therefore,

the problem statement of this research is defined as: the problem with regards to Day of Surgery (DoS) cancellations due to patients being declared unfit is unknown.

A problem identification is needed in this quality improvement project to fully understand the problem. It is essential to fully understand the problem before suggesting possible solutions that could potentially reduce these type of cancellations because implementation of potential solutions might be suboptimal when a problem is not fully understood. The input data for this problem identification can be gathered by interviewing stakeholders involved in a patient's preparation and cancellation process. To ensure the integrity of the input data, a stakeholder identification and classification is essential, before starting the problem identification phase. Possible solutions are identified after fully understanding the problem.

The aim of this research is to develop a solution to assist key hospital personnel to gain a better understanding of the reasons for Day of Surgery (DoS) cancellations, minimising the amount of cancellations and improving the health service delivery at HOSEQ. To help achieving the research aim, the following research questions are formulated. Along with the questions, the method for answering them, the outcome and the corresponding chapter are shown in Table 2. Essentially we argue that the solution to minimising patients being declared unfit for surgery and cancelled on the day is multi-faceted. However, the starting point in resolving this issue is to improve reporting on cancellations.

*Table 2 - Research questions*

Research question	Method for answering	Outcome	Chapter
<b>Who are the key informants with regards to on the day of surgery cancellations and how are they best identified?</b>	Stakeholder identification & classification	Stakeholder Methodology & Ranking	4.1-4.3
<b>What are opportunities for improvement with regards to on the day of surgery cancellations as perceived by the different stakeholders?</b>	Interviews	Perceived opportunities for improvement	5.1
<b>What are opportunities for improvement with regards to on the day of surgery cancellations as analysed from observations and historical data?</b>	Interviews, observations and historical data	Observed opportunities for improvement	5.2 & 5.3
<b>What are the overall opportunities for improvement and possible solutions that affect day of surgery cancellations?</b>	Combining opportunities for improvement	Multifaceted issues & solutions	6.1

### 1.3 Justification of the research

Over one-third of patients cancelled on DoS are cancelled because they are declared unfit for surgery (QPHOTE - Volume I, 2016). The reason why patients are declared unfit on DoS is unclear because there is poor reporting on cancellations. Therefore, the more we know about

the reasons why patients are being declared unfit on DoS, the better we will understand which solution is most suitable to prevent these cancellations from happening.

We want to prevent on the day of surgery cancellations from happening because it results in inefficiency use of Operating Theatre (OT) and impacts a patient's life greatly. Inefficient use of the OT creates additional costs for hospitals. It is economically desirable to use the OT as efficiently as possible because it is the largest cost producing and returns generating department in the hospital (Denton, Viapiano, & Vogl, 2007; Faiz, et al., 2008).

#### **1.4 Methodology**

This research explores an existing problem in a healthcare setting and requires the flexibility to combine methods to explore the existing problem in operating theatre management. It requires an approach that investigates the problem from different perspectives. Therefore, this research is argued in a pragmatic paradigm and has practical implications (Cresswell, 2009: 37).

The research starts with the background investigation, including stakeholder identification and classification. Stakeholder literature is used to identify and classify the definitive stakeholders that provide part of the input data for this project. Identifying and classifying stakeholders in a structured way ensures the integrity of the input data gathered through semi-structured face-to-face interviews. The input data from the interviews form the basis for the problem identification phase, in addition to observational field notes and historical data. A thematic analysis of the interview data results in opportunities for improvement as perceived by the participants.

Observations are used to get a better understanding of the patient flow and a patient's preparation for surgery. Since mixed stories arose from the participants about what actually happens in the last point of contact before a patient comes in for surgery, the pre-operative phone call is also observed. Potential opportunities for improvement are analysed from observational field notes. Historical data is used to quantify the more detailed reasons why patients are cancelled on the day of surgery due to being declared unfit and to find possible opportunities for improvement.

The aim of the problem identification is to find out the actual problem with regards to patients being declared unfit for surgery and cancelled on the day of surgery. Each of the three datasets is analysed separately in the problem identification phase, resulting in opportunities for improvement per dataset. The actual problem is found to be multi-faceted.

In the solution identification phase, these multi-faceted issues are used in combination with the thematic analysis of interview data to come up with solutions to reduce the amount of patients being declared unfit and cancelled on the day of surgery. In order to identify the optimal solution in the context and time frame of this quality improvement project, the identified solutions are then scored upon their potential impact and the ease of implementation.

## **1.5 Outline of the report**

In order to grasp the research journey, Chapter 1 introduces the thesis by giving the background information needed. It also presents the research question and sub questions that are driving this dissertation. In addition, it briefly mentions the methodology and definition of terms before outlining the key assumptions and ethical considerations.

In order to obtain a better picture of the context of this thesis, Chapter 2 outlines the responsibilities of different levels of government in the Australian healthcare system. Additionally, it introduces Activity-Based Funding (ABF), explains why this incentivised hospitals to reduce treatment costs. Further, this chapter elaborates why it is economically desirable to use the Operating Theatre (OT) as efficiently as possible and how Day of Surgery (DoS) cancellations influence the utilisation of the OT.

Chapter 3 addresses the methodological decision making that was necessary in order to answer the research questions. It addresses the three major phases of the research and outlines the data gathering and data analysis methods used. In addition, it briefly mentions limitations of this research.

In order to carry out a thorough stakeholder analysis, Chapter 4 first describes background on stakeholder identification and classification. In addition, it presents the methods used to identify and classify stakeholders in this thesis and presents the identified stakeholders and their classification. Further, it briefly mentions limitations of this stakeholder analysis and makes a suggestion for future reference with regards to a thorough stakeholder analysis.

Chapter 5 presents the participants' perceived opportunities for improvement by analysing interview data. In addition, it presents the opportunity for improvement as identified from observational field notes from the pre-operative phone call. Further, the chapter presents the identified opportunities for improvement extracted from the quantification of the "detail category" of historical cancellations.

In order to come up with optimal solution(s), Chapter 6 combines the opportunities for improvement and identify the actual problem(s) with regards to on the day of surgery



cancellations. In addition, it identifies potential solutions to minimise the amount of cancellations and identifies the solution that is most suitable. Additionally, it briefly discusses the implications for theory, limitations and opportunities for further research.

## 1.6 Definition of terms

Before continuing, it is necessary to provide a definition of terms used in this research. These terms are defined in Table 3.

*Table 3 - Definition of terms*

<i>Term</i>	<i>Definition</i>
Activity-Based Funding (ABF)	A set of standardised measures in which hospitals classify patients, count the number of patients treated under each classification, count the costs associated with treating each type of patient and are paid a predetermined set price per patient (Golenko, 2017)
Cancellation	The act of cancelling something, or saying that something is no longer going to happen.
Clinical urgency category	Clinical assessment of the urgency with which a patient requires elective hospital care, as represented by a (category) code (Queensland Health, 2015). <ul style="list-style-type: none"> <li>- Category 1 (urgent): Admission within 30 days desirable for a condition that has the potential to deteriorate quickly.</li> <li>- Category 2 (semi-urgent): Admission within 90 days desirable due to the clinical condition of the patient.</li> <li>- Category 3 (non-urgent): Admission within 365 days desirable due to the clinical condition of the patient.</li> </ul>
Elective surgery	Surgery that is able to wait longer than 24 hours and the patient is placed on a waiting list. Patients are then prioritised under clinically recommended guidelines.
Salience	The degree to which managers give priority to competing stakeholder claims (Mitchell, Agle, & Wood, 1997)
Stakeholder	Persons or groups with legitimate interests in procedural and/or substantive aspects of corporate activity (Donaldson & Preston, 1995)

## 1.7 Delimitations of scope and key assumptions

This research is delimited to the hospitals within the HOSEQ, namely Hospital A and Hospital B. Further, one could consider the patient as a stakeholder in this research. Nevertheless, we chose to delimit the research to the managerial and operational perspective on this issue, due

to ethical considerations. The patient is acknowledged as a stakeholder, but no data was gathered from patients.

The assumption that is at the basis of this research:

- Participants have knowledge about a patient's preparation for surgery and/or the cancellation process.

## **1.8 Ethical considerations**

This research gained full ethical clearance by the public healthcare organisation's Human Research Ethics Committee (HREC), site specific approval for this study to take place at HOSEQ, and full approval by the Griffith University Human Research Ethics Committee. The HREC ref no: HREC/17/QGC/17, SSA ref no: SSA/17/QGC/55, and GU ref no: 2017/153. The specific ethical considerations included: anonymity of participants, the voluntary nature of participation, organisational and university in kind cost, intellectual property rights, obtaining consent and providing the participants with an option to withdraw at any stage without affecting the participant's relationship with the hospital. Also see the participant information sheet (Appendix 22), the consent form (Appendix 23) and the withdrawal of consent form (Appendix 24).

## **1.9 Summary**

This study aims to develop a solution to assist key hospital personnel to gain a better understanding of the reasons for patients being declared unfit and cancelled on the day of surgery at HOSEQ. In addition, this study aims to minimise the amount of cancellations and eventually improve the health service delivery at HOSEQ. Quality improvement projects aim to improve specific processes or services that are highly context dependent. Therefore, next chapter presents the context of this research. In addition, this project uses a comprehensive stakeholder identification and classification technique to ensure the integrity of input data, and problem identification to fully understand the problem, before suggesting potential solutions. Interviews, observations and historical data are used in the problem identification phase.

## **2 Context**

This chapter focuses on the context description of this research. First, section 2.1 describes elements of the Australian healthcare system in general and elaborates on why there is an incentive for all ABF funded hospitals to reduce treatment costs. Next section 2.2 addresses how healthcare is delivered across the different states and territories. Followed by Section 2.3 which describes characteristics of the large public-sector healthcare organisation in South East Queensland (HOSEQ) and elaborates why it is economically desirable to use the Operating Theatre (OT) efficiently. Section 2.4 discusses reasons impacting the efficiency of the OT. Further, Section 2.5 addresses the impact of on the Day of Surgery (DoS) cancellations on OT utilisation and elaborates on the necessity of problem identification in this research. A patient's journey within HOSEQ from their outpatient appointment to the day of surgery is presented in Section 2.6. The chapter finishes with Section 2.7 which provides background on the magnitude of cancellations on the DoS at HOSEQ.

### **2.1 Australian healthcare system**

Within Australia, healthcare is provided by both private and public government organisations. The governance, coordination and regulation are the joint responsibilities of all levels of government, including the Australian Government (the Commonwealth), state/territory governments and local governments (Australian Institute of Health and Welfare, 2016).

Australian Government's primary healthcare responsibilities are the universal public health insurance scheme, national health policies and Medicare (Australian Institute of Health and Welfare, 2016). Medicare is also known as the publicly funded healthcare system in Australia (Queensland government, 2016).

The state and territory governments are responsible for managing public hospitals, in addition to regulating and licensing private hospitals, public community-based services and primary health services (Australian Institute of Health and Welfare, 2016). The local governments have a major role in public health, health promotion activities and environmental health-related services (Australian Institute of Health and Welfare, 2016).

In 2013-2014 there were 747 public and 612 private hospitals in Australia, together they processed 9.7 million hospital admissions (Australian Institute of Health and Welfare, 2016). State governments provide the main source of income for public hospitals in Australia. Recent national reforms to the healthcare system introduced Activity Based Funding (ABF) as a concept to determine the level of funds provided by the state government to the healthcare providers (Haana, Sethuraman, Stephens, Rosen, & Meara, 2009). ABF refers to the amount

and type of treatments delivered by the hospital. Golenko (2017) states that *“ABF is a set of standardised measures in which hospitals classify patients, count the number of patients treated under each classification, count the costs associated with treating each type of patient and are paid a predetermined set price per patient”* (Golenko, 2017). The price paid by the state government to the hospital for a specific treatment is a fixed price based on the average costs of delivering that treatment to a specific group of patients across all hospitals (Sheridan, 2016). This fixed price creates an incentive for all hospitals that are funded according to the ABF model to reduce treatment costs since cost reduction results in either losing less money or making more profit (Golenko, 2017).

## **2.2 State services**

Each of the six states and the Northern Territory within Australia have their own state-wide healthcare system (Queensland government, 2016). Of all public hospitals within the state of Queensland (QLD), 51 have operating theatres. Those 51 hospitals in Queensland have 234 theatres combined (QPHOTE - Volume I, 2016).

Public health in Queensland is delivered by sixteen independent statutory bodies, also known as the Hospital and Health Services (HHS) (Queensland Government, 2017). Each HHS is responsible for *“delivering efficient, effective and economical health services”* as stated by the QAO (QPHOTE - Volume I, 2016). One of those statutory bodies is the public healthcare organisation in South East Queensland under investigation in this study.

## **2.3 HOSEQ**

The public healthcare organisation in south east Queensland provides public health services for people in south east Queensland and the northern of New South Wales. Projections are that the south east of Queensland will have the largest population growth over the coming years compared to other areas in Queensland.

Both hospital A and hospital B are part of the HOSEQ (Queensland government, 2016). Hospital A is the primary teaching hospital for medical students in the region, offering tertiary level healthcare and has space for 750 beds and carried out 13,373 elective surgeries in 2016. Hospital B is a teaching hospital with 364 beds and carried out 5,185 elective surgeries.

For the purpose of this research, the term ‘operating theatre’ refers to the whole operating theatre department. Within Hospital A and B the OT consists of the pre-admission unit, the theatres and the recovery unit. The OT at Hospital A is made up of eighteen theatres, Hospital B has six theatres.

The OT department is particularly expensive at annual running costs of 32.8 million for Hospital A and 11.2 million for Hospital B. However, this department also carries out a large proportion of funding generating activities. In addition, scholars state that the OT department in every hospital is a high cost utilisation facility and accounts for the greatest funding source (Denton, Viapiano, & Vogl, 2007; Samudra, et al., 2016). Therefore, efficient use of this largest cost producing and returns generating department in hospitals is economically desirable (Denton, Viapiano, & Vogl, 2007; Faiz, et al., 2008).

## **2.4 OT utilisation**

The most commonly used efficiency measure of operating theatres is the 'theatre utilisation rate' (QPHOTE - Volume I, 2016). The theatre utilisation rate is the amount of theatre hours used productively compared to the total available theatre hours in a particular session. Here, a session, or a block of time, is the allocation of either half a day (four hours) or a full day (eight hours) of theatre time. The Department of Health in Queensland confirmed that a theatre utilisation rate of 85 percent is currently best practice. Although, there is no consensus for an optimal theatre utilisation measure that has been agreed on, at the time of writing this thesis (QPHOTE - Volume I, 2016).

Late starts of the first session (Dexter & Epstein, 2009; Pandit, Abbott, Pandit, Kapila, & Abraham, 2012) and long changeover times (Harders, Malangoni, Weight, & Sidhu, 2006; Overdyk, Harvey, Fishman, & Shippey, 1998) are two factors that potentially could influence theatre utilisation and lead to a lack of available operating time to operate on the last patient(s) scheduled on the list. In such circumstances, hospitals face the difficult decision whether or not to cancel a scheduled operation. According to Stepaniak (2009) it is less cost effective to cancel the operation rather than to proceed with the operation after hours (Stepaniak, Mannaerts, de Quelerij, & de Vries, 2009). Additionally, operating after hours results in a patient safety risk because there is less staff available to take care of the patient. According to OT managers, it also results in a decrease in workforce efficiency because of fatigue and overtime.

Early finishes at the end of the day, significantly under and overestimating the surgery duration and cancellations on day of surgery are other factors potentially influencing OT utilisation (Agnoletti, Buccioli, & Padovani, 2013).

All the reasons mentioned above have a potential to influence the OT utilisation rates and impact on the efficiency of the operating theatres. Therefore it is evident that by utilising the OT more optimally, an additional number of patients could potentially be treated (Kumar &

Ghandi, 2012). This is in line with the Queensland Audit Office (QAO) report published in April 2016 on Queensland Public Hospital Theatre Efficiency (QPHOTE). This report discloses whether the practices hospitals use to manage, monitor and report on their theatre efficiency are effective and resulted in many hospitals reviewing their theatre performance. The report concluded that there is potential for all Queensland's public hospitals to improve their theatre efficiency.

## **2.5 Cancellations**

On the Day of Surgery (DoS) cancellations are used as key performance indicators to measure the efficiency of operating room utilisation (El Mahalli, Al Thumairi, & Al Omar, 2012). Pandit, Stubbs & Pandit (2009) considered the minimisation of cancellations as performance measure for efficiency (Pandit, Stubbs, & Pandit, Measuring the quantitative performance of surgical operating lists: theoretical modelling of 'productive potential' and 'efficiency', 2009).

On the Day of Surgery cancellations create utilisation issues, because there is little opportunity to replace a cancelled patient with another fully prepared patient that is able to come in that day. Therefore, if a patient is cancelled on DoS, there is a period in which that theatre is not used. This effects the utilisation rate negatively.

The preparation of a patient for a surgical procedure requires complex coordination and significant planning (Kumar & Ghandi, 2012). The preparation process has been described in section 2.6 of this chapter. Because of the amount of work put into a patient's preparation for surgery, cancelling a patient on DoS does not only result in a decrease of OT utilisation, but it also leads to an inefficient use of operating room staff and a waste of physical resources (Jamieson, 2008; Schofield, et al., 2005). In addition, it is a missed opportunity to treat another patient on the waiting list (Haana, Sethuraman, Stephens, Rosen, & Meara, 2009). Additionally, it creates additional costs for the hospitals, patients and society (Haana, Sethuraman, Stephens, Rosen, & Meara, 2009). For example, when a patient is cancelled, the hospital still has to pay the staff.

In addition to the added costs, the patient's daily life may also be disrupted by being cancelled on DoS (Yoon, et al., 2009; Schofield, et al., 2005), especially if the reason for cancellation is not with the patient themselves, but is hospital initiated. It may be stressful for the patient (Kumar & Ghandi, 2012; Yoon, et al., 2009; Schofield, et al., 2005), causes dissatisfaction among patients (Klopfenstein, Forster, & Van Gessel, 2000) and may carry economic implications and financial loss for the patient and their family (Ivarsson, Kimblad, Sjöberg, & Larsson, 2002). For example, the patient may have organised time off work and asked a

relative to take care of them and their children during the recovery, only for the patient to be cancelled on the day of surgery.

In summary, on the DoS cancellations are a major cause of inefficient use of the OT, a waste of resources and may have a large impact on a patient's life. Multiple studies have concluded that most cancellations are avoidable (Kumar & Ghandi, 2012; El Mahalli, Al Thumairi, & Al Omar, 2012; Schofield, et al., 2005). However, the exact reason for cancellations and what might lead to cancellations is not clear from literature to date. Therefore, problem identification is needed to identify any barriers, challenges and causes leading to the cancellations of patients in HOSEQ. However, before the problem identification phase commenced, it is necessary to examine a patient's journey, the daily practices and get an idea of the amount of cases cancelled. The examination of a patient's journey and daily practices is carried out in order to gain more understanding of what is involved and needed in preparation for a patient's surgery and what the current status of cancellations are in HOSEQ.

## **2.6 From outpatient to Day of Surgery (DoS)**

Every hospital has their own processes in place to prepare a patient's surgery and use specific computer systems and documents. In addition, they have internal policies and guidelines about when to cancel a patient and how to report on these cancellations. In order to accurately capture current practice, a patient's journey has been prepared of the patient's journey from the outpatient clinic to Day of Surgery (DoS), based on observations performed in the outpatient clinic, the pre-admission and admission clinic at Hospital A. The patient journey, which is depicted in Figure 1, describes which processes generally happen. For clarity purposes, the exceptions are left out of scope. The whole process is described below.

After being referred by the GP to a surgeon, the surgical consult is the first step in the patient's journey towards their surgery. During the consult, a surgeon determines patient's need for surgery and discusses patient's consent for the operation. If the patient needs surgery and agrees to have the procedure, the surgeon fills in a booking form (Appendix 1) for the patient, they fill in the consent form (Appendix 2) and the surgeon adds notes into the patient's (hospital based) Electronic Medical Record (EMR).

The surgical Administrative Officer (AO) receives the booking- and consent form and checks if the patient filled in the documents correctly. The patient goes home and the surgical AO uploads the consent form into EMR and sends the booking form to the booking office.

The booking AOs gathers the booking forms and gives them to the Clinical Care Coordinator (CCC) at the appropriate time. After receiving the patient's booking form, the CCC reviews the

patient's history from EMR, plans a surgery date based on available sessions for that speciality and clinical urgency category. The CCC then calls the patient to confirm that the date also suits them. After confirmation of the surgery date, the booking form goes to the booking AOs, who puts the booking details into ORMIS (Operating Room Management Information System) and Hospital Based Corporate Information System (HBCIS).

The appointment letter (Appendix 3) automatically generated by HBCIS is hand delivered to the pre-admission clinic by the booking AOs. The registered nurse in pre-admission clinic reviews the booking form and patient's history, the role of this registered nurse is to assess a patient's need to visit the pre-admission and/or pre-anaesthetic clinic. Based on guidelines (Appendix 4) and experience, the registered nurse assesses from data available in EMR whether the patient needs to visit to the pre-admission clinic and/or the pre-anaesthetic clinic or that the patient is suitable for a phone pre-admission. The registered nurse determines the dates for the (phone) pre-admission- and/or pre-anaesthetic appointments, and gets the AO to make the appointments in HBCIS, and prints the pre-admission letter. The pre-admission letter is sent to the patient as well as their admission letter, a patient information form (Appendix 5) and general admission instructions (Appendix 6).

One day prior to the pre-admission appointment, a temporary chart is created by a pre-admission nurse. This chart contains the relevant paperwork which will be used by nurses and medical staff at the appointment and information brochures to be given to the patient. The nurse reviews the appointments made in HBCIS to verify that appointments are in the correct order.

Between one and two weeks prior to the scheduled surgery date, the pre-admission consultation takes place. Patients deemed to be suitable for phone pre-admission receive a phone call from a clinical nurse, where the pre-admission phone consultation questionnaire (Appendix 7 or 8) is filled in. If there are any indications for the nurse that the patient needs further investigation, the nurse schedules an appointment with the patient to visit the pre-admission clinic and/or pre-anaesthetic clinic. The patients that are referred to the pre-admission clinic are examined by nurse and resident doctor, a pre-admission assessment questionnaire (Appendix 9) is filled in and put into the patient chart and EMR. The patients that are referred to the pre-anaesthetic clinic are examined by an anaesthetist, an anaesthetic record (Appendix 10) is filled out and put into EMR. If any further investigations are necessary, one of the clinical staff members will fill out a request form and puts the details into the patient chart and EMR. The contents of the temporary chart are scanned into EMR after



completion at pre-admission clinic, as well as the paper copy being hand delivered to Surgical Admission Unit (SAU) and stored until Day of Surgery.

The request form is faxed to the outpatient clinic where the further investigations take place. The administrative officer plans the appointments and contacts the patient about the dates. These appointments are put into HBCIS. The shift coordinator keeps track of the patients still needing some additional preparation. They keep track if the appropriate appointments made, and checks if the order of the appointments are logical. If there are any issues, the shift coordinator contacts the appropriate person to ensure that the preparations for a patient's surgery are ready on the surgery date.

The results of the additional test are uploaded into EMR, and if needed a chart review is done by the anaesthetist. If there is any indication that the patient is not fit for surgery, the surgery is postponed. This update is put into HBCIS and ORMIS.

One day prior to the scheduled surgery date, the patient receives the peri-operative phone call from a nurse in SAU. They provide the patient with the time for admission and fasting details, according to the peri-operative phone call protocol (Appendix 11 or 12). They report the elements described in the phone call into EMR based on the peri-operative phone call template (Appendix 13).

The patient presents himself to the hospital on the scheduled surgery date, where the admission AO does the administrative admission. After the administrative admission, the clinical admission follows. A nurse examines the patient and fills in the peri-operative admission form. A visit from the surgeon and the anaesthetist follows. If the nurse, the surgeon or the anaesthetist notices any reason not to proceed with this patient on this day, they cancel the patient.

The person actually making the decision to cancel the patient varies, depending on the reason for cancellation. That person talks to the patient to inform them of the cancellation reasons. A cancellation form (Appendix 14 or 15) is filled in by either the person cancelling or the floor coordinator. The cancellation form is given to the theatre AO, which fills in the cancellation into EMR and ORMIS. ORMIS feed this information into HBCIS. The theatre AO faxes the cancellation form to the CCCs. The CCC contacts the patient for the rescheduled date, prints a new booking letter which is then sent to the pre-admission office and subsequently the patient follows the same admission journey as described above.

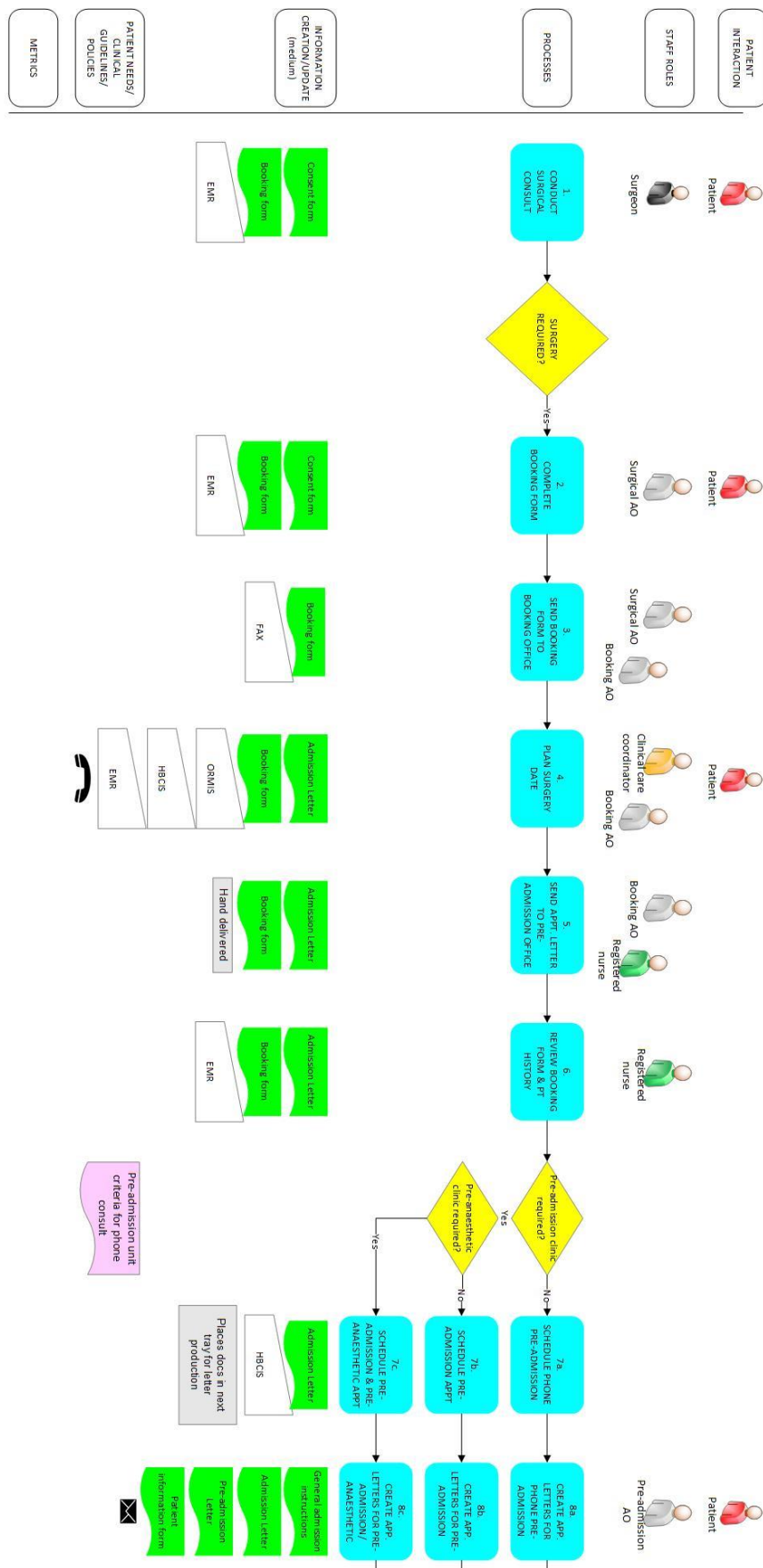
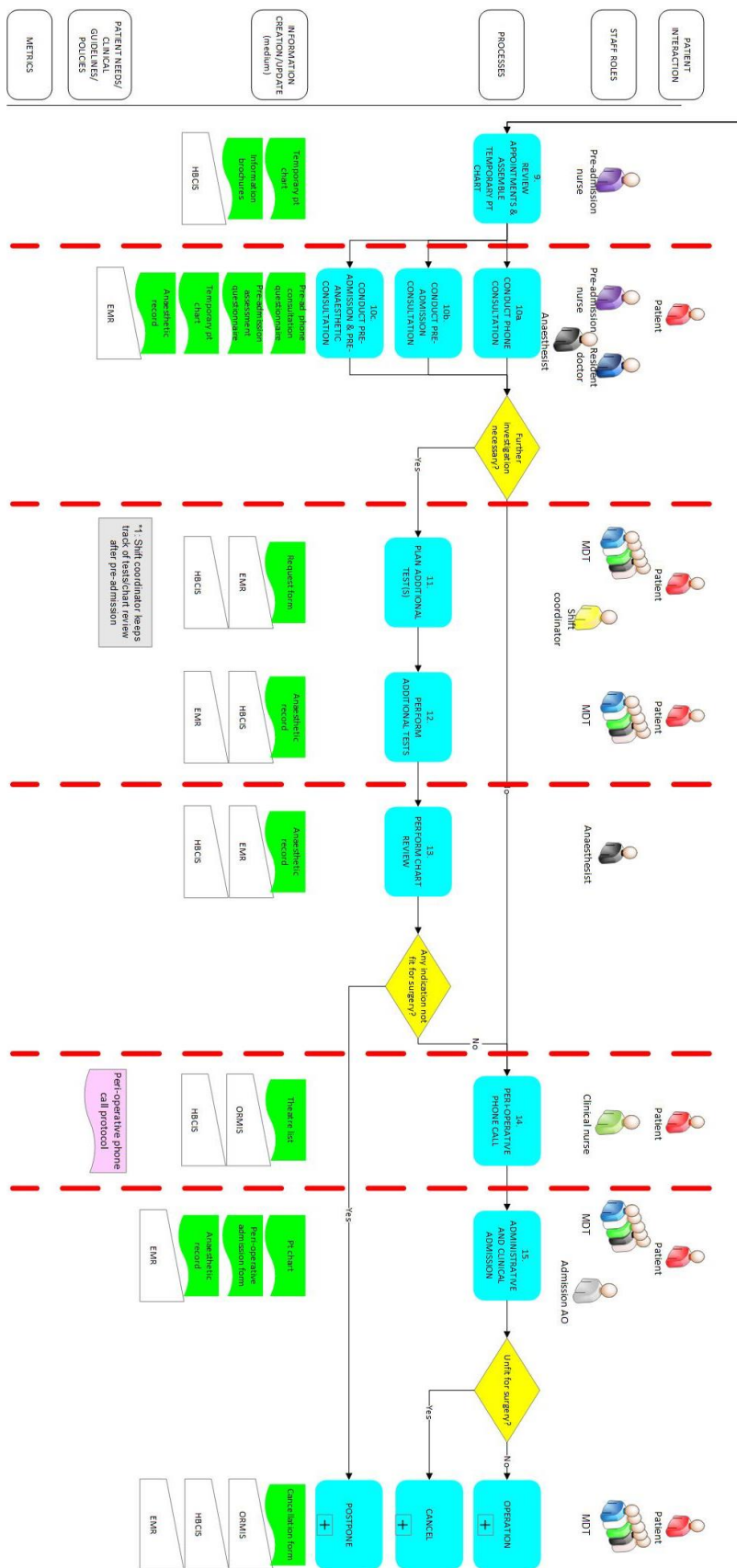


Figure 1 - Visualisation of patient journey from outpatient clinic to on-day-of-surgery



## 2.7 Historical data

Previous section discussed a patient's journey from the outpatient clinic to the Day of Surgery (DoS) and presented a patient's journey to create more understanding of what processes are in place to prepare for a patient's surgery at HOSEQ. This section focusses on creating a better understanding of the magnitude of the amount of cases cancelled on the day of surgery.

Historical data is used to show the amount of surgeries scheduled and percentage of cases cancelled on DoS for Hospital A and Hospital B from January 2015 to April 2017 (as can be seen in Appendix 16). In this period, the amount of cases scheduled at Hospital A varied between 928 and 1320 per month. The percentage of scheduled cases cancelled on DoS at Hospital A dropped from an average of 6.4 percent in 2015 to 3.1 percent in 2016, where the amount of scheduled cases remained steady.

The amount of cases scheduled in the same period at Hospital B varied between 393 and 592 per month. The percentage of scheduled cases cancelled on DoS at Hospital B show some fluctuations, with an average percentage of 8.3 over the months January to April 2016 and 11.6 in March 2017. No specific reason could be found for the increased percentage of cancellations between January and April 2016 when analysing the data. The increase in March 2017 is due to a natural disaster, cyclone Debby.

In the period May 2016 to April 2017, 2.9 and 5.3 percent of all the scheduled cases were cancelled on DoS for respectively Hospital A and Hospital B. Appendix 17 shows the amount of cancellations on DoS per category, for Hospital A and Hospital B in the period May 2016 to April 2017. In both hospitals, the category with the highest amount of cancellations on DoS is "Unfit for surgery – condition". Here, 46.9 percent of all cancellations on DoS are within this category at Hospital A, for Hospital B, this is 19.2 percent. Further investigation is initiated in patients being declared unfit for surgery because of the scope of this research and the high percentage of cases cancelled because of this reason.

Both categories "unfit for surgery – condition" as well as "unfit for surgery – preparation" were included in this further investigation on patients being declared unfit for surgery on DoS. In the period May 2016 to April 2017 a total of 233 patients of 14,534 scheduled cases (1.6 percent) were cancelled on DoS because they were being declared unfit in Hospital A. In Hospital B, 82 of the 5,746 patients (1.4 percent) were being declared unfit for surgery on DoS in that period. In addition, 55.2 and 26.3 percent of all cancellations occurred because patients were declared unfit on DoS at respectively Hospital A and Hospital B.

To give more insight in the amount of patients being declared unfit for surgery on DoS over time, the figure in Appendix 18 is computed. Noteworthy is the amount of patients being

declared “unfit for surgery – condition” on DoS at Hospital B, which seem to have reduced slightly over time. There does not seem to be an decrease or increase at Hospital A.

The figure in Appendix 19 shows the amount of patients being declared unfit for surgery on DoS per quarter per specialty per facility. The specialties at Hospital A with the most patients being declared unfit on DoS were urology, ophthalmic surgery and orthopaedic surgery. This was to be expected, since these specialties also scheduled the most cases. At Hospital B the specialties with the most patients being declared unfit on DoS were adult acute psych, orthopaedic surgery and general surgery. Adult acute psych is unexpected in this list, since there are not that many patients scheduled in this specialty.

Summarising, this section provides some background on the magnitude of patients being cancelled on the day of surgery and declared unfit. The amount of patients cancelled on the day of surgery because they are declared unfit for surgery is not that high, with 1.6 and 1.4 percent of cases cancelled due to this reason at respectively Hospital A and Hospital B.

## **2.8 Summary**

This chapter presented an overview of the research context. The governance, coordination and regulation within the Australian healthcare system are joint responsibilities of the Australian Government, state territory governments and local governments. The recent national healthcare reforms creates an incentive for all activity-based funded hospitals to reduce treatment costs.

Each state has their own state-wide healthcare system. Public health in Queensland is provided by sixteen Hospital and Health Services (HHS), one of which is the HOSEQ. Hospital A and Hospital B are part of this service.

The operating theatre (OT) departments of HOSEQ are particularly expensive but also generates a large proportion of the hospital’s funding income. This is why it is economically desirable to use this department as efficiently as possible. The most commonly used efficiency measure within operating theatres is the “theatre utilisation rate”. Day of Surgery (DoS) cancellations create an utilisation issue, because there is little opportunity to replace a cancelled patient. The reason(s) for on DoS cancellations are unclear and context specific. Problem identification is needed to identify reasons for on DoS cancellations within HOSEQ. To create more understanding of what processes are in place to prepare for a patient’s surgery at HOSEQ, a patient’s journey is made, which can be found in Figure 1.

The amount of patients being declared unfit on DoS is not very high, although the ideal state is to have no patients being declared unfit and have no cancellations on DoS, because every

patient cancelled is one to many. Therefore to get to the ideal state, it is important to carry out problem identification. Next Chapter provides the justification for the methods for data gathering and data analysis. To ensure the integrity of the input data from interviews for the problem identification, a thorough stakeholder identification and classification is needed. The stakeholder identification and classification is discussed in Chapter 4.

### 3 Methodology

This thesis focusses on reasons for patients being declared unfit and cancelled on the day of surgery. Therefore, the purpose of this research is to get a better understanding of the reasons for patients being cancelled on the day of surgery due to being declared unfit. This chapter presents the methodological decision making and justification for the methods used to answer the research questions.

Section 3.1 describes the justification for the philosophical stance for this research, namely pragmatism, and presents the design of this research, followed by the three major phases of the research. Section 3.2 gives the description and justification on data gathering for the different approaches. Followed by Section 3.3, which justifies the methods of analysis used to identify the reasons for patient being cancelled on the day of surgery due to being unfit. In addition, validity, reliability and transferability, and limitations of the methodology are briefly discussed in Section 3.4 and 3.5, respectively.

#### 3.1 Method for the creation of knowledge

This study investigated factors contributing to the cancellations of patients on the day of surgery due to being declared unfit. Additionally, an investigation of the salient stakeholders' experiences and data analysis on Operating Theatre (OT) cancellations was conducted. Using hospital staff's personal experiences and observations conducted in the workplace environment are methods commonly associated with Mixed Methods Research (MMR).

MMR uses both quantitative and qualitative techniques together within one study, where each technique supplements the other (Cresswell & Plano Clark, 2007). The combination of two techniques provides a greater and more in depth understanding of a specific situation than either technique does on its own (Cresswell & Plano Clark, 2007). Johnson, Onwuegbuzie, and Turner (2007; p 123) describe Mixed Methods Research as *"the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the purpose of breadth and depth of understanding and corroboration"* (Johnson, Onwuegbuzie, & Turner, 2007). This study combined 1) perceptions of key stakeholders working throughout the (pre-)admission process of patients, with 2) historical OT cancellation data. As a MMR, or Mixed Methods Research, this study was exploratory in nature and held large qualitative components. In addition, the quantitative component helped to provide a more comprehensive perspective of the situation.

Scholars suggest that researcher's personal beliefs and values should be taken into consideration as they have the potential to influence the decisions and number and types of assumptions made in the research process (Saunders M. , 2015; Burrell & Morgan, 1979). Research paradigms provide the connection between the goals of a study and the methods used to achieve these goals (Houghton, Hunter, & Meskell, 2012). The combination of the beliefs and assumptions shapes the understanding of the research questions and how findings are interpreted by the researcher (Crotty, 1998).

This basic set of guiding beliefs and actions constitutes epistemological, ontological and methodological aspects (Guba & Egon, 1990). Burrell and Morgan (1979) define epistemology as the study of knowledge and justified belief (Burrell & Morgan, 1979). Epistemology concerns assumptions about knowledge, what constitutes acceptable, valid and legitimate knowledge, and how an individual communicates knowledge to others. Additionally, they defined ontology as the study of the nature of being or the kinds of things that exist (Burrell & Morgan, 1979). Ontology is also described as the researcher's perspective on the nature of reality (Bristow & Saunders, 2015).

The ontological and epistemological paradigm operationalised in this study is pragmatism. Pragmatism is commonly understood to be a problem-centred philosophical stance within research that is real-world practice oriented within a specific context (Cresswell, 2009: 37; Bristow & Saunders, 2015). Schuh and Barab (2008) mentioned that within pragmatism *"knowledge is derived from interaction among groups of individuals and the artefacts in their environment, which together create reality"* (Schuh & Barab, 2008). This research is argued in a pragmatic paradigm, given that this study investigated reality from different perspectives with an orientation towards seeking a solution to a problem in a specific context.

### **3.1.1 Researchers' perspective**

Researcher's perspective on a phenomenon can influence research outcomes. The researcher's perspective and research approach are naturally inter-related. The research approach can be either emic, etic, or both (Darling, 2016). In an etic study, an external observer's view of a phenomenon is used. An emic research is making sense of a phenomenon through the eyes of an internal observer (Darling, 2016).

This study investigated possible opportunities for improvements within the existing processes prior to patients being declared unfit for surgery on the day of the surgery. In examining this phenomenon we studied historical data of the cancellations on day of the surgery as an external observer, which is considered an etic approach. However, when observing scheduling



processes and conducting the interviews, my presence in the data gathering process affected this research because I was an integral part of the data collection. This part of the research is considered emic research. Therefore, this research has been approached from both an emic and etic perspective. This approach was operationalised by an analysis interviews with salient stakeholders, field observations, historical data and document analysis.

### **3.1.2 Research design & procedures**

This research had three distinct steps. The first step involved stakeholder identification. stakeholder identification involves identifying the persons within the organisation that can provide essential information needed in this study, also known as 'key informants'. Lists of possible stakeholders involved were provided by managers and compared with researcher's list. Stakeholder classification literature was used to identify the most important stakeholders. The second step was to identify the opportunities for improvement. This step resulted in 1) the opportunities for improvement as perceived by different stakeholders, and 2) the opportunities for improvement as analysed by observational data and historical OT cancellation data.

The third step involved solution identification that resulted in 1) possible solutions and 2) a tool that will assist with better identification of the problem and is a result of the combination of interview data, observational data, and historical OT cancellation data and gathered documents.

## **3.2 Method for data gathering**

Credibility can be established by a clear description of the data collection protocol (Creswell & Miller, 2000; Yin R. , 2004). This section includes the description and justification on how data was gathered for all four datasets, the interviews, observations, historical data and documents.

### **3.2.1 Interviews**

In this research the aim was to develop a solution to assist key hospital personnel to gain a better understanding of the reasons for Day of Surgery (DoS) cancellations, minimising the amount of cancellations and improving the health service delivery at HOSEQ. Interviews were used to gather participant's perception of these reasons. Semi-structured interviews were warranted to both discuss predefined topics as well as pursue topics that arose during the interview in greater detail (Britten, 1999).

### *3.2.1.1 Population & sample*

The study population consisted of staff working at Hospital A and/or Hospital B who are involved with a patient's preparation for elective surgery, and/or who declare the patient unfit for the surgery. The population consisted of workers at various hierarchical levels, both clinical and non-clinical. Of this population, a convenience sample was contacted to participate in this research. The convenience here was based mainly on the accessibility to the participants, but could also be influenced by the availability and willingness to participate (Etikan, Musa, & Alkassim, 2016). Snowball sampling was used to target and access a diverse sample of participants (Yin R. , 2011).

Data saturation was considered in determining the sample size for this research. Data saturation is the point where no new or relevant information emerges. Saunders & Townsend (2016) stated that a sample size of between 15 and 60 participants is the norm for any business research, although the actual number considered to be sufficient is dependent on the research purpose, research design and research paradigm (Saunders & Townsend, 2016). A total of 15 interviews were conducted in the period of the 12<sup>th</sup> of May until the 30<sup>th</sup> of May 2017, an overview of the participant tree can be found in Appendix 20. Data saturation was reached after 13 interviews. The average duration of the interviews was around 45 minutes.

### *3.2.1.2 Interview procedure and schedule*

A list of stakeholder groups was created by a sponsor within the organisation. Thereafter, the sponsors ranked the stakeholders based on their importance with regards to this project. The same sponsor contacted the first group of potential interviewees after which they were invited to participate via an recruitment email with the information statement attached (see Appendix 21 & Appendix 22). Those who responded and agreed to participate were contacted to arrange a time and location to conduct the interview. The face to face interviews took place in the participant's work office or at a meeting room at the hospital.

The interview procedure started with informing the participant about what the study was about, the goal of this research and the voluntary nature of their participation. The interviewees received the information statement (Appendix 22), consent form (Appendix 23) and withdrawal of consent form (Appendix 24) to ensure full understanding of the goal of this study, disclosure of information and anonymity. After signing the consent form, the interviewee was asked if they agreed on the interview being recorded. Each interview was audio taped with the interview mode in the voice recorder app of a Samsung Galaxy S7.

The questions asked during the interview and purpose of each question can be found in Appendix 25. An expert from the field helped with the development of the questions, two hospital managers helped with validation of the interview questions. The actual questions that were asked per interview depended on the interviewee's role within the organisation and the amount of time available. During the interview, field notes were made of the interviewee's body language, facial expression and any distractions during the interview. At the end of the interview, the interviewee was thanked for their time and experiences shared. The interviewee was asked if they could think of anybody that could provide useful insight with regards to this project, as part of snowball sampling.

The recordings of the interview were used to complement notes. The notes were sent to the participant to verify the correctness and completeness of the data and to give them the opportunity provide additional comments. Four of the participants provided additional comments and insights.

### **3.2.2 Observations**

Observations were used as a method to get a better understanding of the processes that are happening in preparing the patient's treatment up and until the cancellation occurring on the day of the surgery. The observations took place in 1) the pre-admission clinic of Hospital A and 2) in the admission clinics of Hospital A and Hospital B in the period from May to June 2017. Observations in the pre-admission clinic were focussed on the preparations for a patient's surgery, the observations on the admission clinic were focussed on the peri-operative phone call carried out the day prior. Three different observations of the peri-operative phone call were carried out by two different researchers, of which two took place at Hospital A and one at Hospital B. Observations of patients were excluded in this research because of ethical limitations. Hence only non-clinical and clinical staff were observed.

The observer walked around in the pre-admission clinic, whilst taking field notes about people's actions. Conversations with the people in the field were initiated to obtain better understanding and greater detail of what was actually happening. The engagement of the researcher with those being observed results in the observations being categorised as 'natural observations'. The observations were overt, which means that all people knew that the observer was there to observe. This potentially could have introduced an altering of natural behaviour or effects of social desirability of the research participants. Although, the observer minimised these effects by developing a positive relationship with participants. The observer clarified that the focus for data gathering was for the benefit of the patient.

The field notes of the observations from the pre-admission clinic and admission clinic were used as an input for mapping the patient's journey. The patient journey modelling and visualisation software 'Essomenic' was used for mapping of the process (Curry, 2008).

### **3.2.3 Historical data**

The ORMIS data manager provided historical data from the ORMIS database on patient related cancellations on day of the surgery for HOSEQ in the period from January 2015 to April 2017. The Health Informatics Directorate provided historical data from the HBCIS database on all cancelled elective surgery bookings on the day of the surgery for HOSEQ in the period from July 2014 to April 2017.

### **3.2.4 Documents**

Publicly available documents were gathered by performing searches in search engine google in the period March to May 2017. The search focussed on the guidelines, procedures and audit reports with regards to the cancellations of elective surgeries within HOSEQ. Managers provided documentation in terms of procedures and policies relevant to the research topic. In addition, documents used in the admission and cancellation processes were gathered during the observations and interviews.

## **3.3 Method of analysis**

The preceding section provided a detailed description on how data was gathered for the datasets. This section focusses on the methods used for the analysis of these datasets. Le Compte and Schensul (1999) define analysis as the process a researcher uses to reduce data to a story and its interpretation (LeCompte & Schensul, 1999). The data sets analysed in this study are interview notes, field observation notes, historical data on DoS cancellations and gathered documents. An analysis of each of these data sets was done, which resulted in conclusions per dataset. Putting together the conclusions of these datasets was the last step in the analysis of the data.

### **3.3.1 Analysis of interview notes**

As part of the analysis, we listened to the recordings and added to the notes that were taken during the interview. Subsequently open coding took place per chunk of data, with the objective to reduce the long list of data to a more manageable number of codes. Meanwhile a list of used codes helps looking for similar or unnecessary codes. Iteratively, the original data was analysed with the adapted/new codes, which is also known as constant comparison

(Corbin & Strauss, 1990). The next step was to categorise the codes which should reflect the purpose of the research. The consecutive step was to repeat this process for the notes of each interview. Themes slowly emerged from the codes and categories. The final step included the write-up of the description of the themes. In addition, quotes are gathered per category to support the ideas and the discussion.

### **3.3.2 Analysis of observation notes**

Observational notes were written into a research journal. Upon reflection on the notes that were made in the pre-admission clinic, a patient's journey is made in Essomenic, a patient journey modelling software which is based on Microsoft Office Visio 2016 (Curry, 2008). The patient's journey was validated by two key informants.

Reflection upon the notes made in the admission clinic during the peri-operative phone call observations resulted in the identification of categories discussed during the call. The notes from these observations were then quantified under these categories.

### **3.3.3 Analysis of historical data**

Historical data of patient related day of surgery cancellations was used to carry out numerous analysis on the amount of the patient related cancellations. Before doing the actual analysis, yearly documents were merged for practicality and ease of use.

The two hospital databases ORMIS and HBCIS stored data on cancellations were compared by taking samples of the databases and comparing these samples. The QAO report that initiated this research used data extracted from the ORMIS database, therefore further analysis on cancellations was carried out with data extracted from this database.

An analysis and categorisation was carried out on the cancellation details of the cancelled cases defined as "unfit for surgery – condition" and "unfit for surgery – preparation" in the period from May 2016 to April 2017. Details filled in into the 'free-text' field were analysed, to categorise the details. Categories emerged slowly and were refined using constant comparison. The analysis resulted in fourteen categories, each of the 314 cases cancelled was assigned a 'detail category', based on the information available in the 'free-text' field. This categorisation was done with the aim to quantify more specific reasons why patients were cancelled.

### **3.3.4 Analysis of documents**

Bowen (p. 27, 2009) described document analysis as "*a systematic procedure for reviewing or evaluating documents – both printed and electronic (computer-based and internet-*

*transmitted) material"* (Bowen, 2009). Interpreting the data gathered through document analysis is essential to give the meaning of the knowledge contained in the documents (Bowen, 2009).

Documents that were included in the analysis:

- Queensland Public Hospital Operating Theatre Efficiency Volume I & II
- Annual Report 2015-2016 from HOSEQ
- Operating theatre efficiency guideline
- Elective surgery implementation standard
- Admission booking form
- Consent form
- Admission letter
- Pre-admission unit criteria for phone consultation
- Patient information sheet
- General admission instructions
- Pre-admission phone consultation questionnaire I & II
- Pre-admission assessment questionnaire
- Anaesthetic record
- Pre-operative phone call protocol I & II
- Pre-operative phone call template
- Patient cancellation form I & II

These documents were analysed by initial browsing of the documents for selecting sections relevant to this study. Those sections were then read thoroughly and all useful facts were highlighted. In addition, a comparison of documents was done by analysing commonalities and differences between documents.

### **3.4 Validity, reliability and transferability**

First, definitions of key terms used in this research and the interview questions were validated by two senior managers within the HOSEQ, to ensure consistency and unified meaning of the common terms used. Second, the interview questions used in this research were developed and discussed with a senior researcher and expert from the field. The questions were also validated by two senior managers within HOSEQ. These steps were taken to ensure that the questions asked would result in responses that provided key information needed for this research. Third, to validate the participant's experience, the notes of each of the interviews were sent to the participants in order to validate their original responses to the questions and completeness of information. Fourth, by doing Mixed Method Research, one method's strength can deal with the weaknesses of another. More reliability is established by supporting the, by nature, unreliable qualitative parts of this research with the quantitative part of this research, namely the historical data on cancellations.

The purpose of this research was not to seek generalisability, but to investigate a specific problem in a specific context. The claims made may be transferable to other contexts.

### **3.5 Limitations of the methodology**

There is a likelihood that some key informants were not included in the study because they were not identified by the other participants. Although, snowball sampling was used to ensure breadth of data gathered, which allowed for targeting and accessing of a diverse sample of participants.

In addition, the amount of interviews conducted, the questions posed, and the presence of the interviewer(s) influenced the data gathered and may therefore have influenced the outcomes of the research. These limitations are commonly encountered when conducting qualitative data that is by nature context and time bound. Nevertheless, combining different data sets, regular reflective checks with the supervisors and a sincere awareness of the need to minimise the biases introduced assisted with maintaining the integrity of the data and its analysis.

Bias was additionally minimised by reflective moments on the influences of the interviewer. In total five of the fifteen interviews were conducted with two interviewers. This not only allowed for self-reflection, but also reflection between the two researchers.

Mixed Method Research is more complex and takes more time to execute, therefore the choice of using MMR also presents a possible limitation. In addition, the researchers are required to have skills and knowledge in both qualitative and quantitative methods (Cresswell, 2009: 37).

### **3.6 Summary**

The philosophical stance that underpins this research methodology is pragmatism. This chapter presented the design of this research which consists of three major phases: 1) stakeholder identification, 2) identification of opportunities for improvement and 3) solution identification. The outline of data gathering methods for the interviews, observations, historical data and documents followed. The next part of this chapter continued with the justification for the methods of data analysis. These methods included theming of interview notes, quantifying observations, a categorisation and quantification of historical data, comparing documents and combining the conclusions drawn from separate datasets. Limitations of this research were discussed. The next chapter is the first of three major phasis, the stakeholder identification.

## 4 Stakeholder identification

A stakeholder identification was particularly important because the operating theatre managers were unclear and unsure about the exact reasons for cancelling surgical cases on the day of surgery. While managers were well informed, we cannot be sure to fully understand the problem if only one perspective is investigated. Therefore, definitive stakeholders' stories were needed to identify the problem from different perspectives. A formal stakeholder identification and classification is carried out to ensure that the most important stakeholders' stories and experiences are heard and documented. A stakeholder analysis and identification increases the integrity of the interview data significantly as we can be assured that the most salient participants have been questioned to create the most trustworthy dataset.

In this chapter, first, a definition of stakeholder is adopted from existing literature in Section 4.1. This is followed by Section 4.2 which presents a review of the literature on stakeholder identification and classification to determine the stakeholder identification process most suitable for this research. This chapter finishes with the list of definitive stakeholders who became the key informants in Section 4.3.

### 4.1 Background

Stakeholder identification is a common concept in business and organisations. The literature presents several definitions. For example, Freeman (1984) defines 'stakeholders' as *"those groups without whose support the organisation would cease to exist"* (p. 31). Attas (2004) defines a stakeholder as *"a person who has much to lose – financially, socially or psychologically – from the failure of the firm"* (Attas, 2004). Donaldson & Preston (1995) describe stakeholders as *"persons or groups with legitimate interests in procedural and/or substantive aspects of corporate activity"* (Donaldson & Preston, 1995). This definition is a little more comprehensive than other definitions and focuses on the interests of stakeholders in the activities and processes of the organisation. The purpose of stakeholder identification in this research was to determine which stakeholders had a procedural or substantive interest in declaring a patient unfit for surgery. Therefore, the definition presented by Donaldson & Preston (1995) was considered to be best suited.

### 4.2 Stakeholder identification and stakeholder classification

It is important to identify which stakeholders are involved in the preparations for patients' surgery, and how important each of those stakeholders are in this process. This step is carried out in order to ensure data is gathered from key informants as participants in this research.



Mainardes, Alves and Raposo (2012) undertook a thorough review of existing literature and summarised stakeholder classification typologies, as shown in Table 4. This classification of typologies shows varying ways of looking at stakeholders in different contexts.

*Table 4 - Stakeholder classification typologies. From Mainardes, Alves and Raposo (2012)*

<b>Authors</b>	<b>Classification/criteria used</b>
<b>Goodpaster (1991)</b>	The strategic and the moral stakeholder
<b>Savage et al. (1991)</b>	Stakeholder's potential powers to threaten or cooperate with the organisation
<b>Clarkson (1995)</b>	The primary (with formal relationships) and the secondary (without formal relationships)
<b>Mitchell et al. (1997)</b>	Power, legitimacy and urgency
<b>Rowley (1997)</b>	Network density and the centrality of the organization focus
<b>Scholes and Clutterbuck (1998)</b>	Power of influence, impact on the organization and affinity with organisational objectives
<b>Kamann (2007)</b>	Power and the level of interest
<b>Fassin (2009)</b>	Classical stakeholders, stake-watchers, stake-keepers

Despite the plethora of stakeholder classifications, according to Gould (2015), Mitchell, Agle and Wood's (1997) model of stakeholder identification and salience has been widely adopted as a useful framework by stakeholder theorists. This is because the Mitchell et al.'s framework includes the level of importance of each of the stakeholder groups. Miles (2015) concurs and stated that Mitchell et al.'s (1997) model is the most prominent schema (Heaton, Miles, & Duhan, 2014). Mainardes, Alves and Raposo (2012) also argued that this model is the most popular one and Friedman and Miles (2006) mentioned the gained popularity among stakeholder theoreticians and practitioners for the use of Mitchell et al.'s classification of salient stakeholders (Mainardes, Alves, & Raposo, 2012; Friedman & Miles, 2006).

Notwithstanding the popularity of Mitchell et al.'s framework, according to Mainardes, Alves and Raposo (2012) several research projects that tested Mitchell et al.'s model empirically exposed limitations (Agle, Mitchell, & Sonnenfeld, 1999; O'Higgins & Morgan, 2006; Magness, 2008). One of these limitations argues the binary nature of the attributes used in Mitchell et al.'s model (Mainardes, Alves, & Raposo, 2012). In practice, stakeholders, according to the context in which they hold a stake, have varying levels of power, legitimacy and urgency. According to the framework, all stakeholders with power, legitimacy and/or urgency combined should be marked as possessing that attribute. However, the extent of the power, legitimacy and urgency may be inconsistent between the stakeholders, creating different levels of salience within one classification. For example, some definitive stakeholders may be more salient than other definitive stakeholders. Each hold all three attributes (power,

legitimacy and urgency) but each to a different extent. This limitation could potentially deem a stakeholder as salient, where managers may consider that same stakeholder as non-salient. This may also present difficulty in prioritising the stakeholders in different categories. This lack of scale is described as the single most important drawback to Mitchell et al.'s framework (Mainardes, Alves, & Raposo, 2012). Despite the limitation mentioned, Mitchell et al.'s (1997) model is determined to be most suitable as the stakeholder classification typology within this research.

In order to get a better understanding of the Mitchell et al.'s classification, we need to further explore the terminology used in that classification. This is the definitions of salience and the definition of the attributes of power, legitimacy and urgency.

Mitchell et al.'s framework is used to identify stakeholders and how their interests can be prioritised by managers (Mitchell, Agle, & Wood, 1997). The model describes that the attributes 1) *power* to influence an organisation, 2) *legitimacy* of the stakeholders' relationships with the organisation, and 3) *urgency* of the stakeholders' claim on the organisation, can help define the salience of a stakeholder (Mitchell, Agle, & Wood, 1997). In this model salience is described as "*the degree to which managers give priority to competing stakeholder claims*" (Mitchell, Agle, & Wood, 1997). In other words, saliency is about who matters most in the eyes of the managers.

Mitchell et al. (1997) described the attribute power, based on Dahl (1957), Pfeffer (1981) and Weber (1947) as: "*A relationship among social actors in which one social actor, A, can get another social actor, B, to do something that B would not have otherwise done*" (Dahl, 1957; Pfeffer, 1981; Weber, 1947). This describes influence from one person over the other. In the case of surgical scheduling and in particular delaying surgical intervention by cancelling on the day of surgery, typically only medical clinicians have this power. However, if any paperwork is missing, others, such as admission clinical staff, may also have power to cancel the operation. Legitimacy is described as "*A generalised perception or assumption that the actions of an entity (organisation) are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, definitions*" by Suchman (1995) and Weber (1947) as cited in Mitchell et al. (1997) (Suchman, 1995; Weber, 1947; Mitchell, Agle, & Wood, 1997). Legitimacy in the context of delaying surgical intervention and particularly cancelling on day of surgery is about the lack of conformity to policy and procedure which are usually imposed for the quality and safety of the patient. For example, if results of investigations are missing it is legitimate that the case is cancelled.

In terms of the attribute “urgency”, Page (2002) builds on Mitchell et al.’s (1997) original definition of urgency by defining urgency as: *“The degree to which a stakeholder’s stakes calls for immediate attention because of its time-sensitive nature and its importance to stakeholder”* (Page, 2002; Mitchell, Agle, & Wood, 1997). Therefore in the context of delaying surgical intervention by cancelling the case on the day of surgery, urgency is operationalised by solidifying the reasons for not going ahead with the surgery.

Every person or group with legitimate interest in procedural and/or substantive aspects of corporate activity can possess one or more of these attributes. In the case of running an operating theatre list, for example, the anaesthetist has the knowledge (power) to make the decision to cancel a patient on the day because the patient has a cough, which presents a risk for the patient (legitimacy). It is in the interest of the both the anaesthetist and the patient to immediately cancel the patient (urgency), to prevent the patient waiting longer for the surgery which is not going to take place that day and the hospital to waste valuable operating theatre time. Each stakeholder can be categorised in a stakeholder class, depending on the salience characteristics they possess, as can be seen in Figure 2. Table 5 summarises the stakeholder classes in which stakeholders are categorised based on their salience (Gould, 2015).

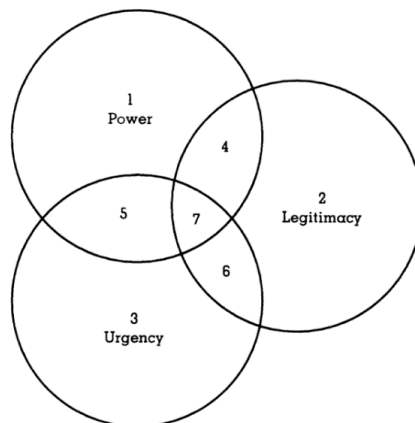


Figure 2 - Qualitative classes of stakeholders (Mitchell, Agle, & Wood, 1997)

Table 5 - Summary of Mitchell et al.'s (1997) model of stakeholder identification and salience (Ryan Gould, 2015)

Stakeholder Class/ Stakeholder Type		Salience characteristics		
		Power	Legitimacy	Urgency
Latent stakeholders	Dormant (1)	√		
	Discretionary (2)		√	
	Demanding (3)			√
Expectant Stakeholders	Dominant (4)	√	√	
	Dependent (6)		√	√
	Dangerous (5)	√		√
Definitive stakeholders (7)		√	√	√
Non-stakeholder				

The so called latent stakeholders (Dormant, Discretionary and Demanding) possess one of the three salient characteristics, which indicates that stakeholder salience will be low. Expectant stakeholders possess two of the three characteristics (Dominant, Dependent, Dangerous) and are considered to be moderately salient stakeholders. Stakeholder salience is high when a stakeholder possesses all three salient characteristics (Definitive) and are therefore considered to be the most important stakeholders. The absence of salience characteristics suggests a person is not a stakeholder.

### 4.3 Identification of stakeholders

A stakeholder identification is needed to ensure the most salient stakeholders provide the information needed to better understand the problem around cancellation of day of surgery cases. The most salient stakeholders are the key informants, who were identified using the six step approach shown in Figure 3.

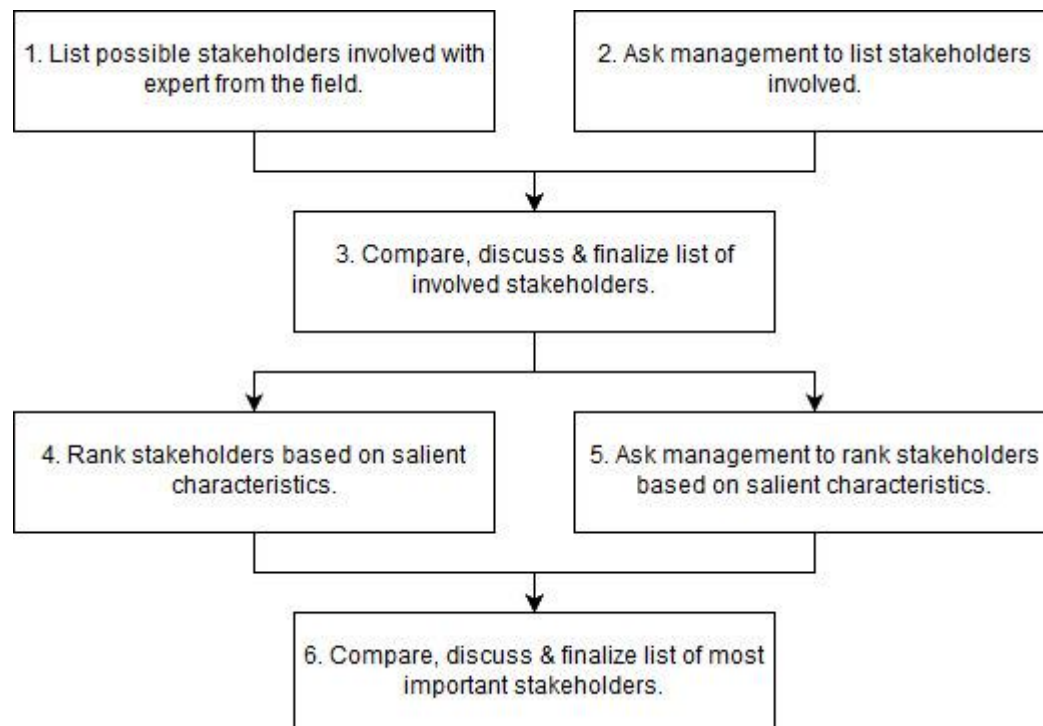


Figure 3 - Six step approach used for identifying key informants

Step 1 and 2 were carried out to ensure completeness and correctness of the stakeholder list. Step 3 allowed for the diagnosis of any differences between the two lists. An example of such a difference was that the researcher mentioned 'clinical care coordinator' and 'surgical clinical care coordinator' separately, where managers agreed that this was the same role. These discrepancies were discussed with managers and an expert from the field, which resulted in a finalised list of stakeholders.

Based on the theory discussed in the previous section, a tool is constructed to rank the importance of all involved stakeholders. Here, the salient attributes of Mitchell et al. (1997) are used for classifying the definitive and expectant stakeholders. These are stakeholders that have power, legitimacy and urgency in some combinations when addressing the problem of cancellations on day of surgery. Step 4 involves the classification of stakeholder attributes to each stakeholder by the researcher. Managers were asked to provide the same list in step 5, based on their experience from the field. Step 6 allowed for a comparison of the two lists. The two lists showed some differences in opinion.

An example of such a difference of opinion was that managers did not assign the stakeholder group 'admin staff' with the attribute power with regards to cancelling a patient on the day. We argued that the admin staff does possess this attribute since they are in charge of how these cancellations are documented. This documentation forms the basis for reporting, upon which the managers base their decisions.

Another example is that managers did not assign the stakeholder group 'admission nurse' with power and legitimacy. However, they are the last point of contact before the patient comes in for surgery on the day and are responsible for assessing the patient's health on the day. In both cases the admission nurse has the knowledge (power) when to cancel a patient and could observe missing test results (legitimacy).

In addition, managers indicated that the pre-admission nurse possessed none of the attributes. This was surprising as having none of the attributes would indicate that the pre-admission nurse is not a stakeholder. Previously they were listed by managers as a stakeholder. Therefore we argued for the inclusion of that role in the research. Similarly others that were initially identified as stakeholders were later classified as not having any of the three attributes. This shows that further research into stakeholder identification is important. The classification is a qualitative exercise and agreement to the inclusion of stakeholders needs to be favouring the benefit of the doubt. Therefore we included all initially identified stakeholders in the research. Eventually, consensus was reached on all differences in opinion. Table 6 shows the list of involved stakeholders and their ranking from step 4, 5 and 6, based on the salient characteristics: power, legitimacy and urgency. There are nine definitive stakeholders identified: clinical care coordinator, anaesthetic consultant, perioperative NUM, scrub scout NUM, nursing director, surgeon consultant, floor coordinator, pre-admission nurse and admission nurse. The surgical admission unit staff is identified as dependent stakeholder, the admin staff as dominant. The ORMIS data manager, bed management and scrub scout staff in OT are identified as dormant stakeholder.

Table 6 – Classification of stakeholders based on Mitchell et al.'s salient characteristics for step 4, 5 and 6

Stakeholder role	Type	Power			Legitimacy			Urgency		
Step		4	5	6	4	5	6	4	5	6
Clinical Care Coordinator	Definitive	1	1	1	1	1	1	1	1	1
Anaesthetic consultant on duty	Definitive	1	1	1	1	1	1	1	1	1
Perioperative NUM	Definitive	1	1	1	1	1	1	1	1	1
Scrub scout NUM	Definitive	1	1	1	1	1	1	1	1	1
Nursing director	Definitive	1	1	1	1	1	1	1	1	1
Surgeon/specialist consultant on duty	Definitive	1	1	1	1	1	1	1	1	1
Floor coordinator	Definitive	1	1	1	1	1	1	1	1	1
Preadmission nurse	Definitive	1	0	1	1	0	1	1	0	1
Admission nurse	Definitive	1	0	1	1	0	1	1	1	1
Surgical admission unit staff	Dependent	0	0	0	1	1	1	1	1	1
Admin staff	Dominant	1	0	1	1	1	1	0	0	0
Anaesthetic nurse in OT	Demanding	0	0	0	0	0	0	1	1	1
ORMIS data manager	Dormant	1	0	1	0	0	0	0	0	0
Bed management	Dormant	1	0	1	0	0	0	0	0	0
Scrub scout staff in OT	Dormant	1	0	1	0	0	0	0	0	0

Appropriate stakeholder identification is essential in quality improvement science to ensure integrity of the input data. As mentioned in section 4.2, difficulties could have been presented in prioritising the stakeholder roles, because of the characteristics of the framework. In addition, there may be differences in salience between stakeholders per stakeholder group. Limitations were mentioned that could potentially deem a stakeholder group as salient, where managers could consider the same stakeholder group as non-salient.

Another limitation of this stakeholder identification process was the stratification of the information into clinical issues and logistical issues. Making such an early stratification of issues, may have influenced stakeholder analysis on our part, in terms of determining the salience of the stakeholders involved (in step 4) with making a logistical decision regarding cancelling day of surgery cases. In learning from this process and in hind side, it may have been better to also ask the stakeholder to do a self-rating on the three attributes by the initial stakeholder group identified and compare and contrast these with the analysis of the managers. In addition, managers were seen as salient stakeholder for the determination of the stakeholders and perhaps too much power, legitimacy and urgency was ascribed to them. As mentioned earlier, the definition of salience described by Mitchell et al. is as follows: *“the degree to which managers give priority to competing stakeholder claims”*. This definition of salience solely focusses on the manager’s perception. This would imply that a manager’s

perception is the only one existing and considered to be true in Mitchell et al.'s framework. Differences in opinion arose whilst discussing which stakeholder possesses which attribute with managers. The researcher assigned attributes to stakeholder groups as an external observer and the manager as internal observer. An opportunity for improvement to this method would be to add a point of view from the operational side, which would improve the integrity of input data. Therefore, we suggest to make the classification method three dimensional with 1) researcher, 2) manager and 3) operational staff are involved.

For future reference it is advised to 1) list stakeholders groups in consolidation with an expert from the field and ask managers to do the same, 2) compare, discuss and finalise the two lists with the expert from the field and the manager, 3) rank the stakeholder groups based on Mitchell et al.'s framework, ask managers to do the same and ask selected stakeholder groups do a self-rating on the three attributes, and 4) compare, discuss and finalise the rankings in a meeting with all people involved in the ranking, as is illustrated in Figure 4.

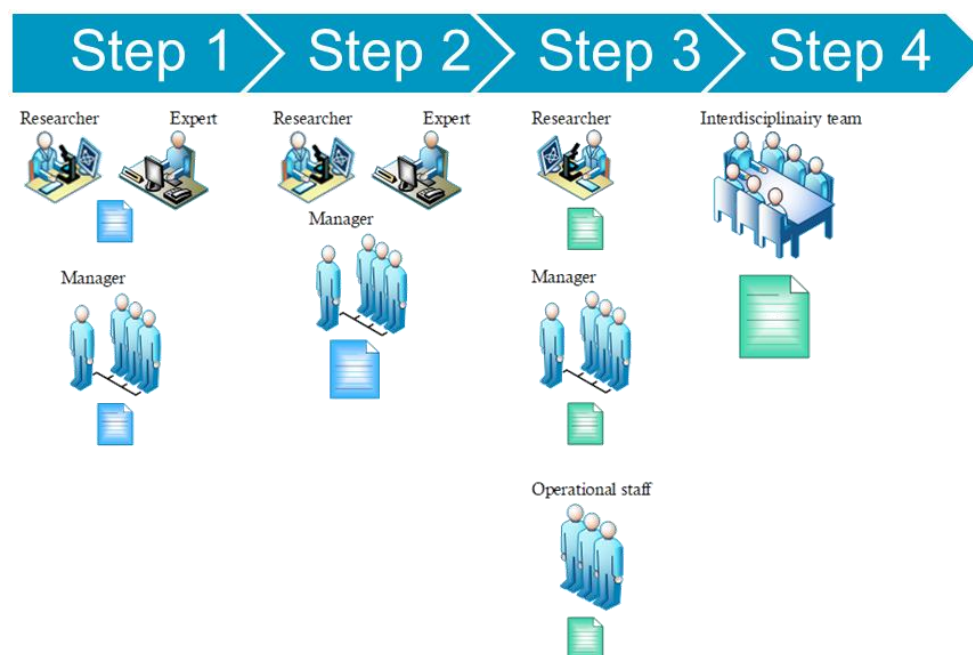


Figure 4 - Conceptual framework for stakeholder identification and classification

#### 4.4 Summary

In this research, a 'stakeholder' is defined as *"persons or groups with legitimate interests in procedural and/or substantive aspects of corporate activity"*. Despite some limitations, Mitchell et al.'s framework for stakeholder identification and salience is used in this research. Possible stakeholders involved are listed by the researcher and operating theatre managers.

These lists are compared, discussed and finalised. The researcher and managers ranked the stakeholders based on their salient attributes, resulting in nine definitive stakeholders.

The suggestion is to make the stakeholder classification method three dimensional by involving the operational staff. A self-assessment of the operational staff is suggested in addition to the ranking by the researcher and managers. This conceptual framework for stakeholder identification and classification is presented in Figure 4. Next chapter presents the second of three phasis in this research, the opportunities for improvement resulting from data analysis of interviews with stakeholders, observational field notes and historical data.



## 5 Findings

This chapter reports on the analysis of interviews, observations and historical data. This research is about getting a better understanding of cancellations of patients on the day of surgery due to being declared unfit at HOSEQ. This chapter focusses on answering the research questions: *“What are opportunities for improvement with regards to on the day of surgery cancellations as perceived by different stakeholders?”* (as described in Section 5.1) and *“What are opportunities for improvement with regards to on the day of surgery cancellations as analysed from observations and historical data?”* (as described in Section 5.2 and 5.3).

Largely from observations, we conclude that opportunities for improvement around day of surgery cancellations can be placed into two categories. The opportunities for improvement can either be clinical or logistical, therefore this stratification is useful when analysing interview data. Clinical opportunities for improvement involve opportunities around clinical processes, the logistical opportunities for improvement involve opportunities around non-clinical processes. The participants’ perceptions about the issues around cancellations on day of surgery and the opportunities for improvement are multi-faceted. The research continues with observational field notes and an analysis of historical data on cancellations.

### 5.1 Opportunities for improvement identified in the interviews

Through the use of semi-structured interviews the research question *“What are opportunities for improvement with regards to on the day of surgery cancellations as perceived by different stakeholders?”* was addressed. From the data it became evident that the main opportunities for improvement existed in 1) Communication and 2) Preparation. Within these two broader themes sat a selection of codes representing sub-themes (also see Appendix 26), outlined in Figure 5 below.

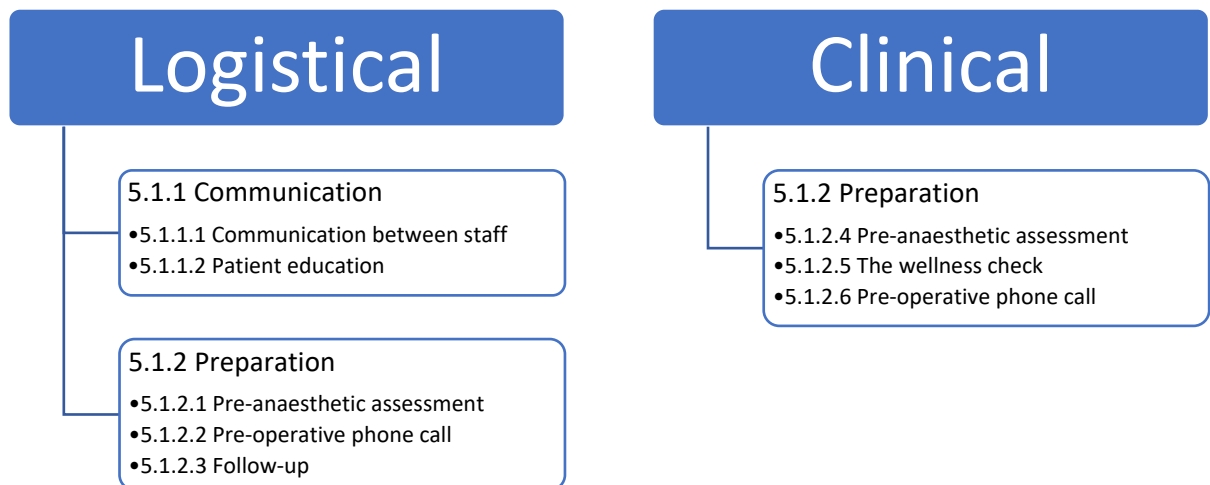


Figure 5 - Overview categories, sub-themes and themes

### 5.1.1 Opportunities for improvement in communication

The first theme identified is communication. For the purpose of this thesis, communication involves items like communication between departments and with the patient. The corresponding sub-themes are 1) communication between staff and 2) patient education.

#### 5.1.1.1 Opportunity to improve communication between staff

The perceived problem of communication between staff is described in twofold by the participants: communication between staff and communication between departments about what processes are in place. One participant described the communication between staff as follows:

*“We could do with better communication ... we don’t have any communication from theatre telling us that somebody is postponed because they are not fit. ... We could get the communication from the CCCs [clinical care coordinators] ... The CCCs then should tell us if it was because patient were unfit or what we could have done differently or how we can improve the process. their responsibility, to see what happened and what didn’t work.” (Participant 8)*

Other participants mentioned the lack of communication between departments about processes that are in place specifically, one stating that feedback is absent:

*“In the previous setup where we didn’t have that [dedicated anaesthetists in pre-anaesthetic clinic], the anaesthetists would rotate through pre-admission, which is kind of sad that it isn’t the case anymore. Because of their feedback and whether they are happy with what they are getting at the other end.” (Participant 8)*

Another stated:

*“It is also unclear how they screen patients to attend pre-admission or not attend pre-admission.” (Participant 2)*

A further issue amongst staff is relation to communication of how the cancellation process was monitored. During the interviews it became clear that there was no specific process for monitoring nor for whose responsibility it was. Participant 2 stated that *“The ORMIS Data Manager, We [the operating theatre management committee]”* are responsible for the monitoring of the cancellation process. Participant 8 stated: *“Our anaesthetic consultants [in pre-admission clinic]”,* other participants mentioned *“That would be the Clinical Care Coordinators”* and *“If there would be anybody monitoring it [the cancellation process], that would be me [Nurse Unit Manager anaesthetic], and I have not been doing it”.*

These quotes signify an uncertainty of existing processes, which forms an opportunity for improvement. From the conversations it became clear that there are numerous reasons for people not knowing who is responsible for what processes, such as misinformation or lack of communication. In addition, participants indicated that being unaware of processes that are in place in other departments can result in gaps in services provided, overtreatment of the patient and restricts staff from different departments to provide feedback to each other. Lack of feedback prevents departments to realise where there is potential to improve their service and to make an improvement in their service. Possible gaps in preparation for the surgery of a patient may result in the patient being declared unfit on Day of Surgery (DoS). Therefore, improving communication between staff about the processes in other departments is very important.

#### *5.1.1.2 Opportunity to improve patient education*

Patient communication about the preparation for surgery is imperative. For example, patients need to know what time they need to come into the hospital, from what time they need to start fasting and whether or not they should take medication. Some participants mentioned that the communication with the patient about the preparation for surgery could be improved:

*“We can communicate better with our patients with regards to preparation.” (Participant 2)*

More specifically, participants highlighted a lack of communication regarding appropriate protocols that may assist with communication. For example, one participant said:

*“I think one of the issues is communication with the patient. Communication in relation to what medication should stop ... communication about starvation protocols ... communications about actually turning up on the day [and what time to turn up].” (Participant 12)*

In addition to communicating with the patient about their preparation for surgery, participants stated that there could be various reasons for the patient not to inform the hospital about them having a cold or broken skin before the day of surgery. Numerous participants mentioned that patients simply think that even though they have a cold/scratch, they will be fine:

*“The patient usually speaks up themselves on the day of surgery [about scratches/being ill]. Not usually the day before when you’re speaking to them on the phone. ... [A challenge is that] a patient may not think that infected scratches is very much.” (Participant 4)*

*“A lot of times, a patient will just turn up, even if they feel unwell and hope for the best” (Participant 2)*

*“The patients see a little nick, oh that’s nothing” (Participant 5)*

This message is strengthened by other participants arguing that patients do not realise the risks:

*“They don’t realise how dangerous it is” (Participant 10)*

*“They don’t understand the risks their putting themselves in.” (Participant 15)*

Patients’ unawareness or underestimation of the risks with regards to them being unfit could potentially yield patients coming in on the day of surgery and being cancelled. Educating patients in understanding the dangers of arriving unfit for surgery at the hospital, although viewed as important by the participants, seemed to be somewhat lacking as participant 1 stated:

*“I guess maybe we could do more patient education.” (Participant 1)*

Indicating that improvement of patient education is another opportunity for improvement to reduce the amount of patients being cancelled on the day of surgery due to being declared unfit.

### **5.1.2 Opportunities for improvement in preparing patients for surgery**

The second theme identified is preparation. This theme includes all preparations carried out in a patient’s preparation for surgery. These preparations can cause but also prevent a patient being cancelled on the day on the day of surgery. The participants indicated that the following

were important when it comes to preparation: 1) pre-anaesthetic assessment, 2) pre-operative phone call and 3) follow-up which are stratified under logistical issues and are discussed in the next sections.

#### 5.1.2.1 Opportunity for improvement in pre-anaesthetic assessment

Participants mentioned inadequacy in pre-anaesthetic assessment, such as investigations that have not been carried out, as participant 8 mentioned:

*“Another reason why people might be postponed or cancelled on the day, is if all the proper investigations are not done beforehand.” (Participant 8)*

According to participants, these inadequacies occur because staff seem to be too busy, as participant 14 mentioned:

*“If they had done their investigation properly and did not rush, they would have seen that the reason why he was cancelled was already flagged in EMR.” (Participant 14)*

In addition, a participant stated that the pre-admission nurses are under pressure to see every patient because of a lack of room:

*“We currently have to hurry every patients because of the lack of room.” (Participant 8)*

The fact that the pre-admission clinic has to hurry every patient could potentially influence the quality of the assessment of the patient. Also the pre-anaesthetic clinic has a challenge with regards to capacity:

*“We probably only see 25% of all the patients.” (Participant 9)*

*“We don’t have enough spots for everybody for every patient to see the anaesthetist. ... We now need to make a call who can see an anaesthetist and who can’t, as a gatekeeper. I would prefer not to have to make the call so often.” (Participant 8)*

Other challenges that arise in the pre-anaesthetic clinic are:

*“Sometimes they even request an anaesthetic review, but there’s no good reason I can find. So I’ll take that to anaesthetist and I’ll say, what do you think?” (Participant 8)*

*“Surgeons often request a lot of tests just to be sure the patient does not get cancelled, ... where the patient does not need all of those tests.” (Participant 12)*

Hence, a lack of a standard pre-anaesthetic assessment that is carried out for every patient to determine which patients to bring into pre-admission and pre-anaesthetic clinic limits the staff

in the proper selection of patients that actually need to visit either one of these clinics. One participant mentioned that there is a pre-anaesthetic assessment process present, but is not generally filled out:

*“What is introduced almost a year ago, is that a patient fills in a questionnaire in outpatients, a general health questionnaire ... That gets scanned into EMR along with the booking form. That’s meant to be happening, but hasn’t been happening as often as we would like.”*  
(Participant 8)

Not generally filling out this general health questionnaire limits the pre-anaesthetic assessment process. Determining which patients need the additional assessments the most could help to better prepare the higher risk patients and hopefully prevent them from being declared unfit on the day of surgery. Therefore, filling out the health questionnaire consistently is an opportunity for improvement to reduce the amount of patients being cancelled on the day of surgery due to being declared unfit.

#### *5.1.2.2 Opportunity for improvement when making pre-operative phone call*

The patient is provided with the time to come into the hospital and fasting instructions during the pre-operative phone call the day prior to surgery. Some participants assume that the questions asked by the clinical staff are adequate:

*“Surely one of the questions would be you have no infection or scratches on the side you’re operated on. Which I’m sure they [clinical staff phoning patient] ask.”* (Participant 5)

*“The information a patient receives when they ring in is complete. They [the patients] get told don’t eat don’t drink and they get told it more than once, it is also in the letters they get.”* (Participant 6)

Another participant argues that nothing is asked about specific details that could help determine whether a patient is fit for surgery or not:

*“They [clinical staff phoning patient] would just ask is there anything else we need to know, they wouldn’t ask specifically if patients have scratches on their legs. They wouldn’t ask the patient specific details, they would just call the patient to tell them what time to come in and give them the fasting instructions. I don’t think they have a standard list of questions they ask.”*  
(Participant 14)

In addition, the same participant stated:

*“I don’t get why the phone call is that late [on the day].”* (participant 14)

This indicates that the staff really does not know exactly what is asked and when and by whom, jeopardising the quality of pre-anaesthetic assessment of fitness for surgery. A lack of thorough assessment of a patient's health status prior to surgery could result in a patient being cancelled, because of a health issue identified on the day of surgery. Therefore, a standardised health assessment during a pre-operative phone call in terms of content and timing is an opportunity for improvement to reduce the amount of patients being cancelled on the day of surgery due to being unfit.

#### *5.1.2.3 Opportunity for improvement in follow-up after a cancellation*

The third subtheme identified is follow-up. Some participants advocated that there is an absence of a follow-up after cancelling a case. One participant gave a description:

*"If somebody would be bored they could go back and see why a patient was cancelled, if the patient went through pre-admission clinic. I don't think that is done. ... Nobody is actually drilling down to see: Oh patient didn't get an MRI, was it booked? Did the patient know he needed an MRI? Did they need to attend? Did they get the (posted) form? Did they know they had to go to the GP to get their bloods done." (Participant 2)*

Some participants mentioned the absence of a follow up more specifically:

*"The follow up after a patient gets cancelled is absent." (Participant 2)*

*"There's no one responsible for following it through." (Participant 7)*

*"The reasons are very general, and nobody nuts it out to whether this patient would ever be fit for surgery." (Participant 8)*

Hence, there is an absence of a follow-up after a case gets cancelled, which poses an opportunity for improvement. In addition, it seems that the attitude towards following up is a result of the seemingly lack of interest in improving the situation. This may be due to that the problem is not perceived to be a serious one by some staff. Participant 2 stated that only if someone is "bored" they could go back and analyse the reason for this inefficiency. The absence of a follow-up prevents the hospital from figuring out if that cancellation could be picked up earlier and what could be done about it. In turn, this takes away the opportunity to prevent that type of cancellations from happening in the future.

In addition to the three logistical sub-themes identified within the theme 'preparation', there are also sub-themes sorted under clinical issues. These corresponding sub-themes are 1) pre-anaesthetic assessment, 2) the wellness check and 3) pre-operative phone call.

#### 5.1.2.4 Opportunity for improvement in pre-anaesthetic assessment

One of the clinical issues with regards to the preparation for the surgery of a patient are an incomplete or a lack of investigations in outpatient clinic that could have assisted with diagnosing the patients unfit for surgery earlier, prior to them arriving at the hospital. Most issues are related to the practices in outpatient clinic:

*"Maybe the doctors that see the patients in clinic are not as skilled as they need to be." (Participant 11)*

*"These problems need to be picked up in outpatients. Instead of just looking at the 75 year old's knee and say you need a knee replacement. Look at the whole picture. Flag them in outpatients. Say you know what, you've got a cardiac history, this is what happening, this is the medication you're on. I think you need to see a medical consultant in pre-admission." (Participant 3)*

Participants advocated for a complete medical review in the outpatient clinic, as participant 3 continued:

*"When they [the patient] come into outpatients and the surgeon deem them necessary to have surgery, there and then they (should) already flag. You should also get your medical review today, you should go and see the medical practitioner in outpatient clinic." (Participant 3)*

An incomplete medical review in outpatient clinic and the absence of information required for a patient's optimisation of fitness for surgery is an opportunity for improvement to minimise the amount of patients being declared unfit for surgery on the day.

#### 5.1.2.5 Opportunity for improvement in the wellness check

The participants mentioned the inability for hospital staff to determine if a patient is well enough to come in for their surgery, after visiting the pre-admission clinic:

*"Could be the case that a patient visited the pre-admission/pre-anaesthetic clinic, but it was a while ago, at the time they were okay, ... and now they got a cold" (Participant 10)*

*"Pre-admission was two weeks ago and they got a cold in the meantime, and the patient thought they were okay." (Participant 7)*

*"We have a couple of cancellations, I think it is mainly because patients are unfit." (Participant 1)*

*"It is actually very common that people that get in on the day of surgery, and have a cold." (Participant 12)*

*"We've no way of working out whether or not they [the patients] are well enough to come in." (Participant 6)*



Therefore, one opportunity to mitigate the cancellations on day of surgery is the ability to assess a patient's wellness preferably prior to scheduling the surgery, but at least prior to arriving in the hospital on the day of surgery. One participant added:

*"If you want to prevent patient coming in with a cold, you'd have to speak to all of them two days prior [to introduce even the smallest chance to find somebody else]." (Participant 10)*

Another participants mentioned:

*"Other places I've worked there's a two day [prior to surgery] wellness check, we [currently] don't do a wellness check." (Participant 2)*

*"I think a standard set of questionnaires, a health check [a couple of days prior to surgery], would be really good. (Participant 14)*

Current practice lacks a way of working out whether or not a patient is well enough for surgery, a couple of days prior to surgery. The lack of such a wellness check contributes to people coming in for surgery on DoS, whilst they are unfit. This poses an opportunity for improvement.

#### *5.1.2.6 Opportunity for improvement in pre-operative phone call*

One other clinical issue with regards to the preparation for the surgery of a patient is the pre-operative phone call. Participants state that patients do not follow pre-operative instructions sufficiently:

*"People just don't listen, about for example fasting ... or chewing gum ... sometimes it is a lot of information for them to take." (Participant 10)*

*"They [the patients] do not follow pre-op instructions sufficiently ... aren't fasted, are generally unprepared medically or fail to attend for surgery without advising beforehand." (Participant 11)*

In addition, during the pre-operative phone call, the nurses may pick up if a patient sounds unwell, according to one participant:

*"Now often that gets picked up the day before, the nurses will go, you don't sound very great." (Participant 13)*

When it is picked up that a patient is unwell, one could argue that an assessment could be made whether a patient is fit enough to undergo surgery the day after. Nonetheless, the nurses cannot make the (clinical) decision to cancel a patient, as stated by some participants:

*"We can't tell them over the phone not to come in. We can't make that call, if we think they may not be well enough. ... Sometimes we refer them*

*back to their GP then and occasionally get the GP will cancel because he is unfit.” (Participant 6)*

*“A nurse will never say to them, we’re cancelling you ... a lot of times it will be, come in and we’ll assess you on the day” (Participant 10)*

The nurse does not have the clinical authority to make the decision to cancel the patient on the day prior. Only a doctor has clinical authority to cancel a patient. Therefore, the nurse tends to call the anaesthetist to ask him how to proceed. However, generally, the anaesthetist is reluctant to cancel, as described by one anaesthetist:

*“The difficulty we have is that we [anaesthetists] often get a phone call the day before, that the patient has a cough. Now that’s fascinating but I cannot review them over the phone. The GP’s can see them and they generally describe antibiotics, they may not help at all. That’s just trying to maximise the chance of a patient getting through. You often can’t make a decision until you see the patient.” (Participant 15)*

Thus, current practice in the pre-operative phone call does not include a process to assess whether a patient is fit enough for surgery allowing clinical staff other than doctors to make a decision about fitness for surgery. Despite a patient sharing their concern about their health issues or the nurse picking up that a patient is unwell during the pre-operative phone call, no other action is taken to prevent the patient come in on the day of surgery. Hence, incorporating a procedure on what to do when a patient indicates they are unfit is an opportunity for improvement to reduce patients being declared unfit and cancelled on the day of surgery. This may include assessing the scope of practice of a nurse practitioner to be authorised to intervene.

### **5.1.3 Summary of opportunities for improvement (interviews)**

Interview data was analysed to get a better understanding of why patients are being cancelled on the day of surgery. Quotes were used to evidence the opportunities for improvement identified per sub-theme. The conclusions on participants’ perceived opportunities for improvement per category and sub-theme are summarised in Table 7.

Table 7 – Summary on participants' perceived opportunity for improvement per category per sub-theme

Category	Theme	Sub-theme	Summary opportunities for improvement per sub-theme
Logistical	Communication	Communication between staff	Improving communication between staff about the processes in other departments
		Patient education	Improve patient education
	Preparation	Pre-anaesthetic assessment	Fill out health questionnaire consistently
		Pre-operative phone call	Health assessment during pre-operative phone call in terms of content and timing
		Follow-up	Follow-up after cancellation
Clinical	Preparation	Pre-anaesthetic assessment	Carry out complete medical review in outpatient clinic
		A (lack of) wellness check	Incorporate wellness check in current practice
		Pre-operative phone call	Incorporate procedure on what to do when a patient indicates they are unfit Analyse opportunity to increase scope of practice for other staff, e.g. Nurse Practitioners, to cancel patients preop.

## 5.2 Opportunities for improvement from analysis of observational data

This section aims to answer the research question “*What are opportunities for improvement with regards to on the day of surgery cancellations as analysed from observations and historical data?*”. The first part of this question is answered by the observations carried out in the pre-admission clinic and admission clinic. The second part of this question is answered in the next section. As stated in Chapter 3, Section 3.2.2, observations were carried out of the preparation processes in the pre-admission clinic and of the pre-operative phone call in the admission clinic. The observations in the pre-admission clinic resulted in a comprehensive patient journey, which is presented in Chapter 2, Figure 1 on page 26. The observations of the pre-operative phone call in the admission clinic are discussed in this section.

Whilst visiting the admission clinics at Hospital A and B, we observed the pre-operative phone calls because this is the last point of contact with the patient prior to coming in for surgery. In addition, mixed stories arose from the participants about what actually happens during the pre-operative phone call. The findings concerning the observations carried out in the admission clinic, during the pre-operative phone call is presented in Table 8, Table 9 and Table 10. Each column represents one phone call, green dots indicate that the row's topic is discussed in that phone call. The topics are identified by the researcher whilst listening to the phone calls. A summation of the amount of times a topic is discussed is presented in the last column.

### 5.2.1 Pre-operative phone call Hospital A

Participants stated that on average there are around 60 patients calling Hospital A every day. A registered nurse calls the patient. On the first day that the phone calls were observed, the calls lasted on average around 45 seconds, on the second day they lasted around 150 seconds. It was observed that in Hospital A there is a standard pool of registered nurses from the admission clinic that actively call the patient.

We observed that nurses in Hospital A use a print-out of next day's theatre list when calling with patients. The patient's contact details are not on the theatre list. The nurse had to go into HBCIS to look up the patient's phone number before calling the patient. In addition, the nurses documented the information they provided to the patient in the electronic medical record. There are templates available in the electronic medical record for this documentation. During the first day of observations at Hospital A, there were two nurses, one calling the patient, the other one looking up the patients contact details and documenting the topics discussed in the electronic medical record. The nurses mentioned that this was an experiment to speed up the calling process. During the second day of observations, there was only one nurse carrying out all of these tasks.

Topics discussed during the pre-operative phone calls differ widely per phone call (as can be seen in Table 8 and Table 9), despite that all of the conversations per observation Table 10 are carried out by the same registered nurse.

Table 8 - Categorised observations per phone call Hospital A – observation 1

Observation #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Total
Verify correct person?	●	●	●		●		●	●	●		●	●	●		●	●		●	●	●	15
Time to come in for surgery	●	●	●		●		●	●	●	●	●	●	●	●	●	●		●	●	●	17
Which location to go to	●	●			●		●	●	●		●	●	●	●	●	●		●	●	●	13
Fasting instructions	●	●	●		●		●	●	●	●	●	●	●	●	●	●		●	●	●	17
No chewing gum/mints	●																				1
Medication		●	●		●		●	●	●	●	●	●	●	●	●			●	●		14
Pickup/dropoff instructions		●			●						●		●								4
Nale polish/deoderant/perfume										●		●		●		●					4
Jewellery instructions												●									1
Voicemail + message left				●													●				2
No Voicemail no message					●																1

Table 9 - Categorised observations per phone call Hospital A - observation 2

Observation #	1	2	3	4	5	6	7	8	9	10	11	12	13	Total
Verify correct person?	●	●	●		●		●	●	●	●	●	●	●	11
Time to come in for surgery	●	●	●		●		●	●	●	●	●	●	●	11
Which location to go to	●	●					●	●	●	●	●	●	●	9
Fasting instructions	●	●			●		●	●	●	●	●	●	●	10
No chewing gum/mints											●			1
Medication	●	●			●		●	●	●	●	●	●	●	10
Pickup/dropoff instructions		●												1
Nale polish/deoderant/perfume							●	●	●	●	●		●	6
Jewellery instructions	●	●			●		●	●	●	●	●	●	●	10
Voicemail + message left				●		●								2
No Voicemail no message														0

The question with regards to medication was along the line of: “are you on any regular medication”, if the patient agreed, the patient was told “keep taking this medication unless anaesthetist or doctor have advised you to do otherwise”. This seems a somewhat an inadequate way of advising which medication a patient should take or not take. They have already been told to fast, but now they are informed that it is probably ok to take the medications. Therefore, being more informed about what medication can or shouldn’t be taken prior to surgery poses an opportunity for improvement to reduce patients being declared unfit and cancelled on the day of surgery.

It was observed that none of the conversations included a question or mentioning of possible signs for the patient being unfit, such as having a cold, scratches etc. Therefore, introducing a more thorough wellness check a few days prior to admission is an opportunity for improvement to minimise the amount of patients being declared unfit on the day of surgery.

### 5.2.2 Pre-operative phone call Hospital B

Participants stated that on average there are around 20 patients calling Hospital B every day. When they call, a registered nurse has a conversation with the patient. On the day that the phone calls were observed, the calls lasted on average around 25 seconds.

It was observed by us that at Hospital B there are different practices, compared to Hospital A. Patients are instructed to call Hospital B between 1 and 3 PM on the day prior to surgery, where a theatre (registered) nurse is assigned to answer the phone. There is no standard pool of nurses answering the phone. Hospital B is planning to change this process in the near future, so that the nurses will actively be calling the patient. The information provided to the patient is not documented or handed over.

Similarly to Hospital A, at Hospital B the topics discussed during the pre-operative phone calls differ widely, as can be seen in Table 10. Missing instruction could result in not properly prepared patients and could potentially lead to a patient being cancelled on the day.

Therefore, the consistency and standardisation of the pre-operative phone call is an opportunity for improvement to reduce patients being declared unfit and cancelled on the day of surgery.

Table 10 - Categorised observations per phone call Hospital B

Observation #	1	2	3	4	5	6	7	8	9	10	11	12	13	Total
Verify correct person?	●	●	●	●	●	●	●	●	●	●	●	●	●	13
Time to come in for surgery	●	●	●	●	●	●	●	●	●	●	●	●	●	13
Which location to go to											●	●	●	3
Fasting instructions	●	●	●	●	●	●	●	●	●		●	●	●	12
No chewing gum/mints			●											1
Medication	●	●	●	●	●	●	●	●	●			●	●	11
Pickup/dropoff instructions	●		●	●		●	●	●				●	●	8
Nale polish/deoderant/perfume	●		●	●	●	●	●	●	●		●		●	10
Jewellery instructions	●		●		●	●	●	●	●		●		●	9
Bring documents	●		●	●	●	●	●	●	●		●	●	●	11
Voicemail + message left														0
No Voicemail no message														0

In addition, similar to Hospital A, at Hospital B minimal information is given in regards to medication taking on day of surgery and there was little in depth questioning of the possible signs for the patient being unfit, such as having a cold, scratches etc. Therefore, opportunities for improvement are 1) the consistency of the pre-operative phone call, 2) adequately advising a patient which medication to take, and 3) question a patient about possible signs for being unfit during the pre-operative phone call.

### 5.2.3 Summary of opportunities for improvement (observations)

It was observed that topics discussed during pre-operative phone call vary between patients. In addition, the way of asking/advising the patient about medication was inadequate and questions about possible signs for a patient being unfit were largely absent.

All of these opportunities for improvement seem to be the result of lack of a protocol for the pre-operative phone call. Lack of protocol may result in not properly informing a patient, which could prevent a patient from properly preparing for surgery and could potentially result in the patient being cancelled. Hence, incorporating a protocol for the pre-operative phone call is an opportunity for improvement to reduce patients being declared unfit and cancelled on the day of surgery.

## 5.3 Opportunities for improvement from analysis of historical data

This section answers the second part of the research question “*What are opportunities for improvement with regards to on the day of surgery cancellations as analysed from observations and historical data?*”. The findings from historical data were based on data from

primarily one database, ORMIS. Data from another database, HBCIS is also used in the analysis of data integrity. Data from the ORMIS database is used for the quantification of ‘cancellation details’.

5.3.1 Data integrity

In order to analyse the data integrity, the data from the Queensland Public Hospital Operating Theatre Efficiency report (Figure 6), which used data from the ORMIS database, is compared to the data extracted from HBCIS (Figure 7). Small deviations between the two data sources are expected, because it is not entirely clear which data preparation steps are performed by the Queensland Audit Office in producing their results. Figure 6 & Figure 7 show differences in the frequencies of cancellation categories between the two databases. This triggered further investigation of the integrity of the data, more specifically into the data entries itself.

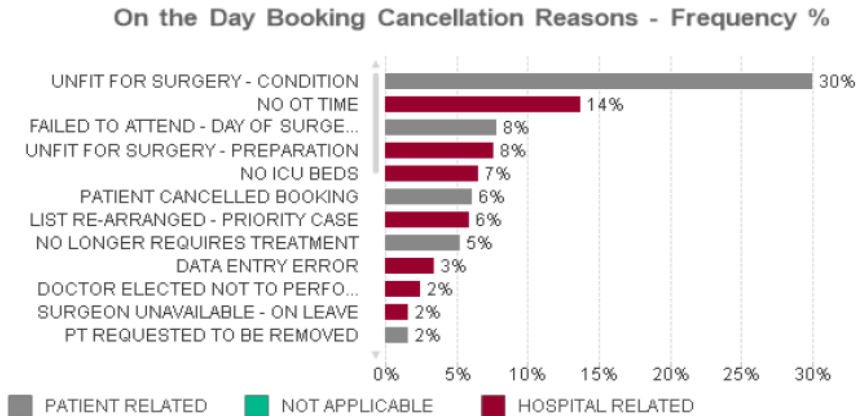


Figure 6 - On the day booking cancellation reasons - Frequency %. Data Source: ORMIS.

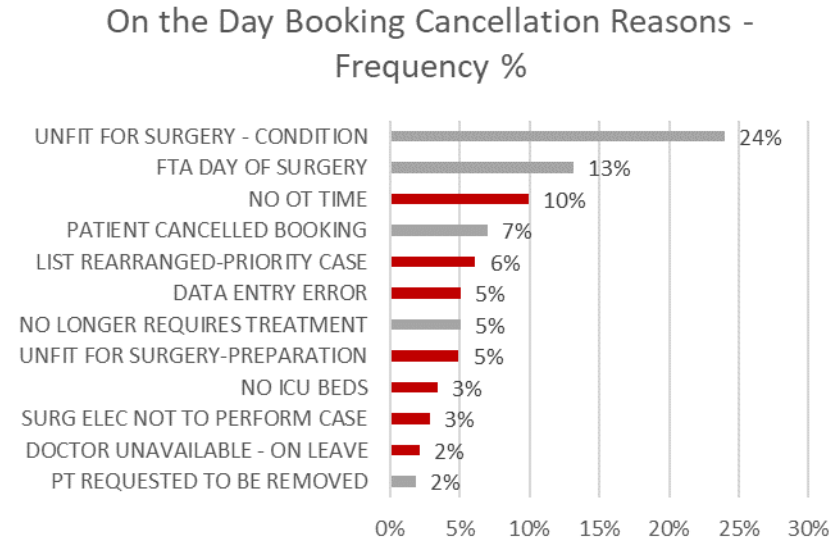


Figure 7 - On the day booking cancellation reasons at HOSEQ - Frequency %. Data source: HBCIS

One would expect data on the same case to be consistent when considering the data entries in the two databases. It was observed that the amount of cases vary between the two databases. A cancellation that is reported in one database is not necessarily reported in another, no obvious relation between these missing cases and other characteristics are observed. In addition, the cancellation details per case varied between the two databases. One database provided more detail than the other. Again, no obvious relation between these variations and other characteristics are observed. Another variation between the databases was the facility in which the surgery was planned to take place. An example of these differences can be found in Appendix 27.

These variations all raise concern about the data integrity. Questions can be asked about the correctness of data entries in either of the two databases, since the data entries between the two databases are inconsistent. Therefore, consistent and correct reporting of cancellations assist data integrity, which is an opportunity for improvement to minimise patient being declared unfit and cancelled on the day of surgery.

### **5.3.2 *Quantifying cancellation details***

Currently ORMIS provides users with the opportunity to indicate a cancellation category, two examples of categories available in ORMIS are “Unfit for surgery – condition” and “Unfit for surgery – preparation”. These categories are imposed by the categories available in HBCIS and are used to report on and are used in benchmarking studies of Queensland’s public hospitals. The categories provide a generic overview on reasons why patients are cancelled on the day of surgery. Specific reasons on cancellations on day of surgery were absent. Therefore, clinical staff is urged to fill in the actual reason why the patient was cancelled in the section free text field ‘details’. The ‘cancellation details’ of the two categories mentioned above are quantified to analysis opportunities for improvement, since this ‘cancellation field’ contains information on the actual reason why patients are cancelled.

This free-text field ‘details’ allows the clinical staff to make any comments they think are appropriate, which result in a large variety in comments. Examples range from ‘14’ to ‘Unfit’ and ‘pt has thyroid issues needs to have further investigations’. The quantification of these details is carried out to provide insight in possibilities for improvement. The results of this quantification are presented in Figure 8, which shows the number of patients cancelled due to being unfit on the day of surgery per ‘detail category’ for the period of May 2016 until April 2017.



### Number of patients 'unfit for surgery' on DOS per detail category (period May 2016 to April 2017)

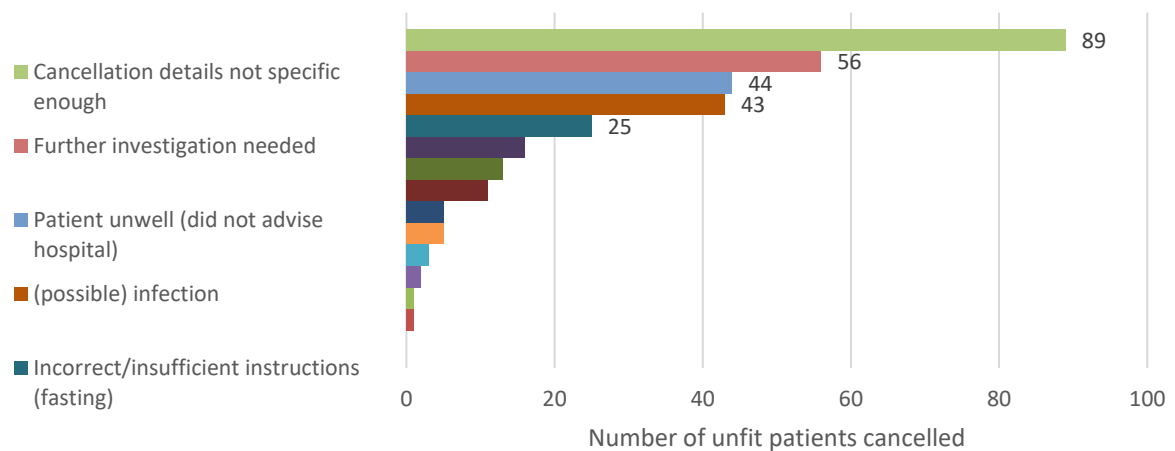


Figure 8 – Number of patients unfit for surgery on the day of surgery at HOSEQ per detail category (period May 2016 - April 2017). Data source: ORMIS

The top five 'detail categories' of patients being declared unfit on the day of surgery are 1) *Cancellation details not specific enough*, 2) *Further investigation needed*, 3) *Patient unwell (did not advise hospital)*, 4) *(possible) Infection* and 5) *Incorrect/insufficient instructions (fasting)*. These more specific categories for declaring a patient unfit for surgery on the day of surgery provide more insight in potential opportunities for improvement to minimise patients being declared unfit and cancelled on the day of surgery.

The detail category '*Cancellation details not specific enough*' includes details which mentioned the cancellation category again. When the cancellation details are not specific enough staff may be hindered from getting insight in the actual problems that yield the patients being cancelled due to being unfit on the day of surgery. Not having a clear understanding of the actual problem of a cancellation, in turn, restricts the staff's ability to actually try and prevent cancellations from happening. Hence, documenting cancellation details more specifically is an opportunity for improvement to reduce patients being declared unfit and cancelled on the day of surgery.

The detail category '*Further investigation needed*' consist of patients which need additional investigations before they are ready for surgery, such as a cardiology review or a PET scan. When staff makes the decision that the patient needs further investigations on the day of surgery, it indicates that the workup of that patient was not done properly. Hence, carrying out all necessary investigations in preparation is an opportunity for improvement to minimise the amount of patients being declared unfit for surgery on the day.

The detail category '*Patient unwell (did not advise hospital)*' includes patients being declared unfit for surgery on the day of surgery with a specific reason, for example a cold or a fever. The detail category '*(possible) Infection*' includes patients having a rash, sores, bites, scratches or a chest infection. The patient came in on day of surgery whilst being unfit for surgery because of a cold/fever or risk of infection and were therefore cancelled. If the patient would have informed the hospital earlier, by either calling themselves or whilst talking to the nurse during the pre-operative phone call, the patient could have been rescheduled. Not informing the hospital could be the result of simply not knowing or underestimation of risks. This could be a result of insufficient patient education or lack thereof. Hence, improving patient education is another opportunity for improvement to reduce patients being declared unfit and cancelled on the day of surgery.

The detail category '*Incorrect/insufficient instructions (fasting)*' includes patients being declared unfit because they did not follow fasting instructions. Not following fasting instructions indicates that the patient forgets to follow instructions, keeps following the normal daily routine or the instructions are incorrect, insufficient, misunderstood instructions, or lack thereof. Providing the patient with clear instructions about fasting is an opportunity for improvement to minimise the patients being declared unfit on the day of surgery.

A breakdown of the occurrence of the top five cancellation detail categories per speciality per facility can be found in Appendix 28.

### **5.3.3 Summary of opportunities for improvement (historical data)**

Historical data analysis resulted in the identification of opportunities for improvement to reduce the amount of patients being declared unfit and cancelled on the day of surgery. The categorised opportunities for improvement resulting from historical data analysis are summarised in Table 11. The first two opportunities for improvement focus on the reporting of cancellations, although the best way forward is to prevent patients that are going to be declared unfit on day of surgery from coming in. Although when they do come in, better documentation is warranted.

*Table 11 - Summary on opportunities for improvement resulting from historical data analysis*

Category	Summary opportunities for improvement per theme
<b>Logistical</b>	Consistent and correct reporting of cancellations
	Cancellation details documented more specific
	Improve patient education
	Provide patient with clear instructions
<b>Clinical</b>	Carry out all necessary investigations in preparation

## 5.4 Opportunities for improvement summary

This chapter has presented answers to the following two research questions using three separate datasets: *“What are opportunities for improvement with regards to on the day of surgery cancellations as perceived by different stakeholders?”* and *“What are opportunities for improvement with regards to on the day of surgery cancellations as analysed from observations and historical data?”*.

The research questions generated three separate datasets, each of which answered part of the overall research question about opportunities for improvement. Opportunities for improvement are stratified into logistical or clinical opportunities.

In total, eight opportunities for improvement as perceived by different stakeholders were identified from the analysis of interview data. The five logistical opportunities for improvement are 1) improve staff’s awareness about processes in other departments, 2) improve patient education regarding the risks associated with coming in for surgery while being unfit, 3) fill out health questionnaire consistently, 4) health assessment during pre-operative phone call in terms of content and timing, and 5) incorporate follow-up after cancellation. The three clinical opportunities for improvement are 1) carry out complete medical review in outpatient clinic, 2) incorporate wellness check in current practice, and 3) incorporate procedure on what to do when a patient indicates they are unfit.

The opportunity for improvement as analysed from observations is the logistical opportunity to incorporate a pre-operative phone call protocol.

Three logistical opportunities for improvement as analysed from the historical data analysis are 1) document ‘cancellation details’ more specifically, 2) improve patient education, and 3) provide patient with clear instructions. The clinical opportunity for improvement identified from historical data analysis was to carry out all necessary investigations in preparation.

All the opportunities for improvement identified in this chapter form the basis for the last of three major phases of this research, the solution identification. The solution identification is discussed in next chapter.

## 6 Discussion and conclusions

This chapter presents the solution identification and the development of the solution to improve the quality of information on reporting day of surgery cancellations in an attempt to reduce the amount of cancellations in Section 6.1. Next, Section 6.2 describes the main findings of this study which form the basis of answering the main research question are discussed. Thereafter, Section 6.3 discusses the most important recommendations which form the implications for practice are discussed. Finally, implications for theory and limitations to this research are presented in Section 6.4 and 6.5, respectively. Further, Section 6.6 gives recommendations for future research.

### 6.1 Solution identification

This section combines the findings from different datasets and identifies practical solutions. The opportunities for improvement, stratified in logistical and clinical opportunities, are presented in Table 12. The last four columns indicate with 'Yes' whether that opportunity for improvement resulted from a certain dataset. As discussed in the previous chapter, there are twelve opportunities for improvement identified to reduce the number of patients being cancelled on the day of surgery due to being declared unfit. Eight of those opportunities are ordered under logistical opportunities, four are placed under clinical opportunities. Table 12 summarises which opportunities for improvement arose per datasets. Five opportunities of improvement arose from multiple datasets, although this does not necessarily indicate that those opportunities are most pressing ones.

*Table 12 - Opportunities for improvement per dataset*

Category	Opportunities for improvement per dataset	Interviews	Observations	Historical data	Document analysis
<b>1. Logistical</b>	1.1 Improve staff's awareness about processes in other departments	Yes			
	1.2 Improve patient education	Yes		Yes	Yes
	1.3 Fill out health questionnaire consistently	Yes			
	1.4 Health assessment during pre-operative phone call in terms of content and timing	Yes			
	1.5 Follow-up after cancellation	Yes			Yes
	1.6 Incorporate pre-operative phone call protocol		Yes		
	1.7 Cancellation details documented more specific			Yes	
	1.8 Provide patient with clear instructions			Yes	Yes
<b>2. Clinical</b>	2.1 Carry out complete medical review in outpatient clinic	Yes			
	2.2 Incorporate wellness check in current practice	Yes			Yes
	2.3 Incorporate procedure on what to do when a patient indicates they are unfit	Yes			Yes
	2.4 Carry out all necessary investigations in preparation			Yes	

Interestingly, there are many opportunities for improvement to reduce the number of patients being cancelled on the day of surgery due to being declared unfit for surgery. Numerous of the opportunities for improvement mentioned in the previous chapter are confirmed by the document analysis. Some of which are described below.

Historical data has shown that there are still numerous patients arriving in the hospital for surgery while being unfit for surgery. Several documents are provided to the patient in the preparation for surgery, one of these documents is the “General admission instructions”. These instructions describe why preventing post-operative wound infection is important. These “General admission instructions” as well as all other documents provided to the patient fail to mention why notifying the hospital about having a cold, sore throat, flu or high temperature prior to surgery is important. Therefore, the lack of this information in these documents confirms that patient education is an opportunity for improvement.

Another opportunity for improvement that is confirmed by document analysis is the follow-up after a cancellation, more specifically the patient cancellation form. The patient cancellation form is used when a patient is cancelled. The form provides clinical staff with a field in which the reason for the cancellation can be entered. In the Operating Room Management Information System (ORMIS) and Hospital Based Corporate Information System (HBCIS) there are specific cancellation categories. These categories are not available on the patient cancellation form, which indicates that the administrative officers are actually translating the reason written down by clinical staff into a cancellation category. This is purely based on interpretation and is likely to influence data integrity. In addition, the cancellation form does not include an opportunity to state whether the patient visited the pre-admission and/or pre-anaesthetic clinic. Also, there is no opportunity to state on which date the patient visited either one of these clinics. Further, it is not documented which staff member informed the patient that they were cancelled or what the staff member told the patient. Furthermore, the cancellation form does not include the opportunity to document the patient’s clinical urgency category. Introducing these pieces of information to the cancellation form can provide valuable insight in the follow-up after a cancellation. These insights may prevent cancellations from happening again, although currently, there is an absence of procedure on the follow-up of a cancellation. A lack of procedure on the follow-up of a cancellation rules out the opportunity to continuously improve the processes in place. Therefore, incomplete information on the cancellation form confirms that a procedure on the follow-up after a cancellation is an opportunity for improvement.

Incorporating a wellness check is another opportunity for improvement that is confirmed by document analysis. There are two versions of the pre-operative phone call protocol, both protocols discuss the topics to be discussed with the patient during the pre-operative phone call. Neither of the two versions of the pre-operative phone call protocol prescribes to ask questions about possible signs of the patient being unfit for surgery, such as having a cold, broken skin, etc. The absence of the questions in the protocol could result in the absence of those questions during the pre-operative phone call. If the nurses don't pick up signs about a patient being unfit on the day prior to surgery, the patient is likely to travel to the hospitals and then is likely to be cancelled on the day of surgery. In addition, there is also an absence of procedure as to what to do if clinical staff notice that the patient has a cold a few days prior to surgery. Therefore, incorporating a wellness check is another opportunity for improvement confirmed by document analysis.

The operating theatre efficiency guidelines, published in January 2017 (p. 22) confirm that there is an opportunity for improvement in incorporating a pre-operative phone call guide (Queensland Health, 2017). This guide advises to let the patient confirm surgery the working day prior to surgery before noon. In the QLD health document, It is emphasised that hospitals clearly communicate to patients they must phone the hospital on the day prior to their surgery. Any patient unable to be confirmed by noon is to be cancelled and replaced with another patient. This guideline is not incorporated in current practice and it is unclear why it is not incorporated yet.

The opportunities for improvement vary widely. This is an indication that the problem with regards to patients being declared unfit for surgery and cancelled on the day of surgery is not a single problem, it is multi-faceted. There are systemic issues identified, such as issues with regards to communication between staff, patient education, the pre-anaesthetic assessment, the pre-operative phone call and follow-up after a cancellation. Each of these systemic issues, together with the suggested solution(s), are discussed in the following sections.

#### **6.1.1 Issue 1: Communication between staff**

The systemic issue 'communication between staff' was earlier described as improving staff's awareness about processes in other departments. This is an important logistical opportunity for improvement to prevent gaps emerging in services provided and possible overtreatment of patients.

The suggestion to improve communication between staff is to introduce monthly interdisciplinary meetings where patient flow is discussed. During these discussions, it is

important to identify who carries out which action, why that action is carried out, at what moment in time at which department this action is carried out and which documents are used. Different patient flows can be discussed, such as a general patient flow or the patient journey from one specific patient. The patient flow can be followed from beginning to end or from end to the beginning, each of which can provide useful insights and can contribute to quality improvement projects.

### **6.1.2 Issue 2: Patient education**

The second systemic issue is patient education. The logistical opportunity for improvement 'provide the patient with clear instructions' is part of another logistical opportunity for improvement, namely 'improving patient education'. Together they form this systemic issue which mainly focusses on creating awareness of the risks with regards to the patient being unfit and educating the patient about why it is important to follow instructions.

To ensure that all necessary information is conveyed to the patient, we suggest incorporating a patient education protocol that describes what information must be provided to the patient at a point in time. Also, it should describe why that information is conveyed, how it is conveyed, by whom it must be conveyed and which protocols/procedures or forms are used in this process. This patient education protocol could also be seen as an item necessary in a patient's preparation for surgery. An example of information that is necessary to convey to the patient is why it is important to keep the hospital updated when a patient experiences a cold or a fever in the week before surgery.

### **6.1.3 Issue 3: Pre-anaesthetic assessment**

Three opportunities for improvement are part of the systemic issue 'pre-anaesthetic assessment'. The logistical opportunity for improvement 1) fill out health questionnaire consistently is combined with two clinical opportunities for improvement 2) carry out a complete medical review in the outpatient clinic, and 3) carry out all necessary investigations in preparation.

The suggestion is to let the specialist carry out the complete medical review in the outpatient clinic, once it is determined that a patient needs surgery. This medical review identifies potential health issues and hence allows the patient to be optimised for surgery before visiting the pre-admission clinic.

The Clinical Care Coordinators (CCC) should only schedule patients that do not require any additional tests or reviews, therefore it is the CCC's responsibility to ensure that all necessary investigations are carried out. In addition, it is strongly recommended that every patient fills

out the health questionnaire in the outpatient clinic, before leaving the hospital. It is advisable that the outpatient administrative officer ensures that the questionnaire is completed, which allows the registered nurse in the pre-admission clinic to properly assess if the patient needs to visit the pre-admission and/or pre-anaesthetic clinic.

#### **6.1.4 Issue 4: Pre-operative phone call protocol**

The fourth systemic issue identified is 'pre-operative phone call protocol'. Two logistical opportunities for improvement are combined with one clinical opportunity, namely 1) health assessment during pre-operative phone call in terms of content and timing, 2) incorporate pre-operative phone call protocol, and 3) incorporate wellness check in current practice. The analysis of interview data showed that there is a need for a pre-operative phone call protocol despite that document analysis showed that two versions of such a protocol exist. This indicates that the protocol is not well known. In addition, these protocols do not include a patient's health assessment. Therefore, it is not surprising that the patient is not asked about possible signs of being unfit during the pre-operative phone call. However, historical data does show that a substantial proportion of patient cancelled is because they are unfit. Therefore, the pre-operative phone call protocol is one of the systemic issues.

Revising the existing pre-operative phone call protocol is part of the suggested solution for this systemic issue. The proposed protocol should result in standardised phone calls and should provide staff with guidelines on the information that needs to be provided to the patient. For example, the time to come in, fasting details and which medication to take or stop taking. In addition, the protocol should also indicate which questions to ask. For example, if the patient still wants to proceed with the surgery and whether the patient is experiencing a cold. This new protocol will be more comprehensive and will, therefore, result in longer phone calls with the patient, which is conflicting with the attempt of clinical staff to speed up the calling process. Although currently, clinical staff reports in EMR which information is provided to the patient, which is necessary since the information provided to patients varies between patients. Once the phone call is standardised, it is advised to only document special cases in EMR. In turn, not documenting the conversation with every patient saves time.

#### **6.1.5 Issue 5: Follow-up**

Both the logistical opportunity for improvement 'Cancellation details documented more specific' as well as the clinical opportunity for improvement 'incorporate procedure on what to do when a patient indicates they are unfit' are part of the logistical opportunity for



improvement ‘follow-up after cancellation’. These three opportunities form the systemic issue ‘Follow-up’.

The suggestion is to implement a follow-up protocol, including a section on what to do when a patient indicates they are unfit during the pre-operative phone call. In addition to the protocol, somebody is made responsible for the follow-up of every cancellation, to drill down why that patient actually was cancelled, if this reason could have been detected earlier and where it could be detected earlier. Although, before this is possible, the reporting on cancellations needs to be improved, since the information is now interpreted by multiple people and there is an inconsistency between different databases. There is a need to capture more information on cancellations on the day of surgery than is currently captured. Therefore, it is suggested to revise the information provided on the cancellation form. Once the reporting on cancellations is optimised, every cancellation can be analysed. The person responsible for the follow-up can make a distinction between cases that are single events and more systemic issues. The person responsible should be provided with the freedom to start quality improvement projects on these systemic issues.

#### **6.1.6 Selecting a solution**

All identified systemic issues and solutions are summarised in Table 13. To determine which solutions to focus on first, the solution numbers (1 to 8) also indicated in Table 13 are depicted in the consultancy matrix in Figure 9. The solutions are stratified in clinical, logistical and clinical and logistical solutions, as can be seen in Table 13.

*Table 13 - Identified solution(s) per issue*

<b>Issue</b>	<b>Category</b>	<b>Solution(s)</b>
<b>Communication between staff</b>	Logistical	1) Monthly interdisciplinary meeting to discuss patient flow
<b>Patient education</b>	Logistical	2) Implement patient education protocol
<b>Pre-anaesthetic assessment</b>	Clinical Logistical	3) Specialty resident carries out complete medical review 4) Incorporate health questionnaire in outpatient protocol
<b>Pre-operative phone call protocol</b>	Clinical & Logistical	5) Revise the existing pre-operative phone call protocol
<b>Follow-up</b>	Clinical & Logistical Logistical Logistical	6) Implement follow-up protocol 7) Make somebody responsible for follow-up 8) Revise cancellation form

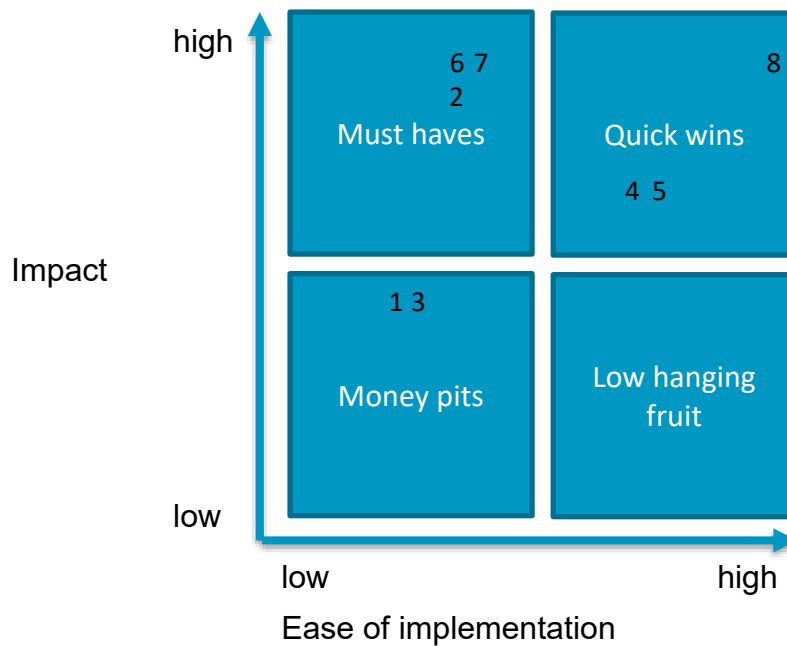


Figure 9 - Solutions displayed in an impact/ease of implementation matrix (Andler, 2016)

There are three solutions identified as 'quick wins': 4) Incorporate health questionnaire in outpatient protocol, 5) Revise the existing pre-operative phone call protocol, and 8) Revise cancellation form. Three solutions are identified as 'must haves': 2) Implement patient education protocol, 6) Implement follow-up protocol, and 7) Make somebody responsible for follow-up. Two solutions are identified as 'money pits': 1) Monthly interdisciplinary meeting to discuss patient flow, and 3) Specialty resident carries out complete medical review.

Clinical solutions involve input, and increasing effort of clinical staff, logistical solutions require the involvement of managers to further develop and implement the solutions. Changing clinical practices require efforts from staff which main priority is to help patients. Therefore, we focus on the solutions which are solely logistical, to ensure that the logistical processes are optimised before additional effort is required from clinical staff.

The monthly interdisciplinary meeting to discuss patient flow is a solution categorised as logistical and is identified to have low impact and is not easy to implement. Therefore, this solution is not further discussed. In addition, the implementation of a patient education protocol is believed to have a high impact, but is not as easy to implement. Making somebody responsible for the follow up of cancellations is a solution that follows after the revision of the cancellation form. Therefore, these logistical solutions are not discussed further.

The incorporation of a health questionnaire in outpatient protocol and the revision of the cancellation form are both solutions that are categorised as logistical and both solutions have a high impact and are easy to implement. Incorporating the health questionnaire in the

outpatient protocol also involves the ensuring that the health questionnaire is filled out consistently. Participants have told us that this is a challenge currently.

Filling out a cancellation form after cancelling a patient is already standard practice within HOSEQ. In addition, current research is being undertaken to implement a tool for quality improvement in health services management. Also, better reporting on cancellations provides more insight in which opportunities for improvement, issues and solutions are most pressing to improve the health services at HOSEQ. Therefore it was my persuasion to revise the cancellation form. The development of this tool is presented in next section.

#### **6.1.7 Development of tool**

The current cancellation form is used as a basis for the development of the tool. Since there are two versions of the cancellation form, it is assumed that information from either of the forms is present on the new form. Suggested additions to the cancellation form are discussed in this section, the revised cancellation form can be found in Appendix 29.

The first addition to the cancellation form is a field in which cancellation categories and sub-categories can be chosen. This takes away the responsibility from the admin officers to interpret the reason for cancellation as it is filled in by the clinical staff. The cancellation categories are already present, although the subcategories, per category need to be developed. Examples of subcategories for the cancellation category 'unfit for surgery are 'further investigation needed', 'patient unwell (did not advise hospital)' and 'patient unwell (did advise hospital)'. These subcategories are to be further developed over time but eventually need to be mutually exclusive and collectively exhaustive to ensure consistency in categorisation of cancellations and eventually reporting.

A second addition is to add which staff member spoke with the patient and to keep a record of the communication conveyed, as was suggested by one of the participants. The person speaking with the patient can be different from the person making the decision to cancel the patient. The information on who spoke with the patient and what communication was conveyed ensures that everybody in the organisation is aware of what the patient has been informed of in any future communication.

Another suggestion from participants was to add the clinical urgency category to the new cancellation form. This addition can help provide the organisation with insight to the amount of 'on the day of surgery' cancellations per clinical urgency category. Currently, the cancellation policies at HOSEQ do not include considerations about clinical urgency categories.

The additional insight may result in revision of the cancellation policies by adding guidelines on cancellations with a certain clinical urgency category.

Participants suggested adding a field to the new cancellation form to indicate whether the patient has visited the pre-admission and/or pre-anaesthetic clinic and if so, when. In that way, the influence of these visits on cancellation rates can be determined and may result in revision of the pre-anaesthetic assessments.

After these revisions, it is recommended to appoint someone to be responsible for the follow-up of the cancellations. This person can assist in the implementation of the new form based on an implementation plan, and the development of the cancellation sub-categories. Once fully developed and implemented, the information captured on the revised cancellation form can be used to investigate whether the reason for cancelling could have been detected earlier and which opportunities for improvement, issues and solutions are most pressing. In addition, a potential quality improvement project could be initiated to prevent specific types of cancellations from reoccurring.

## **6.2 Summary**

The aim of this thesis is to develop a solution to assist key hospital personnel to gain a better understanding of the reasons for Day of Surgery (DoS) cancellations, minimising the amount of cancellations and improving the health service delivery at HOSEQ. Research questions stated in Section 1.2 serve as basis to achieve this aim. These research questions are answered in sections 6.2.1 to 6.2.4.

### **6.2.1 Research sub question 1**

*Who are the key informants with regards to on the day of surgery cancellations and how are they best identified?*

Key informants for this research are best identified by stakeholder identification and classification. Possible stakeholders involved are listed by the researcher and operating theatre managers in the stakeholder identification phase. These lists are compared, discussed and finalised. Mitchell et al.'s salient attributes are used by the researcher and operating theatre manager to classify the stakeholders. The nine definitive stakeholders resulting from the stakeholder identification and classification are:

- Clinical care coordinator
- Anaesthetic consultant
- Peri-operative NUM
- Scrub scout NUM
- Nursing director

- Specialist consultant
- Floor coordinator
- Preadmission nurse
- Admission nurse

### **6.2.2 Research sub question 2**

*What are opportunities for improvement with regards to on the day of surgery cancellations as perceived by the different stakeholders?*

Key informants' experiences form an important part of the input data for this research. Interviews with these key informants is one of the datasets used to analyse opportunities for improvement. Eight opportunities for improvement as perceived by different stakeholders are identified from the analysis of interview data:

- Improving communication between staff about the processes in other departments
- Improve patient education
- Fill out health questionnaire consistently
- Health assessment during pre-operative phone call in terms of content and timing
- Follow-up after cancellation
- Carry out complete medical review in outpatient clinic
- Incorporate wellness check in current practice
- Incorporate procedure on what to do when a patient indicates they are unfit

### **6.2.3 Research sub question 3**

*What are opportunities for improvement with regards to on the day of surgery cancellations as analysed from observations and historical data?*

Observations and historical data are two other datasets used as data input for this research, in addition to the interviews with key informants. The opportunity for improvement as analysed from observations is:

- Incorporate pre-operative phone call protocol

The opportunities for improvements resulting from historical data analysis are:

- Consistent and correct reporting of cancellations
- Cancellation details documented more specific
- Improve patient education
- Provide patient with clear instructions
- Carry out all necessary investigations in preparation

### **6.2.4 Research sub question 4**

*What are the overall opportunities for improvement and possible solutions that affect day of surgery cancellations?*

The opportunities resulting from the three datasets vary widely. The problem with regards to patients being declared unfit for surgery and cancelled on the day is multi-faceted. Therefore, the opportunities for improvement are grouped into systematic issues. Solutions are

identified for each of the systemic issues. The systemic issues including corresponding solutions with regards to on the on the day of surgery cancellations due to being declared unfit at HOSEQ are:

**Systemic issue 1: Communication between staff**

- Monthly interdisciplinary meeting to discuss patient flow

**Systemic issue 2: Patient education**

- Implement patient education protocol

**Systemic issue 3: Pre-anaesthetic assessment**

- Specialty resident carries out complete medical review
- Incorporate health questionnaire in outpatient protocol

**Systemic issue 4: Pre-operative phone call protocol**

- Revise the existing pre-operative phone call protocol

**Systemic issue 5: Follow-up**

- Implement follow-up protocol
- Make somebody responsible for follow-up
- Revise cancellation form

There are numerous solutions identified to improve theatre operations and minimise cancellations on the day of surgery, due to patients being declared unfit. It is strongly recommended to first focus on the follow-up after a cancellation. The revision of the cancellation form is the first step to gain a better understanding of reasons for cancellations on day of surgery due to patients being declared unfit. Next, implementing a follow-up protocol and appointing somebody to be responsible for the follow up of cancellations is the starting point for future quality improvement projects.

### **6.3 Recommendations**

The revision of the cancellation form is the first step to improve health services at HOSEQ. Although, to ensure that this revised form becomes the new standard, it is recommended to develop an implementation plan. This plan can be based on current research being undertaken to implement a tool for quality improvement in health services management. Managers can implement the revised tool according to the implementation plan. In addition to the revision of the cancellation form and the development of an implementation plan, it is recommended to appoint someone to be responsible for the follow-up to help optimise the cancellation form even further. This person should track back what the actual reason why was for every single cancelled case, to determine if that cancellation could have been detected earlier and if this was a single flaw or a systematic issue. Quality improvement projects can be initiated for the systematic issues identified.

In addition to the revision of the cancellation form and making someone responsible for the follow-up, the next recommended step is to implement a follow-up protocol to standardise

the process after a cancellation. This protocol should include a procedure on what to do when a patient indicates they are unfit.

The next step is to incorporate a health questionnaire in outpatient protocol and to ensure that this questionnaire is filled out consistently. The registered nurse determining whether a patient needs to visit the pre-admission and/or pre-anaesthetic clinic can use the information from the questionnaire to make a more educated decision which patients should visit which clinic.

Another recommendation is related to the existing pre-operative phone call, more specifically, the health questionnaire in this phone call. Historical data shows that a substantial proportion of patients being cancelled is due to them being unfit for surgery. This is not surprising because it was observed that no questions about a patient's fitness are asked during the pre-operative phone call, neither is there a process to check on a patient's fitness a couple of days prior to surgery. This message is strengthened by participants who mentioned that Sydney Children's Hospital at Westmead uses a health questionnaire. This questionnaire is used three days prior to surgery to try and prevent the unfit patient to come in for surgery. Participants mentioned that it would be good to have such a questionnaire. Therefore, it is recommended to adapt and adopt the health questionnaire in the pre-operative phone call.

Previously mentioned and additional recommendations are summarised below:

- Adopt and adapt a thorough and consistent stakeholder analysis in every quality improvement projects.
- Revise cancellation form
- Appoint someone to be responsible for the follow-up of cancellations.
- Implement follow-up protocol
- Adopt and adapt a health questionnaire in outpatient clinic
- Adopt and adapt a health questionnaire in the week following up to surgery
- Revise the pre-operative phone call protocol
- Adjust the timing of the pre-operative phone call
- Implement patient education protocol

#### **6.4 Implications for theory**

Stakeholders' experiences form the basis of input data for the problem identification in quality improvement projects. A solution can be identified once a problem is fully understood. Unfortunately, the stakeholder analysis is often forgotten in quality improvement projects. Without a proper stakeholder analysis, the integrity of the input data is unknown. Identifying the problem with questionable integrity of data integrity can result in identification and implementation of sub-optimal solutions. Therefore, the theoretical implication of this research is an addition to quality improvement science in terms of emphasising the need for

a thorough stakeholder identification and classification. This research has adopted the notion that stakeholder analysis and thus stakeholder identification and classification is an utmost crucial step in the quality improvement process for the purpose of improving data integrity. This thorough stakeholder analysis is part of a conceptual framework, presented in Chapter 3.

## **6.5 Limitations**

Limitations of the methodology are discussed in Section 3.5. This section describes the limitations to the research.

Due to ethics approvals, my overseas stay, the university course I followed, and the limited duration of appointment at Griffith University, only limited time was available for data gathering. Nevertheless, necessary preparations were carried out prior to the data gathering phase to ensure gathering of an acceptable amount of data in the period of time available.

The conclusions of this research are partly based on existing data of which the integrity is unknown. Therefore, the results of this research need to be interpreted with care.

The sample from which I chose my stakeholders was limited to the snowballing technique that may inadvertently have biased the stakeholder identification. Nevertheless, participants kept referring to the participants already interviewed or on the list to be interviewed. Therefore, it is unlikely that other potential key informants are missed.

In addition, another limitation to this research is the use of a convenient sample. A convenience sample can result in under- and over representation of certain groups within the sample. The stakeholder identification and classification was carried out to ensure representation of most of the groups and the selection of most important stakeholder groups. The current climate of Hospital A is different from the climate at Hospital B. Findings aggregated of the two hospitals may have obscured some of the findings. Nevertheless, we are confident that the recommendations could benefit both hospitals.

Due to the researcher being a non-native English speaker, this could have resulted in misinterpreting participants, which may have altered the findings. Nevertheless, the researcher took the time to verify the correctness of interpretations and reflected on the language used. The thesis was also proof read by colleagues at the Griffith University and the sponsor from the organisation. We acknowledge the limitations of the methodology and the research discussed, although necessary actions were taken to prevent the limitations from detracting the significance of the findings.



## **6.6 Further research**

Numerous opportunities for future research emerged while carrying out this research. The first opportunity for further research is to develop a framework for a thorough stakeholder analysis for quality improvement projects in health services management. In addition, the impact of a thorough stakeholder analysis on data integrity in quality improvement projects can be investigated. In addition to the impact of a thorough stakeholder analysis, it is interesting to investigate the impact of the self-assessment of identified stakeholders in the stakeholder classification.

This research used interviews and analysis on observations and historical data to develop the tool, although we are unsure how we know that we achieved what we set out to achieve. Therefore, another opportunity for future research is to investigate what appropriate measures are to check the fidelity of a tool for quality improvement in health services management.

The revised tool provides HOSEQ with additional information on cancellations. This information could provide the health services a useful insight. For example, further research could investigate the impact of a patient visiting pre-admission and/or pre-anaesthetic clinic on that patient being declared unfit and cancelled on the day of surgery.

## **6.7 Conclusion**

This chapter set out to relay a better understanding of the reasons why patients are being declared unfit and cancelled on the day of surgery. The solution identification used the twelve opportunities for improvement to identify five general issues which resulted in eight practical solutions. The revision of the cancellation form was the single solution with a high impact and high ease of implementation and was further developed. The suggested additions to the cancellation form are 1) categories and sub-categories, 2) who spoke with the patient and what was the patient told, 3) clinical urgency category, and 4) If the patient visited the pre-admission and/or anaesthetic clinic and, if so, on which date the patient the visit occurred. Appointing someone to be responsible for the follow-up of cancellations can help reduce the number of patients being declared unfit and cancelled on the day of surgery. An implementation plan of the new cancellation form will help to ensure that the revised form becomes the new standard. The implementation of the revised cancellation form is the basis for improving theatre operations and minimise cancellations on the day of surgery due to patients being declared unfit.

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## Appendix 1 – Admission booking form

 <p><b>Queensland Government</b> <b>Gold Coast Health</b></p> <p align="center"><b>PROCEDURE / ADMISSION BOOKING FORM</b></p> <p>Facility: _____</p>	<p align="center">(Affix identification label here)</p> <p>URN: _____</p> <p>Family name: _____</p> <p>Given name(s): _____</p> <p>Address: _____</p> <p>Date of birth: _____ Sex: <input type="checkbox"/> M <input type="checkbox"/> F <input type="checkbox"/> I</p>
<b>PLEASE PRINT</b>	
<b>CONFIDENTIAL</b>	
<p><b>REFERRAL CENTRE</b>    <input type="checkbox"/> OPD    <input type="checkbox"/> Private Rooms    <input type="checkbox"/> Private Practice Clinic</p> <p>Unit/Surgeon: _____ Status: <input type="checkbox"/> Public    <input type="checkbox"/> Intermediate    <input type="checkbox"/> Other</p> <p>Provisional Diagnosis: _____</p> <p>Proposed Operation/Procedure: _____</p> <p>Document Pre-Op Investigations/Preparation: _____</p> <p>_____</p> <p>Estimated Operating Theatre Time: _____ Hrs</p> <div style="display: flex; justify-content: space-between;"> <div> <input type="checkbox"/> This patient suitable as a day case  <input type="checkbox"/> This patient requires overnight admission  <input type="checkbox"/> This patient suitable for Robina         </div> <div style="border: 1px solid black; padding: 5px; width: 200px;"> <p align="center"><b>CONSENT FORM SIGNED</b></p> <p align="center"><input type="checkbox"/> YES    <input type="checkbox"/> NO</p> <p>Signed by: _____</p> </div> </div> <p>Expected length of stay: _____ days</p>	
<p><b>URGENCY CATEGORY</b></p> <p><input type="checkbox"/> <b>CATEGORY 1</b>    Treatment recommended within 30 days - must be allocated a booking date</p> <p><input type="checkbox"/> <b>CATEGORY 2</b>    Treatment recommended within 90 days</p> <p><input type="checkbox"/> <b>CATEGORY 3</b>    Treatment not required within 90 days (Chronic condition - there may be pain or dysfunction but unlikely to deteriorate quickly)</p>	
<p>Operation Date: ____/____/____    Admission Date: ____/____/____</p> <p>Instructions to Patient: _____</p> <p>Is the patient ready for care?    <input type="checkbox"/> Yes    <input type="checkbox"/> No    If no, date when ready for care: _____ (A patient is ready for care, if prepared to accept an offer of hospital admission and is not deferred for medical or social reasons)</p> <p>Available at short notice?    <input type="checkbox"/> Yes    <input type="checkbox"/> No    <input type="checkbox"/> &lt;24 hrs    <input type="checkbox"/> &lt;48 hrs</p> <p>Medical Officer's Signature: _____    Date: ____/____/____</p>	
<p><b>OFFICE USE ONLY:</b></p> <p>Patient suitable for "Nurse Only" Pre Admission Clinic    <input type="checkbox"/> Yes    <input type="checkbox"/> No</p> <p>PAC Booked    <input type="checkbox"/> Southport    Date: ____/____/____</p> <p>                                 <input type="checkbox"/> Robina    Date: ____/____/____</p> <p>Copies:    WHITE copy to Medical Record    YELLOW copy to Operation Bookings    PINK copy to Patient</p>	

**DO NOT WRITE IN THIS BINDING MARGIN**  
Do not reproduce by photocopying. All clinical form creation and amendments must be conducted through Health Information Services

Date Reviewed: 06/2016  
Mat. No.: 10106143



00050:PR:14000

**PROCEDURE / ADMISSION BOOKING FORM**

Page 1 of 1



## Appendix 2 – Consent form



Queensland  
Government

### Carpal Tunnel Decompression

Facility:

(Affix identification label here)

URN:

Family name:

Given name(s):

Address:

Date of birth:

Sex: ☐ M ☐ F ☐ I

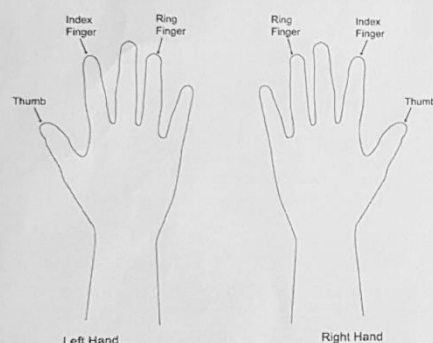
#### A. Interpreter / cultural needs

- An Interpreter Service is required? ☐ Yes ☐ No  
 If Yes, is a qualified Interpreter present? ☐ Yes ☐ No  
 A Cultural Support Person is required? ☐ Yes ☐ No  
 If Yes, is a Cultural Support Person present? ☐ Yes ☐ No

#### B. Condition and treatment

The doctor has explained that you have the following condition: *(Doctor to document in patient's own words)*

This condition requires the following procedure. *(Doctor to document - include site and/or side where relevant to the procedure)*



Left wrist ☐ Yes ☐ No

Right wrist ☐ Yes ☐ No

The following will be performed:

A Carpal tunnel decompression is done through a cut (7 - 10 cm) along the underside of the wrist. The nerve is found and will be freed by removing the tissue from it.

#### C. Risks of a carpal tunnel decompression procedure

There are risks and complications with this procedure. They include but are not limited to the following.

##### General risks:

- Infection can occur, requiring antibiotics and further treatment.
- Bleeding could occur and may require a return to the operating room. Bleeding is more common if you have been taking blood thinning drugs such as Warfarin, Aspirin, Clopidogrel (Plavix or Iscover) or Dipyridamole (Persantin or Asasantin).

- Small areas of the lung can collapse, increasing the risk of chest infection. This may need antibiotics and physiotherapy.
- Increased risk in obese people of wound infection, chest infection, heart and lung complications, and thrombosis.
- Heart attack or stroke could occur due to the strain on the heart.
- Blood clot in the leg (DVT) causing pain and swelling. In rare cases part of the clot may break off and go to the lungs.
- Death as a result of this procedure is possible.

##### Specific risks:

- The numbness and tingling in the fingers and thumb may persist.
- Damage to the median nerve. This may require re-operation and nerve repair.
- Damage to the tendons, which may require surgical repair of the tendons.
- The operation occasionally does not work and needs to be done again.
- Pain at the wrist when making a fist or leaning on the wrist.
- Scar tenderness – may be permanent or temporary.
- Weakness of the muscles at the base of thumb, which does not go away.
- Abnormal pain response to surgery with worsening of pain and disability.
- The surgical cut may cause changes to the sensation and colour of the limb.
- In some people, healing of the wound may be abnormal and the wound can be thickened and red and the scar may be painful.

#### D. Significant risks and procedure options

*(Doctor to document in space provided. Continue in Medical Record if necessary.)*

#### E. Risks of not having this procedure

*(Doctor to document in space provided. Continue in Medical Record if necessary.)*

#### F. Anaesthetic

This procedure may require an anaesthetic. *(Doctor to document type of anaesthetic discussed)*



Queensland  
Government

## Carpal Tunnel Decompression

Facility:

(Affix identification label here)

URN:

Family name:

Given name(s):

Address:

Date of birth:

Sex: ☐ M ☐ F ☐ I

### G. Patient consent

I acknowledge that the doctor has explained;

- my medical condition and the proposed procedure, including additional treatment if the doctor finds something unexpected. I understand the risks, including the risks that are specific to me.
- the anaesthetic required for this procedure. I understand the risks, including the risks that are specific to me.
- other relevant procedure/treatment options and their associated risks.
- my prognosis and the risks of not having the procedure.
- that no guarantee has been made that the procedure will improve my condition even though it has been carried out with due professional care.
- the procedure may include a blood transfusion.
- tissues and blood may be removed and could be used for diagnosis or management of my condition, stored and disposed of sensitively by the hospital.
- if immediate life-threatening events happen during the procedure, they will be treated based on my discussions with the doctor or my Acute Resuscitation Plan.
- a doctor other than the Consultant may conduct the procedure. I understand this could be a doctor undergoing further training.

I have been given the following Patient Information Sheet/s:

- ☐ About Your Anaesthetic *OR*  
☐ Anaesthetic: Nerve Block  
☐ Carpal Tunnel Decompression

- I was able to ask questions and raise concerns with the doctor about my condition, the proposed procedure and its risks, and my treatment options. My questions and concerns have been discussed and answered to my satisfaction.
- I understand I have the right to change my mind at any time, including after I have signed this form but, preferably following a discussion with my doctor.
- I understand that image/s or video footage may be recorded as part of and during my procedure and that these image/s or video/s will assist the doctor to provide appropriate treatment.

On the basis of the above statements,

### I request to have the procedure

Name of Patient: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

#### Patients who lack capacity to provide consent

Consent must be obtained from a substitute decision maker/s in the order below.

Does the patient have an Advance Health Directive (AHD)?

☐ Yes ▶ Location of the original or certified copy of the AHD: \_\_\_\_\_

☐ No ▶ Name of Substitute Decision Maker/s: \_\_\_\_\_

Signature: \_\_\_\_\_

Relationship to patient: \_\_\_\_\_

Date: \_\_\_\_\_ PH No: \_\_\_\_\_

Source of decision making authority (tick one):

- ☐ Tribunal-appointed Guardian  
☐ Attorney/s for health matters under Enduring Power of Attorney or AHD  
☐ Statutory Health Attorney  
☐ If none of these, the Adult Guardian has provided consent. Ph 1300 QLD OAG (753 624)

### H. Doctor/delegate Statement

I have explained to the patient all the above points under the Patient Consent section (G) and I am of the opinion that the patient/substitute decision-maker has understood the information.

Name of Doctor/delegate: \_\_\_\_\_

Designation: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

### I. Interpreter's statement

I have given a sight translation in

\_\_\_\_\_ (state the patient's language here) of the consent form and assisted in the provision of any verbal and written information given to the patient/parent or guardian/substitute decision-maker by the doctor.

Name of Interpreter: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## Appendix 3 – Admission letter



Enquiries to:  
Gold Coast University Hospital  
Telephone: (07) 5687 4804

Ref: UR 1023628

**ATTENTION: This Letter Contains Your Operation Date  
and Important Information. Do Not Discard**

Dear

Arrangements have been made for you to have your Paediatric Surgery surgery at the Gold Coast University Hospital.

**On the day prior to your procedure, you will be phoned between 1:00pm and 4:30pm to be advised of your admission time.** If your surgery is on a Monday, you will be phoned on the Friday before your admission date on the Monday.

Your admission date is as follows:

**Date            Wednesday 12th July 2017**

**When you arrive, please report to Peri-Operative Services, Level 2, D Block, Gold Coast University Hospital to be admitted.**

If you have agreed to be treated as a public patient your treatment may be provided by any of our suitably qualified specialists and/or at another facility. This is to ensure that you can receive appropriate treatment in the quickest possible time.

If you require attention for your condition before your surgery date, we would urge you to contact your general practitioner.

**Please read any attached patient information sheets carefully to better prepare you for your upcoming admission.**

If you have any questions about the information in this letter, please call the Elective Surgery Booking Office on (07) 5687 4804 between 7:30am and 4:00pm Monday to Friday (excluding public holidays).

Yours sincerely

A handwritten signature in black ink that reads "Christopher Hicks".

Christopher Hicks  
Service Director, Perioperative and Critical Care Services  
Gold Coast Hospital and Health Service  
Tuesday 30th May 2017

NOTE: Any patient who declines two offers of clinic appointment or operation date may be removed from the elective surgery waiting list. A new referral would be required from their general practitioner.

**Gold Coast Health**  
Building a healthier community

Gold Coast University Hospital  
1 Hospital Boulevard  
Southport QLD 4215

[www.goldcoast.health.qld.gov.au](http://www.goldcoast.health.qld.gov.au)

Version No: 1.5 Effective From: 14/04/2016 [GOT]

## Appendix 4 – Pre-admission unit criteria for phone consultation

PRE ADMISSION UNIT CRITERIA FOR PHONE CONSULTATION
<p><u>The patient must be:</u></p> <ul style="list-style-type: none"> <li>• Males aged between 2yrs – 50yrs ( unless having LA, then no PAC is required)</li> <li>• Females aged between 2yrs – 60yrs (unless having LA, then no PAC is required)</li> <li>• Physical status of ASA I / ASA II</li> <li>• Adult body mass index less than 40</li> <li>• No previous problems with anaesthesia</li> <li>• No history of cardiac disease, stroke, epilepsy or blood clots</li> <li>• No Aspirin, Warfarin, etc.</li> <li>• Able to understand and speak English</li> </ul>
<p><u>Suitable types of procedures for phone consultations:</u></p> <ul style="list-style-type: none"> <li>• <i>Lap chole</i></li> <li>• D &amp; C</li> <li>• Hysteroscopy</li> <li>• Laparoscopy</li> <li>• Eua/Cone Biopsy</li> <li>• Lletz</li> <li>• Cystoscopy (Gynae)</li> <li>• Diathermy Cervix</li> <li>• Ex/O Vulval Lesions</li> <li>• Lap Tubal Ligation</li> <li>• Hand Surgery</li> <li>• Foot Surgery</li> <li>• MUA</li> <li>• R/O K-Wires</li> <li>• Arthroscopy</li> <li>• R/O Pins/Screws/Plates</li> <li>• Some Shoulder Surgery &lt; 50 years</li> <li>• ACL</li> <li>• Trigger Finger</li> <li>• Carpel Tunnel</li> <li>• EUA</li> <li>• Sigmoidoscopy</li> <li>• Haemorrhoidectomy</li> <li>• Pilonidal Sinus</li> <li>• Ex/O Skin Lesion</li> <li>• Dental Extractions</li> </ul>
<p>Completion of, and satisfaction with a telephone consultation with the patient should be at the discretion of the Registered Nurse. <u>If in doubt</u> regarding the suitability of the patient, the RN should <u>cease the consultation and arrange an appointment for the patient in the</u></p>



## Appendix 5 – Patient information sheet



### Operation Bookings

#### PATIENT INFORMATION - ADULT

Arrangements have been made for you to have an operation at Gold Coast University Hospital. Please read the below information carefully to better prepare you for your operation.

**On your operation day, please remember to bring with you:**

- The appointment letter attached and any forms you have been asked to complete
- Medicare, Pension or Health Care Cards
- Nightwear, toiletries, well fitting shoes or slippers (optional)
- Current medications you are taking with doses

**Things to Note:**

- Legally you cannot drive for 12 hours following sedation, therefore a responsible adult must be available to pick you up
- You must not travel by taxi or public transport home unescorted after your procedure
- Do not bring large sums of money, jewellery, mobile phones or laptop computers

***Note: All personal effects brought into the hospital are your responsibility***

**Fasting Requirements**

You will need to fast for a **minimum of 6 hours** – this means **no solid foods** including sucking sweets or chewing gum. You may have small amounts of water up to 2 hours before the procedure.

- If your operation is to be performed in the morning of your admission, you **must not** have anything to eat (no solid food) from 2am. You may have water up until 6am
- If your operation is to be performed in the afternoon, you may have a light breakfast of tea and toast before 7am on the morning of your admission. You may have water up until 11am

If you have any questions or concerns, please phone the Elective Surgery Booking Office on **07 56874802** between 7:30am and 4:00pm Monday to Friday (excluding public holidays).

## Appendix 6 – General admission instructions



# GOLD COAST UNIVERSITY HOSPITAL

## PRE ADMISSION CLINIC

### GENERAL ADMISSION INSTRUCTIONS

1. **DO NOT DRIVE YOURSELF TO or FROM HOSPITAL**
2. You will need to fast for a minimum of 6 hours - this means **No Solid Foods**, including **sucking sweets** or **chewing gum**. You may have "**Small amounts of WATER**" up to 2 hours before the procedure.
3. **NO ALCOHOL ON THE DAY OF SURGERY**
4. **FASTING TIMES :**  
**Morning procedure**  
No Solid food after 2 am ☐ Water only until 6 am ☐  
**Afternoon procedure**  
No Solid food after 7 am ☐ Water only until 11 am ☐
5. Please shower with the sponges provided as per the instructions on the back of this sheet. Bring nightwear, toiletries and appropriate footwear.
6. Please do not wear **DEODORANT, MAKE-UP, NAIL POLISH, PERFUMES, POWDER, CREAMS or AFTERSHAVE**. Aerosol cans **ARE NOT** permitted.
7. Bring **ALL** of your medications and please document (on the attached sheet) **ALL** medications taken prior to your admission.
8. Do not bring any **valuables** with you eg: **large amounts of money, jewellery**, etc.
9. Bring **ALL X-RAYS** you have had, relating to this admission.
10. On the day prior to your procedure, you will be phoned between 1pm and **4:30pm** to confirm your admission time. If surgery is on a Monday, you will be phoned on the Friday prior.
11. It is important that you tell the Nurse when you're phoned for your admission time, if you have **any sores, skin tears, boils /pimples or rashes on your body**.
12. Report **directly** to Peri Operative Services, Level 2, D Block on the day and time specified.
13. You are welcome to have **ONE** support person with you on the day of surgery.
14. Please note :- **SMOKING IS PROHIBITED** within 5 metres of the hospital grounds. If seeking advice for information on Quit Smoking speak with a nurse  
**PLEASE NOTIFY US IF:**
  1. You have a **Cold, Sore Throat, Flu or High Temperature** prior to your surgery date.
  2. You require any special care when you leave hospital.
  3. You need to cancel you surgery for any other reason please phone the Hospital and speak to the **Operation Booking Office 56874802**

### **PREVENTING POST-OPERATIVE WOUND INFECTION**

Normally, the skin can carry certain bacteria (germs) which cause no infection at all. But they can enter the body through broken skin, such as at the time of an operation. Prior to your admission to hospital, it is important to prepare the skin to prevent post-operative wound infections. This is achieved by washing the skin with the sponges provided, which contain a disinfectant. Please follow the instructions on the packet of the sponge, paying attention to your armpits, navel and groin areas as well as the operation site.

\* Please cease washing if there are any signs of an allergic reaction (eg. redness, itching etc). Contact the Pre-Admission Clinic or your GP for further advice.

\* REMEMBER, you should carry out this procedure on two separate occasions before your operation: The **night before** your operation and the **morning** of your operation.

### **PHYSIOTHERAPY**

During and following surgery you may experience changes in your respiratory (breathing) and circulatory (blood) systems.

These changes can include weakness with breathing muscles making it hard to clear your airways. It may be difficult to cough because of pain – this can cause a chest infection and collapse your airways.

Surgery can slow your blood flow for up to 7 days and may increase the risk of blood clots forming.

**To prevent these from occurring you need to do these exercises every hour following your surgery and continue until you are discharged from hospital.**

#### **BREATHING:**

1. Slowly take a deep breath in and out.
2. Follow this by a slightly deeper breath in and out.
3. Take the deepest breath you can and hold it for 3 seconds
4. Repeat 3 times and finish with a cough.

#### **CIRCULATION:**

Bend your feet up and down 20 times an hour, after the operation, and this will help pump blood through your legs and return blood flow to normal.

**IF YOU HAVE ANY PROBLEMS THERE IS A PHYSIOTHERAPIST AVAILABLE ON THE WARD WHO WILL BE PLEASED TO HELP YOU.**

## Appendix 7 – Pre-admission phone consultation questionnaire 1

<b>Gold Coast University Hospital - Pre Admission Unit</b> <b>CHILDREN and ADOLESCENTS</b> <b>PHONE CONSULTATION QUESTIONNAIRE</b>	<i>(Please place patient label here)</i>  UR Number: Family Name: Given Names: DOB: <span style="float: right;">Sex:</span>
<b>The following questions are to be used by the Pre Admission RN for phone consultations with selected Children and adolescents</b> <b><u>Appropriate</u> questions should be asked at the discretion of the RN</b>	
Date: ..... Procedure: ..... Surgeon: ..... Patient age: ..... Patient Weight: ..... kg Procedure date: ..... OT List: AM <input type="checkbox"/> PM <input type="checkbox"/>	
What Operation are you having? ..... Have you ever had an anaesthetic? <span style="float: right;"><input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unsure</span> If YES – Were there any problems with the anaesthetic? <span style="float: right;"><input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unsure</span> What type of problems? ..... Have any family members ever had a problem with an anaesthetic? <span style="float: right;"><input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unsure</span> If YES - What type of problems? ..... List any operations/serious illnesses you have had ..... ..... Do you have any Allergies or reactions to medicines? <span style="float: right;"><input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unsure</span> If YES - What are you allergic to? ..... Are you taking any medications? (Including vitamins /herbal remedies) <span style="float: right;"><input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unsure</span> If YES - What medications do you take ..... ..... Do you take aspirin, blood thinners or anti-inflammatory medicines? <span style="float: right;"><input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unsure</span> If YES - What medications ..... Do you suffer from asthma, chronic bronchitis or any lung disorder? <span style="float: right;"><input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unsure</span> If YES - What disorder ..... Do you have a cough or cold now or in the past week? <span style="float: right;"><input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unsure</span> Are you a Diabetic? ..... <span style="float: right;"><input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unsure</span> Have you ever had kidney problems? ..... <span style="float: right;"><input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unsure</span> Do you have loose teeth? ..... <span style="float: right;"><input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unsure</span>	



**Gold Coast University Hospital - Pre  
Admission Unit  
CHILDREN and ADOLESCENTS  
PHONE CONSULTATION QUESTIONNAIRE**

(Please place patient label here)

UR Number:

Family Name:

Given Names:

DOB:

Sex:

Have you ever had epilepsy, hepatitis or been jaundiced ? ☐ YES ☐ NO ☐ Unsure

Do you have any artificial devices (eg: metals, glasses, hearing aid etc) ? ☐ YES ☐ NO ☐ Unsure

Have you signed a consent form? ☐ YES ☐ NO ☐ Unsure

Withhold NSAIDS 48hrs ☐ yes ☐ no Withhold Vitamins etc 7 days ☐ yes ☐ no

Day Surgery Protocol explained ☐ YES ☐ NO

Discharge Transport: .....

Comments: .....

.....

.....

.....

.....

.....

Is this patient required to attend Pre Admission Clinic ? ☐ YES ☐ NO

Does this patient require an Anaesthetic review ? ☐ YES ☐ NO


\*If this form is completed, and the patient is not required to attend a PAC or Anaesthetic clinic, it is not necessary to call the RMO on the day of surgery

INTERVIEWED BY.

NAME:..... DESIGNATION: .....

SIGNATURE:..... DATE:.....

## Appendix 8 – Pre-admission phone consultation questionnaire 2

 <p><b>Queensland Government</b></p> <p><b>Gold Coast Health Service District</b></p> <p><b>PRE AD PHONE CONSULTATION QUESTIONNAIRE</b></p>	<p style="text-align: right;">(Affix identification label here)</p> <p>URN: _____</p> <p>Family name: _____</p> <p>Given name (s): _____</p> <p>Address: _____</p> <p>Date of birth: _____ Sex: <input type="checkbox"/> M <input type="checkbox"/> F <input type="checkbox"/> I</p>
<p>Facility: .....</p>	
<p>The following questions are to be used by the Pre Admission RN for phone consultations with selected patients prior to surgery.</p> <p><u>Appropriate</u> questions should be asked at the discretion of the RN ( eg some questions do not always apply, especially to young patients or children)</p>	
<p>Date: / / Procedure: _____ Surgeon: _____</p>	
<p>Patient Height: _____ cm. Patient Weight: _____ kg BMI: _____ Procedure Date: / /</p>	
<p>OT List: <input type="checkbox"/> AM <input type="checkbox"/> PM</p> <p><input type="checkbox"/> Main Theatre <input type="checkbox"/> Gold Coast Surgery Centre</p>	
<p>What Operation are you having? _____</p>	
<p>Have you ever had an anaesthetic? (3) <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unsure</p>	
<p>If YES – Were there any problems with the anaesthetic? (3) <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unsure</p>	
<p>What type of problems? _____</p>	
<p>Have any family members ever had a problem with an anaesthetic (3) <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unsure</p>	
<p>If YES - What type of problems? (3) _____</p>	
<p>List any operations/serious illnesses you have had (4) _____</p>	
<p>Do you have any Allergies or reactions to medicines? (1) <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unsure</p>	
<p>If YES - What are you allergic to? (1) _____</p>	
<p>Are you taking any medications? ( including vitamins /herbal remedies) (2) <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unsure</p>	
<p>If YES - What medications do you take (2) _____</p>	
<p>Do you take aspirin, blood thinners or anti-inflammatory medicines? (2) <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unsure</p>	
<p>If YES - What medications (2) _____</p>	
<p>Do you suffer from asthma, chronic bronchitis or any lung disorder? (3) (6) (16) <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unsure</p>	
<p>If YES - What disorder (3) _____</p>	
<p>Do you have a cough or cold now or in the past week? (12) <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unsure</p>	
<p>Have you ever had a heart attack? (10) <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unsure</p>	
<p>Do you have chest pain /discomfort with exercise ? (7) <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unsure</p>	
<p>Do you have shortness of breath with exercise? ( eg walking a flight of stairs) (5) <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unsure</p>	
<p>Have you ever had high blood pressure or suffered a stroke? (6) (11) <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Unsure</p>	


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10 / 2011

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00050:PR14001

PRE AD PHONE CONSULTATION QUESTIONNAIRE

Page 1 of 2



Queensland  
Government

Gold Coast Health Service District

**PRE AD PHONE  
CONSULTATION  
QUESTIONNAIRE**

Facility:.....

(Affix identification label here)

URN:

Family name:

Given name (s):

Address:

Date of birth:

Sex: ☐ M ☐ F ☐ I

- Have you ever had blood clots in your legs or lungs? (13) ☐ YES ☐ NO ☐ Unsure
- Are you a Diabetic? (14) ☐ YES ☐ NO ☐ Unsure
- Have you ever had epilepsy, hepatitis or been jaundiced? (15) ☐ YES ☐ NO ☐ Unsure
- Do you have arthritis or joint problems? (16) ☐ YES ☐ NO ☐ Unsure
- Have you ever had kidney problems? (17) ☐ YES ☐ NO ☐ Unsure
- Do you have any deformities with your neck or jaw? (18) ☐ YES ☐ NO ☐ Unsure
- Do you smoke? How many? (19) ☐ YES ☐ NO ☐ Unsure
- Do you drink alcohol? How much? How often? (20) ☐ YES ☐ NO ☐ Unsure
- Do you use recreational drugs? What? (21) ☐ YES ☐ NO ☐ Unsure
- Do you have dentures, caps, crowns or loose teeth? ☐ YES ☐ NO ☐ Unsure
- Do you have any artificial devices (eg: Joint/limb, pacemaker, hearing aid etc)? (22) ☐ YES ☐ NO ☐ Unsure

- Have you signed a consent form? ☐ YES ☐ NO ☐ Unsure
- Could you be pregnant? (23) ☐ YES ☐ NO ☐ Unsure
- Withhold NSAIDS 48hrs ☐ YES ☐ NO Withhold Vitamins etc 7 days ☐ YES ☐ NO
- Day Surgery Protocol explained ☐ YES ☐ NO
- Discharge Transport: \_\_\_\_\_

Comments:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- Is this patient required to attend Pre Admission Clinic? ☐ Yes ☐ No
- Does this patient require an Anaesthetic review? ☐ Yes ☐ No

\*If this form is completed, and the patient is not required to attend a PAC or Anaesthetic clinic, it is not necessary to call the RMO on the day of surgery

INTERVIEWED BY:

Name (print):

Designation:

Signature:


Date: / /

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## Appendix 9 – Pre-admission assessment questionnaire

[illegible]

## Appendix 10 – Anaesthetic record

 <b>Queensland Government</b> <b>Gold Coast Health</b> <b>ANAESTHETIC RECORD</b>		(Affix identification label here) URN: Family name: Given name(s): Address: Date of birth:      Sex: <input type="checkbox"/> M <input type="checkbox"/> F <input type="checkbox"/> I	
Facility: .....			
<b>Proposed Procedure:</b>		<b>Surgeon/Physician:</b>	
<b>HISTORY:</b>     <b>Age:</b>		<b>DRUGS:</b>    <b>ALLERGIES:</b>  GI: Reflux/Heartburn <input type="checkbox"/> No <input type="checkbox"/> Yes Fasted Since .....  Previous Anaesthetics, Operations & Complications:  Exercise tolerance > 4 METS: <input type="checkbox"/> Yes <input type="checkbox"/> No Tobacco: Ethanol: Family history of anaesthetic complications: <input type="checkbox"/> No <input type="checkbox"/> Yes Recreational Drug Use:	
<b>PHYSICAL EXAMINATION</b>  BP ____ / ____ HR ____ SaO <sub>2</sub> ____ Weight ____ (kg)  CVS  RS  Airway Assessment  Teeth		<b>DIAGNOSTIC STUDIES</b>  ECG  CXR  <b>LABORATORY STUDIES</b>  FBC  Renal/Electrolytes/BSI  Others	
ASA 1 2 3 4 5 6 <input type="checkbox"/> E			
<b>IMPRESSION / PLAN / DISCUSSION WITH PATIENT</b>			
Anaesthetist:		Print Name:      Date of Interview:	

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ANAESTHETIC RECORD



Queensland  
Government

Gold Coast Health

## ANAESTHETIC RECORD

(Affix identification label here)

URN:

Family name:

Given name(s):

Address:

Date of birth:

Sex: ☐ M ☐ F ☐ I

Facility:

### Monitoring / Ancillary:

- ☐ Standard monitors (ECG, NIBP, SaO<sub>2</sub>, EtCO<sub>2</sub>)
- ☐ Temperature
- ☐ Urinary catheter
- ☐ Art line
- ☐ CVP line
- ☐ Forced air warmer
- ☐ Fluid warmer
- ☐ NG Tube
- ☐ IV line
- ☐ IV line

### Drugs:

### Airway:

- ☐ Oro / Naso-pharyngeal
- ☐ N. Cannula / Hudson Mask
- ☐ LMA / ETT/Face Mask
- Size \_\_\_\_\_
- Laryngoscopy Gd \_\_\_\_\_
- Blade (Type) \_\_\_\_\_

### Position:

- ☐ Sup / Prone / Lat / Lith
- ☐ Other:
- ☐ Pressure areas padded
- ☐ Eyes taped / Eye pads

### Induction

- ☐ IV
- ☐ Inhalational
- ☐ Rapid Sequence
- Technique**
- ☐ GA
- ☐ Sedation
- ☐ Spinal
- ☐ Epidural
- ☐ Plexus Block
- ☐ Nerve Block

### Comments / Procedures / Complications

Time

### Ventilation Mode

- ☐ Spontaneous
- ☐ Volume Controlled
- ☐ Pressure Controlled

### Ventilator Settings

TV \_\_\_\_\_  
Press \_\_\_\_\_  
Rate \_\_\_\_\_  
PEEP \_\_\_\_\_ cm H<sub>2</sub>O

### Anaesthetic Agents

- ☐ O<sub>2</sub> / Air / N<sub>2</sub>O
- ☐ \_\_\_\_\_

### Blood Loss =

SaO<sub>2</sub>

EtCO<sub>2</sub>

FiO<sub>2</sub>

MAC/ET Vol Agent

BIS

Temp

CVP

Urine Output

F  
L  
U  
I  
D

Anaesthetist(s):

Theatre Location:

Date of Operation:



## Appendix 11 – Pre-operative phone call protocol 1

### PREOPERATIVE PHONE CALLS

Time of admission

Location – Level 2, D block, Perioperative services, Gold Coast Hospital

Fasting Time ( Unless otherwise stated)

AM – No food, lollies or chewing gum after 0200hrs  
Water until 0600hrs

PM – Light breakfast before 0700hrs. NO lollies or chewing gum after 0700hrs  
Water until 1100hrs

Shower the night before and the morning of surgery – No make-up, jewellery, nail polish, aftershave or creams to be applied.

Children – Follow fasting rules. No milk products after fasting ( breast milk, formula etc) Can have apple juice instead of water.  
Dress in comfortable clothing with no metal after shower.

Medications - Patient to take all usual medications unless advised otherwise by their doctor. If staying in hospital to bring all current medications.

X-Rays – Bring any x-rays relevant to their procedure.

Day surgery patient - Require transport home and a responsible adult to stay with the patient overnight. Taxi and other forms of public transport are not acceptable unless patient is accompanied by a responsible adult.

Diabetic – Check if advice has been given re insulin / medications of - **NO insulin on day of surgery AM or PM, ½ dose of medication night before** If no advice given, contact RMO who can contact patient.

TRUSS Biopsy – Patient to take prescribed Ciprofloxacin prior to leaving home and Microlax enema before shower at home. If patient has not been given a script for Ciprofloxacin, drug may be administered on admission per standing order 2015/001.

Total Prostatectomy - Patient should have full bowel prep and clear fluids.

Cataract patients – Can continue anticoagulants unless advised otherwise by surgeon.

If on **Warfrin**, patient should have had an **INR** within the last week and bring that result into hospital. **Acceptable level is <3.5.**

Patient Cancels – Advise Clinical Care Co-Ordinator of the appropriate speciality.

## Appendix 12 – Pre-operative phone call protocol 2

### Pre operative phone calls

- **Time** of admission and location is GCUH **SOUTHPORT** Level D2.
- **Fasting** AM – No solid food after 2 am  
Clear fluids until 6am (no milk)  
PM – No solid food after 7am  
Clear fluids until 11am (no milk)
- **Shower** before coming to hospital – no makeup, jewellery, creams
- **Children** – dress in PJ's or comfortable clothing after shower, ensuring there is no metal on clothing.
- **Medication** – take all medication unless advised not to by the doctor.  
Bring in usual medications except for pain medication
- **Xrays** – bring in any relevant xrays
- **Day surgery patient** – require pick up and overnight care  
Cannot take taxi / public transport / drive yourself.  
Exception - flexible cystoscopy and LA eye patients approved by surgeon.
- **Diabetic** – check if advice has been given re insulin / medications. If no advice given contact RMO who can then contact patient.
- **TRUS biopsy** – check if had antibiotic ordered and dispensed. Patient to take prior to leaving home. Microlax enema at home prior to admission.
- **Total radical prostatectomy** – full bowel prep, clear fluids
- **Bowel surgery** - ? bowel prep or clear fluids / ? check with surgeon
- **Eye patients** – can continue Aspirin / Plavix / Warfarin unless advised otherwise by surgeon. **Take antihypertensive / normal medication.**  
On Warfarin? What was their last INR?  
Acceptable level is < 3.5  
INR needs to have been done within previous 7 days  
Fasting – check anaesthetic roster / notation on OT list  
No anaesthetist allocated - **non fasting.**  
Anaesthetist allocated – Drs Green, Walker, Godfrey – **fast** all patients.  
Drs Imrie, Russell, Morris – fast only those patients for LA + sedation or GA.
- **Patient cancels** – Advise Clinical care co-ordinator  
Advise OT front desk 76021  
Adjust admission times for other patients on that list and  
Advise patients as required.



## Appendix 13 – Pre-operative phone call template

Patient advised the following regarding their planned procedure:

**Admission time at GCUH Southport Level D2\_**

**Fasting AM Surgery**

No solid food after 0200 including lollies and gum.  
Clear fluids until 0600hr.

**Fasting PM Surgery**

No solid after 0700hr including lollies and gum.  
Clear fluids until 1100hr.

**Non fasting ophthalmic patient**

Continue diet.

**Shower** before coming to hospital – no makeup, jewellery, creams.

**Medication**

Take **ALL** medication at the usual times unless advised not to by the doctor  
Bring in all usual medication in packaging.

Cataract patient taking Warfarin?

If yes – INR result in last 7 days \_

**Diabetic**

Medical advice given re insulin/medication.

**Xray**

Bring any relevant xrays.

**Day surgery patient**

Transport home and overnight care required.  
Cannot take a taxi / public transport unaccompanied.  
No driving for 24 hours post surgery.

**TRUS**

Take prescribed antibiotic when leaving home.  
Have microlax enema before showering.

**Patient cancels**

Reason \_

Clinical care co-ordinator / OT receptionist advised.

**Signed by:**

—

## Appendix 14 – Patient cancellation form 1

PATIENT CANCELLATION FORM	
<b>PATIENT STICKER</b> URN: _____ NAME: _____ DOB: _____	
PROCEDURE DATE:	DATE CANCELLED:
PROCEDURE: _____	
CANCELLED BY:	CONTACT NO.:
CONSULTANT:	TEAM:
REASON FOR CANCELLATION: _____	
<b>ENDOSCOPY BOOKINGS ONLY</b> REBOOK - YES NO Rebooking Time Frame: _____ IF PATIENT IS CANCELLING FOR PERSONAL/SOCIAL REASONS, PATIENT MUST RING AND REBOOK THROUGH ENDOSCOPY BOOKINGS (1300 559 083 – OPT:1) PLEASE PUT COMMENT STATING THAT PATIENT HAS BEEN INFORMED IN HBCIS	
<b>PLEASE TICK ONCE INFORMED</b> <div style="display: flex; flex-direction: column; gap: 5px;"> <div><input type="checkbox"/> FLOOR COORDINATOR / NUM</div> <div><input type="checkbox"/> AO's – EMAIL TO GAYE/CATH/ALLISON/PRE ADMISSIONS/BOOKINGS</div> <div><input type="checkbox"/> PACU / ADMISSIONS</div> <div><input type="checkbox"/> NIC NOTIFY CSSD / WARD / BED MANAGER</div> </div>	
HAS PATIENT BEEN CANCELLED IN: ORMIS <input type="checkbox"/> ESISS <input type="checkbox"/>	
On Completion - <b>SCAN &amp; EMAIL TO APPROPRIATE BOOKING OFFICE</b> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <b>ENDOSCOPY</b>  <b>BOOKINGS</b>  <b>ORTHOPAEDIC</b>  <b>ECT</b> </div> <div style="width: 65%;">           Endoscopy_Referrals@health.qld.gov.au            Operation_Bookings@health.qld.gov.au            GCH_Ortho_theatre-bookings@health.qld.gov.au            ECT Nursing Staff Gold Coast         </div> </div>	
Processed by: _____ AO: _____ RN: _____	
<input checked="" type="checkbox"/> pt visited pre-admission office, if yes, date: _____ (also for pre-anesthehc)	

## Appendix 15 – Patient cancellation form 2

GCUH OPERATING THEATRE PATIENT CANCELLATION FORM	
Patient Sticker	
UR:	
NAME:	
DOB:	

Procedure Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Date Cancelled: \_\_\_\_/\_\_\_\_/\_\_\_\_

Procedure: \_\_\_\_\_

Cancelled By: \_\_\_\_\_ Contact No: \_\_\_\_\_

Consultant: \_\_\_\_\_ Team: \_\_\_\_\_

Reason for Cancellation (Please give detailed reason for patient being unfit etc).

Please Tick

- ☐ Operating theatre floor coordinator / Anaesthetic- PACU Floor Coordinator / NUM informed
- ☐ Administrative staff at front desk notified
- ☐ PACU / Admission staff notified
- ☐ Bed manager notified
- ☐ Ward notified
- ☐ Documented in EMR

Has the patient been cancelled in ORMIS? ☐ HBCIS ☐

Time Discharged: \_\_\_\_\_

### On Completion

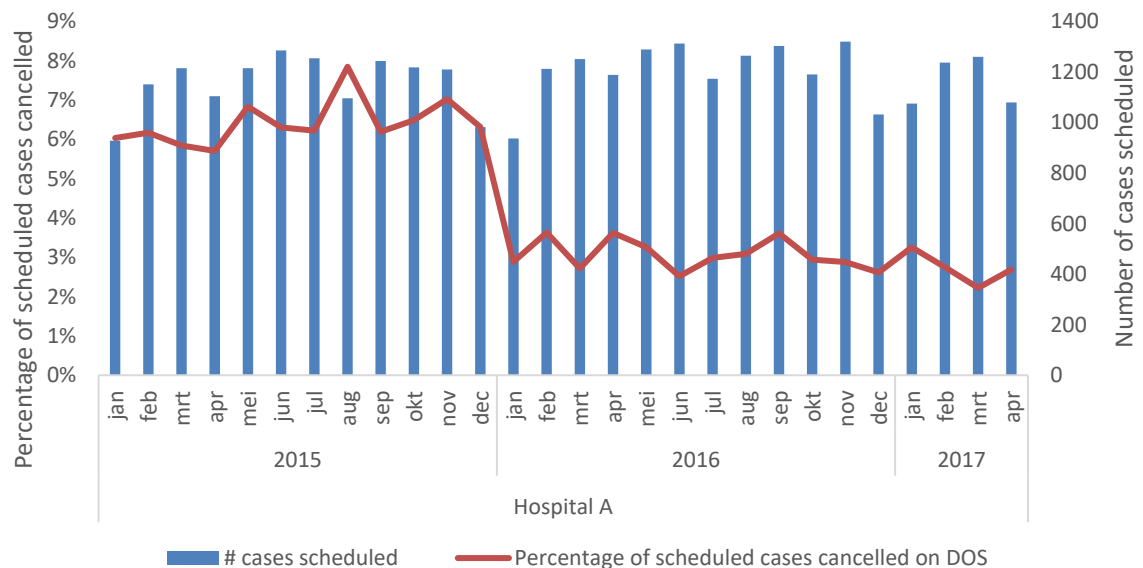
Scan & email form to:

Operation Booking: [Operation.Bookings@health.qld.gov.au](mailto:Operation.Bookings@health.qld.gov.au)

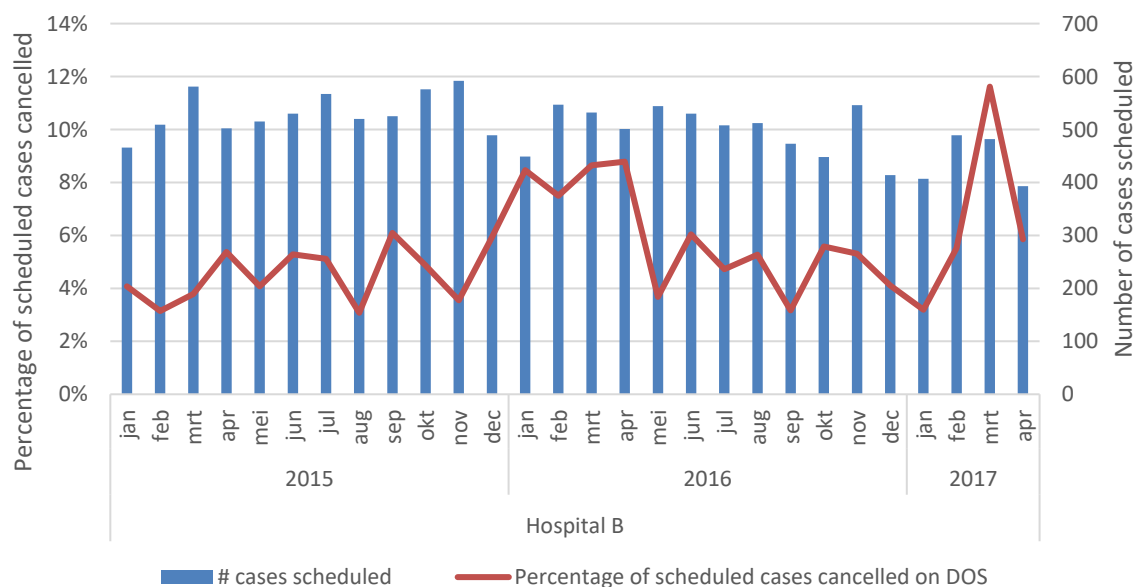
Processed by: \_\_\_\_\_ (name)

## Appendix 16 – Number of cases scheduled and % scheduled cases cancelled on DOS at Hospital A and Hospital B

Number of cases scheduled and % scheduled cases cancelled on DOS at Hospital A

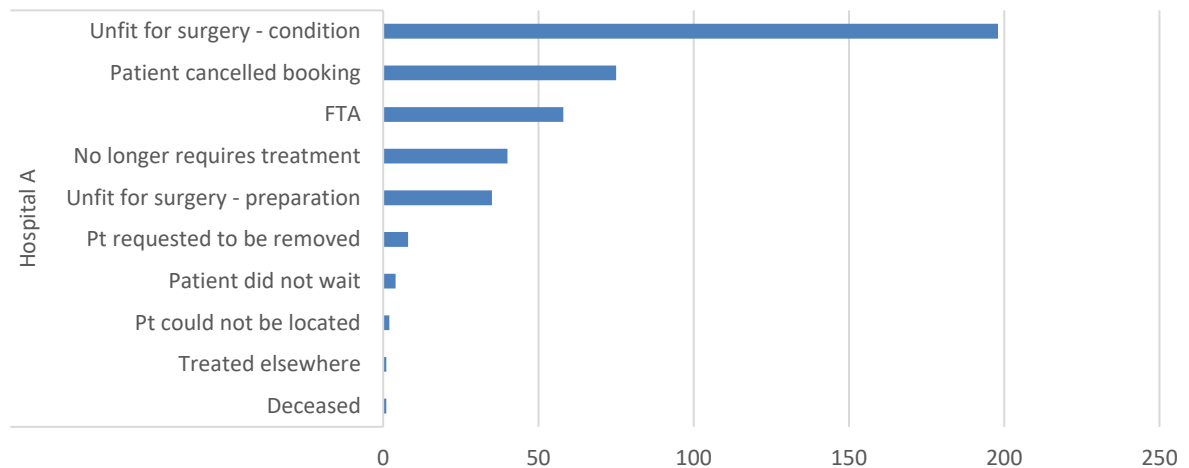


Number of cases scheduled and % scheduled cases cancelled on DOS at Hospital B

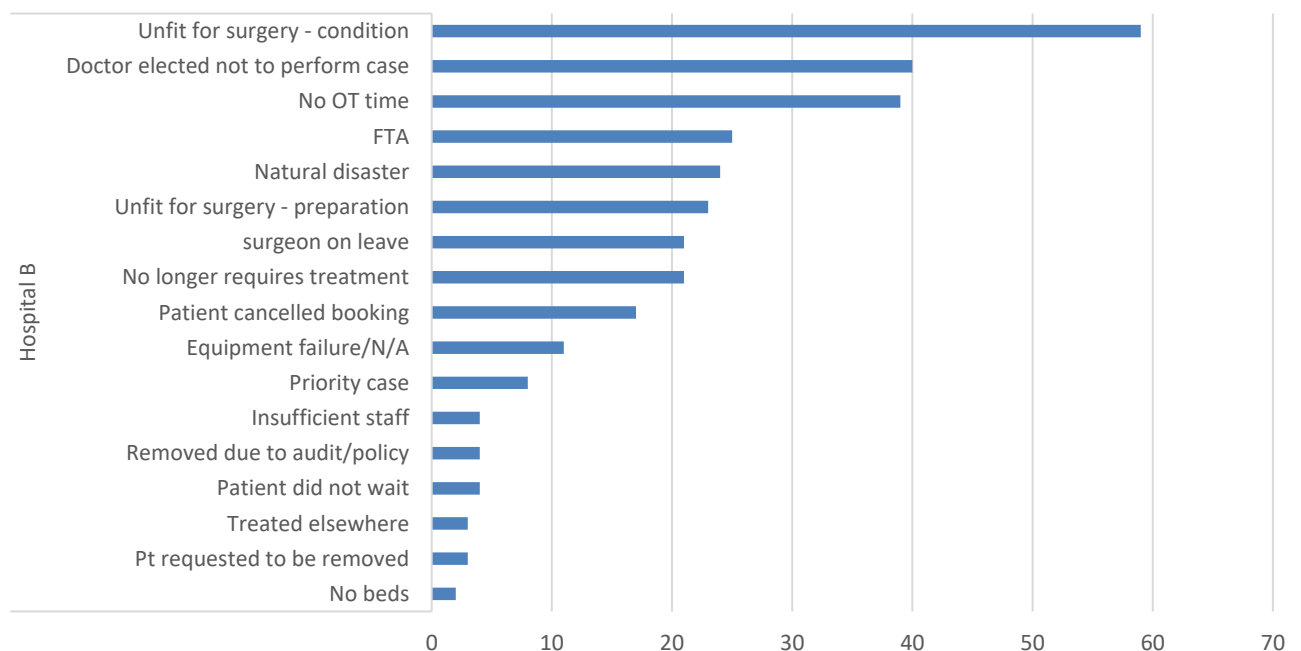


## Appendix 17 – Number of cancellations on DOS per category at Hospital A and Hospital B (period May 2016 to April 2017)

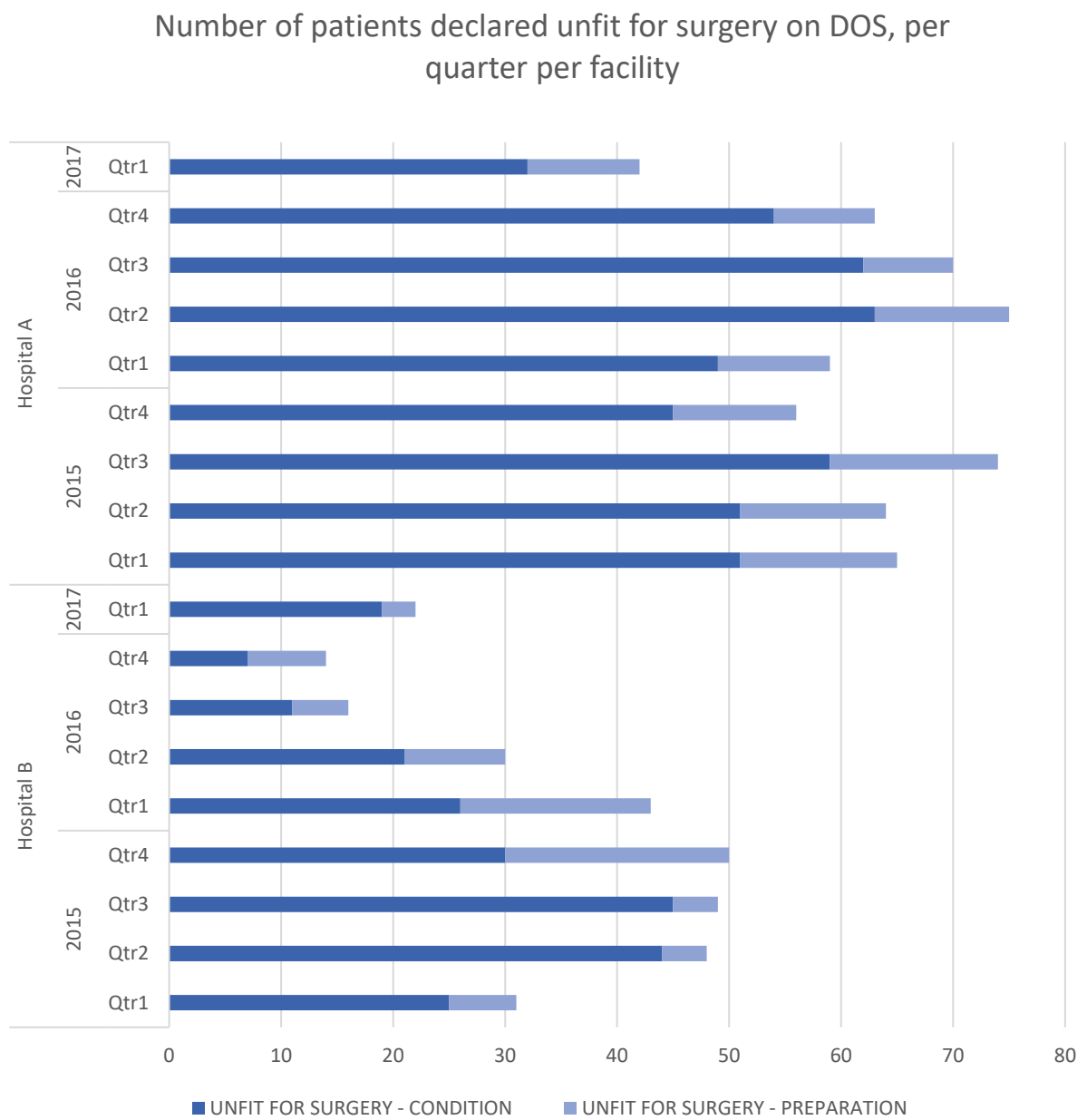
Number of cancellations on DOS per category at Hospital A  
(Period: May 2016 - April 2017)



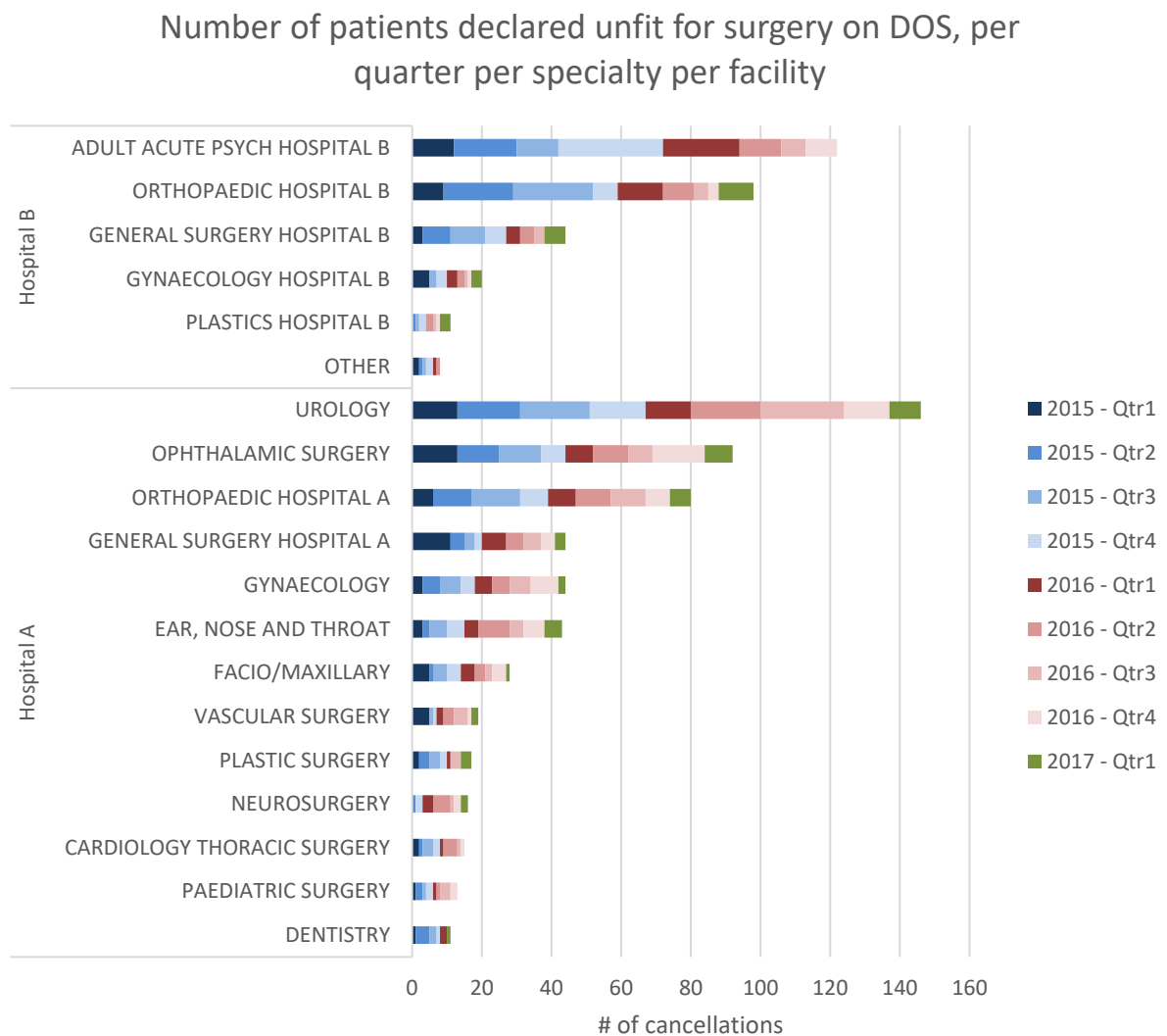
Number of cancellations on DOS per category at Hospital B (Period: May 2016 - April 2017)



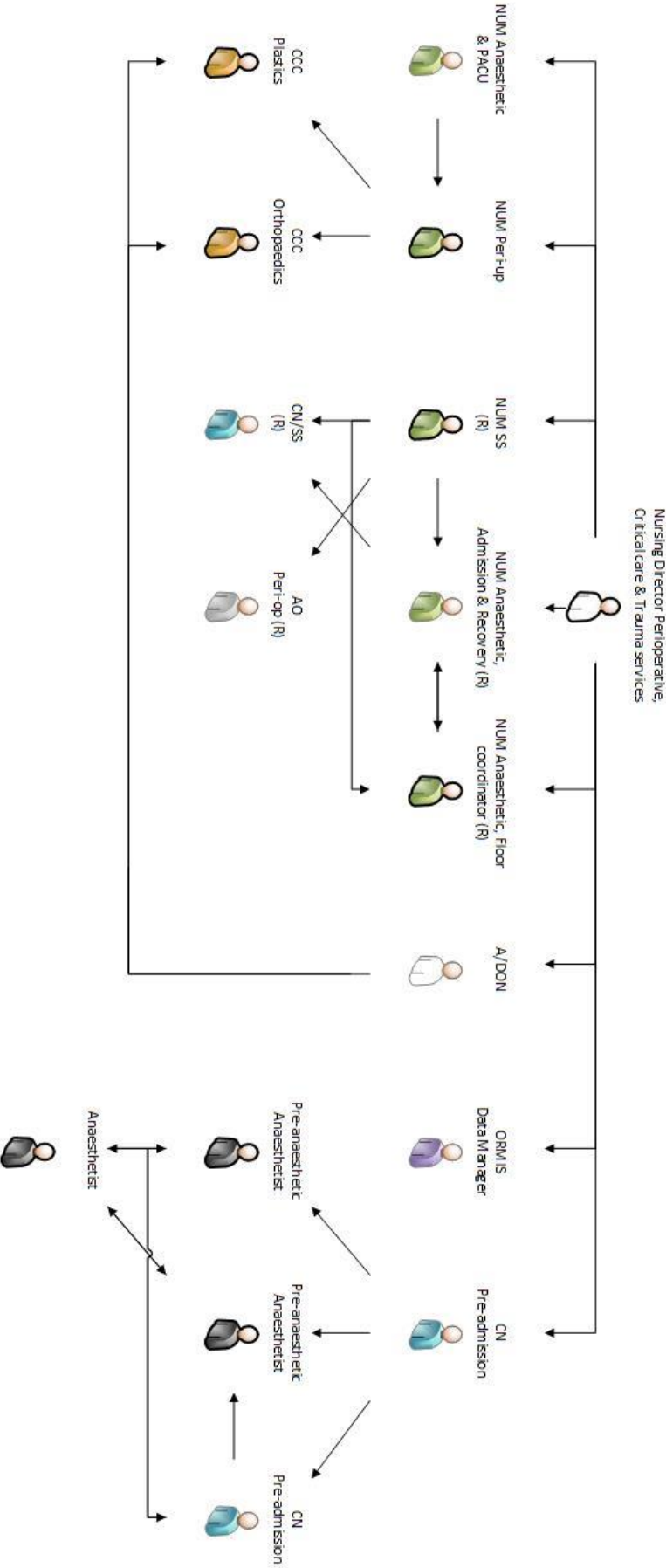
## Appendix 18 – Number of patients declared unfit for surgery on Day Of Surgery, per quarter per facility



## Appendix 19 – Number of patients declared unfit for surgery on day of surgery, per quarter per specialty per facility



Appendix 20 – Participant tree





## Appendix 21 – Recruitment email

### Recruitment email

Hi \_\_\_\_\_, ... ,

I'm a visiting scholar at Griffith University and currently working on this project within HOSEQ. You may have already received an email/heard from ... about some research we are currently working on.

This research is an extension of the theatre performance project and focusses on cancellations on the day of surgery due to a patient being declared unfit. ... pointed out that it might be useful for us to talk to you regarding this matter. Please find attached the supporting documents for some further information.

We would very much like to interview you and get your perspective on this matter.

If you have any questions please don't hesitate to simply reply to this email or call me on [+61498608270](tel:+61498608270).

Kindest regards,  
Peter Bartels

## Appendix 22 – Research participant information statement

# Research Participant Information Statement

Creating a tool to identify the factors influencing on the day surgery cancellations

Mr Peter Bartels  
Professor Anneke Fitzgerald  
Mrs Jennifer Kosiol

### (1) What is the study about?

More efficient and effective health services are called for in order to keep up with demand for (inter)national performance targets and increasing demand for health services (Annual Report 2014-2015). The Queensland Public Health Operating Theatre Efficiency (QPHOTE) report presents an analysis of performances of the 16 Hospital and Health Services (HHSs) within Queensland. It reported that during 2014-2015, a total of 125,566 elective and 60,485 emergency surgeries were performed in Queensland. The report concluded that there is potential for all Queensland's public hospitals (QPH) to improve their theatre efficiency (QPHOTE - Volume I, 2016).

The large public-sector healthcare organisation in South East Queensland (HOSEQ) is included in this analysis. The Queensland Audit Office (QAO) used data from the Operating Room Management Information System (ORMIS) for their analysis. This system has standardised reasons for cancellations, one of those reasons is 'Unfit for surgery' either due to a patient's condition or their preparation for surgery. One of the most notable findings within the HOSEQ is the increased percentage of cancellations on the day of surgery due to patients being declared unfit. It is unclear why so many patients are declared unfit, which has led to this research.

By developing a data collection tool, we will learn more about the reasons for cancellation of elective patients on the day of surgery from an organisational point of view. We will analyse the factors that cause cancellations on the day of surgery with the view of reducing the cancellation rate.

### (2) Who is carrying out the study?

The research is being conducted by Mr Peter Bartels who is a scholarly visitor from the University of Twente, The Netherlands, under the supervision of Professor Anneke Fitzgerald, Griffith University and Mrs Jennifer Kosiol, A/Service Director Perioperative, Critical Care & Trauma Services.

The research studies contribute to Mr Peter Bartels studies for the award of the Master Industrial Engineering and Management, track Health Care and Technology Management at the University of Twente.

**(3) What does the study involve?**

Participants in this study will be involved in an interview of around 45 minutes. The researcher will also collect data related to the study by examining documents and observing practices over a 3-month period from May till July 2017.

**(4) How much time will the study take?**

Data collection will take approximately 3 months to complete. This includes 3 months of observations, and interviews with 20 participants (or until data saturation reached). Participating in this study will take 45 minutes.

**(5) Will I incur any costs by participating in the study?**

There are no costs associated with participating in this study.

**(6) Can I tell other people about the study?**

Participants may share information about this project with others.

**(7) Will I receive the results of the study?**

The organisation will receive a short organisational report, including a prototype data collection tool and recommendations based on the findings of this report. If you would like a copy of this report please email Peter directly at: [p.h.g.bartels@student.utwente.nl](mailto:p.h.g.bartels@student.utwente.nl)

**(8) Confidentiality and disclosure of information**

Any information that is obtained in connection with this study will remain confidential and will be disclosed only with your permission, except as required by law. If you consent to participate in this study, we plan to discuss and publish the results to Hospital A and Hospital B managers and in academic publications/conferences. In any publication, information will be provided in such a way that you cannot be identified.

**(9) Can I withdraw from the study?**

Participation in this study is voluntary - you are not under any obligation to consent and - if you do consent - you can withdraw at any stage without affecting your relationship with the HOSEQ. You can withdraw your consent by advising the researcher either verbally, via email, or by completing and returning the 'Participant Withdrawal of Consent Form' that is supplied herein.

You may stop the interview at any time if you do not wish to continue. The audio recording will be erased and the information provided will not be included in the study.

**(10) How can I obtain further information?**

When you have read this information, Peter Bartels will discuss it with you further and answer any questions you may have. If you would like to know more at any stage, please feel free to contact either the researcher or Professor Anneke Fitzgerald at ([Anneke.fitzgerald@griffith.edu.au](mailto:Anneke.fitzgerald@griffith.edu.au))

**(11) What can I do if I have a complaint or a concern?**

Any concerns or complaints about the conduct of this study should be directed to the:

Details HOSEQ

Any complaint will be investigated promptly and you will be informed of the outcome.

<b>This information sheet is for you to keep.</b>
---

## Appendix 23 – Research participant consent form

### ***Creating a tool to identify the factors influencing on the day of surgery cancellations.***

#### **RESEARCH PARTICIPANT CONSENT FORM**

Researcher: Peter Bartels

0498608270

[p.h.g.bartels@student.utwente.nl](mailto:p.h.g.bartels@student.utwente.nl)

I \_\_\_\_\_, agree to participate in this research. I have read the Research Participant Information Statement and had any question I have about the research answered for me by the researcher.

---

Name of Research Participant (*First name and Surname*)(*Print*)

---

Research Participant Signature

Date

---

Researcher's Signature

Date

## Appendix 24 – Research participant withdrawal of consent form

***Creating a tool to identify the factors influencing on the day of surgery cancellations.***

### RESEARCH PARTICIPANT WITHDRAWAL OF CONSENT FORM

You can withdraw your participation consent by advising the researcher verbally, via email to [p.h.g.bartels@student.utwente.nl](mailto:p.h.g.bartels@student.utwente.nl) or by returning this completed form to Professor Anneke Fitzgerald, G42, Parklands Drive, Southport 4222, Building 5, Room 14.

Researcher: Peter Bartels

0498608270

[p.h.g.bartels@student.utwente.nl](mailto:p.h.g.bartels@student.utwente.nl)

I hereby wish to **WITHDRAW** my consent to participate in the research proposal described above and understand that such withdrawal **WILL NOT** jeopardise my relationship with the HOSEQ.

---

Research Participant Name (*Print*)

---

Research Participant Signature

---

Date

## Appendix 25 – Interview schedule

Question	Purpose
1. Could you tell me a little bit about your role at HOSEQ?	Introduction/demographic
2. How are you involved with the patient when they come into the hospital for their surgery. Do you see them, talk to them? Are you involved with the preparation for treatment, prior to admission? How exactly? Face to face or administratively only?	Determine stakeholder's involvement
3. Which key informants are involved with the actual decision to cancel a patient on the day of surgery? Who is in charge of cancelling the case generally?	Stakeholder analysis
4. There are multiple reasons for on the day of surgery cancellations, in your opinion, is there an issue/problem with on the day of surgery cancellations? What are some of the key challenges facing 'on the day of surgery' cancellations?	Measure idea of importance/verify
5. How do you go about it when a case gets cancelled, which steps do you follow? What is the cancellation policy in Hospital A? Is the policy well known? Does the policy require reporting of the incident?	Process map/policy
6. How are these 'incidents' or cancellations reported? By whom? (with which data collection tool? Electronic?)	Existing reporting process/tool/system
7. What do you think the consequences are for staff when a case is cancelled? What do you think the consequences are for a patient when a case is cancelled?	Understanding impact
8. What information do you think is needed for reporting of cancellations?	Completeness of information
9. Who monitors the cancellation process?	Closing the loop
10. How would you change the process to minimise the amount of cancellations?	Stakeholder's perspective on improvements
11. Did we ask everything you have expected us to in this interview? Is there anything else you would like to add?	Verify completeness of questions

## Appendix 26 – Codes sorted into categories

### Codes

Communication in general  
 Communication w/ pre-admission  
 Communication from Hospital B  
 Communication from theatres  
 Communication w/ theatre staff  
 Communication from theatre to pre-admission  
 Communication about cancellation w/ pre-admission  
 Communication from CCC  
 Phone call from theatre  
 Proper investigation pre-admission  
 Patient not invited pre-admission  
 Wrong patient sent to pre-anaesthetic clinic  
 Patient who needed it not set to pre-anaesthetic clinic  
 Triaging patient  
 Pre-admission physician  
 Not enough anaesthetic appointments  
 Patient's health changes  
 Unwell day prior  
 Lack of health check  
 Verify patient wellness day prior  
 Patient failed to disclose unfit  
 Assess patient's fit-ness day prior  
 Patient become unfit  
 Follow-up actual reason  
 Discrepancy in reporting  
 Incorrect data in systems  
 Cancellation procedure  
 Reporting on communication w/ patient when cancelled  
 Monitoring cancellations  
 Bad reporting of cancellations  
 Cancellation reasons very general  
 Reporting of cancellation reason  
 Further categorise cancellations  
 No one responsible for following through  
 Patient's unawareness of risk  
 Informing about cancellation  
 Patient's unawareness of danger  
 Patient underestimates condition

### Category

Communication between staff  
 Communication between staff  
 Communication between staff  
 Communication between staff  
 Communication between staff  
 Communication between staff  
 Communication between staff  
 Communication between staff  
 Communication between staff  
 Pre-anaesthetic assessment  
 Pre-anaesthetic assessment  
 Pre-anaesthetic assessment  
 Pre-anaesthetic assessment  
 Pre-anaesthetic assessment  
 Pre-anaesthetic assessment  
 Wellness check  
 Wellness check  
 Wellness check  
 Wellness check  
 Wellness check  
 Wellness check  
 Wellness check  
 Follow-up  
 Follow-up  
 Follow-up  
 Follow-up  
 Follow-up  
 Follow-up  
 Follow-up  
 Follow-up  
 Follow-up  
 Follow-up  
 Patient education  
 Patient education  
 Patient education  
 Patient education



## Appendix 27 – Example of entries in databases ORMIS and HBCIS

10 latest entries from month April 2017. Database: ORMIS

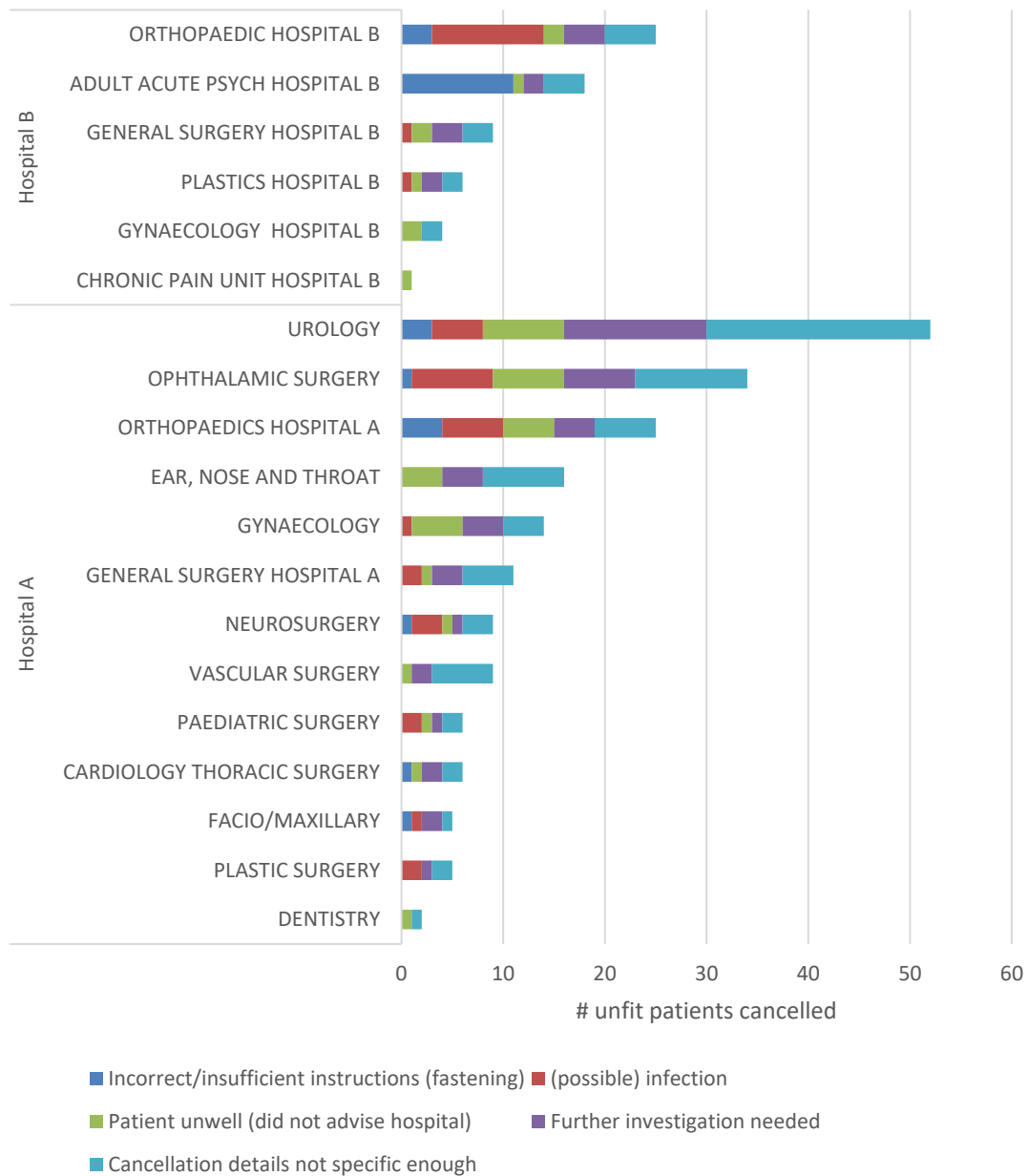
Facility	Specialty	Date	Cancellation category	Cancellation reason
Hospital B	ORTHOPAEDIC Hospital B	19-apr-17	UNFIT FOR SURGERY - CONDITION	PT HAS SORES NEAR OPERATION SITE
Hospital B	ORTHOPAEDIC Hospital B	19-apr-17	UNFIT FOR SURGERY - CONDITION	PT HAS LARGE ABRASIONS OVER LEFT HIP, KNEE AND LOWER LEG.
Hospital B	ORTHOPAEDIC Hospital B	19-apr-17	UNFIT FOR SURGERY - PREPARATION	AN MRI IS REQUIRED PRIOR TO OPERATION
Hospital A	DENTISTRY	20-apr-17	UNFIT FOR SURGERY - CONDITION	UNFIT CONDITION
Hospital B	ORTHOPAEDIC Hospital B	21-apr-17	UNFIT FOR SURGERY - CONDITION	WOUND ON OPERATIVE SITE
Hospital A	PLASTIC SURGERY	21-apr-17	UNFIT FOR SURGERY - CONDITION	INFECTION CLAMIDIA RIGHT EYE
Hospital B	GENERAL SURGERY Hospital B	24-apr-17	UNFIT FOR SURGERY - CONDITION	ASTHMA EXACERBATION
Hospital A	DENTISTRY	27-apr-17	UNFIT FOR SURGERY - PREPARATION	PT WAS GIVEN INCORRECT ADMISSION TIME & FASTING INSTRUCTIONS
Hospital B	ORTHOPAEDIC Hospital B	28-apr-17	UNFIT FOR SURGERY - CONDITION	INFLAMED OPEN LEG WOUND
Hospital A	PLASTIC SURGERY	28-apr-17	UNFIT FOR SURGERY - CONDITION	DR MADE THE DECISION TO WAIT A LITTLE BIT LONGER FOR SURGERY

10 latest entries from month April 2017. Database: HBCIS

Facility	Specialty	Date	Cancellation category	Cancellation reason
Hospital A	ONCOLOGY	19-apr-17	UNFIT FOR SURGERY - CONDITION	
Hospital B	ORTHOPAEDIC SURGERY	19-apr-17	UNFIT FOR SURGERY - CONDITION	**30 min** HOSPITAL B REG LIST
Hospital B	ORTHOPAEDIC SURGERY	19-apr-17	UNFIT FOR SURGERY - CONDITION	OT CX HOSPITAL A 22.3.17 - REBOOKED HOSPITAL B FELLOW LIST 1
Hospital A	ORTHOPAEDIC SURGERY	19-apr-17	UNFIT FOR SURGERY-PREPARATION	FELLOW LIST HOSPITAL B R1
Hospital A	DENTAL	20-apr-17	UNFIT FOR SURGERY - CONDITION	UNFIT CONDITION
Hospital B	ORTHOPAEDIC SURGERY	21-apr-17	UNFIT FOR SURGERY - CONDITION	FB
Hospital A	PLASTIC & RECONSTRUCTIVE SURG.	21-apr-17	UNFIT FOR SURGERY - CONDITION	++ +/- LOCAL FLAP + RT EAR HELIX ** CAT 1 **
Hospital A	DENTAL	27-apr-17	UNFIT FOR SURGERY-PREPARATION	SANA R/V
Hospital B	ORTHOPAEDIC SURGERY	28-apr-17	UNFIT FOR SURGERY - CONDITION	PLATT LIST HOSPITAL B
Hospital B	PLASTIC & RECONSTRUCTIVE SURG.	28-apr-17	UNFIT FOR SURGERY - CONDITION	DR MADE THE DECISION TO WAIT A LITTLE BIT LONGER FO

## Appendix 28 – Number of patients declared ‘unfit for surgery’ for top five ‘category details’ per specialty per facility between May 2016 and April 2017

Number of patients declared 'unfit for surgery' for top five 'category details' per specialty per facility between May 2016 and April 2017



## Appendix 29 – Revised cancellation form

# HOSEQ OPERATING THEATRE PATIENT CANCELLATION FORM

Patient sticker URN: Name: DOB:	
Procedure date: __/__/__	Date cancelled: __/__/__
Procedure:	
Cancelled by: Consultant: Patient informed by: Message conveyed to patient:	Contact no: Team:
Reason for cancellation:	
<b>NOTE: Make sure to tick the cancellation category and sub-category at the back of this form.</b>	
Clinical urgency category: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3	
Please indicate whether and when patient visited: <input type="checkbox"/> Pre-admission clinic on: __/__/__                      and/or <input type="checkbox"/> Pre-anaesthetic clinic on: __/__/__	
Please tick once informed: <input type="checkbox"/> Operating theatre floor coordinator/anaesthetic-PACU floor coordinator/NUM <input type="checkbox"/> Administrative staff at front desk <input type="checkbox"/> PACU/Admission staff <input type="checkbox"/> Bed management <input type="checkbox"/> Ward	
Please tick once cancelled in: <input type="checkbox"/> EMR <input type="checkbox"/> ORMIS <input type="checkbox"/> HBCIS	

On completion scan & email form to Operation booking:  
[Operation.Bookings@health.qld.gov.au](mailto:Operation.Bookings@health.qld.gov.au)

Processed by RN: \_\_\_\_\_ (name)                      AO: \_\_\_\_\_  
(name)

## Cancellation category & subcategory

- ☐ Unfit for surgery – condition
  - ☐ Further investigation needed
  - ☐ Patient unwell (did not advise hospital)
  - ☐ Patient unwell (did advise hospital)
  - ☐ ...
  - ☐ Other, ...
- ☐ Unfit for surgery – preparation
  - ☐ (possible) infection
  - ☐ Incorrect/insufficient instructions (fasting)
  - ☐ Incorrect/insufficient instructions (medication)
  - ☐ Consent missing/incomplete
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ Other, ...
- ☐ No longer requires treatment
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ Other, ...
- ☐ Treated elsewhere
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ Other, ...
- ☐ Patient could not be located/contacted
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ Other, ...
- ☐ Deceased
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ Other, ...
- ☐ Patient requested to be removed
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ Other, ...
- ☐ Patient cancelled booking
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ Other, ...
- ☐ Failed to attend – Preac appointment
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ Other, ...
- ☐ Failed to attend – Day of surgery
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ ...
  - ☐ Other, ...
- ☐ Patient did not wait
  - ☐ ...
  - ☐ Other, ...

## **Appendix 30 – Abstract accepted for presentation at SHAPE symposium**

### **Quality improvement science in health services management: a framework**

Quality improvement science aims to overcome the gap between ideal and actual care (Shojania, McDonald, Wachter, & Owens, 2004), in order to attain positive transformation in a healthcare process or service. This transformation is greatly dependent on the local situation (Itri, et al., The Science of Quality Improvement, 2017).

Much is written about methods and tools for quality improvement science. However less is known about how to actually find the root cause of the problem. A frequent occurring problem in quality improvement science is that potential solutions are tested before the problem is fully understood (Chao, 2007). Without knowing the problem, the purpose of the research cannot be defined and implementation of potential solutions is likely to be sub-optimal.

This paper presents a conceptual framework which can assist the researcher identifying the root cause of the problem(s). The first step within this framework involves identification of who matters and why. Salient stakeholders can be found by using stakeholder analysis. Step two uses interviews with stakeholders, document analysis and field observation, in order to identify key terms, articulate the problem and decide on problem measurements. Step three of this framework is to develop an intervention protocol with which data on the problem can be gathered. This data will be used in order to attain a positive transformation in the process. Hence, this conceptual framework suggests a structured way of identifying the root cause of the problem(s) and therefore contributes to quality improvement science in health services management.

*Impact: Direct reference to the contribution in the proceedings of the conference.*