The Sahlgrenska Academy

Priority setting for acute surgery procedures

- How to prioritize acute surgeries?
A case study of the Skaraborg Hospital Group (SkaS) improvement process.

Part A Literature Review

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Overall Literature Review

1. Background.

Accessibility, availability, and high quality are considered important objectives in the Swedish health care system (SFS 2017:30). Providing care on equal terms to all inhabitants is the main goal stated in the Swedish law (SFS 2017:30). Daily, healthcare faces various forms of prioritization situations where it must be decided how to use the limited resources available to provide care on equal terms (Vårdanalys, 2020). Over the past 20 years, these prioritization decisions have become increasingly difficult, and it is predicted that the gap between available resources and the demand for health care will increase (Sandman, 2015; Stiernstedt, 2016). The increasing gap is due to demographic changes, biomedical and medical-technical development, medicalization, and a continuously increasing demand for health care (Sandman, 2015). Thus, it has become medically possible to help more and more patients at the same time as there are no resources for all the care that is possible (SOU, 2016). Hence, a recent report from Sandman (2015) illuminates that it is critical to develop guidelines for horizontal priorities to translate the ethical platform into practical guidance for care professionals.

The current guidelines for priorities in healthcare are based on the ethical platform from 1997, which forms the basis for priorities and ethical considerations in all situations at all levels of healthcare - from the clinical level to overall governance (Vårdanalys, 2020). The purpose of the guidelines is to ensure that priorities are set in accordance with and on the grounds decided by the government. For 20 years, the health service has since tried to follow this platform systematically. However, several everyday care situations have emerged where the platform does not appear to provide clear guidance or where the guidance is not in line with the intuitions that can occur in the situation (Sandman, 2015).

The aim of this overall literature review is to first scope the current frameworks, laws, objectives, and principles for priority setting in the Swedish health care system. The second part will explain

evidence-based practice and the theoretical definition of processes management to contextualize how prioritization is relevant to healthcare practice and indirectly to the population's access to healthcare. The chapter will finally present a detailed literature review on horizontal priorities focusing on acute surgery priority setting. The review aims to provide an overview of research pertaining to guidelines or models for how to practically prioritize acute surgical interventions within as well as between different surgical specialties – how these models have been constructed and assessed as well as the results they have led to.

2. Introduction to priority setting in the Swedish healthcare system.

For a long time, Sweden has had the ambition to provide an equal and fair health care system, but limited resources have made decision-making on how resources should be prioritized more difficult to achieve (Bergman et al., 2015). To prioritize means choosing something over something else. In a health care setting it can be choosing one treatment over another or that one patient is treated before another (VGR, 2005). The priority principles are based on the Swedish Health Care Act, which states that care must be provided on equal terms and that patients who have the greatest need for care must receive care first (SFS 2017:30). The concept of vertical prioritization involves the choice of measures within the department, diseases within a patient group, or different forms of treatments for an individual patient (SOU, 2001). The concepts of horizontal prioritization are used for the choices of measures made between different departments, clinics, or disease groups. Before discussing medical priorities in detail, the key principles in Sweden, on which decision-making is based are presented below. Three principles govern the legal framework for priorities in Sweden in the healthcare legislation from 1997: The human value principle, the needs and solidarity principle, and the cost-effectiveness principle (SFS 1996/97:60). According to government decisions, the three principles are ranked so that the human value principle takes precedence over the principle of need and solidarity, which in turn takes precedence over the cost-effectiveness principle.

2.1.1 The human value principle

The human value principle states that prioritization in the healthcare system should not be linked to a person's individual characteristics or function in society (SFS 1996/97:60). The prioritization of health care resources cannot be based on a person's social or economic status, income, age or gender, the principle considers the equal value of all people. Thus, the human value principle is ranked highest of the three principles.

2.1.2 The needs and solidarity principle

The need and solidarity principle states that health care resources should be allocated to those who have the greatest need, i.e., the people with the lowest quality of life and those in the most difficult conditions should be given priority (SFS 1996/97:60). Since the principle of need and solidarity has a higher rank than the third principle, the cost-effectiveness principle, the legislation presupposes that patients who suffer from more serious illnesses and have a significantly lower quality of life are given priority and are entitled to a higher cost of treatment (SFS 1996/97:60).

2.1.3 The cost-effectiveness principle

The cost-effectiveness principle is subordinate to the two previous principles, which means that there must be a reasonable relationship between costs and the effect of the treatment. If, for example, two different treatments have the same effect, the one that costs less should be chosen. The ratio most used in Sweden is kronor per won quality-adjusted life-year (QALY) and it should only be used for comparisons of treatments for less serious diseases or conditions, so the evaluation is fair (SFS 1996/97:60).

2.2 Medical priorities

The term medical priority often appears in discussions about priorities. The patient’s need for care is central in prioritization decisions. Need relates both to the patient's ability to assimilate treatment and the condition or severity of the illness. Patients only need interventions that provide

benefits i.e., measures that improve health and quality of life. Priority decisions are performed with a ranking of disease states. The more serious the condition is, and the more effective treatment there is, the higher the ranking of the condition and the measure (SOU, 2001). Necessary priorities must be perceived as reasonable and justified. Priorities are set both on a political and medical/professional level.

2.3 The priority groups.

The priority groups are the three ethical principles translated into disease states and patient groups with different needs (SOU, 2001). The priority groups are formed in a systematic way based on the principles. Some priority groups are obvious, for example, the health service has an absolute responsibility to help in life-threatening and acute illnesses. Other groups are less obvious and are therefore highlighted in the governments' decisions, for example, the care of seriously chronically ill, patients in need of palliative care, and care of people with impaired autonomy (SOU, 2001). The regional medical sector committee develops the priority guidelines for the health care staff. Priority decisions within specialized medical care should be based on the following principles (SOU, 2001): First, the priority groups I-IV specify to what group the patient belongs based on symptoms and/or diagnosis (figure 1).

Priority group I
• Care of life-threatening acute illnesses. Care of diseases that without treatment lead to permanent disability or premature death. Care of severe chronic diseases. Palliative care and end-of-life care. Care of people with impaired autonomy
Priority group II
• Prevention, habilitation and rehabilitation
Priority group III
• Care of less severe acute and chronic diseases
Priority group IV
• Care for reasons other than illness or injury

Figure 1. Priority Groups. Reference: SOU 2001

Second, priorities are then further detailed in an emergency matrix based on the degree of urgency, which describes possible consequences if care is not provided (figure 2.)

Degree of urgency matrix:

The patient is in a condition which, if no care is taken, entails:

1. Immediate threat to life
2. Risk of very serious injury, premature death, significant disability and unbearable situation
3. risk of serious injury, permanent damage or very low quality of life
4. risk of expected deterioration / non-maintained function ADL level
5. risk of significant inconvenience, increased morbidity, prolonged period of illness, reduced quality of life
6. risk of inconvenience, injury, permanent injury or low quality of life
7. likely increased risk of impaired health experience or non-optimal quality of life
8. possibly increased risk of morbidity, deterioration of functional level or quality of life
9. risk of reduced quality of life according to the patient's perception and science and proven knowledge does not contradict this
10. no risk of increased morbidity, impaired functional level or impaired quality of life

Figure 2 Reference SOU 2001:8 Degree of urgency matrix

The prioritization process also considers the type of procedure, such as surgery or medical treatment, as well as the effects, benefits and possible risks that exist in connection with the measure. Decisions are made on scientific evidence-based knowledge and the benefit is measured in relation to the cost. An accepted waiting time is then decided to depend on the level of care needed. These vertical priorities are set by the health care staff, usually within a particular medical specialty (SOU, 2001).

2.4 Priority work in Västragötalands Region

In all regions, the region's prioritization council prepares priorities within the medical specialties. The Prioritization Council consists of experts from several key areas of knowledge, such as

various medical specialties, ethics, health economics and coordinates the region's joint horizontal prioritization work. The health- and medical care committee and the regional board are responsible for the work. Vertical medical priorities are set by healthcare professionals. In the Västra Götaland region, medical sector councils prepare priorities within the medical specialties (VGR, 2005). Regional horizontal priorities concern decisions on the distribution of resources between different areas of the organization and between large disease groups, such as the distribution of resources between cardiology and surgery. This type of prioritization is mainly done by regional politicians.

The focus of the Västragötaland region's priority work is to handle the need for care, as the need is greater than the resources (VGR, 2019). The starting point in the work is the national prioritization model in figures 1 and 2, with specified issues, which above all aims to:

- Study what the prioritization looks like and then quality review it based on the available guidelines and scientific basis that already exists in the area.
- Set practical care perceptions against the ethical principles of how resources should be prioritized according to law.
- Use data to allocate available resources to those departments and units with the greatest need for measures that provide the greatest societal benefit.

To be able to prioritize according to the three ethical principles in ranking for the greatest possible benefit, a transparent and open prioritization based on a jointly designed platform is required in the region (VGR, 2019).

2.5 Discussions about priority setting.

It can be challenging for those who make the priority decision to determine at what stage and what cost is justifiable in relation to the measure in a serious situation (Sandman, 2015). The report *Styra mot horisonten:* from the Swedish Agency for Health and Care Analysis states that the needs principle now places higher demands on the decision-making bodies (Vårdanalys, 2020). The same report points out that when several patients in the same priority group have the

same need for care, the principles from authorities would be more helpful if they specified how to prioritize the patients in everyday care situations. In an effort to offer care based on needs between disease groups and patients from different departments competing over the same resources, the report claims that it is required that those formulating the guidelines for horizontal priorities also translate the ethical platform into practical guidance for care professionals. In addition, the report claims that clear goals for horizontal priorities in the regions are missing and that the principles in SFS 1996/97:60 and SOU 2001 are rather obscure in the practical work (Vårdanalys, 2020). According to the report, there is no common picture of how horizontal priorities should be formed in the practical goals by the requirements that are legally claimed (Vårdanalys, 2020). At both state and regional levels horizontal priorities are to some extent deficient (Vårdanalys, 2020).

Insufficient practical guidance is problematic because it is a prerequisite for managing the resources when demand is high and expected to increase (Sandman, 2015). The debate is focusing on horizontal prioritization since vertical priorities are primarily managed by the medical judgment of clinicians and therefore do not need to be questioned (Sandman, 2015). However, horizontal priorities indirectly affect how vertical priority settings are performed, since horizontal resource allocation between specialties determines how much space there is to treat patients within specialties – vertical priorities are balanced according to the horizontal distribution (Vårdanalys, 2020). The interesting gap in this debate is how horizontal priorities are perceived by the health care professionals because they sometimes face decisions to prioritize horizontally when patients compete for the same resource, for example, in an emergency room for surgery (Prioriteringscentrum, 2007; Riksrevisionen, 2004).

If we return to the problems in the Swedish health care system with low efficiency and long queues, and assume the report from Vårdanalys (2020) is pointing at one of the main problems when managing horizontal prioritization. Information, such as needs forecasts, measurements of

current goal fulfillment, and a system of horizontal priorities, is absent and fails to guide decision-makers when planning resources. In addition, support for health care professionals when facing horizontal prioritizing decisions – choosing which patient to receive care first – is also missing. Practically, this means that if informative guidelines and routines to develop better quality are provided to hospitals, they can handle the problems in a better way (Stiernstedt et.al, 2016).

3. Evidence-based practice to improve quality

Improved quality is almost always equated with increased efficiency in health care, and vice versa (SOU, 2016). Quality improvement, therefore, aims to ensure evidence-based, person centered, patient-safe, equal, accessible, and efficient care (VGR, 2017). Evidence-based practice involves a conscious and systematic use of several sources of knowledge for decision-making (Socialstyrelsen, 2020). Common sources of evidence-based practice are the best available knowledge or research, the professionals' expertise as well as information about the patients' experiences and desires (Socialstyrelsen, 2020). The context determines how the information is systematically collected from these sources – it can be local initiatives on medical guidelines or national contexts that apply to legislation in the field or compilations of local expert knowledge.

Transparency is an essential part of evidence-based practice, partly because it facilitates evaluation and learning in quality improvement processes (Hellström et al., 2015). In a health care context, this can imply that if an organization is driven to continuously improve according to evidence, they can control the occurring problems and develop guidelines to achieve better quality (Stiernstedt et.al, 2016). Sometimes, a national guideline may be of lesser relevance in a specific context, whereas professional expertise from a clinical worker may be of greater importance. Evidence-based work is based on social ethics –it is unethical to use interventions for which there is no evidence-based support (Socialstyrelsen, 2020). An alternative to better control the emerging and future problems in healthcare is to implement a daily practice that works more with evidence-based quality improvements. Managing production and resources by

matching them with available capacity is, from a public health perspective, attractive to everyone because it can balance resources and enable better accessibility, availability, and quality in the healthcare system.

Reports and research agree that health care must become more efficient to provide higher quality to meet the increasing demand (Bergman et al., 2015). Quality improvement in the health care context is an area that has expanded in the research community during the last decades. Bergman et al. (2015) describe successful principles and practices for quality improvements in a health care context. Additionally, they argue that quality improvement initiatives based on the abundance of data that exists in the system might increase the efficiency of the system significantly (Bergman et al., 2015). Glouberman & Mintzberg (2001) claims that participation from healthcare professionals is crucial for success in quality improvement processes in healthcare organizations. It is common for conflicting interests to emerge in complex organizations during change processes. Fear of unknown routines and aspects of incorrect communication and lack of competence can also be obstacles in quality improvement efforts (Sveningsson & Sörgärde, 2019). Even if resistance arises it can be an asset to consider – valuable improvement ideas might emerge from an initial critique of a change effort (Sveningsson & Sörgärde, 2019).

The more complex an organization is, and the more people involved, the greater the need to integrate the people who work within the organization for successful change (Glouberman & Mintzberg, 2001). However, to understand how an improvement process in healthcare regarding priority setting develops over time involving many co-workers in a complex system, a basic understanding of quality improvement is needed. The following section presents process management in a health care context and concludes how these concepts are linked to how priorities are discussed during an improvement project in a hospital setting.

4. Processes management.

The concept of process is often used in development projects in healthcare. The process concept is defined as a unique phenomenon and refer to the individual patient (Lifvergren, 2022). The process concept I aim to use is described as a common and recurring phenomenon or transformation of any kind of resource that aims to provide value to a customer (Bergman & Klefsjö, 2020; Modig, 2015). The concept assumes a perspective where the process is repeated over time and linked to continuous development to generate value-creating activities for the customer (Bergman & Klefsjö, 2020; Modig, 2015). The dominating customer in health care is the patient. (Bergman & Klefsjö, 2020; Modig, 2015). In process improvement all the co-workers who are involved in the process together map how key activities in the process are interlinked; what happens during the activities, who are responsible for the activities, whether the activities create value for the patient or not, and what outcomes the process leads to. Thus, process improvement creates a common understanding of the process, where co-workers together can learn retroactively from history to improve and develop the process to improve future results (Bergman & Klefsjö 2020). Processes are not results-driven but study *how* the improvement work takes place. By working with processes, it becomes easier to identify cause-effect mechanisms and how deviations or errors and unwanted variation can be minimized. The focus of care processes is understanding how the patient's needs are met in the system (Lifvergren, 2022). Thus, to get an overview of how prioritizations are carried out and improved in daily operations pertaining to acute surgery, the overall literature overview also entails a detailed review on this specific theme.

5. Detailed Literature Review: Research of delays and priority setting for acute surgeries.

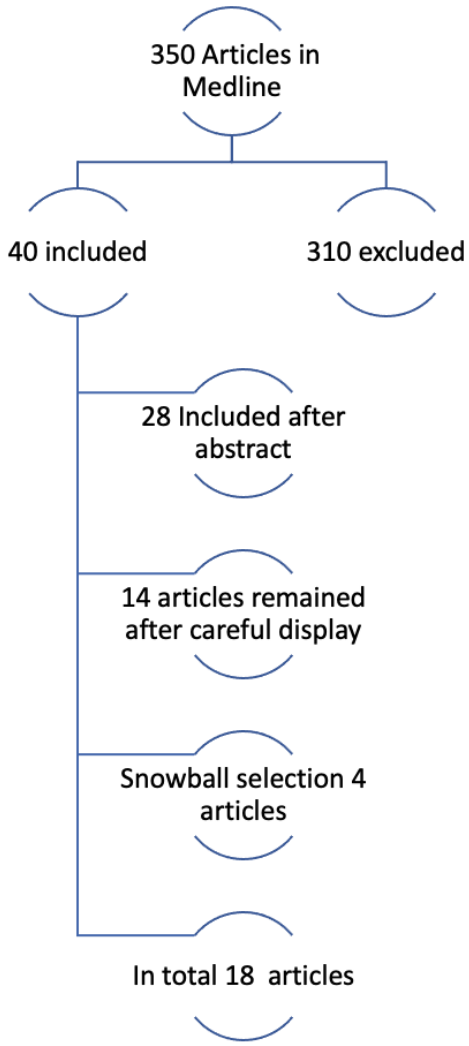
The detailed literature review presents current research on how to practically prioritize acute surgeries since the case study in part B deals with this specific area patients are presented.

5.1 Data collection and search strategy

A literature review provides an assessment of a research area and entails an overview of a scientific field connected to the researched subject (Snyder, 2019). Thus, a literature review

was conducted that focused on priority setting for acute surgeries and causes of delays. Reports related to principles for prioritization and healthcare processes were included. Articles were selected based on relevance, for example, having similar health care systems and conditions to distribute care. All included articles were published on or after year 2000 since there did not appear to exist previous studies on acute surgery priority setting before that. The database MEDLINE was chosen since it covers almost 30 million articles from 7000 journals published internationally concerning literature on biomedicine, including the allied health fields and biological and physical sciences, humanities, and information science as they relate to medicine and health care. The data search was performed during the period of January 16 to March 20, 2022. The initial screening was done using keywords (see table 1) and resulted in 350 identified articles related to priorities for acute surgery. During this search, I received professional help from the librarian at the Skaraborg Hospital Group (SkaS) to add filters for sorting, as the first searches yielded several thousand results. The screening and process of the literature review are shown in table 1 and the procedure of adding search filters in MEDLINE is found in Appendix 1. Not all articles are included in the section literature review, but in connection with reading they gave a good overall picture of the subject. Table 1 shows an overview of the search.

Table 1: The approach used to carry out parts of the review for this study.



Process of the literature review.
1. Keywords selection
The keywords represent the research area for this study: Priority setting, acute or emergency surgery.
2. Searching in MEDLINE
The literature search was done by using keywords in Medline. Filters were used during the search to display the most relevant articles to the topic shown in appendix 2, resulting in 350 relevant articles in the endnote library. All the relevant articles from the search operation were gathered at first and sorted by heading which excluded 310 articles.
3. Reading and Analysing
The 40 included articles were skimmed down by abstract and conclusion of the research to decide whether they were relevant to apply in the review or not. 28 articles were judged to be relevant and they were read more carefully and sorted out into 14 articles, that were read completely and some of them were included in the literature review. 4 additional articles were included by a snowball selection from the references in the read articles. In total 18 articles were read.
4. Discussing the Literature
The articles are used in mainly the literature review, part A, either to show examples of studied frameworks for priority setting or to support perspectives and arguments on the subject. The literature is discussed to help get an overall understanding of the research field and compared with the study's empirical data found in the analysis and discussion of the case.
5. Reference management
All articles and literature used in this case study, including the literature review chapter are cited and listed in the reference list by APA7 style with the program endnote.

The 18 articles found can be attributed to two themes: Delays in acute surgical procedures (ten articles) and, Priority setting in Surgery (eight articles). Several of the articles concerning delays were similar and examined reasons for *delays* and intervention models for handling patients for acute surgery. The articles for *prioritization* contain different frameworks used to set priorities by color coding. The most relevant articles are presented in the next section.

5.1.1 Delays in acute surgical procedures

More than 20 years ago Lankester et al (2000) claimed that there were no published guidelines for what constitutes or is considered a reasonable delay between admission and time for surgery. Lankester et al. (2000) conducted a local audit within a unit to examine the structure and process

of orthopedic trauma patients at the clinic. The examination lasted for 3 months and 34 % of the acute orthopedic cases that required surgery, within each group, were delayed beyond the target time. Moreover, 87% were delayed due to a lack of available operating time or a lack of an available surgeon. Out of all the acute cases, 15% were performed at times normally used for elective planned surgeries (Lankester et al., 2000).

Lankester et al. (2000) study shows that the practice at the time did not agree with the standards that they considered to be ideal. Although the study is limited to orthopedic acute cases their findings indicate that the time limit set by default is essentially arbitrary. Thus, the article represents an invitation to find consensus and encourages a dialogue for further opinions on what should be considered "best practice" regarding time limits for acute surgeries. The study indicates that regardless of which time goals are considered best practices, an improvement is required to utilize the resources more efficiently to minimize the backlog. Although this article was written over 20 years ago, later publications show similar findings.

Caesar et al. (2018) collected longitudinal data at a Swedish hospital on waiting times for acute orthopedic surgery to evaluate and describe the number and causes of delays. Their results show that 24% of approximately 36,000 surgeries planned as acute surgery was rescheduled and delayed, sometimes even several times before receiving their treatment. The result is lower than Lankester et al. (2000) results and reveals that the issue is still prevalent. In Caesar et al. (2018) study the main finding explaining the root causes of the delays showed that 81% of the delays were due to internal organizational causes. The two most frequent internal reasons were that another emergency operation was given higher priority or there was an unexpected prolongation of ongoing surgery (Caesar et.al, 2018), The most important finding was that the high proportion of delays was constant during the seven years of the study. Further, the high frequency of rescheduled acute surgeries, 24 % had their surgery delayed at least once, was explained by

internal reasons. However, the study was limited to orthopedic patients at a single university hospital so it is difficult to generalize their results to other clinics.

Both Caesar et al. (2018) and Lankester et al. (2000) studies present vertical prioritizes between orthopedic patients but *within a specialty*, which limits their relevance for how delays occur when different specialties that share the same resources and operating rooms prioritize patients *between specialties*. However, like other studies, Cesar's study reveals that internal reasons cause delays. Most delays occur when acute patients with higher priority appear, e.g., patients from other specialties, which causes further changes in the schedule. Further, they also highlight the need for hospitals and clinics to continuously improve the preoperative planning processes by identifying root causes of inefficiency to decrease acute surgery cancellations (Caesar et al, 2018).

Most research studies within the area of planning and prioritizing surgery focused on electively scheduled surgeries and planned care (Cardoen et.al, 2010). The shortcomings in the elective operations are affected and caused by the acute patients, who compete for the same resources (Cardoen et.al, 2010). Research here indicates that elective and acute flows should be separated, but the opinions are not homogenous.

Faryniuk and Hochman (2013) tested an alternative variant by changing the way they handle the patient flow of acute surgery patients. Unlike Bowrey et al. (1997), discussed below, they designed an emergency care service (ACSS) to change and improve the care process for non-trauma surgical patients. They chose to separate flows so as not to compete with the electively planned surgery. Faryniuk and Hochman (2013) assessed the effect of ACSS retrospectively. The results implied a doubling of patient volume management after the ACSS team was established. The study is limited to three surgical patient groups with specific diagnoses. However, the onset of ACSS significantly reduced the duration of the surgical consultation despite an increased patient load, the time from admission to surgery after ACSS was established was retained.

Bowrey et al. (1997) and Navarro & Hardy (2017) suggested that an early assessment by a senior surgeon or anesthesiologist at the emergency ward would significantly reduce the number of surgical admissions not only in acute scenarios but also regarding admissions from general practitioners in primary care. However, Bowery et al. (1997) study could not show data to support the claim that a significant reduction in intake size would be achieved through early assessment by a senior surgeon. In addition, the appropriateness of having seniors for assessment was questioned as it may involve sacrificing other clinical work and is likely to result in a reduction of surgical training and inadequate use of resources (Bowrey et al., 1997).

Navarro & Hardy´s (2017) model for patients presenting to emergency departments or general practitioners in primary care was managed at their unit by a new service, the surgical triage unit (STU). To manage key issues such as high rates of admissions, inappropriate referrals, long waiting times, and prolonged senior input for surgeries at the unit an STU consultant's early intervention for risk stratification of patients for acute surgery was tested. The STU consultant then admitted the patient to the appropriate emergency on-call consultant. Outside office hours the STU function was the same, but the referral phone was connected to senior surgical registrars on duty. An early risk stratification from a more senior was successful in the study. The new model, STU, is claimed to have improved clinical efficacy, patient satisfaction, and gave better clinical outcomes, such as a reduction in admissions of acute general surgery patients by up to 15% and almost a full elimination of incorrect attendances (Navarro & Hardy, 2017). The researchers encourage other units to consider implementing similar service models and improvement programs.

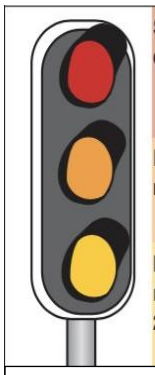
5.2 Priority setting in Surgery.

Triage is the scanning process that aims to assess the severity of a patient’s condition from a disease. The process is of paramount importance when resources are insufficient in relation to demand and is initiated to avoid resource exhaustion (Kluger et al., 2013). In 2013 the World

Society for Emergency Surgery Study Group (WSES) recommended the use of a color system to assess and classify emergency surgeries to reduce the loss of information and to allow the establishment of standardized decisions among the professionals (Kluger et al., 2013). Timing of Acute Care Surgery (TACS) is based on a survey from a panel of different medical specialists about the ideal time for more frequent emergency surgeries (Kluger et al., 2013). Color-coding the severity of the illness will enable the use of a standardized language among the surgical team at the department as well as between the departments managing acute surgical cases in other specialties and will permit better documentation and improved quality according to Kluger et al., 2013. Their argument is that the timing of surgical intervention is critical for patients in need of acute surgery. Therefore, all surgery disciplines should have an agreed data-based time frame that is linked to various color codes Although literature and knowledge exist regarding the optimal timing of various acute surgical interventions, implementation of a matrix for triage is lacking (Kluger et al., 2013). The theoretical triage system by WSES in Kluger et al. (2013) focuses only on surgical operations and does not include the other specialties such as acute orthopedic surgery cases. The WSES framework is therefore difficult to use to prioritize between different specialties. Despite this, it has been tested in practice by Coelho, et al. (2019) in a surgical setting.

Coelho et al. (2019) presented the use of a color classification system in the daily activities of a surgical department. They investigated a before and after scenario when implementing the system. In the practical application, it is not demonstrated how the criteria for the different colors have been translated into other types of surgery, for example, orthopedics, pediatric surgery, etc. Nor is it stated whether the classification was used daily. It is also noted that the number of orthopedic surgeries increased significantly after the implementation of the system, but this result is not further commented on in the article (Coelho et al., 2019).

Leppäniemi and Jousela (2014) developed a code system for organizing acute surgery across surgical disciplines. Their study was based on clinical outcomes and existing clinical guidelines. They classified emergency operations for several specialties uniformly based on stated urgency, medical priority, and measured how the use of dedicated daytime of operating rooms was utilized. The color code system is shown in figure 3.



Start as soon as possible; delay to surgery < 8 h	Any hour of the day or night (24–7–365)	Ruptured abdominal aortic aneurysm Perforated hollow viscus organ Acute appendicitis
Early operation required; maximum delay 8–24 h	Usually not between 22.00 and 08.00 hours	Acute cholecystitis Acute adhesive small bowel obstruction (not strangulated)
Non-elective operation required; maximum delay 24–48 h	Usually not between 22.00 and 08.00 hours	Skin grafting (open abdomen) Tracheostomy Cholecystectomy after mild biliary pancreatitis

Figure 3: A traffic-light coding system by Leppäniemi & Jousela, 2014

Their results show that the hospitals became better prepared to avoid delays when the causes of the delays had been clarified and when a three-color coding system for prioritization had been implemented. The most important structural improvement of the system was the separation of flows of elective and acute surgical patients (Leppäniemi & Jousela, 2014). This was done both physically and functionally by having operating rooms during the day only for acute surgery. By ensuring sufficient dedicated acute operating room capacity, acute surgery seldom affected elective surgeries. In situations where the emergency capacity was not used, elective cases were carried out in those operating rooms instead. The triage tool minimized delays to the most urgent surgeries and optimized the use of capacity. Further, the proportion of night surgeries decreased despite the inflow of red patients increasing (Leppäniemi & Jousela, 2014). However, the authors argue that the color-coding criteria might be too rough to deliver surgeries for red patients, why they suggest dividing them into subcategories. Additionally, they propose that broader time criteria are better to use for horizontal priorities to minimize confusion or cause delays between specialties and maintain a maximum time limit and allow stated urgency as the main factor for prioritization. After the implementation of the traffic light color system, the number of cases

delayed and the reasons for the delays were evaluated each month. Systematic errors were also corrected at the follow-ups. This indicates that they used evidence-based practice to increase the quality of the process. The authors believe and empathize that monitoring the system with responsible managers is important. Thus, monitoring is important to ensure that codes are not misused and provides an important input for iterative discussions on how the codes should be interpreted.

6. Conclusion

To conclude the theory and research presented in this overall literature review, there are clear ethical guidelines in Sweden for vertical priorities, but they can be difficult to assess and put in the practical work of healthcare, not least regarding horizontal priorities. The pressure on healthcare is increasing, why the need to prioritize will increase and become more important and at the same time more difficult. Prioritization of patients and resources between specialties is arguably a public health issue since it is related to access to acute healthcare and could minimize bad health-related outcomes and generate higher quality for the inhabitants of the nation. However, to achieve these goals and follow the principles that exist, more research on how to improve prioritization work in daily operations is needed. Studies show that principles and methods from quality and process development can be valuable when working with priorities in everyday care situations.

A detailed literature search regarding acute priorities in surgical everyday life gives some clues, but the studies cannot be generalized and very little has been written about horizontal priorities *between* specialties. In addition, only one of the articles specifically examines and demonstrates work for priorities between specialties and had the same routines overall in a large hospital setting. What seems to be common is that the work with horizontal priorities must take place continuously and locally, perhaps by using principles and practices from quality improvement in local process work. It can be recognized that there is a need for a better functioning universal

system to manage priorities locally. In addition, there are no longitudinal qualitative case descriptions on how prioritization work takes place in daily operations. Thus, in part B a longitudinal qualitative case study that closely follows and gives an in-depth description of a four-month project that aimed to improve vertical and horizontal acute prioritizations at the Skaraborg Hospital Group is presented.

7. Reference list:

Bergman, B. & Klefsjö, B. (2020). *Kvalitet från behov till användning* (Sjätte upplagan ed.). Lund: Studentlitteratur.

Bergman, B., Hellström, A., Lifvergren, S. & Gustavsson, S. M. (2015). An Emerging Science of Improvement in Health Care. *Quality engineering*, *27*(1), 17-34. https://doi.org/10.1080/08982112.2015.968042

Bowrey, D. J., Wheeler, J. M., Evans, R. O., Fligelstone, L. J. & Vellacott, K. D. (1997). Can emergency general surgical referrals be reduced? A prospective study [Research Support, Non-U.S. Gov't]. *Journal of the Royal College of Surgeons of Edinburgh*, *42*(6), 381-382. https://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&NEWS=N&PAGE=fulltext&D =med4&AN=9448391 http://resolver.ebscohost.com/openurl?sid=OVID:medline&id=pmid:9448391&id=doi:&issn =0035-8835&isbn=&volume=42&issue=6&spage=381&date=1997&title=Journal+of+the+Royal+College+of+Surgeons+of+Edinburgh&atitle=Can+emergency+general+surgical +referrals+be+reduced%3F+A+prospective+study.&aulast=Bowrey&pid=%3CAN%3 E9448391%3C%2FAN%3E

Caesar, U., Karlsson, J., & Hansson, E. (2018). Incidence and root causes of delays in emergency orthopaedic procedures: a single-centre experience of 36,017 consecutive cases over seven years. *Patient Safety in Surgery [Electronic Resource]*, *12*, 2. https://doi.org/https://dx.doi.org/10.1186/s13037-018-0149-1

Cardoen, B., Demeulemeester, E. & Beliën, J. (2010). Operating room planning and scheduling: A literature review. *European journal of operational research*, *201*(3), 921-932. https://doi.org/10.1016/j.ejor.2009.04.011

Coelho, M. A., Lourencao, P., Weber, S. T. & Ortolan, E. V. P. (2019). Implementation of a surgical screening system for urgent and emergent cases in a tertiary hospital. *Revista do Colegio Brasileiro de Cirurgioes*, *46*(4), e2211. https://doi.org/https://dx.doi.org/10.1590/0100-6991e-20192211 (Implementacao de um modelo de triagem cirurgica para casos urgentes em um hospital terciario)

Faryniuk, A. M. & Hochman, D. J. (2013). Effect of an acute care surgical service on the timeliness of care. *Canadian Journal of Surgery*, *56*(3), 187-191. https://doi.org/https://dx.doi.org/10.1503/cjs.022911

Glouberman, S. & Mintzberg, H., (2001). *Managing the Care of Health and the Cure of Disease- Part I: Differentiation*. Aspen Publishers, Inc.

Hellström, A., Lifvergren, S., Gustavsson, S. & Gremyr, I. (2015). Adopting a management innovation in a professional organization: The case of improvement knowledge in healthcare. *Business process management journal*, *21*(5), 1186-1203. https://doi.org/10.1108/BPMJ-05-2014-0041

Kluger, Y., Ben-Ishay, O., Sartelli, M., Ansaloni, L., Abbas, A. E., Agresta, F., Biffl, W. L., Baiocchi, L., Bala, M., Catena, F., Coimbra, R., Cui, Y., Di Saverio, S., Das, K., El Zalabany, T., Fraga, G. P., Gomes, C. A., Gonsaga, R. A. T., Kenig, J., . . . Moore, E. E. (2013). World society of emergency surgery study group initiative on Timing of Acute Care Surgery classification (TACS). *World journal of emergency surgery*, *8*(1), 17-17. https://doi.org/10.1186/1749-7922-8-17

Lankester, B. J., Paterson, M. P., Capon, G. & Belcher, J. (2000). Delays in orthopaedic trauma treatment: setting standards for the time interval between admission and operation. *Annals of the Royal College of Surgeons of England*, *82*(5), 322-326. https://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&NEWS=N&PAGE=fulltext&D =med4&AN=11041030
http://resolver.ebscohost.com/openurl?sid=OVID:medline&id=pmid:11041030&id=doi:&issn =0035-8843&isbn=&volume=82&issue=5&spage=322&date=2000&title=Annals+of+the+Royal+College+of+Surgeons+of+England&atitle=Delays+in+orthopaedic+trauma+treatment%3A+setting+standards+for+the+time+interval+between+admission+and+operation.&aulast=Lankester&pid=%3CAN%3E11041030%3C%2FAN%3E

Leppäniemi, A. & Jousela, I. (2014). A traffic-light coding system to organize emergency surgery across surgical disciplines. *British journal of surgery*, *101*(1), e134-e140. https://doi.org/10.1002/bjs.9325

Lifvergren, S. (2022). *SkaS-guiden 2.0 - Praktiska råd för kvalitetsdriven verksamhetsutveckling*. Skaraborgssjukhus- Västragötalandsregionen.

Modig, Å., P. (2015). *Detta är lean: lösningen på effektivitetsparadoxen* ([Ny uppl.] ed.). Stockholm : Rheologica.

Navarro, A. P., Hardy, E., Oakley, B., Mohamed, E., Welch, N. T. & Parsons, S. L. (2017). The front-line general surgery consultant as a new model of emergency care. *Annals of the Royal College of Surgeons of England*, *99*(7), 550-554. https://doi.org/https://dx.doi.org/10.1308/rcsann.2017.0081

Prioriteringscentrum (2007). Vårdens alltför svåra val? Kartläggning av prioriteringsarbete och analys av riksdagens principer och riktlinjer för prioriteringar i hälso- och sjukvården. Linköping: Prioriteringscentrum.

Riksrevisionen (2004). Riktlinjer för prioriteringar inom hälso- och sjukvård. RiR 2004:9. Stockholm: Riksrevisionen.

Rosenbäck, R. (2017). *Produktionsstyrning i sjukvården: en väg framåt* (Upplaga 1 ed.). Lund : Studentlitteratur.

Sandman, L. (2015). *Vilken vägledning ger den etiska plattformen för prioriteringar i konkreta prioriteringssituationer?*

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, 104, pp.333-339.
Stiernstedt, e. a. G., Zetterberg, D. and Ingmanson, A. (2016). Effektiv Vård. *Stockholm*.
SFS 1996/97:60. *Prioriteringar inom sjukvård.* https://data.riksdagen.se/dokument/GK0360.
SFS 2017:30. (2017) Hälso och sjukvårdslag. https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/halso--och-sjukvardslag_sfs-2017-30.
Socialstyrelsen. (2020). Att arbeta evidensbaserat: Ett stöd för praktiskt arbete. https://www.socialstyrelsen.se/globalassets/sharepointhttps://www.socialstyrelsen.se/globalassets/sharepoint-dokument/artikelkatalog/ovrigt/2020-10-6930.pdfdokument/artikelkatalog/ovrigt/2020-10-6930.pdf
SOU. (2001). *Prioriteringar i vården: perspektiv för politiker, profession och medborgare : slutbetänkande från Prioriteringsdelegationen*. Stockholm: Prioriteringsdelegationen
SOU. (2016). *Effektiv vård:Slutbetänkande*. Stockholm *SOU2016:2*.
Sveningsson, S. & Sörgärde, N. (2019). *Organisationsförändring - hur, vad och varför?* Studentlitteratur AB.
VGR. (2005). Prioriteringar i hälso- och sjukvården- om Västragötalands prioriteringsarbete. VGR. Retrieved 12-20 from http://www.natverken.se/media/7388/Västra%20Götaland%20-%20Prioriteringar%20i%20vården.pdf
VGR. (2017). Strategi för hälso- och sjukvårdens omställning i Västra Götalandsregionen. In. Protokoll från Regionfullmäktige, 2017-05-16: Västra Götalandsregionen.
VGR. (2019). Verksamhetsplanen 2019 för SkaS.
Vårdanalys. (2020). Styra mot horisonten: Om vård efter behov som grund för horisontella prioriteringar. (Report 2020:7). Stockholm, Sweden: Myndigheten för vård-och omsorgsanalys

1. Appendix 1. Ovid MEDLINE(R)

Litterature review conducted in Ovid MEDLINE(R). *All references from base line 2022-01-18, 350 references. The field in grey is a filter applied in MEDLINE for case studies.*
My Search Strategy:

#	Searches	Results
1	Surgical Procedures, Operative/	56626
2	((Surger* or Surgical or operation$1) adj3 (Acute or Emerg* or Trauma* or "non elective")).ab,kf,ti.	65255
3	1 or 2	119469
4	Health Priorities/	11261
5	(Prioriti* or triage).ab,kf,ti.	103010
6	Triage/	13830
7	4 or 5 or 6	115365
8	3 and 7	972

9	limit 8 to (danish or english or norwegian or swedish)	885
10	9 not (comment or editorial or letter).pt.	860
11	10 not (animals not (animals and humans)).sh.	**856**
12	Epidemiologic Methods/	31583
13	exp epidemiologic studies/	2860949
14	Observational Studies as Topic/	7364
15	Clinical Studies as Topic/	683
16	Single-Case Studies as Topic/	93
17	(Observational Study or Validation Studies or Clinical Study).pt.	123141
18	(observational adj3 (study or studies or design or analysis or analyses)).ti,ab,kf.	183060
19	cohort*.ti,ab,kf.	724115
20	(prospective adj7 (study or studies or design or analysis or analyses)).ti,ab,kf.	480139
21	((follow up or followup) adj7 (study or studies or design or analysis or analyses)).ti,ab,kf.	153439
22	((longitudinal or longterm or (long adj term)) adj7 (study or studies or design or analysis or analyses or data)).ti,ab,kf.	306299
23	(retrospective adj7 (study or studies or design or analysis or analyses or data or review)).ti,ab,kf.	581049
24	((case adj control) or (case adj comparison) or (case adj controlled)).ti,ab,kf.	145213
25	(case-referent adj3 (study or studies or design or analysis or analyses)).ti,ab,kf.	631
26	(population adj3 (study or studies or analysis or analyses)).ti,ab,kf.	208240
27	(descriptive adj3 (study or studies or design or analysis or analyses)).ti,ab,kf.	92818
28	((multidimensional or (multi adj dimensional)) adj3 (study or studies or design or analysis or analyses)).ti,ab,kf.	4295
29	(cross adj sectional adj7 (study or studies or design or research or analysis or analyses or survey or findings)).ti,ab,kf.	362774
30	((natural adj experiment) or (natural adj experiments)).ti,ab,kf.	2677
31	(quasi adj (experiment or experiments or experimental)).ti,ab,kf.	16886
32	((non experiment or nonexperiment or non experimental or nonexperimental) adj3 (study or studies or design or analysis or analyses)).ti,ab,kf.	1538
33	(prevalence adj3 (study or studies or analysis or analyses)).ti,ab,kf.	43833
34	case series.ti,ab,kf.	89717
35	case reports.pt.	2239637
36	(case adj3 (report or reports or study or studies or histories)).ti,ab,kf.	888018
37	Organizational Case Studies/	12620
38	or/12-37	6256197
39	11 and 38	350

The Sahlgrenska Academy

Priority setting for acute surgery procedures

- How to prioritize acute surgeries?
A case study of the Skaraborg Hospital Group (SkaS) improvement process.

Part B Manuscript

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Abstract:

Accessibility as well as providing care on equal terms to all inhabitants are the main objectives stated in the Swedish law SFS 2017: 30. As Sweden is facing demographic imbalances with more patients in need of care, prioritization decisions have become more common. Health care professionals daily face various forms of prioritization decisions on how to use available resources to provide care on equal terms. However, a literature review scoping relevant existing research shows that guidelines on how to prioritize care in daily practices are few. Further, no studies give an in-depth process description on how priority decisions might be evaluated or improved in practice.

The study's extensive empirical material was obtained by observations and interviews from a four-month long improvement process at Skaraborgs Hospital Group (SkaS) that sought to improve local priority guidelines for acute surgery within as well as between specialties. The case description gives an overall narrative of a long volatile process with perspectives from both involved and non-involved staff capturing the work to improve prioritization routines at SkaS.

The research questions focus on how priorities for acute surgery are currently performed at SkaS and what factors affect priority setting? Further, is the current priority setting perceived to be fair and work towards the targeted statutory objectives in practice? Finally, has the priority process affected SkaS and what benefits and shortcomings can be identified to improve priority setting in daily practice? A thematic qualitative content analysis was used to identify key themes that were related to the research questions. The identified themes were also validated by participants in the improvement project.

The study´s result found homogeneous perceptions among co-workers regarding routines and justice in the case process concerning priorities, but certain scenarios imply that some priorities were not solely based on patient's needs assessment. However, patient safety and medical treatment quality were found to not be at risk despite delayed acute surgeries. Transparent dialogues with an understanding of each specialty department's patients were found to be a key factor to improve current routines. The main benefit was insights of learning in the process. In addition, routines for priorities between specialties were argued to be beneficial to continuously work with. The organization's process confirms that SkaS succeeded to decide on a value-creating change to prioritize elective surgeries according to eight principles stated in the Swedish law.

The study’s findings support previous research that there remain conflicts of priority setting in healthcare, especially regarding horizontal practical priorities. The study also provides an insight into processes from everyday care illuminating how priorities are complied with in practice. The findings could be relevant for other health care organizations working with improvements project in similar contexts.

Keywords: Acute surgery, Priority Setting, Vertical Priorities, Horizontal Priorities, Ethical Principles and Frameworks, Longitudinal Case Study.

1. Introduction

Accessibility, availability, and providing care on equal terms to everyone are the main objectives and goals stated in the Swedish health care law SFS 2017: 30. Sweden is facing demographic challenges with an aging and growing population (Socialstyrelsen, 2021). For a decade the Swedish health care system has been embossed by resource constraints entailing finance, facilities, and staff. Still, the inflow of patients is continuously increasing (Socialstyrelsen, 2015). The increasing demand on the health care system is due to several factors. The growing population of elderly people suffering from multiple diseases gives the system an increased number of patients with need of more care resources (Stiernstedt et.al, 2016: Bergman et.al, 2015). At the same time, the productive part of the population has become smaller and therefore the funding and labor may be at risk since healthcare is demanded even more (Weisz et al. 2013). The increasing demand for health care is also due to medical and technical development since it makes it possible to help more patients (Stiernstedt et. al, 2016).

For many years Swedish health care have had problems with long waiting times and the queues for care are getting longer (Socialstyrelsen, 2021). In addition, the pandemic has led to cancelations of thousands of surgeries and the care burden is growing larger (Socialstyrelsen, 2021). According to SOU (2016), not enough resources have been provided and the efficiency is substantially unchanged with limited resources. Scanty patient flows, low efficiency, and productivity regarding surgical treatments are a fact and have been a problem area for years despite efforts to improve the system’s efficiency (Stiernstedt et.al 2016). Today's healthcare is said to be evidence-driven with high demands on quality through data from observations and measurement of productivity (Bergman et.al, 2015). However, even if large amounts of data are collected, clinical practice is often not governed by using data for learning, improvement, and innovation (Bergman et.al, 2015). In almost all cases, individual healthcare professionals provide great and dedicated work, but the healthcare system has systematic errors, and the patient

outcome may be less optimal, perhaps even unsatisfactory, or unacceptable without anyone noticing, more than individual patients (Bergman et.al, 2015).

1.1 Challenges – Inefficiency and prioritization in daily operations

Thus, and not surprisingly, a growing set of reports emphasizes that hospitals' patients must be managed more efficiently to make care more accessible and optimize their capacity. Inefficient management of patients prevents patients from receiving both elective and acute care in time (Rosenbäck, 2017). Patient safety and care quality decrease with long queues since the patients' needs may change or get worse if the procedure cannot be done according to plan. There is a need for a system view involving health care professionals and managers inside the system to focus on planning as well as balancing and evening out variations within and between clinics (Rosenbäck, 2017).

However, while Swedish hospitals are putting increasing efforts on improving flow efficiency (Lifvergren & Lifvergren 2022), the issue of prioritization is also a key issue. Thus, as ques must be handled in safe and equitable ways, practically oriented frameworks for *managing prioritization* in everyday practices are pivotal and might also contribute to improved planning of resources as well as improved efficiency. Health care professionals daily face various forms of prioritization situations where it must be decided how to use the limited resources available to provide care on equal terms (Vårdanalys, 2020). Prioritization decisions have become more common over the past twenty years, and forecasts claim that the gap between available resources and the demand for care will increase even more (Sandman, 2015; Stiernstedt, 2016).

1.2. Problem background – Prioritizations at the Skaraborg Hospital Group

The longitudinal case study was conducted at the Skaraborg Hospital Group (SkaS), a middle-sized Swedish specialist hospital located in the Western region of Sweden. SkaS has four hospitals, Skövde, Lidköping Falköping and Mariestad with 4500 staff members allowing capacity for 512 admitted patients. The hospital's surgical operations are organized in an overall

surgical process where five surgical specialties all use joint surgical resources. In 2021, the number of patients who were waiting for surgery and who did not meet the care guarantee increased from 1050 to 1660 patients (VGR, 2019). Hence, due to an increasing demand on surgical procedures SkaS initiated an overall project to increase the number of surgeries per resource in 2020. However, due to staff shortage the available resources in terms of operation rooms are still limited, why the current demand on surgical procedures is difficult to meet. Subsequently, priority decisions in daily practices are becoming more common and waiting times for acute surgery has increased. Thus, a project to review and improve the priority setting process of acute surgery was initiated by the hospital director in December 2021 at SkaS. The aim of the project was to investigate potential problems regarding how acute surgeries are prioritized within and between specialties and, if needed, propose improvements. The improvement project followed a common model for process improvement, DMAICL (Define – Measure – Analyze – Improve – Control – Learn) further detailed in the Method section.

1.3 Aim

The aim of this study is to present an in-depth description and analysis of the DMAICL improvement project for acute priority setting at SkaS. The longitudinal case study closely followed the entire project process during five months from December 2021 to late April in 2022 using participative observations and interviews. The study will focus on how the prioritizing process at SkaS developed over time, and how priorities of acute surgery were experienced and changed within the organization during the process. The aim of the study is reflected in three research questions.

1.4 Research Questions

- How are priorities for acute surgery currently performed at SkaS and what factors affect priority setting?
- Is the current priority setting perceived to be fair and work towards the targeted statutory objectives in practice?

- Has the priority process affected SkaS and what benefits, and shortcomings can be identified to improve the process?

Before giving an overview of research methods as well an in-depth description of the case, an overview of the theoretical framework is presented.

2. Theoretical Background

To prioritize means to give something priority over something else and rank different alternatives and choose. Prioritization in health care means choosing between many alternative measures and patient groups (SOU 1995). Those who have the greatest need for medical care must be given priority for care according to the Swedish law SFS 2017:30. The concepts of horizontal and vertical priorities are often used in healthcare contexts. Horizontal priorities involve the choice of measures between departments, clinics, or disease groups and how resources are to be distributed between different people. Vertical priorities involve the choice of measures between diseases within a disease group or between different forms of treatment for an individual patient, often within a ward or clinic. In order to determine a horizontal or a vertical prioritization, it presupposes that systematic priorities based on agreed ethical guidelines exist and are clear.

2.1 The Swedish health care Act

Prioritization in health care is addressed in the Swedish law, *Hälso-och Sjukvårdslagen,* chapter 3 (SFS 2017:30) in §1 "*the goal of health and medical care is good health and care on equal terms for the entire population. Care must be given with respect for the equal value of all human beings and for the dignity of the individual human being. Those who have the greatest need for health care are given priority for care".* Right now, health care is based on a simple prioritization matrix that is well compatible with the government decision in 1997 regarding how we should prioritize according to the government's official proposition (SFS 1996/97:60) formed after the official investigation *Vårdens svåra val* (SOU 1995:5). The ethical platform in Sweden has three

ethical principles to guide priority setting in the health care system. Firstly, the principle of human value, all people have equal value as well as the same right regardless of characteristics and functions in the community (SFS 2017:30). The second is the need and solidarity principle, which states that the one who has the greatest need for health and medical care must be given priority. The last one is the cost-effectiveness principle, which states that when choosing between different treatments or procedures there should be a realistic relationship between costs and effect and benefit to the patient (SFS 2017:30).

Degree of urgency matrix:

The patient is in a condition which, if no care is taken, entails:

1. Immediate threat to life
2. Risk of very serious injury, premature death, significant disability and unbearable situation
3. risk of serious injury, permanent damage or very low quality of life
4. risk of expected deterioration / non-maintained function ADL level
5. risk of significant inconvenience, increased morbidity, prolonged period of illness, reduced quality of life
6. risk of inconvenience, injury, permanent injury or low quality of life
7. likely increased risk of impaired health experience or non-optimal quality of life
8. possibly increased risk of morbidity, deterioration of functional level or quality of life
9. risk of reduced quality of life according to the patient's perception and science and proven knowledge does not contradict this
10. no risk of increased morbidity, impaired functional level or impaired quality of life

Figure 1 Degree of urgency matrix SOU 2001:8

2.2 Guidelines

The priority groups stated in SOU, 2001 are the three ethical principles translated into disease states and patient groups with different needs (SOU, 2001). The patients' medical priority should be judged after the matrix displayed in figure 1. It is necessary that the doctor who is responsible for the patient states a correct medical priority in hours and that it should be strictly based on the medical priority and no other circumstances (SOU 1995:5). Thus, if clear guidelines from the community are missing, a fair priority decision can be hard to accomplish, and priority decision variations occur (SFS 1996/97:60). Guidelines for priorities are missing on a national level according to the report Vårdens alltför svåra val (Prioriterings Centrum, 2007). The report is an analysis of the governmental principles and guidelines for priorities in health care with criticism of lacking guidelines and specifications of the issue. Sandman's (2015) report points out that the governing principles in scenarios when patients with the same need for care and medical priority would be more beneficial if they were better specified on how to prioritize.

To offer care based on needs better guidelines must be formulated based on the ethical platform – guidelines must be easier for professionals to interpret and follow in daily operations. The report also argues that formulated horizontal priorities are missing and fluctuate in health care practice (Sandman 2015; Vårdanalys, 2020). In addition, Vårdanalys's (2020) report claims that the guidelines in SFS1996/97:60 and SOU 2001:8 that should permeate the "care based on need principle" do not permeate everyday care practices. To prioritize according to the three ethical principles in ranking for the greatest possible benefit, a transparent and jointly designed platform is required (VGR, 2019). The recent year's debate focuses on horizontal priorities. Hence, they indirectly affect how vertical priority settings are performed since horizontal priorities determine how much capacity there is to manage patients. In other words, vertical priorities are impacted by the horizontal distribution of resources (Vårdanalys, 2020). In addition, healthcare professionals' support when facing horizontal prioritizing decisions – choosing which patient to receive care first – in similar priority groups across specialties – is absent as well as an inattentive subject in research. Hypothetically, this could mean that if informative guidelines and routines to develop better quality are provided to hospitals, they can handle the prioritization problems in a better way (Stiernstedt et.al, 2016).

2.3 Current research on delays and priority setting for acute surgery procedures.

A detailed literature review concerning practical models for priority setting in everyday practices was conducted (also presented in part A in more detail). Lankester (2000) claimed that guidelines for delays to acute surgery were missing in an orthopedic context. The main reason for delays was the unavailable capacity to treat patients in need. Caesar et.al (2018) conducted a similar study in orthopedics during a longer time and identified continuously occurring delays. The root causes for delays in the acute flow of surgery were due to internal organizational reasons. Another emergency operation was given higher priority or unexpected prolongation of ongoing surgery explained the main delays. Both Caesar et al. (2018) and Lankester et al. (2000) study displayed vertical prioritizes within orthopedic patients. Further, they identified the need for hospitals and

clinics to continuously improve their processes by identifying root causes of inefficiency to decrease acute surgery cancellations (Caesar et al, 2018).

Navarro & Hardy´s (2017) introduced a new service model with a senior physician in an intervention to reduce the risk of misjudgements, incorrect referrals, high rates of admissions, and ques in acute surgery theatre. An early risk stratification from a senior doctor was claimed to have improved efficacy and patient satisfaction and resulted in a reduction of admissions and almost a total elimination of incorrect referrals to acute surgery (Navarro & Hardy, 2017). Kluger et.al (2013), suggested the use of a color system to classify acute surgeries to establish a standardized view for decisions among the professionals. The coding was argued to support surgical teams within and between the departments to manage acute surgical patients from other specialties as well as to have improved documentation and quality. Kluger et.al (2013) empathized that even though knowledge exists regarding the optimal timing of various acute surgical interventions, implementation of a matrix for triage is demanded.

Leppäniemi and Jousela (2014) created and implemented a framework in colours to prioritize operations. They classified acute operations for several specialties unitary based on stated urgency and medical priority and separated acute and elective surgery flow. This proved to be successful, and delays were reduced, resources were used more efficiently, and broader time categories made it easier to assess and prioritize more homogeneously between specialties. Further, the coding system was continually evaluated and monitored to minimize abuse and to create dialogues for common understanding.

To conclude the theoretical and practical frameworks, the problem of delays in acute surgery and frameworks for prioritizing patients does not seem to be a local challenge. A perfect system is not established or should perhaps not even be strived for. However, managing and improving existing routines for prioritization is of great importance for developing current practice. The

findings from the literature review do not have any specific routines or frameworks to implement and use straight from the research field. Evidence-based quality improvement processes seem to be the best way to establish a better system. Prioritization of patients and resources between specialties is arguably a public health question since it is related to accessibility and availability to the healthcare system and could minimize poor health. Current research illuminates different local success indicators for managing prioritizing and delays of acute surgeries. Still, it can be argued that studies are limited. Particularly, few studies address how priorities are performed in everyday care situations. Thus, there is a need for practical models to manage priorities according to evidence-based practice. Continuous improvement of transparent ongoing processes seems to be one way to achieve better priorities (Bergman & Klefsjö, 2020).

3. Methods

3.1 Research Methodology

The improvement project of acute prioritizations at SkaS was investigated using a single longitudinal qualitative case study. A case study approach is useful when there is a need to obtain a deep appreciation of a process in its natural environment (Crowe et.al, 2011). A qualitative approach is relevant when the researcher aims to study the social context and understand different perspectives of a process (Bryman and Bell, 2011). According to Yin (2014) research questions with “how” are likely to favor the usage of a case study approach when a contemporary set of events is investigated without any manipulation. Additionally, a longitudinal case study is appropriate to study how co-workers and project members understanding of a phenomenon evolves over time (Crowe et.al, 2011).

3.2 The Skaraborg hospital group – project, case context and participants

The pivotal fundament for this study was a project improvement process where different managers and staff met to discuss prioritizing questions at SkaS during a four-month period

from December 2021 to late April 2022. Figure 2 shows an overall chart of the SkaS organization, and the specialty departments involved in the project: K2, K3, K4, K5 and K6.

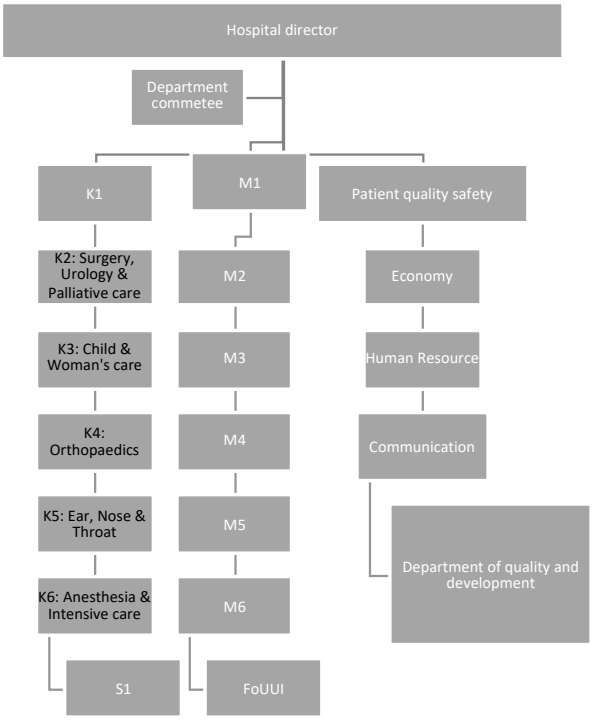


Figure 3.1. The Skaraborg Hospital group - organization of departments and function

The mission came from the hospital director, who is chair of the *tactical steering group for surgery*, were the department managers from K2-K6 together with the hospital director, the development director, the economy director and the production strategist handle strategic and tactical resource planning of surgeries.

The project was led by the hospital's development director, a strategic senior advisor, and a development facilitator. They will be referred to as *project managers*. The project group consisted, and still consists, of *process managers*. Process managers are senior surgeon physicians within different specialties and represents the various specialty departments. The process managers have a hybrid function working both clinically and administrative with operative planning responsibilities and manage acute surgeries in Lidköping and Skövde. The other departments displayed in figure 2 are not covered by the project as their specialties and their patients' treatments and remedies do not usually need surgery.

The daily coordinators, referred to as *coordinators,* work at K6, the department responsible for all the operating rooms (OR) as moderators to plan the daily program of surgeries including the acute list. The acute list details all acute surgery cases that are gathered after they have been reported by a doctor at a department. The coordinators are usually nurses with different specializations such as surgery and anesthesiology. The coordinator function is a rotating role. Coordinators might also have section-leader roles, which means that they have an overall responsibility of the OR staffing and scheduling, and support those in the staff who work inside ORs.

Surgery planners are usually nurses, assistant nurses, or medical secretaries who mostly handle elective planning. They plan the overall operation program allocated space a few weeks ahead. The coordinators and planners are not participants in the project meetings. Their descriptions are therefore derived from their practical work. ‘

The *physicians* in the study are not derived specifically from their specialty, but are a mixed collection from all departments. Some of them have attended project meetings and some have not.

The *surgeon* is the person performing the surgery, the surgeon and the reporting doctor don't have to be the same person. In this study, it should be clarified that there is no distinction between the terms acute and emergency, they have the same meaning.

The project group worked according to a common model for process improvement called DMAICL (Define-Measure-Analyze-Improve-Control-Learn) (Bergman & Klefsjö, 2020).The steps initially defined, measured and analyzed the current state regarding priority settings to get a common understanding and to reveal potential shortcomings in the prioritization process. During the fourth phase (Improve) various improvement suggestions were then tested based on the initial analysis. During the Control and Learn phases the improvements were continuously

evaluated and, eventually, scaled up. Instead of using the model's original words, each step in the model was mentioned with illustrative sentences to describe what each phase contained, e.g., the Defining phase was called "Getting the mission". All steps in the project process are displayed in figure 3.

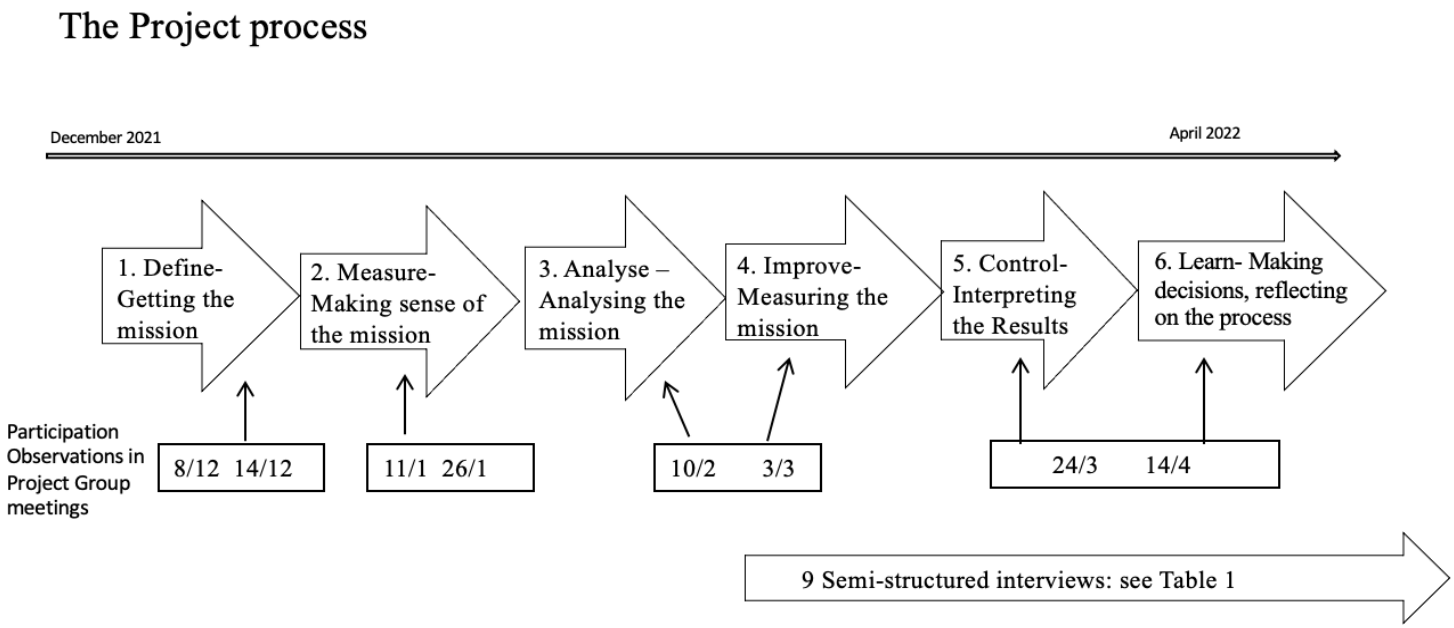


Figure 3.2 The Project Process.

Thus, two meetings were dedicated to the Define and Measure phases, whereas the last four steps – Analyse, Improve, Control and Learn – were managed during one meeting per phase.

The study followed an abductive research method, where the approach was used to make sense of the observations in the early stages of the process to build an understanding of the area and relevant theoretical models. Working abductively also allowed the researcher to explore the process and at the same time embed and anchor in theory thus focusing on the professionals' perspectives on the process to develop an initial 'local theory' which, in the analytical phase, was juxtaposed against existing theories (Yin, 2014). Subsequently, the empirical material from the observations and the interviews should add new knowledge and experiences to the study questions about the prioritization process.

3.3 Data collection

Data was collected from observations of the eight meetings and from nine interviews with department process managers involved in the improvement project, as well as staff, such as nurses, coordinators, surgery planners and physicians involved in acute surgeries daily (table 1). Triangulation from multiple data sources – observations, field notes from meetings, documents, and reports and, later, interviews – was used to investigate the process. The use of multiple triangulated data sources is advocated to secure internal validity in research (Crowe et.al, 2011). Multiple data sources also help the researcher to keep a systematic and holistic view of the process and should lead to similar conclusions and embrace the process from different angles (Yin, 2014).

3.4 Observations

According to Yin (2014) observation is a key approach to obtaining information about the outside world or the study area. However, there are many difficulties, apart from the fact that it is time-consuming to collect material, and it can be ethically difficult in some scenarios because the researcher may change other participants' behavior. In addition, the observations will be colored and influenced by the researcher indirectly as notes or perceptions displayed are selected by the researcher.

In this case, participative observations were used to collect data from the eight project meetings throughout the process to scope information about the development of the process. The observations represent the main overviewing empirical material of the process. The observations were documented in the form of detailed handwritten meeting notes and were combined with memorandums from the meetings. The meetings took place continuously in connection with the project members' practical work, and their interaction during meetings has also been reflected in the empirical material. Due to the pandemic, the meetings took place in digital meeting rooms on TEAMS. Each meeting lasted approximately two hours. The digital meetings enabled a higher participation rate from several of the departments without affecting their clinical work.

3.5 Interview selection

Semi-structured interviews were carried out during late spring 2022 as a complement to the observed meetings until saturation of data and sample size were reached. Participant recruitment for the interviews was a combination of strategic and snowball sampling. The strategic sampling was convenient to reach out to the process managers involved in the project group to capture their individual perceptions and descriptions of the process. The snowball sampling was of value in reaching out to key people who were not members of the project group but worked with prioritization daily at the departments. The snowball selection was done by the interviewees giving suggestions for people they thought had additional perspectives of interest. The selection of interviews was limited according to what was considered possible within the time frame of the study. To a possible extent, the strategic selection of interviewees has varied in profession, age, gender and different functions and areas of responsibility in the process to broaden the basis of different experiences. At first 16 individuals were contacted and during the process, more respondents were contacted with the same informative email where the study's aim and research question were mentioned together with brief questions about the process to consider before the interview. In total nine interviews were conducted and an empirical saturation was completed after the nine individual interviews since a lot of the descriptions from the observations were homogenous. Unfortunately, the response rate was low for individual interviews. During the collection, the ability to interview was developed and the experience from previous interviews could, after reflection, help select and adapt the questions with greater certainty. The interviewees are presented in table 1 by a professional title and department.

Table 1 List of interviewees.

Date of interview	Interview Id	Department	Role
2022-03-23	1	K3	Physician
2022-03-25	2	K4	Physician Orthopaedic
2022-03-31	3	K2, K4	Surgery planner
2022-04-01	4	K6	Physician Anaesthesia
2022-04-04	5	K5	Physician Process manager
2022-04-06	6	K2	Surgery planner
2022-04-20	7	K6	Nurse Coordinator, Section leader

2022-04-27	8	K6	Nurse Coordinator, Section leader
2022-04-29	9	K6	Nurse Coordinator, Section leader

3.5.1 Semi-structured interviews

One risk with qualitative interviews is that the respondents may conceivably angle their answers according to what they think is expected (Diefenbach, 2008). Therefore, I used a semi-structured design of interview questions that reduces the risk of angled answers. When designing as well posing the questions I tried to encourage reflection and curiosity about the process and priority routines to avoid directed answers and gave the respondents opportunity to reflect and to reformulate the answers in a continued conversation. The interview guide is found in appendix 1. In short, however, the questions touched on how the respondents reasoned and communicated priorities within and between the clinics and the current routines with questions such as “Does the process to prioritize acute surgeries have some standard structures and routines? Explain what the process before an acute surgery looks like for you”? "Is the process friction-free? Do you have clear guidelines to follow in the process? Are there situations that you don’t feel are covered by guidelines or frameworks? Do you think your colleges think the same? Do you discuss and talk about prioritizing? Is it possible to prioritize equal and fair?

3.5.2 Processing data from observations and interviews

The observed meetings and interviews were conducted in Swedish. All interviews were recorded, but not transcribed verbatim due to time limits. Instead, the recordings were listened to afterwards. Themes, meaning bearing units and citations were documented with detailed notes. The notes for each interview as well as the field notes from the observations were then carefully translated to English for further analysis. The study's empirical data includes eight observed meetings which were divided into six different phases. The observed collection consists of 16 hours of observations of Teams meetings, and an additional one and a half hours of field-notes observations after each completed meeting. The study had nine voice-recorded individual interviews on Teams with a duration ranging from 35 to 55 minutes, and over 100 reviewed pages of field-notes and transcriptions from both observations and interviews in total.

3.6 Data analysis

A six-phase framework for thematic analysis (Clarke & Braun, 2017) was used for managing data from all data sources to enable an overreaching story of the process when writing the case description chapter. The analysis helped to determine what material to present in the six phases. According to Bryman and Bell (2017) it is important to create connections to analyze and fulfill the aim of the study to answer the research questions. The thematization was helpful in this respect; (1) it facilitated the presentation of the empirical material in the six connected phases of the improvement project as well as it provided a connection with the descriptions in the interviews. When familiarizing and generating the data (2), this included reading field notes taken during and after all meetings. Field notes were re-read several times to fit in the case description, and the data was coded in a chronological order. The field observations facilitated categorizing to find relevant elements to connect to the individual interviews when presenting the narrative of the project process in the case description section.

Additionally, the themes in the Analysis and Discussion section was completed following six steps by Clarke & Braun (2017): (1) Familiarizing with the data, the recordings from the interviews were re-listened with extensive notes and citations. (2) Generation of initial codes, the interviews were coded with colors to help to find united descriptions and perceptions of the process for the case description. (3) Identify and search for themes, the color codes set up from the interviews helped to develop potentially relevant themes in the analysis. (4) Reviewing themes. In this step, the themes from interviews were evaluated to check if they worked with the overall description of the project process. (5) Defining the themes and phases with names, this step continued as an ongoing analysis when trying to generate clear definitions by finding suitable names for each theme and presenting reflections and thoughts concerning the project process (6) The last step - writing the report, when clear definitions of the phases were established, the analysis was presented with a selection of vivid and convincing examples from project process

and the staff. The analysis and discussion chapter emanated from the research questions and produced an analysis of the case project process and the interviews.

3.7 Quantitative data

A quantitative approach can be appropriate when numerical data are to be analyzed using statistics (Bryman and Bell, 2011). The quantitative data presented in the case description are from secondary sources that were collected and analyzed by the project management group. The data was presented to the project group to discuss and understand current production and goal fulfillment at SkaS to improve and review priorities. Both time series, histograms and goal fulfillment for acute surgeries were presented. Almost all quantitative data were retrieved from the reporting system for surgical procedures, Orbit, or from the Swedish quality register service (SPOR), who do quality monitoring reports and national comparisons to increase awareness concerning surgical procedures (SPOR, 2021). Patient records from the electronic medical journal Melior were also reviewed by the process managers. Thus, quantitative data was used in the case description as a tool for the reader to understand the whole process.

3.8 Ethics

3.8.1 Trustworthiness and Authenticity

In a qualitative study, the empirical foundation has requirements for authenticity, reliability, and accuracy according to Yin (2014). In the study the authenticity of the data should not be questioned, the sources that build the empiric material are well documented and interpreted neural in its context. I consider the sources reliable because the hospital is not disadvantaged by the study.

To ensure credibility and trustworthiness in the study, triangulation of data has been used during each step. Extensive observations of the process have been combined with data from interviews of care staff from all departments connected to acute surgery and cross-checked with interview data from staff who were not directly involved in the project group, but were involved in the

work with acute surgeries. The use of secondary quantitative data was important to grasp the process as a whole and provided an additional way to compare the information with the staff's perception of priorities.

As previously mentioned, the work with field notes and descriptions, and quotes from interviews have been handled with great care to avoid interpreting the answers so that they lose their original meaning, both when presented in the case description and in translations. The same level of accuracy was also considered in the analysis of data, where I worked diligently to reflect the content of the process, the statements, and the interviews through constant comparisons and presented the phases with different data sources. Moreover, the part A has been a source of additional data to understand the complexity of improvement processes, statutory principles and frameworks for priority setting in acute surgeries.

Authenticity has also been considered as an important aspect the study. In the section that presents the case description a solid effort has been made to, as far as possible, reflect different viewpoints and positions in the context so that they are represented fairly. Both voices and perspectives from staff involved in the process as well as from staff outside the project group are represented in the material. The basis of data is considered accurate, and the empirical data presents the process I aimed to investigate.

The personal data, first and last names, and professional titles that the study has processed are handled with respect and caution in accordance with research ethics principles (Swedish Research Council, 2017). I have anonymized all respondents regarding integrity and all respondents will be able to take part of the results of study. The respondents have been informed that participation is voluntary and that they are allowed interrupted the interview at any time and asked before recording the interview. The audio files used from the recording of interviews have

been deleted after re-listening and taking notes, according to research ethics principles (Swedish Research Council, 2017).

4. Empirical Case study

4.1 Introduction to the case description

The case description presents the empirical material collected from the project group's process during subsequent meetings following the six steps from the model DMAICL showed in figure 4.1 below. The case description also entails individual reflections from interviews, and experiences of prioritization in discussions on improving priority settings for acute surgeries during the project process.

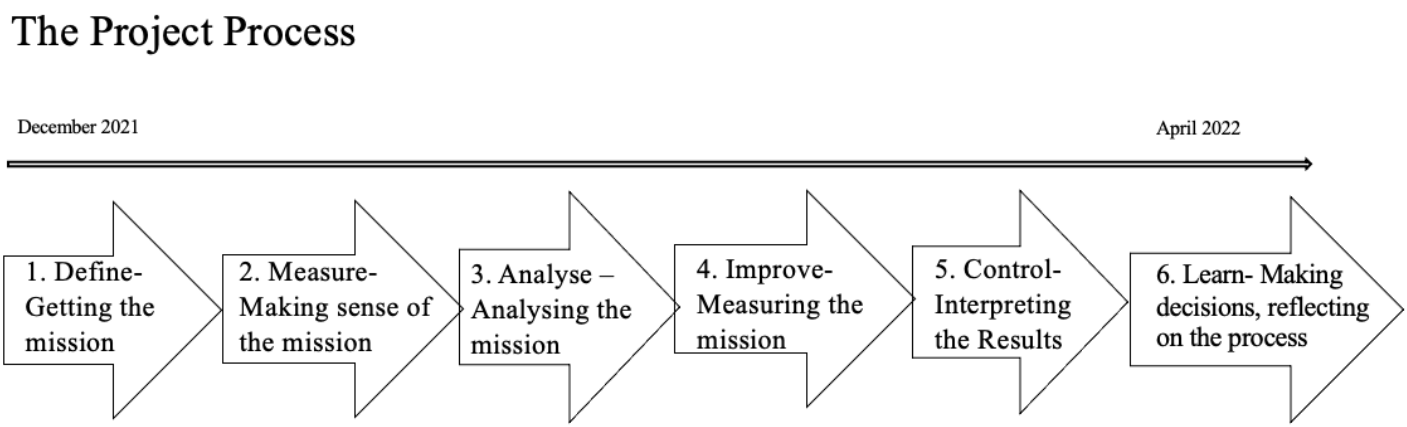


Figure 4.1 The Project Process.

Before giving an in-depth description of the case, some explanations regarding local ICT-systems for acute surgery planning as well as planning and prioritization routines before project start at SkaS are provided.

The program used to plan, manage, and report surgeries is called Orbit. The acute list for acutely registered patients is found in Orbit. The surgery report card that physicians use when reporting patients for acute surgery must indicate the degree of urgency, which is done by specifying the time frame within which the operation is to be performed.

The degree of urgency stated in 0, 2, 6, <24 or 24+ hours. The prioritization criteria for acute surgery reports are classified using time categories:

1. Immediate urgency, the operation should take place immediately.
2. Within 2 hours, <2h, the surgery should take place within 2 h from the time of the report.
3. Within 6 hours, <6h, the surgery should be within 6 hours from the time of the report.
4. Within 24 hours, <24h, the surgery needs to be done within 24 hours from the time of report.
5. Over 24 hours, 24+h, means that the surgery can be done after 24 hours but it is arbitrary what is meant and what time is specified. Normally, meaning that the current care treatment opportunity should normally take place within a week and be planned as an acute surgery daytime.

Operating rooms (ORs) are the rooms available for surgical procedures at the hospital. There are both electively distributed ORs and acute ORs. The distribution of OR´s is done by the operations council. The OR´s are shared by several departments on different days and the allocated time slots are based on the historical distribution and the size of the departments. The sizes of the departments vary, and a department with many patients and surgeries shares space with a department with a smaller number of patients and number of surgeries.

The practical prioritizing process is displayed step by step in figure 4.2, showing how the admission process of a patient in need for acute surgery is performed and when vertical and horizontal prioritizing occur.

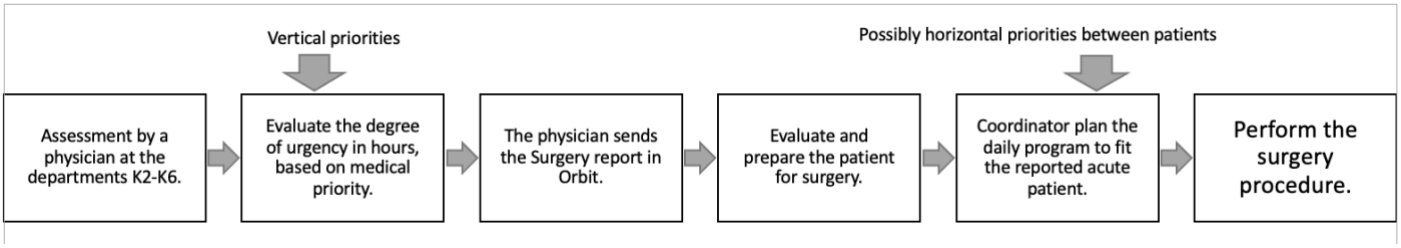


Figure 4.2 An illustration of the prioritization process.

4.2 Case description

4.2.1 Define- Getting the mission.

December 2021– January 2022

The tactical steering group for surgery requested that the project group should manage priority questions since the resources do not cover the needs daily. The first phase of the process started with a dialogue meeting with an introduction of the newly formed group and discussions about the project directive from the hospital director. The project managers held the meeting. Process managers from K2 to K6 were invited and involved in the discussion about the mission. The project managers described the mission and assignment: *"The prioritization process must be investigated because current data show that production needs exceed capacity".*

The purpose of the group was declared to jointly investigate the prioritization process for acute surgeries using the DMAICL roadmap. The issue raised was how resources and patients should be prioritized in a more equitable way, especially across departments. The group's long-term goal was defined by the development director: *"We must try to find a better alternative to priorities than the current one."*

All the process managers had different opinions about the project process. One process manager described in dialogue with the group: *"I´m not convinced of the group's purpose but I am happy to follow the process and be successively convinced".* Additionally, the aim of the project was perceived as relevant since no one could really describe how priorities of acute surgeries between specialties were performed. There was a consensus in the discussion that a change was needed, and the current system was stated to not work optimally without mentioning why. The discussion moved on to historical prioritization initiatives that had not been shown to affect current practice. The vertical 10-step matrix for prioritization, presented below in figure 4.3, from SOU 2001:8 was shown and proposed by a process manager to be used as a platform for discussion.

Degree of urgency matrix:
The patient is in a condition which, if no care is taken, entails:
1. Immediate threat to life
2. Risk of very serious injury, premature death, significant disability and unbearable situation
3. risk of serious injury, permanent damage or very low quality of life
4. risk of expected deterioration / non-maintained function ADL level
5. risk of significant inconvenience, increased morbidity, prolonged period of illness, reduced quality of life
6. risk of inconvenience, injury, permanent injury or low quality of life
7. likely increased risk of impaired health experience or non-optimal quality of life
8. possibly increased risk of morbidity, deterioration of functional level or quality of life
9. risk of reduced quality of life according to the patient's perception and science and proven knowledge does not contradict this
10. no risk of increased morbidity, impaired functional level or impaired quality of life

Figure 4.3 Degree of Urgency SOU 2001:8

The importance of defining relevant concepts and using the homogeneous terms as a basis in the dialogue about priorities was emphasized by the group during the meeting. It was agreed that a common picture of priorities was also important for training purposes of new staff. The process manager at K4 pointed out that surgeries regarding hip fractures had clinical evidence-based guidelines, where a high one-year mortality had been found if the patients were not managed within 24 hours from the arrival at the emergency ward. The group concluded that it was unclear whether these guidelines were considered in current decisions. All the process manager mentioned that their departments had patient lists that related to “tender cases”, which entailed patients that had waited for surgery. The number of patients on these lists were argued to increase within the departments, and sometimes they became urgently prioritized even if they shouldn´t according to the ethical guidelines and government decisions.

Finally, it was agreed that the group's continued work would focus on how SkaS could improve the prioritization of acute surgery without including the elective surgeries. It was judged easier since certain aspects could be disregarded, such as finances and the patient's geographical affiliation as well as the care guarantee for elective surgery. To move forward to the Measure phase, each department was requested to internally review their routines based on the matrix that is compatible

with SOU 2001:8 matrix. There was a consensus and optimism, especially among the project managers, even though it was practically unclear exactly the what group was supposed to work with.

In a conversation with a physician and surgeon about their routines after the initial meeting, they retold their practical routines in detail without hesitation. One of them explained that the routines are experienced actions and not a document: *"I don't know if it is written down but can check if there are PMs or routines for urgent reported cases, but it isn't a problem because everyone understands and knows exactly what it means and how to handle it. We have never really had a problem".*

Several interviews with the process managers at this time confirmed that written routines are unavailable in priority decisions. For instance, one process manager stated that "*We don´t have set principles or routines, but these principles in the 10 step matrix are the basis when looking at the patient's best outcome …We often discuss what is considered reasonable and expected to do for a patient - an injury, on different people, means that you will treat differently….It is always acknowledged- What exactly does this patient need, will the patient benefit from the surgery?"*

Another process manager described the assessments of the patient as: *"We never look only at the injury on a scale, but at the whole person and their life situation and conditions for rehabilitation".*

4.2.2 Measure- Making sense of the mission.

January – February 2022.

All process managers as well as the project managers participated during the second meeting. The project managers initiated the meeting by presenting data to start a discussion of the current situation regarding acute surgeries (figures 4.4 and 4.5). This phase was about developing an understanding of the task in the process group. After a thorough review of the data produced from

the Swedish quality register SPOR, of the hospital's goal fulfillment, discussions followed. The data that is presented below was retrieved by the project managers.

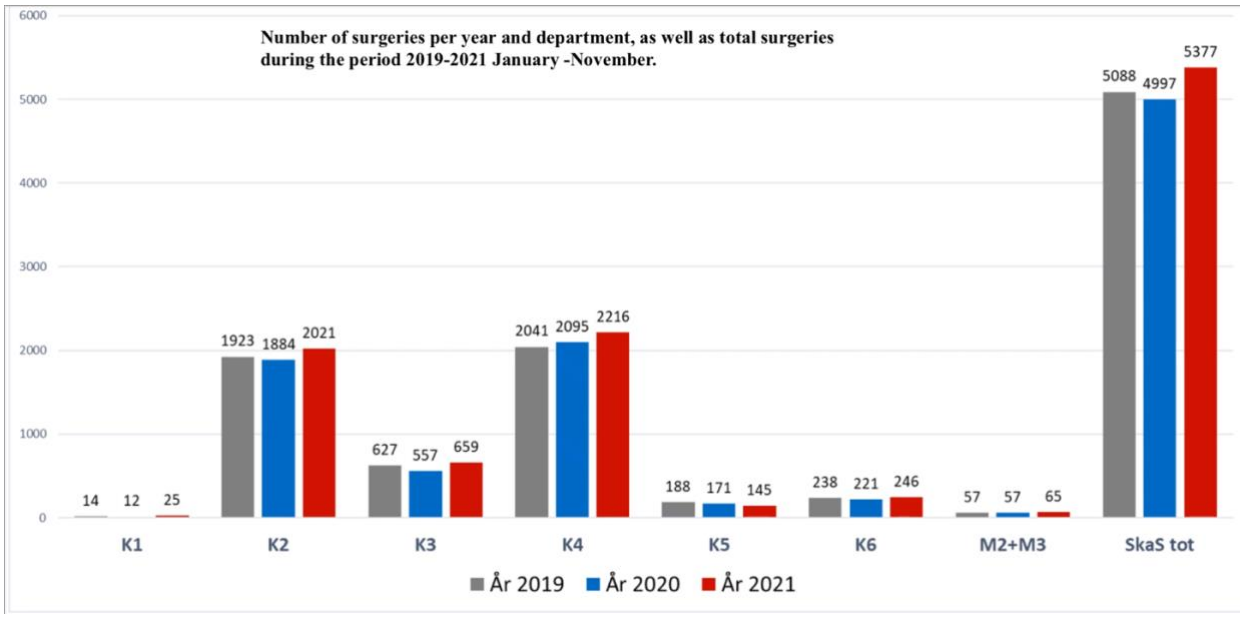
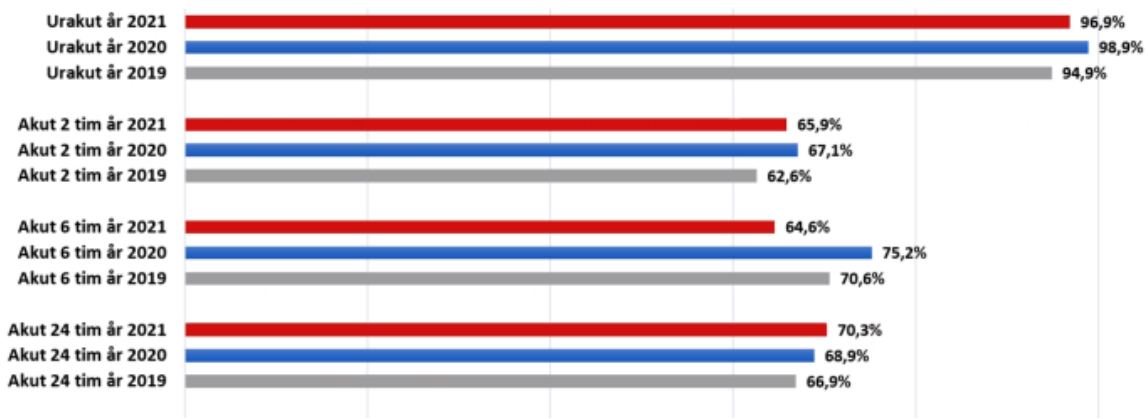


Figure 4.4 Number of operations per year and department, as well as total operations in the period 2019-2021 January - November, Source: SPOR 2021

Data showed that departments K2, and K4 accounted for most of the acute surgeries during the time period; approximately 1800-2200 surgeries annually. K3 had approximately 500 acute surgeries. K5 and K6 had 150-250 acute surgery yearly. Each department was then presented according to time criteria and stated priorities in the report for surgery. Then the goal fulfillment over the past 3 years was presented, showing the proportion of acute surgeries where the criteria reported is succeeded.

Figure 4.5 Bar-chart of goal fulfillment, accomplished surgeries within the time criteria, 2019-2021, source SPOR 2021.



Priority Acute	Waiting time	SkaS	Nationally
Urgent	10:de percentile	00:00	00:00

	Average	01:24	01:10
	Median	00:28	00:29
	90:e percentile	01:21	01:40
<2h	10:de percentile	00:31	00:31
	Average	03:29	02:52
	Median	01:33	01:26
	90:e percentile	03:30	03:37
<6h	10:de percentile	01:40	01:36
	Average	05:55	06:16
	Median	04:18	04:00
	90:e percentile	10:57	10:40
<24h	10:de percentile	04:03	03:10
	Average	24:43:00	20:25
	Median	18:58	16:14
	90:e percentile	46:58:00	40:58:00
>24h	10:de percentile	18:48	09:50
	Average	69:28:00	59:40:00
	Median	49:37:00	44:25:00
	90:e percentile	144:55:00	138:00:00

Table 2 Waiting time for each priority group in hours and minutes. SkaS 2019-2021 compared with nation, source: SPOR 2021

Mean and median as well as the 10th and 90th percentile in hours and minutes were presented for each time category. The median for each time category was noted to be good enough, but the mean was not fulfilling the time limits for priorities. One observation was a question of what causes the delays. The group discussed whether the pandemic had provided additional work and generated more acute surgeries, as an effect of elective surgeries having lower prioritization in times of backlog to explain the data.

The project managers suggested to make a histogram per department to visualize the proportion of surgeries that were managed in time for each priority group. Thus, the goal fulfillment per priority group could be assessed. The group jointly agreed on this approach. If stipulated time categories were not met, the group would be able to work upstream and investigate possible root causes to poor goal fulfilment. A process manager expressed that: *"I agree, it's great to look at*

this for practical reasons. Some patient groups we know need to be prioritized, and we work hard to prioritize them, but still, we don't succeed."

The data in figure 4.4 and 4.5 also resulted in many open discussions about OR space, an argued problem in prioritizing decisions. One process manager perceived that they constantly worked in backlog. It was pointed out by another process manager that sometimes there were medical causes or drugs that delayed acute surgery.

The project managers emphasized that it now was important to move from perception to data and investigate potential causes that might explain delayed surgeries within the time categories. A process manager asked the question *"What is it that makes us not reach the priority <24h, we can have a feeling but the important thing to know is what is actually correct".*

Based on this remark, the group decided to start with the time category reported within 24 hours (<24h).

Other citations from various process managers during the meeting give a good implication of what reasons were addressed further:

"Sometimes you are forced to urgently report a patient because it is not possible to get them a surgery - but then it is also needs-driven decision".

An additional hypothesis arose from another process manager: *" I believe the delays are affected by the fact that the patient has not been fully prepared and can be operated on when they are reported"*

Yet another process manager filled in *"... I agree, I believe that more surgeries should be reported to the time category over 24 hours instead of <24 hours. A strict < 24-hour group will possibly reduce the <24 lists so patients in need get the surgery on time".*

In this phase, all parties involved concluded that they had grasped the mission. Many issues and causes were raised from all group members that would permeate the next phase of the process.

4.2.3 Analyze -Analyzing the mission.

February- March 2022.

The approach adopted by the project group during the meeting was to analyze issues that aroused in the define and measure phases. Thus, data results from the histograms including goal fulfilment for >24-hour priorities (figures 4.6 and 4.7 and table 3) were discussed to investigate which prioritization decisions gave which consequences. This would help to understand - *How do we prioritize?* K2 and K4 together accounted for about 87% of the total number of operations reported within the <24-hour limit. The succeed goal fulfilment was measured as the waiting time between the time of the acute registration report and the time to surgery start in hours.

Table 3: Volumes and goal fulfilment 2021; Acute surgeries with priority <24h reported in Orbit.

Column1	Number of surgeries	Goal fulfilment
K2 (Urology)	918 (Uro. 235)	71% (Uro 64%)
K3	125	76%
K4	958	67%
K5	76	74%
K6	85	62%

Below are some examples of the histograms presented on reported surgeries in Orbit of <24h. The dark marked green line is the 24-hour limit and the bars to the right of this line represent delayed surgeries.

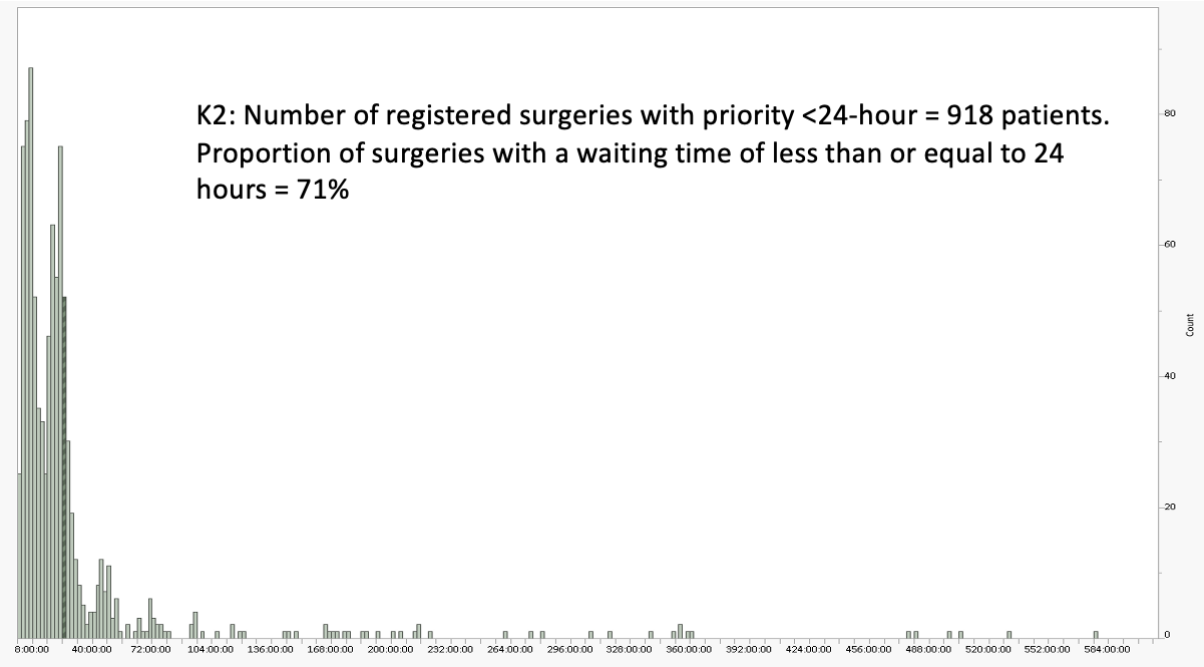


Figure 4.6. Histogram of K2.

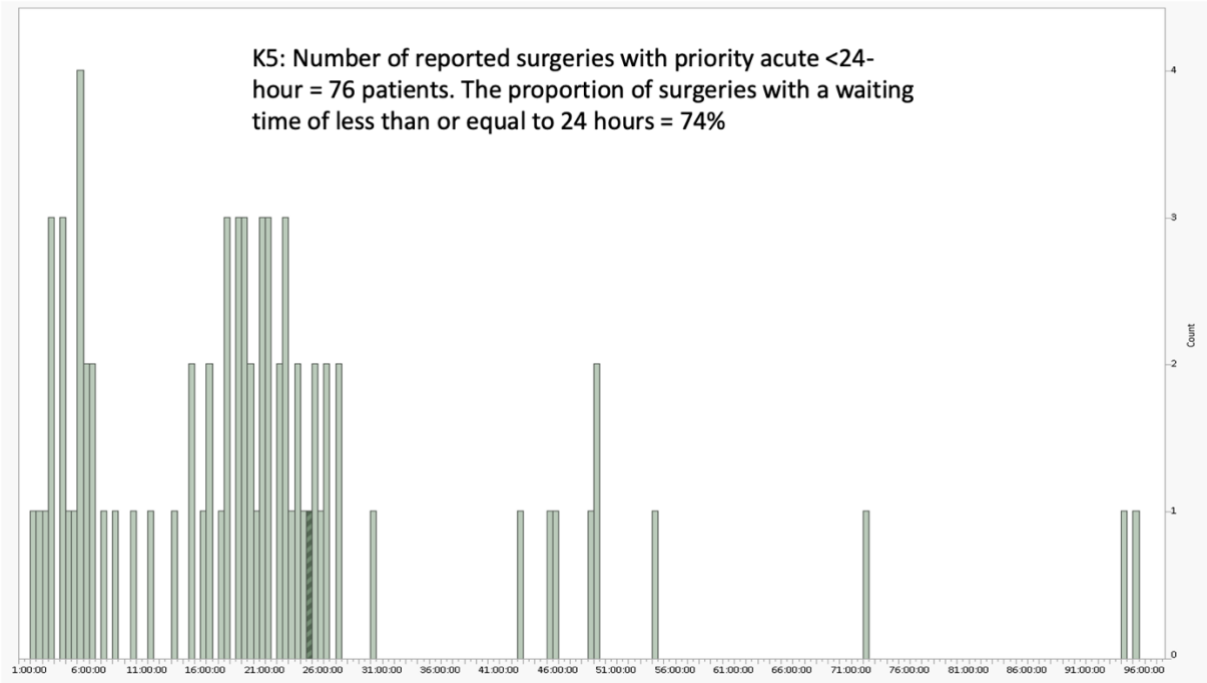


Figure 4.7 Histograms of K5.

Possible reasons for delays were suggested to be that the system does not get updated if the patient's conditions are changed and the set surgery time remains in the system. There was a uniform curiosity in the group if there were differences in how department patients are prioritized. For example, a process manager asked: "*Does K3 patients always precede K5?"*. Causes of delays were considered in the group to be rational, the fixed times that should be stated

in the report were described in some cases as difficult to relate to. It was stated in the group that the data will not be truly evident because incorrect registrations occur in the time reports. In the descriptions from the process managers, it seems like different doctors and specialties related differently to the acute surgeon's report in Orbit. In addition, the group speculated on whether there was diurnal variation and spread depending on when the patient is reported for surgery and by who.

There was a proposal for sub-emergency operating rooms, to minimize missed priorities of patients in the <24 h limit in the meeting. A coordinator saw subcategories as a solution to fairer priorities *"... perhaps subcategories of the time categories would have been good for dividing patients. The clinical view is important in prioritization decisions, often there is a reasonable amount on the acute list, and you can get a good overview of patients' conditions, but if there are many on the list, it becomes more difficult to assess and weigh the patients against each other…"*

The matrix from SOU 2001 was discussed; whether they are sufficient to assess understanding of how SkaS should prioritize when two or more patients compete for the same resource. The second question was if there was an established good enough goal fulfillment nationally, and if those facing prioritization decisions were aware of the weaknesses in the time intervals. The questions were openly discussed in the meeting without further facts. Eventually, it was decided that samples must be taken within each department to be translucent and reveal how the worst cases have gotten the delayed results that the data shows. Cases that belonged to the delayed group, i.e., cases that ended up outside the target boundary in the histograms, needed to be studied.

Another suggestion to explain the data was that the first doctor's prioritization is not medically correct or incorrectly assessed. After an assessment by a more qualified doctor, a re-prioritization is made, but it is not re-registered in the system. This possible scenario also means that the

opposite can happen; the patient gets a higher priority without the report being changed. However, weekends were described as calmer and easier to prioritize as there are fewer factors that interfere compared to weekdays. For instance, there are often two acute cases with the same priority that need the same space on weekdays when more factors affect priority decisions. Regardless of the scenario, the process managers expressed that it would be valuable to assess the proportion of registration errors without medical consequences. However, the process managers all agreed that their clinical perceptions told them that the registration errors do not affect daily operations, and that improvements to decrease registration errors might be initiated after project completion. It was noted, again, that the <24-h acute list contained a wide range of different medical priorities and patients. A process manager added: *"…it could potentially have a displacement effect…cases with a strict need to receive within 24 hours disappear from the list with a wide range of patients".*

In this phase, elements of justice were also discussed. According to the process managers, a just prioritization of surgeries became more difficult to assess when there were many patients on the acute list. On weekdays, conscious prioritization was not always experienced to be carried out systematically. Lack of the right skills to perform the surgical procedure was another reason for unjust prioritization that was suggested. Another explanation that appeared in the dialogue was that staff agree and base the decision on which department was not prioritized last time and therefore they should be given priority for their patient this time. From this perspective, justice in the process was described as a systematic reason based on the department's order and not the patient's needs. This was also evident in an interview with a physician at one of the departments: *"Sometimes it seems like logistical reasons and the staff's working hours are taken into account in prioritization decisions".*

A physician described a personal thought on the time intervals used in the current prioritizing order, in an interview after the meeting: *"I have thought a lot about the hourly intervals, they*

don't fit well with the patient's real needs, for example, there is no 8-hour time category. It is not really about the patient not getting the right care and a quality issue... A suggestion from my side, personally, is that until the operation is done that you do not change anything. If I have written within 6 hours, I want the operation within 6 hours, regardless of what the others have for patients or must do. When the surgery is done, or on the way to the surgery, you can change the report to 12 hours and cheat a little, so you get the right numbers even if you enter surgery after 8 hours. So did we do it at another hospital where I worked before SkaS ".

A process manager reflected on the surgery report and variations between specialties in an interview afterwards and mentioned: *"We have no written routines because patients and cases can´t be compared so easily, but we have a structure where we know what we usually give the highest priority. There are differences between patients and patient groups, all patients are assessed individually. Doctors also think differently in different situations. Sometimes you can make a priority that seems medically strange, but sometimes the right competence or equipment is needed to enable a successful operation and healing for the patient. Improvisation becomes part of the prioritization process. An injury, for example, can belong to an old and fragile patient but also a young and healthy patient, then the prioritization becomes different because they have different needs".*

In another interview, a coordinator described scenarios where cases were presented as being acute than they really were: *"... when different specialties want to enter the same OR, there can be rivalry and our perception of what is the most medically correct priority does not match what they think about their patient. Sometimes the arguments or what they claim may be about other things, for example, that they want to do the surgery before the end of the day or not performed during on-call hours… so it is not purely a medical priority behind certain priorities. It does not affect the patient but is practically easier. The OR space is also a basic problem - at the same*

time, we cannot have an acute capacity that is oversized for the worst-case scenario all the time. It's a balancing act…"

4.2.4 Improve- Measuring the mission.

March 2022

During this phase the project group determined what to measure from the histograms. The meeting started with a summary of the ongoing benchmark on priority frameworks to inspire the dialogue. The overall perception was that continuous improvements seemed to be a successful approach to improve priorities in daily operations. However, the common perception was that there were no best practices regarding prioritization *between* different specialties in this area yet. Drawing from the dialogue, the members agreed to start measuring prioritization outcomes using the histograms to be able to discuss how they had prioritized acute surgeries *between* the departments. Thus, root causes for unjust prioritization across departments might be revealed. A project manager concluded:

"If we get a common picture of causes, we should be able to refine a prioritization framework and then measure outcomes month by month".

The group was aware that they would not find the perfect set of routines for priorities, but could build it themselves, together. No one had had the time to check further data or samples since the last meeting to see if the registrations were correctly or incorrectly reported, but the hypothesis was that the data would be useful to improve the priorities. It was stated that it is a fact that there aren´t enough acute ORs but seemed that the process still could improve delays by looking for variations in the histograms. However, this was considered a minor problem according to the project managers who stated: *"If priorities prove to be an obstacle after random sampling, we can calibrate and discuss so patients get the surgery on time"*.

It was also emphasized that the prioritization process should accelerate slowly, involve all stakeholders and build the model from the ground to make long-term sustainable decisions. The project managers suggested that the group should start collecting hypotheses for delays in a list

along with the samples from patient records in order to confirm or reject the hypotheses; a common remedy to improve variations in systems according to a project manager. K6, do not have patient journals to go through in the same way, but they were asked to comment on what they see as value-creating in the process. They emphasized that OR:s on weekdays are most difficult to manage. They would like better coordination of the acute OR´s with the departments with a daily meeting routine.

The groups continued work concerned all departments, K2-K6, which were commissioned to examine 15 patient records per department as a sample to explore what types of patients were delayed and what prioritizing decisions where behind to understand why the goal fulfillment <24h is not achieved. The selection would be random or convenient-inductive, where classifications and categories were generated successively during the review. Results of the review should be sent the day before the next meeting to compile. As part of this, an extensive literature review was conducted in search of a practically useful prioritization template found in part A. A project manager comments on the next step and explains that: *"When 15 root causes from the sample have been examined from each department, a 20/80 Pareto analysis can be done. Because in most cases, 20% of the causes account for 80% of the effect. It is evidence-based recurring in almost all contexts in variance analyzes of outliers' data".*

The project group concluded that the found frameworks in the literature was similar to those used in Sweden. However, most articles did not have descriptions of "exemplary conditions" in different surgical specialties. It was concluded by the group, based on the search, that it does not exist guidelines for urgent priorities to be adopted or implemented. However, the best practically example found were a routine from Södra Älvsborg's hospital group (SÄS), which had a routine written down for priorities between departments, where examples conditions of prioritization for all specialties had been produced. The routine also displayed who was responsible for cases when medical priorities were hard to judge. The process managers were requested to review and

comment on the SÄS-routine and see if it could work to be implemented with adjustments to fit at SkaS. If, contrary to expectations, it could inspire a written routine and be tested. Learning and evaluation could be the next step in the process if a new routine was agreed upon. The proposal for a meeting forum for daily reconciliation was taken up again, some departments thought the idea was good and agreed, and the departments with smaller volumes were more skeptical.

4.2.5 Control- Interpreting the results

April 2022

A cupel of the process managers had time to review patient records before the meeting and the results were discussed. Clearly, there were incorrect registrations, but also incorrect priorities as an explanation for patients falling outside the 24-hour limit. However, there were no written detailed reviews to compile the material. It was a crucial step to be able to move forward in the process of changing routines, according to project managers, since the group had to build and learn from existing routines to improve internally. A process manager commented on the SÄS routine: *"I personally think you can take this routine straight off, it looks elaborate, but I´m curious about what their reality looks like, is it significantly better than ours through this governing document, or is their goal fulfillment the same as ours".*

A project manager added: *"It may also be that they have a great governing document but don´t follow it at all*".

The process managers were generally positive at this stage and implied that it would be a good idea to implement and test but stated that it would not have been necessary if they had the OR space - but this was not the reality. A process manager pointed out that <24h patients seemed to be the root cause explaining why priorities do not work, according to their sample:

"It is a too large group with a too wide time interval that accommodates too many different medically important and even less important patients".

It appeared from another process managers sample that patient registered for <24 hours were reported erroneously, or that ORs were missing. It was concluded that about half of the department's 15 samples incorrectly ended up over 24 hours, but from the start, it should have been reported as >24h and not <24 h. Another department that did not inspect their samples quickly found registration errors and assumed it was a common cause of delayed surgery. Further, medical reasons related to the patients were found to emerge after the surgery report was sent, which caused errors in the reported time limit. Another scenario presented was that a person that was not the surgeon reported the surgery without knowing what to fill in and no corrections were made afterward in the system.

Everyone in the group agreed that if the SÄS routine would be tested, with modifications, it should be followed up so that no medical negative consequences would appear. Moreover, it was stated that the document should not govern the assessments of the medical profession. It turned out in the dialogue that difficult prioritization decisions and tough trade-offs sometimes land on K6 to decide. The process managers admitted that it occurs, usually when there is a clear conflict between two cases from different departments. It was described as a difficult role because an anesthetist or coordinator does not have full knowledge of all specialties and patient's needs. Easily accessible daily Teams-meetings were proposed to update acutely reported patients' priorities to minimize conflicts, since patient needs can change rapidly both for the worse and for the better and every specialist knows their cases best. It was decided that everyone should try to submit written summaries of their samples for compilation and again, check the SÄS-routine and substantiate it with the reasons found. The project manager believed *"It will provide internal knowledge"*.

In the next step it was discussed whether the SÄS routine could be a good basis for SkaS. In general, the attitude has changed among the process managers- The document was seen more as an obstacle. There was a fear from the process managers that a document would become a

decisive governing document and may impair priorities. It was also stated that the individual competence and experience-based assessment could be reduced. A process manager described that the prioritizing of patients is a dynamic condition-based decision and believe that a document could indirectly make the priorities less flexible. The project managers emphasized that the document would be used more as guidance and support in decisions, so it becomes valuable. The process managers did not experience difficulty prioritizing medically. A process manager stated:

"... We do not want another paper ladder that gives hollow and false promises ... The data sample was a good and useful self-reflection for us. The cases that took the longest time for my department were the seriously ill ones, where we could not control the priorities because the anesthesia did not think that the patient was inadequate health before surgery or that there were higher priority patients on the acute list".

The process managers did not hesitate to express that priority decisions from their point of view are a minor problem for acute patients. They believed and perceived that other factor such as OR space, equipment or other higher priority patients affect acute surgery delays. A process manager describe in an interview after the meeting that: *"The time intervals cause difficulties and affect acute surgeries, especially registration for surgery between 6 and <24 hours. There is an 18-hour difference in the decision in the registration, it becomes strange, and you end up with the question of what a medical priority is, and what is a logistical prioritization. That is the most interesting lesson I have learned in this process. In the <24h group, there is a mishmash of cases that are very medically important that it´s done in <24 h, mixed with cases that are logistical good to get done < 24 h but 30 hours is also ok. 6 hours reported cases are the same, 8-10 hours may be okay, but it is not possible to report <24 hours because then it can be too long. There we can have different views on the reports between the specialties.*

To summarize the phase, the need for a new routine or guideline was off the table to test. There was an unwillingness to risk the current system for prioritization that worked quite well in practice but included a lot of systematic errors. The process managers expressed a believe that a written routine could be misused to access ORs and possibly create mistrust between the departments. In addition, it was stated that the majority of the delays were incorrect registrations and system errors and were not caused by misjudgments in the medical prioritization of the patient. The project group stated that it was reassuring and a good seal of quality that it did not affect patients. The remaining question in the group was how quality should be measured in relation to acute surgeries since the goal fulfillment did not show the experienced reality. The meeting was abruptly rounded off and the continuation of the process was unclear to everyone, the next meeting was booked without a clear agenda or defined tasks.

4.2.6 Learn- Making decisions and reflecting on the process

April 2022

During this phase, it was apparent that the process managers decisions was a persecute for the process continuation and that their drive is important. A project manager commented the last meeting: *"If there is no internal drive from them, it is difficult to move forward, forcing change is not something to strive for"*.

A reflection after the meeting from a process manager was: *"For me, priorities are a super important topic, but the purpose of the meetings is unclear, the goal is not defined. There are a lot of discussions - but we must know what to come up with. The last meeting was difficult, and it feels like reaching a back alley. There are a lot of meetings as a process manager - it can be important but frustrating when you do not know what the purpose is and where something is supposed to lead*".

Another process manager described their perception of the process *"The project group facilitates the success of the process, if we are to have a strong edge, project managers may need to be more decisive in the process. They support but do not decide. I do not think we will find a good solution organically - we realized during the process that it was difficult and narrowed it down to the acute operations because it was and felt more tangible. It was a good start, but I do not know if that is where the main problem lies".*

Further, another process manager described that a fundamental issue from their point of view was: *"All process managers have their own truth - and can justify why their clinic is most affected when it must be prioritized, but I think it must be done at the level of a department manager or higher".*

There was a consensus about what insights the process managers had gained from the process. In an interview with a process manager, they described learning outcomes from the process as: *" ... what has been most valuable is when we looked at goal fulfillment and 15 samples of what we actually did within each time frame. Then it is still unclear whether it is the right priority or not if it doesn't meet the goals of the time frame. Then I think the process has shown that we do not actually prioritize the acute surgeries at SkaS, because we always have patients who do not receive surgery within the right time frame".*

The same process manager continues to explain that their department has specific cases where it is important to do surgery <24 h: *"This month we managed to prioritize those specific cases but otherwise SkaS performance statistically is almost the worst in Sweden, in that specific patient group".* The process manager explained that the process has provided some specific causes that could explain the bad statistic but commented that: *"We need more open ORs because we share ORs with other departments and they also need space ... We always need at least all the space we already have".*

A plain description found in all answers regarding difficult priority situations from the process managers was: For example, a process manager described:

"We are often in a situation with several patients with the same priority but a small OR space to get them in. We have to choose one of the patients, which also means that we are forced to opt-out of patients, it doesn't feel medically good, but we have no other choice. This is what is the most difficult, we are constantly forced and make bad medical decisions due to the fact that there is not enough acute OR´s… we are forced to prioritize among already prioritized patients".

A week after the meeting in an interview a process manager expressed a positive outcome from the process. In the dialogue, thus the circumstances, there was an indication that the process might have helped to talk and discuss difficult priority decisions, the following was described:

"…Yesterday we had 2 high-priority <6h operations and 3 <24h that had to get surgery. It worked out! We got extra space, there was an understanding that even our department have cases you cannot postpone. It may begin to become a better understanding and loosen up a bit between the specialties when quick access to acute surgeries OR´s is needed, even though situations like this usually don´t happen ... the path to full understanding is not straight, but…"

At the next meeting, a process manager mentioned that the acute surgery program needed to be reviewed. It was pointed out that the upcoming reorganization change, new halls, and premises, with two separate flows, could be a good opportunity to address the priority question again. It was decided that after the reorganization, the group could review the established routines. Hypothetically, it could be long queues at one department, and it would be relevant to even out the queues by the distribution of OR space. The project manager filled in and stated: *"The approach with histograms and random journal reviews is a good method to take the pulse of the process again after the summer".*

There was a consensus in the group that reconciliations of the acute list and meeting routine would be needed to get bureaucratized. It was concluded that inequalities in the vertical priorities between the departments remained. A routine for the distribution of OR space between patients from different specialties, with the same priority, was needed to specifically be reviewed. In the discussion it was mentioned that some specialties have difficulty fitting in high priority cancer surgery patients, at the same time, many elective surgeries were performed. The distribution of ORs was proposed to be distributed based on the department's queues instead, to be able to succeed in evening out the imbalance in the horizontal priorities of resources.

However, one week before the submission of the study, it was announced that SkaS had reached a breakthrough. The department managers, process managers and the hospital director have agreed to change the prioritization routine for elective surgery. Time and reflections of the process seemed to have yielded results according to the project managers. The prioritization principles were suggested by a process manager. The identified problem areas that have been discussed as well as the underlay from the acute prioritizing process will be used for priorities of elective surgeries instead. The proposal was approved by the tactical steering group at SkaS and will now be tested and applied for prioritizing elective surgeries.

The preliminary prioritization design of elective surgeries will take place in accordance with the following principles: First and foremost, patients with the greatest need will receive care first according to the first 8 prioritization principles in Swedish legislation shown in the matrix in figure 3, regardless of diagnosis. Each clinic must prioritize vertically according to the matrix, and this must be translated in specified order of priority within each specialty, the waiting lists shall be filtered at the entire SkaS. Thereafter, horizontal priorities must be made, departments with patients at the same priority level must be distributed. With this precondition, OR's space can be redistributed with other factors and distribution keys to achieve a SkaS-overall OR distribution that is based on the needs of each specialty. Then the conditions for using the various

surgery departments, Lidköping, Skövde and Falköping, for each type of procedure can also be weighed in. The retrenchment should enable the distribution to be more flexible. The distribution will be re-evaluated monthly and provide a basic distribution based on the need for acute and elective patients with a priority of less than 30 days. Factors such as education and skills, waiting time, production rate, finances, and conditions within, and outside SkaS are also mentioned reviewed in connection with the new routine. Project managers said in conversations afterward that even though the process did not focus on prioritizing elective surgeries they believe the process has influenced this decision. A workshop with the department- and process-managers was booked to focus on how to operationalize the principles into a practical guideline. The project group has the mission to jointly refine the design during the autumn of 2022. In addition, a follow-up analysis of acute prioritizations will also be carried out after the summer. If the same goal fulfilment remains the SÄS routine will be considered again.

4.3 Reflections on the process from participants.

4.3.1 Dialogues around priorities

This section aims to address the thoughts from interviews after a half-year of working with priority questions with staff *not involved* in the project group. A majority of the interviewed staff described the priority situations for acute surgery as a relatively well-functioning process at a first glimpse. Generally, there was no intimation from the surgery planner, coordinators, nurses, or physicians outside the project group working practically which implied that medical priorities were hard to recognize on a patient level when deciding vertical priorities. A physician described:

"…The advantage of vertical priorities is that we know each other very well within the specialty and can have a good dialogue and work closely, we have respect for each other and each other's opinions".

A surgery planner described the dialogue as:

"…We talk with each other at the clinic and have a useful dialogue with the coordinators daily. New physicians can sometimes set the wrong priority, but then we can definitely talk it through with all professional categories, that dialogue is unpretentious. No one questions the medical priority set by someone who has specialist knowledge and has met the patient".

Another surgery planner described the dialogue as a natural part of their work:

"…It is an open natural dialogue with the coordinators and doctors every day, a give and take situation, my work depends on communication in order to get a good flow in the procedures, however, it is important not to take things personally but to see oneself as a messenger both towards the patient and the involved surgery staff in priority situations".

Everyone explained that they trust their own judgment when facing priority decisions. A plain answer that aroused from all descriptions was: For instance, a Coordinator answered: *"I feel comfortable and trust my decisions when prioritizing – I trust my medical education as an anesthesia nurse. We have a great collaboration and dialogue with our doctors that do the medical judgment".*

A physician expressed that the dialogue between the departments worked *"pretty well"*. The description differed compared from the other answers: "…*We anesthetists take priority discussions quite rarely, that is when the OR space is insufficient and we need to prioritize, in 9 out of 10 cases, we don't get involved".*

A department with fewer acute surgeries a physician described: *"…We rarely need to prioritize within the specialty, so when we need an acute surgery, we call the coordinator and check what the list looks like. We try to help prioritize our patients, so the program works out, it is constructive dialogues, if there are other patients with the same priority, we call the reporting doctor or surgeon".*

In another smaller department with fewer surgeries, a physician explained: *"At our department, we benefit from having short surgeries in horizontal priorities, but there is a great deal of respect for our patients when we press our alarm. The acute surgeries we have are often reported immediate or <2h and then we use the alarm function"*

The description that stood out was the coordinators who work towards several of the departments. The following description represented answers from all coordinators concerning priorities between specialties: *"The strength as a day-coordinator is precisely the discussion with all parties involved, but I think it is a person-centered experience. It depends on how they collaborate and whom you collaborate with, it gives different outcomes. If the collaboration works, it is usually great dialogues to get the acute program together, so we utilize the space we have as well as possible based on medical priority. The logistics are also fundamental and sometimes such things determine how the acute flow is handled. But in many ways, you have a lot to say and there is a good dialogue there are always thoughtful arguments in all dialogues".*

Additionally, the coordinators expressed that there were very reasonable dialogues and conversations, but sometimes it could be too many different people involved from each specialty and a lot of parallel conversations. They suggested that a better dialogue would be taken place if the vertical priorities were discussed, first within the department, and then the horizontal ones were followed.

4.3.2 Prioritizing description perceived with friction

Contrariwise to how the dialogue was described, there were also examples and situations when co-workers not involved in the project experienced priorities less frictionlessly. A physician described a scenario that could be found throughout all the interviews: *"If all specialties have high-priority*

patients, discussions naturally arise, usually, these are constructive dialogues but with a high ceiling, but always a give and take situations, it´s hard to get everyone satisfied".

Another physician who works at both hospitals explained that the general experience was that it worked well despite local differences and explained: *"We as anesthesiologists sometimes find it very difficult to weigh 2 patients against each other, these situations would not have arisen if the space existed. I understand that those who do not get their patients on the program are annoyed and disappointed. It is a work environment issue too because no one can work from early morning to late in the evening. The acute list is a conflict if you look at working hours because prioritizing patients is also determined by staff working hours and schedule ".*

A perspective from a coordinator that represented a common viewpoint from coordinators, was the following description: *"…The difficult prioritization decisions occur when two clinics are to be rushed to the same acute room and both clinics work for their own patients' surgery... Some care more about their own patients than others. I think the best thing is to get the surgeons to discuss with each other and not stand as an intermediary – that is not our job. They may claim that their patients are most important when they talk to me, but after a dialogue with the other specialty, they usually get along well ... It is a pity is that dialogues and decision situations like this sometimes take unnecessary time, it's wasted time we will never get back…"*

4.3.3 Discissions around current routines and guidelines

There was no lack of written-down routines or guidelines expressed with clarity, but it emerged in the dialogues that new routines in the event of collisions maybe could facilitate prioritization decisions more easily. There were also answers with deviates regarding new guidelines and routines. A coordinator expressed: *"…Planning the acute list through short meetings in the morning, given that they know how to prioritize vertically before we plan today's acute program,*

would have given great benefits, especially when a situation arises with two patients with the same degree of urgency who need to enter the same room, we need to find a routine which works".

"…It would be good with input afterward to see how other specialties experience horizontal priorities…When it comes to horizontal priorities, there may be old conflicts that remain, for example, maybe the other department's surgeon thinks we went ahead again. I believe we should document cases where different opinions have arisen regarding horizontal priorities, to be able to talk better about it - if it has been prioritized incorrectly or if it could have been done differently to set new routines". - Physician

"... the dialogue is as important as guidelines, our basis for planning the flow well are correct surgical reports, if they are correctly done, fewer surprises will appear. If we have a fundamental good planning basis, it flows on, it is noticeable in my work that mistakes often occur in the acute surgery reports that could have been avoided …" - Coordinator

On the question of whether the staff felt that routines were lacking, there was a common recurring opinion that it was not missing. The question was answered with different angles of approach, but with the same meaning: For example, a physician expressed: "*…No, not guidelines, it is not priorities that are difficult, if we had enough space, we do not need to prioritize, it is the space that makes priorities difficult, especially horizontal".*

"… I don't miss guidelines, I feel safe and secure with the experience I have created. Not because I am fully learned, but it is clear that sometimes there is support in guidelines, often it is required that each patient must be seen without being compared only to the medical priority, for example, reported <2 h surgeries can be very different in nature, and it is difficult to capture specific needs in written guidelines…"- Coordinator

“Guidelines in situations where you need to think fast sometimes feel time-consuming and maybe not be so helpful, it requires experience and an experienced clinical eye”- Coordinator

An answer that stood out from the crowd was: *"I think some guidelines for situations with many on the acute list and shared space would have been good, but it is difficult to design I can imagine… "*. – Coordinator

4.3.4 Reflections and perceptions around justice and equal priorities

Reflections on whether priorities were fair and equal and are carried out in accordance with statutory principles were treated. A strong majority answered with: *“that’s a tricky question”, “both yes and no”, and “it depends”.* The perception was homogenous among all staff categories. The 10-step matrix and the three ethical principles were not currently practically written down or set up on the wall but were perceived to be complied with their work informally. Everyone expressed that it usually was fairly and equally prioritized according to medical priority. To give a glimpse of the described answer to the complex part of the question as depicted: For example, a physician stated: *"Not to one hundred percent fair, I don’t think we´ll ever get there. It is not often that there is a disagreement that something is prioritized over something else…but, there are occasional discussions about how the order of priority should really be fair If we had space ...*– Physician

”The difficulty of prioritizing equally is the medical priority, we often discuss this at the clinic- How do you compare suffering and healing time for different patients… There is no good answer”- Surgery planner

“Both yes and no, basically we do it according to principles, but… when different specialties want to enter the same OR, there can be rivalry and our perception of what is the most medically correct priority does not match what they think about their patient. Sometimes what they claim may be about other things, for example, that they want to operate before the end of the day or

not on-call hours. It is not just a medical priority behind certain priorities. It does not affect the patient but is practically easier. Space is also a basic problem - at the same time, we cannot have an emergency flow that is over dimensioned for the worst-case scenario all the time. It's a delicate balancing act...”- Coordinator

A physician also brought up another perspective and mentioned that the regional assignments that hospitals receive, a number of operations, that must be carried out, can be a conflict to prioritize equal: *“I feel that it can be a failure in the prioritization, some claim that the regional assigned priorities go side by side, it is not a huge problem, but it has an effect during congestion ... since the horizontal priorities of the resources can be skewed, it is not obvious that an elective gastric bypass is more important than a hernia patient with a lot of pain…It is important that they are weighed against another surgery that is needed i.e., cancer surgery, and to think about what else could have been done, and if it should be given a higher priority ".*

4.3.5 Possible solutions and improvement suggestions

Several suggestions to improve priority setting at SkaS emerged in the interviews, the following citations were suggested from each health care profession:

“We can improve our planning, to make the priorities better, if we improve our preparation and planning, and check the day before to see what the program looks like in more detail. For example, we can then prevent starting the day with three complicated cases, maybe it is not necessary to have them at the same time and if it must be done, you have time to prepare so there will be no delays. This needs to be done the day before, it is not uncommon with rearranging at short notice, the same day, unpredictable things can happen, but.. you can plan to minimize it”.
- Physician

Another physician suggested: *“…When priorities are difficult perhaps you should have two systems: one for medically high-priority and one with logistical time categories”.*

A surgery planner with experience from the radiology department stated: *"I am satisfied with our prioritization cultivation, it is fair, but I believe that it can be done in a different way. When I worked on another department, there was clear detailed list of requirements to prioritize acute patients. At the surgeon, it is less specified and more difficult for me to prioritize so it will be fair…I think it was great that the prioritization group was created, it was well thought out because we need to get a different priority thinking".*

A suggestion from a coordinator that could improve the priority decision process was more practical and concrete: *"…I believe that an overall coordinator function for acute surgeries would benefit to fairly judge patients based on strict medical priority. The overall coordinator should have no connection or involvement with a specific department to be fully objective in decisions… "*.

Another concrete improvement suggestion from the coordinator was: *"I believe that systematic errors and less inaccurate reports would improve priorities. Sometimes it gives a lot more work and we coordinators are forced to double-check and call around. It is our basis for planning the acute program and it can be easily avoided if everyone has the same information and agrees on what and how the acute report should be reported and how patients' medical priority should be interpreted"*- Coordinator

5. Analysis and Discussion

The material presented in the case description takes a perspective from within the project group process as well as representing a perception of people who work practically with acute surgery priorities. Therefore, it is fair to say that the material is rich and covers many aspects of priorities as well as the whole longitudinal project process. Several quotes and descriptions have given a picture of everyday care and the current routines for priority setting. The analysis will address the research questions: How priority setting is currently performed, and the factors shown to

affect and influence the priority setting at SkaS will further be described and analysed in this section. The project process benefits and shortcomings will be addressed as well as a review of the project process

5.1 Priority setting and factors affecting acute surgeries at SkaS.

RQ 1: *How are priorities for acute surgery currently performed and what factors affect priority setting.*

5.1.1. The practical priority routines described

The acute surgeries are almost impossible to plan more than a few hours ahead due to a substantial hourly as well as daily variation in the inflow of patients. Thus, it is hard to predict or match the demand with capacity. When patients have been assessed at the emergency department by a physician, they are registered in Orbit for acute surgery list. Staff at K6 , the coordinators, receive the registration report and plan the daily program. The surgery card contains information about the patient, what medical samples are needed, the type of procedure, and the methods and equipment that are required for the surgery. The coordinator and anaesthesiologic staff then make detailed planning and control so that all preparations are coordinated, ensuring that the patient is correctly prepared for surgery.

The notifying doctor is responsible for ensuring that the report is correct and states the medical priority and the degree of urgency in hours i.e., that the patient is correctly assessed to the time categories for prioritization in figure 1. However, a specific day's program for surgeries may need to be redirected quickly if more high-priority patients appear on the acute list. Thus, planning needs to be flexible and adaptable: coordinators and section leaders at K6 must be able to quickly adapt the staffing of ORs to match the program. Other co-workers involved in the prioritization process are the surgeons, coordinators from the different operating specialties (K2-K5), as well as those who fill in the acute surgery report, and all the staff at K6. Thus, many co-workers with different tasks from different departments are involved in the planning

process. Everyone in the process is concerned that all acute surgeries have a place in the program according to the time reported so that the surgeries are carried out in time.

5.1.2 Operating Rooms – A factor influencing priorities.

With many people involved in the process, a short time span between the report and the procedure, and an obvious problem with accessibility to ORs, there are several factors that have emerged during the case process that affect how priorities are currently set. On an organizational level, the availability of OR space puts an increasing pressure on the need for vertical prioritizations within the specialties as well as horizontal prioritization between the departments.

That ORs are shared by the operating departments is also described as a cause influencing prioritization. Shared ORs means that the departments share a key resource for performing surgical procedures. However, the distribution of OR space between the departments is mainly based on a historical distribution that is less flexible to rapid changes, why patients on the same vertical priority level from different specialties sometimes end up in a collision between specialties. Subsequently, sharing resources between departments sometimes means that not all patients get a place in the acute day program, and this affects elective surgeries that may need to be canceled.

Limited OR space to perform surgeries also gives rise to discussions about medically-based versus logistically based priorities, since the co-workers involved in performing the surgeries should not work around the clock. There will therefore be competition for acute OR, especially during the day, because the staff wants to work during the day according to a set schedule. This factor therefore also becomes relevant because the priorities are dependent on the working environment. The staff's working hours and schedule has been shown to influence priority decisions in the case process. Working hours significantly affect acute surgeries in Lidköping.

No emergency operations are performed after 18.00 unless they are assessed as having a time category on the immediate- or <2h-priority level.

The lack of capacity can be argued to affect how prioritization takes place. It is described that the lack of OR primarily makes priorities extremely necessary because the fewer ORs, the more important it is and will be to prioritize vertically and horizontally for the staff. In addition, it appears that the priority question has not been explicitly worked on before the group was commissioned to do so even though the demand to work with priorities has increased due to the Covid 19 pandemic.

5.1.3 Missing routines – A factor affecting horizontal priorities

There is one written prioritization routine that applies to all specialties. The routine describes the vertical prioritization using time categories that are based on the urgency level. However, the routine does not provide any examples that explain how the urgency levels might be translated across various specialties. In addition, it is also ambiguous whether the written time category routine affects how priorities are performed. At several process meetings, the group members repeatedly claimed that prioritization is based on experience-based decisions that take place in a dialogue within the department. No one thought or felt that routines were needed to determine the acute medical priority within the specialty. Consequently, it can be claimed that the vertical priorities were perceived by the group as relatively frictionless. However, there is a dissonance in how the degree of urgency is assessed and reported, and indications that the assessment varies between physicians within the specialty as well as between specialties. Moreover, there is no department that has written routines or specified descriptions on how to manage vertical or horizontal prioritizations between patients, patient groups, or diagnoses within or between departments.

The only standardized routine is the acute report made in Orbit. At the beginning of the case process, vertical priority notifications made in Orbit were not considered a major problem. However, later it became clear that registration errors in the report cards were one of the major explanations for delays in operations and that the stated degree of urgency was not achieved. Aspects that affect report cards and indirect prioritization support can be attributed to several errors that have been identified in the pre-operation planning process. For instance,

- The reporting doctor chooses the wrong card.
- The reporting doctor was not the same as the *surgeon*.
- The reporting doctor did not have enough knowledge to report the case and the card was reported with errors.
- The patient's conditions changed after the report for both the better and worse.
- The stated degree of urgency did not match the patient's time needs.
- The report is not based solely on medical priority. Logistical factors influenced the process to work away acute surgeries on the day program before on-call time.

5.1.4 The pre-operation planning process.

The assessments of the care staff are genuine attempts to manage their patients in the best way. In the pre-operation planning process, unconscious human errors arise, and several of the factors regarding the acute reporting of the degree of urgency will always occur in a complex organization. It is a matter of course that not all physicians possess and master the same deep knowledge for assessments, and everyone has the same right to learn to gain experience.

That the reporting physician and the physician performing the surgery are not the same is also a perception of the group. In addition, it is established the knowledge gap where the surgeon later in the planning process assesses that a different type of material and surgery may be needed to best perform the surgery on the patient. It is a factor that is generally good for the quality of care as well as for the patient's outcome and recovery. On the other hand, the prioritization, planning, and pre-operative preparation of the patient may be less consistent, take longer time, and get delayed.

When patients are treated their conditions can change quickly. Thus, the initial priority sometimes does not correspond to the patient's current condition, why the patient must be re-prioritized, sometimes the patient needs to have a higher priority and sometimes a lower one. Prioritizing decisions are described as a minor problem in situations with fewer patients on the acute list, but if there are many acutely prioritized patients, it is more difficult to prioritize correctly and update the current priority on all patients in need of surgery. The review of the patient medical records also revealed that a common reason for the delay could be attributed to the fact that the operation card had not been changed although the prioritization had changed; SkaS goal fulfilment was measured according to the time priority set early in the planning process but not updated in the system after the procedure.

5.1.5 The time categories for reporting the degree of urgency.

The time categories do not agree well with an individual assessment of a patient was a recurring argument addressed during the case process. However, the time categories are sometimes considered substandard to assess the needs of an individual patient. It was pointed out that some priorities can look medically strange at times because the prioritization categories are arbitrary. In addition, there is a pictorial description of the fact that between the <6h and the <24h time categories there are 18 hours, and patients that may need surgery between 6-12h cannot be reported correctly, why they are preferably reported as a <6h time category prioritization. Subsequently, the prioritization assessments of some patients do not fit with the current static time indications.

5.1.6 Other factors identified affecting the priority setting

Logistical factors such as working hours and staff schedule have been shown to influence the process to manage all the acute surgeries on the day program before on-call time. The acute report contains necessary priorities not based solely on medical priority. There are some necessary compromises that have arisen in the process where the surgeon wants to perform the

surgery, so they do not have to work overtime. The fact that the right specialist's competence is missing for the surgery can also determine its priority, as this may compromise quality and patient safety if surgery is performed. Another factor that has largely been shown to affect the order of priority is when two or more patients need to be prioritized horizontally between the departments. In these situations, patients are described as having equal medical priorities and need for surgery, and both need a place in an already crowded day program. The most common scenario is that there are insufficient OR space and the staff is forced to prioritize among already prioritized patients. It was admitted after the process that this gives rise to discussions, from the project group and staff in the interviews.

Most descriptions of the prioritization decisions convey an impression that the discussions can be seen as constructive dialogues, where coordinators, surgeons and physicians come together to make a proper priority. In these situations, coordinators or anesthesiologists can sometimes become moderators and asked to choose in tough decision-making situations. However, none of them see the above mentioned situations of moderation as part of their job responsibilities and do not want to take these difficult decisions. In the context of these situations, some staff expressed that they were forced to make poor medical prioritization decisions. Some staff even expressed that it is more or less easy to communicate about these situations depending on which co-workers are involved.

Doctors can sometimes be very concerned about their own patient and their needs without being able to look at the whole picture. The coordinators say that they sometimes think that another patient should be managed first and that some cases are unfounded in terms of how acute it has been assessed. Sometimes there are other motives given by the physician to get the patient into surgery based on simplicity, skills and working hours. There are also incentives where not all parties involved agrees on whom to prioritize, therefore is not everyone satisfied.

Historical conflicts where priorities are mismanaged have also come up during the process and the decision may have been based on who had to give up surgery for their patient. The staff do not expresses that there is a lack of routines or guidelines to perform the current priority setting, but at the same time routines are demanded for overall horizontal prioritization situations where two patients collide. No one wants responsibility when the situation arises because it is difficult to be neutral and no one is completely neutral because everyone is connected to different departments.

5.2 Justice and goals experienced in practice

RQ 2. *Is the current priority setting perceived to be fair and work towards the targeted statutory objectives?*

The following section will analyze whether the current priority setting at SkaS in practice is perceived to be fairly performed. There will also be an analysis comparing the ethical principles and targeted objectives to the descriptions from the process and individuals. There are countless descriptions from the project group and individuals that explain their perception of priorities being done fairly and according to the principles and objectives, but it is a complex picture described with a lot of aspects. This section will highlight the soft values perceived by the staff and shortcomings related to priority decisions.

5.2.1 Care based on need

The goal according to Swedish law (SFS 2017: 30) is that the patient receives care at the right time based on need. Care must be distributed on equal terms and those who have the greatest need for care should be given priority for care (SFS 2017: 30). The secondary data used for discussion shows that urgent and immediate surgeries are performed with approximately 95% target fulfillment or more. This can also be captured from the co-workers in the process; the urgent and immediate cases are never described to be compromised. There is no doubt that those with the greatest need for surgery are given the highest priority at SkaS. In comparison with national goal fulfillment at all hospitals, SkaS is relatively close in most time categories.

However, there is a difference in the <24h category average and the median, where SkaS are slightly higher in the waiting time for patients. The staff describes that they perceived that they perform better clinically than what the goal fulfillment data says. The weighted conclusions at the end of the process show that there are several registration errors, which may indicate that the staff's perception is correct. However, there is a discrepancy when discussing horizontal priorities between specialties. Sometimes medical priority in the category <24h is not perceived to be fairly managed.

There is a divided opinion on whether all priorities are purely fair, for example, OR space, working hours, and lack of the right skills are mentioned again. In addition, priorities between specialties are affected by dialogues between coordinators and involved doctors and surgeons where opinions on patients' priorities can be distinguished. In all descriptions there is a "but", "it depends", "yes and no" with several different explanations as to why. The ambiguity in their descriptions can be interpreted in several different ways, partly because they see a difference between fair vertical and horizontal priorities. Several doctors, planner and process managers suggest that the vertical priorities are fair within the specialty, but when it comes to horizontal priorities, they have a poorer overall picture. This is mainly because it is difficult to monitor and familiarize oneself with all cases that are not within the specialty. In addition, in a care environment, it is difficult to assess the suffering and needs of different individuals if they are on a similar vertical prioritization level. A perception that is recurring is that there will never be a 100% fair assessment of priorities. In other cases, external factors affect the preconditions for making fair priorities.

However, there are mixed descriptions of horizontal priorities and recognized by all departments that horizontal priorities are difficult to justify as being fair. It is clear from the process that no one is responsible for horizontal priorities and there are no overarching guidelines. Patients' justice falls on good collaboration and dialogues between doctors,

surgeons, coordinators, and anesthetists. It is acknowledged that in some cases, it is not just a medical priority behind certain priorities as mentioned in section 5.1. No one in the staff mentions that he or she feels that non-medical prioritizations affect patient safety or quality. These types of prioritizations are also considered to be practically easier in an overall assessment for the greater good in most cases.

5.2.2 Suggestions to prioritize more equally

Some think that subcategories should be used to prioritize more fairly, especially in cases reported to <24h. In the <24h patients' acute list, where there is a wide spectrum of different patients. It is perceived that sub-categories would lead to a better sorting and overview when it is difficult to assess and prioritize between already prioritized patients. There is also a higher dimension that is addressed regarding justice. It is argued that the horizontal priorities of resources are perceived to be determined by regional assignments which can skew resource allocation. It is perceived as problematic that elective regional assignments are given important priority when acute surgeries goal fulfillment has not been achieved. At the same time, the issue is more complex than that. Several individuals say in the interviews that it is a delicate balancing act; canceling elective surgeries to make room for acute surgeries will increase the backlog and might generate even more acute surgeries. A point raised on the issue of horizontal priorities says that at the hospital cannot have an over-dimensioned acute theatre constantly, which sometimes risks being empty. Another emphasis arising from the process is that it is important that all surgeries are weighed against other needed surgery and that SkaS needs a better awareness and precast to set priorities over what to choose to do in a larger perspective.

5.2.3 The ethical principles in practice

To compare the three ethical principles that form the basis of priorities in healthcare in Sweden with SkaS's work, I have analyzed how the staff describe the assessment of acute patients. Every description from the staff mention that a starting point for priorities is made from an individual

holistic assessment of a unique human being. In terms of the three ethical principles, the human value principle is described to be the basis for all decisions. Thus, it is not a written down directive, it is a matter of course in their work. Secondly, it appears that the patient's needs are the basis for all their decisions in practice, which is in line with the needs and solidarity principle. Every description of their practical work is permeated by the fact that resources and interventions must be given to the patients with the greatest need. Resources, on a daily level, are allocated in the most efficient way to optimize the acute program so that the acute list of patients is managed in the best possible way. All patients' surgeries are weighed against outcomes; questions such as “Will the patient benefit from the operation” and “Will the measure and treatment have an effect on the patient” always appear in the descriptions. Options for patients, where assessment is insecure are constantly discussed by the staff. This can be interpreted as indirect dialogues regarding the cost and effectiveness principle occurring in priority decisions daily.

In summary, analyzing the process by juxtaposing the perceptions against the three ethical principles from 1997 based on SOU (1995:5) are informally followed, naturally found in all decisions, and conceived to be mainly fair. However, it is an absolute fact that they are not included in the routine descriptions, or that they are set up or used in PMs. In the descriptions, experience and clinical eye is instead mostly relied upon for fair assessments. Vertical priorities are easily assessed until several vertical patients are set against each other in a small OR space. Some aspects of horizontal priorities can affect fairness, human impact plays a role, as different thoughts and preferences can affect justice outcomes. Further, poor communication and lacking routines between specialties are noted as the foremost shortcomings of the horizontal priorities. Lastly, the priorities may also be affected by external factors that cannot be controlled. Priorities that are not considered completely fair rarely affect patients and are not perceived as a problem for quality.

5.3 Benefits and shortcomings concerning the process.

RQ 3. Has the priority process work affected SkaS and what shortcomings and benefits can be identified from the improvement process?

5.3.1 Benefits emerged from the process.

To begin with, it can first and foremost be stated that the project group's dialogues, in comparison with how the priorities discussed in December when *Defining* the mission, have now been concretized from an abstract level to a concrete question. Given that this topic was only discussed in the organization when situations arose and needed to be resolved ad-hoc, the process can certainly be said to have affected SkaS. The late breakthrough can also imply that something affected the people involved in the process to arrive at a joint decision to change priorities for elective surgeries between the departments.

At an organizational level, this group has conducted dialogues between specialties regarding priorities, which has not previously happened at the operational level in the same way. At the beginning of the process, during *Defining* and *Measuring*, the causes of delays and prioritization were unclear and undefined. During the process, in the *Analysis* step, data evaluations and samples have been expressed to be insightful and good for self-reflection. The dialogue on how priorities should be interpreted and considered to be right or wrong is also highlighted as a valuable piece of the process in the steps of *Improve and Control.* This is expressed as one of the most positive outcomes of the process by several people in the *Learning* step, from the model used by the project group.

Moreover, several of the process managers also express that the process was evolving in the sense that the analysis and data were helpful in sharing to see how SkaS is related to other hospitals, but also to internally review their own department. The reviews of the goal fulfilment and the patient records are highlighted by many process managers in conversations after the

process. There are also incentives from them that the dialogue and understanding between the departments may have facilitated better management of difficult situations, even if it is too early to comment.

Another argued benefit which has been raised is that everyone in the project group inevitably describes that they become aware of the current situation and problems and that the meetings have raised awareness of the topic. By illuminating and discussing problems such as prioritization setting in an organization it can unknowingly create better awareness and slipping down in the everyday practice. The process is also argued to have increased the discussions between the departments, which have generated an increased consensus on priorities. Then, at the individual level, it is difficult to assess how it has been received and used further. The second thing that has emerged from the process is the proposals that apply to daily dialogue with the coordinators to better review the acute list in the morning, which probably will be implemented. It is argued that small progress and suggestions during the process are fundamental and pivotal in the experience of the process for better coherence for value creation among staff.

Incorrect registrations stand as an explanation for most cases that ends up outside their stated time priority. The guidance that the surgery report in Orbit provides to the coordinators are claimed to be valuable for everyone involved in acute surgery to reduce the time to surgery, minimizes late surprises and check-ups. Coordinators argue that incorrect registrations, decisions, and poorly filled report cards sometimes take extra time and phone calls and affects the planning of the daily program. This may seem like a shortcoming, but it is also an advantage that has arisen in the process since it is easy to act on and improve. The process has proven that accurate reporting can minimize planning time and provide a better picture of the patient when assessing and comparing patients' medical priorities.

The staff claim that they perform their work based on experience, they all have extensive experience in the surgical specialty. It is considered a good aspect because assessments rarely turn out to be wrong in prioritization decisions according to them and the data, but it is also vulnerable because much of the knowledge is not covered or designed in frameworks to teach others. It is also vulnerable because the routines are not standardized and are described to be based on dialogues. The dialogues are usually good, but when two priorities depend on the dialogue between specialties taking place, that routine might not be well established. The routine then becomes person based which could affect the patient if different strong opinions arise or are not transparent.

Lastly, it can be argued that the reoccurring dialogues and discussions could explain that there was a maturity and sufficient knowledge to change routines for elective prioritizing according to an written routine. Everyone involved in the decision has jointly found eight principles to base priorities for elective surgeries within as well as between specialties, which is a great success in terms of the time and energy invested in the process, even if it was not intended for elective horizontal planning.

5.3.2 Shortcomings in the process

Until the *Control* step of the process model, when the results were to be interpreted, there was a positive spirit in the project group to try to start sketching out a new routine, similar to the SÄS routine, to be used between the departments. But until the next meeting, doubts grew. The scepticism can be explained from several visible aspects and arguments. Firstly, it was argued by the process managers that they do not perceive acute priorities as a sufficiently large problem in their practice but rather a system error than a quality problem. They argue that those with the greatest need are given the highest priority and the quality is not substandard.

The other aspect that came up was opposition to the routine document itself. A fear was expressed of introducing a governing document in the belief that it could be used incorrectly

and become worse than the current practice that is considered to work properly. There was also argued that a document can create mistrust between the departments if the routine is misused to access OR space. In addition, it was stated that documents in some cases could make priority situations less flexible to solve and instil hollow and false promises. The arguments reveal that the process managers somehow doubt their own ability to change their way of working and fear standardizing routines, even though they claim to have a great experience. From an outside perspective, this can be interpreted as contradictory because they are asked to review the priority issue because they possess the best knowledge of each department's routines.

In addition, there are other objections; several process managers express that priority issues are an important topic but that it remains questions about the group's purpose and goals. The process managers also express that there was a lack of concretization of the goal to know what they are expected to achieve. Some express a wish that it would be easier if there was a strong edge and that the decisions were made by the project managers. Everyone is satisfied with the project manager's support and it appears that the process managers do not believe that they themselves can organically achieve solutions and that problems such as these should be decided at a higher level. It can also be interpreted as them being unaccustomed to deciding and changing overall organizational decisions between the departments, it leaves its mark when it comes to implementing a new routine. There is also a conflict of interest because process managers do not see acute priorities as the fundamental problem.

It is also argued that concerning questions like prioritization, everyone in the process has their own truth and belief which makes a standardized routine hard to accomplish as well as compiling it to a specific patient's needs. The argument most used is that patients' needs are difficult to put into a matrix or into a framework even and that the time categories are poorly adapted to support a governing document for individual assessments.

At an organizational level, it can also be seen as a shortcoming that the work of the process, on which a lot of time and energy was put, failed in changing the routine for acute surgery prioritizing. On the other hand, the process has provided many insightful perspectives on priority issues. There are many factors and aspects that have arisen through the work that can be further improved and have had a learning effect. In particular, the agreed upon principles for horizontal prioritization of elective surgeries within and between specialties could be seen as such a learning effect. After the completion of the process regarding acute prioritizations, the project group turned its attention on priorities concerning elective surgery, which was conceived as a larger problem. Currently, the proposal has been approved by the tactical steering group for surgical procedures at SkaS. As a next step, a half-day workshop with the department and process managers will focus on how to operationalize the principles into a practical guideline. The guideline will be refined immediately after the summer and tested during the autumn.

To summarize, no new guidelines or frameworks are required to prioritize the acute patient's medical condition or priority. On the other hand, there are arguments that support that routines for horizontal acute priorities are in demand, as they are currently based on informal dialogues with the parties involved and are vague. The problem can be interpreted to lie in the fact that the staff is not ready to change and test a new routine for acute surgery procedures when it comes down to developing it, even if there are data and project managers who support the process. However, the decision to apply a new routine for the elective prioritizing can be said to have been born and arose from the work of the process as a bonus.

5.4 Discussion – A general review of SkaS improvement process

The analysis reveals that in general the health care professionals involved are supportive and engaged in the process, and a majority evaluate the process as a benefit to the organization. Decision-making and implementation, on the other hand, is a responsibility that the process

managers hesitate to be responsible for in overall organizational decisions. There is a certain fear of failure which is natural in complex organizations (Glouberman & Mintzberg, 2001).

The analysis shows that several everyday situations exist where guidelines are undesirable or sometimes missing, human factors influence priorities, as well as opinions about the patient's needs, and transparency in dialogues. This indicates that Sandman (2015) is partly right when he argues that the ethical principles need to be translated into practical guidance for healthcare staff, but it should also be considered that there are currently no guidelines for SkaS that are used. The study's findings underline Sandman's argument that the matrix from 1997 is considered to be of low importance by healthcare professionals because it does not seem to be useful in everyday healthcare situations, especially not in horizontal priority decisions.

In addition, it can be confirmed that the Vårdanalys report (2020) is in line with SkaS everyday issues. At the moment, there are no guidelines that are followed in practice, and it could be stated that principles from the authorities would be more helpful if they had specified how patients should be prioritized with available resources, since, in most cases, there is always an underlying problem of departments competing for the same resources. The guidelines in SFS1996 / 97: 60 that state “care based on the principle of need” does permeate care, but not formally (Vårdanalys, 2020, p.23). It is well agreed that it does not permeate the internal processes of care at SkaS since some situations and decisions are perceived by the staff at SkaS as difficult. However, something that is important to note is that the ethical principles are deeply rooted in their natural work environment. In this study, especially in conversations about vertical priorities and, to some extent, in horizontal priorities, the ethical principles are repeatedly enacted in the daily operations.

The studies findings show that justice in horizontal priorities in relation to resources and communication is sometimes difficult to motivate or fulfil to be completely fair. According to the report from Vårdanalys (2020), this is since there is now a lack of a common picture of

horizontal priorities. SkaS work can therefore be stated to be at the forefront, as the process has created a better internal picture of horizontal priorities and provided a consensus among priorities. Additionally, the process resulted in a joint decision to change the routine for elective priorities horizontally between the departments based on the requirements that are legally asserted. This could be interpreted as an important factor of success as it is a prerequisite for managing resources when demand is high and is expected to increase. If it then turns out to work well, it can be a good incentive to test for acute horizontal priorities when they feel mature.

The process can with some certainty be assumed to have succeeded in conducting evidence-based practice in a systematic way to then be able to land in decision-making concerning priorities as suggested by Sandman (2015) and Socialstyrelsen (2020). The process can also be claimed to have generated in identifying cause-effect mechanisms that affect acute surgeries to understand how well the patient's needs are met in the system. Based on the analysis, it can be argued that SkaS have begun to implement a new routine to develop better quality, something that Stiernstedt et.al (2016) emphasizes is crucial for solving the efficiency problem in healthcare.

Hellström et al (2015) claim that transparency in improvement processes is essential because it facilitates evaluation and above all learning in quality processes. The commitment of the health care professionals can be demonstrated pivotal for the success of the project process; without them the routine would not have been introduced. Even though conflicting interests have arisen it has been handled and given raise to learning. There is recurring evidence that the descriptions of the co-workers involved in the process say that they saw learning and reflection as one of the main benefits of the process' work.

5.4.1 Delays in acute surgery – a reoccurring phenomena

Delayed emergency surgeries are a problem that has existed in healthcare for a long time. SkaS data are not unique, similar studies such as Lankester´s (2000) and Caesar et al's study (2018) confirm that the findings are not local. In addition, the causal relationships presented by Caesar are also very similar to SkaS, where several of the root causes are organizational internal causes, mainly other high-priority patients with greater needs delay the acute program. In addition, none of the studies found present deeper explanations from staff, only statistical data recorded. This study brought forward many perspectives over time to reveal how an improvement process concerning priorities and delays might occur in a health care setting, possibly not described previously in detail.

Data measuring healthcare productivity can potentially be difficult to interpret to understand at a detailed clinic level. Caesar´s (2018) encourage clinics to continually increase research into pre-operative processes to understand the causes of delays. This study has conducted research to better understand the pre-operative work at a detailed clinical level. Caesar et.al (2018) also claim that reasons for delays are caused by external factors and the responsibility to eliminate them is not only inside the hospital or clinic (Caesar et.al., 2018). The same conclusion can be made to a certain extent at SkaS since factors such as OR and capacity cannot be controlled independently by a department or a single hospital.

5.4.2 Inspiration from previous studies concerning priority setting

Navarro & Hardy's (2017) model has provided indications of what could improve long-term healthcare processes. A proposal to SkaS to minimize erroneous reporting errors is to review whether early assessments of on-call senior physicians on patients in need of acute surgeries can be reviewed as their study suggests. Assessments suggested by Faryniuk and Hochman (2013) to reduce delays and increase access to acute care indicate that a change is demanded to

manage the sorting of acute surgery patients, this could also be a valuable to consider in a new routine.

Leppäniemi and Jousela (2014) contribution is the most developed conceptual code system found up to date, to manage priority setting for acute surgeries between specialties. Their contribution together with applied modifications to the local context like SkaS should, if implemented, be seen as an honest attempt to increase access to acute surgeries by optimizing priority setting across surgical disciplines. Their study has touched on many of the concerns experienced and described at SkaS, such as poorly adapted time categories, where it is instead proposed to use subcategories after horizontal prioritization has been made after the first three colour codes have been determined. The constant monthly follow-up suggested with the code system is claimed to decrease mistrust, confusion and create a better common picture to assess and interpret horizontal priorities, which is a factor that SkaS could consider. Worthy to mention is that several of the identified positive outcomes presented by Leppäniemi & Jousela (2013) have similarities with the governing documents that SkaS agreed to use to prioritize elective surgeries.

5.4.3 Improvement suggestions

The Swedish health care system is judged to have great potential for improvements without a large increase in resources (SOU, 2019). Opposition to change, different opinions and uncertainty about governing documents exist at SkaS, but it is also a valuable thing because it is justified in not risking compromising patient safety in prioritization decisions (Sveningsson & Sörgärde, 2019). A framework around the care processes that today are based on experience will possibly make the organization less vulnerable if skills disappear. This study has shown that this can been done at SkaS. To try to write down routines for acute surgery prioritization and enable even better dialogues with transparency between the specialties is of the utmost importance recommendation for SkaS. To achieve improvements, it is fundamental that there is understanding and a common ground between specialties to embrace different needs and

opinions of professionals. I believe that openness, continuous improvement and iterative learning between professions and collaboration between departments on an overall level are pivotal to face current and future challenges at SkaS.

Interacting in overall projects between specialties but also with other hospitals in the region can generate further learning for a common ground of horizontal priorities. If some of the proposals are reviewed as mentioned above, mutual interpretations of priorities and respect between specialties could generate a new routine and then be shared further. SkaS has the potential to achieve its goal to *increase the number of surgeries performed per resource* by working with priorities. In addition, all reasonable proposals as described in the process can support a better functioning system and can be achieved if the will is there. A system with more precise and established routines will influence the practice in the right direction with a more fair and equal approach towards the vision.

6. Conclusion

The case process has provided a detailed insight into how priorities are carried out at SkaS. The study has given an overall and detailed description of SkaS's prioritization routines and what affects the prioritization decisions. At an operational level, it is mainly physicians and surgeons who set the medical priorities in the surgery report. In addition to the surgery report, the coordinators plan the daily program and specific preparations. Several factors affect the priority decisions, there are identified variations in how vertical priorities are interpreted between the specialties. The variations are also explained to be interconnected in human centered dialogues and communication that affect decisions. There are also identified prioritization situations that have been shown to have insufficient working routines. Particularly, when horizontal priorities are required between two specialties and OR space is missing, or opinions and other claimed reasons such as practically easier solutions differ.

The consequences of delays are complex connecting causes that interfere with priority setting. The main reason found is that current time categories are considered poorly adapted to assess an individual's needs and that information in the surgery report is incorrect, or not updated. Certain scenarios imply that priorities are not solely based on need and medical priorities. Another main finding is that SkaS staff is careful to assess their patients as individuals, based on need. Routines and statutory principles are complied with in the daily practice and the staff perceives that the vast majority of cases receive care on equal terms fairly based on needs.

Transparent dialogues, understanding of each specialty's professions, and their patient's needs were found to be a key factor to improve current priority routines. Several insights of learning and positive reflections were included in the descriptions from the staff regarding the case process benefits. The process's final achievement confirmed that the individuals in the organization succeeded in jointly deciding on a possible value-creating change to prioritize elective surgeries according to written concrete principles. Moreover, this study provides a contribution that there remain a complex conflict and perspectives on priority setting in the Swedish health care system, especially for horizontal priorities.

The study's overall contribution gives the research field an illuminated description of processes and improvement models such as DMAICL used in an everyday care setting. It also shows how priority setting situations and principles take place or are compiled within the practice. The study has also gained insight to understand longitudinal healthcare processes and examined what happens below the surface. Despite the study's limited scope, this longitudinal case study seems to have exposed important perspectives on the care system's conditions for prioritizing. The findings could be of relevance for other health care organizations and future possible research. An improvement suggestion is that priority routines between specialties could be beneficial for SkaS to better manage horizontal priorities.

Based on this case study, SkaS shows a good capacity for change which is partly due to the organization's individuals' driving force – a factor that is valuable for long-term sustainable changes which can achieve greater success for both patients and employees.

6.1 Theoretical Contribution and Further Research

This longitudinal study has provided knowledge about prioritization in a complex health care organization, which has not previously been described in detail. This longitudinal study has provided knowledge about prioritization in a complex health care organization, which has not previously been described in detail. What has been seen throughout this study is lacking research with concrete matrices, guidelines and frameworks in priority setting for acute surgeries, both vertically and horizontally. Further, most guidelines are only tested within one specialty or on specific patient groups or diagnoses. This study contributes by illuminating the complexity that emerge when prioritizations within and between specialties are targeted in daily operations.

Additionally, existing research has been quantitative in nature where outcomes have been based on output measures such as efficiency and productivity, which may not provide a full picture of priorities. No current research has been found that takes an in-depth staff perspective on how, and what affects, acute priority setting in a health care environment. This study aimed to capture the individuals' experiences of priorities and described the project process from a holistic perspective from inside everyday care and can supplement existing research as it takes the perspective of the only ones able to utter a fair view of care provision, health care professionals. The results of the study imply that the care system is not fairer than the health care professionals believe it is. The human experience is important to capture, as no measurements of the complexity of justice exists.

In priority setting research, it could be argued that vertical and horizontal priority setting can achieve greater success and reduce delays if healthcare professionals are involved in identifying causes and effects related to the priorities. This case study contributes by taking communication and respect into account, as well as transparency in development projects to ensure continuous improvements. However, the study is not able to leave any broadly generalizable theoretical contributions behind, as it is limited in scope to SkaS. The local perception could with caution be considered partly sufficient to generalize to other hospitals or the healthcare sector as a sample. The proposal is to see the study as an additional contribution to how priorities are carried out, what factors affect it and whether it is carried out fairly, in line with ethical guidelines. The study also contributes with many perspectives and an overview of process work according to models like DMAICL in care. Interested parties can learn from this study, and it may be important for future processes in healthcare. Finally, it can be stated that continuous processes to constantly improve quality contribute to learning between co-workers across departments and professions, which leads to positive synergy effects for the organization.

Future learnings of the prioritization systems of SkaS can be made if even deeper evaluation is made possible. Identified possibilities could be to combine qualitative and quantitative research methods to identify outcomes more clearly through for example new routines. It would also be welcome to evaluate similar hospitals, to understand if they face similar problems and how they tackle them. Hopefully, this thesis can inspire other hospitals to conduct similar studies and involve their staff in the process. Another aspect that might enrich the perspective on priorities is to include patients' perceptions of priorities and justice in the care process. More knowledge about the patient's experience of justice and perceived needs can add valuable improvements in the prioritization process for SkaS and in general in the Swedish healthcare system to understand what changes create value for patients in the system.

7. References

Bell, E., Bryman, A. and Harley, B., 2018. Business research methods. Oxford university press.

Bergman, B., & Klefsjö, B. (2012). Kvalitet från behov till användning. Studentlitteratur AB, Lund.

Bergman, B., Hellström, A., Lifvergren, S., & Gustavsson, S. M. (2015). An Emerging Science of Improvement in Health Care. Quality engineering, 27(1), 17-34. https://doi.org/10.1080/08982112.2015.968042

Bowrey, D. J., Wheeler, J. M., Evans, R. O., Fligelstone, L. J., & Vellacott, K. D. (1997). Can emergency general surgical referrals be reduced? A prospective study [Research Support, Non-U.S. Gov't]. Journal of the Royal College of Surgeons of Edinburgh, 42(6), 381-382. https://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&NEWS=N&PAGE=fulltext&D=med4&AN=9448391

http://resolver.ebscohost.com/openurl?sid=OVID:medline&id=pmid:9448391&id=doi:&issn=0035-8835&isbn=&volume=42&issue=6&spage=381&date=1997&title=Journal+of+the+Royal+College+of+Surgeons+of+Edinburgh&atitle=Can+emergency+general+surgical+referrals+be+reduced%3F+A+prospective+study.&aulast=Bowrey&pid=%3CAN%3E9448391%3C%2FAN%3E

Bryman, A. and Bell, E., 2011. Business research methods. Oxford: Oxford Univ. Press.

Caesar, U., Karlsson, J., & Hansson, E. (2018). Incidence and root causes of delays in emergency orthopaedic procedures: a single-centre experience of 36,017 consecutive cases over seven years. Patient Safety in Surgery [Electronic Resource], 12, 2. https://doi.org/https://dx.doi.org/10.1186/s13037-018-0149-1

Clarke & Braun. (2017). Thematic analysis. The journal of positive psychology, 12(3), 297-298. https://doi.org/10.1080/17439760.2016.1262613

Crowe, S., Cresswell, K., Robertson, A., Huby, G., Avery, A., & Sheikh, A. (2011). The case study approach. BMC Medical Research Methodology, 11(1), 100.

Diefenbach, T. (2008). Are case studies more than sophisticated storytelling?: Methodological problems of qualitative empirical research mainly based on semi-structured interviews. *Quality & Quantity*, *43*(6), 875–894. https://doi.org/10.1007/s11135-008-9164-0

Faryniuk, A. M., & Hochman, D. J. (2013). Effect of an acute care surgical service on the timeliness of care. Canadian Journal of Surgery, 56(3), 187-191. https://doi.org/https://dx.doi.org/10.1503/cjs.022911

Glouberman, S., Mintzberg, H., (2001). Managing the Care of Health and the Cure of Disease- Part I: Differentiation. Aspen Publishers, Inc.

Hellström, A., Lifvergren, S., Gustavsson, S., & Gremyr, I. (2015). Adopting a management innovation in a professional organization: The case of improvement knowledge in healthcare. Business process management journal, 21(5), 1186-1203. https://doi.org/10.1108/BPMJ-05-2014-0041

Kluger, Y., Ben-Ishay, O., Sartelli, M., Ansaloni, L., Abbas, A. E., Agresta, F., Biffl, W. L., Baiocchi, L., Bala, M., Catena, F., Coimbra, R., Cui, Y., Di Saverio, S., Das, K., El Zalabany, T., Fraga, G. P., Gomes, C. A., Gonsaga, R. A. T., Kenig, J., . . . Moore, E. E. (2013). World society of emergency surgery study group initiative on Timing of Acute Care Surgery classification (TACS). World journal of emergency surgery, 8(1), 17-17. https://doi.org/10.1186/1749-7922-8-17

Lankester, B. J., Paterson, M. P., Capon, G., & Belcher, J. (2000*). Delays in orthopaedic trauma treatment: setting standards for the time interval between admission and operation*. Annals of the Royal College of Surgeons of England, 82(5), 322-326. https://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&NEWS=N&PAGE=fulltext&D=med4&AN=11041030

http://resolver.ebscohost.com/openurl?sid=OVID:medline&id=pmid:11041030&id=doi:&issn=0035-8843&isbn=&volume=82&issue=5&spage=322&date=2000&title=Annals+of+the+Royal+College+of+Surgeons+of+England&atitle=Delays+in+orthopaedic+trauma+treatment%3A+setting+standards+for+the+time+interval+between+admission+and+operation.&aulast=Lankester&pid=%3CAN%3E11041030%3C%2FAN%3E

Leppäniemi, A., & Jousela, I. (2014). *A traffic-light coding system to organize emergency surgery across surgical disciplines*. British journal of surgery, 101(1), e134-e140. https://doi.org/10.1002/bjs.9325

Lifvergren, S. & Lifvergren, A. (2022). Managing acute patient flows in hospitals. Future chapter in: *Future Health Scenarios*. Francis & Taylor.

Prioriterings Centrum (2007). *Vårdens alltför svåra val.* https://www.diva-portal.org/smash/get/diva2:873429/FULLTEXT01.pdf .
Rosenbäck, R. (2017). Produktionsstyrning i sjukvården - en väg framåt. Studentlitteratur AB
Sandman, L. (2015). Vilken vägledning ger den etiska plattformen för prioriteringar i konkreta prioriteringssituationer?
SFS 1996/97:60. Prioriteringar inom sjukvård. https://data.riksdagen.se/dokument/GK0360.
SFS 2017:30. Hälso och sjukvårdslag. https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/halso--och-sjukvardslag_sfs-2017-30.
SPOR, (w.d). Svenskt Perioperativt Register. 2021.
Stiernstedt, G., Zetterberg, D. and Ingmanson, A. (2016), Effektiv Vård, Statens Offentliga Utredningar (Official Reports of the Swedish Government), SOU2016:2, Stockholm, Sweden.
Socialstyrelsen (2015). Väntetider och patientflöden på akutmottagningar. https://www.socialstyrelsen.se/globalassets/sharepoint-dokument/artikelkatalog/ovrigt/2015-12-11.pdf
Socialstyrelsen. (2020). *Att arbeta evidensbaserat: Ett stöd för praktiskt arbete*. https://www.socialstyrelsen.se/globalassets/sharepoint-dokument/artikelkatalog/ovrigt/2020-10-6930.pdf
Socialstyrelsen (2021). *Uppdämda vårdbehov Analys och förslag till insatser.* Available https://www.socialstyrelsen.se/globalassets/sharepoint-dokument/artikelkatalog/ovrigt/2021-10-7534.pdf.
SOU (1995). Vårdens svåra val. Statens offentliga utredningar 1995:5. Avalible: https://www.regeringen.se/49b6ca/contentassets/6c4cb9f4c3ef4296b68ea7c6cefbf1d2/del-1-kap.-1-t.o.m.-kap.-8-vardens-svara-val
SOU. (2001). *Prioriteringar i vården : perspektiv för politiker, profession och medborgare : slutbetänkande från Prioriteringsdelegationen*. Stockholm: Prioriteringsdelegationen
SOU. (2016). *Effektiv vård – Slutbetänkade av en nationell samordnare för effektivare resursutnyttjande inom hälso- och sjukvården*. Statens offentliga utredningar, SOU (2016:2). Stockholm.
Swedish Research Council (2017). GOOD RESEARCH PRACTICE. [online] Available at: https://www.vr.se/download/18.5639980c162791bbfe697882/1555334908942/Good-Research-Practice_VR_2017.pdf.
VGR. (2005). *Prioriteringar i hälso- och sjukvården- om Västragötalands prioriteringsarbete*. Västragötalandsregionen. Retrieved from http://www.natverken.se/media/7388/Västra%20Götaland%20-%20Prioriteringar%20i%20vården.pdf
VGR. (2017). Strategi för hälso- och sjukvårdens omställning i Västra Götalandsregionen. In. Protokoll från Regionfullmäktige, 2017-05-16: Västra Götalandsregionen.
VGR. (2019). *Verksamhetsplanen 2019 för SkaS*.
Vårdanalys. (2020). Styra mot horisonten: Om vård efter behov som grund för horisontella prioriteringar. (Report 2020:7). Stockholm, Sweden: Myndigheten för vård-och omsorgsanalys
Weisz, J. A., Mohrman, S. A., McCracken, A. (2013). It's A Great Time to Be a Physician: Building a Healthcare System That Works. Bozeman, MT: Second River Healthcare.
Yin, R. K. (2014). Case study research : design and methods (5. ed.). London : SAGE.

1. Appendix

This section contains questions asked during the empirical collection of data in the interviews. The questions were prepared for the interviews with several process managers, physicians, surgery planners, and daily coordinators at SkaS. The questions were asked in a dialogue in different ways based on the participant's responses.

1.1 Appendix 1. Interview Guide

1. What is your name? How long have you been working at SkaS and what is your professional title?
2. What is your role and in what department do you work?

3. Describe a typical working day and usual routines in terms of the activities you perform.
4. Do you have a big variation in your tasks and in the activities from day to day? Does the process to prioritize acute surgeries have some standard structures?
5. Explain how the process before an acute surgery looks like, which parts are you involved in?
6. Is the process friction-free? How does it look when it is unclear?
7. Who is responsible for managing patient acute lists for surgery at the unit?
8. Would you say that you have clear guidelines to follow in the process? How do you prioritize resources (Staff, OR room/patients). Can you influence the process? Does it involve improvisation?
9. What factors are considered while planning acute surgery patients?
10. Is there situations that you don't feel are covered by guidelines or frameworks?
11. What is the most tricky in the prioritization process? Any hard situation you experienced?
12. How do you think when prioritizing, do you feel comfortable and safe?
13. Do you think your colleges think the same? Do you discuss and talk about prioritizing? Do you think doctors at other units think the same?
14. When is it hard to prioritize patients? Do you have a routine?
15. What is frustrating regarding acute surgeries?
16. Which are the biggest barriers to prioritize equal?
17. Time aspect in priorities, what takes time when it must go fast and be fair? What will be the consequences of the reasons for any delays? Who will be responsible and how will it be handled if it becomes "wrong"? Is it difficult to assess risks?
18. Are there any issues like bottlenecks, miscommunication, or lack of instructions in the process from your perspective?
19. In your experience, what do you think would help the process to improve? Vertical and horizontal?