

RESILIENCE AT THE SHARP END – A DESCRIPTION OF NURSES’ CAPABILITY TO CREATE SAFETY

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ABSTRACT

A large part of the hunt for safety within the healthcare domain seems to be about hunting errors and trying to develop barriers to prevent similar errors in the future, learning from errors. People are seen as the liability and they should try harder to be safe. This study focuses on trying to understand how nurses create safety within the work instead of looking at the errors produced, learning from creating safety. With more descriptions of how nurses recover or step back from danger we are able to provide nurses on all levels from undergraduates to experts with important information on how safety is created on the sharp end and therefore enhance patient safety. The benefit of looking at things that go right rather than looking at errors is that the frequency of things that goes right is significantly higher. Resilience engineering, this study's backbone, is aiming to increase the number of events that go right rather than reducing the things that go wrong.

This qualitative study based on nine individual interviews with nurses, working at an intensive care unit, shows that nurses have a broad understanding of risks associated with daily practice. The risks described the interviewed nurses are associated with the system, patient care and with nurses own person and knowledge. Nurses do recognize several conflicting goals affecting practice and decisions. Safety is described in a rich and broad way. Safety is created through knowledge, by doing and by being. The results show that nurses need to know a lot in order to be safe. They have to do many things in order to keep the practice safe and they have to have different qualities in order to be a safe nurse.

The findings in this study should not be generalized without taking all the background information and the study's context into consideration. Being able to reproduce and teach how safety is created would enhance safety. In order to be safer within health care we need to know much more about why things most often go right than wrong in circumstances that are full with risks and danger.

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INTRODUCTION

Safety is a value that is a part in all practice and created by people on all levels in a socio-technical system (Cook, 2008). The hunt for safety within the healthcare domain (at least in Finland) has been about hunting errors and trying to develop barriers to prevent similar errors in the future. The “old view” (people are seen as the liability and they should try harder, Dekker, 2008), on Human Factors has been the leading star. In trying to understand Human Factors and safety we need to take a “new view” (Dekker, 2008) on how errors happen and listen to the “second story”. To look at how safety is created within the work instead of looking at the errors produced represent the new view. We should be interested in both “safe performance as well as unsafe performance” (Hollnagel, 2011, p. xxxv).

We need to address the unsafe performance, which in many ways is being done today in Finland. There are several projects running (e.g. National Institute for Health and Welfare, Ministry of Social Affairs and Health, The Finnish Nurses Association) which aim is to enhance patient safety. These projects have succeeded to get safety the needed attention and a lot is happening in different projects in different hospitals. Many small steps towards a safer healthcare are in many ways welcome. What seems to be lacking is a closer look at safe performance. The usefulness of looking at safe performance is that the numbers of those are so much greater than the unsafe performance (Hollnagel, 2011).

The goal of Resilience Engineering theory is to increase the number of events that go right rather than reducing the things that go wrong, in other words the effect on safety when increasing the amount of things that goes right is the same as reducing the amount of things that goes wrong (Hollnagel, 2011). To explore the resilience of nurses working at the sharp end would give us a clearer picture of how nurses create safety. Dekker (2011) states that resilience is: “a capability to recognize the boundaries of safe operations, a capability to steer back from them in a controlled manner, a capability to recover from a loss of control if it does occur”. With more descriptions of how nurses recover or steer back from danger we could provide nurses on all levels from undergraduates to experts with important information on how safety is created on the sharp end and therefore enhance patient safety.

In general the negative news about errors and injury has made the society aware about errors. This gives the society a general negative picture of healthcare and their safety standard. The society and especially the newspapers are often forgetting that the personnel working at the sharp end are mostly doing a great job and doing their best in trying to avoid incidents or accidents. People go to work so that they could do a great job, not to produce errors (Dekker, 2008). The importance of showing the society and the personnel working within the healthcare the positive capabilities during the hunt for safety should not be forgotten.

The result from this study may help to understand how nurses create safety. How nurses work in different countries may not be the same. The length of their education and more importantly the structure of the education can vary. Further a study about resilience in healthcare has not, to my knowledge, been done in Finland. The safety agenda so far has been about finding and trying to build barriers against errors. This study on the other hand focuses at how safety is being created instead of the errors. What we can teach and learn from this is how safety is preserved and maintained.

Research question

The intention is to understand, discover, explore and illuminate how nurses increase system resilience and to describe trade-offs and behavior associated with the nurse ability to anticipate and steer back from risks. With this understanding we could provide nurses on all levels, from undergraduates to experts, with important information on how safety is created on the sharp end and therefore enhance patient safety. The research question this study is trying to answer is:

- How do nurses in their daily work increase system resilience?

PREVIOUS RESEARCH AND LITERATURE

In the literature review the task is to identify and evaluate what I feel is the most pertinent sources of information.

Forward from error

To move forward from the human error label after failure is crucial in the process of making health care safer (Woods & Cook, 2002). In their paper “Nine Steps to Move Forward from Error” Woods and Cook (2002) makes generalizations about how systems fail and how people contribute to safety, based on research. In short this paper emphasizes the importance of understanding how the work is done at the sharp end and how an organization succeeds.

The article covers nine steps to improve safety in a checklist style, (Woods & Cook, p. 137):

1. Pursue second stories beneath the surface to discover multiple contributions
2. Escape hindsight bias
3. Understand work as performed at the sharp end of the system.
4. Search for systemic vulnerabilities.
5. Study how practice creates safety
6. Search for underlying patterns
7. Examine how change will produce new vulnerabilities and paths to failure
8. Advocate for new technology to support and enhance human expertise.
9. Tame complexity through new forms of feedback

From these nine steps several are of relevance regarding resilience at the sharp end, the main topic of this paper. By pursuing second stories we achieve a greater understanding of the “pressures and dilemmas that drive the performance” and “how people and organizations work to overcome hazards and make safety” (Woods & Cook, p. 138). Pursuing second stories will generate us the understanding of work performed at the sharp end. To understand the source of failure you first have to understand “how practitioners coordinate activities in ways that help them cope with the different kinds of complexities they experience” and furthermore we have to understand “the nature of technical work as experienced by the practitioner in context” (Woods & Cook, p. 139).

Understanding the conflicting goals, trade-offs and complexities the practitioners are up against while working is important. Woods and Cook (2002) provide us with three recommendations (pp. 138-139):

1. We should look for sources of success because we mostly succeed despite the opportunities to fail.
2. We should try to understand what makes problems difficult
3. We should avoid the psychologist's fallacy, meaning that we should not believe that by observing work we could capture the actual experience of work.

This study indicates that practitioners, at the sharp end, are aware of hazards and risks and that they organize their practice in a way to avoid failure and defuse threats. The practitioners create safety. To know where in the process and how this avoidance is done becomes both important and interesting. Where in the process of care are the threats nurses avoid and how do they arrange their work to avoid and defuse these threats? What trade-offs do they make? To be able to enhance human expertise we have to "understand the sources of and challenges to expertise in context" (Woods & Cook, p. 142). Emerging from this article; we know something about the possible risks in health care but lack a description of how the practitioners at the sharp end adapt, recognize and avoid these risks. In conclusion this paper could be seen as one that attempts to operationalize resilience.

Resilience and gaps

Gaps and resilience is an article from Cook, Patterson, Woods, & Render (2008) that discusses the gaps, fracture points, in the work and the resilience in the system that helps the system function regardless of these gaps. The article also illustrates different ways to increase resilience into the system.

The gaps are presented to arise from different sources and creating a variety of problems. Practitioners are often aware of the gaps and have different ways to manage them. Because these gaps are known and anticipated, experienced practitioners are able to construct bridges that make the consequences rare. The article points out that we should know the gap-sources, how people cope with gaps, how changes in the system changes the gaps, how to reduce the gaps and how to overcome the gaps. According to the article it becomes central to understand how people create effective strategies that reduce the amount and significance of the gaps in understanding safety in healthcare.

In this article resilience is seen as the strategy that bridges these. The trade mark for a high reliable organization is that they treat the knowledge of gaps as imperfect and therefore continuously "invest in

anticipating the changing potential for failure” (Cook, Patterson, Woods, & Render, p. 7). To anticipate the risk, having foresight, would be a sign of resilience. The article illustrates five different strategies to increase system resilience into a process. The example used is taken from the process of administering medications supported by Bar Code Medication Administration (BCMA). The strategies presented are:

- to model adaptive systems and variability
 - context-sensitive understanding of how practitioners adapt to cope with potential hazard
- identify unintended cascading effects from systemic change
 - understand that all changes can have unintended effects
- make activities and communications of team members observable
 - thinking out loud, express changes out loud
- support sacrifice decisions
 - support deviations that individuals make to increase safety
- monitor the gap between standard operating procedures and actual practice
 - understand the difference between SOP's and real work, monitor the difference and work to reduce the gap between these

In the conclusion the article argues that safety is a value, not a commodity, and that “people create safety under resource and performance pressure” (Cook, Patterson, Woods, & Render, p. 15). Giving the workers and managers the information about the changing vulnerabilities would make it possible for them to innovate new means for adaptation.

Minding the Gaps - Creating Resilience in Health Care (Nemeth, Wears, Woods, Hollnagel, & Cook, 2008) focuses on explaining how resilience engineering can help an organization to recover and cope with unexpected developments. An example of this would be the ability to adapt when the demands on the organization goes beyond the operating boundary. The article discusses two examples of resilience, one about an Emergency Department (ED) that is able to adapt to increasing amount of patients and one example about how to design improvements to the infusion device control/display interface. In this review I will focus on the ED case because this study here will focus on the human, not the technical apparatus found in health care.

A remarkable point in this article is that many things that are done to improve the safety in healthcare are done with the lack of system knowledge and therefore these improvements to safety often fail. An

example of this would be the effort to improve safety using information technology in health care without the understanding of how these new technologies also foster errors.

The example from the ED gives us information on how the practitioners can stretch the work at the boundaries and the practitioners adapting strategies. The article explains how the coping strategies can become exhausted and therefore the system becomes so less resilient, that the practitioners had to make sacrifice decisions, trade-offs, in order to preserve higher level goals and regain control of the situation.

As a problem for creating safety at the ED the article describes how different pressures has left the ED brittle and less resilient when the system is pushed out the margin of its boundaries. Reasons for this are said to be new patient flows and management responses to economical or other pressures. In this article they found four adaptive strategies that were used by the practitioners in order to cope with the different levels of challenge. The first strategy is described to be one where the system runs as routine and anticipates changes outside the routine in an apparently seamless way. The second strategy is described to be one where a key individual recognizes system degradation and initiates adaptive responses. The third strategy is described as a process that reallocates the resources on the whole department. Only life-threatening illness will be managed this way. The fourth strategy is to reorganize in a catastrophic event. Examples of this kind of event the article include a mass casualty or natural disaster.

Safety and hedging resources

The article “Regularly irregular: how groups reconcile cross-cutting agendas and demand in healthcare” (Nemeth, et al., 2007) discusses how practitioners working in acute care learn how to hedge resources that can be used if needed. They have taken a closer look at “how practitioners cope with the demands that the system presents to them” (Nemeth, et al., p. 139) and “how rules and expertise have been developed to coordinate work at large scale” (Nemeth, et al., p. 140). In practice they have taken a closer look at hand-offs, the call schedule and patient transfers.

The research was done with several different methods. The hand-offs was studied by direct observation, process tracing and conversation analysis, the call schedule and patient transfers by direct observation and informal interviews.

Hand-offs, the change of information between off-going and on-coming staff, is used “to coordinate clinical work, authority and responsibility” (Nemeth, et al., p. 141). The strategies used in hand-offs varies in many ways depending on many reasons, e.g. experience, time pressure, patient situation, who is attending among others. The ability to develop, adjust and employ different strategies in hand-offs was found to represent expertise. This expertise was found to be learned by apprenticeship rather than by any formal training.

The call schedule was found to represent a strategy of hedging resources against everything that might happen at an anesthesia department. The process of knowing what might happen developed over time. A lot of the daily work can be anticipated but not everything. The regular work and the demands are known through experience but different types of surprises like somebody calls in sick or will there be suitable organs available for the operation to be scheduled. Therefore a call schedule that promotes resilience with “extra” resources should not be seen as evidence of inefficiency but rather as a hedge against uncertainty.

By looking at patient transfers, within a hospital, and how patients might get lost and how the actual transfer might happen a long time after the order, Nemeth, et al., (2007) has found that the resources are not always optimal and the time and effort to fix this issue are many times in short supply due to the need to run at full capacity. Most importantly (Nemeth, et al., 2007, p. 147) states that “Although much of the work is mundane and regular, its details are consistently irregular” and “irregularity requires the judgment of individuals who work”.

Resilience and behaviour

The ability to prevent and defuse threats is important. What skills or behaviors are seen in resilient operations? Rhona Flin (2006) looks at the behavioral level of resilience in the article “Erosion of Managerial Resilience: From Vasa to NASA”. The main question this article attempts to answer is “what exactly characterizes managerial resilience and how can it be measured and trained” (Flin, p. 226). In contrast with many safety and resilience articles Flin (2006) article uses a historical event as the example of how conflicts between safety and production can lead to disaster. The Swedish gunship Vasa was at its maiden journey on the 10th of August 1628 when it sank after just a few minutes of

sailing due to heavy heeling to one side which led to capsizing. The ship was equipped with an extra gun deck on order from the King, Gustavus Adolphus, in the middle of the building process. It is argued that the master shipbuilder tried to dissuade the King from this without luck.

In high resilience organizations it is a critical ability for the middle managers to be able to “function as a protective buffer between the competing demands of production” (Flin, p. 225). In the case Vasa it is easy to understand, in hindsight, that it might have been hard to argue against the King. In a sense the King and the authority he stands for is still alive and well because “the regal power is now located in the senior management boardrooms and government offices” (Flin, p. 226).

Flin (2006, pp. 227-229) describes three skills that characterize managerial resilience. The three skills are diagnosis, decision-making and assertiveness. Diagnosis is seen as a skill to detect “signs of operational drift towards a safety boundary”. Decision-making is described as an ability to “select the appropriate action to reduce the diagnosed level of threat” and assertiveness is described as the skill to “persuade other personnel that production has to be halted” (Flin, p. 228). All these skills seem to be directly related to the skills of an experienced nurse. The nurse notice that there is a danger takes appropriate first actions to avoid the threat and finally tries to convince superiors to make changes.

Can these skills be trained or measured? This paper indicates that the skills, described above, all are influenced by underlying attitudes (e.g. commitment to safety) and it would be possible to both measure and train the skills. The measuring could be done in three possible ways, with safety climate questionnaires, upward appraisal or by identifying managerial scripts. All these skills are trained “under the banner of Crew Resource Management” (Flin, p. 233). What exactly is learned here remains slightly unclear except for assertiveness.

These findings indicate that it would be possible to observe measure and train some of the resilience aspects. It seems possible to observe assertive behavior and notice how the practitioners try to balance the trade-offs that are required to meet competing objectives.

Understanding nurses' work at the sharp end

Ebright et al. (2003, p. 631) want to “increase the understanding of RN work complexity in acute care setting” by highlighting details from nurses’ actual work. In this study they used both field observations and semi structured interviews. Each participant was observed 3 hours on two separate times and interviewed by a Critical Decision Method. The theoretical framework is the understanding of human performance in a changing environment and complexity.

With the study Ebright et al. (2003) addressed three different areas: 1) human and environmental issues affecting nurses’ work, 2) specific cognitive factors driving nurses’ performance and decision making, and 3) strategies used to manage work successfully. The sample was eight expert registered nurses’ (RN) from seven different units. A job history that exceeded five years was the criteria to be an expert and taking part in the study. The data analysis was made by two nurses, one physician safety expert and one human performance expert (p. 633).

Ebright et al. (2003) found twenty-two patterns emerging from the observations and interviews. The patterns where (2003, p. 634):

1. Patterns of work complexity
 - Disjointed supply sources
 - Missing equipment or supplies
 - Repetitive travel
 - Interruptions
 - Waiting for systems or processes
 - Difficulty in accessing resources to continue or complete care
 - Inconsistencies in care communication across care providers and /or patient
 - Breakdown in communication process/communication medium
2. Patterns of cognitive factors driving performance and decision making
 - Goal patterns
 - Maintaining patient safety
 - Preventing getting behind
 - Avoiding increasing complexity
 - Appearing competent and efficient to coworkers
 - Maintaining patient/family satisfaction
 - Knowledge patterns
 - Knowing individual patient information
 - Knowing typical patient profiles
 - Knowing unit routines and workflow

3. Patterns of care management strategies

- Stacking
- Anticipating and forward thinking
- Proactively monitoring patient status
- Strategic delegation and handoff
- Stabilizing and moving on
- Memory aids

In the discussion, Ebright et al. (2003), says that though the findings in the study cannot be generalized, there are several findings that should be taken in consideration. The findings indicate that nurses do work in a complex environment where a lot of the time is spent on managing the system rather than taking care of the patient. The daily work is full of gaps and discontinuities. Competing goals and tradeoffs are a part of the work and these should be discussed in the open in order to practice in a safer way and throughout basic education. The importance of knowing unit routines and typical patient profiles is stressed here too. In the study, they raise questions about how the knowledge patterns found can be maintained when nurses are moved to new units and during the use of travel nurses. The expert RNs studied also showed “effective strategies to cope and adapt in work situations to manage workload demands” (p. 638). The findings also suggested issues to be dealt with when redesigning the environments to support care providers and safe work situations.

I would argue that this study really is trying to look at the sharp end and how nurses work in a complex system. In the pursuit of patient safety, it is striking that there have not been many attempts to understand what practitioners at the sharp end do during daily practice. Though the findings cannot be generalized, it seems very likely that some of which found within the system occur elsewhere even in other countries with different cultures.

Literature summary

An experienced nurse is a big asset for safe performance. In the literature we have seen that the work, the nurse does, is shaped by experience, adaptation and learning, of the system and how the work can be done to avoid errors. We have seen that there is a way forward in Woods & Cook (2002).

Understanding the work performed at the sharp end of the system is crucial in understanding how

safety is created and maintained. Of particular interest here is where and how is the nurse anticipating risks.

We have seen that gaps, or fracture points, that occur in care are readily recognized in many cases (Cook, Patterson, Woods, & Render, 2008; Nemeth, Wears, Woods, Hollnagel, & Cook, 2008).

Problems produced by gaps are that both anticipated and bridged by experienced practitioners and therefore these gaps rarely lead to consequences or failure. Nemeth, et al. (2007) shows how expertise and rules have been developed over time to match different complex situations in acute care settings. How practitioners at the sharp end manage to cope and do the work regardless of restraint in resources could be seen as important in the production of safety. Many of the “solutions” are found to be informal and would be unnoticed if they would not be the subject of studies. How practitioners learn to hedge resources, to be used if needed, is one example of a solution that has developed over time and through experience.

The hunt for safety in health care includes the pursuit of means to enhance resilience. Creating and sustaining strategies that are resistant to failure is one way, in resilience engineering, to enhance safety (Nemeth et al. 2008). As many of the gaps are known and anticipated, informant practice has developed a number of strategies to overcome the gaps. Which strategies are enhancing resilience and where are they found becomes important research questions. It is important to understand how practitioners create bridges and overcome gaps if one is to understand the source of safety in health care. That practitioners have the ability to bridge gaps, ironically, is one of the reasons why gaps are given less attention than they could or should. As the pattern and significance of gaps is a dynamic process, a static defense has a limited value and we need more descriptive information of how safety is created at the sharp end.

On a behavioral and skill level Flin (2006) has shown that there are three skills that characterize “managerial” resilience. 1) The skill to detect drift towards safety boundaries. 2) The skill to select appropriate action in order to reduce the level of threat and 3) the skill to persuade other personnel that production has to be halted. Looking at the skills from a nurses’ perspective would add to what has been discussed in the other papers; - knowing gaps and risks in the work, - knowing what to do to

retreat and avoid, - cross-checking and taking part in the decision making process and knowing how to steer back. Flin (2006) finds that a critical ability, especially for middle managers, is to “function as a protective buffer between the competing demands of production”. Why this ability not would be critical even further out on the sharp end is not answered. This study will not focus on the managerial level but the skills mentioned in Flin (2006) can also found in the nurse’s daily work.

To be able to make the system safer we need to understand in what circumstances and surroundings the practitioners work. Ebright et al. (2003) has shown us how expert nurses adapt and cope with the complex system and what kind of strategies these RNs use. What is described as work complexity is in a sense obvious but still little has been made to reduce the complexity within the health care industry. The factors driving performance and decision making should be taken into account in the basic training of nurses. Also the patterns of care management strategies are important knowledge for those who work at sharp end to possess.

In summary, we have seen why it is important to look at resilience and how this could help the pursuit of safety in health care. We have seen that nurse’s work in a highly complex environment with competing goals and that they manage to cope and adapt. The nurses also seem to create safety in a difficult surroundings. In Finland many projects to enhance patient safety have started during the last years (see earlier). From these projects, we often get different kinds of recommendations. What seems to be lacking though is a clear picture of how safety is produced today in health care, in Finland. This study will focus on how nurses in their daily work can increase system resilience. As this would be a very large area, this study will focus more directly on the trade-offs, skills and behavior associated with the nurses’ ability to anticipate and handle risks and create safety.

METHOD

According to Blaxter, Hughes, & Tight (2010, p. 59) methodology is the “paradigm that underpins the research” and method is the “tools of data collection or analysis”. The alternative paradigms are described as the quantitative paradigm and the qualitative paradigm. Which paradigm would then suit this study best? The qualitative paradigm includes (Blaxter, Hughes, & Tight, 2010, pp. 65-66):

- Concerned with understanding behavior
- Naturalistic and uncontrolled observation
- Subjective
- Close to the data and the data is not in the forms of numbers
- Discovery oriented
- Process oriented
- Assumes a dynamic reality

All these descriptions fit this study since the plan here is to understand, explore and illuminate how nurses can increase system resilience. This study is not seeking causes and the data therefore is not numerical and thus not a quantitative study.

Approach and sample

The most common approaches to “small-scale research projects” (Blaxter, Hughes, & Tight, 2010, p. 67) are described as action research, case studies, experiments and surveys. The approach best suited this study would be the case study since it:

- Illustrates problems
- Can indicate good practice
- Observes characteristics of an individual or community
- The data is drawn from people’s experiences and practices

Creswell (2007, s. 73) states that “case study research involves the study of an issue explored through one or more cases within a bounded system”. Observing and interviewing nurses on a specific ward and with a specific area of interest fits the case study model. The case’s boundaries are limited by physical area, time, area of interest and number of people included. The issue studied would be the ability to anticipate and steer back from risk. The case study approach is “studying an event, an

activity” (Creswell, 2007, s. 78) and that is what this study will do. It will look at how nurses do create safety.

Blaxter, Hughes, & Tight (2010) discuss four different techniques to collect data. Looking at documents (p. 186), interviewing and discussing issues with informants (p. 193), observation that allows researcher to understand much about what goes on (p. 198) and by questionnaires, which are widely used but not easy to carry out and interpret (p. 201).

Since this research question is about understanding the work at the sharp end, observations and interviews will be used in this study. The data will be obtained in two different stages at an intensive care unit at the University Hospital in Helsinki, Finland. This setting is chosen because the patients being treated at an intensive care unit need interventions more often than patients on normal wards and their health status can rapidly change. The need for anticipation and recognition of risks therefore happens with more frequency and therefore it should be more obvious here how the nurse creates safety. A possible third stage will be decided on after the analysis. An information letter was sent to the participants before the study took place (Appendix A (in Finnish)), where the participants are given general information of the study and are reminded that there is no obligation to participate. This research project was also approved by the relevant ethics committees.

The first stage of data collection was to observe nurses at work during two different day-time shifts on two different weekdays. The active observation during each shift was divided into segments of four times 60-90 minutes. Dividing the observing into segments gives the observer a possibility to make more exact notes of the activities tracked. The data collected from observations will only be used as a pre-understanding in the process of preparing for the interview stage. By observing, before interviewing, I was able to understand more about what goes on in the real world and give me the clues of what questions should be asked in the interviews and in what kind of situations resilience is appearing in. I also had the possibility to ask questions about a specific situation and behavior, ex. why the nurse did act like she/he did or what meaning was attributed to these actions. According to Wilkinson and Birmingham (2003) observation is “an extremely handy tool...that can allow researchers to understand much more about what goes on in complex-real-world situation than they can

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ever discover simply by asking questions” (cited in Blaxter, Hughes, & Tight, 2010, p.198). In this study the information gathered from these observations will be used only to design better questions.

The second stage and primary stage of data collection was the interviews of eight nurses working at the unit. The nurses participating in this study were selected by the head nurse. The interviews were semi-structured including both a set of questions that was asked of all interviewed and then there was an open discussion. See appendix B for semi-structured questions. Each interview took approximately 60-90 minutes and was recorded. A possible third stage of data collection would be a second set of interviews to correct facts and possible misunderstandings. The possible final interview layout will be determined, if needed, after the first interview cycle has been analyzed.

Expected results and analysis

The data obtained through observations included notes about nurse activities. How the nurse observed did what and under what circumstances, will constitute the main data at this stage. Behaviors and action taken by the nurse to maintain or preserve safety will be of high interest. As the observation-data is mainly to provide information for the interview questions, little further analysis of this data will be performed. This data could be called pre-understanding.

The data from the first interview cycle was recorded raw-data from semi-structured questions and discussions of themes decided after the observation. This data will be analyzed by thematic analysis (Blaxter, Hughes, & Tight, 2010, p. 233). If a need for a second interview appears, a final interview will focus on discussing the issues that rise from the analyzed material to verify the interpretations that emerged from earlier interviews. The results will be presented in sections according to the themes rising from the study (Creswell, 2007, s. 79).

Research ethics

Since this study focuses on the nurse and what she/he does, and not on the patient nor the treatment, a ethical review at the University Hospital will not be needed. A permission to perform the study was however granted 24st of January 2012 (see Appendix D), after the thesis proposal had been approved at Lund University. The collected material will be stored according to good practice and the individual

nurses interviewed cannot be recognized from the written text. In the case of that the data collected in the interviews would be transcribed by a third party, normal masking procedures would be followed.

RESULTS

These results are based on the nine interviews made during the period of 4th of April and 23rd of April, 2012. All interviews were individual by individual and the average length was 48 minutes and the range was 27 – 70minutes. The total length of all interviews was 7h 17 minutes and all was transcribed to text. All interviewees had the opportunity to take part in this study during their work shift. Only one of the interview sessions was interrupted, and this happened twice, during this one interview. Preceding the interviews, two observation periods were carried out. Both lasted for six hours with only a short break, one in the morning and one in the afternoon. These observations facilitated a pre-understanding of the work done at the intensive care unit and helped produce better questions for the interview session. After the observations six questions were added to the interview schedule (Appendix C). Only a part of those interviewed had been on shift during the observation period.

The results will be presented in sections that describe how nurses create and maintain safety, how they see the risk and how they describe the system in which they work. The results will not be presented in the order of original questions. The interview questions were designed to allow discussions about safety, risks and issues like conflicting goals, hierarchy and autonomy. All citations are freely translated from Finnish in a way that the original message and meaning would be approximately the same. Explanations marked [] are made by the author in order to explain certain answers.

The system

The interviewed work experience varied from 3 to 26 years, average 14, which gave the total of 122 years of experience. The experience on this specific intensive care unit was 79 years which comes to an average of little less than 9 years.

The question “What conflicting goals do you recognize there is in daily work?” seemed difficult for most interviewees to answer directly. Their answers to this question were often preceded with a discussion of what conflicting meant. Interestingly there were several different conflicting goals acknowledged. The results to this question are presented here:

- Aseptic care: - lifesaving treatment
 - much to do with patient in short time

[There is a high recognition for the need of aseptic care and some disagreement about the meaning of working aseptically. Lifesaving treatment and working with a hurry often conflicts with this “correct” way of working.]

“shall I do this with a hurry or properly”

“the aseptic quality might not be the best when saving the patient’s life is priority number one”

- Best practice – practical needs
[The nurse knows what would be the best way to treat the patient but for pragmatic reasons has to do it differently]
“sometimes it is easier to keep the patient sedated though he would benefit from being awake”
- Quality of care – economics
 efficiency
 staffing

[In some answers the nurse mentioned that they feel they have to choose cheaper products in order to save money. To be efficient also seems to be a big issue. The efficiency was regarded to be a situation where work tempo had to be high for a long time and therefore the quality could be poorer. Times when there were too few practitioners on duty was also mentioned as problematic.]

“in a hurry I hate the job and when I got the time to do a good job I love it”

“I might have to defend my choices to superiors”

“extra thorax x-rays and laboratory tests costs money - sometimes I feel that I’m expected to debate the need of the tests with physicians in order to reduce costs”

- Mentoring – learning
[Nurses have the obligation to instruct/mentor students and sometimes they feel that it is not possible due to a too heavy workload]
“you would like to let students do but have to make up time if they are slow or you are not sure they are able to do the task”

Hierarchy is generally seen as having little impact on how nurses work in this unit. Many of the answers suggest that they have been experiencing more hierarchical effects on other units they worked on or that hierarchy had a more of an effect on them earlier in their career. Daring to speak up and the numbers of years of experience seems to be connected to how hierarchy is experienced. Two sides of

hierarchy can be found in these answers. There is the “good” hierarchy when everybody knows who is in charge and taking responsibility and “bad” hierarchy when the hierarchy in itself produces situations where you would not dare to speak up or confront power.

“not any more.... earlier in the career I was scared to object to physicians or ask dumb questions”

“not so much – I have guts to stand up – but I respect them”

“not afraid anymore – have been here so long”

“not in any ways – I dare to ask everybody”

“I hate hierarchy – it produces situations when you don’t dare to speak up”

“it creates safety....you know who takes responsibility”

To feel that your opinion counts when working in a group is very important for all these informants. It seems that the feeling of being listened gives practitioners respect, the feeling of being equal and the feeling of being an important part of the process.

“it is important but if there is hierarchy present it brings tension to the situation”

“I feel that I got clear conscience when I speak up – it doesn’t matter if they ignore you after that”

“very important to be able to say your opinion”

“very important – but sometimes there are so many people present on the rounds that I feel my opinion would be wrong”

Recognition of risk

This study suggests that nurses are generally aware of risks and are able to bring out a range of safety issues to the table. In order to be able to present the study’s some categories created by the author are used to present the reader with an overview of nurses’ awareness of risk and why some situations becomes difficult to manage in daily work. The three categories are: 1) Risks associated with the System, 2) Risks associated with Patient Care or Patients, 3) Risks associated with Nurses’ PRole and Knowledge. Beneath each figure there are some quotations that represent examples from each category.

1) Risks associated with the system

This category includes risks not directly connected with the practitioners activity or their treatment of the patient.

- Physical surrounding
 - cables to trip over
 - crowded space
 - many rooms are equipped differently – difficulties to find things
- Work management
 - 24/7 work - risk of missing information
 - lack of personnel – hurry – risk from many different labor related things
 - no breaks - tiredness
 - need to stack duties
 - risk when mobilizing patient
 - inexperienced personnel – nurses' and physicians
 - risk of not daring to ask for guidance/help
 - not always clear who does what
- Equipment
 - risk of malfunctions
 - hard to manage all different ones, no consistency

Figure 1: Risks associated with the system

Examples: *“a big problem is inexperienced physicians....I can't help that, it's an organizational problem”*

“...one example is the cables lying on the floor”

“maybe more than others the movement of information”

2) Risks associated with Patient Care or Patients

This category includes all acknowledged risks directly connected with the treatment of the patient.

- Medicine orders not written down anywhere
- The need for the simultaneously doings of many things, when for example patient arrives
 - risk of missing something
- Patient reacts unexpectedly
- Disoriented patients
- Different “correct” ways of doing things
- Rare situations – unexpected situations
- Too sedated patients
 - the ability to foresee, anticipate, what will happen is lost
- Mobilizing patient
 - risk of patient/nurse falling, tripping
- Infections
 - for both patient and nurses'

Figure 2: Risks associated with Patient Care or Patient

Examples: *“...with patients that are restless and disoriented.....what makes the patient unsafe towards himself”*

“There will always be unexpected situations”

“The risk is that I medicate the patient for one reason with sedatives and then he is relaxed and calm but then I could miss that a patient is unconscious due to a bleeding in the brain.”

“The most risks occur in the beginning of care. I think that there is hurry in the beginning [at admissions] and so many peoples involved, so there might easily be something unnoticed”

3) Risks associated with Nurses’ Role and Knowledge

This category includes all acknowledged risks that describe things directly connected with the nurses own person and knowledge.

- Lack of knowledge
 - theory – anatomy and physiology
 - patient profiles – how patient might react in different situations
 - understanding what causes what
 - not able to choose well among options
 - not able to recognize the risk in time
- Nurses’ Human performance
 - forgetting
 - misunderstanding
 - tired
 - preoccupied
 - things go unnoticed
 - mental overload
 - belief in authorities – little assertiveness
 - unable to react quickly
 - health care routines makes it hard to adopt to new situations
 - stop questioning why
 - lack of communication
 - lack of social skills
 - not prepared for risk

Figure 3: Risks associated with Nurses’ Role and Knowledge

Examples: *“misunderstandings, the physician may tell you some thing and you get it wrong”*
“if you don’t focus on what you are doing, talking to a colleague about something”

As we can see from the figures and examples above, nurses can describe any number of risks and they are very aware both about of risks associated with their work and what makes their work difficult at times. All interviewed were given the chance to describe a situation in which things got out of control. From informant comments this study found that there was generally three things that led to safety risks. First, when many things happen at the same time the ability to predict and anticipate was poor. Secondly, totally unexpected events that could lead to accident and injury were a theme that rose from the material. This is because totally unexpected events can lead to a situation where the nurse had no way of predicting or anticipating particular events. Examples of these were rare clinical events and malfunction of equipment. Thirdly, when one did not have the knowledge how to perform certain clinical tasks.

Safety

This study is about safety and how nurses create safety in everyday work. During interviews the discussion alternated between risk and safety multiple times. If something was regarded a threat to safety, the interviewee discussed how he/she would manage that threat, how safety was maintained and managed. Discussions about creation of safety and being safe also included questions about what the nurse thought was the risk to be managed and what made this difficult.

The results in this section will be divided in categories that have stood out in interviews. The categories are based on how the nurses were talking about safety. The areas that stood out were to have 1) knowledge about something, 2) to do something and 3) to be something as a person. The categories are not necessarily explicit though. The results are shown in figures 4-6. Beneath each figure there are citations representing a few examples from each category chosen from the interviews.

- 1) Knowledge of: Safety described as something you need to know in order to be safe.

 - Theory
 - human physiology, anatomy, pathophysiology
 - best practice
 - why things are done in a certain way
 - Patient
 - profile
 - condition
 - baseline
 - Machines
 - function and use
 - Equipment
 - function and use
 - When to use help from other professionals
 - Own limitations
 - Risks

Figure 4: Safety by knowledge of something

Examples: *“I have learned to be prepared for the worst”*
“You have to know how the patient might react and what normal is for the patient”
“You need to know how to use the respirator”

- 2) Doing: Safety is described as something you do in order to be safe.

 - Monitoring
 - how patient is doing
 - what experienced and inexperienced colleagues are doing

- Anticipating
 - what might be needed during shift
 - changes in patient
 - patient pain
 - different examinations and the need for them
 - need of equipment, medications and machines
 - the un-expected
 - personnel – number and experience
 - risks associated with treatment
- Questioning
 - Doctors' decisions
 - yourself
 - double-checking
- Adapt
 - to new situations
 - changing situations
- Knowledge
 - update every now and then
 - trust own knowledge
 - sharing knowledge and information
 - knowing best practice
- Person
 - be approachable with colleagues
 - helping
 - listening – talking - explaining
 - aseptic mindfulness

Figure 5: Safety by doing

Examples: *“I check things not just by habit or routine”*

“I try anticipating very much, and teaching younger nurses to be one step ahead all the time”

“I think about how to lay out the work during the shift”

“I think you need the ability to question your own knowledge”

- 3) Being. Safety described as something you are or have to be in order to be safe.
- Ability to
 - have a broad picture of what is happening
 - take many options into consideration
 - prioritize
 - speak out load
 - think out load
 - explain why things are done in a certain way
 - put together many pieces of information
 - to be able to say no
 - Integrity/Humble/Honest
 - about own knowledge and its limits
 - Aseptic minded
 - Social skills
 - to ask and give help
 - to listen

- to make patient feel safe
- to be able to work with other professionals
- to communicate
- to be able to monitor each other
- to be available to colleagues
- Courage
 - to stand up against hierarchies
 - to question orders
 - to have own opinion
 - to demand explanations
- Skill
 - to find knowledge
 - to anticipate patients reactions
 - to share knowledge
 - to be always ready
 - to react quick
 - to predict
 - to control
 - to control panic
 - to observe
 - to stay calm
 - to identify danger
 - to use resources effectively
 - to read the patient

Figure 6: Safety by being

Examples: *“I’m calm and able to handle situations quickly if needed”*
“You need a lot of theoretical knowledge...and information from your colleagues and ability to find knowledge”
“I’m precise and a little paranoid”
“I try to be one that is easy to work with if help is needed”

DISCUSSION

To move forward from error, to pursue second stories and to understand the work done at the sharp end gives us an understanding of what makes practical work difficult and full of pressures and dilemmas. It shows what practitioners do in order to keep their work safe and overcome hazards. It is important to understand the complex system where practitioners deal with conflicting goals and trade-offs. (Woods & Cook, 2002)

The results in this study have shown us that nurses are aware of and recognize a variety of different conflicting goals affecting their daily work. Nurses are aware of the basic need for aseptic correct care and the consequences for the patient when this is lacking. This aseptic correct way of doing the work however can conflict with the realities of everyday practice when action and speed is required. Lifesaving activities are prioritized when needed by practitioners, knowing that aseptic care is a “golden rule” to follow. Conflicting issues rises with best practice too. Nurses are generally aware of what would be best for the patient and they recognize situations where other needs are given higher priority as we can see from the example of keeping the patient sedated even though the patient might benefit from being awake. Economical, efficiency and the numbers of practitioners on duty are all recognized as potential conflicts with the quality of care. Increases in work tempo at work seem to affect how nurses experience their job. This can produce negative feelings when having the time to do a “good job” gave positive feelings. If this is connected with lack of resources is unclear but possible due to that often upsticks in work tempo is often linked with the number of personnel on duty. An interesting and unexpected finding about conflicting goals was that the obligation to mentor can conflict with giving students the opportunity to learn. This was brought out only by one nurse though.

We have seen from the literature that the work, the nurse does, is shaped by experience, adaptation and learning, of the system and practitioners ideas about how the work should be done to avoid errors. As Cook, Patterson, Woods, & Render (2008, p. 2) says; “people in their different roles are aware of potential paths to failure, they develop failure-sensitive strategies to forestall these possibilities”. This can be seen in the results of this study also. Nurses are aware of the risks associated with their daily

practice. Risks here are associated with the system, patient care and the nurse person and knowledge. This finding suggests that nurses have numerous different strategies and plans to avoid known risks. Risks associated with the system (physical surrounding, work management and equipment) seem to demand adaptation capabilities and coping strategies because there is little the nurse directly can do to change situations like these. The results in this study also indicates that nurses are aware of gaps, or fracture points, that can occur in the process of care (Cook, Patterson, Woods, & Render, 2008; Nemeth, Wears, Woods, Hollnagel, & Cook, 2008) and that gaps are anticipated and bridged by practitioners. As the pattern and significance of gaps is a dynamic process a static defense has a limited value to safety and this suggests we need more descriptive information about how safety is created at the sharp end in clinical care (Nemeth et al. 2008).

The results in this study suggest that safety can be maintained and created in many ways. Nemeth, et al. (2007) has shown how expertise and rules develop over time to match different complex situations in acute care settings. This was found here too; nurses can create safety and what is seen to be important for safety has been developed over time. As for expertise, this study did not focus on experts and developed strategies as such. We did see here like Nemeth et al. (2007) that how practitioners developed over time and by experience the ability to hedge resources, and that nurses believe that courage to be able to be more assertive and therefore more safe was regarded to be very important. Interestingly, hierarchy was seen to have little impact on how these informants worked but on the other hand they believed that courage to question hierarchies was very important. Many of the interviewed talked about how hierarchies had more impact on the work earlier in their careers but not anymore due to that they “dared” to address anybody.

On a behavioral and skill level Flin (2006) has shown us that there are three skills that characterize “managerial” resilience; 1) skill to detect drift towards a safety boundary, 2) skill to select appropriate action in order to reduce the level of threat, and 3) skill to persuade other personnel that production has to be halted. This study suggests that the skills mentioned in Flin (2006) are found in the nurse’s daily work and the three skills should be seen as not linked to managerial level. Looking at the skills and behaviors from a nurses’ perspective this study suggests that the skills Flin (2006) refers to are found within all three categories described here as, -knowledge, being and doing. What seems to be missing

in Flin's discussion is a coupling to the halting production. From the nurses' perspective, this is generally part of a clinical process e.g. questioning a medicine order, not halting the "whole" enterprise. Results in this study shows that nurses are generally well aware of the risks and the boundaries. They know how to retreat and avoid risks and how to take part in the decision making process. The results in this study also suggest that nurses normally can detect risks and all risks that pass undetected are taken to be total surprises.

Ebright et al. (2003) has shown us how expert nurses adapt and cope with the complex system and what kind of strategies nurse use. Many of the patterns listed by Ebright et al. (2003) can be found in the results of this study as well. Patterns of work complexity and patterns of cognitive factors driving performance and decision making can be found within the three categories of risks, in this study. There is much similarity between knowledge patterns in Ebright et al. (2003) and the category of safety through knowledge in this study. Many of the patterns of care management strategies Ebright et al (2003) correspond to are found within the three categories here on how safety is created.

In summary, the results from this study show that risks are very well understand among nurses (figures 1-3). The list of safety features a safe practitioner needs, i.e. by having knowledge, by doing and being (figures 4-6) is both long and deep.

CONCLUSIONS AND FURTHER RESEARCH

This study was about understanding, exploring and illuminating how nurses can increase system resilience and about describing trade-offs and behaviors associated with the nurse ability to anticipate and avoid risks. In the results we are able to see that nurses do know a lot about risks in their daily work. The way they describe how safety is created and maintained is both rich and detailed. Safety is created and anticipated all the time. A situation that cannot be anticipated and sudden events seem to be most problematic for the informants interviewed here.

The findings in this study are based on a small sample, nine, and all interviewed were working at an intensive care unit. Therefore generalization of the findings within healthcare is premature even though these findings agree with earlier studies. Still these findings can provide nurses on all levels, from undergraduates to experts, with important information on how safety is created on the sharp end and therefore could help to enhance patient safety.

The research question this study was to answer was; how do nurses in their daily work increase system resilience? The findings in this study help us to know more about what risks nurses do acknowledge and how they see safety constructed in their daily work. As resilience has been stated to be “a capability to recognize the boundaries of safe operations, a capability to steer back from them in a controlled manner, a capability to recover from a loss of control if it does occur” (Dekker, 2008) we can argue that this study has been looking at resilience. A more proper research question might have been; how do nurses in their daily work maintain system resilience?

Further research within the area of how nurses create and maintain safety could include a closer look at the practical strategies used by nurses in respect to safety and how they develop and change through the years. If the strategies used by nurses can be taught during basic education in order for nurses to become safer could be another research topic. A closer look on how nurses do trade-offs and justifies them to themselves and others could also give us an understanding of how nurses choose between options when it comes to safety.

Understanding the work performed at the sharp end of the system is crucial in understanding how safety is created. This study has shown us a little about how safety is created but hopefully gives us a better understanding of how many things nurses are trying to keep in mind in the process of doing a good job, every day. An experienced nurse is a big asset for safe performance in clinical settings and we should be more interested in how they manage to be so safe every day.

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Appendix A

SAATEKIRJE

Hyvä teho-osaston sairaanhoitaja,

Opiskelen Lundin Yliopistossa Ruotsissa ja kerään tutkimusaineistoa pro –gradu tutkielmaani varten. Pääaineeni on ”Human Factors and System Safety” eli Inhimilliset tekijät ja systeemiturvallisuus. Tutkimuksen tarkoituksena on kuvata sairaanhoitajien kykyä luoda turvallisuutta ja lisätä järjestelmän virheensietokykyä. Tutkimuksen tavoitteena on parantaa potilasturvallisuutta lisäämällä ymmärrystä siitä miten sairaanhoitaja työssään luo turvallisuutta ja ehkäisee riskejä.

Tutkimuksen aineisto kerätään haastattelemalla teho-osastolla työskenteleviä sairaanhoitajia. Haastattelu kestää n. tunnin ja se nauhoitetaan. Haastattelu ajat sovitaan erikseen jokaisen haastateltavan kanssa. Haastattelu aineisto säilytetään tutkimukseen kuuluvien hyvien tapojen mukaisesti eikä tutkimukseen osallistuvaa sairaanhoitajaa pysty tunnistamaan. Ennen haastatteluja tutkija tulee osastolle seuraamaan sairaanhoitajan työtä yleisesti ja tekee muistiinpanoja

Pyydän sinua ystävällisesti osallistumaan tähän tutkimukseen haastateltavaksi. Tutkimukseen osallistuminen on täysin vapaaehtoista mutta tutkimuksen onnistumisen kannalta erittäin tärkeää.

Tutkimukseen on HYKS operatiivisen tulosityksikön lupa ja HUS vastuuhenkilönä toimii hoitotyön kliininen opettaja Netta Pohjamies-Molander (050 4272268).

Mikäli haluat lisätietoa, vastaan mielelläni kysymyksiisi. Voit olla myös yhteydessä työni ohjaajaan James Nyceen.

Ystävällisin terveisin,

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Appendix B

Semi-structured questions, to be asked of all participants.

1. Years of experience - Kuinka monen vuoden työkokemus?
2. Years of experience at the unit - Kuinka monta vuotta tässä yksikössä?
3. How safe would you describe yourself at work? - Miten turvallisesti kuvaisit itseäsi työssä?
4. What skills would you say a safe nurse needs? - Mitä taitoja sanoisit että turvallinen sairaanhoitaja tarvitsee?
5. Do you think you have those skills? - Onko sinulla mielestäsi niitä taitoja?
6. What risks do you recognize that there is in daily work? - Mitä riskejä tunnistat päivittäisessä työssä?
7. What conflicting goals do you recognize there is in daily work? – Mitä ristiriitaisia tavoitteita tunnistat olevan päivittäisessä työssä?
8. How would you describe your ability anticipate risks in your work? – Miten kuvailisit kykyäsi ennakoita riskejä työssäsi?
9. Describe how hierarchy affects you in your work. – Kuvaile miten hierarkia vaikuttaa sinuun työssäsi.
10. Do you feel that your opinion counts when you work in a group? – Millä tavalla koet että mielipiteelläsi on merkitystä työskennellessäsi ryhmässä?

Appendix C

Added semi-structured questions:

- Tell me how you create safety?
- Why does some issues or situations become difficult and a threat to safety?
- Tell an example of a situation when things has been out of your hands?
- Tell an example of situation when you have saved it from getting worse or go bad
- I was here and observed your work a couple of days. I have this claim that a lot of what you do is anticipating – What is your comment to that?
- What do you think I forgot to ask about safety during this interview?

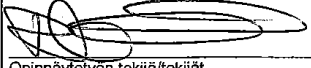
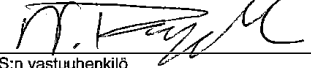
HELSINGIN JA UUDENMAAN
SAIRAANHOITOPIIRI

OPINNÄYTETYÖN TUTKIMUSLUPAHAKEMUS Liite 1


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|---------------------------------------|--|--|
| Opinnäytetyön tekijää koskevat tiedot | Suku- ja etunimet Nystrom Patrik Holger Virka/toimi tai oppiarvo/koulutustausta Ensihoidon ohjelmavastaava - Arcada HUS:n palveluksessa <input type="checkbox"/> Kyllä <input checked="" type="checkbox"/> Ei Sähköpostiosoite/puh/gsm patrik.nystrom@arcada.fi / 0503223630 Kotiosoite Linnanpellontie 170, 04130 Sipoo Yliopisto ja laitos/Ammattikorkeakoulu/oppilaitos, jossa opiskelee Lund University - Human Factors and System Safety Yliopiston laitoksen/Ammattikorkeakoulu/oppilaitoksen osoite Lunds universitet Trafikflyghögskolan, Drottningv. 5, 264 51 LJUNGBYHED | |
| Opinnäytetyön ohjaaja oppilaitoksessa | Opinnäytetyön ohjaaja(t), ohjaajien oppiarvot ja yhteystiedot (sähköposti/puhelin) James M. Nyce, Associate Professor of Anthropology, Ball State University, 2000 W University Avenue Muncie IN 47306, USA, 765-285-7321, jnyce@bsu.edu Opinnäytetyön ohjaaja(t), ohjaajien ilmoitus siitä, onko opinnäytetyön tutkimussuunnitelma hyväksytty esitetyssä muodossa Lupa on olemassa. | |
| HUS:n vastuuhenkilöä koskevat tiedot | Suku- ja etunimi/virka/toimi Pohjamies-Molander Netta / Hoitotyön kliininen opettaja Työpaikan osoite PL 266 00029 HUS Sähköpostiosoite/puh/gsm netta.pohjamies-molander@hus.fi | |
| Opinnäytetyötä koskevat tiedot | HUS:n tulosalue, tulosyksikkö tai lääkelaitos, jossa vastuuhenkilö työskentelee HYKS operatiivinen tulosyksikkö Opinnäytetyön nimi julkisessa muodossa Resilience at the sharp end – A description of nurses' capability to create safety. Lyhyt selostus opinnäytetyön suorittamisesta HUS:ssa julkisessa muodossa (kirjasinkoko 10) Tutkimuksen aineisto kerätään Töölön sairaalan tehoosastolla. Aineiston keruu tapahtuu haastattelulla kahdeksan sairaanhoitajaa tutkijan käytyä ensin havainnoimassa työtä osastolla saadakseen esiymmärryksen sairaanhoitajan keinoista hallita ja ennakoida riskejä. Liitteenä hyväksytty pro-gadu tutkielman suunnitelma. | |
| | Asiasanat (max 5 kpl) Patient Safety, Resilience | |
| | Opinnäytetyön taso <input type="checkbox"/> Licensiaattitutkinto <input checked="" type="checkbox"/> Maisteri tutkinto <input type="checkbox"/> Ylempi AMK tutkinto <input type="checkbox"/> Kandidaatti <input type="checkbox"/> AMK tutkinto <input type="checkbox"/> Muu, mikä? <input checked="" type="checkbox"/> Ei <input type="checkbox"/> Kyllä, mitä? | Opinnäytetyön tieteenala <input type="checkbox"/> Lääketiede <input type="checkbox"/> Hammaslääketiede <input type="checkbox"/> Hoitotiede <input type="checkbox"/> Terveystieteiden tiede <input checked="" type="checkbox"/> Muu, mikä? Human Factors and System Safety |
| | Opinnäytetyö on osa laajempaa HUS -hanketta? <input checked="" type="checkbox"/> Ei <input type="checkbox"/> Kyllä, mitä? | Arvioitu aloituspvm. 18.1.2012 Arvioitu päättymispvm. 24.6.2012 |
| | Opinnäytetyön suorituspaikat HUS:ssa <input type="checkbox"/> HUS konsernihallinto <input checked="" type="checkbox"/> HYKS-sairaanhoitoalue <input type="checkbox"/> HYKS Medisiininen tulosyksikkö <input type="checkbox"/> HYKS Naisten- ja lastentautien tulosyksikkö <input checked="" type="checkbox"/> HYKS Operatiivinen tulosyksikkö <input type="checkbox"/> HYKS Psykiatrian tulosyksikkö <input type="checkbox"/> Hyvinkään sairaanhoitoalue <input type="checkbox"/> Lohjan sairaanhoitoalue <input type="checkbox"/> Länsi-Uudenmaan sairaanhoitoalue <input type="checkbox"/> Porvoon sairaanhoitoalue <input type="checkbox"/> HUS-Aptaeikki <input type="checkbox"/> HUS-Desiko <input type="checkbox"/> HUS-Kiinteistöt Oy <input type="checkbox"/> HUS-Logistiikka <input type="checkbox"/> HUS-Lääkintäteknikka <input type="checkbox"/> HUS-Röntgen <input type="checkbox"/> HUS-Servis <input type="checkbox"/> HUS-Tilakeskus <input type="checkbox"/> HUSLAB <input type="checkbox"/> Ravioli <input type="checkbox"/> Uudenmaan sairaalapesula Oy <input type="checkbox"/> Muu, mikä? | |

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Appendix D 2/2

| | | |
|--|--|---|
| Kohderyhmä <input type="checkbox"/> Potilaat <input type="checkbox"/> Omaiset <input checked="" type="checkbox"/> Henkilökunta <input type="checkbox"/> Asiakirjat <input type="checkbox"/> Muu, mikä? | | Tutkittavien/havaintoyksikköjen määrä Havainnointia suoritetaan kaksi päivää (8x60-90 n. Haastattelu N=8 hoitajaa |
| Aineiston keruumenetelmä <input type="checkbox"/> Kysely <input checked="" type="checkbox"/> Haastattelu <input type="checkbox"/> Havainnointi <input type="checkbox"/> Asiakirja-analyysi <input type="checkbox"/> Muu, mikä? | | |
| HUS:n ulkopuoliset yhteistyötahot Haastatteluaineiston puhtaaksikirjoitus tapahtuu mahdollisesti ostopalveluna. | | |
| Aiheuttaako opinnäyte kustannuksia HUS:lle? <input type="checkbox"/> Kyllä <input checked="" type="checkbox"/> Ei (Kustannusarvio ja rahoitussuunnitelma erillisellä liitteellä) (Tutkimusluvan myöntäjä voi vaatia selvitystä tapauskohtaisesti) | | Opinnäytetyön hyödyt/vaikutukset HUS:n toimintaan <input checked="" type="checkbox"/> Välitön soveltuvuusarvo toimintaan, mihin Potilasturvallisuuden kehittämiseen. <input type="checkbox"/> Ei välitöntä sovellettavuutta |
| Opinnäytetyön tekijänä sitoudun noudattamaan sairaalan antamia ohjeita ja sääntöjä ja raporttoimaan opinnäytetyöni tuloksista tutkimusluvan myöntäjälle. Päiväys 18.1.2012  Opinnäytetyön tekijä/tekijät nimenselvennys Patrik Nyström | | |
| Päiväys 18.1.2012  HUS:n vastuuhenkilö nimenselvennys Netta Pohjames-Molander | | |

Alla olevaa päätöskohtaa käytetään silloin, kun päätös voidaan antaa lomakepäätöksenä (kts. JYL 1/2010, kohta 4.3)

| | | |
|---|---|---|
| LOMAKE- PÄÄTÖS 5/2012 | <input checked="" type="checkbox"/> Myönnetään hakemuksen mukaisesti <input type="checkbox"/> Myönnetään edellyttäen, että | |
| | <input type="checkbox"/> Hakemus hylätään seuraavin perusteluin *) | |
| | *) Oikaisuvaatimusohje liitteenä | |
| | Tutkimusluvan alkamispäivä 25.1.2012 | Tutkimusluvan päättymispäivä 28.6.2012 |
| | Päiväys 28.1.2012  Tutkimusluvan myöntäjä nimenselvennys ARI TUOMA | Päiväys Tutkimusluvan puoltaja HUSissa nimenselvennys |

Tarvittavat liitteet

- ☒ Opinnäytetyön suunnitelma ja selostus opinnäytetyön suorittamisesta HUS:ssa
- ☒ Aineiston keruulomake
- ☒ Kysely/haastattelulomakkeen saatekirje

Lisäksi tarvittaessa

- ☐ Opinnäytetyötä suorittava muu henkilöstö
- ☐ Kustannusarvio ja rahoitussuunnitelma
- ☐ Hakemus tietojen saamiseksi salassa pidettävistä asiakirjoista
- ☐ Vaitiolosittoumus/ salassapito- ja käyttäjäsitoumus
- ☐ Tutkittavan tiedote ja suostumus
- ☐ Eettisen toimikunnan lausunto
- ☐ STM:n lupa
- ☐ Henkilörekisteriseloste

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