The postoperative handover: a focus group interview study with nurse anaesthetists, anaesthesiologists, and PACU nurses

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The postoperative handover: a focus group interview study with nurse anaesthetists, anaesthesiologists, and PACU nurses

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ABSTRACT

OBJECTIVES To investigate different professionals’ (nurse anaesthetists’, anaesthesiologists’, and postanaesthesia care unit nurses’) descriptions of and reflections on the postoperative handover.

DESIGN A focus group interview study with a descriptive design.

SETTING One anaesthetic clinic at two hospitals in Sweden.

PARTICIPANTS Six focus groups with 23 healthcare professionals involved in postoperative handovers. Each group was composed on the basis of profession: nurse anaesthetists (n=8), anaesthesiologists (n=7) and postanaesthesia care unit nurses (n=8).

RESULTS Through qualitative content analysis of interview transcripts, patterns and five categories emerged: 1) Having different temporal focus during handover, 2) Insecurity when information is transferred from one team to another, 3) Striving to ensure quality of the handover, 4) Weighing the advantages and disadvantages of the bedside handover, and 5) Having different perspectives on the transfer of responsibility. The professionals’ descriptions of and reflections on the postoperative handover differed with regard to the temporal focus during handover and perspectives on the transfer of responsibility. All professional groups were insecure about having all information needed to ensure the quality of care. They strived to ensure quality of the handover by: focusing on matters that deviated from the normal course of events, aiding memory through structure and written information, and cooperating within and between teams. They reflected on the bedside handover as enhancing their control of the patient. On the other hand, they also reflected on the bedside handover as a threat to the patient’s integrity as well as frequent interruptions could be disturbing.
CONCLUSIONS There are similarities and differences between the three professional groups’ perspectives on postoperative handover; these may affect patient care. Further studies are needed to reach shared understanding and consensus across professional groups – within the operating theatre team and between the operating theatre team and the postanaesthesia care unit team – to ensure safe postoperative care.

Strengths and limitations of the study

- To the best of our knowledge, this is the first study investigating nurse anaesthetists’, anaesthesiologists’, and PACU nurses’ views on postoperative handover using focus group interviews.
- Focus group interviews have the advantage of reaching a wider range of views through group interaction than individual interviews.
- A strength of the study was that personnel involved in postoperative handover was interviewed using profession-based groups to find out each group’s perspective on the handover.
- A further strength was that the interviews were observed by an assistant moderator and all participants agreed upon the summary.
- One limitation could be that each group was quite small.
INTRODUCTION

The handover consists of three key aspects: transfer of 1) information, 2) responsibility and/or accountability, in 3) the context of teams and their work environments.[1] With regards to information transfer, studies have shown that anaesthesiologists and postanaesthesia care unit (PACU) nurses had different expectations concerning the content of information transferred [2] and opinions on what information needs to be reported.[3] Although the handover consists of transfer of responsibility and/or accountability, one study[4] revealed a lack of consensus among personnel concerning when the transfer of responsibility and/or accountability takes place.[4] Yet, another study[2] showed that, during postoperative handover, the time of transfer of responsibility varied.[2] Concerning working conditions during postoperative handover, personnel often work in teams that consist of several different professionals working together in an environment with frequent interruptions,[2, 5, 6] which interfere with the handover recipient’s memory.[7] Teamwork is an essential component of achieving high reliability in health care,[8] and working atmosphere and shared understanding are factors of importance to the quality of handover.[9] Poor surgical teamwork behaviour concerning information sharing during intraoperative and handover phases has been shown to be significantly associated with more frequent postoperative complications or death.[10]

To summarize, postoperative handovers are crucial to patient safety. However, there is a lack of consensus about what constitutes a good handover.[11-13] A systematic review of postoperative handover by Møller et al.[14] concluded that it is important to acknowledge the role of communication, teamwork and collaboration within the setting.[14] It is important that different professionals have a shared understanding.[9, 15] To achieve such an understanding, it is essential to generate knowledge about each professional group’s views on postoperative handover. Qualitative studies of postoperative handovers between anaesthesiologists and
PACU nurses, using individual interviews, have been conducted.[16-19] To date, however, no study has investigated nurse anaesthetists’, anaesthesiologists’, and PACU nurses’ views on postoperative handover using focus group interviews.

Aim

The aim of the present study was to investigate different professionals’ (nurse anaesthetists’, anaesthesiologists’, and PACU nurses’) descriptions of and reflections on the postoperative handover.

METHODS

Design

A focus group interview study with a descriptive design was used.[20, 21]

Setting

The participants worked in an anaesthetic clinic located at two medium sized hospitals, which shared the same top management and were located in the same county council district in central Sweden. In Sweden, postoperative handovers at the PACU between a nurse anaesthetist (the sender) and a specialist nurse in intensive care (the receiver) are common. Nurse anaesthetists may, with support from the anaesthesiologist, independently induce, maintain and conclude general anaesthesia. A specialist nurse in intensive care may judge, address and evaluate, e.g., analgesia and sedation.[22] During the period June 2014 to June 2015, 16,004 operations from different specialties (13,235 inpatients and 2,769 outpatients) were performed at the two hospitals. At the anaesthetic clinic, the communication tool Situation-Background-Assessment-Recommendation (SBAR)[23] and the WHO Surgical
Safety Checklist[24] were used. The WHO Surgical Checklist was developed to increase teamwork and communication in surgery. The checklist is designed to ensure patient safety on three occasions during the surgical procedure: “Sign in (before the induction of anaesthesia), “Time out” (before the incision of the skin), and “Sign out” (before the patient leaves the OT).[24]

Data collection

A total of six focus groups interviews were conducted from January to May 2015. Purposive sampling was used, and the heads of department established contact with potential participants who had at least one year’s experience in the profession. The participants received oral and written information about the study. The composition of the groups was based on the participants’ similar professions, role and experience of the same issue,[21] the goal being to identify patterns in the professional groups’ descriptions of and reflections on postoperative handover. The six focus groups consisted of two groups of nurse anaesthetists, two groups of anaesthesiologists, and two groups of PACU nurses. In total, 23 respondents participated (Table 1). The study was approved by the Regional Ethical Review Board in Uppsala (reg. no. 2011/061).

Table 1. Demographic characteristics of participants

<table>
<thead>
<tr>
<th>Profession</th>
<th>Gender Male/Female</th>
<th>Median age (Q1-Q3)</th>
<th>Median years of practice¹ (Q1-Q3)²</th>
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<tbody>
<tr>
<td>Nurse Anaesthetists</td>
<td>2/6</td>
<td>40 (34-44)</td>
<td>3 (2-16)</td>
</tr>
<tr>
<td>Anaesthesiologists</td>
<td>5/2</td>
<td>54 (47-61)</td>
<td>24 (15-30)</td>
</tr>
<tr>
<td>PACU nurses²</td>
<td>0/8</td>
<td>59 (55-63)</td>
<td>34 (23-40)</td>
</tr>
</tbody>
</table>

¹Years of practice in current profession. ²PACU (Postanaesthesia care unit) nurses were all Specialist Nurses in Intensive Care, which means registered nurses with one year of training and a degree in intensive care. ³Quartiles.
A semi-structured interview guide was used covering key topics. The guide was pilot-tested on a focus group of PACU nurses in another hospital, and minor changes were made. All interviews were conducted by one moderator (MR), who is a nurse anaesthetist and specialist nurse in intensive care with 22 years’ experience in the professions. During the interviews, the assistant moderator (GM) observed the interaction between participants in the group and made notes. The interviews lasted 1-1.5 hours and were held in an undisturbed room at the participants’ workplace and digitally recorded. The interview began with opening questions to get everyone to talk; thereafter, introductory questions were posed to introduce the topic of the questions and to encourage conversation among the participants. To move the conversation closer to the key questions, transition questions were posed. The key questions concerned the participants’ descriptions of and reflections on the transfer of 1) information, 2) responsibilities/accountability, in 3) the context of teams and their work environment during postoperative handover. During the interview, the participants were also presented with an example from a transcribed verbal handover in order to stimulate the discussion. Finally, questions about the ideal handover were asked. In the second part of the focus group interview, the main results of an observational study of postoperative handover were presented and discussed, but this is not included in the present analysis. At the end of the interview, the assistant moderator provided a summary, and concluding questions about the adequacy of the summary were posed to enable participants to reflect back on previous comments.

Data analysis

The interviews were analysed using qualitative content analysis. The interviews were listened to and transcripts were read and re-read to obtain an overall impression and become familiar with the text. The three professional groups were first analysed separately, according
to the study aim, in order to identify preliminary subcategories.[21] Meaning units (sentences and paragraphs) were identified and condensed, abstracted, and labelled with a code. Thereafter, they were sorted into three topics; information, responsibility and/or accountability, in the context of teams and their work environments from the interview guide. The codes within each topic were thereafter grouped into preliminary subcategories based on their similarities and differences. Thereafter, the preliminary subcategories for the three professional groups were compared and subcategories with similar names were scrutinized for differences and similarities and grouped together when found to have the same content. Next, the subcategories were grouped into five categories based on similarities and differences. The analyses were primarily carried out by the first and last author. During the analysis process, the subcategories and categories were discussed with all co-authors until consensus was reached.

RESULTS

From the analysis of the nurse anaesthetists’, anaesthesiologists’, and PACU nurses’ descriptions of and reflections on the postoperative handover, five categories emerged:

“Having different temporal focus during handover”, “Insecurity when information is transferred from one team to another”, “Striving to ensure quality of the handover”, “Weighing the advantages and disadvantages of the bedside handover”, and “Having different perspectives on the transfer of responsibility.” Patterns in the three professional groups’ descriptions and reflections appeared, and these patterns are described in each of the categories and subcategories (Table 2). The quotations are presented in italics and the separate character “-” marks that different participant within the group are talking.
Table 2

Table 2. Categories and subcategories that emerged for each profession, marked by an X

<table>
<thead>
<tr>
<th>Category</th>
<th>Having different temporal focus during handover</th>
<th>Insecurity when information is transferred from one team to another</th>
<th>Striving to ensure quality of the handover</th>
<th>Weighing the advantages and disadvantages of the bedside handover</th>
<th>Having different perspectives on the transfer of responsibility</th>
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<tr>
<td>Subcategory</td>
<td>Focusing mainly on the past</td>
<td>Focusing mainly on the present</td>
<td>Focusing on the continuum of care</td>
<td>Insecure about having all information needed</td>
<td>Insecure about receiver's knowledge</td>
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<td>X</td>
<td>X</td>
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<tr>
<td>Anaesthesiologists</td>
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<td>PACU nurses</td>
<td>X</td>
<td>X</td>
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*PACU (postanaesthesia care unit) nurses were all Specialist Nurses in Intensive Care, which means registered nurses with one year of training and a degree in intensive care.
**Having different temporal focus during handover**

The three professional groups described different temporal focus during the post-operative handover, e.g., focusing mainly on the past, on the present, and on the continuum of care in its entirety. As senders of information, the nurse anaesthetists described that they focused mainly on what they themselves had done, i.e. the anaesthesia process, and partly on the patients’ continuing care. They reflected on the uncertainty concerning which information the PACU nurses considered to be essential and described a disinterest in some of the information reported. The anaesthesiologists described that they focused on the continuum of care from the OT to discharge, e.g., the surgical procedure, observations and recommendations. They described that all personnel should focus on the continuity of care, but they were unsure whether that was the case during the reported handover. Like the nurse anaesthetists, the anaesthesiologists reflected on the insecurity concerning the receivers’ focus during handover.

As receivers of information, the PACU nurses described a main focus on essential information of importance for the “here and now”, e.g., which patient was to be taken care of, vital parameters and recommendations for conducting postoperative care at the PACU. They reflected on nurse anaesthetists’ focus as mostly reporting information about the anaesthesia process.

“.../we often report on how the anaesthesia went, if the patient was stable and such things /.../because that’s the main thing for us. “.../we report on things we’re interested in and they [PACU nurses] have other interests.” (Nurse anaesthetists)

**Insecurity when information is transferred from one team to another**

All professional groups described and reflected on the insecurity about whether all of the information needed was actually transferred from one team to another. The nurse anaesthetists described that they were obliged to transfer all important information about the patient from
the OT team to the PACU team, but like the anaesthesiologists and PACU nurses, they
described doubts about whether all of the essential information from the surgeon or theatre
nurse was transferred before the patient left the OT. The anaesthesiologists described
insufficient “sign out” between the main surgeon and the nurse anaesthetist before the patient
left the OT and reflected on this as a risk of postoperative misjudgements. They saw
improvements if important information was always communicated by the main surgeon
before the patient left the OT. Furthermore, several information transfers and lack of
knowledge are potential risks for the patient’s continued care.

- “We don’t know a thing about that [catheters, dressings, drainage]. The surgeon often escapes
before saying anything /…/. And then we don’t have answers to the PACU’s questions.”
(Nurse anaesthetist)

- “/…/it’s up to the team to be clear with each other before they leave the operation theatre
and I think there are shortcomings there. The surgeon may have things in mind that aren’t
conveyed and that I don’t comprehend. There are four perspectives that need to become one.”
(Anaesthesiologist)

- “/…/And how they coped with the surgery because the others [Nurse anaesthetists] don’t
have a clue, you know, what it’s all about.”-“No, and what they [Surgeons] have
done.” (PACU nurses)

The nurse anaesthetists also described insecurity as to whether the information was
understood, and the anaesthesiologists described insecurity about the receivers’ knowledge
when they did not know the particular PACU nurse. Furthermore, the nurse anaesthetists and
anaesthesiologists reflected on the need of confirmation from the receiver, so that they could
be sure that the information was understood.

- “/…/But I would probably have liked for the person who receives somewhere, for them to
summarise and confirm what they have been told. Then I leave and I have made my report but
I don’t know whether they understood what I wanted.”(Anaesthesiologist)
Striving to ensure quality of the handover

The three professional groups described and reflected on how they strived to ensure quality during the handover by: focusing the information on deviating events, aiding memory through structure and written information, and cooperating within and between teams. All of the groups described the importance of emphasizing information on matters that deviate from the normal course of events. They expressed that information concerning the anaesthetic and surgery process that has proceeded as expected, is less important to mention. The nurse anaesthetists and anaesthesiologists also reflected on the importance of limiting the amount of information during postoperative handover.

"/.../put the focus on that, if it's something unusual/.../that sticks out or if the patient has a medical background that means you have to think a bit differently." "Yes, I think so too" – "Yes" "Yes, things that occur during surgery that are out of the ordinary" "/.../where do we draw the line?" "Exactly" "And of course we do, we make some kind of selection and if there is nothing special, the report will be shorter." (Anaesthesiologists)

"And if something special has occurred." "Yes, with the patient, loss of blood pressure, the pulse increases or something like that, or extraordinary bleeding. Something that they had to do something about, basically." (PACU nurses)

The nurse anaesthetists described using a structure such as SBAR to aid memory when they reported essential information. The anaesthesiologists described using a structure for their own memory during handover, and they wanted information to be communicated with a structure to serve as a reminder during handover. The PACU nurses described that they expected to receive the information with a structure. They also reflected on the importance of asking questions, in a structured manner, during the entire handover, rather than only at the end of handover. The nurse anaesthetists and the PACU nurses reflected on the importance of having written information during handover to aid memory, and they felt that the electronic patient records complicated information retrieval.
"...if you follow the SBAR concept, you have a main thread through the whole thing /.../"
"That’s what xxx says about the main thread, that you find it and thinks that SBAR helps you here. “(Nurse anaesthetists)

"Yes, if there’s anything special there I want to – but what was your thinking there? But we have been taught to ask our questions later and that’s “Not easy. “There is a risk that you forget since there’s a lot going on around you. You should have the opportunity to interrupt, at least once.” (PACU nurses)

All professional groups saw benefits of cooperation. The nurse anaesthetists reflected on the need for improved cooperation within the OT team as well as for developing further collaboration between the OT team and the PACU team to increase interaction around achieving consensus before executing the handover. The PACU nurses described advantages when the theatre nurses and the nurse anaesthetist collaborated during handover as more information about the surgery process was transferred, but also disadvantages as the handover then became more unstructured. The anaesthesiologists and the PACU nurses described the benefits of cooperation within the PACU team, as it facilitated and safeguarded the handover situation.

"...need to discuss how we will report and who will do the reporting and what should be reported, and we have to have this discussion among ourselves in the OT and we need have it with the PACU nurses /.../and arrive at some consensus/.../” (Nurse anaesthetist)

Weighing the advantages and disadvantages of the bedside handover

The professional groups described and reflected on both advantages and disadvantages with the bedside handover. Nurse anaesthetists and PACU nurses reflected on the benefits of carrying out handovers close to the patient, as this provided control over the patient’s medical condition, on the other hand it might threaten the patient’s integrity. The nurse anaesthetists described decisions about whether the handover should be performed bedside depending on whether the information transferred was meant to be heard by the patient. The PACU nurses
also reflected on the time-saving benefits of the bedside handover, compared with a handover in a separate room. The anaesthesiologists and the PACU nurses reflected on the disturbing bedside environment as it sometimes entailed frequent interruptions, which they felt caused stress and distraction.

"When you’re standing at the bedside you can check the vital parameters and see that everything is fine when you hand the patient over." “Yes” (Nurse anaesthetists)

"...I prefer having the patient in front of me/.../The times the nurse anaesthetist come and report on a patient I can’t see, that upsets me, because I would really like to see who they’re talking about.” “I want to have control.” (PACU nurses)

"While giving my report/.../if I’m disturbed/.../I mean if my thoughts are interrupted. I think that’s dangerous, because every time it happens is harder to return to the main thread” (Anaesthesiologist)

"Well, that the machines are beeping and ringing, it gets your adrenalin going, because you’re used to reacting to it.” “Well, then your attention easily shifts to the beeps.” “That’s the way it is.” “You’re disturbed and distracted. And that’s the idea, it is a warning signal to us.” (PACU nurses)

**Having different perspectives on the transfer of responsibility**

The professional groups described different perspectives on the transfer of responsibility. The nurse anaesthetists, that they handed over responsibility when all the information was given to the PACU nurse and when they left the PACU. The anaesthesiologists handed over responsibility to other physicians, but their overall responsibility (accountability) remained even after handover to a PACU nurse. The PACU nurses described that they required control over the patient’s condition before taking over the responsibility. Uncertainty about responsibility arose when the nurse anaesthetist provided incomplete information about the patient or when the nurse anaesthetist failed to complete tasks that he/she was supposed to have done prior to handover.
- “When you hand information over you include what you know and then the responsibility is someone else’s” (Nurse anaesthetists)

- “We don’t transfer the responsibility just because we’ve transferred the patient. “As a medical doctor, you still hold overall responsibility.” (Anaesthesiologists)

“/…/you have to wait before taking all of the responsibility, because they should already had found out certain things in the operating theatre /…/” “but I have to know /…/you have to know what we’re going to do with this patient.” (PACU nurse)

Observation of interaction during focus group interviews

During the interviews the interaction between the participants was observed by the assistant moderator. A friendly atmosphere was observed, the participants seemed to be familiar with each other and no participant seemed shy or otherwise reluctant to speak. The topic engaged them with a lively discussion and “postoperative handover” did not seem to be a sensitive topic. Within the groups, no single participant dominated the discussion and each participant had roughly the same amount of time to talk. During the focus group interviews the participants often confirmed each other non-verbally, e.g. by nodding or smiling back, and verbally, by completing each other’s statements and sentences.

DISCUSSION

In the present study, the postoperative handover content time frame differed between the three professional groups. The nurse anaesthetists mainly focused on the past, the anaesthesiologists mainly focused on the continuum of care, and the PACU nurses mainly focused on the present but reflected on nurse anaesthetists’ handover as mostly concerning information about the anaesthesia process. The nurse anaesthetists, in turn, reflected on PACU nurses as not interested in the information transferred. If the sender transfers information concerning the
past (i.e., the anaesthesia process) that the receiver pays less attention to, because he/she is focusing on factors important to the continuing care, we might assume that the receiver will remember this information less well. According to Flin et al., listening is an active process, and even under ideal circumstances with an interested listener, only about one-third of what is heard is actually listened to, even less if the listener is not interested. In line with this, a previous study showed that of the items transferred during postoperative handover, the drugs used during anaesthesia were the items least likely to be remembered by the PACU nurses.

The groups described risks when information from the OT team was transferred to the PACU team if they did not have all of the essential information from the surgeon. According to Sandberg and Targama, people in an organization must have a shared understanding if cooperation is to be achieved. This involves having both a similar understanding of the collective's work in its entirety, and an understanding of their specific roles and competence in the performance of a task. There is a need for the different professional groups within the OT team and between the OT team and the PACU team to have a shared understanding of the whole so as to ensure the patient’s continuing care. In the present study, the participants’ reflections indicate that there is room for improvement.

The professional groups described strategies for ensuring the quality of handover. At first, to focus on deviating events. This is in line with one of the recommendations for improving communication in teams made by Flin et al.; that the message should be as brief as possible, including only the most relevant information owing to the costs of attention and cognitive resources for both the sender and the receiver. Another strategy, described by
the professional groups, was using a structure for the information that is handed over.

Communication with high predictability can be said to contain redundancy, which facilitates the receiver’s interpretation of the message.[26] The notion that there are benefits of using a structure is in line with findings from other studies.[27, 28] A third strategy was to see the benefits of cooperation between and within the teams as well as have a shared understanding, which is in line with earlier studies.[9, 15, 17]

It is well known that the PACU environment is marked by frequent interruptions,[6, 29] and findings in the present study were seen as these could lead to distractions. Nevertheless, both the nurse anaesthetists and PACU nurses described the benefits of the bedside handover, as it increased control of the patient. Results of a study by Frankel et al.[30] concerning context, culture and communication during handover suggested that a “joint focus of attention” has the greatest potential for achieving a high-quality and reliable handover. Such an approach coordinates the sender’s and receiver’s verbal and visual attention jointly on an artefact.

Redundancy in the visual field gives a momentary “joint focus of attention” using simultaneous inputs.[30] The bedside handover, described by the nurse anaesthetists and PACU nurses in the present study, has the ability to create a “joint focus of attention”. On the other hand, interruptions interfere with memory and therefore should be minimized.[6, 31]

The professional groups gave different descriptions of the part of the handover that concerned responsibility. Greenberg et al.[32] investigated malpractice claims due to communication breakdowns during the preoperative, intraoperative and postoperative period and found that 43% occurred during handover and that ambiguity about responsibilities was a commonly associated factor.[32] As in a study by Smith and Mishra,[5] the PACU nurses did not accept taking over responsibility if the handover was not completed.[5] In contrast to the nurse
anaesthetists, the anaesthesiologists did not hand over the responsibility after handover to a PACU nurse. Since ambiguity concerning responsibility seems to be a contributing factor to adverse events the professional groups’ responsibility should be clearly stated.

**Strengths and weaknesses of the study**

Previous studies of handovers gave rise to the notion that professions involved in postoperative handover might have different perspectives on the handover. We chose focus group interviews with profession-based groups consisting of participants with great experience of postoperative handover. The number of participants in each group was quite small. On the other hand, Kreuger and Casey[20] recommended that a group with fewer participants is preferable when the purpose is to understand an issue or behaviour, when the topic is complex, and when the participants’ level of experience is high.[20] The text was analysed and discussed by two authors (MR, GM) and the subcategories and categories were discussed with all co-authors until consensus was reached to achieve credibility.[33] The first author was familiar with the context investigated, which may have threatened the confirmability. Conducting the analysis together with a co-author with a different clinical background may have decreased this risk.[34] The assistant moderator observed the interaction between the participants. All participants had opportunities to voice their opinion about the handover and everyone agreed on the summary. With a view to increase trustworthiness, we have tried to explain the context and the data analysis as thoroughly as possible in order to allow the reader to determine the transferability of the present results.[34]

**Conclusion**
The present study showed similarities as well as differences between the nurse anaesthetists’, anaesthesiologists’, and postanaesthesia care unit nurses’ descriptions of and reflections on postoperative handover. Further studies of handover are needed in order to reach a shared understanding across the professional groups and of their work in its entirety, to ensure high quality and safe care.

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Contributors All authors (MR, ME, CLS and GM) contributed to the design, interpreted data, drafted and revised the article critically. MR and GM collected the data. Data analysis was primarily conducted by MR and GM, and the data were discussed with all authors (MR, ME, CLS and GM). MR wrote the manuscript under the supervision of ME, CLS and GM. All authors read and approved the final version of the paper.

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Competing interests All authors have completed the ICMJE uniform disclosure form at www.icmje.org/coi_disclosure.pdf and declare: MR has received research grants from Patient Insurance LÖF and the Swedish Society of Nursing; no other relationships or activities that could appear to have influenced the submitted work.

Ethics approval  The Regional Ethical Review Board in Uppsala, Sweden (reg. no. 2011/061) on 9 March 2011.

Data sharing statement  There are no additional data available for data sharing.
REFERENCES


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The postoperative handover: a focus group interview study with nurse anaesthetists, anaesthesiologists, and PACU nurses

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ABSTRACT

OBJECTIVES To investigate different professionals’ (nurse anaesthetists’, anaesthesiologists’, and postanaesthesia care unit nurses’) descriptions of and reflections on the postoperative handover.

DESIGN A focus group interview study with a descriptive design using qualitative content analysis of transcripts.

SETTING One anaesthetic clinic at two hospitals in Sweden.

PARTICIPANTS Six focus groups with 23 healthcare professionals involved in postoperative handovers. Each group was composed on the basis of profession: nurse anaesthetists (n=8), anaesthesiologists (n=7) and postanaesthesia care unit nurses (n=8).

RESULTS Patterns and five categories emerged: 1) Having different temporal focus during handover, 2) Insecurity when information is transferred from one team to another, 3) Striving to ensure quality of the handover, 4) Weighing the advantages and disadvantages of the bedside handover, and 5) Having different perspectives on the transfer of responsibility. The professionals’ perception of the postoperative handover differed with regard to the temporal focus and the transfer of responsibility. All professional groups were insecure about having all information needed to ensure the quality of care. They strived to ensure quality of the handover by: focusing on matters that deviated from the normal course of events, aiding memory through structure and written information, and cooperating within and between teams. They reflected on the bedside handover as enhancing their control of the patient, but also that the bedside handover could threaten the patient’s integrity and that frequent interruptions could be disturbing.
CONCLUSIONS

The present findings revealed variations in different professionals’ view on the postoperative handover. Healthcare interventions are needed that aim at minimizing the gap between professionals’ perception and practice and achieving a shared understanding. Furthermore, to ensure high quality and safe care, stakeholders/decision-makers need to pay attention to the environment and infrastructure in postanaesthesia care.

Strengths and limitations of the study

- To the best of our knowledge, this is the first study investigating nurse anaesthetists’, anaesthesiologists’, and PACU nurses’ views on postoperative handover using focus group interviews.
- Focus group interviews have the advantage of reaching a wider range of views through group interaction than individual interviews.
- A strength of the study was that personnel involved in postoperative handover was interviewed using profession-based groups to find out each group’s perspective on the handover.
- A further strength was that an assistant moderator observed the focus group interviews and all participants agreed upon the summary.
- One limitation could be the small sample size in two similar centres.
INTRODUCTION

The handover consists of three key aspects: transfer of 1) information, 2) responsibility and/or accountability, in 3) the context of teams and their work environments.[1] With regards to information transfer, studies have shown that anaesthesiologists and postanaesthesia care unit (PACU) nurses had different expectations concerning the content of information transferred [2] and opinions on what information needs to be reported.[3] Although the handover consists of transfer of responsibility and/or accountability, one study[4] revealed a lack of consensus among personnel concerning when the transfer of responsibility and/or accountability takes place.[4] Yet, another study[2] showed that, during postoperative handover, the time of transfer of responsibility varied.[2] Concerning working conditions during postoperative handover, personnel often work in teams that consist of several different professionals working together in an environment with frequent interruptions,[2, 5, 6] which interfere with the handover recipient’s memory.[7] Teamwork is an essential component of achieving high reliability in health care,[8] and working atmosphere and shared understanding are factors of importance to the quality of handover.[9] Poor surgical teamwork behaviour concerning information sharing during intraoperative and handover phases has been shown to be significantly associated with more frequent postoperative complications or death.[10]

To summarize, postoperative handovers are crucial to patient safety. However, there is a lack of consensus about what constitutes a good handover.[11-13] A systematic review of postoperative handover by Møller et al.[14] concluded that it is important to acknowledge the role of communication, teamwork and collaboration within the setting.[14] It is important that different professionals have a shared understanding.[9, 15] To achieve such an understanding, it is essential to generate knowledge about each professional group’s views on postoperative handover. Thus, to identify whether there are potential gaps between different professionals
that can affect patient safety. Qualitative studies of postoperative handovers between anaesthesiologists and PACU nurses,[16-19] and a mixed methods study[20], have been conducted. To date, however, no study has investigated anaesthesiologists’, PACU nurses’ and nurse anaesthetists’ views on postoperative handover using professional homogenous focus group interviews.

Aim

The aim of the present study was to investigate different professionals’ (nurse anaesthetists’, anaesthesiologists’, and PACU nurses’) descriptions of and reflections on the postoperative handover.

METHODS

Design

A focus group interview study with a descriptive design was used.[21, 22]

Setting

The participants worked in an anaesthetic clinic located at two medium sized hospitals in central Sweden, which share the same top management and are located in the same county council district, with about 130 km distance between them. In Sweden, postoperative handovers at the PACU between a nurse anaesthetist (the sender) and a specialist nurse in intensive care (the receiver) are common. Nurse anaesthetists may, with support from the anaesthesiologist, independently induce, maintain and conclude general anaesthesia. A specialist nurse in intensive care may judge, address and evaluate, e.g., analgesia and sedation.[23] During the typical postoperative handover, the
nurse anaesthetist and PACU nurse stand nearby the patient while looking at the written
anaesthetic record, the patient and the monitor. At some occasion, a theatre nurse and a
licensed practical nurse are also present. Sometimes an anaesthesiologist is present during the
postoperative handover or is the person doing the reporting. The written anaesthetic record
contains information about the anaesthetic procedure, e.g. drugs and fluids given, blood loss,
vital parameters and the performed surgery. The electronic patient record, where the patient’s,
e.g., clinical background and medication are documented, is located at some distance away
from the patient or in another room.[6] During the period June 2014 to June 2015, 16,004
operations from different specialties (13,235 inpatients and 2,769 outpatients) were performed
at the two hospitals. At the anaesthetic clinic, the communication tool Situation-Background-
Assessment-Recommendation (SBAR)[24] and the WHO Surgical Safety Checklist[25] were
used. The WHO Surgical Checklist was developed to increase teamwork and communication
in surgery. The checklist is designed to ensure patient safety on three occasions during the
surgical procedure: “Sign in (before the induction of anaesthesia), “Time out” (before the
incision of the skin), and “Sign out” (before the patient leaves the OT).[25]

Data collection

A total of six focus group interviews were conducted from January to May 2015. Purposive
sampling was used, and the heads of department established contact with potential
participants who had at least one year’s experience in the profession. The participants
received oral and written information about the study, and written informed consent was
obtained. Because of the interaction between respondents and the group dynamics, focus
group interviews have the advantage of elucidating both individual and shared views on a
topic as well as providing rich information.[21] The composition of the groups was based on
the participants’ similar professions, role and experience of the same issue[22], the goal being
to identify patterns in the professional groups’ descriptions of and reflections on postoperative handover. The six focus groups consisted of two groups of nurse anaesthetists, two groups of anaesthesiologists, and two groups of PACU nurses. In total, 23 respondents participated (Table 1). The study was approved by the Regional Ethical Review Board in Uppsala (reg. no. 2011/061).

Table 1. Demographic characteristics of participants

<table>
<thead>
<tr>
<th>Profession</th>
<th>Gender Male/Female</th>
<th>Median age (Q1-Q3)</th>
<th>Median years of practice¹(Q1-Q3)²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse Anaesthetists</td>
<td>2/6</td>
<td>40 (34-44)</td>
<td>3 (2-16)</td>
</tr>
<tr>
<td>Anaesthesiologists</td>
<td>5/2</td>
<td>54 (47-61)</td>
<td>24 (15-30)</td>
</tr>
<tr>
<td>PACU nurses²</td>
<td>0/8</td>
<td>59 (55-63)</td>
<td>34 (23-40)</td>
</tr>
</tbody>
</table>

¹Years of practice in current profession. ²PACU (Postanaesthesia care unit) nurses were all Specialist Nurses in Intensive Care, which means registered nurses with one year of training and a degree in intensive care. ³Quartiles.

A semi-structured interview guide was used covering key topics.[22] The guide was pilot-tested on a focus group of PACU nurses in another hospital, and minor changes were made.

All focus group interviews were conducted by one moderator (MR), who is a nurse anaesthetist and specialist nurse in intensive care with 22 years’ experience in the professions.

During the focus group interviews, the assistant moderator (GM) observed the interaction between participants in the group and made notes.[21] The focus group interviews lasted 1-1.5 hours and were held in an undisturbed room at the participants’ workplace and digitally recorded. The focus group interview started with opening questions to get everyone to talk; thereafter, introductory questions were posed to introduce the topic in focus and to encourage conversation among the participants. To move the conversation closer to the key questions, transition questions were posed.[21] The key questions concerned the participants’ descriptions of and reflections on the transfer of 1) information, 2) responsibilities/accountability, in 3) the context of teams and their work environment during postoperative handover. During the focus group interviews, the participants were also
presented with an example from a transcribed verbal handover in order to stimulate the
discussion.[21] Finally, questions about the ideal handover were asked. In the second part of
the focus group interview, the main results of an observational study of postoperative
handover[6] were presented and discussed, but this is not included in the present analysis. At
the end of the focus group interview, the assistant moderator provided a summary, and
concluding questions about the adequacy of the summary were posed to enable participants to
reflect back on previous comments.[21]

Data analysis

The focus group interviews were analysed inductively, using qualitative content analysis.[22]
The recorded focus group interviews were listened to and transcripts were read and re-read to
obtain an overall impression and become familiar with the text. The three professional groups
were first analysed separately, according to the study aim, in three steps in order to identify
preliminary subcategories.[22] 1) Meaning units (sentences and paragraphs) were identified
and condensed, abstracted, and labelled with a code. 2) Thereafter, the codes were sorted into
three topics; information, responsibility and/or accountability, in the context of teams and
their work environments from the interview guide. 3) The codes within each topic were
thereafter grouped into preliminary subcategories. Thereafter, the preliminary subcategories
for the three professional groups were put together, compared and subcategories with similar
names were scrutinized and grouped together when found to have the same content. Next, the
subcategories were compared for similarities and differences and grouped into five categories.
The analyses were primarily carried out by the moderator (MR) and the assistant moderator
(GM). During the analysis process, the subcategories and categories were discussed with all
co-authors until consensus was reached.
RESULTS

From the analysis of the nurse anaesthetists’, anaesthesiologists’, and PACU nurses’
descriptions of and reflections on the postoperative handover, five categories emerged:
“Having different temporal focus during handover”, “Insecurity when information is
transferred from one team to another”, “Striving to ensure quality of the handover”,
“Weighing the advantages and disadvantages of the bedside handover”, and “Having different
perspectives on the transfer of responsibility.” Patterns in the three professional groups’
descriptions and reflections appeared, and these patterns are described in each of the
categories and subcategories (Table 2). The quotations are presented in italics and the separate
character “-“ marks that different participant within the group are talking.
Table 2

Table 2. Categories and subcategories that emerged for each profession, marked by an X

<table>
<thead>
<tr>
<th>Category</th>
<th>Having different temporal focus during handover</th>
<th>Insecurity when information is transferred from one team to another</th>
<th>Striving to ensure quality of the handover</th>
<th>Weighing the advantages and disadvantages of the bedside handover</th>
<th>Having different perspectives on the transfer of responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subcategory</td>
<td>Focusing mainly on the past</td>
<td>Insecure about having all information needed</td>
<td>Focus the information on deviating events</td>
<td>Aid memory by structure and written information</td>
<td>Provide control and save time</td>
</tr>
<tr>
<td>Nurse Anaesthetists</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Anaesthesiologists</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>PACU nurses*</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

*PACU (postanaesthesia care unit) nurses were all Specialist Nurses in Intensive Care, which means registered nurses with one year of training and a degree in intensive care.
Having different temporal focus during handover

The three professional groups reported different temporal focus during the post-operative handover, e.g., focusing mainly on the past, on the present, and on the continuum of care in its entirety. As senders of information, the nurse anaesthetists focused mainly on what they themselves had done, i.e. the anaesthesia process, and partly on the patients’ continuing care. They were uncertain concerning which information the PACU nurses considered to be essential and mentioned a disinterest in some of the information reported. The anaesthesiologists reported that they focused on the continuum of care from the OT to discharge, e.g., the surgical procedure, observations and recommendations. They stated that all personnel should focus on the continuity of care, but they were unsure whether that was the case during the reported handover. Like the nurse anaesthetists, the anaesthesiologists were uncertain about the receivers’ focus during handover. As receivers of information, the PACU nurses reported focusing mainly on essential information of importance for the “here and now”, e.g., which patient was to be taken care of, vital parameters and recommendations for conducting postoperative care at the PACU. They reflected on nurse anaesthetists’ focus as mostly reporting information about the anaesthesia process.

“/…/we often report on how the anaesthesia went, if the patient was stable and such things /…/because that’s the main thing for us. “/…/we report on things we’re interested in and they [PACU nurses] have other interests.”” (Nurse anaesthetists)

Insecurity when information is transferred from one team to another

All professional groups described and reflected on being uncertain as to whether all of the information needed was actually transferred from one team to another. The nurse anaesthetists reported that they were obliged to transfer all important information about the patient from the OT team to the PACU team, but like the anaesthesiologists and PACU nurses, they reported
having doubts about whether all of the essential information from the surgeon or theatre nurse was transferred before the patient left the OT. The anaesthesiologists reported insufficient “sign out” between the main surgeon and the nurse anaesthetist before the patient left the OT and reflected on this as a risk of postoperative misjudgements. They saw improvements if important information was always communicated by the main surgeon before the patient left the OT. Furthermore, the anaesthesiologists saw several information transfers and lack of knowledge as potential risks for the patient’s continued care.

"We don’t know a thing about that [catheters, dressings, drainage]. The surgeon often escapes before saying anything /…/. And then we don’t have answers to the PACU’s questions.”
(Nurse anaesthetist)

"/…/It’s up to the team to be clear with each other before they leave the operation theatre and I think there are shortcomings there. The surgeon may have things in mind that aren’t conveyed and that I don’t comprehend. There are four perspectives that need to become one.”
(Anaesthesiologist)

"/…/And how they coped with the surgery because the others [Nurse anaesthetists] don’t have a clue, you know, what it’s all about.”-“No, and what they [Surgeons] have done.” (PACU nurses)

The nurse anaesthetists also reported insecurity as to whether the information was understood, and the anaesthesiologists reported insecurity about the receivers’ knowledge when they did not know the particular PACU nurse. Furthermore, the nurse anaesthetists and anaesthesiologists reflected on the need of confirmation from the receiver, so that they could be sure that the information was understood.

"/…/But I would probably have liked for the person who receives somewhere, for them to summarise and confirm what they have been told. Then I leave and I have made my report but I don’t know whether they understood what I wanted.” (Anaesthesiologist)

Striving to ensure quality of the handover
The three professional groups described and reflected on how they strived to ensure quality during the handover by: focusing the information on deviating events, aiding memory through structure and written information, and cooperating within and between teams. All of the groups mentioned the importance of emphasizing information on matters that deviate from the normal course of events. They expressed that information concerning the anaesthetic and surgery process that has proceeded as expected, is less important to mention. The nurse anaesthetists and anaesthesiologists also saw the importance of limiting the amount of information during postoperative handover.

- “/...put the focus on that, if it’s something unusual/...that sticks out or if the patient has a medical background that means you have to think a bit differently.”-“Yes, I think so too” – ”Yes”-“Yes, things that occur during surgery that are out of the ordinary”-“/...where do we draw the line? “-“Exactly”-“And of course we do, we make some kind of selection and if there is nothing special, the report will be shorter.” (Anaesthesiologists)

- “And if something special has occurred.”-“Yes, with the patient, loss of blood pressure, the pulse increases or something like that, or extraordinary bleeding. Something that they had to do something about, basically.” (PACU nurses)

The nurse anaesthetists reported using a structure such as SBAR to aid memory when they reported essential information. The anaesthesiologists reported using a structure for their own memory during handover, and they wanted information to be communicated with a structure to serve as a reminder during handover. The PACU nurses said that they expected to receive the information with a structure. They also reflected on the importance of asking questions, in a structured manner, during the entire handover, rather than only at the end of handover. The nurse anaesthetists and the PACU nurses reflected on the importance of having written information in front of them during handover to aid memory, and they felt that the electronic patient records complicated information retrieval, because using them was considered time consuming and caused nurses to lose sight of the patient’s condition.
"/.../if you follow the SBAR concept, you have a main thread through the whole thing /.../" -
"That's what xxx says about the main thread, that you find it and thinks that SBAR helps you here." (Nurse anaesthetists)

"Yes, if there's anything special there I want to - but what was your thinking there? But we have been taught to ask our questions later and that's. "Not easy. "There is a risk that you forget since there's a lot going on around you. You should have the opportunity to interrupt, at least once." (PACU nurses)

All professional groups saw benefits of cooperation. The nurse anaesthetists reflected on the need for improved cooperation within the OT team as well as for developing further collaboration between the OT team and the PACU team to increase interaction around achieving consensus before executing the handover. The PACU nurses described the advantages of the theatre nurses and the nurse anaesthetist collaborating during handover, as more information about the surgery process was transferred, but also the disadvantages, as the handover then became more unstructured. The anaesthesiologists and the PACU nurses reported benefits of cooperation within the PACU team, as it facilitated and safeguarded the handover situation.

"/.../need to discuss how we will report and who will do the reporting and what should be reported, and we have to have this discussion among ourselves in the OT and we need have it with the PACU nurses /.../and arrive at some consensus/.../" (Nurse anaesthetist)

Weighing the advantages and disadvantages of the bedside handover

The professional groups described and reflected on both advantages and disadvantages with the bedside handover. Nurse anaesthetists and PACU nurses reflected on the benefits of carrying out handovers close to the patient, as this provided control over the patient’s medical condition. On the other hand, it might threaten the patient’s integrity because other patients might hear the report. The nurse anaesthetists described how decisions about whether the handover should be performed bedside depended on whether the information transferred was
meant to be heard by the patient. The PACU nurses also reflected on the time-saving benefits of the bedside handover, compared with a handover in a separate room. The anaesthesiologists and the PACU nurses reflected on the disturbing bedside environment as it sometimes entailed frequent interruptions, which they felt caused stress and distraction.

-“When you’re standing at the bedside you can check the vital parameters and see that everything is fine when you hand the patient over”. “Yes” (Nurse anaesthetists)

-“/…/I prefer having the patient in front of me/…/The times the nurse anaesthetist come and report on a patient I can’t see, that upsets me, because I would really like to see who they’re talking about.” “/…/I want to have control.” (PACU nurses)

-“While giving my report/…/if I’m disturbed/…/I mean if my thoughts are interrupted. I think that’s dangerous, because every time it happens is harder to return to the main thread” (Anaesthesiologist)

-“Well, that the machines are beeping and ringing, it gets your adrenalin going, because you’re used to reacting to it.” “Well, then your attention easily shifts to the beeps.” “That’s the way it is.” “You’re disturbed and distracted. And that’s the idea, it is a warning signal to us.” (PACU nurses)

**Having different perspectives on the transfer of responsibility**

The professional groups described different perspectives on the transfer of responsibility. The nurse anaesthetists reported that they handed over responsibility when all the information was given to the PACU nurse and when they left the PACU. The anaesthesiologists handed over responsibility to other physicians, but their overall responsibility (accountability) remained even after handover to a PACU nurse. The PACU nurses stated that they required control over the patient’s condition before taking over the responsibility. Uncertainty about responsibility arose when the nurse anaesthetist provided incomplete information about the patient or when the nurse anaesthetist failed to complete tasks that he/she was supposed to have done prior to handover.
"When you hand information over you include what you know and then the responsibility is someone else’s” (Nurse anaesthetists)

"We don’t transfer the responsibility just because we’ve transferred the patient.” “As a medical doctor, you still hold overall responsibility.” (Anaesthesiologists)

“/…/you have to wait before taking all of the responsibility, because they should already had found out certain things in the operating theatre/…/” “but I have to know/…/you have to know what we’re going to do with this patient.” (PACU nurse)

Observation of interaction during focus group interviews

During the focus group interviews the interaction between the participants was observed by the assistant moderator. A friendly atmosphere was observed, the participants seemed to be familiar with each other and no participant seemed shy or otherwise reluctant to speak. The topic engaged them with a lively discussion and “postoperative handover” did not seem to be a sensitive topic. Within the groups, no single participant dominated the discussion and each participant had roughly the same amount of time to talk. During the focus group interviews, the participants often confirmed each other non-verbally, e.g. by nodding or smiling back, and verbally, by completing each other’s statements and sentences.

DISCUSSION

In the present study, the postoperative handover content time frame differed between the three professional groups. The nurse anaesthetists mainly focused on the past, the anaesthesiologists mainly focused on the continuum of care, and the PACU nurses mainly focused on the present but reflected on nurse anaesthetists’ handover as mostly concerning information about the anaesthesia process. This is in line with an earlier study[2] where PACU nurses sought other information than that reported by the sender. The nurse anaesthetists, in turn, reflected on
PACU nurses as not interested in the information transferred. If the sender transfers information concerning the past (i.e., the anaesthesia process) that the receiver pays less attention to, because he/she is focusing on factors important to the continuing care, we might assume that the receiver will remember this information less well. According to Flin et al.,[26] listening is an active process, and even under ideal circumstances with an interested listener, only about one-third of what is heard is actually listened to, even less if the listener is not interested.[26] In line with this, a previous study[6] showed that of the items transferred during postoperative handover, the drugs used during anaesthesia were the items least likely to be remembered by the PACU nurses.[6]

The groups reported risks when information from the OT team was transferred to the PACU team if they did not have all of the essential information from the surgeon. According to Manser et al.,[9] a shared understanding is an important feature of handover quality. Sandberg and Targama[15] stated that people in an organization must have a shared understanding if cooperation is to be achieved. This involves having both a similar understanding of the collective's work in its entirety, and an understanding of their specific roles and competence in the performance of a task.[15] There is a need for the different professional groups within the OT team and between the OT team and the PACU team to have a shared understanding of the whole so as to ensure the patient’s continuing care. In the present study, the participants’ reflections indicate that there is room for improvement.

The professional groups described strategies for ensuring the quality of handover. At first, to focus on deviating events. This is in line with one of the recommendations for improving communication in teams made by Flin et al.[26]: that the message should be as brief as...
possible, including only the most relevant information owing to the costs of attention and
cognitive resources for both the sender and the receiver.[26] Another strategy, described by
the professional groups, was using a structure for the information that is handed over. This is
in line with an integrative review of postoperative handover[27] showing that information
transfer, technical errors and high-risk events were positively influenced by the use of
structured handover tools. Communication with high predictability can be said to contain
redundancy, which facilitates the receiver’s interpretation of the message.[28] The notion that
there are benefits of using a structure is in line with findings from other studies. e.g. [29, 30] A
third strategy was to see the benefits of cooperation between and within the teams as well as
have a shared understanding, which is in line with earlier studies. e.g. [9, 15, 17] Furthermore,
the nurse anaesthetists and the PACU nurses wanted written information in front of them;
they saw disadvantages of electronic patient records, because these records were not in the
immediate vicinity of the patient. In line with this, a study by Redley et al.[20] showed that
clinicians saw difficulties, during postoperative handover, when documents were incomplete
or not immediately available.[20] Electronic patient records should therefore be designed to
be user-friendly and placed near the patient.

It is well known that the PACU environment is marked by frequent interruptions,[6, 31] and
findings in the present study were seen as these could lead to distractions. Nevertheless, both
the nurse anaesthetists and PACU nurses reported benefits of the bedside handover, as it
increased control of the patient. Results of a study by Frankel et al.[32] concerning context,
culture and communication during handover suggested that a “joint focus of attention” has the
greatest potential for achieving a high-quality and reliable handover. Such an approach
coordinates the sender’s and receiver’s verbal and visual attention jointly on an artefact.
Redundancy in the visual field gives a momentary “joint focus of attention” using
simultaneous inputs.[32] The bedside handover, described by the nurse anaesthetists and
PACU nurses in the present study, has the potential to create a “joint focus of attention”. On
the other hand, interruptions interfere with memory and therefore should be minimized.[6, 33]

The professional groups gave different descriptions of the part of the handover that concerned
responsibility. Greenberg et al.[34] investigated malpractice claims due to communication
breakdowns during the preoperative, intraoperative and postoperative period and found that
43% occurred during handover and that ambiguity about responsibilities was a commonly
associated factor.[34] As in a study by Smith and Mishra,[5] the PACU nurses did not accept
taking over responsibility if the handover was not completed. In contrast to the nurse
anaesthetists, the anaesthesiologists did not hand over the responsibility after handover to a
PACU nurse. Since ambiguity concerning responsibility seems to be a contributing factor to
adverse events the professional groups’ responsibility should be clearly stated.

**Strengths and weaknesses of the study**

Previous studies of handovers gave rise to the notion that professions involved in
postoperative handover might have different perspectives on the handover. We chose focus
group interviews with profession-based groups consisting of participants with great
experience of postoperative handover. One limitation could be the small sample size in two
similar centres. The number of participants in each group was quite small. On the other hand,
Krueger and Casey[21] recommended that a group with fewer participants is preferable when
the purpose is to understand an issue or behaviour, when the topic is complex, and when the
participants’ level of experience is high.[21] In the present study, trustworthiness is described
and enhanced by the criteria of credibility, dependability, confirmability and transferability.
The text was analysed and discussed by two authors (MR, GM) and the subcategories and
categories were discussed with all co-authors until consensus was reached to achieve
credibility and dependability.[35] Furthermore, representative quotes from the transcribed text
were used to enhance credibility. The first author was familiar with the context investigated,
which may have threatened the confirmability. Conducting the analysis together with a co-
author with a different clinical background may have decreased this risk.[36] The assistant
moderator observed the interaction between the participants. All participants had
opportunities to voice their opinion about the handover and everyone agreed on the summary.
We have tried to explain the context as thoroughly as possible to allow the reader to
determine the transferability of the present results. With a view to increasing trustworthiness,
we have explained the data analysis as thoroughly as possible to meet the criteria of
dependability.[36]

**Conclusion**

The present findings revealed variations in different professionals’ view on the postoperative
handover. Healthcare interventions are needed that aim to minimize the gap between
professionals’ perception and practice and to achieve a shared understanding. Furthermore, to
ensure high quality and safe care, stakeholders/decision-makers need to pay attention to the
environment and infrastructure in postanaesthesia care.
ACKNOWLEDGEMENTS

Assistance with the study We would like to thank the participants for their contribution to this study.

Contributors All authors (MR, ME, CLS and GM) contributed to the design, interpreted data, drafted and revised the article critically. MR and GM collected the data. Data analysis was primarily conducted by MR and GM, and the data were discussed with all authors (MR, ME, CLS and GM). MR wrote the manuscript under the supervision of ME, CLS and GM. All authors read and approved the final version of the paper.

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Competing interests All authors have completed the ICMJE uniform disclosure form at www.icmje.org/coi_disclosure.pdf and declare: MR has received research grants from Patient Insurance LÖF and the Swedish Society of Nursing; no other relationships or activities that could appear to have influenced the submitted work.


Ethics approval The Regional Ethical Review Board in Uppsala, Sweden (reg. no. 2011/061) on 9 March 2011.

Data sharing statement There are no additional data available for data sharing.
REFERENCES


### COREQ 32-item checklist

<table>
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<tr>
<th>No</th>
<th>Item</th>
<th>Guide questions/description</th>
<th>Answers</th>
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<tr>
<td></td>
<td></td>
<td>Domain 1: Research team and reflexivity</td>
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<tr>
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<td>Personal Characteristics</td>
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<tr>
<td>1.</td>
<td>Interviewer/facilitator</td>
<td>Which author/s conducted the interview or focus group?</td>
<td>Maria Randmaa conducted all the focus group interviews and Gunilla Mårtensson was an assistant moderator during all the focus group interviews.</td>
</tr>
<tr>
<td>2.</td>
<td>Credentials</td>
<td>What were the researcher's credentials? E.g. PhD, MD</td>
<td>Maria Randmaa, RNA, PhD; Maria Engström, RN, PhD, Professor; Christine Leo Swenne, RN, PhD, Assoc. prof; Gunilla Mårtensson, RN, PhD, Assoc. prof.</td>
</tr>
<tr>
<td>3.</td>
<td>Occupation</td>
<td>What was their occupation at the time of the study?</td>
<td>Maria Randmaa, lecturer Faculty of Health and Occupational Studies, University of Gävle, Sweden; Centre for Research and Development, Uppsala University/County Council of Gävleborg, Sweden; PhD-student Department of Public Health and Caring Sciences, Uppsala University, Sweden; Maria Engström, Professor Faculty of Health and Occupational Studies, University of Gävle, Sweden; Associate researcher Department of Public Health and Caring Sciences, Uppsala University, Sweden; Nursing Department, Medicine and Health College, Lishui University, China; Christine Leo Swenne, Senior lecturer Department of Public Health and Caring Sciences, Uppsala University, Sweden; Gunilla Mårtensson, Senior lecturer Faculty of Health and Occupational Studies, University of Gävle, Sweden; Associate researcher Department of Public Health and Caring Sciences, Uppsala University, Sweden.</td>
</tr>
<tr>
<td>4.</td>
<td>Gender</td>
<td>Was the researcher male or female?</td>
<td>All researchers are female</td>
</tr>
<tr>
<td>5.</td>
<td>Experience and training</td>
<td>What experience or training did the researcher have?</td>
<td>Maria Randmaa had no previous experience of focus group interviews. Maria Engström had previous experience of individual interviews and focus group interviews. Christine Leo Swenne had previous experience of individual interviews. Gunilla Mårtensson had previous experience of individual interviews.</td>
</tr>
</tbody>
</table>

Relationship with participants

| 6. | Relationship established | Was a relationship established prior to study commencement? | Yes, a relationship was established prior to the study commencement. |
| 7. | Participant knowledge of the interviewer | What did the participants know about the researcher? e.g. personal goals, reasons for doing the research | The participants knew the reasons for doing the research. |

Interviewer characteristics

| 8. | Methodological orientation and Theory | What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis | The methodological orientation was content analysis |

Domain 2: study design

Theoretical framework

| 9. | Methodological orientation and Theory | What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis | The methodological orientation was content analysis |

Participant selection

<p>| 10. | Sampling | How were participants selected? e.g. purposive, convenience, consecutive, snowball | Purposive sampling was used. |
| 11. | Method of approach | How were participants approached? e.g. face-to-face, telephone, mail, email | The heads of department established contact with potential participants who had at least one year’s experience in the profession. |
| 12. | Sample size | How many participants were in the study? | Six focus groups with 23 healthcare professionals involved in postoperative handovers. Each group was composed on the basis of profession: nurse anaesthetists (n=8), anaesthesiologists (n=7) and... |</p>
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<tr>
<td>13.</td>
<td>Non-participation</td>
<td>How many people refused to participate or dropped out? Reasons?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No participants dropped out.</td>
</tr>
<tr>
<td>Setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Setting of data collection</td>
<td>Where was the data collected? <em>e.g. home, clinic, workplace</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The interviews were held in an undisturbed room at the participants’ workplace.</td>
</tr>
<tr>
<td>15.</td>
<td>Presence of non-participants</td>
<td>Was anyone else present besides the participants and researchers?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No.</td>
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<tr>
<td>16.</td>
<td>Description of sample</td>
<td>What are the important characteristics of the sample? <em>e.g. demographic data, date</em></td>
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<tr>
<td></td>
<td></td>
<td>The interviews were conducted from January to May 2015. Demographic data such as profession, gender, age and years of practice were described.</td>
</tr>
<tr>
<td>Data collection</td>
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<td>17.</td>
<td>Interview guide</td>
<td>Were questions, prompts, guides provided by the authors? Was it pilot tested?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A semi-structured interview guide was used covering key topics. The guide was pilot-tested on a focus group of PACU nurses in another hospital, and minor changes were made.</td>
</tr>
<tr>
<td>18.</td>
<td>Repeat interviews</td>
<td>Were repeat interviews carried out? If yes, how many?</td>
</tr>
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<td></td>
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<td>No, there were no repeated interviews.</td>
</tr>
<tr>
<td>19.</td>
<td>Audio/visual recording</td>
<td>Did the research use audio or visual recording to collect the data?</td>
</tr>
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<td></td>
<td></td>
<td>The interviews were digitally audio-recorded.</td>
</tr>
<tr>
<td>20.</td>
<td>Field notes</td>
<td>Were field notes made during and/or after the interview or focus group?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>During the interviews, the assistant moderator observed the interaction between participants in the group and made notes.</td>
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<tr>
<td>21.</td>
<td>Duration</td>
<td>What was the duration of the interviews or focus group?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The focus group interviews lasted 1-1.5 hours.</td>
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<tr>
<td>22.</td>
<td>Data saturation</td>
<td>Was data saturation discussed?</td>
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<tr>
<td></td>
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<td>Data saturation, as seen from the concept of grounded theory, was employed. However, our data are rich in content.</td>
</tr>
<tr>
<td>23.</td>
<td>Transcripts returned</td>
<td>Were transcripts returned to participants for comment and/or correction?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No, but at the end of the interview, the assistant moderator provided a summary, and concluding questions about the adequacy of the summary were posed to enable participants to reflect back on previous comments.</td>
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<td>Domain 3: analysis and findings</td>
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<td>Data analysis</td>
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<td>24.</td>
<td>Number of data coders</td>
<td>How many data coders coded the data?</td>
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<td></td>
<td></td>
<td>The analyses were primarily carried out by the first and last author.</td>
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<td>25.</td>
<td>Description of the coding tree</td>
<td>Did authors provide a description of the coding tree?</td>
</tr>
<tr>
<td>26.</td>
<td>Derivation of themes</td>
<td>Were themes identified in advance or derived from the data?</td>
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<tr>
<td>27.</td>
<td>Software</td>
<td>What software, if applicable, was used to manage the data?</td>
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<tr>
<td>28.</td>
<td>Participant checking</td>
<td>Did participants provide feedback on the findings?</td>
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<tr>
<td>Reporting</td>
<td>Quotations presented</td>
<td>Were participant quotations presented to illustrate the themes / findings? Was each quotation identified? e.g. participant number</td>
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<td>30.</td>
<td>Data and findings consistent</td>
<td>Was there consistency between the data presented and the findings?</td>
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<tr>
<td>31.</td>
<td>Clarity of major themes</td>
<td>Were major themes clearly presented in the findings?</td>
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<tr>
<td>32.</td>
<td>Clarity of minor themes</td>
<td>Is there a description of diverse cases or discussion of minor themes?</td>
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The postoperative handover: a focus group interview study with nurse anaesthetists, anaesthesiologists, and PACU nurses

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<td>10-Apr-2017</td>
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| Complete List of Authors: | Randmaa, Maria; Faculty of Health and Occupational Studies, Department of Health and Caring Sciences
Engström, Maria; University of Gävle, Faculty of Health and Occupational Studies; Uppsala University, Department of Public Health and Caring Sciences
Leo Swenne, Christine; Uppsala University, Department of Public Health and Caring Sciences
Mårtensson, Gunilla; University of Gävle, Faculty of Health and Occupational Studies; Uppsala University, Department of Public Health and Caring Sciences |
| Primary Subject Heading: | Communication |
| Secondary Subject Heading: | Anaesthesia, Qualitative research |
| Keywords: | Anaesthetic clinic, Handover, Postoperative, Qualitative study |
The postoperative handover: a focus group interview study with nurse anaesthetists, anaesthesiologists, and PACU nurses

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1) Faculty of Health and Occupational Studies, University of Gävle, Gävle, Sweden
2) Centre for Research and Development, Uppsala University/County Council of Gävleborg, Gävle, Sweden
3) Department of Public Health and Caring Sciences, Uppsala University, Uppsala, Sweden
4) Nursing Department, Medicine and Health College, Lishui University, China

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E-mail: maaraa@hig.se

Word count: Excluding title page, abstract, references, and tables: 4660 words

Keywords: Anaesthetic clinic, Handover, Postoperative, Qualitative study
ABSTRACT

OBJECTIVES To investigate different professionals’ (nurse anaesthetists’, anaesthesiologists’, and postanaesthesia care unit nurses’) descriptions of and reflections on the postoperative handover.

DESIGN A focus group interview study with a descriptive design using qualitative content analysis of transcripts.

SETTING One anaesthetic clinic at two hospitals in Sweden.

PARTICIPANTS Six focus groups with 23 healthcare professionals involved in postoperative handovers. Each group was homogeneous regarding participant profession, resulting in two groups per profession: nurse anaesthetists (n=8), anaesthesiologists (n=7) and postanaesthesia care unit nurses (n=8).

RESULTS Patterns and five categories emerged: 1) Having different temporal foci during handover, 2) Insecurity when information is transferred from one team to another, 3) Striving to ensure quality of the handover, 4) Weighing the advantages and disadvantages of the bedside handover, and 5) Having different perspectives on the transfer of responsibility. The professionals’ perceptions of the postoperative handover differed with regard to temporal foci and transfer of responsibility. All professional groups were insecure about having all information needed to ensure the quality of care. They strived to ensure quality of the handover by: focusing on matters that deviated from the normal course of events, aiding memory through structure and written information, and cooperating within and between teams. They reported that the bedside handover enhances their control of the patient, but also that it could threaten the patient’s privacy and that frequent interruptions could be disturbing.
CONCLUSIONS

The present findings revealed variations in different professionals’ views on the postoperative handover. Healthcare interventions are needed to minimize the gap between professionals’ perceptions and practices and to achieve a shared understanding of postoperative handover. Furthermore, to ensure high-quality and safe care, stakeholders/decision-makers need to pay attention to the environment and infrastructure in postanaesthesia care.

Strengths and limitations of the study

- To the best of our knowledge, this is the first study investigating nurse anaesthetists’, anaesthesiologists’, and PACU nurses’ views on postoperative handover using focus group interviews.
- Focus group interviews have the advantage of reaching a wider range of views through group interaction than individual interviews.
- A strength of the study was that personnel involved in postoperative handover were interviewed using profession-based groups, the goal being to try to understand each group’s perspective on the handover.
- A further strength was that an assistant moderator observed the focus group interviews and all participants agreed upon the summary.
- One limitation could be the small sample size drawn from two similar hospitals.
INTRODUCTION

The handover consists of three key aspects: transfer of 1) information, 2) responsibility and/or accountability, in 3) the context of teams and their work environments.[1] With regard to information transfer, studies have shown that anaesthesiologists and postanaesthesia care unit (PACU) nurses had different expectations concerning the content of information transferred[2] and opinions on what information needs to be reported.[3] Although the handover consists of transfer of responsibility and/or accountability, one study revealed a lack of consensus among personnel concerning when the transfer of responsibility and/or accountability takes place.[4] Yet another study showed that, during postoperative handover, the time of transfer of responsibility varied.[2] Concerning working conditions during postoperative handover, personnel often work in teams that consist of several different professionals working together in an environment characterized by frequent interruptions,[2, 5, 6] which interfere with the handover recipient’s memory.[7] Teamwork is an essential component of achieving high reliability in health care,[8] and working atmosphere and shared understanding are factors of importance to the quality of handover.[9] Poor surgical teamwork behaviour concerning information sharing during intraoperative and handover phases has been shown to be significantly associated with more frequent postoperative complications or death.[10]

To summarize, postoperative handovers are crucial to patient safety. However, there is a lack of consensus about what constitutes a good handover.[11-13] A systematic review of postoperative handover by Møller et al.[14] concluded that it is important to acknowledge the role of communication, teamwork and collaboration within the setting. Furthermore, it is important that different professionals have a shared understanding.[9, 15] To achieve such an
understanding, it is essential to generate knowledge about each professional group’s views on postoperative handover. Thus, there is need to identify whether there are potential gaps between different health professionals’ perceptions of postoperative handover that can affect patient safety. Qualitative studies of postoperative handovers between anaesthesiologists and PACU nurses[16-19] and a mixed methods study[20] have been conducted. To date, however, no study has investigated anaesthesiologists’, PACU nurses’ and nurse anaesthetists’ views on postoperative handover using profession homogenous focus group interviews.

Aim

The aim of the present study was to investigate different professionals’ (nurse anaesthetists’, anaesthesiologists’, and PACU nurses’) descriptions of and reflections on the postoperative handover.

METHODS

Design

A qualitative descriptive design was used.

Setting

The participants worked in an anaesthetic clinic located at two medium sized hospitals in central Sweden, which share the same top management and are located in the same county council district, with about 130 km distance between them. In Sweden, postoperative handovers at the PACU between a nurse anaesthetist (the sender) and a specialist nurse in intensive care (the receiver) are common. Nurse anaesthetists may, with support from the anaesthesiologist, independently induce, maintain and conclude general anaesthesia.
specialist nurse in intensive care may judge, address and evaluate medical and nursing
interventions.[21] During the typical postoperative handover, the nurse anaesthetist and
PACU nurse stand nearby the patient while looking at the written anaesthetic record, the
patient and the monitor. On some occasions, a theatre nurse and a licensed practical nurse are
also present. Sometimes an anaesthesiologist is present during the postoperative handover or
is the person doing the reporting. The written anaesthetic record contains information about
the anaesthetic procedure, drugs and fluids given, blood loss, vital parameters and the
performed surgery. The electronic patient record, where the patient’s clinical background and
medication are documented, is located at some distance away from the patient or in another
room, i.e., not in direct proximity to where most of the postoperative handovers take place.[6]
During the period June 2014 to June 2015, 16,004 operations from different specialties
(13,235 inpatients and 2,769 outpatients) were performed at the two hospitals. At the
anaesthetic clinic, the communication tool Situation-Background-Assessment-
Recommendation (SBAR)[22] and the WHO Surgical Safety Checklist[23] were used. The
WHO Surgical Checklist was developed to increase teamwork and communication in surgery.
The checklist is designed to ensure patient safety on three occasions during the surgical
procedure: “Sign in (before the induction of anaesthesia), “Time out” (before the incision of
the skin), and “Sign out” (before the patient leaves the operating theatre (OT)).[23]

Data collection

A total of six focus group interviews were conducted from January to May 2015. Purposive
sampling was used, and the heads of department established contact with potential
participants who had at least one year’s experience in the profession. The participants
received oral and written information about the study, and written informed consent was
obtained. Because of the interaction between respondents and the group dynamics, focus
group interviews have the advantage of elucidating both individual and shared views on a
topic as well as providing rich information.[24] The homogenous composition of the groups
was based on the participants’ similar professions, role and experience of the same issue,[25]
the goal being to identify patterns in the professional groups’ descriptions of and reflections
on postoperative handover. The six focus groups consisted of two groups of nurse
anaesthetists, two groups of anaesthesiologists, and two groups of PACU nurses. In total, 23
respondents participated (Table 1). The study was approved by the Regional Ethical Review
Board in Uppsala (reg. no. 2011/061).

**Table 1.** Demographic characteristics of participants

<table>
<thead>
<tr>
<th>Profession</th>
<th>Gender Male/Female</th>
<th>Median age (Q1-Q3)</th>
<th>Median years of practice (Q1-Q3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse Anaesthetists</td>
<td>2/6</td>
<td>40 (34-44)</td>
<td>3 (2-16)</td>
</tr>
<tr>
<td>Anaesthesiologists</td>
<td>5/2</td>
<td>54 (47-61)</td>
<td>24 (15-30)</td>
</tr>
<tr>
<td>PACU nurses²</td>
<td>0/8</td>
<td>59 (55-63)</td>
<td>34 (23-40)</td>
</tr>
</tbody>
</table>

¹Years of practice in current profession. ²PACU (Postanaesthesia care unit) nurses were all Specialist Nurses in Intensive Care, which means registered nurses with one year of training and a degree in intensive care. ³Quartiles.

A semi-structured interview guide was used covering opening questions, introductory
questions, transition questions, and key questions. The interview guide was pilot-tested on a
focus group of PACU nurses in another hospital, and minor changes were made. The focus
group interview started with opening questions to get everyone to talk; thereafter, introductory
questions were posed to introduce the topic in focus and to encourage conversation among the
participants. To move the conversation closer to the key questions, transition questions were
posed.[24] The key questions concerned the participants’ descriptions of and reflections on
the transfer of information during handover, the transfer of responsibility and/or
accountability and the context of teams and their work environment. One example of a key
question is: “Can you talk about what kind of information you usually get and what kind you
try in particular to focus on and listen to? Why do you focus especially on this information?
Probes were used to go into more depth on a certain topic. In order to stimulate discussion during the focus group interviews, the participants were also presented with an example from a transcribed verbal handover.[24] Finally, questions about the ideal handover were asked. In the second part of the focus group interview, the main results of an observational study of postoperative handover[6] were presented and discussed, but this is not included in the present analysis. All focus group interviews were conducted by one moderator (MR), who is a nurse anaesthetist and specialist nurse in intensive care with 22 years’ experience in the professions. During the focus group interviews, the assistant moderator (GM) observed the interaction between participants in the group and made notes.[24] At the end of the focus group interview, the assistant moderator provided a summary, and concluding questions about the adequacy of the summary were posed to enable participants to reflect back on previous comments.[24] The focus group interviews lasted 1-1.5 hours; they were held in a quiet room at the participants’ workplace and digitally recorded.

Data analysis

The focus group interviews were analysed inductively, using qualitative content analysis.[25] The recorded focus group interviews were listened to and transcripts were read and re-read to obtain an overall impression and become familiar with the text. The three professional groups were first analysed separately, according to the study aim, in three steps, the goal being to identify preliminary subcategories.[25] The steps were: 1) Meaning units (sentences and paragraphs) were identified and condensed, abstracted, and labelled with a code. 2) The codes were sorted into three topics from the interview guide – information, responsibility and/or accountability – in the context of teams and their work environments. 3) The codes within each topic were grouped into preliminary subcategories. Thereafter, the preliminary subcategories for the three professional groups were put together and compared, and
subcategories with similar names were scrutinized and grouped together when found to have the same content. Next, the subcategories were compared for similarities and differences and grouped into five categories. The analyses were primarily carried out by the moderator (MR) and the assistant moderator (GM). During the analysis process, the subcategories and categories were discussed with all co-authors until consensus was reached.

**RESULTS**

From the analysis of the nurse anaesthetists’, anaesthesiologists’, and PACU nurses’ descriptions of and reflections on the postoperative handover, five categories emerged: “Having different temporal foci during handover”, “Insecurity when information is transferred from one team to another”, “Striving to ensure quality of the handover”, “Weighing the advantages and disadvantages of the bedside handover”, and “Having different perspectives on the transfer of responsibility.” Patterns in the three professional groups’ descriptions and reflections appeared, and these patterns are described in each of the categories and subcategories (Table 2). The quotations are presented in italics and the notional sign “-“ marks when another participant, within the group, interjects a comment or continues the discussion.
Table 2

Table 2. Categories and subcategories that emerged for each profession, marked by an X

<table>
<thead>
<tr>
<th>Category</th>
<th>Having different temporal foci during handover</th>
<th>Insecurity when information is transferred from one team to another</th>
<th>Striving to ensure quality of the handover</th>
<th>Weighing the advantages and disadvantages of the bedside handover</th>
<th>Having different perspectives on the transfer of responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subcategory</td>
<td>Focusing mainly on the past</td>
<td>Insecure about having all information needed</td>
<td>Focus the information on deviating events</td>
<td>Aid memory by structure and written information</td>
<td>Provide control and save time</td>
</tr>
<tr>
<td></td>
<td>Focusing mainly on the present</td>
<td></td>
<td></td>
<td>Cooperative within and between teams</td>
<td>Threats to integrity</td>
</tr>
<tr>
<td></td>
<td>Focusing on the continuum of care</td>
<td></td>
<td></td>
<td></td>
<td>The disturbing bedside environment</td>
</tr>
<tr>
<td></td>
<td>Focusing on the continuum of care</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nurse Anaesthetists</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Anaesthesiologists</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>PACU nurses(^a)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

\(^a\) PACU (postanaesthesia care unit) nurses were all Specialist Nurses in Intensive Care, which means registered nurses with one year of training and a degree in intensive care.
Having different temporal foci during handover

The three professional groups reported different temporal foci during the post-operative handover, e.g., focusing mainly on the past, on the present, and on the continuum of care in its entirety. As senders of information, the nurse anaesthetists focused mainly on what they themselves had done, i.e. the anaesthesia process, and partly on the patient’s continuing care. They were uncertain concerning which information the PACU nurses considered to be essential and mentioned a disinterest in some of the information reported. The anaesthesiologists reported that they focused on the continuum of care from the OT to discharge, e.g., the surgical procedure, observations and recommendations. They stated that all personnel should focus on the continuity of care, but they were unsure whether that was the case during the reported handover. Like the nurse anaesthetists, the anaesthesiologists were uncertain about the receivers’ focus during handover. As receivers of information, the PACU nurses reported focusing mainly on essential information of importance for the “here and now”, e.g., which patient was to be taken care of, vital parameters and recommendations for conducting postoperative care at the PACU. They related that the nurse anaesthetists’ focus was mostly on reporting information about the anaesthesia process.

- “/.../we often report on how the anaesthesia went, if the patient was stable and such things /.../because that’s the main thing for us. “/.../we report on things we’re interested in and they [PACU nurses] have other interests.” ” (Nurse anaesthetists)

- ” It can sometimes be very frustrating, I must say, because some nurses aren’t interested in what you have to say.” ”/.../ but that it’s difficult, that I don’t really know what they’re interested in.” ”/.../ they [PACU nurses] say, ”I’m not all that interested in the anaesthesia process, but more in drainage and continued prescription of medications.” ” (Nurse anaesthetists)

Insecurity when information is transferred from one team to another

All professional groups described and reflected on being uncertain as to whether all of the information needed was actually transferred from one team to another. The nurse anaesthetists
reported that they were obliged to transfer all important information about the patient from the
OT team to the PACU team, but like the anaesthesiologists and PACU nurses, they reported
having doubts about whether all of the essential information from the surgeon or theatre nurse
was transferred before the patient left the OT. The anaesthesiologists reported insufficient
“sign out” between the main surgeon and the nurse anaesthetist before the patient left the OT
and considered this to entail the risk of postoperative misjudgements. They saw improvements
in continuity of care if important information was always communicated by the main surgeon
before the patient left the OT. Furthermore, the anaesthesiologists felt that several information
transfers and lack of knowledge posed potential risks to the patient’s continued care.

-“We don’t know a thing about that [catheters, dressings, drainage]. The surgeon often escapes
before saying anything /.../. And then we don’t have answers to the PACU’s questions.”
(Nurse anaesthetist)

-“.../it’s up to the team to be clear with each other before they leave the operation theatre
and I think there are shortcomings there. The surgeon may have things in mind that aren’t
conveyed and that I don’t comprehend. There are four perspectives that need to become one.”
(Anaesthesiologist)

-“.../And how they coped with the surgery because the others [Nurse anaesthetists] don’t
have a clue, you know, what it’s all about.”-“No, and what they [Surgeons] have
done.”(PACU nurses)

The nurse anaesthetists also reported insecurity as to whether the information was understood,
and the anaesthesiologists reported insecurity about the receiver’s knowledge when they did
not know the PACU nurse involved. Furthermore, the nurse anaesthetists and
anaesthesiologists reflected on the need for confirmation, by the receiver, of the information
given; thus they wanted to be sure the information was understood.

-/.../“So I assume that if I report to PACU and they don’t understand what I’m talking about
then I really hope they say something and ask, like “now I don’t know what you mean
here”. ”/.../ but sometimes I think they do, though some of them look bewildered.” (Nurse
Striving to ensure quality of the handover

The three professional groups described and reflected on how they strived to ensure quality during the handover by: focusing the information on deviating events, aiding memory through structure and written information, and cooperating within and between teams. All of the groups mentioned the importance of emphasizing information on matters that deviate from the normal course of events. They reported that information concerning an anaesthetic and surgical process that has proceeded as expected is less important to mention. The nurse anaesthetists and anaesthesiologists also saw the importance of limiting the amount of information during postoperative handover.

".../put the focus on that, if it's something unusual/.../that sticks out or if the patient has a medical background that means you have to think a bit differently." "Yes, I think so too" – "Yes"– "Yes, things that occur during surgery that are out of the ordinary"– ".../where do we draw the line?" – "Exactly"– "And of course we do, we make some kind of selection and if there is nothing special, the report will be shorter." (Anaesthesiologists)

"And if something special has occurred."– "Yes, with the patient, loss of blood pressure, the pulse increases or something like that, or extraordinary bleeding. Something that they had to do something about, basically." (PACU nurses)

The nurse anaesthetists and the anaesthesiologists reported using a structure such as SBAR to aid memory when they reported essential information. The anaesthesiologists and the PACU nurses expected to receive the information within a structure. The PACU nurses also reflected on the importance of asking questions, in a structured manner, during the entire handover, rather than only at the end of the handover. The nurse anaesthetists and the PACU nurses
reflected on the importance of having written information in front of them during handover to aid memory; they felt that the electronic patient records complicated information retrieval, because using them was, in their view, time consuming and caused nurses to lose sight of the patient’s condition.

-“/…/if you follow the SBAR concept, you have a main thread through the whole thing /…/”“That’s what xx says about the main thread, that you find it and thinks that SBAR helps you here.” (Nurse anaesthetists)

-“Yes, if there’s anything special there I want to – but what was your thinking there? But we have been taught to ask our questions later and that’s.”“Not easy.”“There is a risk that you forget since there’s a lot going on around you. You should have the opportunity to interrupt, at least once.” (PACU nurses)

All professional groups saw the benefits of cooperation. The nurse anaesthetists reflected on the need for improved cooperation within the OT team as well as for developing further collaboration between the OT team and the PACU team to increase interaction around achieving consensus on how handovers should always be carried out. The PACU nurses described the advantages of the theatre nurses and the nurse anaesthetist collaborating during handover, as collaboration meant transfer of more information about the surgical process. However, they also mentioned the disadvantages, in that collaboration of this kind also meant a more unstructured handover. The anaesthesiologists and the PACU nurses reported the benefits of cooperation within the PACU team, which they said facilitated and safeguarded the handover situation.

-”/…/need to discuss how we will report and who will do the reporting and what should be reported, and we have to have this discussion among ourselves in the OT and we need have it with the PACU nurses /…/and arrive at some consensus/…/” (Nurse anaesthetist)
Weighing the advantages and disadvantages of the bedside handover

The professional groups described and reflected on both the advantages and the disadvantages associated with the bedside handover. Nurse anaesthetists and PACU nurses reflected on the benefits of carrying out handovers close to the patient, as this provided control over the patient’s medical condition. On the other hand, it might threaten the patient’s privacy because other patients might hear the report. The nurse anaesthetists described how decisions about whether the handover should be performed bedside depended on whether the information transferred was meant to be heard by the patient. The PACU nurses also reflected on the time-saving benefits of the bedside handover, compared with a handover in a separate room. The anaesthesiologists and the PACU nurses reflected on the disturbing bedside environment, which sometimes entailed frequent interruptions they felt caused stress and distraction.

-“When you’re standing at the bedside you can check the vital parameters and see that everything is fine when you hand the patient over” -“Yes” (Nurse anaesthetists)

--“.../I prefer having the patient in front of me/.../The times the nurse anaesthetists come and report on a patient I can’t see, that upsets me, because I would really like to see who they’re talking about.” -“I want to have control.” (PACU nurses)

-“While giving my report/.../if I’m disturbed/.../I mean if my thoughts are interrupted. I think that’s dangerous, because every time it happens is harder to return to the main thread” (Anaesthesiologist)

-“Well, that the machines are beeping and ringing, it gets your adrenalin going, because you’re used to reacting to it.” -“Well, then your attention easily shifts to the beeps.” -“That’s the way it is.” -“You’re disturbed and distracted. And that’s the idea, it is a warning signal to us.” (PACU nurses)
Having different perspectives on the transfer of responsibility

The professional groups described different perspectives on the transfer of responsibility. The nurse anaesthetists reported that they handed over responsibility when all the information was given to the PACU nurse and when they left the PACU. The anaesthesiologists handed over responsibility to other physicians, but their overall responsibility (accountability) remained even after handover to a PACU nurse. The PACU nurses stated that they required control over the patient’s condition before taking over the responsibility. Uncertainty about responsibility arose when the nurse anaesthetist provided incomplete information about the patient or when the nurse anaesthetist failed to complete tasks that he/she was supposed to have done prior to handover.

- “When you hand information over you include what you know and then the responsibility is someone else’s” (Nurse anaesthetists)

- “We don’t transfer the responsibility just because we’ve transferred the patient. “As a medical doctor, you still hold overall responsibility.” (Anaesthesiologists)

“/…/you have to wait before taking all of the responsibility, because they should already have found out certain things in the operating theatre/…/” “but I have to know/…/you have to know what we’re going to do with this patient.” (PACU nurse)

Observation of interaction during focus group interviews

During the focus group interviews, the interaction between the participants was observed by the assistant moderator. Overall, the atmosphere in all six focus groups was judged to be friendly. The participants seemed to be familiar with each other and no participant seemed shy or otherwise reluctant to speak. The topic engaged them in a lively discussion and “postoperative handover” did not seem to be a sensitive topic. Within the groups, no single participant dominated the discussion and each participant had roughly the same amount of
time to talk. During the focus group interviews, the participants often confirmed each other’s statements non-verbally, e.g. by nodding or smiling, and verbally, by completing each other’s statements and sentences.

DISCUSSION

In the present study, the temporal foci differed between the three professional groups. The nurse anaesthetists mainly focused on the past, the anaesthesiologists mainly focused on the continuum of care, and the PACU nurses mainly focused on the present, but did report that the nurse anaesthetists’ handovers mostly concerned information about the anaesthesia process. This is in line with an earlier study showing that PACU nurses sought information other than that reported by the sender.[2] A previous study showed that, of the items transferred during postoperative handover, the drugs used during anaesthesia were the items least likely to be remembered by the PACU nurses.[6] In the present study, the nurse anaesthetists reported feeling that the PACU nurses were not interested in the information transferred. If the sender transfers information concerning the past (i.e., the anaesthesia process) that the receiver pays less attention to, because the receiver is focusing on factors important to the continuing care, we can assume that passive listening during handover on the part of the receiver will result in information loss. This is in line with Flin et al.[26], who suggested that listening is an active process, and that even under ideal circumstances with an interested listener, only about one-third of what is heard is actually listened to, even less if the listener is not interested.
The groups reported risks when information from the OT team was transferred to the PACU team if the sender of information did not have all of the essential information from the surgeon. According to Manser et al.,[9] a shared understanding is an important feature of handover quality. Sandberg and Targama[15] suggested that people in an organization must have a shared understanding if cooperation is to be achieved. This involves having both a similar understanding of the collective's work in its entirety, and an understanding of their specific roles and competence in the performance of a task.[15] There is a need for the different professional groups within the OT team and between the OT team and the PACU team to have a shared understanding of the whole so that they can together ensure the patient’s continuing care. In the present study, the participants’ reflections indicate that there is room for improvement.

The professional groups described strategies for ensuring the quality of handover. One initial strategy is to focus on deviating events. This is in line with one of the recommendations for improving communication in teams made by Flin et al.[26], who suggested that the message should be as brief as possible, including only the most relevant information owing to the costs of attention and cognitive resources for both the sender and the receiver. Another strategy, described by the professional groups, was using a structure for the information that is handed over. This is in line with an integrative review of postoperative handover showing that information transfer, technical errors and high-risk events were positively influenced by the use of structured handover tools.[27] Communication with high predictability can be said to contain redundancy, which facilitates the receiver’s interpretation of the message.[28] A third strategy was to see the benefits of cooperation between and within the teams, which is in accordance with a previous study.[17] Moreover, the professional groups thought that having a shared understanding would improve the postoperative handover, which is in line with
earlier studies.[9, 15] Furthermore, the nurse anaesthetists and the PACU nurses wanted written information in front of them; they saw disadvantages associated with electronic patient records, because these records were not in the immediate vicinity of the patient. In line with this, a study by Redley et al.[20] showed that clinicians saw difficulties, during postoperative handover, when documents were incomplete or not immediately available. We therefore suggest that postoperative handovers be performed in a structured way, such as when using SBAR, and that the electronic patient records be designed to be user-friendly and placed near the patient.

It is well known that the PACU environment is marked by frequent interruptions,[6, 29] and in the present study such interruptions were seen as possibly causing distractions. Nevertheless, both the nurse anaesthetists and PACU nurses mentioned the benefits of the bedside handover, as it increased control of the patient. Results of a study by Frankel et al.[30] concerning context, culture and communication during handover suggested that a “joint focus of attention” has the greatest potential for achieving a high-quality and reliable handover. Such an approach coordinates the sender’s and receiver’s verbal and visual attention jointly on an artefact. Redundancy in the visual field gives a momentary “joint focus of attention” using simultaneous inputs.[30] The bedside handover, described by the nurse anaesthetists and PACU nurses in the present study, has the potential to create a “joint focus of attention”. On the other hand, interruptions interfere with memory and therefore should be minimized.[6, 31]

The professional groups gave different descriptions of the part of the handover that concerned responsibility. Greenberg et al.[32] investigated malpractice claims due to communication
breakdowns during the preoperative, intraoperative and postoperative period and found that 43% occurred during handover and that ambiguity about responsibilities was a commonly associated factor. As in a study by Smith and Mishra,[5] the PACU nurses did not accept taking over responsibility if the handover was not completed. In contrast to the nurse anaesthetists, the anaesthesiologists stated that they did not hand over the responsibility after handover to a PACU nurse. Because ambiguity concerning responsibility seems to be a contributing factor to adverse events, the professional groups’ responsibility should be clearly stated.

Strengths and weaknesses of the study

Previous studies of handovers have taken up the notion that professions involved in postoperative handover might have different perspectives on the handover. We chose focus group interviews with profession homogeneous groups consisting of participants with considerable experience of postoperative handover. One limitation could be the small sample size drawn from two similar hospitals. The number of participants in each group was quite small, which entails the potential risk that data saturation was not reached. On the other hand, Krueger and Casey[24] recommended that a group with fewer participants is preferable when the purpose is to understand an issue or behaviour, when the topic is complex, and when the participants’ level of experience is high. In the present study, trustworthiness is described and enhanced by the criteria of credibility, dependability, confirmability and transferability. The text was analysed and discussed by two authors (MR, GM); to achieve credibility and dependability, the subcategories and categories were discussed by all co-authors until consensus was reached.[33] Furthermore, representative quotes from the transcribed text were used to enhance credibility. The first author was familiar with the context investigated, which may have threatened the confirmability. Conducting the analysis together with a co-
author with a different clinical background may have decreased this risk.[34] The assistant moderator observed the interaction between the participants. All participants had opportunities to voice their opinion about the handover and everyone agreed on the summary. However, member checking was not used, which is a potential threat to data credibility. We have tried to explain the context as thoroughly as possible to allow the reader to determine the transferability of the present results. With a view to increasing trustworthiness, we have explained the data analysis as thoroughly as possible to meet the criteria of dependability.[34]

Conclusion

The present findings revealed variations in different professionals’ views on the postoperative handover. Healthcare interventions are needed that aim to minimize the gap between professionals’ perceptions and practices and to achieve a shared understanding. Furthermore, to ensure high-quality and safe care, stakeholders/decision-makers need to pay attention to the environment and infrastructure in postanaesthesia care.
ACKNOWLEDGEMENTS

Assistance with the study We would like to thank the participants for their contribution to this study.

Contributors All authors (MR, ME, CLS and GM) contributed to the design, interpreted data, drafted and revised the article critically. MR and GM collected the data. Data analysis was primarily conducted by MR and GM, and the data were discussed with all authors (MR, ME, CLS and GM). MR wrote the manuscript under the supervision of ME, CLS and GM. All authors read and approved the final version of the paper.

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Competing interests All authors have completed the ICMJE uniform disclosure form at www.icmje.org/coi_disclosure.pdf and declare: MR has received research grants from Patient Insurance LÖF and the Swedish Society of Nursing; there are no other relationships or activities that could appear to have influenced the submitted work.


Ethics approval The Regional Ethical Review Board in Uppsala, Sweden (reg. no. 2011/061) on 9 March 2011.

Data sharing statement There are no additional data available for data sharing.
REFERENCES


# COREQ 32-item checklist

<table>
<thead>
<tr>
<th>Domain 1: Research team and reflexivity</th>
<th>Item</th>
<th>Guide questions/description</th>
<th>Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Characteristics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Interviewer/facilitator</td>
<td></td>
<td>Which author/s conducted the interview or focus group?</td>
<td>Maria Randmaa conducted all the focus group interviews and Gunilla Mårtensson was an assistant moderator during all the focus group interviews.</td>
</tr>
<tr>
<td>2. Credentials</td>
<td></td>
<td>What were the researcher's credentials? E.g. PhD, MD</td>
<td>Maria Randmaa, RNA, PhD; Maria Engström, RN, PhD, Professor; Christine Leo Swenne, RN, PhD, Assoc. prof; Gunilla Mårtensson, RN, PhD, Assoc. prof.</td>
</tr>
<tr>
<td>3. Occupation</td>
<td></td>
<td>What was their occupation at the time of the study?</td>
<td>Maria Randmaa, lecturer Faculty of Health and Occupational Studies, University of Gävle, Sweden; Centre for Research and Development, Uppsala University/County Council of Gävleborg, Sweden; PhD-student Department of Public Health and Caring Sciences, Uppsala University, Sweden; Maria Engström, Professor Faculty of Health and Occupational Studies, University of Gävle, Sweden; Associate researcher Department of Public Health and Caring Sciences, Uppsala University, Sweden; Nursing Department, Medicine and Health College, Lishui University, China; Christine Leo Swenne, Senior lecturer Department of Public Health and Caring Sciences, Uppsala University, Sweden; Gunilla Mårtensson, Senior lecturer Faculty of Health and Occupational Studies, University of Gävle, Sweden; Associate researcher Department of Public Health and Caring Sciences, Uppsala University, Sweden.</td>
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<td>4.</td>
<td>Gender</td>
<td>Was the researcher male or female?</td>
<td>All researchers are female</td>
</tr>
<tr>
<td>5.</td>
<td>Experience and training</td>
<td>What experience or training did the researcher have?</td>
<td>Maria Randmaa had no previous experience of focus group interviews. Maria Engström had previous experience of individual interviews and focus group interviews. Christine Leo Swenne had previous experience of individual interviews. Gunilla Mårtensson had previous experience of individual interviews.</td>
</tr>
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<td></td>
<td>Relationship with participants</td>
<td>relationship established prior to study commencement?</td>
<td>Yes, a relationship was established prior to the study commencement.</td>
</tr>
<tr>
<td></td>
<td>Participant knowledge of the interviewer</td>
<td>What did the participants know about the researcher? e.g. personal goals, reasons for doing the research</td>
<td>The participants knew the reasons for doing the research.</td>
</tr>
<tr>
<td></td>
<td>Interviewer characteristics</td>
<td>What characteristics were reported about the interviewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic</td>
<td>The participants were aware of the interviewer’s interest in the research topic.</td>
</tr>
<tr>
<td></td>
<td>Domain 2: study design</td>
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<tr>
<td></td>
<td>Theoretical framework</td>
<td>What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis</td>
<td>The methodological orientation was content analysis</td>
</tr>
<tr>
<td></td>
<td>Participant selection</td>
<td></td>
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<tr>
<td></td>
<td>Sampling</td>
<td>How were participants selected? e.g. purposive, convenience, consecutive, snowball</td>
<td>Purposive sampling was used.</td>
</tr>
<tr>
<td></td>
<td>Method of approach</td>
<td>How were participants approached? e.g. face-to-face, telephone, mail, email</td>
<td>The heads of department established contact with potential participants who had at least one year’s experience in the profession.</td>
</tr>
</tbody>
</table>
|   | Sample size | How many participants were in the study? | Six focus groups with 23 healthcare professionals involved in postoperative handovers. Each group was composed on the basis of profession: nurse anaesthetists (n=8), anaesthesiologists (n=7) and
<p>| | | |</p>
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<td>13.</td>
<td>Non-participation</td>
<td>How many people refused to participate or dropped out? Reasons?</td>
</tr>
<tr>
<td>14.</td>
<td>Setting of data collection</td>
<td>Where was the data collected? e.g. home, clinic, workplace</td>
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<tr>
<td>15.</td>
<td>Presence of non-participants</td>
<td>Was anyone else present besides the participants and researchers?</td>
</tr>
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<td>16.</td>
<td>Description of sample</td>
<td>What are the important characteristics of the sample? e.g. demographic data, date</td>
</tr>
<tr>
<td>17.</td>
<td>Interview guide</td>
<td>Were questions, prompts, guides provided by the authors? Was it pilot tested?</td>
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<tr>
<td>18.</td>
<td>Repeat interviews</td>
<td>Were repeat interviews carried out? If yes, how many?</td>
</tr>
<tr>
<td>19.</td>
<td>Audio/visual recording</td>
<td>Did the research use audio or visual recording to collect the data?</td>
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<tr>
<td>20.</td>
<td>Field notes</td>
<td>Were field notes made during and/or after the interview or focus group?</td>
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<tr>
<td>21.</td>
<td>Duration</td>
<td>What was the duration of the interviews or focus group?</td>
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<td>22.</td>
<td>Data saturation</td>
<td>Was data saturation discussed?</td>
</tr>
<tr>
<td>23.</td>
<td>Transcripts returned</td>
<td>Were transcripts returned to participants for comment and/or correction?</td>
</tr>
</tbody>
</table>

**Domain 3: analysis and findings**

**Data analysis**

<p>| 24. | Number of data coders | How many data coders coded the data? | The analyses were primarily carried out by the first and last author. |</p>
<table>
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<tr>
<th></th>
<th>Description of the coding tree</th>
<th>Did authors provide a description of the coding tree?</th>
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<tbody>
<tr>
<td>25</td>
<td></td>
<td>Yes, the authors did provide a description of the coding tree.</td>
</tr>
<tr>
<td></td>
<td>Derivation of themes</td>
<td>Were themes identified in advance or derived from the data?</td>
</tr>
<tr>
<td>26</td>
<td></td>
<td>No, no themes were identified; the subcategories were grouped into five categories based on similarities and differences.</td>
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<tr>
<td></td>
<td>Software</td>
<td>What software, if applicable, was used to manage the data?</td>
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<tr>
<td>27</td>
<td></td>
<td>Analyses of demographic characteristics of participants were performed using IBM SPSS 20.0. Otherwise, no software was used.</td>
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<td></td>
<td>Participant checking</td>
<td>Did participants provide feedback on the findings?</td>
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<tr>
<td>28</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Reporting</td>
<td>Quotations presented</td>
<td>Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number</td>
</tr>
<tr>
<td>29</td>
<td></td>
<td>Yes, quotations were presented to illustrate the findings. The quotations were identified by professional group.</td>
</tr>
<tr>
<td></td>
<td>Data and findings consistent</td>
<td>Was there consistency between the data presented and the findings?</td>
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<tr>
<td>30</td>
<td></td>
<td>Yes.</td>
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<tr>
<td></td>
<td>Clarity of major themes</td>
<td>Were major themes clearly presented in the findings?</td>
</tr>
<tr>
<td>31</td>
<td></td>
<td>No, no themes were identified, but the five categories were clearly presented.</td>
</tr>
<tr>
<td></td>
<td>Clarity of minor themes</td>
<td>Is there a description of diverse cases or discussion of minor themes?</td>
</tr>
<tr>
<td>32</td>
<td></td>
<td>No, there is no description of diverse cases. All data related to the aim of the study were included in the five categories.</td>
</tr>
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</table>
The postoperative handover: a focus group interview study with nurse anaesthetists, anaesthesiologists and PACU nurses

Maria Randmaa, Maria Engström, Christine Leo Swenne and Gunilla Mårtensson

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- Qualitative research (697)

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