An Observational Study of Postoperative Handover in Anesthetic Clinics; The Content of Verbal Information and Factors Influencing Receiver Memory

Maria Randmaa, RN, Gunilla Mårtensson, PhD, RN, Christine Leo Swenne, PhD, RN, Maria Engström, PhD, RN

Purpose: *The aim was to examine the handover process in the postanesthesia care unit, how much the receiver remembered, and what factors influenced memory.*
Design: *An observational study with a descriptive and correlational design.*
Methods: *A total of 73 handovers were investigated, and data were collected using observation, audiotape recordings of the handovers, and the patient's anesthetic record.*
Finding: *Interruptions occurred at 56 (77%) handovers and the sender expressed unclear information at 51 (70%) handovers. The mean of the verbally given information remembered by the receivers was 47%; the items mostly likely not to be remembered were the drugs used during anesthesia. A linear generalized estimating equation was used and identified variables that were significantly associated with receivers' retention of information were structure and handover duration.*
Conclusion: *Lack of structure and long duration of the verbal handover decrease how much the receiver will remember.*

Keywords: *communication, handover, memory, postanesthesia care unit.*

WHEN PATIENTS ARE TRANSFERRED from the operating room (OR), they are handed over from one health care professional or team to another nurse or team in the postanesthesia care unit (PACU). Jeffcott et al[1] suggested that the handover involves transfer of three key

Maria Randmaa, RN, is a lecturer at the Faculty of Health and Occupational Studies, Department of Health and Caring Sciences, University of Gävle, Gävle, Sweden; an Intensive Care Nurse at the Department of Anaesthesia, County Council of Gävleborg, Sweden; and a PhD student at the Department of Public Health and Caring Sciences, Uppsala University, Uppsala, Sweden; Gunilla Mårtensson, PhD, RN, is a senior lecturer at the Faculty of Health and Occupational Studies, Department of Health and Caring Sciences, University of Gävle, Gävle, Sweden; and researcher at the Department of Public Health and Caring Sciences, Uppsala University, Uppsala, Sweden; Maria Engström, PhD, RN, is a senior lecturer at the Faculty of Health and Occupational Studies, Department of Health and Caring Sciences, University of Gävle, Gävle, Sweden; and a researcher and Associate Professor at the Department of Public Health and Caring Sciences, Uppsala University, Uppsala, Sweden; and Christine Leo Swenne, PhD, RN, is a clinical senior lecturer at the Department of Public Health and Caring Sciences, Uppsala University, Uppsala, Sweden.

Funding: This work was supported by the Faculty of Health and Occupational Studies, University of Gävle and it was also supported by the County Council Gävleborg. It was also supported by the Patient Insurance LÖF (Landstingens Ömsesidiga Försäkringsbolag) and the Swedish Society of Nursing (Svensk Sjuksköterskeförening), but these organizations had no role in the design and running of the study.

Conflict of interest: None to report.

Address correspondence to Maria Randmaa, Faculty of Health and Occupational Studies, University of Gävle, S-801 76 Gävle, Sweden; e-mail address: maaraa@hig.se.

1089-9472/$36.00
http://dx.doi.org/10.1016/j.jopan.2014.01.012

aspects, namely "(1) information, (2) responsibility and/or accountability, in (3) the context of teams and their work environments" (p. 272).[1] In the PACU, transfer of care places great demands on both delivering and receiving personnel, as the first postoperative period is a time when many physiological changes occur that may be serious and occur rapidly. For this reason, health care personnel need to keep a great deal of sometimes complex information in memory. Furthermore, the handover most often takes place in an environment that is event driven, time pressured, and with frequent distractions.[2] Despite this, there is still little research on the handovers at the PACU.

Handovers require straight, clear, and consistent communication and are important to guarantee quality, continuity, and safety of care.[3] Nevertheless, studies have revealed that omission of important information is quite common[4,5] and that communication breakdowns occur.[6] A study of surgical malpractice claims involving communication breakdowns found that such breakdowns were most often a result of failure between a surgical field and another caregiver and that almost all cases of poor communication occurred during oral communication between one sender and one receiver.[6] A study[7] of incident reports from six Danish hospitals showed that 52% were the result of communication errors, of which 86% were during handover. It is therefore essential that the handover include all information that is vital to the patient's continuing care and that the receiver remember vital information to ensure patient safety. This, in turn, emphasizes the importance of investigating what factors may influence receiver memory during handover.

The human brain has clear limits and Baddeley[8] described memory as a flow from the environment through sensory memory to short-term memory and then on to long-term memory. In sensory memory, visual or written information is kept and completely reproduced for a very short time. In short-term memory, information can be stored for a few seconds. In working memory, one can "keep things in mind" while complex tasks are performed. In long-term memory, information can be stored over a long period of time.[8] There is also a classification of memory known as retrospective memory and prospective memory. Retrospective memory includes the memory we have of events, people, and words that we experienced in the past and may contain a large amount of information. Prospective memory is the memory we have for things we should remember to do in the future without having to be reminded of them and often contains a small amount of information.[9] Prospective memory seems to depend on both long-term memory and working memory.[10] Li et al[11] suggested that interruption interferes with prospective memory; and in their systematic review, they concluded that interruption should be minimized in workplaces with high working memory demands.

However, despite existing knowledge of the negative consequences of poor handover, there is little evidence for what constitutes best practice.[12,13] Although there are studies dealing with postoperative handovers,[14] some are based on interviews dealing with the personnel's view of handover[15-18] and some also used observations in combination with interviews.[2,19,20] Most of the observational studies focusing on handovers have concerned homogenous-specific patient groups, such as pediatric care[21-23] and patients undergoing vascular and gastrointestinal surgical procedures.[4,24] Moreover, previous studies have mostly investigated handovers in the PACU between an anesthesiologist and a nurse, and studies have shown that there might be different professional views of handovers.[5]

Thus, to add to the research in this area, we found it important to also study handovers in PACUs between nurses and handovers regarding patients with different diagnoses. Furthermore, earlier observational studies[4,24] have used observational tools to measure the handover process. We considered it important to measure the handover process also using audiotape to register given information, remembered information, duration, and interruptions so as to avoid bias and increase reliability. Additionally, we were interested in how much the receiver of information would remember after the handover and what factors influence receivers' memory. Regarding memory, we found only one study[25] that has investigated how much the receiver remembered from a verbal handover. The latter study examined 18 handovers from ambulance crews to emergency department personnel, counting recorded remembered information sequences of information.[25] There is a need to examine the handover process[13] using a