

Patient safety during intrahospital transports in intensive care

Hazards, experiences and future measurements

Akademisk avhandling

Som för avläggande av filosofie doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentlig försvaras i hörsal Arvid Carlsson, Academicum Medicinargatan 3, Göteborg den 8 maj, klockan 13.00

Av Lina Bergman

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Avhandlingen baseras på följande delarbeten

- I. Bergman, L. M., Pettersson, M. E., Chaboyer, W. P., Carlström, E. D. & Ringdal, M. L. Safety Hazards During Intrahospital Transport: A Prospective Observational Study. *Critical Care Medicine* 2017;45(10): e1043-e1049. doi: 10.1097/CCM.0000000000002653.
- II. Bergman, L., Pettersson, M., Chaboyer, W., Carlström, E. & Ringdal, M. Improving quality and safety during intrahospital transport of critically ill patients: A critical incident study. *Australian Critical Care* 2020;33(1):12-19. doi: 10.1016/j.aucc.2018.12.003.
- III. Bergman, L., Pettersson, M., Chaboyer, W., Carlström, E. & Ringdal, M. In safe hands: Patients' experiences of intrahospital transport during intensive care. *Intensive & Critical Care Nursing* [In press]. doi: 10.1016/j.iccn.2020.102853.
- IV. Bergman, L., Chaboyer, W., Pettersson, M. & Ringdal, M. Development and initial psychometric testing of the intrahospital transport safety scale in intensive care. *Submitted*.

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Abstract

Patient safety is an attribute of the healthcare system that minimizes the incidence of adverse events (AEs), and that entails identifying the causes of harm and preventive strategies. Intrahospital transport (IHT) of patients in intensive care is a process associated with AEs and patient complications. Despite this, little is known about how contextual, organizational and human factors influence patient safety during the IHT process. The overall aim of this thesis was therefore to explore patient safety during the IHT process in intensive care.

An ethnographical study was conducted, including participant observations (Study I) and interviews with healthcare professionals and patients (Studies II and III). Furthermore, a cross-sectional study was undertaken to develop and evaluate a scale to measure patient safety during IHTs (Study IV).

The findings in this thesis show that the structure of the healthcare system influenced the IHT process. System deficiencies included lack of resources, insufficient transport equipment and poor hospital and workplace design. Teamwork during IHTs was characterized by high team member turnover, unclear team roles and, sometimes, limited communication and cooperation. Task performance was demanding and affected by disturbances and interruptions. Identified skills for safe IHT included knowledge of IHT-related tasks and teamwork, as well as anticipating and preparing for potential patient safety threats. Patients felt safe during the IHT because they trusted the staff to look after their interests. However, safety hazards were common, albeit seldom resulting in harm to patients. The development of the IHT safety scale resulted in a 24-item instrument. The study yielded evidence of construct validity and internal consistency reliability in a sample of Swedish healthcare practitioners.

The conclusion in this thesis is that IHTs of intensive care patients are hazardous, complex and demanding. Despite the existence of system deficiencies, adverse incidents (AIs) are often handled correctly; few patients thus seem to suffer AEs. The findings suggest that safety improvements should aim to (re)design systems that meet the requirements for performing transfers safely, and that the issue of how clinicians' resilience capacity can be supported should also be taken into consideration. The IHT safety scale could be a useful tool to better understand safety prerequisites and improve clinical practice.

Keywords: ethnography, human factors engineering, intensive care, instrument development, intrahospital transport, nursing, patient safety, patient transfers, safety hazards