Intensive and Critical Care Nursing (2015) 31, 155—164

Available online at www.sciencedirect.com

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journal homepage: www.elsevier.com/iccn

ORIGINAL ARTICLE

Information structure and organisation in change of shift reports: An observational study of nursing hand-offs in a Paediatric Intensive Care Unit

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Accepted 25 September 2014

KEYWORDS
Nurses;
Observational study;
Information organisation;
Change of shift report

Summary Patient hand-offs involve the exchange of critical information. Ineffective hand-offs can result in reduced patient safety by leading to wrong treatment, delayed diagnoses or other outcomes that can negatively affect the healthcare system. The objectives of this study were to uncover the structure of the information conveyed during patient hand-offs and look for principles characterising the organisation of the information. With an observational study approach, data was gathered during the morning and evening nursing change of shift hand-offs in a Paediatric Intensive Care Unit. Content analysis identified a common meta-structure used for information transfer that contained categories with varying degrees of information integration and the repetition of high consequence information. Differences were found in the organisation of the hand-off structures, and these varied as a function of nursing experience. The findings are discussed in terms of the potential benefits of computerised tools which utilise standardised structure for information transfer and the implications for future education and critical care skill acquisition.

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http://dx.doi.org/10.1016/j.iccn.2014.09.004
0964-3397/

Implications for Clinical Practice

- Nursing Change of shift reports in a PICU are conveyed in a structured manner reflecting shared understanding.
- The organization of the reports is characterized by information integration and redundancy of high-risk information.
- The quality of the organization is associated with nurse experience.
- The structure found here can be used to train and standardize shift handovers.
- The information structure can be implemented in computerized handover tools.

Introduction

Patient hand-off is the transfer of information, knowledge and responsibility for patient care from one healthcare professional to another. Executed effectively it provides continuity of care for the patient, and confidence to the sending and receiving clinicians that all key patient information has been conveyed (American College of Obstetricians and Gynecologists [ACOG] 2007; Coleman, 2003; Greenberg et al., 2007). Poor communication during hand-offs such as a failure to convey relevant information or conveying erroneous or ambiguous information creates a situation in which unsafe or insufficient care for the patient can result (Apker et al., 2010; Behara et al., 2005).

Evidence of breakdowns in hand-off communication and the impact on patient safety is growing. As will be reviewed below, research demonstrates that a high proportion of communication breakdowns occur during patient hand-off (Arora et al., 2005; Greenberg et al., 2007; Ong and Coiera, 2011). In a report released by the Australian Council for Safety and Quality in Health Care (2005), the harm produced by ineffective hand-offs included wrong treatment, delayed diagnoses, life threatening adverse events, increased length of hospital stay and other effects that negatively impact the healthcare system.

Impact of information transfer manner in hand-offs

With communication breakdown as the focus of patient safety issues, attention has been drawn to current hand-off practices in an attempt to identify where problems reside. While different methods of hand-offs (modes of information transfer) have been identified (Sexton et al., 2004), this study focused on synchronous, face-to-face communication.

There is evidence that face-to-face forms of communication remain the preferred method of hand-offs by nurses (Scovell, 2010; Streitenberger et al., 2006). Face-to-face hand-offs have the potential to mitigate information loss by providing the opportunity for interactive questioning (Patterson et al., 2004) and immediate acknowledgement of information reception (Coeira and Tombs, 1998). In addition, the availability of non-verbal information such as physical gestures or facial expressions (ACOG, 2007; Nemeth et al., 2005) add to the verbal communication. Finally, face-to-face hand-off provides the opportunity to build, maintain and facilitate organisational aspects and teamwork (Parker et al., 1992).

In contrast, there are criticisms of synchronous verbal communication as well. The criticism includes the content being task oriented (Radka, 2003) and retrospective (Clemlow, 2006; Davies and Priestly, 2006), and lacks novel content in the hand-off (Benson et al., 2007). Additional criticisms address the inclusion of irrelevant information, the inclusion of overly general assessments of patient conditions, incompleteness of exchange and interruptions (Dowding, 2001; Kihlgren et al., 1992; Kostopoulu and Shepard, 2000; Luikkonen, 1993; McMahon, 1990; Sherlock, 1995; Stople and Ottani, 2006). Taken together, research suggests that characteristics of the information conveyed in the hand-off are critical to an effective and safe hand-off.

The significance of information structure

The significance of the information structure in hand-offs and its criticality were studied and emphasised by many studies (Abraham et al., 2014; Brown, 2007; Ilan et al., 2012; Sandlin, 2007; Wilson, 2007). The increased awareness of the impact of information structure in hand-off communication on patient safety has led many to suggest developing and implementing standardisation and structured protocols in hand-off communication (Alvarado et al., 2006; Caruso, 2007; Greenberg et al., 2007; Riesenberg et al., 2010). A relatively recent systematic review of the postoperative handover literature (Segall et al., 2012) found that using structured checklists to guide communication to ensure information completeness, and using protocols to standardise the hand-off process, are among the strategies for a safe and effective hand-off.

There are challenges to conveying the information in a structured and well-organised manner. The receiving nurse must process the incoming information in some manner in order to adequately encode and utilise it during the shift (Dowding, 2001; Lamond, 2000). However, the transient, sometimes rapid nature of information transfer in hand-offs is an obstacle to understanding, retaining and recalling information. A systematic review on nursing hand-offs (Riesenberg et al., 2010) found that among the communication barriers to effective hand-offs are factors such as inaccurate recall of information, failure to convey essential information or understand the significance of some information and disorganised reports.

Classical studies in cognitive psychology can provide an account for why there are failures in understanding and recalling information and having a disorganised hand-off report. Those studies (e.g., Bower, 1970; Buschke, 1976; Gobet et al., 2001; Miller, 1956) found that when information is structured in categories it facilitates information encoding and recall. Thus, structuring hand-off reports in categories can have direct implications for reducing information loss in hand-offs. The question remains what this structure should be like, and what well-organised information means in the context of handing off patient care. It