A preliminary field study of patient flow management in a trauma center for designing information technology*

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ABSTRACT. We described the information transfer and communication activities of nurse coordinators (NCO), who lead patient flow management in a major trauma center. A field study was conducted to identify information sources and information tools used, leading purposes of communication, and the information types NCOs need for patient flow management. In addition to verbal communication, NCOs frequently used a combination of patient-oriented and process-oriented information tools.

INTRODUCTION. Effective patient flow management in acute care settings is an ever more important issue with the increasing demand for beds, reduced inpatient capacity, and increasing cost of care. In spite of its importance, only few studies exist describing techniques for patient flow management.1 The lack of knowledge about patient flow management hinders the development of well-designed information technology that has the potential to improve flow management.

METHODS. The study was conducted in a Level I trauma center (90 beds). Patient flow in this center is a collaborative process involving NCOs, physicians, charge nurses, unit nurses, and case managers. The primary responsibilities of NCOs are facilitating patient access and patient flow. They make several rounds (NCO rounds) individually on a regular basis throughout a shift to identify patients that can be discharged or transferred and to learn about staffing needs.

An observation instrument was developed and validated to collect data on patient flow management activities during NCO rounds. One observer collected data with the instrument while shadowing the NCO during NCO rounds on six different shifts for a total of 17 hours. To complement observation data, we conducted in-depth, semi-structured interviews with two NCOs using an interview guide and analyzed it using content analysis.

RESULTS. NCOs was engaged in information exchange and communication majority of time (75%) during NCO rounds. They communicated most frequently with the charge nurses of each unit (28%), followed by unit nurses (8%), and physicians (7%). The leading purposes of communication were to receive or give information about current and projected bed status, staffing needs, projected admissions, discharges, transfers, and the level of care required by each patient. The most frequently used information tools by NCOs included bed management bundle (BMB) (26%), phone (8%), electronic health record (EHR) (5%), unit white board (4%), nurse staffing schedule (4%), and text pager (2%). BMB is a paper-based, process-oriented tool developed by the NCOs and tailored to facilitate patient flow management. It consists of a clipboard holding computer print-outs of the patient census, the day’s surgery schedule, a handwritten list of possible admissions awaiting transfer to the center, and the physician’s on-call schedule. NCOs carry it with them all the time and annotate it based on the information they receive throughout the shift. The bundle is not a permanent document, at the end of each day it is destroyed.

Process-oriented information3 was collected or disseminated by the NCO during NCO rounds. This type of information necessary for managing patient flow effectively, is not necessarily required or appropriate to be officially documented. Care providers often create information tools (such as the BMB described in this paper) themselves to support their process-oriented information needs.2

DISCUSSION. In order to manage patient flow, care providers often create information tools themselves. New IT solutions for patient flow management should be designed by taking into account the informal, process-oriented information exchange and communication necessary for effective patient flow management. This paper reported the features of information tools used by NCOs and their roles in patient flow management. Findings can be used as a guide to develop new IT solutions for effective patient flow management. Future research is needed to understand information needs of others (charge nurse, physicians, and case manager) involved in patient flow management.

REFERENCES
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