



A two-site survey of clinicians to identify practices and preferences of intensive care unit transfers to general medical wards



Michael E. Detsky, MD ^{a,c,d,f,g,*}, Jonathan Ailon, MD ^{a,c,h}, Adina S. Weinerman, MD ^{a,c,i},
Andre C. Amaral, MD ^{a,c,e}, Chaim M. Bell, MD, PhD ^{a,b,c,d}

^a Faculty of Medicine, University of Toronto, Toronto, Ontario, Canada

^b Institute of Health Policy, Management and Evaluation, University of Toronto, Toronto, Ontario, Canada

^c Department of Medicine, University of Toronto, Toronto, Ontario, Canada

^d Department of Medicine, Mount Sinai Hospital, Toronto, Ontario, Canada

^e Department of Critical Care Medicine, Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada

^f Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA

^g Leonard Davis Institute, University of Pennsylvania, Philadelphia, PA

^h Department of Medicine, St Michael's Hospital, Toronto, Ontario, Canada

ⁱ Department of Medicine, Sunnybrook Health Sciences Center, Toronto, Ontario, Canada

ARTICLE INFO

Keywords:

Intensive care unit
General medical ward
Transfers
Process of care

ABSTRACT

Introduction: The transfer of patients from the intensive care unit (ICU) to the general medical ward is high risk for adverse events and health care provider dissatisfaction. We aimed to identify perceived practices, and what information is important to communicate during an ICU transfer.

Methods: This study used a self-administered questionnaire that surveyed physicians in 2 different hospitals. These physicians provide care in either the ICU or the general medical ward. Responses were evaluated with Likert scales and frequencies.

Results: A total of 121 physicians (54% response rate) completed the survey. Current practice most often includes written chart and telephone communication. Most providers (63.3%) believed that the current process is inadequate. Surprises are common (79% of respondents); and reported adverse events include medication errors (60.4%), aspiration (49.5%), and decreased level of consciousness requiring intervention (44.6%). The use of an ICU transfer tool is one potential mechanism of improving this process of care, and providers reported several items that may be useful.

Conclusion: Providers reported the current process of transferring patients from the ICU to the general medical ward as inadequate. We highlight data that physicians feel is important to communicate at the time of transfer.

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1. Introduction

Critically ill patients are complex and generate a large amount of clinical information during their stay in the intensive care unit (ICU) [1]. This clinical information includes ICU and non-ICU-related diagnoses, courses of treatment, procedures, and input from consulting subspecialties. If patients improve to the status that they no longer require ICU level care, a process is started to transfer the patient from the ICU to the ward. This process is referred to as a transfer. Transfers refer to the transition between different health care teams and/or environments. Examples of this could be transitioning from the ICU team to a general medical team in the same hospital or from the inpatient

setting to the outpatient setting with a new set of health care providers. Transfers could also refer to information exchange between clinicians taking responsibility for a patient but not changing services. An example of this would be residents covering patients during an overnight call shift. This is also referred in the literature as a handover [2].

Transfers are challenging to perform and associated with adverse events [3] and poor health care provider satisfaction [4]. Part of what makes these events challenging is that large amounts of information must be accurately and efficiently conveyed from a delivering team (eg, the ICU team) to a receiving team (eg, the general medical team). When a new clinician assumes care of a patient, they are at risk for gaps in knowledge about the patient they are responsible for. In one study looking at transfers of care for call coverage, trainees interviewed after their on-call shifts reported “surprises” or unexpected changes in care in 14% of 426 patient days [5]. In a study in the pediatric environment, trainees identified that they were not adequately prepared for 80% of events that occurred at night, 75% of which could have been anticipated and discussed during handover [6]. In studies looking at transfers between different teams, the adverse events identified include

Abbreviations: ICU, intensive care unit; REB, research ethics board.

* Corresponding author at: Mount Sinai Hospital 600 University Ave, Suite 433, Toronto, Ontario M5G 1X5, Canada. Tel.: +1 416 586 4800x2583.

E-mail addresses: mdetsky@mtsinai.on.ca (M.E. Detsky), ailonj@smh.ca (J. Ailon), weinerman@sunnybrook.ca (A.S. Weinerman), andrecarlos.amaral@sunnybrook.ca (A.C. Amaral), cbell@mtsinai.on.ca (C.M. Bell).

errors in diagnostic, treatment, and disposition errors [7,8] as well as inappropriate medication discontinuity [9] and/or poor patient satisfaction [10].

Although previous work has identified some of the pitfalls in current practices of transfers within the same team and transfers between different teams, there is a paucity of research focused specifically on transfers from the ICU to the general medical ward. Thus, we sought input from both intensivists and internists to provide information on the current practice of transfers from the ICU to the general medical ward. We aimed to identify the potential burden from transfers, and what information is perceived as essential to provide input into the development of an ICU transfer tool.

2. Materials and methods

2.1. Census sample

This study involves a sample of physicians who work in the ICU or general medical ward environments to answer questions about ICU transfers. A self-administered Web-based survey [11] was e-mailed to all physicians who work in either the ICU or general medical wards at 2 academic hospitals (St Michael's Hospital and Sunnybrook Health Sciences Centre) at the University of Toronto. The 2 hospitals in this study are distinct in their geographic location, patient population served, and case mix. St Michael's Hospital is located in the inner city downtown of Toronto, whereas Sunnybrook Health Sciences Centre is located in an affluent region in the middle of Toronto. The physicians in this sample includes both attending physicians as well as trainees (ie, residents or clinical fellows) who were on their rotations for these respective services and would have been exposed to patient transfers from the ICU to the general medical ward. The general medicine and ICU trainees were e-mailed the survey at the end of their clinical rotation. If a trainee had already been exposed to the survey, they were asked in the e-mail not to complete the survey a second time. This took place between July 2012 and April 2013. The survey was e-mailed to attending physicians in both general internal medicine and ICU in March 2013. Follow-up reminders were sent within 1 to 2 weeks of the initial e-mail. The research proposal, letter of introduction, and survey tool were approved by both the St Michael's Hospital and Sunnybrook Health Sciences Centre Research Ethics Boards.

2.2. Survey instrument and development

The questionnaire consists of both open-ended and closed-ended questions consisting of multiple domains. This includes questions on how the transfer process is conducted as well as the frequency and description of observed adverse events (examples included medication errors, respiratory failure, etc). We also solicit demographic data of the participants and information that clinicians feel is helpful to improve the transfer. A 7-point Likert scale (with 1 being useless, 4 being neutral, and 7 being essential) is used to assess attitudes and experiences toward the domains in question. The higher the average scores for each item, the more useful it is deemed by the respondents.

We follow published recommendations on survey design to optimize the applicability and utility of our survey [12]. To ensure utility, clarity, face, and content validity, our questionnaire was evaluated by pretesting 5 clinicians who work clinically in either the ICU or general medicine setting. These clinicians helped evaluate and refine the survey before distribution. Through this process, we were able to generate items for inclusion in the survey, followed by item reduction with further refinement and feedback.

2.3. Statistical analysis

This study incorporates descriptive statistics to analyze survey responses. Ordinal and categorical variables are summarized using

percentages and frequencies. Statistical analysis was conducted using statistical software Stata (StataCorp 2013, Stata Statistical Software: Release 13; StataCorp LP, College Station, TX). All surveys with at least 1 response to a question are included in the analysis.

3. Results

3.1. Baseline characteristics

The initial sample consisted of 31 ICU attending physicians, 51 general internal medicine attendings, 64 ICU trainees, and 79 general internal medicine trainees. Of the 225 surveys sent out, 121 were completed (54% response rate). There is a mixed distribution of clinician experience with variation in year since graduation and amount of time dedicated to clinical duties in an academic year among the respondents (Table 1).

3.2. Process of ICU transfer

Most of the physician-to-physician interaction is conducted through written chart notes and telephone communication with most respondents reporting "always" or "often" using written notes (74/117, 63.2%) (Table 2). Dictated notes in the chart, template form in the chart, in-person communication, or the option of no hand over were selected less often. Interestingly, 31.8% of respondents reported "often" or "sometimes" that no handover was given. When separated into self-reported specialties, the response of no handover given was consistent between the 2 groups with 27.9% (12/43) of ICU care providers and 33.9% (21/62) general medical ward care providers ($P = .51$). There was variation in the amount of time clinicians report for transfers. Over half (58/118, 49.2%) of respondents report that the transfer "almost always" or "often" takes more than 30 minutes to complete. When looking at physicians from the different clinical backgrounds, 8 of 43 of these responses are from ICU care providers, whereas 50 of 65 are from general internal medicine ($P < .0001$), suggesting that the receiving team spends more time than the delivering team in ICU transfers.

Most respondents (79%) report being surprised by elements of clinical information on transfer. The most common response is that surprises on transfer occurred 1 to 4 times over a clinical period of 2 months. The most common adverse events reported by physicians are medication errors and aspiration events (Table 3). Both ICU and general medical physicians report these adverse events. A large proportion of clinicians

Table 1
Demographics of respondents

	%
Year of graduation from medical school	
1990 and earlier	12.1
1991-2000	26.3
2001-2010	23.2
After 2011	38.4
MD current status	
ICU attending	13.2
ICU fellow	10.4
Resident on ICU rotation	17.0
Internal medicine attending	28.3
Resident on internal medicine rotation	30.2
Other	1.9
Amount of clinical work in weeks per year	
≤12	30.6
13-24	45.9
25-36	11.2
≥37	12.2
No. of transfers in a week of clinical duty	
0	0.0
1-4	30.5
5-8	34.3
9-12	15.2
>12	20.0

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