Lost in translation: challenges in handing over critical care

Andre Amaral, MD
Assistant Professor
Interdepartmental Division of Critical Care Medicine
University of Toronto
Sunnybrook Health Sciences Centre
Objectives

1. To understand the relevance of handovers for patient safety

3. To review possible threats to effective handovers

5. To think about simple things you can do to improve your
WHAT IS A HANDOVER?

1. Exchange of patient information:
   • Allow for continuity of care
   • Increased effectiveness
   • Increased safety of actions
   • Better clinical understanding

Cohen MD and Amaral AC Crit Care 2011 (in press)
ARE HANDOVERS A SAFETY
WE KNOW FATIGUE IS...

1. Libby Zion, 18: Oct. 4, 1984 with fever, agitation and jerking movements

2. A first-year intern was charged with her care

3. Meperidine to calm her

4. 107 degree fever, then fatal heart attack

5. Cause of death: serotonin syndrome
Libby’s father, Sidney Zion, wrote in The New York Times:

“You don’t need kindergarten to know that a resident working a 36-hour shift is in no condition to make any kind of judgment call.”
REFORMS FOLLOW LIBBY’S DEATH

1. Blue-ribbon commission report: New York State’s residency duty requirements

2. 2003: ACGME

3. 2010: revised ACGME

Effect of Reducing Interns’ Work Hours on Serious Medical Errors in Intensive Care Units

Christopher P. Landrigan, M.D., M.P.H., Jeffrey M. Rothschild, M.D., M.P.H.,

Table 3. Incidence of Serious Medical Errors.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Traditional Schedule</th>
<th>Intervention Schedule</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serious medical errors made by interns</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serious medical errors</td>
<td>176 (136.0)</td>
<td>91 (100.1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Preventable adverse events</td>
<td>27 (20.9)</td>
<td>15 (16.5)</td>
<td>0.21</td>
</tr>
<tr>
<td>Intercepted serious errors</td>
<td>91 (70.3)</td>
<td>50 (55.0)</td>
<td>0.02</td>
</tr>
<tr>
<td>Nonintercepted serious errors</td>
<td>58 (44.8)</td>
<td>26 (28.6)</td>
<td>&lt;0.001</td>
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<tr>
<td>no. of errors (rate/1000 patient-days)</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>All serious medical errors, unit-wide</td>
<td>250 (193.2)</td>
<td>144 (158.4)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>50 (38.6)</td>
<td>35 (38.5)</td>
<td>0.91</td>
</tr>
<tr>
<td></td>
<td>123 (95.1)</td>
<td>63 (69.3)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>77 (59.5)</td>
<td>46 (50.6)</td>
<td>0.14</td>
</tr>
</tbody>
</table>
To the Editor:

... However, having experienced the intervention schedule firsthand as intern subjects in the study, we have serious concerns about the authors' conclusions. Residents in the study worked traditional every-three-day on-call schedules and routinely worked extra hours to cover for the interns. Worried residents and attending physicians, aware that the interns on the intervention schedule were poorly informed, took a more active role in patient care, making the majority of decisions and more closely supervising the interns' actions. This hypervigilance may have strongly biased the study toward a positive result.
Awake and Informed
Jeffrey M. Drazen, M.D.

During a small part of this study, I served as attending physician on the ICU during both the traditional (control) schedule and the intervention schedule. Although the interns were more awake and made fewer serious mistakes during the intervention schedule, they often knew very little about the patients who had been admitted the night before they came on duty.
Effect of Reducing Interns’ Work Hours on Serious Medical Errors in Intensive Care Units

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<thead>
<tr>
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</tr>
<tr>
<td>Wrong Medication (Rate/1000 patient-days)</td>
<td>7.7</td>
<td>12.1</td>
</tr>
</tbody>
</table>
Effect of work-hours regulations on intensive care unit mortality in United States teaching hospitals

Meeta Prasad, MD; Theodore J. Iwashyna, MD, PhD; Jason D. Christie, MD, MSCE; Andrew A. Kramer, PhD; Jeffrey H. Silber, MD, PhD; Kevin G. Volpp, MD, PhD; Jeremy M. Kahn, MD, MS
Effect of work-hours regulations on intensive care unit mortality in United States teaching hospitals*  

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Temporal Trends in Rates of Patient Harm Resulting from Medical Care

Christopher P. Landrigan, M.D., M.P.H., Gareth J. Parry, Ph.D.,

A Internal Reviewers, All Harms

Harms per 1000 Patient-Days

2002 2003 2004 2005 2006 2007
MALPRACTICE CLAIMS…
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1. Failed handovers:
   • 28% of surgical errors (Gawande AA Surgery 2003)
   
   • 20% of ambulatory care errors (Gandhi TK Ann Intern Med 2006)
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2. What is worse: a “fumbled” handover or being fatigued?

4. Handovers 6x > fatigue in claims! (Singh Arch...
ARE HANDOVERS A SAFETY
1.23% of handovers may contain:
• “errors” (incorrect information)
• “surprises” (omitted information)

Philibert I Qual Saf Health Care 2009
1. 23% of handovers may contain:
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2. Trainees not prepared for 80% of nighttime events
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   • “surprises” (omitted information)
   Philibert I Qual Saf Health Care 2009

2. Trainees not prepared for 80% of night-time events
   • 75% of which could have been anticipated and discussed during handovers
   Borowitz SM Qual Saf Health Care 2008
<table>
<thead>
<tr>
<th>Variable</th>
<th>OR</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-covering</td>
<td>6.1</td>
<td>0.02</td>
</tr>
<tr>
<td>Apache II</td>
<td>1.2</td>
<td>&lt;0.001</td>
</tr>
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</table>
OBJECTIVE 1: TO UNDERSTAND HANDOVERS IN PATIENT SAFETY

1. Handovers are frequently seen as an important factor in adverse events...

3. Handovers may be more important than fatigue!
(1) Background clinical information
(2) Course of the acute illness
(3) To-dos / Tasks
(4) Uncertainty
(5) Anticipation of events
ELEMNTS OF A HANDOVER

(1) Background clinical information
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ELEMENTS OF A HANDOVER

Subjectiv Objectiv

(1) Background clinical information
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THREAT 1: “DEFAULT”

(1) Background clinical information
   “COPD and hypertension”
(2) Course of the acute illness

(3) Anticipation of events
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   “…septic shock from perforated ischemic bowel, who had acute lung injury and acute kidney injury. He has been extubated for the past 24 hours and is starting to diurese spontaneously”
(3) To-dos

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(3) **To-dos**
   “He needs to have a new catheter inserted to re-start dialysis tomorrow”

(4) **Uncertainty**
   “He was slightly hypotensive overnight. I think we might have made him hypovolemic with the ultrafiltration. He was on low dose of pressors this morning, but he is off pressors now after a fluid challenge. I am not sure whether he is becoming septic again”

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Default option
THE DEFAULT OPTION...
THREAT 2: OUR MENTAL
THREAT 2: OUR MENTAL

(1) Background clinical information
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(5) Anticipation of events
   “In case he gets worse again, I’d re-start antibiotics and arrange for an abdominal CT scan”
THREAT 2: OUR MENTAL
Next morning’s handover to the team:

“Mr MM was OK overnight, he is just on a very low-dose of levo….”

2. When CT was ordered in the next day he was found to have acalculous cholecystitis… Diagnosis/Rx were delayed by approximately 18 hrs!
1. 63 yo, elective pelvic exenteration for colorectal cancer

2. Low urine output and elevated lactate in the first 24 hrs of ICU, but resolved with fluid resuscitation

3. On transfer to the floor the ICU fellow thought the AXR looked a bit “different”, then called Surg Resident
THREAT 3: HIERARCHY
1. Surg resident: “Oh, it is not worrisome”
2. ICU Fellow: “OK, if you say so…”

Pt found to have a gastric volvulus and required re-operation
OBJECTIVE 2: TO REVIEW
OBJECTIVE 2: TO REVIEW

1. Handovers: information exchange
1. Handovers: information exchange
1. Handovers: information exchange

3. Multiple types of handovers
OBJECTIVE 2: TO REVIEW

1. Handovers: information exchange

3. Multiple types of handovers
Objective 2: To Review

1. Handovers: information exchange

3. Multiple types of handovers

5. It is not a simple task, as it involves several “subjective” components
OBJECTIVE 2: TO REVIEW

1. Handovers: information exchange

3. Multiple types of handovers

5. It is not a simple task, as it involves several “subjective” components

- It is a clinical skill that needs to be
1. When there is uncertainty, we “see” only what we have been trained to see.

3. Avoid “creating” diagnoses, there is no shame in saying “I don’t know what this patient has”
2. Mental models are the visualization of concepts and their relationship

3. Who is receiving handover from you?

4. Do they share mental models with you?
   • Yes – more efficient and safer handover
   • No – less efficient, BUT opportunity to increase knowledge about a patient

5. Do they already know the patients?

7. If you are receiving a handover, questions are NEEDED
3. Hierarchy may hinder discussion of differences in mental models

5. If you see a problem, don’t be afraid to voice it!
Objectives

1. To understand the relevance of handovers for patient safety

3. To review possible threats to effective handovers

5. To think about simple things you can do to improve your...
THANK YOU!

andrecarlos.amaral@sunnybrook.ca
Riesenber, Am J Med Qual 2009
### Telephone communication for resident on warfarin

#### Date:________ Time:________

**Originator of call:** I am calling about warfarin patient <resident name>, one of Dr. <MD name>'s patients at <nursing home>.

The issue I am calling about (select from the following options) is:

<table>
<thead>
<tr>
<th>Change in Condition</th>
<th>Fall without injury/Minor skin tear</th>
</tr>
</thead>
<tbody>
<tr>
<td>fall with potential injury</td>
<td>fall</td>
</tr>
<tr>
<td>skin tear with potential complication</td>
<td>no injury noted</td>
</tr>
<tr>
<td>fever</td>
<td>no bleeding/bruising</td>
</tr>
<tr>
<td>ANY bleeding or bruising</td>
<td>no skin tear</td>
</tr>
<tr>
<td>other injury</td>
<td>redness noted</td>
</tr>
<tr>
<td>other medication issue</td>
<td>no drainage</td>
</tr>
<tr>
<td>abnormal UA test results</td>
<td>size: apx ______ cm</td>
</tr>
<tr>
<td>abnormal chest Xray results</td>
<td></td>
</tr>
<tr>
<td>other, specify:</td>
<td></td>
</tr>
</tbody>
</table>

#### Last 2 INR test results

<table>
<thead>
<tr>
<th>INR Date</th>
<th>INR</th>
<th>Dosing Pattern</th>
<th>Current</th>
<th>mg</th>
<th>Date from</th>
<th>Date to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Indication for warfarin:**
- AFib
- DVT/PE
- MECHANICAL HEART VALVE
- OTHER

Other important medications the resident is taking (including past 3 days):
- Antibiotics:
  - 
- NSAIDs (e.g. ibuprofen, motrin, piroxicam, indocin, motocox, etc.):
- aspirin or Plavix (clopidogrel):

#### Situation

- No concerns
- I'm uncomfortable about this patient because: high INR, bleeding/bruising, other

Say what you think would be helpful or needs to be done, which might include:

- No new orders needed
- INR/Warfarin Recommendations
  - Tell me if the warfarin dose should be changed
  - Tell me when to repeat the INR
  - Is it 3 days? In 7 days? Other?
- Other Recommendations
  - Tell me whether to order an antibiotic
  - If so, should we adjust the warfarin dose?
  - When should we schedule the next INR test?
  - Tell me whether to order other tests
  - Should we send the resident to the emergency department?
  - When do you want to call again (or under what conditions)?

**Who responded:**________ Date:________Time:________

**Recommended Action**

**Based on nurse Assessment**

**ENTER ALL ORDERS DIRECTLY ONTO THE PHYSICIAN ORDER SHEET**
Randomized Trial of a Warfarin Communication Protocol for Nursing Homes: an SBAR-based Approach

Terry S. Field, DSc, Jennifer Tjia, MD, MSCE, Kathleen M. Mazor, EdD, Jennifer L. Donovan, PharmD, Abir O. Kanaan, PharmD, Leslie R. Harrold, MD, MPH, George Reed, PhD, Peter Doherty, BS, Ann Spenard, MSN, Jerry H. Gurwitz, MD

Table 3: Adverse Warfarin-related Events in Intervention and Control Nursing Homes

<table>
<thead>
<tr>
<th>Event Description</th>
<th>Intervention Nursing Homes</th>
<th>Control Nursing Homes</th>
<th>Rate Ratio</th>
<th>Adjusted Rate Ratio* (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preventable adverse warfarin-related event</td>
<td>41</td>
<td>42</td>
<td>0.95</td>
<td>0.87 (0.54-1.4)</td>
</tr>
<tr>
<td>Preventable serious, life-threatening or fatal warfarin-related event</td>
<td>7</td>
<td>11</td>
<td>0.62</td>
<td>0.50 (0.17-1.5)</td>
</tr>
<tr>
<td>Potential adverse warfarin-related event</td>
<td>82</td>
<td>101</td>
<td>0.79</td>
<td>0.77 (0.45-1.3)</td>
</tr>
</tbody>
</table>

CI = confidence interval.
*Adjusted for nursing home, abstractor, and resident’s age, sex, race, and Charlson comorbidity score.
# Retention of information by emergency department staff at ambulance handover: do standardised approaches work?

Rhiannon Talbot and Anthony Bleetman

doi: 10.1136/emj.2006.045906

<table>
<thead>
<tr>
<th></th>
<th>No Standardized Handover</th>
<th>Standardized Handover</th>
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<tbody>
<tr>
<td>Recall of Clinical Information</td>
<td>56.6%</td>
<td>49.2%</td>
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