Medication Administration in the 21\textsuperscript{st} Century: A Spoonful of Sugar or a Hard Pill to Swallow?

Presented by

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The graphic artistry in this presentation is the work of Stacy Heiner, BSN, Ashland, OR
Objectives

- Explain the complexity of “med administration”
- Examine the feasibility of reducing interruptions during med administration
1. An airplane ride
2. Turbulence in healthcare
3. Conducting an ethnography
4. Findings from an ethnography
   - Med admin
   - Interruptions
Welcome Aboard

- Boarding Process
- Turbulence
Boarding Process
Boarding Process

- Patients
  - Admissions
  - Discharges
  - Transfers

- Healthcare staff

- Nursing shifts
Boarding Process

Nursing Shifts

7A..................7P..........................7A
7A..........................11P
7A..................3P..................11P..............7A
7A..............1P........7P
9A 11A 1P

Jennings (in progress). Partial funding was provided by the National Institute of Nursing Research, grant number 5T32NR008856; Kalisch, et al. (2008). The effect of consistent nursing shifts on teamwork and continuity of care. JONA, 38, 132-137.
Turbulence

- **Outside the aircraft**
  - Take your seats
  - Fasten your seatbelts

- **Inside the hospital**
  - Care must continue
  - There are no seatbelts!
Studies of Turbulence (T)

- Salyer (1995): $\uparrow T$, $\downarrow$ communication
- Tillman (1997): $\uparrow T$ from Managed Care
- Boscoe (2007): $\uparrow T$, $\uparrow$ medication errors; patients felt less well cared for

Studies of Turbulence (T)

- AHRQ Patient Safety Handbook*
- Other signs
  - Noise
  - Equipment/supplies
  - Interruptions
  - Technology

Turbulence

- Environment/outcome connection → elusive*
- Progress in patient safety**: C+ → B-
- We measure what we know how to measure and that may not be what matters most***

A Postdoc Adventure*

Turbulence in the Healthcare Environment

*This work was funded by a National Institute of Nursing Research/National Institutes of Health Institutional Training Grant (5T32NR008856); Dr. Barbara Mark, Director; Dr. Margarete Sandelowski, Mentor.
An Ethnography

- Participant observation (3 hr blocks): me and my steno pad/noise dosimeter
- Formal interviews: me and my audiotape/paid transcriptionist
- Documents: me, informatics, hospital policies, and more
An Ethnography

Anticipated Participants

- Staff from a medical and surgical unit ($N = \sim 150$)
  - Nursing
  - Physicians
  - Unit clerks
  - Pharmacists
  - Transporters
  - RT/PT/TO
  - Social workers
  - Case managers

Patients—in scenes, not the target of inquiry
Actual Participants ($N = 577$)

- Bedside nurses $= 298$ ($N1 - N298$)
- Unit clerks $= 39$ ($U1 - U39$)
- Others $= 165$ ($O1 - O165$)
- Physicians $= 75$ ($P1 - P75$)
# Hours of Data Collection

**Total Study**

<table>
<thead>
<tr>
<th>Method</th>
<th>Hours</th>
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<td>Participant observation</td>
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<tr>
<td>Formal interviews</td>
<td>29 hrs</td>
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<td>Document review</td>
<td>TNTC</td>
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**Total**: $296^{+++}$ hrs

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**An Ethnography**
### Shadowing

#### UNIT

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<th>RN Experience</th>
<th>Medical</th>
<th>Surgical</th>
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<tr>
<td></td>
<td>Day Shift</td>
<td>Night Shift</td>
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<tr>
<td>&lt; 2 yrs</td>
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<td>&gt;3 yrs</td>
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<tr>
<td>LPN</td>
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An Ethnography
An Ethnography

The Gift that Keeps on Giving
I want to acknowledge and thank the staff who allowed me to capture their reality.
Findings

The Complexity of Med Admin*

- Temporal structure
- Demands
- Managing time
- Choosing the tools**

Interruptions***

- Stopping them
- Handling them

Background /Context

What IS Med Admin?

- Founded on the 5 (or 6) R’s*
- It’s about giving the drugs ordered by physicians and dispensed by pharmacists**

### Elements of Med Admin

<table>
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<tr>
<th>Study</th>
<th>Verify</th>
<th>Obtain</th>
<th>Prepare</th>
<th>Deliver</th>
<th>Give</th>
<th>Chart</th>
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Complexity of Med Administration

The Temporal Structure*

- Inseparable from other work
- Med schedule structured the shift
- Meds defined the day: good/bad
- Average number of scheduled doses
  - Medical unit: 25/pt/day + 2 prn
  - Surgical unit: 22/pt/day + 4 prn

Complexity of Med Administration

The Temporal Structure*

- Administration times for scheduled meds
  - Q4h (02, 06, 10, 14, 18, 22)
  - BID (10/22 unless diuretics)
  - QD (10 unless empty stomach—06, or labs—18)

- When meds are given
  - 25% @ 10:00
  - 17% @ 22:00
  - 58% during the rest of the day

The Temporal Structure*

- Unscheduled meds
  - PRNs—pain, nausea, itching
  - STATs—give within 30 minutes
- Unscheduled meds are interruptions
- Blood administration

Complexity of Med Administration

Institutional Demands*

- The Joint Commission (TJC)
- Laws (e.g., Controlled Substances Act)
- Private organizations (i.e., ISMP)
- National Fire Protection Association

Complexity of Med Administration

Institutional Demands*
- TJC--profiling

Complexity of Med Administration

Technical Device Demands*

- “Smart” IV pumps
- Handhelds
- Med admin devices
- Assessment tools
- Automated medication administration cabinets (AMDCs)
- Barcoded medication administration (BCMA)
- Patient controlled analgesia (PCA)
- Glucometers
- COWs
- Mobile phones

Technical Device Demands*

- Best of times
- Worst of times
  - “[BCMA] sensitized nurses to the medication schedule in a new way”**

Complexity of Med Administration

Patient Demands*

- Physical and mental capacity
- Preferences and requests
- Age and ability
  - Number and size of pills
  - Pill by pill
  - Crush meds/mix with applesauce

Complexity of Med Administration

Demands of the Physical Environment*

- Facility age
- Clear hallways
- Electrical outlets
- Number of med rooms
- Size of patient rooms

Complexity of Med Administration

Demands of medications*

- Routes
  - Parenteral (45%)
  - Oral (42%)
  - Enteral (4%)
- Reconstituting antibiotics
- Giving multiple antibiotics at the same time
- Hep-locking or plugging IVs

Complexity of Med Administration

Managing Time*

- Articulation work**
  - Invisible
  - Opposite of routine***
  - Keeps things on track
  - Taken for granted
  - Workarounds as a form of articulation work

Managing Time*

- Sequencing med administration**
  - No pattern
  - Giving meds “on time”
  - Crushed meds—at the end
  - Multiple abx—at the start
  - Reprioritizing***—overcoming operational failures

Managing Time*

- Clustering care*, **
  - Optimize time in patient’s room
  - Consolidate meds

Managing Time*

- Multi-tasking
  - Using mobile phones and...
  - Talking to people during med admin

Interruptions

Stopping them

OR

Handling them
Background/Context

Why Worry?

- Cognitive stacking *
- Reprioritizing **

- Poor outcomes (?) ***

Interruptions

Intervention Studies

- **Pape*→AHRQ innovation**
  - Control
  - Intervention A: vest
  - Intervention B: checklist
- **Pape**
  - Fewer distractions after signs posted
- **Relihan***
  - Pre: 27; post: 11

Interruptions

Intervention Studies (con’t)

- Kliger*—Quiet time

- Anthony**—No Interruption Zone
  - Pre: .35
  - Post: .21

The Feasibility of Interventions

- Stopping interruptions
  OR
- Handling interruptions
Interruptions

Handling interruptions*

- Expect them
- Care process is messy, not linear
- Positive features

*Jennings & Sandelowski (in progress).
Interruptions

Handling interruptions

- **Time management**
  - Sequencing med admin
  - Clustering care
  - Multi-tasking
  - Reprioritizing

- **Cognitive management**
  - Memory devices
  - Deep breathing
  - Choosing to stop or continue
  - Visual cues
Challenges in the 21st Century

- Clinicians
- Administrators
- Researchers
- Educators
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