Two Hospitals Collaborate to Reduce Medication Errors Using Human Factors Approaches

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Learning Objectives

1. Identify 12 categories of interruptions that affect nurses during medication administration
2. Identify 5 medication safety initiatives that succeed in reducing medication errors and decreasing interruptions
Human Factors

- Leading causes of medication errors
- Nurses are targets for interruptions
- Attention span depleted
- Nurses tend to allow people to interrupt
- Cannot tell who is the nurse and when giving meds
- Used airline safety paradigm
  - Pilots do not engage in conversation unrelated to the flight, below 10,000 ft.
  - Use checklists & teamwork
Purpose

The purpose of the study was:

1. To investigate the self-perceived extent of distractions and interruptions nurses routinely experience during medication administration
2. To survey nurses regarding the sources of those distractions and interruptions before and after specific interventions were in place
Methods

- Hospital A used: a quiet zone, education, STOP signs, procedure checklist, and nurses carrying red folders containing medication sheets as a indicator to not interrupt
- Hospital B used: a quiet zone, education, STOP signs, procedure checklist, and wearing of a fluorescent sash as a symbol not to interrupt
- Pre and post intervention nurses were surveyed using Psychdata via email about their perception of the severity and type of interruptions during medication administration
Preparation & Initiatives

- Pre-intervention survey via email
- Unit Champions recruited
- Education of staff members
  1. White laminated checklist cards for MedSafe protocol
  2. Other staff members should “field” phone calls and interruptions
  3. A quiet zone - each medication area marked with red tape
  4. Laminated “Do not interrupt” signs placed on units
  5. Nurse uses visible attire or symbol
Interruption Categories Surveyed Pre-post Intervention

1. MD, NP, PA interrupts
2. Staff members interrupt
3. Nsg student interrupts
4. Nsg faculty interrupts
5. I start a conversation
6. Conversation in area
7. Missing or wrong dose med
8. Loud noises in area distract
9. Emergency interrupts
10. Phone call interrupts
11. Visitor/family interrupts
12. Patient call light interrupts
Sample

- The sample (n = 236) included:
  - Females = 91% (n = 215); males = 9% (n = 21)
  - Aged 23-67 (mean = 42)
- Education levels were:
  - LVN (3%; n = 7)
  - ADN (35.6%; n = 84)
  - Diploma (7.2%; n = 17)
  - BSN (51.3%; n = 121)
  - MSN or other (3%; n = 7)
Hospital A
Sign posted
on med room
doors & over
medication
dispensing
areas

Do Not Interrupt Nurses
During Medication
Administration!
Avoid Conversation In This
Area!
MedSafe Checklist

- Place MedSafe sash on self.
- Verify all assigned patients meds using Care Connect Admin. Record (eMAR).
- **Do not engage in conversation not pertaining to meds. Do not allow interruptions or distractions. State “MedSafe protocol is being followed at present.”**
- Other staff “field” phone calls and interruptions for MedSafe nurse. Prioritize tasks.
- **Use 7 rights: right drug, right patient, right dose, right time, right route, right reason, right documentation.**
- Obtain med from Pyxis and verify: right drug, right patient, right dose, right time, right route. **Focus on med packets by looking closely at items being read. Do not open unit dose packets.**
- Administer meds to only one patient at a time. Take Computer/Workstation-On-Wheels and use barcode medication verification system at the bedside and verify name and DOB on patient’s armband.
- Verify pt ID name and DOB on armband. Ask pt to state name and DOB.
- Read med name aloud to patient while opening unit dose packet.
- **Correctly document medications** in Care Connect while at the bedside.
MedSafe Process

- Observations
- Reminders
- Dealing with interruptions
- Delegation of duties
- Not all interruptions were avoidable
- Continued to support use of sash
• The t-test for Hosp A showed sig decrease in conversation (p = .014) after five months
• ANOVA showed significant mean differences based on hospital setting; Hospital B had higher levels of interruptions (p < .001)
• While there was no change in medication errors with Hospital A, Hospital B reported a 49% decrease compared to the previous five months
• Both hospitals demonstrated mean decreases in most interruption categories
Reduction in Mean Interruptions by Category Hosp A as Reported In Survey

<table>
<thead>
<tr>
<th>Category</th>
<th>Pre intervention Mean Scores</th>
<th>Post intervention Mean Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff members interrupt</td>
<td>6.05</td>
<td>5.61</td>
</tr>
<tr>
<td>I start a conversation or talk</td>
<td>4.13</td>
<td>3.41</td>
</tr>
<tr>
<td>Conversation in area</td>
<td>6.73</td>
<td>5.32</td>
</tr>
<tr>
<td>Loud noises in the area</td>
<td>4.92</td>
<td>4.75</td>
</tr>
<tr>
<td>Emergency situation interrupts</td>
<td>2.72</td>
<td>2.45</td>
</tr>
</tbody>
</table>
Reduced Interruptions by Category Hosp B as Reported In Survey

<table>
<thead>
<tr>
<th>Category</th>
<th>Pre intervention Mean Scores</th>
<th>Post intervention Mean Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff members interrupt</td>
<td>7.11</td>
<td>6.38</td>
</tr>
<tr>
<td>Faculty interrupt</td>
<td>4.29</td>
<td>4.18</td>
</tr>
<tr>
<td>I start a conversation or talk</td>
<td>4.15</td>
<td>3.49</td>
</tr>
<tr>
<td>Loud noises in the area</td>
<td>6.19</td>
<td>5.95</td>
</tr>
<tr>
<td>Missing or wrong dose med</td>
<td>5.93</td>
<td>5.87</td>
</tr>
<tr>
<td>Urgent phone call(s) interrupts</td>
<td>7.56</td>
<td>7.47</td>
</tr>
<tr>
<td>Visitor/family interrupts</td>
<td>7.79</td>
<td>7.43</td>
</tr>
<tr>
<td>Patient call light interrupts</td>
<td>8.69</td>
<td>8.29</td>
</tr>
</tbody>
</table>
Hosp A
Issues Identified

- Vocera was ongoing interruption
- Most nurses readily accepted process
- Although CNO was supportive, some unit directors were not as consistent
- Nurses in special care areas felt that the process was not applicable to them
- Attach consistent use of MedSafe protocol to yearly evaluation
Hosp B
Issues Identified

- Some resistance to use of the yellow sash
- Reminded that sash offers additional cue not to interrupt once leaving area of STOP sign
- Concern about location of Pyxis in C Tower
Lessons Learned

- Transitioning to new practices takes time & patience
- Emotions change along with the change
- Must let go of old ways and take on new ways
- People tend to go back to old ways of doing things
- Maintain momentum
- Sustain the new practices

Process requires teamwork and celebrating successes!
How To Implement

• Step 1
  • Order the visible symbol for staff
  • Select start up units and start date
  • Develop a timeline for completion
  • Hang signs on each medication room door and above each Medication Machine

• Step 2
  • Educate nurses and others about process

• Step 3
  • Communicate the change throughout
  • Use tactful signs on hallway walls to inform visitors of the process
  • Add the information to patient admission packets
How to Begin

- On week 1, review the entire process at start of each shift
- Conduct at least 2 – 3 simulations

- Provide one-on-one training and observe nurses during 1st week to reinforce the process
- On weeks 2-4, review the entire process with every shift at least 1 time per week
- Monitor that the process sticks
Appropriate Use

- Visible symbol starts in the Med Room
- Use ONLY when giving meds
- Nurse is not interrupted while giving medications
International Focus

- Texas Health Presby Hospital Denton, TX
- Texas Health Presby Hospital Plano, TX
- NewYork-Presby Hospital
- University of Saint Francis Hosp, Indiana
- Children’s Hosp of Philadelphia
- Princeton Healthcare System Princeton, NJ
- St. Elizabeth’s, Beaumont, TX
- 32 Kaiser Hospitals, CA
- Joanna Briggs Institute, Queensland, Australia
- University National Hospital, Bogota Columbia
- St. Luke’s Woodlands, TX
- Methodist Hosp Houston
- Brackenridge Hosp Austin
- Seton NW Austin, TX
- St. James Hosp Dublin Ireland
- John’s Hopkins Hospital DC
- Changi General Hosp Singapore