Nursing Management Congress 2017
Interruptions in Clinical Practice
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Interruptions in Clinical Practice

The speaker has no conflicts of interest

Review of the Literature

Selected articles reviewed:
- ED specific articles without time limits
- Non-ED articles back to 2010
- Total of 40 articles reviewed
A Changing View of Interruptions

Traditional view of interruptions:
- Research focused on the impact of the interruption on task performance for the interrupted task
- Interrupted tasks more error prone
- To limit errors, the traditional approach was to employ blocking strategies (ignore the interruption and stay on task)
- Literature focused on education about the dangers of allowing yourself to be interrupted

Research focus broadened and new knowledge emerged:
- More recent studies looked at what happened to the interruption that was blocked
- Interruptions that were blocked frequently led to other errors or rework (e.g., RN not interrupted when the resident called back for necessary orders)
- Discovered that not all interruptions are bad

Definitions for Interruptions/Distractions

Interruption: Primary task is paused to:
- attend to secondary task (task switching)
- concurrently manage another task (multi-tasking)
- reject secondary task (blocking)
Definitions for Interruptions/Distractions

Distraction: Sensory input that captures attention while performing another task but doesn’t require task disruption:
- Doors opening in an OR
- Entry of another person into the medication room
- Email popup notices

Distractions are not covered in this session

Category of Interruptions

Good interruptions:
- Add value to work
- Leads to success (prevents errors)
- Knowledge sharing
- One study of 5,000 interruptions for Peds nurses found 11% resulted in a positive outcome

Bad interruptions:
- Detracts from value of work
- Leads to failure
- Frequently a result of poorly designed systems
Good & Bad Interruptions

<table>
<thead>
<tr>
<th>Good Interruptions</th>
<th>Bad Interruptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab calls when the K is 6 prior to the 10 am dose of KCl</td>
<td>Panic value which is actually an improvement for the pt</td>
</tr>
<tr>
<td>Consultant returning your call for urgently needed information</td>
<td>Consultant calling about info sent in Epic</td>
</tr>
<tr>
<td>V-tach monitor alarm</td>
<td>Nuisance alarm on monitor (no response required)</td>
</tr>
<tr>
<td>Asking clarifying questions during pt interview</td>
<td>Redirecting the conversation to meet practitioner goals</td>
</tr>
<tr>
<td>ICU calls to say bed is ready</td>
<td>ICU calls to say bed will be ready in two days</td>
</tr>
</tbody>
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Categories of Interruptions

Avoidable
- Task can be delayed
- System redesign can eliminate interruption

Unavoidable
- Immediate response required
- System design is effective

Categories of Interruptions

Predictable: Can be scheduled
Unpredictable: Occurs randomly

Need to consider carefully what is really unpredictable:
- Patient requests assistance to go to BR
- Place patients who need assistance to BR on toileting schedule
Factors Influencing Response to Interruptions
- Experience
- Task being performed
- Workload burden
- Fatigue
- Physical environment
- Volume of interruptions
- Urgency for return to primary task

Evidence for Interruptions: ED
- Interruptions per professional role:
  - Attending: 6.9/hour
  - R3 EM residents: 4.9/hour
  - Junior residents: 1.8/hour
  - Charge RN: 3.8/hour
  - Bedside nurse: 0.5/hour

Study excluded bedside communications

Evidence for Interruptions: ED
- Attending to attending collaboration to coordinate care and seek advice as a source of interruptions in ED
- Junior residents organized care through white board documentation and review
- Senior staff interrupted more frequently as they are viewed as knowledgeable sources of information (Charge RN and senior attending)
- Documentation is the most commonly interrupted task
- Communication gaps found between EMS and ED providers
Evidence for Interruptions: ED

Characteristics of ED nursing interruptions:
- Face to face communication
- Short bursts of frequent communication integral to workflow
- Charge nurse communication seen as hub for centralizing activities and information sharing

One study found case load volume in ED didn’t affect interruptions
Second study found that as the number of patients clinicians managed simultaneously rose so did the interruptions
Greeters and volunteers as a source on interruptions in ED settings

Evidence for Nursing Interruptions
Inpatient Units

Characteristics of nursing inpatient interruptions:
- Phone calls
- Call bells
- Patient requests
- Blood draws
- Sending patients to tests
- Admits/transfers and discharges
Evidence for Interruptions
What the evidence suggests about interruptions in practice:
- The workflow and work setting create unique challenges
- One size fits all solutions are probably doomed
- Adapting strategies to various care settings is still unexplored
- Many studies on interruptions for medication administration as opposed to the clinical setting

How do interruptions work?
Clinician is presented with an interruption alert: presentation of info that creates need to make decision about how to proceed
Clinician changes course to start new task creating an interruption lag: interval between stopping primary task and starting secondary task
What happens during the interruption lag is important. Do I attempt to finish a task or just drop everything?

How do interruptions work?
Clinician returns to the original task which constitutes a resumption lag: interval between start of secondary task and reorientation to primary task
The longer the resumption lag the more difficult it is to accurately resume the original task
When resuming original task if you need to ask "Now, where was I?" you are at risk for rework (repeating a step already performed) or for omitting a step with a consequent error
The Impact of Interruptions

Multi-tasking: Performing routine familiar tasks that don’t require conscious effort (performed in the subconscious); habits; hard-wired routines

Task switching: Diverting attention away from the one conscious task we are performing to another task that requires our attention

Normal cognitive functioning only allows the conscious mind to focus on one event at a time.
Tasks which require full cognitive attention can’t be shared with other tasks
When full cognitive capacity is expended interruptions will create the need for task switching
Avoid task switching at all costs – non-interruptible tasks

We are hardwired to perform multi-tasking; many procedures in healthcare require multi-tasking to achieve success (suctioning a patient and assessing the patient’s oxygenation status)
Task switching where the mind needs to consciously change the focus of our attention is highly error prone.
Lack of precision in terms has given multi-tasking a bad name as task switching goes largely unrecognized
Non-interruptible tasks
- Establishing a surgical airway during a code
- Adjusting the settings on an IV pump for medications
- Entering orders into the electronic record
- Triage assessment
- TPA dose calculation
- Order verification
- Chemotherapy admixture

Interruptible Subtasks
- Medication verification is non-interruptible
- Travel time to bedside with med will not create task switching (interruptible moment)
- ET Tube insertion – non-interruptible
- Taping the ET Tube – well suited to multi-tasking; interruptible task

The voice of the patient and family
Patient/family perspective about interruptions:
- Timely response of staff more important than waiting for your own care team to respond
- Prefer fewer contacts so do want same staff helping them
- Want to know that the person caring for them knows their story; gets tiring to have to tell same story over and over again
The voice of the patient and family

Patient/family perspective about interruptions:

- No interruption vests creates media backlash that patients are seen as bothering nurses
- Project abandoned with nursing outcry about safety degradation
- Patients don’t understand how they can be seen as interruption

Managing Interruptions

Four approaches to managing interruptions:

- Engaging: primary task is suspended and secondary task immediately engaged
- Multi-tasking: dividing attention between primary and secondary tasks; performed synchronously
- Mediation: Action that supports resumption of primary task- marking med checklist about where you left off
- Blocking: reject the secondary task

Managing Interruptions

Engaging: primary task is suspended and secondary task immediately engaged

- Engaging is an error prone process when it creates task switching
- Making the decision to attend to the interruption creates task switching
- Determine non-interruptible tasks and provide coverage for any interruptions (e.g. chemo zone)
Managing Interruptions

Multi-tasking: dividing attention between primary and secondary tasks; performed synchronously
- Experientially driven
- Effective strategy when one task doesn’t require full cognitive capacity
- Answering a question about a patient going to x-ray while changing the CVC dressing

Managing Interruptions

Mediation: Action that supports resumption of primary task - marking med checklist about where you left off
- Cognitive support to help resume task without repeating prior steps or omitting a step
- Indicate where you left off on the MAR med verification list
- On handwritten allergy list indicate the last allergy entered

Managing Interruptions

Blocking: reject the secondary task
- Desirable for non-interruptible tasks
- Undesirable if it is a good interruption (Neonatal intubation and oxygenation)
- When blocking action is taken to avoid unintended errors with the secondary task devise a back-up plan for managing the secondary task
System Redesign to manage interruptions

Reducing avoidable interruptions:
- Patient specific alarm parameters
- Floor stocking of frequently used drugs
- Clustering supplies by function
- Information desk for non-clinical inquiries (e.g., where is the cafeteria?)

Strategies for managing interruptions

Successful simulation strategies for managing non-interruptible tasks (not deployed in clinical setting)
- Clear Plexiglas booth for non-interruptible tasks (CPOE, medication verification)
- IV pole sensor that when hands are touching IV pump it turns on a red light at top of pole to indicate pump is being programmed
- Wearable lanyards that when RN pushes button lights up as red

Strategies for managing interruptions

Successful simulation strategies for managing non-interruptible tasks (not deployed in clinical setting)
- Timers for IV push chemo agents
- Speaking aloud
  - Improved accuracy of pump settings
  - Ineffective for patient identification
Strategies for managing interruptions

Successful simulation strategies for managing non-interruptible tasks (not deployed in clinical setting)

- Cueing tasks (memory prompts for where you left off for task switching)
  - Checklists
  - Reminder signage
- Standardized workflow (habit forming) – immediately take medication to the verification booth

Blocking strategies are found to be ineffective

- Zone of silence for CPOE
- Do not disturb vests for medication administration

Some reasons they are ineffective:

- Blocks good and bad interruptions
- Lack of system to redirect blocked interruptions
- Blocked interruptions may result in errors of omission as the interruption gets neglected

Design workflow to safely absorb interruptions:

- Cueing functions: tells you where you left off
- Identify subtasks where it’s safe to switch tasks
- Teach clinicians to distinguish between interruptible and non-interruptible tasks (experience driven)
Strategies for managing interruptions

- Provide back up coverage for non-interruptible tasks (e.g., Chemo zone)
- Identify tasks that should have an owner:
  - When it’s everybody’s job it’s nobody’s job:
  - Answering call bells, transport of patients to diagnostic tests, 10 minute EKG
  - Tasks with no ownership are frequent sources of interruptions

Understanding interruptions:

- What is your most frequent source of interruptions?
- One hospital eliminated call bells by 80%:
  - Toileting rounds
  - Blankets on all beds
  - Water pitcher rounds prior to high volume med times
  - Placing personal items within reach

What the science tells us about interruptions

- Communication saturated environment with maximal connectivity
- Full cognitive and social impact of interruptions poorly understood (studies examining personal interruptions couldn’t be located)
- Interruptions are inevitable and workflow needs to be designed for safely managing unavoidable ones
What the science tells us about interruptions

- Redesign systems to eliminate avoidable interruptions
- Distinguish bad interruptions from good ones
- Use blocking strategies wisely: redeploy the blocked interruption

What the science tells us about interruptions

- To reduce errors and the subsequent harm identify non-interruptible tasks and redesign workflow to redeploy interruptions
- Imaging set up – zone of silence
- Chemo zone – hand off of responsibilities
- IDT rounds – Designated call member
- ED handoffs – Staggered shift changes
- Care delivery model: Variable & Routine Rounders

What the science can’t answer

- Is there a tipping point for interruptions where tolerance diminishes and coping degrades?
- Some limited research shows high volume of interruptions increases blocking.
- Which multi-tasking behaviors result in positive outcomes?
- What strategies support human performance in an interruptive clinical environment?
- What strategies support error detection post interruption?
Interruptions in Clinical Practice

Questions