Nurses' Reactions to an Emergent Pediatric Educational Simulation

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Disclosures

Neither party has any conflict of interest to report.

Purpose

- The purpose of this study was to examine nurses' reaction to an emergency simulation exercise, specifically:
  - What went well,
  - What did not go well,
  - Their confidence level during simulation, and
  - Reasons why wrong orders are followed during an emergency situation.

Background

Involves 3 areas:

1. Pediatric resuscitation

2. Recognition of symptoms of deterioration

3. Use of simulation to evaluate

Pediatric Resuscitation

- Resuscitation of critically ill children has long been associated with poor survival

- Pediatric resuscitation requires a different mindset compared to an adult critically ill population

-Cheng, et al., 2012

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Symptoms of Deterioration

- Pediatric patients' symptoms during resuscitation vary from their adult counterparts and can often go unrecognized.

-Straka, et al., 2012

Use of Simulation

- Used to increase repetition and enhance competence before performing complex tasks
- Allows errors to be made in relative safety

-Chan et al., 2012

What is not known

- Nurses' responses in pediatric simulations
- Pediatric Nurses' views of simulations

The purpose of this study was to examine nurses' reaction to an emergency simulation exercise

Methods

Sample

- Analyzed videotapes of simulations (N = 10 groups; 43 nurses)
    - 5 groups of experienced (4 or more yrs.)
    - 5 groups of less experienced (3 or less yrs.)
- All inpatient units were represented, excluding ICUs and ED (n=10)
- Data reported by subgroup and not individual responses

Procedure

- IRB approval
- Taped 10 Staff Development Simulations
  - 18 month old child going into respiratory arrest
  - Wrong order was given during simulation
- Nurses asked during debriefing:
  - What went well
  - What did not go well
  - What are the reasons wrong orders might be followed

Data Extraction

- Two researchers watched videos independently

- Used form, developed for this study, to extract data

  - Form focused on behaviors/reactions related to research questions

- Percent agreement: 100%

Data Collection Form

Accuracy of Simulation	During Simulation					During Debriefing		
	Performed without prompting	Able to answer correctly	Did NOT perform correctly	Not able to answer	N/A	Able to answer correctly	Not able to answer	N/A
Calling of Code – prompt								
Clear Communication								
CPR – Prompt initiation								
CPR – O^2 Delivery								
CPR – Proper ratio								
CPR – Proper position								
Med Delivery – right dose								
Other:								

What went well:	What Didn't Go Well:

Nurses' Confidence Level (first simulation)	Reasons why Wrong Orders are Followed

Date of simulation		Simulation Details:	Weight given	
Number of Participants			Age	
Participants > 5 yrs of exp.			Ativan Dosage	
Reviewer's Initials			Other:	

Data Analysis

- Content Analysis for Open-ended Items <small>McLaughlin & Marascuilo's (1990)</small>
  - Each researcher independently marked units of analysis related to research question
    - Interrater reliability (percent agreement): 98%
  - One researcher developed broader categories in which to place units
  - Other researcher sorted units of analysis into categories
    - Interrater reliability (percent agreement): 98%

- To answer research questions
  - Frequencies and percentages
  - Crosstabs
    - Experienced vs. Less Experienced

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Results

Nurses Reactions to What Went Well During Simulation

Category	More Experienced (n = 5) n (%)	Less Experienced (n = 5) n (%)	Total (*N* = 10) n (%)
Catching medication errors	3 (23.1)	1 (7.7)	4 (30.8)
Rapid response to emergency	2 (15.4)	0	2 (15.4)
Communication between team members	2 (15.4)	0	2 (15.4)
Knowledge of equipment	1 (15.4)	0	1 (7.1)
General performance during simulation	0	2 (15.4)	2 (15.4)
Kept calm during simulation	0	1 (7.7)	1 (7.1)
Learned from prior simulation	0	1 (7.7)	1 (7.1)

Note: One of the groups had no response to this question.

Nurses Reactions to What Did Not Go Well During Simulation

Category	More Experienced (n = 5) n (%)	Less Experienced (n = 5) n (%)	Total (*N* = 10) n (%)
Lack of response to critical indicators/signs	3 (15.8)	1 (5.3)	4 (21.1)
CPR: wrong respiratory technique	2 (10.5)	3 (15.8)	5 (26.3)
Reliance on other health care professionals	2 (10.5)	0	2 (10.5)
Errors in assessment	1 (5.3)	0	1 (5.3)
CPR: wrong compression technique	1 (5.3)	1 (5.3)	2 (10.5)
Wrong medication/fluid administration	1 (5.3)	3 (15.8)	4 (21.1)
CPR: Lack of preparation	0	1 (5.3)	1 (5.3)

Reasons Why Wrong Orders are Followed

Category	More Experienced (n = 5) n (%)	Less Experienced (n = 5) n (%)	Total (N = 10) n (%)
Chaotic situation	3 (75.0)	5 (100.0)	8 (88.9)
Assumption/belief that person in charge is right	3 (75.0)	2 (40.0)	5 (55.6)
Fear	2 (50.0)	2 (40.0)	4 (44.4)
Inexperienced in situation	1 (25.0)	1 (20.0)	2 (22.2)
Uncertain of own knowledge	0	1 (20.0)	1 (11.1)

Nurses' Confidence Level During Simulation

Category	More Experienced (n = 5) n (%)	Less Experienced (n = 5) n (%)	Total (*N* = 10) n (%)
Having experience of simulations helps	2 (33.3)	0	2 (33.3)
Stress interferes with confidence	1 (16.7)	0	1 (16.7)
Lack of leadership within team affects confidence	1 (16.7)	0	1 (16.7)
General low confidence level	0	2 (33.3)	2 (33.3)

Note: Only half of the groups had responses to this question.

Observed Performance During Simulation

	More Experienced			Less Experienced		
	Correct w/o Prompt n (%)	Correct w/Prompt n (%)	Incorrect n (%)	Correct w/o Prompt n (%)	Correct w/ Prompt n (%)	Incorrect n (%)
Prompt initiation of CPR	5 (50.0)	0	0	5 (50.0)	0	0
Clear team communication	4 (40.0)	0	1 (10.0)	4 (40.0)	0	1 (10.0)
CPR: Proper positioning	4 (40.0)	0	1 (10.0)	4 (40.0)	0	1 (10.0)
Proper med/fluid delivery	4 (40.0)	1 (10.0)	0	2 (20.0)	1 (10.0)	1 (10.0)
Called code immediately	3 (30.0)	0	2 (20.0)	3 (30.0)	1 (10.0)	1 (10.0)
Prompt/correct delivery of O_2	3 (30.0)	1 (10.0)	1 (10.0)	4 (40.0)	0	1 (10.0)
CPR: Proper ratio	3 (30.0)	1 (10.0)	1 (10.0)	4 (40.0)	0	1 (10.0)
Proper patient assessment	3 (30.0)	2 (20.0)	0	4 (40.0)	1 (10.0)	0

Observed Performance During Debriefing

	More Experienced		Less Experienced	
	Answered Correctly n (%)	Answered Incorrectly n (%)	Answered Correctly n (%)	Answered Incorrectly n (%)
Prompt/correct delivery of O_2	5 (50.0)	0	5 (50.0)	0
CPR: Proper ratio	5 (50.0)	0	5 (50.0)	0
Call code immediately	5 (50.0)	0	5 (50.0)	0
Proper med/fluid delivery	5 (50.0)	0	4 (40.0)	1 (10.0)

Discussion

- First study to examine Pediatric Nurses Reactions/Performance

- Overall Nurses knew the right answers, but didn't necessarily reflect in performance

- Perceptions of chaos and assuming the person in charge is right may lead to errors in following wrong orders

- Limitations
  - Small sample
  - Group responses vs. individual responses

- Future Research
  - Replication with larger sample and individual responses
  - Performances and reactions in real emergencies

Questions