Do Simulation Roles Really Affect Clinical Decision-Making Accuracy in an Acute Care Scenario?

Kristen Zulkosky, PhD, RN, CNE (nursing – PA College of Health Sciences [PCHS])
Krista White, PhD, RN, CCRN-K, CNE (nursing – Georgetown University)
Amanda Price, PhD (psychology – PA College of Health Sciences [PCHS])
Jean Pretz, PhD (psychology – Elizabethtown College)

INACSL Conference
June 22-24, 2017
Washington, DC
International Nursing Association for Clinical Simulation & Learning is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center’s Commission on Accreditation.
Disclosures

Conflict of Interest

• Kristen Zulkosky reports no conflict of interest
• Krista White reports no conflict of interest
• Amanda Price reports no conflict of interest
• Jean Pretz reports no conflict of interest
• Julia Greenawalt (INACSL Conference Administrator & Nurse Planner) reports no conflict of interest
• Leann Horsley (INACSL Lead Nurse Planner) reports no conflict of interest

Successful Completion

• Attend 100% of session
• Complete online evaluation
Learning Outcomes

The learner will be able to:

- articulate the three phases of clinical decision making accuracy addressed in the study.
- discuss two key findings which resulted from the study.
- identify two implications for nursing education.

Making quality decisions is important
Background of Clinical Decision Making

• Cornerstone of professional nursing
• Quality patient care
• Positive patient outcomes (White, 2014)

• Clinical Decision Making (CDM) phases:
  • **Cue acquisition**
  • Relevancy
  • Plausible hypotheses
  • Diagnosis
  • Action

(Elstein et al., 1978)
Background of CDM (continued)

Simulation Roles

- **Active:**
  - Primary nurse
  - Education nurse
  - Medication nurse

- **Passive:**
  - Family member
  - Observers

Theoretical Framework

- **Nursing Education Simulation Framework**
  - Teacher factors
  - Student factors
  - Educational practices
  - Simulation design characteristics
  - Expected student outcomes

(Harder et al., 2013)

(Jeffries & Rogers, 2007)
Research Gap & Research Question

**Research Gap:** No studies have been conducted that compare CDM accuracy between active and passive roles within simulation.

****************************************************

**Research Question:** Are there differences in CDM accuracy among different roles in an acute care simulation scenario with fourth-semester ASN students?
Methods: Design

• Quantitative, mixed factorial design

• **Within subjects** factors were decision stopping point (SOB and rhythm change) and decision phase (cue acquisition, diagnosis, action)

• **Between subjects** factors were simulation roles (primary, auxiliary, family, observer)
Methods: Participants and Materials

• Participants
  • 120 fourth-semester students enrolled in weekday ASN program (92% female; 66% under age 30; 87% white; 68% with at least 6 months of healthcare experience)
  • Existing groups of 9-10 students participated as part of regular simulation lab day

• Role in simulation
  • Group members were randomly assigned to primary nurse, medication nurse, education nurse, family, or observer

• Standardized and scripted pre-brief with instructor
  • Pre-brief covered medications, potential complications, and shift change report
The Scenario: Post Open Heart (POD #2)

- Two distinct and intentional decision stopping points
  - **Stopping point #1**, SOB (a familiar situation)
    - Patient said, “It is getting a little hard to breathe, I cannot get a good breath.”
  - **Stopping point #2**, Rhythm change to Afib (a novel situation)
    - Patient said, “I just don’t feel right”....
    - If needed, patient prompted, “My chest feels funny” ..... “I’m a little dizzy.”

- Clinical decision making questions (2 minutes to respond to all at each stopping point)
  - **Cue acquisition**: “What are you noticing about the patient right now?”
  - **Diagnosis**: “What do you think is going on right now with the patient?”
  - **Action**: “What specific action(s) should the nurse take at this time?”
Methods: Data Collection Flow

Familiar – SOB

- "I can’t breathe right"
- Pause scenario
- Answer 3 questions
- After 2 minutes
- Resume scenario

Novel - AFib

- "I just don’t feel right."
- Pause scenario
- Answer 3 questions
- After 2 minutes
- Resume scenario
<table>
<thead>
<tr>
<th>Question</th>
<th>Right (1 point each)</th>
<th>Wrong (1 point each)</th>
<th>Neutral (zero)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1 and 2</strong></td>
<td>HOB is flat</td>
<td>Temp 99.8</td>
<td>Lung problem</td>
</tr>
<tr>
<td><strong>What are you observing?</strong></td>
<td>Says he is SOB</td>
<td>I don’t know</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Working to breath</td>
<td>Complications</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Has no O2 on</td>
<td>Abnormal vital signs</td>
<td></td>
</tr>
<tr>
<td><strong>What is wrong?</strong></td>
<td>Incision pain</td>
<td>Bleeding</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Anxiety attack</td>
<td>Chest tube occlusion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pulmonary embolus</td>
<td>Pericarditis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pleural effusion</td>
<td>Cardiac Tamponade</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pneumonia</td>
<td>Chest pain (cardiac)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Is not C &amp; DB</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>Put HOB up</td>
<td>Treat cardiac pain – nitro</td>
<td></td>
</tr>
<tr>
<td><strong>What actions to do?</strong></td>
<td>Admin O2 (per prn order)</td>
<td>Admin cardiac meds</td>
<td>Call doctor</td>
</tr>
<tr>
<td></td>
<td>Ask about pain – specifics</td>
<td>Obtain 12-lead EKG</td>
<td>Ask patient questions</td>
</tr>
<tr>
<td></td>
<td>Admin pain pill</td>
<td>Assess the chest tubes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assess lung sounds</td>
<td>Check sternotomy incision</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assess VS</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Obtain pulse Ox</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Give “huggie” pillow</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Methods: CDM Accuracy Scoring

• Scoring conducted by two doctorally prepared certified nurse educators who were blind to the participant role

• Scale from 1 (completely incorrect or unsafe), 2 (correct but vague or missing important information), 3 (correct but missing minor information), to 4 (correct and complete)

• Due to heterogeneity of variance and violation of normality assumption, scores were recoded as incorrect (1-2) or correct (3-4).

• Intraclass correlation coefficients (Polit & Beck, 2012) ranged from .81 to .98.
# Accuracy Scoring Sheet - Tally

## Scoring Legend

1 = Wrong, nothing of value, unsafe  
2 = Okay but too vague, too much missing  
3 = Got the key element, a bit of missing information  
4 = Right on, very complete  

## Stopping Point #1 & #2 – Krista White

### #1: Shortness of Breath  

<table>
<thead>
<tr>
<th>Student ID</th>
<th>SP1-A</th>
<th>SP1-B</th>
<th>SP1-C</th>
<th>SP2-A</th>
<th>SP2-B</th>
<th>SP2-C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cues</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### #2: Afib

<table>
<thead>
<tr>
<th>Student ID</th>
<th>SP1-A</th>
<th>SP1-B</th>
<th>SP1-C</th>
<th>SP2-A</th>
<th>SP2-B</th>
<th>SP2-C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Cues**  
**Diagnosis**  
**Action**
Results

CDM Accuracy by Situation and Question

** Statistically significant; p < 0.01
Results

CDM Accuracy By Role: SOB Situation

- **Cue acquisition**
  - Primary nurse: 0.9
  - Auxiliary nurse: 0.8
  - Family member: 0.7
  - Observer: 0.6

- **Diagnosis**
  - Primary nurse: 0.3
  - Auxiliary nurse: 0.4
  - Family member: 0.2
  - Observer: 0.1

- **Action**
  - Primary nurse: 0.5
  - Auxiliary nurse: 0.4
  - Family member: 0.3
  - Observer: 0.2
Results

CDM Accuracy By Role: AFib Situation

Cue acquisition
- Primary nurse
- Auxiliary nurse
- Family member
- Observer

Diagnosis

Action

* p = 0.046; + p = 0.06
Implications for Nursing Education & Practice

• Large clinical groups necessitate passive as well as active roles

• **Observer role** is beneficial, especially in novel situations
  - Less scrutiny, less stress, and more ability to collaborate

• **Family member role** is less beneficial, especially in novel situations
  - Instructed to remain “in-role, may not “think like a nurse”

Consider the intent or goal of the simulation when assigning roles.
Implications for Nursing Education & Practice

- **Active roles** in simulation are:
  - more engaged with the scenario
  - Under more scrutinized
  - more stressful overall
  - more like real-life practice

(Kaplan et al., 2012)

Ensure students experience both active and passive roles in simulation.
Strengths & Limitations

• **Strengths**
  - Scenario modified slightly to include two distinct stopping points
  - Congruence between in-room and out-of-room experience
  - Pre-brief was scripted for clinical faculty
  - Patient voice the same for ALL groups
  - Script for research team for consent and data collection
  - Met goal for target sample size
  - Randomly assigned to roles

• **Limitations**
  - Exactly timing of scenario pause may have varied
  - Students may have answered the 3 questions too briefly
  - Uneven numbers of students in different roles
Effect of Simulation Role on Clinical Decision-Making Accuracy

Kristen D. Zulkosky, PhD, RN, CNEa,*, Krista A. White, PhD, RN, CCRN-K, CNEb, Amanda L. Price, PhDc, Jean E. Pretz, Phdd

aDepartment-Nursing, Pennsylvania College of Health Sciences, Lancaster, PA 17601, USA
bDepartment-Nursing, Georgetown University, Washington, DC 20057, USA
cDepartment-General Education, Pennsylvania College of Health Sciences, Lancaster, PA 17601, USA
dDepartment-Psychology, Institution/University- Elizabethtown College, Elizabethtown, PA 17022, USA
References


Thank you for attending!
Any questions?

Kristen Zulkosky, PhD, RN, CNE
kdzulkos@pacollege.edu
Krista White, PhD, RN, CCRN-K, CNE
krista.white@georgetown.edu
Amanda Price, PhD
aprice2@PACollege.EDU
Jean Pretz, PhD
pretzj@etown.edu

Special thanks to our participants, the clinical instructors and the simulation lab staff at PA College.