A Shared Mental Model for High-Stakes Simulation Evaluation in Nursing Education

Vicki Schug PhD, RN, CNE, St. Catherine University, St. Paul, MN
Ann Holland, PhD, RN, Bethel University, Arden Hills, MN
Deborah Bambini PhD, RN, CNE, CHSE, ANEF, Grand Valley State University, Allendale, MI
Linda Blazovich DNP, RN, CNE, St. Catherine University, St. Paul, MN
Dorie Fritz MSN, RN, Normandale Community College, Bloomington, MN

Disclosures

This study/project was supported in part by a grant from the National League for Nursing, Washington DC.

Objectives

- Identify challenges with assuring reliability in high stakes simulation evaluation.

- Discuss the evaluation of a simulation performance component using shared mental model agreements.

- Recognize the benefits of using a shared mental model in high stakes simulation evaluation.

Conceptual Framework

▶ Shared Mental Model:

▶ Individually held knowledge structures that help team members function collaboratively in their environments and are comprised of four attributes: content, similarity, accuracy and dynamics (McComb & Simpson, 2014).

Creighton Competency Evaluation Instrument (CCEI)

Simulation Video #		Scoring Options	
Assigned Participant #		0 = Does not demonstrate competency	
Date:		1 = Demonstrates competency	
		All NA options have been identified. Do NOT use this score.	

ASSESSMENT	Criteria for Score of 1	Score	Comments
Obtains Pertinent Data	**Vital signs:** takes BP, pulse, pain; **Mental status:** oriented to time, place, person; **Neurovascular:** p on correct (R) leg plus one additional assessment. **Dressing:** at incision site.		
Performs Follow-Up Assessments as Needed	Recheck mental status		
Assesses the Environment in an Orderly Manner	Notices patient position and corrects before othe assessments/interventions		
COMMUNICATION			
Communicates Effectively with Intra/Interprofessional Team (TeamSTEPPS, SBAR, Written Read Back Order)	Provides organized report to provider or other ca member with minimal prompting		
Communicates Effectively with Patient and Significant Other (verbal, nonverbal, teaching)	Communication with patient and daughter is acc active listening demonstrated		
Documents Clearly, Concisely, & Accurately	NA		
Responds to Abnormal Findings Appropriately	Calls provider to report change in mental status a attempts to reorient patient		
Promotes Professionalism	Responds to confused patient respectfully		
CLINICAL JUDGMENT			
Interprets Vital Signs (T, P, R, BP, Pain)	Reports or takes action to address abnormal vita		
Interprets Lab Results	NA		
Interprets Subjective/Objective Data (recognizes relevant from irrelevant data)	Responds to changes in mental status and patien complaint of pain		
Prioritizes Appropriately	Safety issues first (repositions) then mental statu		
Performs Evidence Based Interventions	One intervention required. Examples: Uses alter restraints, offers bedpan, repositions, uses pillow leg in alignment, ice, comfort measures, distracti		

PATIENT SAFETY		
Uses Patient Identifiers	Positively identifies patient using name band and one other identifier	
Utilizes Standardized Practices and Precautions Including Hand Washing	Hand hygiene before & after patient care; gloves when in contact with body fluids	
Administers Medications Safely	Does not have to administer med. Must consult provider regarding pain med before administration. If med IS administered, must follow safe administration guidelines	
Manages Technology and Equipment	Uses equipment correctly. For example: bedpan, BP cuff, SPO2, incentive spirometer, stethoscope(to skin surface not gown)	
Performs Procedures Correctly	Repositions patient in straight alignment; maintains abduction of R leg	
Reflects on Potential Hazards and Errors	NA	N

Do you consider this student **competent to practice nursing?** Yes or No

Identify 2 key elements in his/her performance that supports this conclusion.

Clinical competency definition for the purposes of this study: The ability to "observe and gather information, recognize deviations from expected patterns, prioritize data, make sense of data, maintain a professional response demeanor, provide clear communication, execute effective interventions, perform nursing skills correctly, evaluate nursing interventions, and self-reflect for performance improvement within a culture of safety" (Hayden, Jeffries, Kardong-Edgren, & Spector, 2011).

ASSESSMENT	Criteria for Score of 1
Obtains Pertinent Data	**Vital signs:** takes BP, pulse, pain; **Mental status:** alert & oriented to time, place, person; **Neurovascular:** pedal pulse on correct (R) leg plus one additional assessment; **Dressing:** at incision site.
Performs Follow-Up Assessments as Needed	Recheck mental status
Assesses the Environment in an O	Notices patient position and corrects before other assessments/interventions

<u>Assessment</u>

Obtains Pertinent Data:

- All listed assessments must be performed. <u>If the student misses only one item, the score is a 0</u>.
- Assessments don't count if they are performed because of MD or charge nurse prompting.
- Performs Follow-up Assessments as Needed: The student must reassess at least one orientation item (person, place, time) at a distinctly different time than the initial assessment to earn a 1.

Patient Safety

Utilizes Standardized Practices and precautions including Hand Washing:
- Don't penalize the student for what we can't see, for instance if the student never leaves the room, don't penalize for not washing/foaming out.
- Gloves should be worn when assessing the dressing and if placing the patient on the bedpan.
- The student doesn't have to foam when moving from the patient to items in the room such as the computer or phone. The student must foam before applying gloves. A strict interpretation of the criterion statement seems to require it.

PATIENT SAFETY		
Uses Patient Identifiers		Positively identifies patient using name band and one other identifier
Utilizes Standardized Practices and Precautions Including Hand Washing		Hand hygiene before & after patient care; gloves when in contact with body fluids
Administers Medications Safely		Does not have to administer med. Must consult provider regarding pain med before administration. If med IS administered, must follow safe administration guidelines
Manages Technology and Equipment		Uses equipment correctly. For example: bedpan, BP cuff, SPO2, incentive spirometer, stethoscope(to skin surface not gown)
Performs Procedures Correctly		Repositions patient in straight alignment; maintains abduction of R leg
Reflects on Potential Hazards and Errors		NA

Analysis

- Descriptors of competency
- "Do you consider this student competent to practice nursing? Yes or No"

Definitions
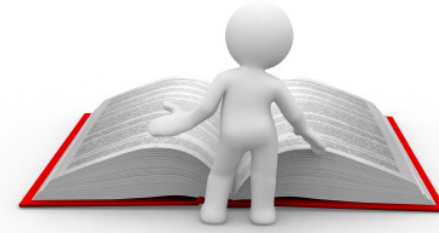
- Clinical competence:
  - the ability to "**observe** and **gather** information, **recognize** deviations from expected patterns, **prioritize** data, make sense of data, maintain a **professional** response **demeanor**, provide clear **communication**, execute effective **interventions**, **perform** nursing skills correctly, **evaluate** nursing interventions, and s**elf-reflect** for performance improvement within a culture of safety" (Hayden, Jeffries, Kardong-Edgren & Spector, 2011).

Intra-rater & Inter-rater Reliability on Yes/No Competency

Inter-rater Reliability: Kappa for Yes/No decision		
Video	**Intervention**	**Control**
1	.298	-.007
4	.268	1.00
6	.211	.750
11	.029	.088
19	.010	.150
28	-.053	-.009

Intra-rater Reliability: Kappa for Yes/No decisions		
Video	**Intervention**	**Control**
1	.826	.675
4	.852	1.00
6	.875	.636
11	.876	.650
19	.897	1.00
28	.894	.430

Qualitative Results:
Competency Yes/No rationale results

▶ While the Total Score ICC indicated strong agreement among faculty regarding the students' performances, when asked to judge the students' overall competency, agreement was less consistent.

▪ For example, for video 4, 100% (n=20) of the control group answered 'no' while 82% (n=22) of the intervention group answered 'no'.

▶ **"Safety"** related to skills and assessment was the most often cited theme among the comments from faculty as to why they judged 'yes' or 'no'. However their comments often contradicted their "judgment" and contradicted the shared mental model agreement.

Qualitative Results: Competency Yes/No Rationale Results

- Example -Faculty who selected 'yes' for the same student video also made the following comments:

"although she did not wash her hands initially or wear gloves while touching the dressing, she is still overall safe"

"I wasn't impressed with her not using hand hygiene or two identifiers, but I feel that those are minor compared to pain, confusion, and positioning."

""...had some major issues regarding infection control"

1) Did not complete key assessments, 2) Moved legs out of alignment to reposition patient in bed, 3) Did not observe standards of patient safety by identifying patient, gloving to assess the wound and put patient on and off the bedpan."

"Did not gather all the necessary information--VS-- to make informed decision. Did not recognize or act upon change in mental status. Two concerns--asking if patient had AZ or dementia. This seemed presumptuous. Completely misunderstood daughter's response and the need for restraints."

Qualitative Results:
Competency Yes/No rationale results

- Consensus about what "competent" means
  - Objective vs "feelings" about the student
  - Inner conflict?
  - Influenced by personality characteristics?
- We want to say yes, did we agree to the SMM but then didn't follow?
- This is a more global assessment – not specific acts
- Lack of confidence about the decision

Qualitative Results:
Competency Yes/No rationale results

- Comparing against others rather than the qualities/ behaviors of "competent"?
  - For example, "While this student missed some critical things - her care gave me a stronger sense that she had confidence and knew what she was doing."

- "Safety" related to skills and assessment was the most often cited theme among the comments from faculty as to why they judged 'yes' or 'no'. However their comments often contradicted their "judgment".

Conclusions

- Achieving agreement about a complex concept like competence (yes/no decision) may be more difficult than awarding scores on a structured tool.

- Ongoing team efforts to achieve a SMM are needed to achieve a consistent and reliable judgment of competence.

- Evaluators may benefit from reflecting on the effect of their personality characteristics on student evaluation.

- Providing participants with a video recorded "model" evaluation was a useful method to initiate a SMM.

Implications for Nursing Education

- A shared mental model would enable faculty to have a more consistent and standard approach for student assessment (Boulet, Jeffries, Hatala, Korndorffer, Feinstein, & Roche, 2011; Kardong-Edgren, et al., 2017).

- When a SMM is formulated in the context of subjective evaluation, faculty have a clearer understanding of definitions and criteria, and can apply that SMM towards student evaluations in a fair and equitable manner that allows for more consistent evaluations (Kardong-Edgren et al., 2017).

- More work to do….
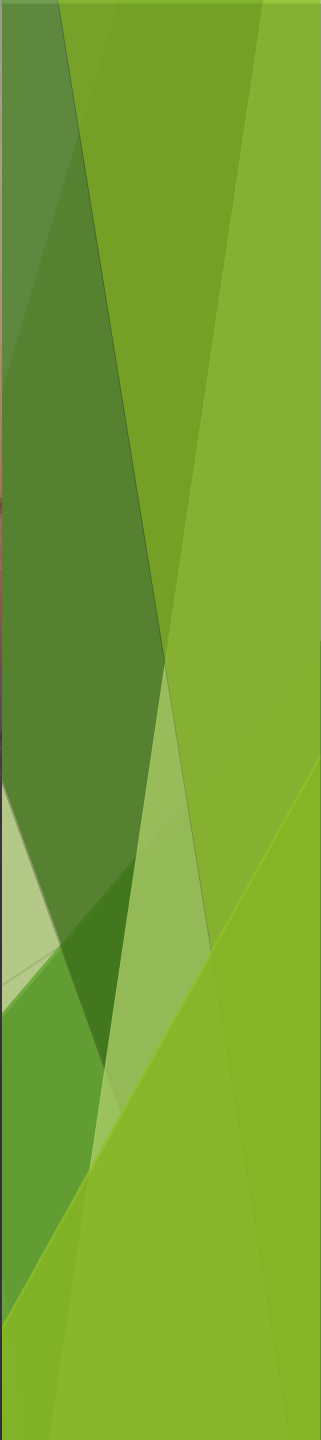
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