



Fostering Clinical Decision-Making Using Screen-Based Simulation Aligned with the NCSEBN Clinical Judgment Measurement Model

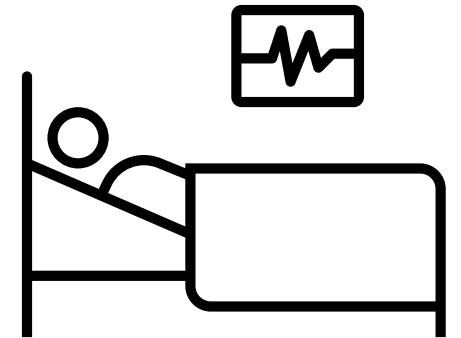
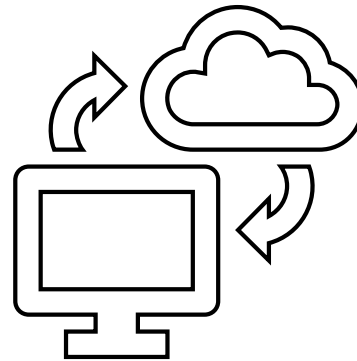
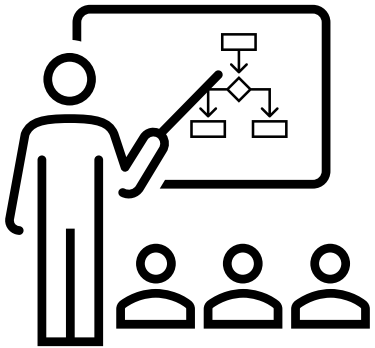
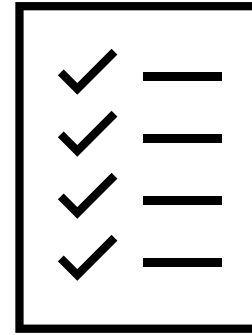
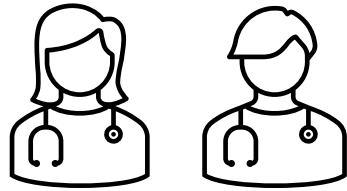


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Conflicts of Interest and Disclosures

Student and faculty access to the Sentinel U[®] Prioritization of Care SBS products were provided in-kind as part of a Sentinel U[®] Nursing Simulation Research Grant (SUNSRG).





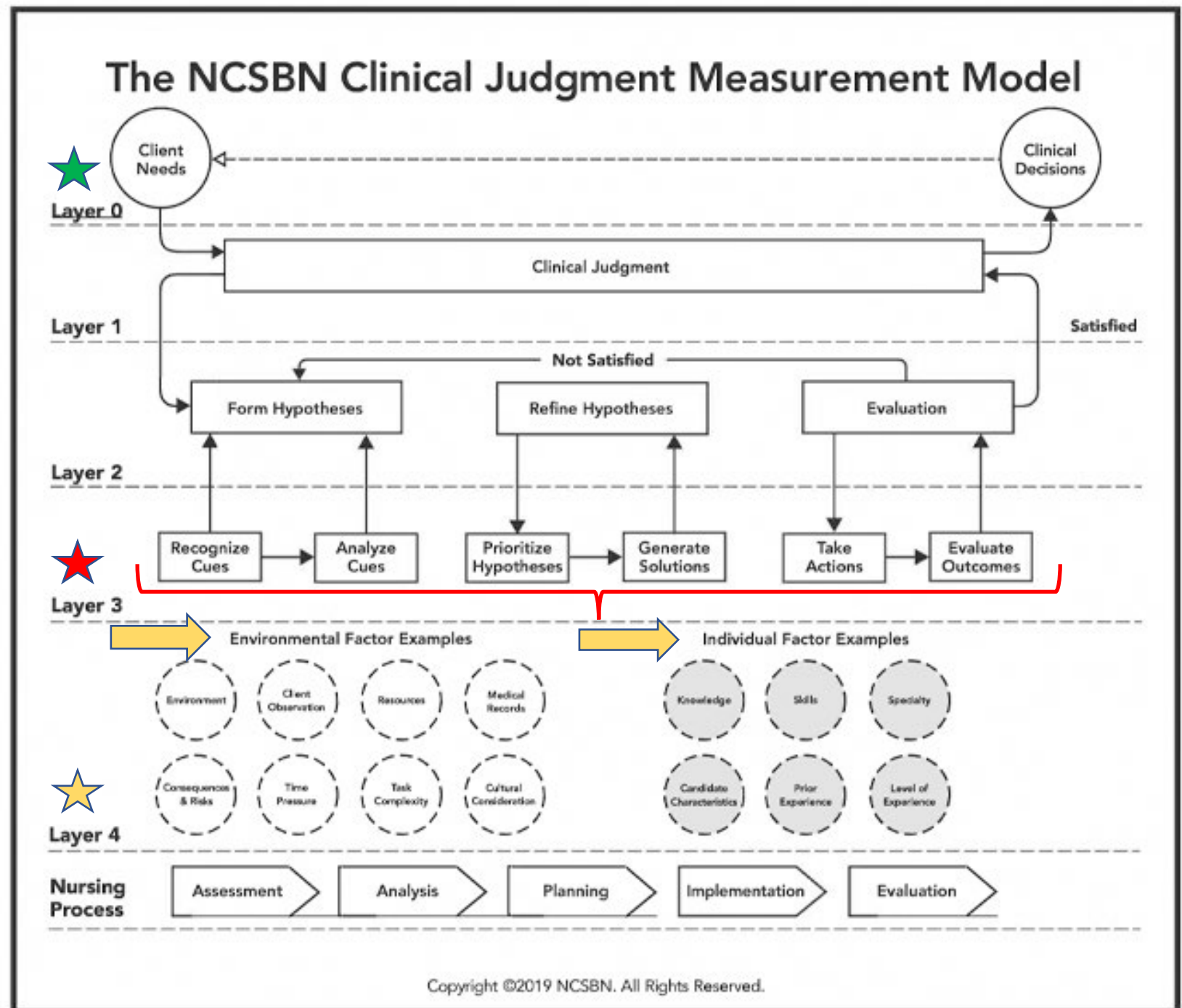
Background

Purpose

To determine if commercially designed SBS can be used to foster clinical judgment development in alignment with the NCSBN CJMM in prelicensure nursing students to help bridge gaps in the transition to professional practice



Conceptual Framework



Sentinel U[®] POC Specialty SBS

The image displays three screenshots of the Sentinel U[®] POC Specialty SBS interface, illustrating the workflow for patient care.

Level of Care Selection (0% Completed): This screen features an "Inquiry" section with prompts: "Tell me about what brought you to the hospital (Reason for seeking care)", "Tell me about your medical history.", "What medications are you taking?", and "Tell me about your living environment (Home Assessment)". A central video feed shows a virtual patient. To the right, a "Basic Information" section includes an "Update" button and a text area for "Enter any notes about your recommendations here...". Below this is an "Additional Notes" section with a prompt "Enter any additional notes about the patient here...".

Patient Prioritization (12% Completed): This screen displays a list of three patients for prioritization:

Rank	Name	Preliminary Diagnosis	Gender	Age
1	Hasina Gutema	Necrotizing Cellulitis and Fasciitis	Female	65
2	Akako Ryu	Seizure	Female	65
3	Anna Lupe	Pancreatitis	Female	74

Each patient entry includes a small profile picture and up/down arrows for re-ranking. To the right, a "Basic Information" section for the selected patient (Hasina Gutema) shows "Height: 5 ft (154.9 cm)" and "Weight: 202 lbs (91 kg)". Below this, "Vital Signs" are displayed: "Pain", "Temperature", "Oxygen Saturation", and "Heart Rate".

Intervention Selection and Prioritization (25% Completed): This screen shows "Intervention Selection" with a list of tasks:

- ☒ Remove the dressing while assessing the skin at the point of catheter entry.
- ☒ Require the patient to lie flat for 30 minutes
- ☐ Apply firm, direct pressure for 15 minutes following removal.
- ☒ After the catheter is removed, measure the circumference of both arms.
- ☒ Encourage the patient to bear down during removal of the catheter.

Below the list is a "Submit" button. To the right, a "Basic Information" section for the selected patient (Preston Shiver) shows "Height: 5 ft. 6 in. (167.6 cm)" and "Weight: 155 lbs. (70 kg)". Below this, "Vital Signs" are displayed: "Pain", "Temperature", "Oxygen Saturation", and "Heart Rate".

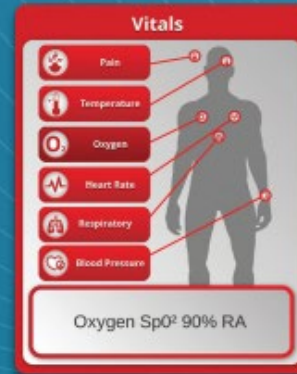
Each virtual clinical encounter is managed by a nurse educator. The interface includes a "Save & Exit" button at the bottom right of each screen.

chart observations, and determine the patient's level of care with rationale.

(Sentinel U[®], n.d.)

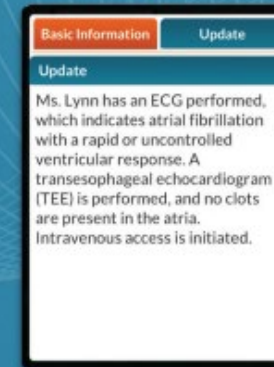
Sentinel U[®] POC Specialty SBS

Recognize Cues



Learners are prepared to **recognize cues** by observing vital signs.

Analyze Cues



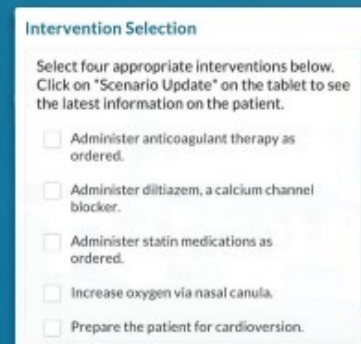
Learners must **analyze cues** found within the patients' health update.

Prioritize Hypotheses



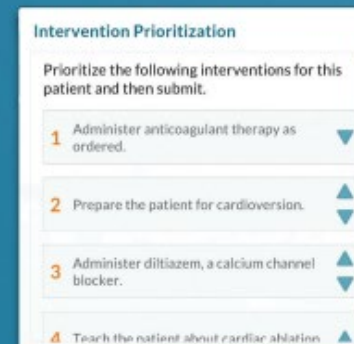
Learners use their clinical judgement to **prioritize hypotheses** on which patients' care to prioritize.

Generate Solutions



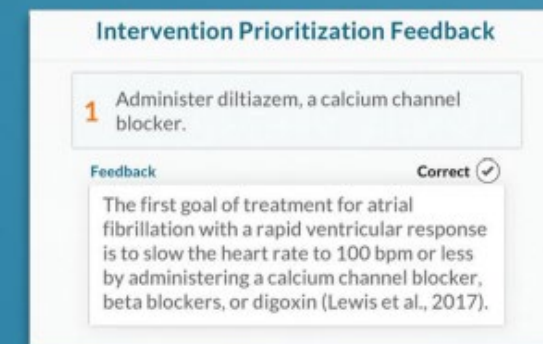
Learners make clinical decisions and **generate solutions** related to patient care.

Take Action



Learners identify priority of health interventions to successfully **take action**.

Evaluate Outcomes



Following their interventions, learners examine efficacy of treatment to **evaluate outcomes**.

Learners evaluate achievement of outcomes in EMPOWER[™] Debrief.

(Sentinel U[®], n.d.)

Research Question

Do prelicensure nursing students demonstrate increased simulation scores across Layer 3 elements of the NCSBN CJMM after completing targeted commercially developed screen-based prioritization of care simulations?

Methods

Intervention

- Sentinel U[®] Prioritization of Care Screen-Based Simulations Aligned with NCSBN CJMM
 - Adult Medical (Week 4)
 - Geriatric (Week 9)

Sample

- Junior-level prelicensure nursing students enrolled in first adult medical-surgical course
- $n = 68$

Measures

- Level of Care (Recognize & Analyze Cues)
- Patient Prioritization (Prioritize Hypotheses)
- Intervention Selection (Generate Solutions)
- Intervention Prioritization (Take Action)

Data Analysis

- Skewness & Kurtosis
- Descriptive Statistics
- Paired t -tests
- Cohen's d

Results

t-test Results Comparing Mean of the Difference in Student Performance Between Medical and Geriatric SBS

	CJMM Alignment	<i>M</i> Difference	Two-sided <i>p</i>	Cohen's <i>d</i>	Interpretation
Simulation Completion Time (Minutes)	N/A	-0:31	< .001	-0.763	Completed faster
Level of Care Selection (# Correct/10)	Recognize & Analyze Cues	-0.046	.063	-0.229	Decreased score
Patient Prioritization (# Correct/10)	Prioritize Hypotheses	-0.137	.001	-0.440	Decreased score
Intervention Selection (# Correct/40)	Generate Solutions	0.031	.001	0.404	Increased score
Intervention Prioritization (# Correct/40)	Take Action	0.087	.012	0.313	Increased score
Simulation Total Score (Sum of # Correct/100)	N/A	0.028	.096	0.204	Increased score

Additional Results: Adult Medical SBS

Adult Inpatient Medical Unit = 45.7% prioritized all five patients from highest (1) to lowest (5) priority order

- 72.9% selected highest priority patient (COPD, SOB, infection)
- > 60% placed patients #2-5 in correct ranking slot

Medical Intensive Care Unit = 15.7% correctly prioritized all five patients

- 48.6% selected highest priority patient (chest pain, signs of MI, history of open-heart surgery)
- 24-43% placed patients #2-5 in correct ranking slot
- Recognized cardiac as system classification, but unsure how to prioritize MI, bradycardia, atrial fibrillation

Additional Results: Geriatric SBS

Home Healthcare = 16.2% prioritized all five patients from highest (1) to lowest (5) priority order

- 67.6% selected highest priority patient (TIA, risk for stroke/injury)
- 35-40% placed patients #2-5 in correct ranking slot
- Difficulty with palliative or end-of-life care

Inpatient Rehabilitation Unit = 2.8% correctly prioritized all five patients

- 59.7% selected highest priority patient (new brain tumor, seizures, risk for injury)
- 15-30% placed patients #2-5 in correct ranking slot
- Unsure of how to prioritize stable patient s/p amputation needing therapeutic communication & support

Conclusions

Student Performance Outcomes

- Increased in ability to correctly select and prioritize appropriate interventions in less time
- Decreased in ability to correctly triage patients to the appropriate level of care and prioritize patients within each care setting

Screen-based Simulation Usage

- Supplement didactic and clinical experiences with targeted SBS to promote CDM
- Provide deliberate practice to ensure consistent, equitable exposure to patient care scenarios, multiple-patient management of care

Recommendations

- Teach faculty & students about NCSBN CJMM
- Faculty development in SBS and Simulation Standards of Best Practice
- Further research
 - Curricular integration to facilitate clinical judgment development
 - Evaluate student clinical performance outcomes in alignment with the NCSBN CJMM

NCSBN CJMM: Individual Factors

Familiarity
with Triage or
Priority
Setting

Knowledge of
Specialty
Areas

Previous
Clinical
Experiences

Students'
Level in
Curricular
Progression

Curricular Gaps Identified:

- Triage to Level of Care
 - Scope of Primary & Acute Care Settings
- Patient Prioritization
 - Triage & Priority Setting Methods

Intervention:

Sentinel U® Screen-Based Simulations

- Prioritization of Care Specialty Series
 - Adult Medical (Week 4)
 - Geriatric (Week 9)

NCSBN Clinical Judgment Measurement Model (CJMM)

Faculty
Expertise
(Curriculum &
Simulation)

Simulation
Facilitator
Competency

Simulation
Task
Complexity

Simulation
Placement in
Curriculum

NCSBN CJMM: Environmental Factors

Limitations

Generalizability of
Results



Simulation
Facilitation

- Environmental Factors
- Individual Factors

Future Research & Recommendations



Faculty &
Preceptor
Development

NCSBN CJMM
&
Metacognition

Screen-based
Simulation
Performance
Outcomes
(Longitudinal)

Student
Performance
Outcomes &
Predictive
Modeling

Policy
Implications

Questions

