Determining Clinical Judgment Among Emergency Nurses During a Complex Simulation

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Contribution to Emergency Nursing Practice

- Clinical judgment is essential to providing sound patient care. Clinical judgment requires the nurse to notice a patient's condition, interpret the condition, respond to the needs of the patient, and reflect on that response.
- The main finding of this paper is that emergency nurses often shift their focus to task completion rather than clinical judgment when under a typical workload of the emergency department.
- Recommendations for translating study findings into emergency clinical practice include evaluating clinical judgment using simulated experiences and providing targeted education to fill the identified gaps and maintain workload levels that allow the emergency nurse to implement its use.

Abstract

Introduction: Clinical judgment is imperative for the emergency nurse caring for the acutely ill patients often seen in the emergency department. Without optimal clinical judgment in the emergency department, patients are at risk of medical errors and a failure to rescue.

Methods: A descriptive observational approach using the Lasater Clinical Judgment Rubric evaluated nurses during a task that required recognition of clinical signs of deterioration and appropriate clinical care for simulated patients.

Results: A total of 18 practicing emergency nurses completed only 44.6% of the patient assessments leading to low levels of clinical judgment throughout the simulation. Nurses expressed 4 levels of clinical judgment: exemplary ($n = 1$), accomplishing

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($n = 6$), developing ($n = 9$), and beginning ($n = 2$). On average, nurses completed 69% of required tasks.

Discussion: Assessments were completed less than half the time, demonstrating a breakdown in the noticing phase of clinical judgment. The nurses shifted to task completion focus with minimal use of clinical judgment. As the nurses remained task oriented, several medication and medical errors were noted while caring for the simulated patients. Experience and education did not influence observed clinical judgment among the par-

ticipants. Given the extreme demands placed on the emergency nurse, it cannot be assumed that nurses have developed or can use clinical judgment when caring for their patients. Time and training targeting clinical judgment are essential for emergency nurse development.

Key words: Emergency nurse; Clinical judgment; Failure to rescue; Patient outcome assessment

Introduction

Clinical judgment is essential in providing care for patients in the emergency department. It is developed through practice to gain experience and knowledge to provide continuous critical analysis of patient needs.[1] Tanner[2] describes this in nursing as "an interpretation of the patient's needs, concerns, or health problems to determine an action to be taken, modifications of standard approaches, or new approaches based on the patient's response to treatment" (p. 204). The emergency nurse must be able to apply evidence available in the situation to the patient's medical needs while detecting and interpreting the clinical indications of deterioration.[3] Developing effective clinical judgment improves the emergency nurse ability to deliver safe and effective patient care in the emergency department despite challenges such as staffing deficits, fatigue, and other barriers to quality care.[4,5] This development can occur in the emergency department through cumulative experience with the broad complaints seen and through targeted education to address high-risk, low-incidence patient presentations.

A lack of clinical judgment can lead to medical errors, estimated to be the third leading cause of death in the United States.[6] A medical error can occur with the omission or commission of an act, error in the execution of a task, or deviation from an approved process that may or may not cause patient harm.[6] Medical errors are often classified as either a medication error[7] or a failure or delay in rescuing a patient.[8] Failure to rescue has been linked to the concept of failing to recognize, failure to relay the information to the provider, and failure to react to the patient condition.[9] A failure to rescue can occur in any health care setting, including the emergency department. The condition of the patient when they present to the emergency department must be accurately assessed and reported to the provider, and appropriate care must be implemented in a timely manner. Effective clinical judgment by the emergency nurse

is critical in the limitation of failure to rescue in the emergency department.

Emergency departments are complex environments with multiple patients, protocols, and demands that lead to an environment at high risk of medical errors and that requires a high level of clinical judgment. Clinical judgment assists the emergency nurse to develop skills in rapidly and accurately assessing and interpreting the clinical meaning of assessment findings. In a setting where patients are essentially unknown and acutely ill, it is challenging yet vital for the emergency nurse to be able to make meaning of assessment data and conclusions about the risk and need for intervention.[2] The high workloads typical to the emergency department limit the time needed for the emergency nurse to use clinical judgment, often leading to a focus on task completion rather than applying good clinical judgment[10] and then appropriately prioritizing care.

Simulation is useful for providing clinical experiences and targeted education in the development of clinical judgment[11] and nursing skills[12-15] in a realistic yet safe environment and as a means to evaluate the clinical judgment of the nurse.[11,16] Lasater[16] expanded upon the thinking like a nurse concept[2] to develop the Lasater Clinical Judgment Rubric (LCJR) to evaluate the stages of clinical judgment based on the translation of this model through high-fidelity experiences in the simulation setting. Clinical judgment was modeled using 4 aspects, noticing, interpreting, responding, and reflecting.[2] The effective use of simulation to evaluate clinical judgment in nursing education[11-13,17,18] should continue into the health care setting to evaluate and enhance the professional development of the emergency nurse.[19,20]

Understanding promotion of clinical judgment within the emergency department is critical to the safe and effective care of acutely ill patients. The use of clinical judgment, barriers to use, and patient outcomes can be explored effectively within a simulated environment. Thus, the objective of this pilot study was to use the LCJR to explore clinical judgment

within a sample of emergency nurses with varying levels of education and experience in a simulated learning environment representative of the emergency setting. It was hypothesized that more experienced nurses would demonstrate higher proficiency and clinical effectiveness and that a higher patient load would result in lower levels of observed clinical judgment. Pilot data collected in this study were used to calculate power analysis for future expansion of this work.

CONCEPTUAL FRAMEWORK

This study integrated a model of professional development with a method for assessing clinical performance to conceptualize the development of clinical judgment in emergency nurses. Benner's[21] novice to expert model describes the progression of a nurse through 5 levels of proficiency: novice, advanced beginner, competent, proficient, and expert. Successful progression requires the nurse to develop clinical judgment through the application of experience to current situations. According to this model, a nurse typically will achieve competency in their work after 2 to 3 years of experience and then continue to develop to the proficient level with additional experience. Benner[21] notes that not all nurses will achieve the expert level, although some will continue to progress to this level. The model posits that for a nurse to advance their level of competence, mentorship and guidance in the clinical setting are essential.[21] This model of progression emphasizes a development of critical thinking that may be viewed through a lens of cognitive activities described by Lasater.[16]

The LCJR was developed to assess the expression of clinical judgment in nursing students by examining the 4 stages of noticing, interpreting, responding, and reflection.[16] Although the true measurement of clinical judgment may be confounded by the context of care, the nurse's background, and the nurse-patient relationship,[2] observed clinical judgment also reflects the base level intersection of confidence, aptitude, skill, and experience[11] in the emergency nurse. Thus, to investigate expertise, the rubric was applied to active emergency nurses of various levels of experience within a simulated ED assignment.

Methods

STUDY DESIGN

This pilot study used a descriptive, observational approach to determine emergency nurse recognition of clinical cues of deterioration and appropriate clinical care for simulated patients in the simulation laboratory of the primary investigator's academic nursing institution. Emergency nurses were assigned either 3 or 4 simulated patients and evaluated through direct observation of the research team using the LCJR and an experiment-specific task checklist.

SETTING

The simulation environment consisted of 4 rooms equipped to appear like an emergency department with supply carts, telemetry monitoring, and hospital bed. The telemetry monitors were programmed to look like the monitors within the local hospital. A nurse's station was provided outside of the simulation rooms with telemetry for remote monitoring of the simulated patients. The environment is arranged around a central observation room that includes audio-visual monitoring equipment in each room and one-way glass for visual observation.

SIMULATION DEVELOPMENT

The simulation was designed with recommended modifications to the National League for Nursing Jeffries Simulation Framework to include 2 high-fidelity mannequins, 2 standardized patients,[22] and a standardized family member for the pediatric patient. Simulations were chosen from a bank of validated simulation experiences provided through the mannequin manufacturer.[23-25] The scenario and expected outcomes for each patient are described in Table 1. A random subsample of nurses with <5 years and all nurses with >5 years' experience ($n = 11$) received a fourth patient to determine whether the addition of a fourth patient produced an observable impact on emergency nurse performance.

SCENARIO

Individual participants reported to the simulation laboratory to complete the study. Before the start, each received a tour of the simulation space, orientation to the equipment, the standardized patients, and high-fidelity simulators. The scenario began with a nursing handoff report for the 3 current patients. The initial patients in the scenario included a pediatric patient being seen for an exacerbation of his asthma that was stable awaiting admission to the floor (patient 1), a young adult with a severe headache and elevated blood pressure with complete workup and awaiting medication administration (patient 2), and a new middle-aged patient with a complaint of recent-onset chest pain (patient 3) (see Table 1). All participants

TABLE 1
Description of the simulation scenario

Patient	Scenario	Expected actions
Pediatric simulator Mother at bedside: SP[25] Asthma	Asthma exacerbation Stable but wheezing slightly Awaiting bed availability on floor Vital signs: • BP: 109/74 mm Hg • HR: 126 bpm • RR: 26 cpm • O$_2$ saturation: 90% on 100% face mask	• Update provided to mother • Respiratory assessment of patient • Administration of methylPREDNIsolone
Young adult: SP[23] Headache, elevated BP, stroke during simulation	Headache Elevated BP Basic laboratory tests drawn Awaiting CT results Vital signs: • BP: 190/140 mm Hg • HR: 90s bpm • RR: 24 cpm • O$_2$ saturation: 94% on RA	• Update patient • Results of CT scan • Treat BP • Neurological assessment • Treat headache
Middle-aged patient simulator[24] New-onset chest pain	New-onset chest pain 7/10 pain No significant history No home medications Cardiac workup/EKG orders Vital signs: • BP: 90s/50s mmHg • HR: 130s bpm • RR: 20s cpm • O$_2$ saturation: 93% on RA	• Cardiovascular assessment • Obtain 12-lead EKG • Initiate peripheral IV access • Address patient BP • Treat patient chest pain • Address patient heart rate
Elderly patient: SP[25] Influenza-like symptoms	New patient Fever, cough, congestion Very needy Distracts staff Vital signs: • Real-time vital signs of SP • Assess patient complaint • Administer ordered medications • Provide for needs of patient	

BP, blood pressure; CT, computed tomography; SP, standardized patient; EKG, electrocardiogram; IV, intravenous; HR, heart rate; RR, respiratory rate; RA, room air.

received the same handoff report and were permitted to choose their patient prioritization. Of note, the second patient had a blood pressure of 190/140 mm Hg and the third patient had a blood pressure of 90/40 mm Hg, both requiring immediate intervention.

At the 25-minute mark of the simulation, 11 participants received a fourth patient experiencing influenza symptoms during the COVID-19 pandemic. Randomiza-

tion was completed before participants arriving to the simulation using a digital randomization tool.[26] The fourth patient was added at random for participants having <5 years' experience. All members of the research team participating in the simulation were masked to condition until the 20th minute of the simulation. All nurses with >5 years' experience received the fourth patient to ensure meaningful workload in the scenario. At

TABLE 2

Scoring using Lasater model[16] of clinical judgment: exemplary, 4; accomplished, 3; developing, 2; and beginning, 1

Category of clinical judgment	1	2	3	4	5	6	7	8	9	10	11	12	13	14*	15*	16*	17*	18*
Noticing																		
Focused observation	2	3	3	3	3	2	3	2	2	2	2	2	2	3	2	4	2	2
Recognizing deviation	1	3	3	3	3	1	3	1	1	1	1	1	1	2	1	4	1	1
Information seeking	2	3	3	3	3	2	2	3	1	1	1	2	1	3	1	4	1	2
Interpreting																		
Prioritizing data	1	3	3	3	3	1	3	1	1	1	1	1	1	2	1	4	2	1
Making sense of data	2	3	3	2	3	1	3	1	2	2	2	2	1	2	1	4	2	2
Responding																		
Calm, confident manner	3	4	3	3	4	3	3	3	3	3	3	3	3	3	3	4	4	3
Clear communication	3	4	4	3	4	3	3	3	3	3	3	3	3	4	4	4	4	4
Well-planned intervention	1	3	3	3	4	1	3	2	1	1	1	1	1	2	1	4	1	1
Being skillful	3	3	3	3	4	2	3	2	3	2	3	3	2	4	4	4	4	3
Reflecting																		
Self-analysis	3	3	3	3	3	3	3	3	3	2	3	3	2	3	2	4	2	3
Commitment to improve	4	4	4	4	4	4	4	4	4	3	4	4	3	4	3	4	4	4
Total score	25	36	35	34	38	23	34	25	24	21	24	25	20	32	23	44	27	26

* The second group of experienced nurses (columns 14-18).

35 minutes, patient 2 developed a higher blood pressure, became nonverbal, and demonstrated weakness on the left side, necessitating lifesaving rescue. The simulation was stopped when the participant recognized the deterioration of patient 2 and called for additional support or at 10 minutes after the change in status. After the completion of the simulation, a plus-delta method debriefing session[27] was conducted by a trained member of the research team, allowing for self-assessment of both positive feedback and discussion of areas of improvement for each learner.

PARTICIPANTS

After approval of the institutional review board at the primary investigator's academic institution, emergency nurses were recruited from a community-based hospital in West Alabama. For inclusion in this pilot study, participants had to be a nurse actively practicing at the bedside in the emergency department with <10 years of experience and had completed the orientation process. Social media posts were shared to Facebook, Twitter, and Instagram accounts. Posts were made to ED group pages within the West Alabama region to increase recruitment. Participants were further recruited via word of mouth within the ED units by members of the research team and other participants for this pilot study. The sample size for this pilot study was deemed sufficient to accomplish proof of concept for this design given limitations arising from the funding available to compensate participants and the availability of emergency nurses local to the investigator's academic institution. Demographic data for the participants were collected for age, sex, years of experience in emergency department, and degree.

VARIABLES

Data Collection

Outcome measures included (1) completed nursing assessments, (2) stages of clinical judgment as scored by the LCJR,[16] and (3) completion of nursing tasks. Multimodal data were collected through direct observation of nurses engaged in the simulation, completion of the LCJR, an expected actions checklist, and discussion after simulation with participants and among the researchers to clarify any discrepancies. Informed consent and demographic data were obtained from all participants. Observation was

conducted by the lead investigator who is a certified EN and a second investigator trained in emergency nursing. The LCJR[16] was completed for each participant and discussed among the research team after each simulation. Although no experimenters were blind to study aims, analyses used objective performance criteria to reduce the impact of observer bias.

Clinical Judgment Assessment Description

Stages of clinical judgment for the simulation was measured using the LCJR (Table 2)[16] to produce a numerical value. Clinical judgment was scored by the first author while the participant completed the simulation then discussed with the participant during the debrief process. At the completion of the simulation, all members involved in conducting the simulation discussed the results and achieved consensus on the assigned score. Video recording of the simulation allowed for members of the team to review video to resolve any disagreements.

The standard scoring for the rubric evaluates nurses on 11 signs of clinical judgment on a scale of 1 (beginner), 2 (developing), 3 (proficient), and 4 (expert), corresponding to total score indicators of 11 as a beginner (minimum score), 22 as someone developing, 33 as the proficient accomplishment of the criteria, and 44 as exemplary performance (maximum score). Based on Benner's[21] novice to expert model suggesting that a nurse achieves competency after being on the job for 2 to 3 years, we would expect those participants with <5 years' experience to be progressing toward proficient status and those with >5 years' experience to perform as proficient practitioners with some progressing toward or achieving the expert level.

Task Completion

Task completion was measured using a checklist developed and scored collaboratively by the research team through direct observation of the simulation. The checklist encoded 17 critical actions required to achieve competent quality of care for all patients. Scores are reported as percent of activities completed owing to differences between participants in the number of patients they received. Accuracy of the checklist was verified by discussing actions with the participant during the debrief of the scenario after simulation completion. Patient assessments were verified through direct observation of each patient encounter and then discussed at the completion of the simulation during the debrief process.

ANALYSIS

All data were collected on paper, entered into spreadsheet software, and transferred to SPSS version 27 (IBM, Chicago, IL) software for analysis. Participants were placed in groups based on their years of experience and assignment to the fourth patient condition for t test comparison. Descriptive data were analyzed for the participants.

Results

Participants ($n = 18$) were primarily female (72%) with an average age of 31.1 years (range: 21-43) and an average emergency nurse experience of 3.5 years (range: 0.75-9). All nurses held an Associate Degree in Nursing (ADN) except for 3 nurses with >5 years' experience who held a Bachelor of Science in Nursing (BSN). See Table 3 for full demographic data. All demographic questions were asked using a free-response space to allow the participant to provide their personally preferred descriptors, if any. Demographic data were collected for the purpose of ensuring a sample representative of the workforce at the recruitment site. No significant differences were noted based on demographic data or the addition of the fourth patient relating to scores on the LCJR or task completion.

COMPLETED NURSING ASSESSMENTS

Nursing assessment completion was determined by direct observation of the nurse interacting with the simulated patient and then discussed during the debrief session. Nursing assessment was completed 44.6% of the time on the assigned patients with 5 participants completing all required assessments. Pediatric patient 1 was assessed by 8 of the 18 nurses (44%) with 5 completing the assessment who had <5 years' experience (38.4%) and 3 with >5 years' experience (60%). Patient 2 (severe headache with elevated blood pressure) was assessed by 5 nurses (27.8%) with 4 nurses having <5 years' experience (30.8%) and 1 with >5 years' experience (20%) completing this assessment. The patient with chest pain was assessed by 8 nurses with 6 nurses with <5 years' experience (46.2%) and 2 with >5 years' (40%) completing the assessment. Of the participants receiving the patient with influenza symptoms ($n = 11$), 8 nurses completed the assessment consisting of 3 <5 years' (50%) and all 5 with >5 years' experience (100%). Total assessments completed were 0 ($n = 5$), 1 ($n = 6$), 2 ($n = 1$), 3 ($n = 3$), and 4 ($n = 3$), with 5 nurses assessing all patients.

TABLE 3
Demographics

Participant	Age	Sex	Years of experience	Degree
1	21	F	0.75	ADN
2	22	F	1	ADN
3	28	F	1	ADN
4	43	F	3	ADN
5	33	F	2	ADN
6	35	F	0.75	ADN
7	35	M	2.5	ADN
8	24	F	1	ADN
9	26	M	4	ADN
10	27	F	2	ADN
11	29	F	2	ADN
12	28	M	3	ADN
13	28	F	5	ADN
Mean	29.2		2.1	
Nurses with <5-y experience above, >5-y experience below				
14	40	F	6	BSN
15	39	F	9	BSN
16	37	F	8	ADN
17	33	M	7	BSN
18	32	M	5	ADN
Mean	36.2		7	
Mean total	31.1		3.5	

M, male; F, female; ADN, Associate Degree in Nursing; BSN, Bachelor of Science in Nursing.

CLINICAL JUDGMENT SCORES ACHIEVED

Total clinical judgment scores observed by the research team for the simulation ranged from 20 to 44. Average scores for the nurses with <5 years' experience were 28 (SD = 6.3) and for the nurses with >5 years' experience 30.4 (SD = 8.3). The scoring for participants during the simulation is presented in Table 2. One participant completed the simulation with an exemplary score, 6 achieved a score of accomplishing the simulation, 9 scored as developing, and 2 scored in the beginning range.

Noticing

Average scores in the noticing category ranged from 1.3 to 4 across all participants. The mean score for noticing was 2.1 with a mean score of 2.1 for nurses with <5 years' experience and 2.2 for nurses having >5 years' experience. Most nurses

(11 of 18) scored as beginners in the category of recognizing deviation. When caring for the patient presenting with chest pain, only 8 nurses appeared to notice the hypotensive state of the patient before treating the patient with a nitrate.

Interpreting

Average scores for the interpreting category range from 1 to 4. The average across the participants was 1.97, with scores of 1.92 for the nurses having <5 years' experience and 2.1 for those having >5 years. Eight of the nurses with <5 years' experience and 2 with >5 years scored as beginners in the prioritizing data category of interpreting. When caring for the patient presenting with chest pain, only 8 of the 18 nurses addressed the hypotensive state of the patient during treatment indicating a lack of interpreting the patient need before treatment.

TABLE 4
Expected action completion percentage

	Expected actions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Pediatric patient	Update mother	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Assessment		X	X		X		X					X		X		X		X
	Medication						X	X	X			X				X	X	X	X
Migraine patient	Update patient	X	X		X		X		X	X	X	X	X	X	X	X	X	X	X
	Assessment		X	X		X		X									X		
	Review CT	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Treat blood pressure		X	X	X	X		X	X	X		X	X	X	X	X			X
	Treat headache	X			X		X		X				X	X				X	
Chest pain patient	Assessment		X	X		X		X		X		X			X		X		
	EKG	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	IV access	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Treat blood pressure		X	X	X	X		X					X				X		
	Treat chest pain	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Address heart rate	X	X			X	X	X		X	X				X		X	X	X
Influenza symptoms	Assessment		X	NA	NA	NA	NA	X			NA	NA	NA	X	X	X	X	X	X
	Medication	X		NA	NA	NA	NA	X		X	NA	NA	NA		X		X		
	Needs	X	X	NA	NA	NA	NA		X	X	NA	NA	NA	X	X	X	X	X	X
Percent		59	82	71	64	79	64	82	59	65	59	64	71	65	76	65	88	65	71

CT, computed tomography; EKG, electrocardiogram; IV, intravenous.

Responding

Average scores for the responding category range from 2.25 to 4. The average across the participants was 2.9, with scores of 2.8 for the nurses having <5 years' experience and 3.3 for those with >5. Ten participants, 7 with <5 years and 3 with >5 years, scored as beginners in the well-planned intervention category of responding. In responding to the hypotensive state seen in the patient presenting with chest pain, only 8 nurses treated the hypotension in this patient.

Reflecting

Average scores for the reflecting category range from 2.5 to 4. The average across the participants was 3.3, with scores of 3.34 for the nurse having <5 years' experience and 3.3 for the nurse having >5 years. Four participants scored as developing in this category with none scoring as beginners. In reflecting upon the care of the patient presenting with chest pain, 10 nurses did not treat the hypotension in the patient even after giving the nitrate and subsequent drop in blood pressure related to the treatment.

COMPLETED NURSING TASKS

Patient care was measured through the completion percentage of the "expected actions" listed in Table 4. One nurse with >5 years' experience completed almost all the expected actions for all patients. Task completion percentage ranged from 59% to 88% of the task with an average of 69% of the tasks being successfully completed. Among the nurses with <5 years' experience, 68% of tasks were completed whereas 73% of the expected tasks were completed by those nurses with >5. Among the nurses with a BSN, 68.7% of the tasks were completed whereas the ADN nurses accomplished 69.5% of the tasks. Task completion for each patient can be found in Table 5.

Discussion

The purpose of this study was to investigate clinical judgment in a sample of emergency nurses with varying levels of education and experience as they engaged a complex quality of care task in a simulated learning environment representative of the emergency setting. In response to higher proficiency and

clinical effectiveness, the addition of the fourth patient, increasing the patient ratio to 4:1, was expected to increase the workload for the nurse participants and affect clinical effectiveness, but it did not have a significant effect on the outcomes. It is hypothesized by the research team that this increased patient load did not affect the participants as expected owing to the patient ratio being lower than the nurses experience on their unit, familiarizing them with incomplete execution of standard-of-care activities.

To investigate lower levels of observed clinical judgment, we used a standard simulation in this study with outcome measures including (1) complete nursing assessments, (2) completion of nursing tasks, and (3) clinical judgment stage as scored by the LCJR. The simulation was representative of a typical assignment in the emergency setting. Results of the analysis demonstrate that participant nurses completed an average of 44.6% of expected nursing assessments and 69% of expected tasks in the simulation. Participants with <5 years of experience scored an average of 28.0 (SD = 6.3) and nurses with >5 years' experience scored an average of 30.4 (SD = 8.3) on the LCJR. Of the 18 participants, most performed in the developing range or below. Specifically of concern, based on the framework presented by Burke et al[9] of recognizing, relaying, and reacting to the condition of patient 3 who was experiencing chest pain, a failure to rescue occurred in 11 participants. Most of the participants failed to recognize or treat the low blood pressure before administering the nitrate.

Overall, our findings indicate that a normally assigned patient load was not associated with expected differences in level of clinical judgment given nurse education and experience, but gravely, this was caused by pervasive deficits in all areas of the clinical judgment framework described by Lasater[11] and Tanner.[2]

COMPLETED NURSING ASSESSMENTS

An appropriately focused assessment (noticing) is fundamental to effective clinical judgment[28] and is the basis for making quality decisions involving patient care.[29] In this study, only 44.6% of the required assessments were completed with only 5 nurses completing assessment on all their simulated patients. A nurse is unable to notice, interpret, respond appropriately, and reflect on patient care[2] without an assessment. This lack of assessment and ability to practice sound clinical reasoning leads to failure to rescue[5] as seen with both patient 3 (chest pain) and patient 2 (headache and elevated blood pressure).

Clinical judgment[2,9] remains vital in reducing failure to rescue and medical and nursing errors. Competent patient assessment is critical for all nurses[30] and must be completed on all emergency patients; however, assessment is easily missed when the emergency nurse is performing in crisis mode.[31] It is possible that this problem originates in the initial training of nurses. Hughes et al[32] report that 44% of nursing faculty in the study reported student performances that received failing grades yet nevertheless reported passing those students. This was reported both as a function of lack of time in the clinical area to fully assess students and of coercive or disruptive student behaviors. This lack of preparation of the new graduate nurse places a heavy burden on the clinical agency to develop new graduate nurses to a level of fundamental competence in the complex environment of the emergency department.

CLINICAL JUDGMENT

Participants of this study were hypothesized to fall into the beginning, developing, accomplished, and exemplary levels of Benner's novice to expert model[21] based on their experience in nursing. In this study, participants scored below their expected level of clinical judgment with a higher-than-expected percentage of participants scoring as beginning within each component of the LCJR given the experience of the sample.

This simulation demonstrated a breakdown in the noticing phase of clinical judgment represented best by the low completion rate of patient assessments. When caring for patient 3 experiencing chest pain, only 44% (6 nurses with <5 years' and 2 nurses with >5 years) noticed the low blood pressure during their assessment. Doing somewhat better at interpreting, most knew that the standard treatment for patients experiencing chest pain is to administer nitrates and selected analgesia,[33] which often causes a decrease in blood pressure in patients who are hypotensive.[34,35] The need to treat the blood pressure before administering the nitroglycerin was noted by 6 of the nurses having <5 years' experience and 3 of the nurses with 5 to 10 years' experience. For responding, 5 nurses with <5 years' and 1 nurse with 5 to 10 years' experience addressed the blood pressure by obtaining an order for a fluid bolus before the administration of the nitroglycerin. The nurse who did not treat the blood pressure before administering nitroglycerin noted the need to intervene after giving the medication and responded by obtaining an order for a fluid bolus after. The eighth nurse who noticed the low blood pressure decided not to administer the medication at all

TABLE 5
Task completion for simulation results

Patient	Scenario	Completion
Pediatric simulator Mother at bedside: SP Asthma	Asthma exacerbation Stable but wheezing slightly Awaiting bed availability on floor. Vital signs: • BP: 109/74 mm Hg • HR: 126 bpm • RR: 26 cpm • O_2 saturation: 9% on 100% face mask	• All updated the mother. • 8 completed the assessment. • 9 administered the ordered medication.
Young adult: SP headache, elevated BP, stroke during simulation	Headache Elevated BP Basic laboratory tests drawn Awaiting CT results Vital signs: • BP: 190/140 mm Hg • HR: 90s bpm • RR: 24 cpm • O_2 saturation: 94% on RA	• 15 nurses updated the patient. • All reviewed the CT results. • 14 treated the high BP, and 7 treated the headache. • Of those treating the BP, only 6 nurses with less than 5-y experience and 3 nurses with more than 5-y experience treated the BP within the first 10 min of the simulation. • A neurologic assessment was completed by 3 participants across both groups. • 1 nurse performed a National Institutes of Health stroke scale assessment.
Middle-aged patient simulator New-onset chest pain	New-onset chest pain 7/10 pain No significant history No home medications Cardiac workup/EKG orders Vital signs: • BP: 90s/50s mm Hg • HR: 130s bpm • RR: 20s com • O_2 saturation: 93% on RA	• 8 participants completed the assessment. • 7 treated the low BP. • 12 addressed the high heart rate. • All participants started the IV, obtained an EKG, and provided treatment for the chest pain. • 7 nurses with <5 y and 4 nurses with >5 y gave the patient with chest pain nitroglycerin without correcting the BP (90/50). • With the administration of the first nitroglycerin the BP was lowered to 84/46, yet 4 nurses (3 < 5 y, 1 > 5 y) gave the second nitroglycerin and metoprolol without correcting the BP despite the decrease related to treatment. • 1 nurse (<5 y) administered morphine to the patient with chest pain without an order for the medication.
Elderly patient – SP Influenza-like symptoms	New patient Fever, cough, congestion Very needy Distracts staff Real-time vital signs of SP	• 8 completed the assessment. • 5 provided the ordered medication. • 10 provided for the patient's needs.

SP, standardized patient; EKG, electrocardiogram; BP, blood pressure; HR, heart rate; RR, respiratory rate; RA, room air.

and moved to the next patient without effective treatment of the chest pain.

The lack of noticing the low blood pressure by the nurses led to the inability to engage in successful interpreting of the abnormal parameter, also leading to inappropriate responding to the patient crisis. Without completing an assessment, 7 less experienced and 3 more experienced nurses treated the patient and administered the nitroglycerin. A lack of reflecting through reassessment of the patient led 4 nurses to give a second nitroglycerin and metoprolol, resulting in further hypotension. One nurse proceeded to erroneously administer morphine to the patient without an order for the medication. A shift in practice occurred away from clinical judgment while caring for this patient to incorrect task performance. Across participants, there was a concerning pattern of failure to assess the patient condition and inconsistencies in application of assessment data.

Experience and expertise in nursing are often seen as the same but should not be used interchangeably.[36] Experience did not translate to higher levels of clinical judgment for this observed simulation when assessed using the LCJR.[11] Based on Benner's[21] novice to expert model, it was expected that the more experienced nurses would have all demonstrated proficient clinical competence levels, yet 80% of the more experienced participants scored in the developing stage. This is corroborated by previous research that reported that in a medical-surgical unit even the experienced nurses demonstrated poor clinical judgment.[37] Of concern in this area is the finding from our study that when faced with the complex workload typical of an ED assignment, the focus changed from using clinical reasoning to task completion, leading to errors in treatment and failure to rescue.[38-40]

The question remains of the importance of experience in clinical judgment beyond competence as a practitioner.[37] Fero et al[41] examined the performance of nurses' clinical judgment and reported no difference between new graduate nurses and those with <10 years' experience. Clinical judgment skills were not influenced by years of experience in intensive care unit or medical-surgical nurses.[37] Further research is needed to examine the relationship between years of experience and clinical judgment specific to emergency nurses.

The development of nursing expertise is influenced by education in theory and practical knowledge,[42] and professional values[43] that can be applied to actual situations but no difference in clinical judgment was seen between ADN- and BSN-prepared nurses. Beyond the initial education of a nurse, mentorship and training are critical in the development of clinical judgment.[21,44,45] Given the high rate of turnover currently being experienced in nursing,[46] the ability to place new graduates with experienced nurses to develop clinical judgment can be difficult.

COMPLETED NURSING TASKS

Nurse workload has been associated with negative patient outcomes, often based on the omission of care needed for a patient.[47] In our observed simulation, we found indications that given the typical workload of the emergency department, nurses tend to become a "machine," rather than applying sound clinical judgment,[38] which leads to missing vital steps in patient care. A nurse who feels overloaded at work is more likely to have an error in patient care[4] as attention shifts to task completion rather than the application of clinical judgment and reasoning to the situation.[40] The participant that missed the stroke stated, "[I was] overwhelmed by the simulation. My focus was on the chest-pain patient, because they needed the most things done." Such a focus on task completion during multitasking has shown to be a risk to patient safety.[39]

A focus on task completion rather than assessment can result in even typical workloads contributing to failure to rescue. This was noted specifically in the care of our simulated patient with chest pain where lack of assessment, lack of interpretation, and lack of response created a situation in which the simulated patient deteriorated. Failure to rescue has previously been explained as being caused by inattentional blindness or the inability to notice a change, because it is unexpected even among expert practitioners.[48,49] Failure to rescue has been linked to the workload of emergency nurses[50] and is of great concern in the emergency department. In this study, we assumed that experience improves clinical judgment as a function of exposure to paradigm cases as described by Benner,[21] but this is not what was observed. Again, the causes of the repeated failure to rescue in this study seem to be linked less to the workload and more to a lack of assessment and interpretive skills.

Limitations

The study had important limitations. This was a self-selecting group of emergency nurses from the 1 regional medical center, limited to a small sample, academic preparation lacking diversity, and a single work environment. Although this sample was representative of nurses employed at this hospital, it did not provide a sample with adequate size and diversity to determine whether clinical judgment or task completion was influenced by the education level of the participants. Although not generalizable to all

emergency nurses, these results contribute to a growing body of knowledge emphasizing the importance of emergency nurse workload and training on patient outcomes.

Implications for Emergency Nurses

Emergency nurses are routinely under a heavy workload, simultaneously caring for multiple patients, including some who are critically ill. The observed clinical judgment during this simulation was much lower than expected. It cannot be assumed that years of experience in the emergency setting alone translate to higher levels of clinical judgment. Educators and unit leadership might better align the resources of the department and hospital to support the success of the emergency nurses via continuing education, simulated practice, and evaluation of clinical judgment rather than isolated tasks or "skills" to provide for patient needs. Surge policies and means to decompress the emergency department are critical in allowing the emergency nurse to be able to take the time to assess and manage each patient rather than forcing a focus on task completion.

Conclusions

Emergency nurses are constantly under a heavy workload, simultaneously caring for multiple critically ill patients. The observed clinical judgment during this simulation was much lower than expected with even the experienced nurses scoring in the developing stage of LCJR. It cannot be assumed that years of experience alone translates to higher levels of clinical judgment in the emergency department. Given the cognitive and practice demands placed on the emergency nurse, it also cannot be assumed that all nurses have clinical judgment capacity related to their experience or educational levels when caring for their patients. Along with continuing education, the priority of unit leadership might be to limit nursing workload, allowing the emergency nurse to develop and use sound clinical judgment rather than forcing a focus on task completion.

Education for the emergency nurse also must focus on developing and enhancing clinical judgment. This means that unit educators should continue to evaluate nurses with simulation-based learning experiences to identify gaps in clinical reasoning after their formal education completes and remediate appropriately. These authors recommend that further research be conducted using larger samples and multiple sites to determine whether our findings are representative of contemporary nursing practice in more than one setting.

Data, Code, and Research Materials Availability

Ethical approval from the University of Alabama (IRB #20-12-4144).

Author Disclosures

Conflicts of interest: none to report.

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