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Developing Situation Awareness in Simulation Prebriefing

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Abstract

BACKGROUND:

Prebriefing before simulation is a recommended practice that increases learner satisfaction and improves performance. Promoting situation awareness through prebriefing facilitates optimal learning outcomes.

METHOD:

Endsley's Model of Situation Awareness is applied to the cognitive work of nursing practice that occurs during the prebriefing phase of simulation. Perceiving, comprehending, and projecting about elements of a situation lead to clinical judgement, reasoning, decision making, and ultimately nursing actions.

RESULTS:

Developing situation awareness in prebriefing is a supported process that connects learners' prior knowledge and experience with the needed knowledge, skills, and abilities in the simulation environment. These mental models become the foundation for understanding the relevance of perceived information, comprehending its meaning, and directing nursing actions.

CONCLUSION:

The simulation facilitator influences the development of situation awareness by focusing perception on key elements and scenario objectives, fostering psychological safety, and enhancing familiarity with the simulation environment during prebriefing.

Introduction

Prebriefing has been an understudied area in nursing simulation until recently, leading to confusion about the benefits and utility of this component of the experience. The most recent version of *Healthcare Simulation Standards of Best Practice™ Prebriefing: Preparation and Briefing* (**INACSL Standards Committee [ISC], McDermott et al., 2021**) clarifies the crucial role that preparation and briefing play in prebriefing for simulation-based experiences. However, because prebriefing practices are not standardized, various terminology and methods lead to different understandings of the concept. Some descriptions are complex, such as Ludlow's (2021) multiphase process, and include a preparatory, orientation, and prebriefing phase. Other descriptions define prebriefing as an orientation to simulation and learner engagement activities (**Chamberlain, 2015**; **McDermott, 2020**; **Page-Cutrara, 2015**). As a result, it can be challenging to explicate the role that prebriefing plays in the achievement of learning outcomes. When simulation is used as a teaching strategy, a prebriefing that connects prior knowledge to current goals sets the learner up for success by facilitating situation awareness (SA). The development of SA is a critical cognitive process essential to clinical judgment, decision making and reasoning, and the provision of quality nursing care. This article explains how prebriefing is an integral part of developing SA in simulation and clinical environments and also provides examples of prebriefing elements that facilitate SA in learners.

Background

SA is a concept that has been studied extensively in aviation, business, and psychology. Endsley (**1995**) initially offered a simple definition of SA as “knowing what is going on” (p. 36), which is a cognitive activity important for many tasks that involve judgment, decision making, and reasoning. Consequently, SA also has been associated with nursing practice. Nurses assess patients, apply findings and other data, such as diagnostic tests and laboratory results, to the contextual situation, and then develop actions and plans of care to meet patients' needs. Sitterding et al. (**2012**) described SA in the context of nursing practice and offered the following definition:

> *A dynamic process in which a nurse perceives each clinical cue relevant to the patient and his or her environment; comprehends and assigns meaning to those cues resulting in a patient-centric sense of salience; and projects or anticipates required interventions based on those cues. This projection then influences how the nurse engages in cognitive staking and nursing care actions.*
>
> *(p. 89)*

SA also has been applied to specific nursing situations (**Busby & Witucki-Brown, 2011**; **Mitchell & Flin, 2008**). In multicasualty incidents, Busby and Witucki-Brown (**2011**) described SA as the process of establishing and maintaining control of dynamic, contextually based situations. In perioperative nursing, Mitchell and Flin (**2008**) identified SA as the ability to use experience to assess situations, assimilate details, and anticipate future requirements of a surgeon. Although SA is an important part of nursing practice, little literature is available about teaching SA concept or deliberately applying SA in clinical nursing education.

Concept of SA and Prebriefing

As a type of experiential learning, simulation often is used in nursing education to create an authentic clinical environment for developing competency. In her seminal work, Jeffries (**2005**) described simulations as “activities that mimic the reality of a clinical environment and are designed to demonstrate procedures, decision-making, and critical thinking through techniques such as role-playing and the use of devices such as interactive videos or mannequins” (p. 97). Simulations, especially high-fidelity or immersive virtual reality simulations, involve dynamic environments in which learners engage in contextually realistic, highly complex cognitive tasks involving physical, perceptual, and human behavior elements (**Lioce et al., 2020**). SA is an essential construct for effective decision making and performance in these multifaceted environments because they mimic nursing practice. Participating in a simulation in which patient care closely mirrors the intricacies of the clinical environment requires the three defining attributes of SA: perception of salient elements in the environment, comprehension of their meaning, and projection of their status into the near future to direct decisions and actions (**Fore & Sculli, 2013**).

When simulations are used for learning and developing competency, learners function within their zone of proximal development and require support for the most successful learning outcomes (**Berragan, 2011**). Fostering SA through prebriefing becomes the guidance that enables learners to provide appropriate nursing care in the simulated health care environment. In fact, prebriefing deliberately engages learners by focusing their attention, thereby cultivating aspects of SA that become significant later in the scenario during simulation.

In *Healthcare Simulation Standards of Best Practice™: Prebriefing: Preparation and Briefing* (**ISC, McDermott et al., 2021**), preparation and briefing are described as two distinct components of prebriefing designed to establish a psychologically safe learning environment. Preparation materials situate learners to a common mental model and prepare learners to achieve objectives successfully. This involves independent preparatory work or assignments designed to focus learners' attention and optimize learning. The briefing often occurs in a prebriefing meeting with a facilitator before the simulation scenario. Discussing expectations, logistical factors, and ground rules results in more prepared and engaged learners (**ISC, McDermott et al., 2021**). Orientation to the simulation space and equipment assists learners in refreshing psychomotor skills and eliminates distractions related to the simulation environment (Ludlow, 2021). During prebriefing, the facilitator provides guidance about the expectations and logistics to prepare learners for the upcoming simulation, ensures they are ready for the experience, and sets the safe container so that critical conversations can occur (**Ludlow, 2020**; **McDermott, 2020**; **Rudolph et al., 2014**). In this way, prebriefing helps learners develop SA.

Discussion

Endsley (**1995**) described SA as “the perception of the elements in the environment within a volume of time and space, [including] the comprehension of their meaning, and the projection of their status in the near future” (p. 6). In this article, Endsley's Model of Situation Awareness is applied to the cognitive work of nursing practice occurring during simulation, with a focus on the prebriefing components. SA is described within the more extensive linear process of decision making, resultant action, and ensuing feedback. The three levels of SA—perception, comprehension, and projection—are continually affected by the state of the environment and influenced by task or system factors as well as individual factors, including an individual's information-processing mechanisms. Examples of prebriefing activities for a prelicensure simulation related to recognizing sepsis in an elderly female patient with pneumonia are provided to explicate the relationship among prebriefing, SA, and simulation. The exemplar begins with the following case report:

> *An 85-year-old woman presents to the emergency room in the early morning with altered mental status, a cough, and shortness of breath. The patient has a history of type 2 diabetes mellitus, hypertension, and dementia. The previous nurse implemented initial orders after the patient was transferred to the medical-surgical unit. It is now afternoon, and the patient's condition is deteriorating.*

Preparation

A learner's preparation for simulation influences individual factors, which are crucial to the development of SA. When simulation is used as a learning activity, students often are required to complete preparatory work before the scheduled simulation session. Although specific activities vary widely, several authors have referred to this as the preparatory phase of simulation, and the purpose is to make learners aware of the required knowledge, skills, and abilities (KSAs) that will support success during the simulation (**Ludlow, 2020**; **McDermott, 2020**; **Tyerman et al., 2019**). The complexity of these activities should be responsive to the level of the learners and mindful of learner and faculty resource utilization (**Leigh & Steuben, 2018**).

Examples of traditional prepwork include assigned readings, videos, journal articles, skill practice, lecture, chart review, prequiz completion, scenario, and skills demonstrations (**Leigh & Steuben, 2018**). In a recent systematic review, Tyerman et al. (**2019**) reported innovations in prepwork that evaluated the effectiveness of traditional strategies and explored new alternatives. Novel prepwork options include concept mapping activities, expert role modeling videos, discussion, and psychological exercises. Tyerman et al. (**2019**) reported that presimulation activities were beneficial and rated highly by students, and Elfrink et al. (**2009**) found that prepwork geared to a specific simulation helped reduce anxiety in learners. The exemplar continues:

> *Fourteen days prior to the simulation, the learners receive the prepwork assignment via the Learning Management System. Students must complete the pneumonia simulation prep-work before the simulation, which includes assigned readings from the medical-surgical nursing text about sepsis and a current article about sepsis bundle practices, a fill-in-the-blank medication preparation table, and a written assignment. The written assignment includes three prompts: (1) describe the relationship between sepsis and multiorgan dysfunction syndrome, (2) discuss the signs and symptoms of sepsis in a patient with a known infection, and (3) discuss nursing responsibilities in delivering evidence-based care for sepsis. The prepwork includes a link to a video in which an expert clinician administers a fluid bolus with an intravenous (IV) pump that is used in the simulation center and a posting of open practice hours.*

Fore and Sculli (**2013**) noted the antecedents relevant to the development and maintenance of SA in a changing environment include cognitive ability, attention, memory, educational background, and experience. During preparation, prep-work acts as a guide and reviews the foundational knowledge needed to develop SA. The learner's well-developed memory enables fine categorization of anticipated and perceived elements of the imminent clinical situation. However, less experienced or unprepared learners receive less information from the same elements, and their anticipation of what is about to occur is limited.

When completing prepwork, learners first recognize elements that may be a part of the clinical experience. Objectives embed these elements, such as needed KSAs. Simulation designers should use SMART (Specific, Measurable, Attainable, Realistic, and Time-bound) objectives to develop simulations and provide these objectives to learners prior to the experience (**ISC, Miller et al., 2021**). Simulation designers can use SMART objectives to help participants focus on specific KSAs expected for the simulation (**ISC, Miller et al., 2021**). Objectives assist learners to filter and interpret meaningful elements in the simulation that match their goals.

However, SA is negatively affected if leaners do not attend to conflicting information in the environment that indicate revisions are needed in their mental model (**Endsley, 1995**).

In the exemplar, the four objectives included in the prep-work are: (1) identify changes in patient condition and collaborate appropriately with team members to manage problems; (2) demonstrate a focused assessment for a patient based on the patient's history and with current clinical manifestations; (3) develop an individualized plan of care informed by patient-specific characteristics; and (4) implement evidence-based nursing interventions. The facilitator also would assist learners to relate their predictions to these objectives and correct inaccurate learner assumptions during the prebriefing discussion.

Prepwork connects learners with their short-term memory and activates long-term cognitive stores about needed KSAs. Learners' information-processing mechanisms are strengthened by this foundational work, affecting the development of SA, decision making, and performance. Well-prepared learners recognize the connection between sepsis and a change in patient condition and then link the delivery of a fluid bolus as a common evidence-based intervention in bundled care. However, some learners will not see the pattern of how the prep-work and objectives are related to each other. SA is affected by these differences in how learners can use prepwork to perceive elements of the planned simulation.

Briefing

Immediately before a simulation, learners meet with the facilitator to have a critical conversation and prebriefing. Prebriefing is described as a complex process with slightly different features (**Chamberlain, 2015**; Ludlow, 2021; **Page-Cutrara, 2015**). It is also defined in the *Healthcare Simulation Standards of Best Practice: Prebriefing: Preparation and Briefing* (**ISC, McDermott et al., 2021**) and the simulation dictionary (**Lioce et al., 2020**). Chamberlain (**2015**) describes prebriefing as orientation and learner engagement activities before the simulation scenario. A principle-based concept analysis by Ludlow (2021) defined prebriefing as a three-phase period used to establish psychological safety, decrease anxiety and extraneous cognitive load, and increase learner engagement.

Page-Cutrara (**2015**) illustrated an example of prebriefing designed to provide time for anticipatory reflection and planning to support decision-making, psychological safety, and debriefing activities. Generally, the same person who facilitates the prebriefing will facilitate the debriefing. This consistency fosters anticipatory reflection and emphasizes planning to support decision making, psychological safety, and debriefing activities (**Johnson, 2020**; **Page-Cutrara, 2015**). Educators design prebriefing activities to engage learners, spark active learning, and "enhance learner satisfaction, participation, and effectiveness of the simulation experience" (**Chamberlain, 2015**, p. 321). By developing SA during prebriefing, the stage is set for clinical thinking, judgment, decision making, and reasoning during the simulation.

During prebriefing, the facilitator sets the tone for the simulation learners and demonstrates respect and investment in the success of everyone. Setting the safe container provides psychological safety and fosters learning (**Rudolph et al., 2014**). Psychological safety decreases the anxiety felt by learners in the environment and improves performance (**Roh et al., 2018**). Anxiety is a significant threat to SA, and by actively promoting psychological safety in prebriefing activities, facilitators may be enabling SA. Details for specific methods in the exemplar case will be provided, but the prebriefing proceeds as described:

> *The facilitator in the pneumonia simulation chooses to conduct the prebriefing by asking the learners what their most pressing concern is related to the upcoming experience and addresses those needs. The facilitator responds to questions empathetically while conveying a genuine desire for students to succeed in formative simulation. A brief discussion ensues about the purpose of the learning activity, ground rules*

are established for mutual respect among all participants, and participants are reminded they will not be penalized for mistakes; these steps help establish a psychologically safe environment.

The facilitator then provides patient report and reviews learning objectives. Using Socratic questions, participants' self-confidence is strengthened by encouraging them to share their observations about their prepwork and assist them in applying it to the current scenario. Collaboratively constructing an overall plan with the learners, the facilitator can choose how much cueing to engage in depending on the learners' initial knowledge base. The learners are allowed to enter and familiarize themselves with the simulation environment. After allowing final questions, the facilitator expresses confidence in the participants, and they begin the simulation being more confident, prepared, and encouraged.

Prebriefing includes a hand-off report on the patient that exposes learners to important elements about the dynamic and evolving clinical situation. A scenario with a clearly defined situation and backstory provides the context for the simulation-based experience (**ISC, Watts et al., 2021**). Attentiveness to these elements is the perception level of SA in Endsley's (**1995**) model. In the exemplar case, the prebriefing patient report would be:

This 85-year-old woman was admitted to the medical surgical unit earlier today with increased confusion and agitation, cough, and shortness of breath. She has a history of dementia, hypertension, and type ii diabetes mellitus. She was transferred from her long-term care facility by ambulance this morning. This morning her daughter was with her, but she has since gone home. Her initial admission orders were implemented. Oxygen is being administered at 2 L per nasal cannula, and intravenous normal saline 0.9 is being infused at 50 cc/hr. Her laboratory values this morning in the emergency department were: white blood cell count, 10,500; glucose 135; blood urea nitrogen, 54; creatinine, 1.8; and lactate, 1.9. Her last set of vitals 4 hours ago were blood pressure 116/70, heart rate 96, respiratory rate 20, and temperature 99.8°. Her oxygen saturation was 95% on 2 L in the past 8 hours; her intake total was 660 mL, and her output total was 110 mL.

Learners who are developing SA will notice the patient's pertinent history, laboratory results, vital signs, key assessment findings, and important information about the context of the situation. Using prior knowledge and experience, they would begin to make sense of the situation and think like a nurse by beginning to synthesize the elements and coming to an early understanding about relevance (**Endsley, 1995**). Using the primed knowledge from the prepwork and the contextual cues from the hand-off report, learners begin to comprehend the clinical situation and compare it with prototypes or mental models that exist from prior knowledge and experiences. The learners assimilate elements that fit their expected mental model and accommodate or reframe their model to adjust to the situation at hand. In the exemplar case, the learners would notice the following:

The patient is hypotensive and has a low-grade fever, with the elevated lactate level as a possible sign of sepsis. As novices, the learners do not recognize the pattern of decreased urine output and elevated creatinine as indicators of sepsis-related organ dysfunction.

Despite good prep work and prebriefing experiences, errors in SA still can occur because of an overabundance of information that overwhelms the individual's ability to reason through all the cues (**Endsley, 1995**). Benner's From Novice to Expert theory (**1984**) explicates that novice nurses have difficulty recognizing meaningful situation components in new or complex clinical situations and vary in their ability to discern what is important. Stress adds to this problem and creates a type of tunnel vision in which important cues are not perceived (**Endsley, 1995**). Individuals respond differently to dynamic environments, and their ability to pay attention to competing elements differs. Therefore, not all learners experience the same development of SA, decision making, and performance (**Endsley, 1995**).

A well-developed mental model or contextual framework is the foundation for understanding the relevance of perceived information, comprehending its meaning, and directing action (**Endsley, 1995**). Didactic classroom knowledge is intended to provide this foundation, yet learners may have trouble integrating elements of a situation with their knowledge, experience, and stated objectives of the simulation. Likewise, even if they grasp the intent of the simulation, learners can be challenged to recognize cues and patterns. SA may not develop when novices cannot correctly integrate or comprehend the meaning of perceived data considering the stated goals or objectives (**Endsley, 1995**).

As novice nurses begin formative simulation-based learning experiences, they bring their knowledge of objective attributes and context-free rules from textbooks and lectures; however, they have little understanding of how to apply these to a clinical situation when prioritization is complicated and unique patient situations do not exactly match what has been learned (**Benner, 1984**). Even with the addition of presimulation prepwork and prebriefing, novice nurses will have difficulty accommodating unexpected elements that do not align with their mental model. The resulting inaccurate or incomplete SA can be detrimental to clinical judgment, reasoning, decision making, and actions.

The prebriefing facilitator plays a crucial role in assisting learners to focus their attention on the most salient elements (**Solli et al., 2020**). Facilitators accomplish this by using questions, discussion, expert role modeling videos, and other learning engagement activities. Some groups in a quasiexperimental study by Chamberlain (**2017**) used learning engagement activities such as viewing a video about respiratory assessment and discussing care plans for a patient with respiratory distress to review content needed in the scenario. In a study of cognitive load theory, a worked-out modeling intervention was provided during prebriefing with the intent of reducing cognitive load (**Josephsen, 2018**).

Similarly, a series of educational activities ranging from reading a personal exemplar of a code to practicing a cardiac assessment were used to prepare students to respond to a cardiovascular emergency (**Brackney & Priode, 2015**). In all instances, simulation participants appreciated the interventions and reported that these activities helped them feel prepared and enhanced various performance measures in the associated scenarios (**Brackney & Priode, 2015**; **Chamberlain, 2017**; **Josephsen, 2018**). These prebriefing activities deliberately enhance SA by identifying relevant elements in the environment and promoting comprehension of the current situation.

Continuing the exemplar case, the facilitator uses clarifying questions to focus the learners:

> *The simulation facilitator asks the learners what parts of the patient report were concerning based on their readings. Using the learners' responses, the facilitator calls attention to gaps in the learners' knowledge about the current situation. The facilitator encourages the learners to think about what assessments are needed to fill those gaps. Throughout the discussion, the facilitator draws out the learners' understanding of relevant patient characteristics that may affect the nursing process in the upcoming scenario.*

To anticipate or project future states, learners must understand the current environment and use a mental model that integrates the elements of a situation and their meanings (**Endsley, 1995**). As a result, assisting learners to establish a mental model becomes a critical prebriefing activity. Focus groups of students in a high-acuity nursing course identified group planning as a potential improvement for a simulation experience; anecdotally, the inclusion of a collaborative group planning activity during prebriefing resulted in less anxiety, greater ownership, and enhanced learning (**Elfrink et al., 2009**). Discussing a brief plan of care for a patient is a particularly productive prebriefing activity because it integrates perception, comprehension, and prediction based on the information revealed in the prepwork, objectives, and patient report. In the exemplar case, the learners identified the following steps in their brief care plan: (1) introduce themselves to the patient and check patient identification; (2) assess vital signs; (3) perform a focused assessment of mental status and respiratory and cardiovascular systems; and (4) potentially call the provider to update a change in the patient's condition.

Simulation generally is a group experience when used for clinical learning in nursing programs. During prebriefing, SA develops among the group members, but each individual has a different capacity for SA. Overall, team SA is affected by the degree of awareness that the members have regarding their responsibilities (**Endsley, 1995**). In simulation, it is often necessary to divide participants into observer and participant roles; however, developing team SA is assumed equally by all of the group members. It is beneficial for all of the group members that some will excel at developing SA and begin to project the future actions of elements in the environment during the pre-briefing. This ability represents the highest level of SA and is available only when the elements of the situation are perceived, comprehended, and associated with particular objectives (**Endsley, 1995**). In the exemplar case, only one learner may recognize that decreased urine output is a clinical indicator of poor perfusion and advocate for collecting other assessment data related to perfusion. The group's SA is enhanced by the individual SA that includes the perception of the significance of urine output related to sepsis, recognition of the potential causes, and the resultant prediction that there may be other signs of poor perfusion.

Orientation

The orientation phase of prebriefing occurs when the learners enter the clinical environment and use their senses to interact with the equipment directly prior to the start. This is an opportunity for learners to gather perceptual cues and elements. In simulation pedagogy, this is particularly important because learners must understand what is being simulated and how to operate equipment. In a simulation, participants, designers, instructors, and operators must all mutually commit to the fiction contract (**Dieckmann et al., 2007**; **Rudolph et al., 2014**). This fiction contract has implications for SA because the educators must design the simulation with enough fidelity to allow for perceptual elements to be perceived, and the participants must agree to accept known limitations.

To facilitate SA, repeated experience in a familiar environment allows learners to develop expectations about future simulations. Endsley (**1995**) suggests information from the environment will be processed more quickly and accurately if there is an agreement with expectations. Conversely, errors are more likely when expectations differ from what is experienced. Establishing comfort with the simulation environment also decreases learner anxiety and promotes attention to the most salient clinical elements (Ludlow, 2021). The following components are present in the exemplar orientation:

The facilitator introduces the participants to the simulation space and reviews any unfamiliar equipment, allowing time for the participants to touch and use the equipment. In the pneumonia simulation, a manikin plays the patient role, so the facilitator reviews the functions and limitations in the context of depicting respiratory findings. Any specific processes expected in the simulation, such as using communication devices to contact team members, are reviewed.

Simulation

After prebriefing, learners enter the simulation where SA continues to be sustained, yet modified, throughout the scenario. Although SA may be developed through prebriefing, it can be changed by the perception of new information. In the simulation scenario, unsupported SA, decision making, and performance of actions occur during the provision of nursing care. According to Endsley's (**1995**) model, the performance of actions creates feedback that becomes part of the state of the environment. Learners must perceive this new information and assimilate or accommodate accordingly. Some formative simulations contain conceptual cues intended to provide learners with information and feedback needed to foster successful care of the patient and achieve learning outcomes (**Paige & Morin, 2013**). These cues support learner SA even when a facilitator is not present and accurate predictions are challenging within the complex environment of health care. The following provides an example using the pneumonia case:

> *It may be difficult for learners to recognize increased work of breathing in a manikin. If learners do not notice that vital signs indicate increased oxygen needs, the facilitator provides cues in the patient's voice about escalating respiratory distress. They may even voice physical assessment findings related to decreased perfusion that the manikin is unable to provide.*

Best practices in prebriefing support the development of SA, which then informs decision making and action in a simulation. However, some variables can negatively affect the development of SA.

Threats to Situation Awareness

Simulation design, following the Healthcare Simulation Standards of Best Practice™: Simulation Design (**ISC, Watts et al., 2021**), encourages purposeful structure, process, and outcomes to facilitate consistent learning and provide a valuable simulation-based experience. Although a simulation is designed with a scenario to provide context and cues to allow progression through the experience, there are limitations with the simulated environment. For example, manikin simulation will incorporate realistic moulage to replicate essential characteristics of a clinical problem, but an olfactory component that could possibly affect SA may be missing.

In other SA applications such as aviation, interface design affects information presentation, which has ramifications for how much and how accurately it is perceived (**Endsley, 1995**). This is especially relevant in manikin-based simulations because of limitations of the technology. Although the manikins are sophisticated and designed to replicate many aspects of human anatomy and physiology, there are some human functions that cannot be replicated, and facilitator-provided reality cues offset these limitations (**Paige & Morin, 2013**). For example, when participants ask a manikin to push against their hand to test motor strength in the lower extremity, the facilitator assuming the manikin-based patient provides a verbal reality by stating, “I am pushing back on your hand with +5 strength.” Simulation uniquely requires learners to perceive reality cues and engage in the fiction contract to be engaged with learning (**Rudolph et al., 2014**). These distinctive requirements may affect a learner's ability to develop SA, but an orientation to the simulation environment mitigates these challenges.

Stress also can negatively mediate SA to the extent that the stressors, either physical or sociopsychological, are perceived as threatening or dangerous (**Endsley, 1995**). In SA, stress may narrow the field of focus and increase the probability of missing cues within the environment or result in premature decision making or nursing actions without exploring all of the information available (**Endsley, 1995**). Stress affects working memory capacity and retrieval ability negatively. Because many students find simulation stressful, SA may be affected despite adequate preparation from prepwork and prebriefing (**Shearer, 2016**). However, establishing readiness and a mental model during prebriefing may diminish the effects of stress on SA and allow learners to engage fully in the clinical experience.

Debriefing

It is presumed that inaccurate or incomplete SA may lead to poor performance (**Endsley, 1995**). However, Endsley (**1995**) posits that SA is only one factor that can increase the probability of good performance but does not guarantee it. Therefore, in simulation pedagogy, the debriefing phase is crucial for learner recollection, reflection, and feedback about the experience. Debriefing is a formal, reflective process that encourages thinking about the completed simulation and moves learners toward assimilation and accommodation of learning (**Bradley et al., 2020**; **Dreifuerst, 2009**; **Rivière et al., 2019**).

A skilled debriefer will encourage conscious consideration of the personal and contextual factors that influence both correct and incorrect decisions and actions taken during the simulation (**ISC, Decker et al., 2021**). Exploration of the thinking behind the actions include experience, culture, background, personality, skills, and knowledge. These influence the development of SA and the resultant clinical judgment, decision making, reasoning, and actions.

The relationship between prebriefing and debriefing is important. Through Socratic questioning, the debriefer uncovers the thinking underpinning learners' actions and decision making (**Dreifuerst, 2015**). In this manner, debriefing detects errors in SA or confirms accurate SA. By querying learners about noticing, interpreting, and decision making, SA can become apparent and taken-for-granted assumptions challenged and discussed (**Dreifuerst, 2015**). Because learners may have no awareness that their mental frames are inaccurate or incomplete, examining the mental models used in performance is necessary to identify errors in SA (**Endsley, 1995**). In the exemplar case, the debriefing unfolds:

> *The facilitator notices that the learners attribute the patient's mental status to her history of dementia. They ask whether there could be other reasons for decreased mental status in this situation. One student remembers reading during their prep work that decreased level of consciousness could be a sign of severe sepsis. Another student adds that decreased perfusion to the brain because of septic shock could be causing increased confusion and lethargy. The facilitator asks how the group could tell whether the current mental status was the patient's baseline or whether it was an acute change. The learners name several ways of investigating the patient's baseline mental status. One learner explains that she would have been much more worried about the patient if the change in mental status was new and that detail might have changed some of the nursing actions taken. The group verbalizes the importance of knowing the patient's baseline to understand the situation better.*

Conclusion

The limited research about prebriefing in nursing simulation demonstrates favorable learning outcomes as well as increased learner satisfaction and is considered a critical element of simulation. Unfortunately, the variability in prebriefing implementation makes it challenging to identify the necessary components. However, developing SA throughout the simulation preparation and prebriefing process promotes better clinical judgment, reasoning, and decision making that leads to quality nursing care. Best practices in prebriefing help develop SA as conceptualized in Endsley's Model of Situation Awareness (**1995**) and contribute to greater learner satisfaction and more effective learning experiences.

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