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A Systematic Review and Development of Best Practice in the Usage of Video Recording During Debriefing of Simulation with Undergraduate Nursing Students

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A SYSTEMATIC REVIEW AND DEVELOPMENT OF BEST PRACTICE IN THE USAGE OF VIDEO RECORDING DURING DEBRIEFING OF SIMULATION WITH UNDERGRADUATE NURSING STUDENTS

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Abstract

The purpose of this evidence based project was to evaluate current literature and synthesize the best practice guidelines for debriefing and video-assisted debriefing (VAD) as it relates to simulation-based learning for undergraduate nursing students. Presently, high fidelity patient simulators (HFPS) and various debriefing techniques are used in many different occupational fields. Facilitator led verbal debriefing is a standard practice in nursing schools following a simulation to guide student reflection and learning. Newer technology, however, is now allowing for video-recording and annotation of simulations for enhanced debriefing sessions and can be used for immediate review. Some evidence-based guidelines exist for standard debriefing; however, there is limited research for both VAD and the facilitator's role. This project provides an operational definition which promotes assimilation into real-world practice by explaining the attributes of VAD: reflection, feedback, self-efficacy, and behavioral identification. Guidelines focus on tools for the facilitator to lead a VAD session. The Kolb Experiential Learning Theory (ELT) and framework was used for this project (Kolb, 1984).

Keywords: debriefing, video-assisted debriefing, facilitated feedback, reflection

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Chapter 1: Introduction

Simulation

Nursing simulation is a recreated clinical scenario performed in an artificial setting, such as a school, for deliberate practice of skills in a controlled environment (Hicks, Coke, & Li, 2009). Many colleges and universities have integrated simulation to allow students to develop knowledge and clinical judgment in "real-world" conditions. Simulation has its roots in fields such as military and aviation and entered the nursing profession in the early 1960's (Hogg, 2002; Dismukes, Jobe, & McDonnell, 1997, Fanning & Gaba, 2007; Rosen, 2008; Kamerer, 2012). It continues to expand by integrating advanced technologies such as realistic high fidelity patient simulators (HFPS) and video-assistive technology to enhance standard debriefing sessions. As schools utilize these technologies it is important to assess the effectiveness of these modalities and students' perceptions of their learning through them (Entwistle, 1991).

The realistic environment allows the student to fully immerse themselves into the scenario, realize and safely learn the consequences of their actions, and learn to use healthcare technology and equipment while gaining exposure to rare clinical events which can positively impact patient outcomes (Gururaja, Yang, Paige & Chauvin, 2008; Kamerer, 2012; Fanning & Gaba, 2007). Strengths shown in utilizing simulation include integrative learning which brings together theoretical bases from both lecture and reading. Psychomotor skills can further be incorporated from skills lab to clinical practice. Simulation provides early exposure to real-life situations prior to entering the workforce (Lasater, 2007; Kamerer, 2012; Fanning & Gaba, 2007). Scenarios may be recorded and monitored remotely by faculty who can annotate in real-time for immediate video-assisted debriefing (VAD) directly following the simulation.

Debriefing

Debriefing is an activity immediately following a simulated exercise during which students and instructors reflect on actions, outcomes, and the critical-thinking processes to develop clinical judgment, reasoning, and communication skills (Arafeh, Hansen, & Nichols, 2010; Chronister & Brown, 2011; Dreifuerst, 2009; Kamerer, 2012; Jefferies, 2007). Most literature promotes debriefing after simulation because it has been found to enhance learning and is a stepping stone towards a higher quality of education (Cantrell, 2011; Dreifuerst, 2009; Fanning & Gaba, 2007; Kamerer, 2012; Olsen, 2013). Jeffries (2005) asserts debriefing to be an overlooked yet invaluable tool when it reinforces positive aspects of the experience and allows the participant to link theory to practice and research, think critically, and discuss how to intervene professionally in complex situations.

Standard debriefing has been utilized for decades in the post-simulation discussion. It is a verbal review which includes creating a positive, non-threatening, respectful, and confidential atmosphere; allowing time for reflection to explore feelings and reactions and providing positive and non-judgmental feedback. It also includes asking open-ended questions such as, "what went well" and "what could be done differently"; and assimilating key points of the simulation to apply to the clinical setting (Cantrell, 2011; Dreifuerst, 2009; Fanning & Gaba, 2007; Kamerer, 2012; Olsen, 2013). Standard debriefing is led by a trained facilitator who does not lecture, but promotes and guides discussion amongst students, allowing reflection of all participant's performances (Ostergaard, Dieckmann, & Lippert, 2011; Dreifuerst, 2009; Kamerer, 2012).

Video-Assisted Debriefing

VAD is a structured reflection period, including all components of standard debriefing, where students and faculty converse following replay of clips from their video-taped simulation

session (Chronister & Brown, 2012). Studies have shown the use of video playback demonstrates value in simulation debriefing by allowing the participants to see their actions and/or inactions in real time rather than relying on recall (Decker, Gore, & Feken, 2011; Johnson-Russell & Bailey, 2010). Viewing video clips allows the students to recognize their own and their peer's behaviors immediately. Providing the students a period of time for reflection, evaluation of actions, and critical thinking in a safe environment, VAD can be effective to enhance future practice (Savoldelli, Naik, Park, Joo, Chow, and Hamstra, 2006; Rutledge, Barham, Wiles, and Benjamin, 2008; Cant & Cooper, 2011; Coolen et al. 2012; Chronister & Brown, 2012; and Scherer et al., 2003).

In a recent study comparing standard debriefing and VAD, students stated they were more satisfied with debriefing when using video playback as opposed to standard debriefing alone (Dusaj, 2014). Students preferred this method as it allowed them to identify their own achievements and errors by watching the video recording of their performance. International sites reported higher uses of recording during the simulation as well as mandatory student viewing of the video, whereas U.S. respondents did not require student viewing even though the video-equipment was installed and used (Gore, et al. 2012).

Research has shown positive student perceptions and high learning outcomes from verbal post-simulation debriefing. However, there is a lack in the understanding of these perceptions of VAD (Jeffries, 2007; Decker, 2007; Lasater, 2007; Fanning & Gaba, 2007; Chronister & Brown, 2011). There are only a few studies incorporating student perceptions and the reviews are both positive and negative. Common positive perceptions include: encouraged self-reflection, boosted self-confidence, and provided more objective perspectives. Common negative perceptions include reports of students feeling tired, humiliated, anxious, and stressed (Levett-

Jones & Lampkin, 2014; Elfrink, Nininger, Rohig, & Lee 2009; Saiki, Mukohara, Otani, & Ban, 2011).

Purpose

The four year undergraduate nursing program for whom this project was initiated values the benefits of nursing simulation to enhance student learning to develop highly skilled professionals with the expertise needed to care for patients and families. The University has the necessary equipment to implement VAD into their curriculum; however, there is a gap in the literature regarding best practice guidelines for its use. There is evidence showing higher learning and critical thinking skills are enhanced with the VAD process; however, the evidence-based literature remains inconclusive as to which method provides the best outcomes for the participants (Chronister & Brown, 2012). Therefore the purpose of this evidence based project was to evaluate the literature and synthesize the research to develop the best practice guidelines for VAD as it relates to simulation based learning for nursing students in a four-year undergraduate program.

Chapter 2: Concept Analysis

Debriefing in simulation experiences has been utilized by many fields and proves to be one of the most crucial steps in achieving good learning outcomes. A review of literature found video-assisted recording for the use in debriefing to be beneficial. However, the term VAD for the purposes of simulation has not yet been defined conceptually in the literature. Debriefing itself has been conceptually analyzed by Dreifuerst (2009) using the Walker and Avant method. This research project also used the same method to guide the concept analysis of VAD and the formation of an operational definition as it pertains to the simulation experience of undergraduate nursing students. The purpose of conceptual analysis is to examine the structure and the function of the chosen word or term (Walker and Avant, 2011). The Walker and Avant model has two assumptions: (1) concepts have defining attributes and (2) those concepts can be analyzed prior to or independently of theory construction and testing (Dreifuerst, 2009). Walker and Avant (2011) define concepts as the building blocks of theory construction with a mental image of a phenomenon, an idea, or even a construct of the mind about a thing or action. Defining attributes make the concept at hand unique from others and permit the researcher to decide which phenomena match the concept and which do not (Walker and Avant, 2011). Attributes of a concept are tentative, according to Walker and Avant (2011), because they change from one person to the other and from day to day.

This chapter provides an operational definition of VAD by reviewing the literature concerning both debriefing and video-recording as they pertain to medical and non-medical debriefing experiences. This chapter continued the work supporting the search for best practice guidelines using a video-assisted recording device for the purpose of debriefing undergraduate nursing students during simulation experiences.

Debriefing

The term debriefing itself has been conceptually defined by Dreifuerst (2009) as a process in which faculty and students reexamine the clinical simulation which fosters the development of clinical reasoning and judgment skills through a reflective learning process. The defining attributes of this process are reflection, emotion, reception, framing, integration, and assimilation which work together during debriefing to create a significant learning experience (Dreifuerst, 2009). These attributes were further described by Dreifuerst (2009) as

- reflection: the opportunity to re-examine the experience by calling out the thinking process which took place during the simulation event;
- emotion: the ability to embed a learning experience into memory by the way it frames the experience;
- reception: openness to feedback which can have a positive or negative impact depending on the delivery by the facilitator;
- framing: the attribution of meaning to a set of facts;
- integration: the ability for the facilitator to model framing will embed the elements of the experience into scaffolding so the learner can call upon the learned information in future situations; and
- assimilation: the ultimate goal of nursing education in which nursing students can demonstrate the successfully transfer of what they have learned in the simulation experience into a real-world setting.

Van Heukelom, Begaz, and Treat (2010) defined debriefing as the aspect of the simulation experience during which the learners are given an opportunity to reflect on the simulation while the instructor is given the opportunity to provide feedback and teach the

participants. This study compared two types of simulation debriefings where one took place 'in-simulation' as the other was 'post-simulation'. Participants perceived the limited feedback during the simulation then followed by a comprehensive debriefing session helped them learn the subject matter with an overall understanding of right versus wrong in the proposed scenario (Van Heukelom, et al. 2010).

Merriam-Webster (2014) defined the term debrief as to interrogate (as a pilot) usually upon return (as from a mission) in order to obtain useful information and to carefully review upon completion. Military terms of this word were found throughout the literature review such as 'diffusing' which came out of combat. Here, it had a psychological and therapeutic association in aiding the processing of traumatic events to reduce psychological damage and quickly return combatants back to the frontline (Fanning & Gaba, 2007). Much importance was placed on the narrative to reconstruct what happened. A similar form of debriefing, called critical incident debriefing, was also used to mitigate stress among emergency first responders (Fanning & Gaba, 2007). Though many guidelines of debriefing are available and used across a wide spectrum of specialties; the evidence remains inconclusive as to which method provides the best outcomes for participants.

Video-Assisted Debriefing

Although VAD methods have been developed for several decades there are only limited definitions found in the literature review to adequately describe it. VAD is used in career fields such as sports, military, aviation, psychology, occupational therapy, and medicine (Fanning & Gaba, 2007; Baum & Gray, 1992; Liu, Schneider, & Myazaki, 1997). Since the 1960's video recording has been utilized and documented as a learning strategy in medical simulations of surgical training and trauma resuscitations (Scherer, Chang, Meredith, & Battistella, 2003).

Medical residents have found the videotape review helpful, especially when reviewing it on their own the next day (Scherer et al., 2003). In 1981, Quirk and Babineau (1982) researched how 3rd and 4th year medical students could best learn interviewing techniques for residency, and showed significant improvement in interviewing skills for the group which had a video-recorded review of their simulated interview ($T=5$, $p<.01$) (Quirk & Babineau, 1982).

Coolen et al. (2011) evaluated the effectiveness of video-assisted real-time simulation (VARS) to other educational methods such as problem-based learning (PBL) in forty-three 4th-year medical students to evaluate if VARS could develop competence in acute medicine in a realistic and safe environment. The main results of the study showed improved skill acquisition in students trained on high-fidelity simulators using the VARS method compared to PBL (Coolen et al., 2011). The structured approach of VARS was found to be a powerful tool to improve clinical competence as it both assisted in identification of training needs and provided training for the intervention with feedback and an individualized learning path (Coolen et al., 2011). According to the authors, students gave many positive comments about the opportunity to use both the VARS and PBL learning methods. An increase in confidence and self-efficacy directly related to receiving specific and direct feedback was reported (Coolen et al., 2011). Video-assisted recording for use of debriefing assisted in (1) identification of training needs (2) provided training for the intervention with feedback and (3) developed an individualized learning path to be used as a tool to improve clinical competence (Coolen et al. 2011).

In psychology, VAD has been studied by Baum and Gray (1992) who used four methods of learning to test listening skills: self-observation via video-tape, viewing a live experienced therapist, viewing a novice therapist attempting to use the skills, and the subjects own pre-training interview. The study, which differed from other similar studies in this area of

psychology which tested video-recording alone, used a control group who was video-recorded against a group who was taught by traditional methods (Baum & Gray, 1992). The students observing the skilled therapist had the best outcomes, however, the usefulness of video-assisted learning could not be ruled out and suggested further testing be done (Baum & Gray, 1992).

Defining Attributes

Walker and Avant (2011) described defining attributes as the heart of concept analysis in which broad insight is provided. The goal of this section is to offer the reader a deeper understanding of the characteristics of VAD to allow for insight into the model case and application to real-life scenarios. The four defining attributes of VAD most frequently established in the literature are reflection, feedback, self-efficacy, and behavioral identification and change (Bandura, 1977; Chronister & Brown, 2012; Coolen et al., 2011; Deickman, Friis, S. M., Lippert, A., & Østergaard, 2009; Issenberg, Mcgaghie, Petrusa, Gordon, & Scalese, 2005; Katz, 2006; Kolb, 1984)

Reflection

The concept of reflection on an event or activity is the cornerstone of experiential learning, and facilitators must guide this reflective process (Fanning & Gaba, 2007). Reflective learning can be demonstrated by thinking-in-action, thinking-on-learning and thinking-beyond-action using simulation experiences fostered by facilitated debriefing strategies (Dreifuerst, 2009). Tanner (2006) wrote about a similar view stating reflection-on-action and subsequent clinical experiences completes the cycle of learning; showing what nurses gain from experience contributes to ongoing clinical knowledge development and capacity for clinical judgment in future situations. Fanning (2007) called this "post-experience analysis" an attempt to bridge the natural gap between experiencing an event and making sense of it, thus providing a facilitated or

guided reflection in the cycle of experiential learning. Without reflection on the events which take place, the skilled professional in any field is unable to assess and synthesize what is learned to apply it in the future. Reflection is an essential component of the Kolb theoretical model which asks, "Why did it happen that way?" (Kolb, 1984).

Reflection and reflective thinking are described by Ackermann and Lioce (2012) as processes leading to validation of learned skills. Ackermann and Lioce (2012) described developing trust and establishing a connection between the simulation instructor and student to further explore through the learners' comprehension of the simulation experience. The International Nursing Association for Clinical Simulation & Learning (INASCL) (2011) delineated between reflection and reflective thinking, reflection being the conscious consideration of the meaning and implication of an action, whereas reflective thinking could be taught. Reflective thinking requires time, active involvement in realistic experience, and the guidance of an effective trainer (INASCL, 2011). A debriefing should be conducted in a confidential environment. This supports the emotional aspects of the simulation to foster trust, open communication, self-analysis, and reflection, which encourages students to respond to each other with understanding and compassion (Ackermann & Lioce, 2012; INASCL, 2011). These steps encourage further exploration through reflection, introspection, understanding, and enables not only the learner but also the facilitator to explore the experience. Linking guided reflection to critique and correction provides an opportunity to show the affective and behavioral learning which occurs through structured or situated cognitive activities during debriefing (Kuiper, Heinrich, Matthias, Graham, & Bell-Kotwell, 2008).

Reflection has been summarized for the purpose of this study as the opportunity for a student to view video-recorded segments of the scenario with guided verbal discussion and

reflective thinking to recall the events and thought processes which occurred during a simulation experience to synthesize and utilize for future application.

Feedback

Educational feedback was identified as one of the most important components of simulation-based medical education (Issenberg et al., 2005; Gore, 2015; Gururaja et al., 2008). Katz (2006) described educational feedback as a constructive and objective appraisal of performance given to improve a student's behavior and skills. It can either be formative in nature for purposes of modifying a learner's behavior, or it can be a summative evaluation in which judgment is made about the performance for comparison to other learners (Katz, 2006). Issenberg et al. (2005) published a systematic review listing ten criteria for a successful simulation with feedback being the highest priority. The educational feedback appeared to slow the decay of acquired skills to allow learners to self-assess and monitor their progress toward skill acquisition and maintenance. This study also noted the timing of feedback did not matter whether it was directly following or post hoc via a video-recording system (Issenberg et al., 2005). Coolen, et al. (2011) noted students reported an increase in confidence and motivation in training sessions where specific and direct feedback was given on clinical skills and problem management.

According to Merriam-Webster (2014), feedback was defined as helpful information or criticism which is given to someone to help improve a performance or product. Feedback cannot be facilitated in the absence of an instructor or professional in the field of study. Experienced simulation instructors and facilitators are the backbone of the debriefing process and without their expertise the students would be unable to process or utilize the scenarios presented. As previously discussed, there are criteria facilitators must meet in order to most effectively use

VAD to positively enhance student learning. Further research by Deickmann et al. (2009) asserted six specific roles of the instructor include (1) information provider, (2) role model, (3) facilitator, (4) assessor, (5) planner, and (6) resource developer. The feedback to be provided to the students is based on the roles of the trainer and how strongly they are accomplished. The roles need to vary with target groups and learning objectives and trainers must consciously control the degree of involvement during debriefing (Deickman et al., 2009). Jeffries (2005) also described instructors to be essential to the success of simulation activities, but unlike a class-room setting with teacher-centered instruction, simulation is student-centered.

Whether the information about an experience is received from the instructor, a peer, or a computer-based tool, students believe feedback is helpful, informative, and encouraging (Jeffries, 2005). The method of providing immediate feedback about the student's performance allows for increased knowledge and evaluation of decision-making and guides students toward desired learning outcomes (Jeffries, 2005). Ackermann and Lioce (2012) viewed feedback as both verbal and non-verbal with both positive and negative responses assisting the participants to be open to all feedback. Katz (2006) gave basic principles in providing feedback in the medical setting which included

- developing clear course objectives;
- establishing a relationship with the learner for trust and learner acceptance;
- planning the feedback in advance;
- basing the feedback on descriptive observations being non-judgmental and performance specific;
- focusing on areas the student can control instead of personal characteristics;
- being focused and concise;

- balancing positive and negative comments;
- allowing the change for self-assessment; and
- using positive end comments.

It is also important to encourage feedback from the students either verbally or in the form of a questionnaire. To evaluate this, Olsen (2013) promoted a question to students such as, "Did the instructor's questions help you think critically?"

Feedback has been summarized for the purpose of this study as the positive and negative outcomes of the simulation experience shared by both the student and instructor to facilitate deeper learning and encourage application for future real-world situations.

Self-Efficacy

According to the American Psychological Association (2014), self-efficacy is an individual's belief in their capacity to execute the behaviors necessary to produce specific performance attainments. It reflects the confidence one has in the ability to exert control over their motivation and behavior which influences all manner of human experience (APA, 2014). These include goals for which people strive, the amount of energy expended toward goal achievement, and the likelihood of obtaining a certain level of behavioral performance (APA, 2014).

According to Scherer et al. (2003), perceived self-efficacy is the discrepancy between the behaviors participants *think* they are performing versus the behaviors *actually* performed. Scherer's study used video-recording and review to asses if it would improve compliance of trauma resuscitations with a treatment algorithm. Scherer et al. (2003) argued video-recorded review is the perfect media for capturing and reviewing complicated behaviors and which is also helpful in identifying incongruities in perceived self-efficacy.

Bandura (1986) defined self-efficacy as, "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances. Self-efficacy is not concerned with the skills one has but with the judgments of what one can do with whatever skills one possesses" (p. 194). Bandura (1977) originally developed the concept of self-efficacy out of the Social Cognitive Theory which viewed human function as a reciprocity of behavior, cognition, personal factors, and environmental events which all act as determinants of each other (Gage & Polatajko, 1994). This conceptual system enveloped expectations of personal mastery which affect both initiation and persistence of coping behavior. The strength of a person's conviction in their own effectiveness will most likely affect whether or not they will even attempt to cope with a situation (Bandura, 1977). People tend to avoid new and threatening situations they believe will exceed their coping skills. However, once engaged in such a situation, confidence in behavior may be gained, and the situation can be managed (Bandura, 1977).

Video-recording is associated with improving perceived self-efficacy according to a study by Scherer et al. (2003) and postulated skills will be improved by aligning one's perceptions of performance with actual performance. Coolen et al. (2011) observed improved self-efficacy in the study of fourth-year medical students using the VARS system. The study found improving self-efficacy encourages positive thinking allowing a person to visualize successful performance and is likely to increase a medical provider's motivation to continuously improve competence (Coolen et al., 2011).

For the purpose of this study, self-efficacy was used in the context of VAD to describe the ability one has to choose a behavior to embrace desired learning outcomes. This can be

accomplished from evaluating one's perceptions about the scenario as well as one's actual performed actions through viewing a video-recording of the simulation experience.

Behavioral Identification

A behavior is a subjective action which is perceived differently by the one performing the action and those viewing it. Humans live each day watching the behaviors of others, but not always understanding the rationale. VAD is a tool which can be used in controlled settings to assess why a person performed a simulation task the manner in which they did. Video-recording allows for visual recall of the situation to be further discussed and also allows observers to give their perception of what was happening. This process of behavioral identification is a cornerstone of VAD and has the opportunity to provide a depth of experience verbal debriefing alone cannot (Scherer et al., 2003).

Scherer et al. (2003) identified such behavioral change in their study of trauma resuscitation procedures. After one month of initiating the conference-based video-recorded review of the student performance, one half of the behaviors had improved. Also, performances after one month of video-recorded feedback were better than those which had three months of verbal feedback for their assessment skills (Scherer et al. 2003). Not only did student performances sustain, but they continued to improve throughout the study period of three months. Scherer et al. (2003) stated improvements in outcomes are due to objective evidence seen by the individual of their performance which is the first step in behavioral change. Reduction in time spent mastering the skills liberated the participant to pursue other learning opportunities.

Behavioral identification and change as it pertains to VAD in nursing simulation is the process by which a student observes the action in need of change through video-recording,

discusses it with peers, and implements change in future practice. Through this implementation learning times will be reduced leading to better outcomes for patients.

Operational Definition of VAD

The defining attributes of VAD have been identified as reflection, feedback, self-efficacy, and behavior identification and change. The aim of this concept analysis connected the aspects debriefing and video-recording to form an operational definition of VAD as it pertains to undergraduate nursing simulation. The definition is:

> A post-simulation discussion utilizing a video-recording system to review specific points and actions in the simulation with the student and/or class and allow for deepened reflection and feedback to identify behaviors needing changed, as well as illustrating and reinforcing good behaviors to promote safe assimilation into real-world experiences, thus promoting self-efficacy.

Model Case

Undergraduate nursing students are led into a simulation area and given a short pre-brief session. The prepared facilitator reviews the simulation room (location of supplies and medications), mannequin (normal sounds, pulses, and chest movement), the logistics of how the simulation will operate (paging for resources), and assigns participants to their roles. Each student is provided with a consent form to sign for permission to be video-recorded. The students witnessing the simulation receive worksheets to mark thoughts and to analyze the elements which should be completed in the scenario. The group is oriented to the goals and purpose of debriefing and is reminded by the instructor that confidentiality and trust are essential to the process of debriefing and thoughts and questions are welcome. During the simulation, the instructor and facilitator run the scenario using the B-Line video-recording device to tape

throughout and annotate thoughts during specific points for later review. Forty to sixty minutes is allotted per scenario to include both the fifteen to twenty minute simulation and thirty to forty minute debriefing. Following the simulation experience, the small groups of eight students are all seated at a round table with the facilitator to review the scenario using video clips for prompting and review.

First, a positive open-ended question is asked to the students: "What went well during this scenario?" A conversation is initiated regarding the emotions of the events: "How are each of you feeling?" "What was the experience of caring for the patient like for you?" Both non-verbal and verbal demeanors are used to support discussion. After the essential time allowing for emotions to be discussed, the instructor refocuses the conversation to the attribute of reflection on specific points of the scenario for learning and feedback to take place. Four main components are addressed which include: (1) communication through situation, background, assessment, and recommendation (SBAR), (2) identification of critical events, (3) nursing management, and (4) collaboration with family and the healthcare team. These points are reviewed via playback of the video-recording and promote the attribute of self-efficacy. The instructor plays back moments on the recording of greatest importance and not the entire scenario so as to keep the students from being distracted by less important aspects of the simulation. After playback of specific scenes, the facilitator asks questions: "What happened?" "What is the primary concern in this scenario?" "What knowledge, skills and attitudes are needed for this simulation?" "Were the interactions and interventions appropriate for this patient?" "How did the participants work as a team?" and "Is there additional information which would be useful?"

The video review is concluded with questions to promote further thinking and behavioral identification such as, "How could this situation be improved upon?" "What could have been

done differently?" and "Were there any safety concerns with the patient or environment?" Debriefing is wrapped up by the instructor coaching the students on assimilation of key points. The facilitator will ask questions to promote this type of thinking; "What knowledge, skills, or attitudes displayed in this simulation would be useful for the clinical setting?" or "How will this improve your ability to care for patients?" Even students in the first year of clinical training can benefit from critical thinking and apply learned information in a controlled environment to the real-world setting.

Students are asked for feedback about the simulation and debriefing experience via a questionnaire. The questionnaire will be focused on asking the students to identify their perception of the VAD experience. This information is to be reviewed by the instructor and other facilitators to promote added changes and better outcomes for the future.

Chapter 3: Methodology and Framework

The aim of this project was to synthesize best practice guidelines for VAD in relation to simulation-based learning for practical application involving undergraduate nursing students. This project began in August 2014 after an extensive review of literature identified a clinical problem involving VAD in which no best practice guidelines had yet been developed. Because of the need for VAD guidelines in four-year nursing programs, relevant literature was searched through peer reviewed journals, books, and research articles from 2004 to current date using the databases PubMed and CINAHL. This research base has varying levels and grades of evidence. The search terms used were debriefing, VAD, reflection, feedback, and perception.

Model

Kolb's Experiential learning theory (ELT) had been chosen as the model to guide this project. Kolb used ELT to "describe learning as the process whereby knowledge is created through the transformation of experience" (Kolb, 1984, p. 41). This theory addresses the provision of learning experiences and provides different interventions to meet the needs for all learning types (Lisko & O'Dell, 2010). Kolb, Boyatzis, and Mainemelis (1999) used the term experiential to differentiate the ELT from cognitive learning theories, which can emphasize cognition over effect, and behavioral learning theories, which deny any role for subjective experience in the learning process.

This model was chosen as the structured framework because it focuses on the emotions, behavior, and thoughts which deepen the learning experience. The process is based on Kolb's (1984) four-stage learning cycle which encompasses (1) concrete experience, (2) reflection, (3) abstract conceptualization, and (4) active experimentation. In relation to these stages in VAD, simulation represents as the concrete experience, debriefing as reflection, generation and

understanding of new concepts represents abstract conceptualization, and clinical setting or real-life experience as active experimentation.

All four stages must be experienced for learning to be effective. ELT allows for both understanding of the learning and an explanation of the style or environment in which it occurs. The learning cycle can be monitored in the simulation lab through observation and interaction (verbal and non-verbal) and utilized with the best practice guidelines for VAD. To synthesize evidence based practice guidelines for VAD, Kolb's Experiential Learning Theory (ELT) cycle can be applied to improve clinical judgment and reasoning.

Setting and Population

A four-year undergraduate nursing program which currently uses HFPS and has the equipment capabilities to implement VAD will require evidence-based guidelines and structure to ensure safe and beneficial use for students. VAD guidelines (see Appendix C) are necessary for both nursing faculty and nursing students to have a standard for implementation which provides consistency between each session.

The results of this project were presented on April 2, 2015 to Cedarville nursing faculty including Professor Connie Ford, MSN, CFNP as Committee Chair and Dr. Amy Voris, DNP, AOCN, CNS as Co-Chair. Other graduate students of the family nurse practitioner program were also present.

Chapter 4: Results

A full review of literature was conducted and graded for evidence. Research articles were sorted into two appendices (A and B) to distinguish studies focused on standard debriefing and VAD. Articles were searched primarily through a university's search engine, *One Search.* Through this search engine multiple databases are made available including: Cumulative Index to Nursing and Allied Health Literature (CINHAL) Plus with Full Text, Cochrane Central Register of Controlled Trials, Cochrane Database of Systematic Reviews, Health Source: Nursing/Academic Edition, Health Technology Assessments, Medline, and Medline with Full Text. Other resources included presentations through medical institutions and universities regarding their research and use of VAD. Key terms used were: "debriefing", "video-assisted debriefing", "facilitated feedback", and "reflection". Throughout this project the key terms were expanded to also include "facilitator role".

Inclusion and Exclusion Criteria

Inclusion criteria for the research articles used to develop guidelines for VAD in this project included: use of VAD and/or standard debriefing, use of these debriefing techniques in regards to simulation exercises, use of a facilitator, healthcare team members, English language, published within the past ten years, and evidence-based. Exclusion criteria included: debriefing techniques not used with a simulation exercise, no facilitator used in the debriefing, no correlation with healthcare team members, and published greater than the past ten years. Of the seventy-three articles reviewed on this subject, only twenty met the research criteria for consideration in this project.

Research articles were used from seven different experimental designs including: qualitative, randomized controlled trial, descriptive study, comparative crossover design, cross-

sectional survey, quasi-experimental study, and case-control. Each study was reviewed for level of evidence (LOE) (Melnyk & Fineout-Overholt, 2011) and grade of recommendation (GOR) (Joanna Briggs Institute, 2013).

Level of evidence recommendations were based on a 1-7 scale by Melnyk & Fineout-Overholt (2011):

- Level 1: Systematic review and meta-analysis of randomized controlled trials;
- Level 2: One or more randomized controlled trials;
- Level 3: Non-randomized controlled trial;
- Level 4: Case-control or cohort study;
- Level 5: Systematic review of descriptive and qualitative studies;
- Level 6: Single descriptive or qualitative study; and
- Level 7: Expert opinion.

Based on the analysis of articles in this study 16% were level 1, 12% were level 2, 8% were level 3, 16% were level 4, 28% were level 5, and 20% were level 6. No level 7 studies were included in the list.

Based on the Joanna Briggs Institute grades of recommendations, eleven of the twenty articles were found to be strong, grade "A", and nine to be weak, grade "B". Based on this scale, strong recommendations must meet the following criteria: clear and desirable effects outweigh undesirable effects of the strategy; adequate evidence quality supporting its use; identified benefit or no impact on resource use; and preferences of the learners experience are taken into account (Joanna Briggs Institute, 2013). A grade "B" or weak recommendation is given if the following are evident: unclear if desirable effects outweigh undesirable effects of strategy; evidence supporting its use and may be of low quality; benefit, no impact, or minimal impact on

resource use; and preferences of the learner experience may or may not have been taken into account (Joanna Briggs Institute, 2013).

Summary of Literature Review

Debriefing has been found to be the most important aspect of simulated learning exercises as it allows for students to reflect on actions, outcomes, and the critical-thinking process which occurred to develop clinical judgment, reasoning, and decision making (Arafeh, Hansen, & Nichols, 2010; Chronister & Brown, 2011; Dreifuerst, 2009; Kamerer, 2012; Jefferies, 2007). Standard debriefing is the form of post-simulation discussion most commonly used which utilizes verbal discussion rather than video to help students explore their feelings and reactions to the scenario as well as receive non-judgmental constructive feedback through open-ended questions (Cantrell, 2011; Dreifuerst, 2009; Fanning & Gaba, 2007; Kamerer, 2012; Olsen, 2013). Important elements of standard debriefing include a trained facilitator, appropriate amounts of time allotted for both simulation and debriefing, comfortable environment, self-reflection, and feedback (Krogh et al., 2015; Reed et al., 2013; Arafeh et al., 2010; Elfrink et al., 2009; Pivec & Blazovich, 2012; Gore et al., 2012; Levett-Jones & Lapkin, 2014).

While VAD incorporates the use of video-assistive technology to allow students to view selected portions of the scenario it continues to utilize the important aspects of standard debriefing mentioned previously. What VAD adds to standard debriefing is the ability for students' to see their actions and/or inactions in real time rather than relying on memory recall and allows them to recognize their own and/or their peer's behaviors immediately (Decker, Gore, & Feken, 2011; Johnson-Russell & Bailey, 2010. Common positive perceptions from students participating in VAD included: encouraged self-reflection, boosted self-confidence, and provided more objective perspectives. Negative perceptions included reports of students feeling tired,

humiliated, anxious, and stressed (Levett-Jones & Lampkin, 2014; Elfrink, Nininger, Rohig, & Lee, 2009; Saiki, Mukohara, Otani, & Ban, 2011). These results exposed the need for the development of consistent guidelines in VAD.

Video-Assisted Debriefing Guidelines

Facilitator Roles

Throughout the literature, a resounding theme for both standard debriefing and VAD had been the importance of trained facilitators. Without defined criteria for facilitators, students are more at risk for poor experiences due to poorly implemented feedback. (Dreifuerst, 2009). Essential components of the facilitator role included: implementation with at least two faculty skilled in video-recording, annotation, and content presented in the scenario; practice runs with video, audio, and annotation technology prior to student use; informing participants of policies related to the use of the recordings with signed consent forms for permission to record; guided debriefing and development of skills to enhance student perception of simulation and debriefing; and to conduct a pre-briefing session orienting students to simulation scenarios, technology, and procedures (Krogh et al., 2015; Reed et al., 2013; Gurauraja et al., 2008; Arafeh et al., 2010; Mikasa & Cicero, 2007; Elfrink et al., 2009).

Student Role

While the facilitator has the most responsibility in preparing and implementing a simulation scenario with VAD, the student also has responsibilities in ensuring they are receiving the full benefit of the learning experience. Much of the facilitator role for informing participants of policies related to the use of video recordings during simulation can be accomplished prior to student's arriving to the simulation via an online preparation sheet, instructional video, or other means. It is the student's responsibility to come prepared by reviewing each aspect of the chosen

preparatory method used. The student must be actively engaged in all aspects of the simulation, VAD, and should also follow up with a brief summary of their experience (Fanning & Gaba, 2007; Franklin, Boese, Gloe, Lioce, Decker, Sando, Meakim, & Borum, 2013).

Environment

One of the most important considerations of simulation with either standard debriefing or VAD is the environment in which it's conducted. The literature discussed several ways to provide a setting conducive for safe, effective learning. First, the physical aspect of the room must be clean with chairs and tables positioned in a circle so both students and facilitators are facing one another at eye level (Elfrink et al., 2009; Fanning & Gaba, 2007). Just as important are the non-physical considerations such as creating a respectful, safe, non-threatening, and confidential atmosphere (Krogh et al., 2015; Elfrink et al., 2009; Fanning & Gaba, 2007)

Recommended Session Outline

Evidence-based literature is clear on the order in which a VAD session should occur, however, the amount of time spent on each element is debated. Whether the simulation will be used for standard debriefing or VAD, the scenario should be allotted the same amount of time. Although differing opinions are apparent in literature reviews and recommendations, the most commonly documented aspect implies a VAD session should be 2-3 times longer than the simulation itself (Krogh et al., 2015; Gore et al., 2012). The total length for a simulation scenario with VAD should be one hour in length (see Appendix C for allotted times of each activity) (Krogh et al., 2015; Gore et al., 2012). The session is divided into parts beginning with a pre-brief, allowing for the students to become familiar with the setting, equipment, and resources during simulation. The next activity is the video-recorded simulation, which is uninterrupted by the facilitator (Krogh et al., 2015; Franklin et al., 2013). VAD will encompass

the majority of each session and includes a guided reflection, 1-3 small video-clip reviews, integrated debriefing, and final wrap-up (Krogh et al., 2015; Reed et al., 2013; Gore et al., 2012).

Other specific recommendations to be considered in post-simulation VAD is ensuring each video clip is introduced by the facilitator, noting the intent of viewing it with words such as "clarifying," looking," and "understanding" (Krogh et al., 2015; Reed et al., 2013). Video clips should be used to help redirect and focus the learner on the course objectives and outcomes and not to humiliate or blame (Krogh et al., 2015). Another important aspect of the facilitator is to use open-ended questions throughout the debriefing session and remember silence can be an acceptable feature of the reflection time (Dreifuerst, 2009; Fanning & Gaba, 2007; Cantrell, 2008; Sando et al., 2013).

Facilitator Feedback

When students are given the opportunity to reflect on any type of debriefing session one of the most common elements noted is the importance of constructive facilitator feedback (Fanning & Gaba, 2007). Aspects of this practice most important to participants is the provision of honest feedback and portrayal of a positive demeanor from the facilitator (Elfrink et al., 2009; Franklin et al., 2013; Sando et al., 2013; Lasater, 2007; Scherer et al., 2003).

Final Wrap-Up

Each VAD session should be closed with a brief time to provide concluding thoughts for students, recommended activities to alleviate the identified performance gaps and to offer opportunities to view the full video-recording privately in the simulation center to encourage enhanced self-guided reflection and learning (Krogh et al., 2015; Cantrell et al., 2008; Levett-Jones & Lampkin, 2014). When VAD is in the early implementation phase at any facility, it is

advised to obtain feedback from students, verbal or written, and ensure this method is being perceived by the student in a positive way.

Chapter 5: Discussion

The purpose of this systematic review of literature was to search for best practice guidelines for VAD when applied to undergraduate nursing students in order to enhance their educational learning. Although a gap in the literature was found regarding best practice for VAD, the research revealed different types of both standard and VAD strategies. Some of the techniques for VAD proved beneficial to the student while others were detrimental. Therefore, best practice guidelines have been developed based on the positive aspects of this technique. These best practice guidelines can be used as a tool to assist both the facilitation and learning from this debriefing technique (see Appendix C for VAD guidelines).

The recommendations identified by the literature review for future VAD research included: developing a web-based training program for facilitators and creating a standard annotation coding system. These two additions in VAD training would allow for more effective, efficient, and non-biased debriefing in a timely fashion and so enhance the students learning process for future practice. Another recommendation was to evaluate the student's perceptions of the VAD process. Such an evaluation should include video viewing preferences (i.e. alone or in a group) and if video or standard debriefing alone is preferred.

In conclusion, verification of enhanced learning through simulation based training and VAD were validated in the research. These recommendations and guidelines were developed to provide a framework for the facilitation of VAD. This project provides the best practice guidelines with which a four-year undergraduate nursing program can use should they decide to implement VAD in simulated learning environments.

Appendix A

Summary of Studies Using Standard Debriefing

Authors	Title	Research Design	Results	LOE[1]/ GOR[2]
Fanning & Gaba (2007)	The role of debriefing in simulation based learning	Systematic Review	This review of literature examines different approaches to debriefing, including VAD, and the components which enhance a debriefing session. Objectives of debriefing, facilitator role, setting, and practical timing are also addressed.	Level 5 Grade B
Franklin et al. (2013)	Standards of best practice: Simulation standard IV: Facilitation	Systematic Review	Facilitation methods used during simulation and debriefing should include: Providing cues to redirect the scenario and guide participants towards learning by certain cues which do not distract from the participant focused simulation; and by having preparation before the simulation, facilitation during simulation, and feedback during debriefing after simulation to help learners achieve the expected outcomes.	Level 5 Grade B

Issenberg et al. (2005)	Features and uses of high-fidelity medical simulations that lead to effective learning: A BEME systematic review.	Systematic Review	This review synthesized existing literature for evidence in educational science which addresses the features of using a high fidelity patient simulator leading to the most effective learning. The authors found these simulators and simulation-based learning environments to be effective and to complement medical education for patient care settings.	Level 1 Grade A
Jeffries (2005)	A framework for designing, implementing, and evaluating: Simulations used as teaching strategies in nursing.	Qualitative Study	This article provides a framework which can be used to design, implement, and evaluate simulations for teaching in nursing education. She promotes strong facilitation and debriefing to be key elements in simulation learning.	Level 6 Grade B
Lasater (2007)	High-fidelity simulation and the development of clinical judgment: Students experience	Qualitative Study	Personal characteristics of faculty supporting debriefing process and the effects of student outcomes in simulation learning.	Level 4 Grade A
Reed (2012)	Debriefing experience scale: Development of a tool to evaluate the student learning experience in	Qualitative Study	Two scales in the Debriefing Experience Scale were developed to measure both the student experience	Level 5 Grade A

	debriefing		during debriefing and the importance of those experiences to the student. The subscales of this questionnaire are: analyzing thoughts and feelings, learning and making connections, facilitator skill in conducting the debriefing, and appropriate facilitator guidance.	
Sando et al. (2013)	Standards of best practice: Simulation standard VII: Participant assessment and evaluation	Systematic Review	This summary of articles promotes simulation and debriefing follow criteria including: developmental objectives, tested for evidence-based content, use evaluation tools test with like populations for validity and reliability, explanation prior to start of debriefing, students oriented to room and equipment, conducted by trained and objective facilitators, and designed with predetermined time parameters.	Level 5 Grade A
Van Heukelom et al. (2010)	Comparison of post-simulation debriefing versus in-simulation debriefing in medical	Randomized-Control Trial	A randomized retrospective pre-post assessment was made through surveying one	Level 2 Grade A

	simulation	hundred sixty-one students who received either post-simulation debriefing or in-simulation debriefing. Students reported that a simulation experience followed by a debriefing session helped them learn more effectively, better understand the correct and incorrect actions, and was overall more effective compared with debriefing which occurred in-simulation.

Appendix B

Summary of Studies Using Video-Assisted Debriefing

Authors	Title	Research Design	Results	LOE[1]/ GOR[2]
Arafeh et al. (2010)	Debriefing in simulated-based learning facilitating a reflective discussion	Descriptive Study	Descriptive study discussing the importance of debriefing in simulation-based learning and the necessity of having trained facilitators lead these sessions.	Level 6 Grade B
Cantrell (2008)	The importance of debriefing in clinical simulations	Descriptive Study	Eleven students participated in videotaped simulation scenarios. They received verbal debriefing at the end of each clinical simulation and then also received a structured debriefing session involving a review of the videotape. The descriptive findings suggest students have a strong need for debriefing directly following simulation to help them decompress and integrate the experience.	Level 5 Grade A
Chronister & Brown (2012)	Comparison of simulation debriefing methods	Comparative Crossover Design	Participants in the video-assisted group had faster response times for several skills, while knowledge retention scores were	Level 4 Grade B

			higher in the verbal debriefing group	
Coolen et al., (2012)	Effectiveness of high fidelity video-assisted real-time simulation: A comparison of three training methods for acute pediatric emergencies	Randomized -Control Trial	This study evaluated the effectiveness of video-assisted real-time simulation (VARS) to other educational methods such as problem-based learning (PBL) in forty-three 4th-year medical students to evaluate if VARS could develop competence in acute medicine in a realistic and safe environment. The main results of the study showed improved skill acquisition in students trained on high-fidelity simulators using the VARS method compared to PBL. The structured approach of VARS was found to be a powerful tool to improve clinical competence as it both assisted in identification of training needs and provided training for the intervention with feedback and an individualized learning path.	Level 1 Grade A
Elfrink, et al. (2009)	The case for group planning in human patient simulation	Summative Evaluation Qualitative Study	114 senior pre-licensure students participated in a formative evaluation of the simulation and	Level 5 Grade A

			debriefing experiences. Three questions guided the interviews: “What, if anything, do you find helpful in simulation?”, “What is not helpful”, and “How would you change simulation to make it a better learning experience?” Strong responses to all three questions involved eliminating videotaped guided debriefing to improve simulation. Student’s stated videotaping the simulation was highly stressful and distracted them from focusing on care of the simulated patient.	
Gore, et al. (2012)	A 2010 survey of the INACSL membership about simulation use	Cross-Sectional Survey	Significant differences found between the US and international sites regarding the use of video recording of simulations. International sites had higher use of video recording during the simulation, and also implemented mandatory student viewing of the recording.	Level 5 Grade A

Grant et al. (2010)	Using video-facilitated feedback to improve student performance following high-fidelity simulation	Quasi-Experimental Design	Both standard and video-assisted debriefing methods were effective. Scores slightly higher in experimental group but not significant.	Level 3 Grade B
Gururaja et al. (2008)	Examining the effectiveness of debriefing at the point of care in simulation-based operating room team training	Descriptive Study	High-fidelity, simulation-based operating room team training sessions were videotaped and assessed by trained independent raters who used an instrument based on effective debriefing characteristics to evaluate the sessions. Positive results were shown when introductions, rapport-building, and feedback where identified intentions for behavior change were implemented. The authors concluded effective debriefing can occur with time and space constraints however careful attentions to questioning and facilitation skills are essential.	Level 6 Grade A

Hamilton et al. (2012)	Video review using a reliable evaluation metric improves team function in high-fidelity simulated trauma resuscitation	Non-experimental Descriptive Study	90% of residents found VAD to range from being very to extremely helpful. All participants reported feeling more competent as both team leaders and members because of VAD.	Level 6 Grade A
Krogh, Bearman, & Nestle (2015)	Expert practice of video-assisted debriefing: An Australian qualitative study.	Qualitative Study	24 simulation educators who use VAD in their practices were interviewed. Although there were variations in when and how the video was used, all respondents agreed video is an educational tool when debriefing across all disciplines and levels of learner experience. Specific techniques pulled from this study included introducing the educational purpose of viewing a clip; letting the learners observe and reflect on their performances; providing examples of good practice; and integrating the clip into the debrief by using it to launch discussion.	Level 6 Grade A
Levett-Jones, T., & Lapkin, S. (2013)	A systematic review of the effectiveness of simulation debriefing in health professional	Randomized Control Trial	Ten randomized control trials involving various debriefing methods were reviewed such as: post-simulation debriefing,	Level 1 Grade B

	education.		in-simulation debriefing, instructor facilitated debriefing, and VAD. These studies included pre-test to post-test performance reviews of technical and non-technical skills. One study reported consistent improvement in these outcomes with the use of VAD. No recommendation could be made regarding which method of debriefing is best as there were no clinical or practical differences noted in these studies. Further research was suggested.	
Mikasa & Cicero (2007)	Play it again: Effect of simulation recording on evaluation during debriefing	Randomized -Control Trial	84 students randomly assigned into groups of 3-5 and placed in verbal standard or VAD groups. Research questions asked were two-fold: Does the faculty evaluation compare to the student's evaluation of their performance when video playback is viewed during debriefing or with discussion alone; and does the student's evaluation of their team performance change from pre to post-	Level 2 Grade A

			debriefing and if so what made them change their mind. VAD did influence the student's total scores on the likert scale as well as with critical thinking.	
Reed et al. (2013)	Debriefing simulations: Comparison of debriefing with video and debriefing alone	Quasi-Experimental Design	64 senior nursing students divided into one of two debriefing groups: standard verbal or video-assisted. Following the debriefing experiences students were asked to fill out a 20 item Debriefing Experience Scale. Overall nursing students reported their experiences were minimally different between the two styles of debriefing, however there were two items in which VAD had higher mean scores: "Debriefing helped me to make connections between theory and real-life situations" and "I had enough time to debrief thoroughly."	Level 3 Grade A

Salvodelli et al. (2006)	Value of debriefing during simulated crisis management: Oral versus video-assisted oral feedback	Prospective, Randomized Controlled, Three-arm, Repeated Measures Design	Groups who were debriefed had a significant improvement over those who had no debriefing. There was no significant difference between the debriefing groups	Level 1 Grade B
Sawyer et al. (2012)	The effectiveness of video-assisted debriefing versus oral debriefing alone at improving neonatal resuscitation performance: A randomized trial	Prospective Design	30 participants divided into 2 debriefing groups, VAD and standard. No statistically significant difference in their scores however VAD did have a 4% improvement over oral debriefing in their knowledge and performance skills.	Level 2 Grade B
Scherer et al. (2003)	Videotape review leads to rapid and sustained learning	Case-Control Study	Trauma resuscitations of medical residents were taped and reviewed for 6-months. During the first 3 months team members were given verbal feedback regarding their performance and for the last 3 months they attended videotaped reviews of their performance. The authors found behaviors did not change after the first 3 months of verbal feedback alone, however, behavior did improve after 1 month of videotape feedback and some requirements of resuscitation were reduced by a time of 50%.	Level 4 Grade A

Quirk & Babineau (1982)	Teaching interviewing skills to students in clinical years: A comparative analysis of three strategies	Comparative Analysis	This study researched how 3rd and 4th year medical students could best learn interviewing techniques for residency, and showed significant improvement in interviewing skills for the group which had a video-recorded review of their simulated interview (T=5, p<.01)	Level 3 Grade A

[1] Melnyk & Fineout-Overholt (2011)
[2] Joanna Briggs Institute (2013)

Appendix C

Evidence-Based Video-Assisted Debriefing (VAD) Guidelines

I. Facilitator Roles
   a. Implemented with at least two faculty skilled in video-recording, annotation, and content presented in the scenario [1, 2, 3, 4] (Level 2: Grade A)
   b. Practice runs with video, audio, and annotation system prior to student use [2] (Level 3: Grade A)
   c. Inform participants of policies related to the use of the recordings and have them sign consent for permission of recording [2] (Level 3: Grade A)
   d. Guide debriefing and develop skills to enhance students' perception of the simulation and learning [2,3] (Level 3: Grade A)
   e. Create a single fully annotatable debrief log [1] (Level 6: Grade A)
   f. Orient students to simulation scenarios, procedures, and VAD (pre-brief) [5, 6] (Level 2: Grade A)

II. Student's role:
   a. Actively engages in all aspects of the simulation and VAD [7, 8] (Level 5: Grade B)
   b. Brief summary of experience using VAD via verbal report or questionnaire [7, 8] (Level 5: Grade B)

III. Environment:
   a. Clean space with students and faculty sitting in a circle at eye level [6, 7] (Level 5: Grade A)
   b. Respectful, safe, non-threatening, and confidential atmosphere [6, 7] (Level 5: Grade A)

IV. Recommended Session [1,4,5,9,10,11,12] (Level 2: Grade A)
   a. Overview

Step	Activity	Recommended Duration
1	Pre-brief	2-3 minutes
2	Video-recorded simulation	15-20 minutes
3	VAD	30-40 minutes
3a	Guided reflection	(5-10 minutes)
3b	Video clip viewing (1-3 clips)	(45 seconds each)
3c	Integrated debriefing	(20-30 minutes total)
3d	Final wrap-up	(5 minutes)

Note: VAD session is 2-3 times longer than the simulation

   b. Specific Session Recommendations
      i. VAD immediately after high-fidelity patient simulation (HFPS) [13] (Level 2: Grade A)
      ii. Introduce each video clip by noting why the learners are viewing it with words such as "clarifying," "looking," and "understanding" [1, 2] (Level 3: Grade A)
      iii. Focus VAD on course objectives and outcomes [11] (Level 1: Grade B)
      iv. Use open-ended questions throughout [7, 9] (Level 5: Grade A)
      v. Silence is acceptable [7] (Level 5: Grade B)

c. Facilitator Feedback
    i. Provide students honest feedback and portray a positive demeanor [6, 8, 14,15] (Level 1: Grade A)
    ii. Encourage participants to evaluate what they did well, what they need to improve, and offer suggestions to improve their future care [8, 11] (Level 5: Grade A)
d. Final Wrap-up
    i. Recommend activities to alleviate identified performance gaps at the end of the debriefing session [9] (Level 5: Grade A)
    ii. Offer student's opportunity to view full video-recording privately in the simulation center to enhance self-guided reflection and learning [1, 16] (Level 1: Grade B)

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