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Debriefing 101: training faculty to promote learning in simulation-based training

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Abstract

BACKGROUND: Debriefing is recognized as essential for successful simulation-based training. Unfortunately, its effective use is variable. We developed a train the trainer workshop to teach key evidence-based components of effective debriefing.

METHOD: A workshop focusing on best practices for debriefing in surgical simulation-based training was developed for the 2012 Annual Meeting of the Association for Surgical Education. Content emphasized key theoretical concepts related to and evidence-based components of an effective debriefing. Additionally, the workshop incorporated experiential learning via active debriefing following a simulated scenario.

RESULTS: Content of the workshop emphasized effective debriefing as the key to learning in simulation-based education. Key elements of debriefing for educators to keep in mind include the following: approach, learning environment, engagement of learners, reaction, reflection, analysis, diagnosis, and application.

CONCLUSIONS: Effective debriefing is an essential skill for educators involved in surgical simulation-based training. Without it, learning opportunities are missed. Training the trainer in effective debriefing is essential to ensure standardization of practice.

Since its introduction in surgical education over a decade ago, simulation-based training (SBT) has evolved into an increasingly accepted method for honing the skills of surgeons at every level of professional development in a safe learning environment.[1,2] Evidence in the literature clearly demonstrates that key technical skills acquired in SBT can transfer to improved performance in the actual clinical environment (ie, the operating room [OR]),[3–5] making SBT a highly effective mode of teaching. Recently, innovations in surgical SBT have concentrated on the integration of sophisticated technology into training,[6–8] the development of validated tools for assessment of learner performance,[9,10] and

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the introduction of high-fidelity team-based training curricula for OR teams.[11,12] Such efforts are designed to leverage the benefits of simulation as an educational training tool across the entire surgical professional development continuum.

Although much attention related to SBT has focused on key aspects of simulator technological development and the mechanics of curricular design, implementation, and evaluation, recent high-quality reviews have demonstrated that SBT's most effective feature is in fact the oft overlooked debriefing process.[13,14] This facilitated self-reflection of the learner is the critical component for fostering deep learning and promoting transfer of skills and behaviors to clinical practice. Without it, SBT's large commitment of resources and personnel may not be worth the effort. First developed in the military as a post-mission account of events that served both operational and educational objectives,[15] debriefing has developed into a powerful learning tool integrating components of Kolb's experiential learning cycle[16] and Schön's reflective practice.[17] It is a means of assisting the learner in analyzing, interpreting, and assimilating events in an attempt to bridge the gap between merely "experiencing" them and actually "making sense" of what happened.[15]

Despite debriefing's central importance to learning in SBT, little literature in health care focuses on the key constituents of an optimal debriefing, especially in surgery. Recent work has begun to address this deficiency with the international development of both guidelines for effective debriefing and a validated assessment tool to rate the quality of debriefing.[18,19] Their presence, however, does not in itself guarantee high-quality debriefing or learning. In order to utilize debriefing strategies most effectively, faculty must be adequately trained on how to use these guidelines while maintaining learner engagement in a safe, supportive setting. Such facilitator training is recognized as essential for successful educational outcomes.[20]

Unfortunately, unlike other high-risk, high reliability industries that regularly utilize faculty training programs to teach effective debriefing techniques to potential facilitators,[21] the field of surgery has lagged in such faculty development. Often, the focus has remained on ensuring faculty members are able to teach and assess adequately technical skills. In comparison, the ability to provide a constructive debriefing is seldom formally taught, much less assessed. Faculty are left to provide debriefings based on their own experiences in an unstructured, non–evidence-based manner that results in significant variability and, more importantly, a missed opportunity to embed learning after every simulated encounter.[22,23] Considering the immense resources required for the successful implementation of SBT, having adequately trained faculty to lead post-simulation debriefings is paramount.

Although some formal course offerings in debriefing do exist, they are frequently part of multiday courses on SBT[24] or offered as on-line modules without live instructor input.[25] For busy surgical educators inexperienced in debriefing who are under increasing pressure to increase clinical output, neither option is attractive. They can ill afford to forsake clinical activity to take off several days to attend a course, yet they would benefit from the live instruction lacking in an on-line offering. One solution is to integrate debriefing training into the current framework for continuing professional development of surgeons (ie, within the educational content of an established surgical meeting). In this manner, surgeons seeking training would have the opportunity to learn these important techniques in a familiar educational setting at a time when they are already free from other clinical and administrative responsibilities. This article describes such a train the trainer workshop entitled "Best Practices for Debriefing in Surgical Simulation—the What, Where, When, and Why."

Workshop setting and theoretical underpinning

The workshop was conducted at the Association for Surgical Education (ASE) Annual Meeting 2012 in San Diego, CA, in an effort to introduce surgical educators to key elements of debriefing. A working group within the ASE Simulation Committee was charged with developing the workshop educational format. It consisted of 7 surgeons and 1 physician assistant with extensive experience in surgical education and SBT. Goals and objectives emphasized key elements of effective debriefing (Table 1).

The theoretical underpinning of this workshop was based on using debriefing in fostering both learning and behavioral change based on Kolb's theory of experiential learning (Fig. 1).[16] In this theory, a concrete experience leads to reflection by the learner of the events related to it followed by abstract conceptualization of new rules and principles, which are then tested through active experimentation. Behavioral change occurs when these new rules and principles are accepted by the learner. The learning cycle continues when another experience involving the new behaviors triggers the same process. In SBT, the simulation scenario typically serves as the concrete experience of Kolb's experiential learning cycle. The debriefing provides the opportunity for the learner to undergo the reflection and conceptualization related to this "experience." Thus, although an educator may be required to don several different roles during the debriefing process, he has 3 key duties during debriefing: (1) making it safe; (2) making it stick; and (3) making it last (Table 2).[15,18–20,23,26–28] In making a debriefing safe, the educator must strive to create an environment of trust and support in which the focus is on the "process," not the person; learners are respected; and psychological safety is ensured.[15,20,23] Making learning stick requires the educator to focus on learning objectives and to promote active reflective analysis and synthesis by each learner.[20,23,27] Reference to objective indicators (ie, time to intubation, oxygen saturation values) in lieu of subjective interpretations (ie, poor technique in intubation) is particularly useful to help with such reflection.[20] Finally, to promote behavioral change, the educator must make the lessons learned during the debriefing last by eliciting a commitment to change from each learner through the identification of an improvement

Table 1 Objective structured assessment of debriefing

Category/score	1	2	3	4	5
1. Approach	Confrontational, judgmental approach		Attempts to establish rapport with learner(s), but is either over-critical or too informal in manner		Establishes and maintains rapport throughout; uses a nonthreatening but honest approach to create a psychologically safe environment
2. Environment	Unclear expectations of the learner(s); inadequate learning environment		Explains purpose of the session but does not clarify learner(s) expectations or goals		Explains purpose of debrief; clarifies objectives and learner expectations from the beginning
3. Engagement	Purely didactic; facilitator does all the talking with no learner engagement; does not involve passive learner(s)		Learner(s) participate(s) in the discussion but through closed questions; facilitator does not actively invite input from passive learner(s)		Encourages participation of learner(s) through use of open-ended questions; invites learner(s) to actively contribute to discussion
4. Reaction	No acknowledgment of learner(s)'s reactions or emotional impact of the experience		Asks learner(s) about their feelings but does not fully explore their reaction to the experience		Fully explores learner(s)'s reaction to the experience; appropriately managing any learner(s) who are confused or unhappy
5. Reflection	No opportunity for self-reflection; learner(s) not asked to describe what actually happened in the scenario		Some description of events by facilitator, but with little self-reflection by learner(s)		Encourages learner(s) to self-reflect on experience using a step-by-step approach
6. Analysis	Reasons and consequences of actions are not explored with the learner(s)		Some exploration of reasons and consequences of actions by facilitator (but not learner)		Helps learner(s) to explore reasons and consequences of actions, relates it back to previous experience to offer explanations
7. Diagnosis	No feedback on clinical or teamwork skills; does not identify performance gaps or provide positive reinforcement		Feedback provided only on clinical (technical) skills; focuses on errors only; does not target behaviors that can be changed		Provides objective feedback on clinical (technical) and teamwork skills; identifies positive behaviors in addition to performance gaps, specifically targeting changeable behaviors
8. Application	No opportunity for learner(s) to identify strategies for future improvement or to consolidate key learning points		Some discussion of learning points and strategies for improvement but little application of this knowledge to future clinical practice		Reinforces key learning points identified by learner(s) and highlights how strategies for improvement could be applied to future clinical practice

in his/her performance gaps.[23,28] The workshop was explicitly designed to incorporate these 3 core components.

Evidence base for the workshop

This workshop was based on the 2 recent studies in surgery identifying the key dimensions for conducting an effective debriefing in surgical SBT.[18,19] In the first study, 50 representative OR team members from Britain, Australia, and the United States underwent semistructured interviews related to opinions regarding characteristics of good and bad debriefing.[18] This work was followed by a systematic review of the literature on surgical debriefing.[19] These data were then examined by experts in surgery and human factors to identify 8 key dimensions of debriefing that are required for effective teaching and translation of learning. This led to the creation of the Objective Structured Assessment of Debriefing (OSAD), an 8-item evidence-based tool for guiding and evaluating the quality of debriefing.[18,19] The first 2 dimensions of the OSAD, Approach and Learning Environment, focus on the "making it safe" duty of the debriefer. The next 5 dimensions of the OSAD, Engagement of learners, Learner reaction, Reflection, Analysis, and Diagnosis, encompass the "making it stick" duty of the debriefer. (S)He must avoid "lecturing" to the learners and make a concerted effort to engage each participant individually through encouraging discussion and asking open-ended questions. The final dimension of the OSAD, Application, corresponds to the "making it last" duty of the debriefer. The facilitator must summarize learning points and elicit a

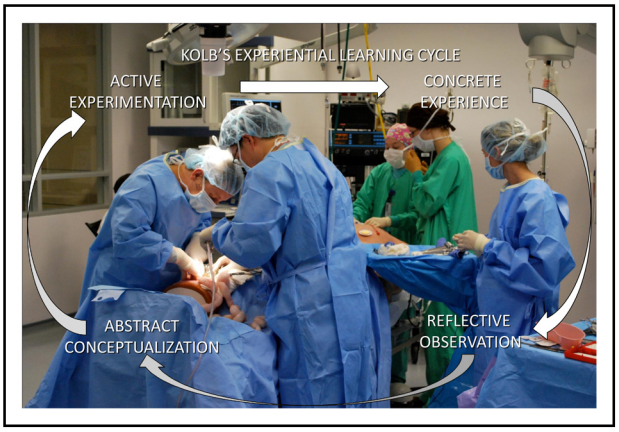

Figure 1 Kolb's experiential learning cycle. (For interpretation of the references to color in this Figure, the reader is referred to the web version of this article.)

commitment from learners to apply lessons in clinical practice to improve the quality of care delivered. This dimension is especially important during the closure of a debriefing in which the educator is attempting to ensure translation of learning to the work environment. OSAD was used in this workshop as it is particularly useful to teach debriefing through evaluation and discussion of video-based or live examples of debriefings in action.

Workshop structure

This workshop was split into 2 separate 90-minutes sessions, each of which could be attended as a stand-alone educational offering for those who had limited time at a busy conference. The first session contained the workshop's didactic components as well as an interactive assessment of debriefings using videos. The didactic teaching focused on the theoretical underpinnings of debriefing and 8 evidence-based dimensions of effective debriefing. The video component involved participants viewing, rating, and discussing 3 edited videos of debriefings in action in terms of the 8 dimensions of effective debriefing reviewed in the didactic portion of the workshop.

The second session was devoted to an immersive simulation experience involving post-simulation debriefing. It involved running an actual SBT exercise with participant volunteers and embedded educators. This provided participants with the opportunity to incorporate the theoretical principles of effective debriefing by practicing their debriefing techniques. Specifically, on completion of the scenario, 2 participants acted as mock trainers and conducted a debriefing focusing on the "intern" and "resident" performances during the scenario. This debriefing was performed in front of the other participants who noted effective and ineffective techniques. Later, course faculty encouraged participants to discuss their noted observations related to the overall simulated scenario and debriefing. Finally, an additional volunteer was paired with the course faculty to provide feedback to the participants acting as debriefers on the quality of their debriefing skills. In this manner, immersive, experiential learning was progressively increased as the workshop progressed.

Workshop evaluation

The effectiveness of the workshop was assessed using a pre-/post-workshop questionnaire design completed by the participants. Questions measured self-efficacy in relation to the objectives-driven aspects of debriefing (rated on a 5-point Likert scale from 1 = not at all confident to 5 = completely confident). Descriptive statistics (eg, mean scale items and standard deviations) were calculated for pre- and post-session responses. Unpaired *t* test was performed to test the difference between the pre- and post-training item mean scores. Bonferroni adjustment was applied to control for family-wise type I error rate because of the multiple tests. Self-efficacy gains related to objectives-driven aspects of effective debriefing are listed in Table 3. Seven of 8 items had statistically significant gains in self-efficacy.

Participants also found that the workshop was well organized with well-prepared speakers regardless of which session(s) they attended. They also felt that the interactive modalities used in their session were effective teaching tools. Encouragingly, participants would recommend the session to a colleague and felt that the topic should be covered in the future. In fact, they planned to incorporate what they learned in the workshop in future debriefings.

Table 2 Duties of debriefer, their timing during a debrief, and corresponding evidence-based dimension(s)

Key duties of debriefer[26]	Corresponding concept	Emphasis in debriefing introduction	Emphasis in debriefing process	Emphasis in debriefing closure	Corresponding evidence-based dimension(s)[18,19]
Make it safe	Create a safe learning environment[15,20,23]	√√√√	√	√	Approach, establishing learning environment
Make it stick	Encourage reflective practice[20,23,27]	√√	√√√√	√√	Learner engagement, reaction, descriptive reflection, analysis, diagnosis
Make it last	Elicit commitment to change[23,28]	√√	√√	√√√√	Application

Table 3 Descriptive statistics comparing pre-/post-training self-efficacy in objectives-driven aspects of debriefing

Item statement	Mean pre-workshop score (SD)	Mean post-workshop score (SD)	*P* value
Right now, how confident are you in your ability to…			
Identify key components of an effective debriefing	2.61 (.91)	3.94 (1.12)	.0006*
Describe the essential phases of the debriefing process	2.44 (.86)	4.06 (1.18)	<.0001*
Describe the role(s) of the debriefer during the debriefing process	2.5 (.86)	4.12 (1.22)	<.0001*
Describe the job of the debriefer during the debriefing process	2.56 (.98)	4.25 (1.24)	<.0001*
Identify good or bad debriefing techniques when observing a debriefing	3.11 (.96)	4.13 (1.15)	.0086
Utilize successfully debriefing techniques to conduct an effective debriefing	2.5 (.79)	3.81 (1.17)	.0005*
Use an assessment tool to evaluate a debriefing	2.44 (1.10)	4.06 (1.24)	.0003*
Perform an effective debriefing following an SBT scenario	2.44 (.78)	3.67 (.29)	.0009*

SBT = simulation-based training; SD = standard deviation.
*Statistically significant after Bonferroni adjustment.

Comments

Debriefing has been recognized as the most important factor for ensuring effective learning in SBT.[13,14] The overall educational impact of a debriefing, however, is ultimately dependent on the skill and ability of the individual leading it. It is the facilitator who embeds deep learning through the skillful guiding of the learner through the debriefing process.

Although facilitator training is well established in other industries,[21] health care in general and surgery in particular still lack an efficient means of training debriefers. The workshop described in this manuscript arose out of a desire to create an educational model for training that could be integrated into already established mechanisms for continuing medical education (CME) to provide the least disruptive manner for individuals to learn debriefing skills. The positive learner response to the workshop content and participants' indication that they felt that they learned something that they could incorporate in actual debriefings at their home institutions indicate that such a model is at least a partial solution to the challenge of training debriefers. It is, however, by no means the only solution. In fact, Dieckmann[29] has promoted a debriefing "Olympics" model involving competitive debriefing with audience selection of the "best" performance.

This workshop incorporated several innovations regarding the ASE workshop format that appeared to be well received by participants. First, it continued the trend of integrating high-fidelity simulation into the workshop environment that was started 2 years earlier at the Simulation Committee's "Putting the meaT in Team Training" workshop. This innovation provided participants the opportunity to undergo an immersive, experiential SBT event to embed more deeply learning. For the debriefing workshop, this SBT went one step further by having learners "simulate" a debriefing to model behaviors and learn by doing. Another interactive teaching technique that participants found worthwhile was the use of videos to demonstrate effective and ineffective techniques.

A second innovation in the workshop format was the creation of 2 stand-alone sessions comprising a 3-hour learning experience instead of designing a 90-minute educational opportunity that repeated itself. In this manner, learners had 3 options related to learning debriefing (ie, session 1, session 2, or both). Such a design also allowed for the opportunity to have graded educational content, allowing for participants to attend a session based on their experience level in debriefing. For example, more experienced debriefers had the opportunity to participate in the immersive simulation session to hone their skills.

Finally, the incorporation of the OSAD assessment tool into the teaching linked learning to an evidence-based approach to effective debriefing. The 8 dimensions of the OSAD embody the debriefing maxim to make it safe, make it stick, and make it last. As mentioned above, the OSAD tool itself can also be used for both formative (ie, as a teaching tool) and summative (ie, as an evaluative tool) assessment of debriefing to promote a standardized, effective means of teaching.

Given time constraints, the workshop was unable to address some of the nuts and bolts related to debriefing technique and the identification/mitigation of problem learners/situations. The literature contains many useful descriptions of techniques for debriefing that, when used properly, allows the facilitator to address all 8 dimensions of effective debriefing. Advocacy Inquiry,[28] the Plus-Delta (+/Δ) Method,[15] Thiagi's Six Phases of Debriefing,[30] Pearson and Smith's Three Questions,[31] Debriefing for Meaningful Learning,[26] and the SHARP method[32] (ie, Set learning objectives, how did it go, address concerns, reflect on key learning points, plan ahead) of debriefing are examples of a few such techniques, which could be explored in further research.

Conclusion

In conclusion, effective debriefing is an essential skill for educators involved in surgical SBT. Without it, learning opportunities are missed. Debriefer responsibilities include making it safe, stick, and last. Eight essential dimensions of surgical SBT include approach, learning environment,

learner engagement, learner reaction, reflection, analysis, diagnosis, and application. Training the trainer in effective debriefing is essential to ensure standardization of practice. To this end, creating a meeting-based educational workshop to teach debriefing to surgical educators is feasible. In addition, it can be designed to span several sessions to provide different opportunities for learning and degrees of participation. Incorporation of such a workshop format in future educational meetings would provide an opportunity to train large numbers of participants in proper debriefing techniques, enhancing undergraduate medical education, graduate medical education, and CME alike.

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