



# Debriefing in pediatrics

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Debriefing is a conversational session that revolves around the sharing and examining of information after a specific event has taken place. Debriefing may follow a simulated or actual experience and provides a forum for the learners to reflect on the experience and learn from their mistakes. Originating from the military and aviation industry, it is used on a daily basis to reflect and improve the performance in other high-risk industries. Expert debriefers may facilitate the reflection by asking open-ended questions to probe into the framework of the learners and apply lessons learned to future situations. Debriefing has been proven to improve clinical outcomes such as the return of spontaneous circulation after cardiac arrest and the teaching of teamwork and communication in pediatrics. Incorporating debriefing into clinical practice would facilitate the cultural change necessary to talk more openly about team performance and learn from near misses, errors, and successes that will improve not only clinical outcome but also patient safety.

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## Introduction

Debriefing is a process in which people who have had an experience are led through a purposive discussion regarding the experience<sup>1)</sup>. Debriefing may follow a simulated or actual experience and provides a forum to reflect on the experience and learn from mistakes. Facilitators guide the process by asking the right questions and probing into the frame of concept, trying to understand the thought process of the trainees<sup>2)</sup>. Those being debriefed reflect on the experience and identify the weaknesses and strengths of their performance. The concept of debriefing evolved from the attempt to bridge the gap between experiencing an event and making sense of it<sup>3)</sup>.

John Dewey was the first to use the phrase “reflective thinking” in 1910, and debriefing or guided reflection follows the concept of reflective thinking<sup>4)</sup>. The learner must make sense of the events experienced in terms of their own world. The experience is followed by reflective observation to conceptualize, make sense, and gain insight toward a more informed understanding of the event and the application to future situations. The final step in the cycle is experimentation, where learners try out the new approach or skills in a future simulated or real event<sup>2)</sup>. This follows Kolb’s experiential learning cycle, which contains four related parts: concrete experience, reflective observation, abstract conceptualization, and active experimentation<sup>5)</sup>.

Historically, debriefing originated in the military, where the term was used to describe the account individuals gave on returning from a mission. This account was analyzed and used to strategize for other missions or exercises<sup>1)</sup>. This cognitive reconstruction of events was performed in groups so that there was a shared meaning. The participants were brought together to describe what had occurred, account for the actions that had taken place, and develop new strategies with each other and the commanding officers.

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Such technical debriefings have long been used in commercial aviation, aerospace, military, and other industries where the risk to human life is high<sup>6-8)</sup>. These debriefings are typically focused on the human and system weaknesses that have the capacity to result in the loss of life and are conducted in a professional, business-like, constructive, concise manner that minimizes the time allotted for emotional release or discussion of feelings. This kind of debriefing is very different from psychological debriefing after traumatic events to share personal feelings and reactions with others and vent emotions in a controlled and supportive environment. An example of the latter type of debriefing is that pioneered by Mitchell et al.<sup>9)</sup> to mitigate stress among emergency first responders. Psychological debriefing is very different from technical debriefing, and they should be considered as separate entities.

### Debriefing after a simulated event

Simulation is a technique to replace or amplify real patient experiences with guided experiences that are artificially contrived and evoke or replicate substantial aspects of the real world in a fully interactive manner<sup>10)</sup>. The use of simulation in pediatrics is increasing as it is an exciting and evolving educational tool with an expanding evidence base supporting its use<sup>11)</sup>. The traditional approach of 'see one and do one' to learning in medicine inevitably exposes patients to inexperienced practitioners, and the associated dangers and harms are unacceptable<sup>10)</sup>. Simulation-based learning is an effective method to manage the problems associated with overcoming the steep learning curve through trial and error. Andreatta et al.<sup>12)</sup> demonstrated improved survival rates after pediatric cardiac arrest with the implementation of a longitudinal simulation mock code program. Another great benefit of simulation-based learning is the ability to provide training with a focus on nontechnical skills such as communication and leadership. The quality of team performance has also reportedly improved following simulation, which can lead to further reduction in medical errors<sup>10)</sup>. Simulation-based learning and debriefing has been incorporated into the curriculum of the Neonatal Resuscitation Program based on the success of NeoSim, the neonatal resuscitation education program emphasizing behavioral skills through immersion in dynamic scenarios provided at the Center for Advanced Pediatric and Perinatal Education at Stanford University<sup>13)</sup>, and has become a global standard.

Debriefing involves learning after a simulated event. However, there is no universally accepted gold standard approach to debriefing in simulation-based medical education<sup>14)</sup>. The debriefing session should cover the learning objectives set for the relative needs of the learners. Objectives need to be well defined

and specified beforehand but may also emerge during the session. It is an opportunity to examine how closely participants' performance approached a known target and identify the required action to bridge any gaps between the performance and target. To ensure that the appropriate performance happens again, it is equally important to emphasize what went well and focus on the strengths as it is to focus on the weaknesses.

The importance of reflection in medical education has been emphasized in the literature<sup>15,16)</sup>. Reflection is more important in pediatrics because children can deteriorate rapidly, and scenarios with seriously ill children are stressful and fast moving; therefore, it is difficult to recall and analyze one's behaviors when immersed in the simulation. There is growing recognition that trainees are aware of behavioral processes, such as teamwork and communication, and benefit more from support in articulating, exploring, and learning from these processes rather than merely being taught how well they worked as a team or how poorly they communicated<sup>17)</sup>.

Video-assisted debriefing permits both individuals and teams to review their performance by providing an objective record. Few studies have investigated the usefulness of video in debriefing, reporting mixed results. Savoldelli et al.<sup>18)</sup> reported no differences between oral and video-assisted oral feedback in improving nontechnical skills during crisis resource management education with anesthesia residents. However, differences did exist between the group that did not receive debriefing and the groups that did. It was concluded that the debriefing improved student performance. As simulation-based education becomes more widely used in healthcare as a means of both formative and summative assessment, a reliable and valid way to assess the efficacy and quality of debriefing becomes more important.

### Role of the facilitator

Data from participant surveys indicate that the perceived skills of the debriefer have the highest independent correlation with the perceived overall quality of the simulation experience<sup>14)</sup>. Unlike the traditional classroom model, facilitators tend to position themselves not as authorities but as colearners. The concept of facilitation stems from education and psychology, whereby one member of the group, the facilitator, uses open-ended questions, positive reinforcement, cognitive aids, and audiovisual capabilities to help others analyze, synthesize, and evaluate issues and extrapolate and apply lessons learned to future situations<sup>2)</sup>. Such facilitation promotes active participation of trainees through guided discussion and personal exploration. Confidentiality and the creation of a nonthreatening environment<sup>2)</sup> are important prerequisites. Elements of a poor debrief include the use of closed questions, criticism, or ridicule concentrating on errors, or

concentrating too much on technical points and not enough on crew resource management. The successful debriefer maintains the stance of genuine curiosity and respect for all participants, curious about their reasoning, data, concerns, and mental model<sup>19</sup>. The debriefer needs to skillfully engage all participants and encourage them to speak up and ask questions. There is a balance between the debriefer talking, inquiring, permitting silence, and letting participants talk<sup>2</sup>.

The adaptation of the US Army's After-Action Review for Simulation Debriefing in Healthcare provides a clear-cut guideline regarding effective and efficient debriefing. When conducting a debriefing, a clear understanding of the desired learning objectives is necessary to create a shared mental model of the most critical aspects of the simulation and foster a focused discussion<sup>1</sup>. The performance standards or benchmarks that define optimal performance should be identified, including the key tasks involved, conditions in which each task is performed, and acceptable standards for success. Through active discussion, the learners will identify what was supposed to happen, identify what actually happened, and examine why things happened the way they did<sup>1</sup>.

Training to be an expert debriefer is time consuming and labor intensive. Instructor courses are offered throughout the world, but there is lack of consensus on the most effective training program and retraining frequency. Debriefing skills should be constantly refined through ongoing educational activities, peer assessments, and self-evaluation<sup>20</sup>. Scripted debriefing would be an alternative for less experienced debriefers<sup>11,21,22</sup>. Adult learners are more self-directed, prefer learning that is problem centered and meaningful to their life situation, and learn best when they can immediately apply what they have learned<sup>2</sup>; therefore, it is important to reframe the experience to the learner's advantage.

## Debriefing to improve clinical outcomes

Debriefing applies not only to simulated environments but also to real clinical events. It is an opportunity for learning and improving patient care, by reviewing what went well and what can be done to improve teamwork and organizational systems. The aviation industry uses preflight and postflight debriefings on a daily basis to exchange information, to improve team building, and for quality management<sup>23</sup>. Debriefing after critical events has been successfully implemented in obstetrics<sup>24,25</sup>, resuscitation<sup>26,27</sup>, and critical care settings<sup>28</sup>. Routine debriefing after normal and critical, high risk, low volume events is the goal. If the time is taken to debrief after normal events, then debriefing is more likely to happen after critical events<sup>20</sup>. In a study by Tan<sup>29</sup>, a postal survey was conducted after debriefing of critical incidents for anesthetic trainees. Debriefing after a critical incident was perceived by most trainees to be useful. Furthermore,

trainees who were debriefed felt more supported by their senior colleagues. This study suggested that, to have maximum effect, the facilitated team debriefings should be performed after real patient care situations to reinforce the lessons learned and thus have the best chance of improving behavior and strengthening team cohesiveness for improved quality and safety in everyday clinical practice. Another advantage is that debriefing can be conducted without additional costs.

The basic mechanics of debriefing after real clinical events are assembling, discussing, and reviewing what went well and what requires improvement. The plus delta debriefing model is based on the approach designed for commercial aviation<sup>20</sup>. This involves creating two headings: delta (for change) and plus (for strengths). Under the delta heading, participants place all behaviors or actions they would change or improve in the future and how to change them. The plus column contains examples of good behaviors or actions. Teammates take turns identifying what went well with teamwork, clinical care, technical performance, or systems. Such real-time debriefing is likely to be self-directed and not led by an external facilitator.

Debriefing has been incorporated into the Pediatric Advanced Life Support courses organized by the American Heart Association<sup>30</sup>, as it is important to debrief after resuscitations to improve clinical outcomes. Debriefing approaches can be classified by the time at which it is delivered: hot or cold<sup>27</sup>. Hot debriefing takes place immediately after the resuscitation and is normally led by a resuscitation team member. It focuses on the team performance, including equipment availability and speed of resuscitation team arrival<sup>31</sup>. This approach is used to identify and rectify latent resuscitation errors. Cold postevent debriefing was first reported by Edelson et al.<sup>32</sup>. The Resuscitation with Actual Performance Integrated Debriefing (RAPID) project was led by senior doctors and used data downloaded from defibrillators to analyze cardiopulmonary resuscitation (CPR) delivery during cardiac arrests. Implementation of RAPID was associated with improved provider knowledge, CPR delivery, and a 14% significant absolute improvement in return of spontaneous circulation. Cold debriefing has advantages over hot debriefings in that performance data can be downloaded, analyzed, and incorporated into the debrief<sup>27</sup>. Zebuhr et al.<sup>33</sup> used cold debriefs in a pediatric intensive care unit with infrequent cardiac arrests. Clinical staff felt that it had a positive effect on knowledge, performance, and confidence. The group subsequently reported improved CPR quality after the implementation of debriefing<sup>34</sup>.

## Conclusions

According to Dieckmann et al.<sup>14</sup>, regardless of simulator usage, "the post scenario debriefing is important to maximize learning

and facilitating change on an individual and systematic level, modifying for the better one's attitudes, perceptions, behaviors, actions or technical skills, or the organization's culture, policies, procedures or operational mechanisms". Debriefing high-risk and low volume events in the everyday clinical environment will enable optimal clinical performance and facilitate the cultural change necessary to talk more openly about team performance and learn from near misses, errors, and successes<sup>35</sup>. Debriefing everyday clinical events in pediatrics on a daily basis will not only improve teamwork and clinical outcomes but also promote patient safety.

### Conflict of interest

No potential conflict of interest relevant to this article was reported.

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