**WORKSHEET for Evidence-Based Review of Science Debriefing**

**Worksheet author(s)**

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**Date Submitted for review:**  
Feb 21, 2010

**Clinical question.**

Intervention and prognosis  
For healthcare professionals (P), do briefings (prior to) and/or debriefings (after a learning or patient care experience) (I), when compared to no briefings (C), improve the acquisition of content knowledge, technical skills and behavioral skills required for effective and safe resuscitation (O).

**Is this question addressing an intervention/therapy, prognosis or diagnosis?** Educational intervention  
**State if this is a proposed new topic or revision of existing worksheet:** New

**Conflict of interest specific to this question**

Do any of the authors listed above have conflict of interest disclosures relevant to this worksheet? NO

**Search strategy (including electronic databases searched).**

Resuscitation AND debriefing OR feedback Cochrane=1, EMBASE=40, PUBMED=15  
Knowledge and skills and resuscitation and retention, EBM reviews=8, OVID= 59  
Knowledge and skills and debriefing EMBASE=9, OVID=5  
Knowledge and retention and debriefing EMBASE=1, OVID=0  
Resuscitation and debriefing and retention EMBASE=1  
Debriefing and knowledge, OVID=80, EMBASE=39  
Debriefing and knowledge and skills, OVID=17, EMBASE=9

Final search Oct, 2009, no new articles added

**State inclusion and exclusion criteria**

Inclusion knowledge and skills and resuscitation and retention and debriefing, English. Some general articles on debriefing including qualitative studies included.  
Excluded articles that were commentaries, described cardiopulmonary resuscitation, debriefing for non acute situations.

**Number of articles/sources meeting criteria for further review:**

A lot of overlap in the articles from different search strategies.  
As there were no articles comparing debriefing with no debriefing articles comparing cognitive debriefing with debriefing have been included.  
Anesthesia, trauma articles with code scenarios are included.  
Total number of articles reviewed were 57 plus 28 selected by other authors.  
Of these 21 are included in the worksheet.  
Reviewed 28 additional articles selected by other 3 authors of debriefing worksheets. 10 of the 28 articles are included in the review.  
This leaves a total of 31 articles placed on the grid  
All feedback articles are considered LOE 5.
## Summary of evidence

### Evidence Supporting Clinical Question

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<thead>
<tr>
<th>Level of evidence</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
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<tbody>
<tr>
<td>A</td>
<td>Savoldelli 2006(E)</td>
<td>Edelson 2008(A)</td>
<td>Pope 2003(E)(F)</td>
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<td>C</td>
<td>Dine 2008(E)</td>
<td>De Vita 20059E)</td>
<td>Halamek 2000(E)</td>
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<td>D</td>
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<td>Mayo(2004)(E)</td>
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<td>E</td>
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<td>Abella 2007(E)(F)</td>
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<td>Italics</td>
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<td>Bond 2006(E)(F)</td>
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<td>Clay 2007(E)(F)</td>
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<td>Farrell 2001(E)(F)</td>
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<td>Van Schaik 2008(E)(F)</td>
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### Level of evidence

- **A**: Return of spontaneous circulation
- **B**: Survival of event
- **C**: Survival to hospital discharge
- **D**: Intact neurological survival
- **E**: Other endpoint
- **Italics**: Animal studies
- **F**: Feedback
### Evidence Neutral to Clinical question

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**Larsson 1999(E)(F)**
**Rudolph 2008(E)**
**Rudolph 2007(E)**

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**Level of evidence**

| A = Return of spontaneous circulation | C = Survival to hospital discharge | E = Other endpoint |
| B = Survival of event                | D = Intact neurological survival  | Italics = Animal studies |

### Evidence Opposing Clinical Question

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**Level of evidence**

| A = Return of spontaneous circulation | C = Survival to hospital discharge | E = Other endpoint |
| B = Survival of event                | D = Intact neurological survival  | Italics = Animal studies |
1. There are no neonatal resuscitation studies comparing debriefing with no debriefing and looking at acquisition or retention of knowledge. Wider approach was taken for this review to include debriefing and other forms of feedback such as simulated mannequin feedback. The studies of feedback are quoted separately. Some debriefing studies in situations other than resuscitation are also included.

2. It is important that debriefing be defined. Some authors (Wayne 2005 pg. 202 - 208, 2008 pg. 56 - 61) have used the term debrief to imply an opportunity for learners to ask questions. Others have alluded to the term debriefing without carefully defining it. Debriefing can be after an educational event or after an actual resuscitation.

3. Debriefing can be done using slides and CD-ROM (Bond 2004 pg. 438, Edelson 2008 pg. 1063), with cue cards using self debriefing cards (Clay 2007 pg. 738), videotaping (Hoyt 1988 pg. 435) without audiovisual feedback initially (Dine 2008 pg. 2817). Oral debriefing may be better than audiovisual (Salvoldelli 2006 pg. 279).

4. Debriefing can be technical or cognitive (Bond 2006 pg. 276 - 283). It can be with the team (DeVita 2005 pg. 326, Edelson 2008 pg. 1063) or with individuals. There is one randomized trial (Savoldelli 2006, 279) looking at impact of debriefing with favourable outcome in anesthesia residents.

Debriefing along with other communication and practical strategies improved performance for management of shoulder dystocia (Goffman 2008 pg. 294), improved airway management (Mayo 2004 pg. 2422), ability to find equipment (Mikrogianakis 2008 pg. 761) and raised awareness of knowledge gaps (Mikrogianakis 2008 pg. 761).

Debriefing is well received (Halamek 2000 pg 819, Moorthy 2005 pg. 631) with some learners describing the positive experience, as good learning experience second only to direct patient interactions (Pope 2003 pg. 650). However the studies that describe it as good experience do not provide data on whether there was better acquisition or retention of knowledge. Debriefing improves confidence amongst learners (van Schaik 2008 pg. 777).

In a survey it was found that following a failed pediatric resuscitation debriefing was commonly done. (Ireland 2008 pg. 328)

Cardiac arrest teams were offered de briefing, however only 7.7% accepted a formal debriefing session (Pittman 2001).

One study compared technical debriefing with cognitive debriefing and did interviews which showed that technical debriefing was better received (Bond 2006 pg. 276). (Larsson 1999 pg. 91) used debriefing to improve team performance.

Theoretical models have been developed for debriefing that provide guidance on how to carry out debriefing (Rudolph 2007 pg. 361, 2008 pg. 1010) and how to set up debriefing for medical teams (Salas 2008 pg. 518).

One investigator has provided a theoretical model for using debriefing for formative assessment (Rudolph 2008 pg. 1010).

Debriefing can be used to teach and clarify issues, however there are no studies showing improvement in learning. Some of the articles discuss the role of debriefing in aviation and crisis management in the background for conducting studies (Reznek 2003 pg. 386).

It is unclear how often learner is in simulated environment, how they are debriefed (team versus individual) and how they are assessed.

Whether debriefing will improve knowledge acquisition and retention in neonatal resuscitation is a gap in science. Adults training for BCLS, anesthetists and residents in code teams demonstrated an improvement in cardiac compressions with feedback. (Abella 2007 pg. 54, Kramer-Johansen 2006 pg. 283, Oh 2008 pg. 273) Both the depth and rate of cardiac compressions was better when they learned with feedback. (Abella 2007 pg. 54).

Cannot comment on the role of debriefing (learning, retention, assessment) or on how it should be done without additional studies.
The only study identified that reported risks associated with debriefing was that by Marsch (2004 51) that reported participants of unsuccessful teams became very emotional.

No risks of debriefing have been reported. In one study (Marsch 2004 pg. 51) reported that participants of unsuccessful teams became very emotional.

Acknowledgements:

Citation List


   COMMENTS: Pre and post cohort design. This is a study with sensing real time feedback. There was no true debriefing. Investigators provided audio visual feedback and were trained in feedback. The ability to correctly provide chest compressions improved with this method of feedback. Adult study with no difference in return of spontaneous circulation or survival.
   LOE 5 fair, supportive


   COMMENTS: Scenarios were not resuscitation. However article is included because they studied the avoidance of errors and in general how to create experts. The simulation scenario was renal failure patient presenting with hyperkalemia and difficulty breathing. The patient required airway support, succinyl choline and acute treatment of hyperkalemia in adults. A qualitative design with debriefing using a CD-ROM and slides. Surprisingly the residents ranked this experience next best to direct patient care. Investigators developed a tool that provided debriefing without an instructor having to be present for the entire debriefing experience.
   LOE 5 Good, supportive


   COMMENTS: Not resuscitation. Investigators compared technical debriefing to concept designed to bring out vertical failure. The scenarios were 2 adult patients one a trauma patient requiring resuscitation and another 80 year old women with increased confusion. The vertical failure in the latter is to treat for sepsis and not think of other causes of change in mentation. Technical and cognitive debriefing were both done with a power point presentation with audio. Technical debriefing was better received in a qualitative interview with ethnographer. No evidence is presented that either group making more comments regarding technical or cognitive behaviour performed better as there is no follow up.
   LOE 5 Fair, supportive

COMMENTS: Study was done in an adult intensive care unit. Authors claim the way they debriefed it was at ‘0’ cost compared to OSCE, Simulation and chart reviews. They designed validated debriefing cards and randomized residents to debriefing and no debriefing group. The residents used the debriefing cards to go over their performance with the fellow. Number of cards used correlated with change in change in self confidence. The total number of debriefing cards used was a mean of 2.6/5 so given there were only 18 residents the numbers are very small. This is a feasibility study and authors conclusions reflect that.
LOE 5 Fair, supportive


COMMENTS: The authors studied the effect of organization and specified roles and goals on survival of the mannequin. Debriefing focused on assuming a specific role, completing the associated task and cooperation. Organization, teamwork and crisis resource management were emphasized. At the end of the debriefing each team reviewed strategies to improve performance. Task completion rates improved with the third scenario. It is difficult to tease out which part of the training was responsible for the improvement. Assigning tasks with practice can improve outcomes. Debriefing can improve outcomes. However overall they showed improvement so one would have to assume that debriefing had some role to play in improving functioning of the team.
LOE 4 Fair, supportive


COMMENTS: Adult resuscitation study. Randomized. Studied simulated cardiac arrest and measured rate and depth of cardiac compressions, they did not study over all performace of resuscitation. They had one group that received audiovisual feedback, the debriefing group did not receive audiovisual feedback. Both groups had baseline data collected, then they were divided into group that received audiovisual feedback and the debriefing group only. Following the second exposure both received debriefing and then third encounter again debriefing only group had no feedback while the audiovisual group had feedback. Both their groups showed improvement in cardiac compressions, the improvement was more marked in the group receiving debriefing and audiovisual feedback. They did not have a group that received no debriefing or audio visual feedback.
LOE 1 Fair, support


COMMENTS: Adult study on patient ROSC. Before and after design. Their debriefing was well designed to go over the patient data collected during the arrest. Investigators made slides on the deficiencies identified. Debriefing was collective but it is unclear if the students with deficiencies were identified or they were expected to know the patients they were involved with. There was a lot of preparation time spent by the investigators preparing for the debriefing session that took about 45 minutes. 30 minutes of this was specific patient discussions and 15 minutes general discussions. They had an improvement in ROSC in the time period debriefing was occurring. This could have been due to
new guidelines 2005 or residents being more aware that their resuscitation was going to be discussed. There was no improvement in survival.
LOE 3 Good, supportive


COMMENTS: Pediatric trauma scenarios. Multiple simulation exercises with debriefing. The decrease in errors could be due to multiple opportunities to practise as a team. Specific effect of debriefing is not studied. They showed an improvement in team performance with their training.
LOE 5 Poor, Supportive


COMMENTS: A qualitative study looking at the effects of role playing, scenarios and debriefing to learn how to break bad news. The general comments from the participants were favourable. However it is not possible to separate out the comments regarding the role playing versus debriefing. There was one comment that suggested video taping would have been more helpful for debriefing.
LOE 5 Fair, supportive


COMMENTS: This study looked at improving maneuvers, communication and overall performance judged on a 5 point Likert scale. They tried to assess management of shoulder dystocia before and after brief lecture on shoulder dystocia, review of basic maneuvers, discussions on optimizing team performance, review of key components of documentation and review of digital recording of simulations and discussions. All these factors combined improved the maneuvers, communication and overall performance in residents and communication and overall performance in attendings. Debriefing cannot be separated out from all the interventions they used.
LOE 5 Fair, supportive


COMMENTS: Investigators present the development of a program and have answers in it related to role of debriefing. They discuss role of debriefing in clarifying issues, allowing for self critique and enhancing knowledge. 100% of their participants agreed that debriefing enhanced knowledge. There was no follow up or determination if it actually enhanced knowledge acquisition or retention. Only neonatal study in the literature commenting on how debriefing was received.
LOE 4 Fair, supportive

COMMENTS: A literature sample is provided. Overall investigators were looking for factors that enhance knowledge and skill retention during CPR. Provides an overview of teaching approaches such as video self instruction, peer tuition, cardiac arrest simulation, action cards, computer aided learning. Not really a systematic analysis.
LOE  5 Poor, supportive


COMMENTS: They demonstrated that videotaping can be done without interfering with resuscitation. Weekly review of resuscitations with debriefing contributed to decreased wasted time, increased attention to priorities and the attendees felt that they changed their delivery of care. This article demonstrates that overall education can improve delivery of care. They did have a control group. Improvement cannot be assigned to debriefing however that was one of the main methods they used to improve outcome.
LOE 5 Fair, supportive


COMMENTS: This article is included to demonstrate that following a failed pediatric resuscitation debriefing is commonly undertaken. Guidelines are not well developed. It is not clear from the survey if the debriefing helped enhance knowledge retention or not.
LOE 5 poor, supportive


COMMENTS: Adults. Historical comparison group. The defibrillator in the study group provided verbal and auditory prompts. Half way through the study they added a prompt for inaction. Overall the quality of compressions improved and they suggested that the increased compression depth was associated with increased short term survival. No separate debriefing. Included because there was regular feedback.
LOE 5 Poor, feedback supportive


COMMENTS: Qualitative study of fire fighters. Investigators discuss conditions effecting debriefing such as: 1. A secure leader, who is flexible, knowledgeable, sincere 2. Group security 3. Participant factors 4. Management/ organizational support.
LOE 5 Good, neutral

COMMENTS: They studied task distribution defined as clarification of role of the team members in the first 5 minutes and leadership behavior as any 2 of the following- Let the team know what is expected of them, decides what should be done, how they should be done and assign tasks. They used debriefing after completion of the simulation. However the questions for debriefing were very specific what kind of scenario, what should be done and have you been involved in cardiac arrest before. After the questions the videos were jointly watched. Participants of unsuccessful teams were at times quite emotional when they viewed their poor performance. 10 of the 16 teams failed. There was no follow up to study the impact of debriefing. They concluded that absence of leadership behaviour and absence of explicit task distribution were associated with poor team performance; however there is no discussion if debriefing improved these skills.

LOE 5 Fair, supportive


COMMENTS: The investigators were teaching emergency airway management. They did systematically demonstrate that debriefing following the first encounter improved airway management skills.

LOE 4 Fair, support


COMMENTS: Even though the residents self reported more comfort and ability to find equipment there was no improvement in team functioning after the debriefing and delivery of educational content. This suggests that debriefing as a teaching tool was not effective in improving team functioning. Details of debriefing technique are not provided other than it was led by the session moderator and involved each team member.

LOE 4 Fair, neutral


COMMENTS: Surgery simulation. They used debriefing to assess the simulation. Only 67% of the trainees were debriefed. Those that were debriefed considered the simulation and debriefing useful.

LOE 5 Poor, Supportive


COMMENTS: This was a feedback study that showed skill acquisition was improved with audio feedback. There was no true debriefing.

LOE 5 fair, supportive of feedback

COMMENTS: A survey looking at debriefing of a cardiac arrest team. 55% response rate of questionnaires. Formal communication between team members only occurred 67% of the time. Team did think communication was important for giving positive feedback and encouraging team improvement, highlighting potential problems and task allocation. Even though debrief sessions were offered to team after an arrest only 7.7% this was done formally.
LOE 5 Poor, supportive


COMMENTS: Qualitative study, anesthetists. Included as there were comments such as “the experiences of having to define and articulate anesthetic practise to the researchers, and of reading transcripts of observations has been one of the richest experiences of my career. They do not discuss if the experience changed the practice. However debriefing was well received and a positive experience. LOE 4 Good, supportive


COMMENTS: Study designed to demonstrate how participants accepted crisis management. Specifically the comment on debriefing was ‘debriefing sessions clarified important crisis management issues 4.3 (strongly agree=5). This was done to assess if Emergency medicine crisis resource management would be feasible as it has been with airline industry and anesthesia. LOE 5 Fair, supportive


COMMENTS: Theoretical article discusses using debriefing as a formative assessment. Discusses formative assessment—observe gap between desired and observed performance—provide feedback about performance gap—investigate basis for performance gap—help close gap through discussions and didactics.
LOE 5 Good, Neutral


COMMENTS: Theoretical article gives the reasons why rigorous feedback debriefing process helps resolve the clinical and behavioral dilemmas brought to the surface by simulation exercises.
LOE 5 Good, Neutral


COMMENTS: Description of how to set up debriefing and review video recordings. This is a summary article.
LOE 5 Good, supportive

COMMENTS: Randomized study using cardiac arrest scenarios. 3 groups. Surprisingly the oral debrief did better than video-assisted and debriefing compared to controls. The authors suggest this could be due to information overload with video and verbal debriefing. They only studied anesthesia non technical skills. No clinical correlation.
LOE 1 Good, supportive


COMMENTS: Pediatric resident questionnaire 74% questionnaires returned so is a representative sample. Indirect evidence that debriefing approved confidence. Mock codes were always followed by debriefing while real codes were not. They tried to correlate mock code and real code experience with confidence, however this was not the purpose of the study and with the average mock codes being 4.85 and real codes being 3.98, difficult to tell if in fact the reason the confidence was better was because of debriefing or more opportunity and time. There was overlap between the residents attending mock and real codes.
LOE 5 Poor, supportive


COMMENTS: Investigators conducted a randomized study. Intervention included engagement of the residents with high fidelity simulation of clinical events and there was opportunity for feedback and learning. Debriefing sessions allowed the residents to ask questions, review algorithms and receive feedback. They did not video the residents doing the simulations so there was no true debriefing.
LOE 1 Poor, supportive


COMMENTS: This a second study by the same investigators that used debriefing to describe an opportunity for the residents to ask questions.
LOE 3 Poor, supportive