Resuscitation 95 (2015) e225–e261

Contents lists available at ScienceDirect

Resuscitation

journal homepage: www.elsevier.com/locate/resuscitation

Part 9: First aid
2015 International Consensus on First Aid Science with Treatment Recommendations☆

David A. Zideman*,[1], Eunice M. Singletary[1], Emmy D.J. De Buck, Wei-Tien Chang, Jan L. Jensen, Janel M. Swain, Jeff A. Woodin, Ian E. Blanchard, Rita A. Herrington, Jeffrey L. Pellegrino, Natalie A. Hood, Luis F. Lojero-Wheatley, David S. Markenson, Hyuk Jun Yang, on behalf of the First Aid Chapter Collaborators[2]

ARTICLE INFO

Keywords:
Anaphylaxis
Asthma
Burns
Hypoglycemia
Shock
Trauma emergencies

Introduction

Definition of first aid

The International Liaison Committee on Resuscitation (ILCOR) First Aid Task Force first met in June 2013. Comprising nominated members from around the globe appointed by each ILCOR member organization, the task force members first agreed to the goals of first aid and produced a definition of first aid as it might apply to the international setting. Task force members considered an agreed-upon definition essential for the subsequent development of research questions, evidence evaluation, and treatment recommendations.

First aid is defined as the **helping behaviors** and **initial care** provided for an acute illness or injury. First aid can be initiated by anyone in any situation.

A *first aid provider* is defined as someone trained in first aid who should

- Recognize, assess, and prioritize the need for first aid
- Provide care by using appropriate competencies
- Recognize limitations, and seek additional care when needed

The goals of first aid are to preserve life, alleviate suffering, prevent further illness or injury, and promote recovery.

This definition of first aid addresses the need to recognize injury and illness, the requirement to develop a specific skill base, and the need for first aid providers to simultaneously provide immediate care and activate emergency medical services (EMS) or other medical care as required. First aid assessments and interventions should be medically sound and based on evidence-based medicine or, in the absence of such evidence, on expert medical consensus. The scope of first aid is not purely scientific, as both training and regulatory requirements will influence it. Because the scope of first aid varies among countries, states, and provinces, the treatment recommendations contained herein may need to be refined according to circumstances, need, and regulatory constraints.

One difference between this 2015 definition and that used for the 2010 process is that the task force did not restrict first aid to "assessments and interventions that can be performed. . .with minimal or no equipment." We acknowledge that, in most cases, equipment might not be available to first aid providers, particularly for bystanders and lay providers. However, the First Aid Task Force noted that, in some countries, supplementary first aid supplies now include inexpensive and compact pulse oximeters, glucose meters, and other adjuncts never before considered to be in the realm of first aid. In the 2015 treatment recommendations, we have striven to remain true to the "minimal or no equipment" approach, but recognize that addition of equipment, used by those trained to use and maintain it, may enhance care.

The task force strongly believes that education in first aid should be universal: everyone can and should learn first aid.

☆ This article has been copublished in Circulation.

* Corresponding author.

[1] Co-chairs and equal first co-authors.

[2] The members of the First Aid Chapter Collaborators are listed in the Acknowledgments section.

http://dx.doi.org/10.1016/j.resuscitation.2015.07.047

How and why topics were chosen

In the autumn of 2012, ILCOR approved the First Aid Task Force as a fully participating task force in the 2015 ILCOR international evidence evaluation and appointed 2 international co-chairs. In the spring of 2013, each member council of ILCOR nominated individuals for membership in the First Aid Task Force. In addition to the co-chairs, 11 task force members were appointed, representing the ILCOR member organizations of the American Heart Association (AHA), the European Resuscitation Council (ERC), the Heart and Stroke Foundation of Canada, the Australian Resuscitation Council, the InterAmerican Heart Foundation, and the Resuscitation Council of Asia. Members included physicians specializing in anesthesia, critical care/resuscitation, emergency medicine, cardiology, internal medicine, and pediatric emergency medicine, as well as paramedics specializing in prehospital care guideline development, specialists in first aid course education and curriculum development, and a specialist in first aid evidence evaluation methodology and guideline development.

The task force convened in June 2013 to review the topics and questions that were evaluated in 2005 and 2010, past research questions formulated in the PICO style (population, intervention, comparator, outcomes) that were never completed, and the new questions that had been submitted since 2010 to the task force, and a priority list created. Topics were reviewed for areas of controversy, known additional new science, and subject matter not previously evaluated. Task force members created a priority list for review, and the top 10 priority-ranked PICO questions were assigned. After the successful commencement of the workflow, the task force co-chairs added a further 12 PICO questions, including 5 new questions, 1 derived question, and 6 that had been previously reviewed. Selected PICO questions that had been previously reviewed were, in some cases, reworded to facilitate literature searches, and outcomes were decided upon by group consensus.

Evidence reviewers were recruited through a call for volunteers distributed by ILCOR to stakeholder organizations around the world. More than 30 individual reviewers were assigned to topics, usually by preference or expertise, but avoiding any direct conflicts of interest. In general, 2 evidence reviewers were assigned to each PICO, supervised by a member of the task force designated as the task force question owner. Evidence reviewers included physicians with diverse specialties including emergency medicine, EMS, wilderness medicine, critical care, cardiology, occupational medicine, toxicology, anesthesia, pediatric emergency medicine, public health, and epidemiology, as well as paramedics, nurse practitioners and first aid education specialists with experience in guideline and curriculum development, and professional evidence evaluation and methodology experts.

The evidence evaluation process

For the 2015 international evidence evaluation process, the AHA developed a new Web-based information and documentation platform, the Systematic Evidence Evaluation and Review System (SEERS), to support the ILCOR systematic reviews and to capture the data in reusable formats. This Web-based system facilitated structured reviews in a consistent format that would support the ultimate development of science summaries and evidence-based treatment recommendations.

Each task force performed a detailed systematic review based on the recommendations of the Institute of Medicine of the National Academies,[1] using the methodological approach proposed by the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) Working Group.[2] After identifying and prioritizing the PICO questions to be addressed,[3] and with the assistance of information specialists, a detailed search for relevant articles was performed in each of 3 online databases (PubMed, Embase, and the Cochrane Library).

By using detailed inclusion and exclusion criteria, articles were screened for further evaluation. The reviewers for each question created a reconciled risk of bias assessment for each of the included studies, using state-of-the-art tools: Cochrane for randomized controlled trials (RCTs),[4] Quality Assessment of Diagnostic Accuracy Studies (QUADAS)-2 for studies of diagnostic accuracy,[5] and GRADE for observational studies that inform both therapy and prognosis questions.[6]

GRADE evidence profile tables[7] were then created to facilitate an evaluation of the evidence in support of each of the critical and important outcomes. The quality of the evidence (or confidence in the estimate of the effect) was categorized as high, moderate, low, or very low,[8] based on the study methodologies and the 5 core GRADE domains of risk of bias, inconsistency, indirectness, imprecision, and other considerations (including publication bias).[9]

The GRADE evidence profile tables were then used to create a written summary of evidence for each outcome (the consensus on science statements). Whenever possible, consensus-based treatment recommendations were then created. These recommendations (designated as strong or weak) were accompanied by an overall assessment of the evidence and a statement from the task force about the values and preferences that underlie the recommendations. Strong recommendations use the words "we recommend," and weak recommendations use the words "we suggest."

Further details of the methodology that underpinned the evidence evaluation process are found in "Part 2: Evidence Evaluation and Management of Conflicts of Interest."

The learning curve for use of the GRADE evidence evaluation methodology was steep and resulted in a total of 22 PICO questions, including 6 new questions, being completed by the task force before the ILCOR 2015 International Consensus Conference on CPR and ECC Science With Treatment Recommendations in February 2015. The remaining topics not reviewed for 2015 have since been reprioritized, with the addition of several new questions that were identified during the ILCOR 2015 work process.

Very little research has been conducted in first aid, and most of the recommendations are extrapolations from research in the prehospital or hospital setting. The selected methodology for evaluation of the literature led to the elimination of lower-quality data from animal studies, case series, and case reports, except for topics where no human studies were identified that met the inclusion criteria. These more stringent requirements led to the inclusion of studies with a higher initial quality of evidence, but most studies were eventually downgraded due to indirectness for the first aid setting. The gaps in knowledge have been identified by the evidence reviewers and summarized at the end of each treatment recommendation. It is our hope that these knowledge gaps will be filled through future research. In the absence of evidence-based medicine to support a treatment recommendation, the task force has made many recommendations based on expert opinion, perceived best practice, and the principle of "do no harm."

PICO questions reviewed

First Aid for Medical Emergencies

- Recovery position (FA 517)
- Optimal position for shock (FA 520)
- Oxygen administration for first aid (FA 519)
- Bronchodilator use for asthma with difficulty breathing (FA 534)
- Stroke recognition[3] (FA 801)

[3] Topics not previously reviewed.