Part 15: First Aid

2015 American Heart Association and American Red Cross Guidelines Update for First Aid

Eunice M. Singletary, Chair; Nathan P. Charlton; Jonathan L. Epstein; Jeffrey D. Ferguson; Jan L. Jensen; Andrew I. MacPherson; Jeffrey L. Pellegrino; William "Will" R. Smith; Janel M. Swain; Luis F. Lojero-Wheatley; David A. Zideman

Introduction

The International Liaison Committee on Resuscitation (ILCOR) First Aid Task Force was formed in 2013 to review and evaluate the scientific literature on first aid in preparation for development of international first aid guidelines, including the *2015 American Heart Association* (AHA) *and American Red Cross Guidelines Update for First Aid*. The 14 members of the task force represent 6 of the international member organizations of ILCOR. Before 2015, evidence evaluation for first aid was conducted by the International First Aid Science Advisory Board and the National First Aid Advisory Board. Although the group responsible for evidence evaluation has changed, the goals remain the same: to reduce morbidity and mortality due to emergency events by making recommendations based on an analysis of the scientific evidence.

A critical review of the scientific literature by appointed ILCOR First Aid Task Force members and evidence evaluators resulted in consensus on science statements with treatment recommendations for 22 selected questions addressing first aid interventions. These findings are presented in "Part 9: First Aid" of the *2015 ILCOR International Consensus on First Aid Science With Treatment Recommendations*,[1,2] and they include a list of identified knowledge gaps that may be filled through future research. The ILCOR treatment recommendations are intended for the international first aid community, with the understanding that local, state, or provincial regulatory requirements may limit the ability to implement recommended first aid interventions. The current AHA/American Red Cross First Aid guidelines are derived from this work. New topics found in the 2015 First Aid Guidelines Update include first aid education, recognition of stroke, recognition of concussion, treatment of mild symptomatic hypoglycemia, and management of open chest wounds. Other topics have been updated based on findings from the corresponding ILCOR reviews.

Background

The roots of first aid have been recorded throughout history, particularly as related to warfare or battlefield care. Images on classical Greek pottery from circa 500 BC depict bandaging of battle wounds.[3] A system of first aid existed in the Roman army, with *capsarii* responsible for first aid, including bandaging, and resembling modern day combat medics.[4] In the 1870s, Johannes Friedrich August von Esmarch, a Prussian military surgeon, was the first to use the term *Erste Hilfe* ("first aid") and taught soldiers to use a standard set of bandaging and splinting skills to care for their wounded comrades on the battlefield.[3] During that same decade, the English Priory of the Order of St John was changed from a religious and fraternal body to a charitable organization with the goal of alleviating human suffering. They later established Britain's first ambulance service and the wheeled transport litter (the St John Ambulance) followed by the St John Ambulance Association "to train men and women for the benefit of the sick and wounded."[5] In the United States, organized training in first aid started in 1903, when Clara Barton, president of the Red Cross, formed a committee to establish instruction in first aid among industrial workers, who were frequently subject to dangerous conditions, accidents, and deaths.[6]

The Evidence Evaluation Process

The recommendations in this 2015 Guidelines Update are based on an extensive evidence review process that was begun by ILCOR after the publication of the *2010 American Heart Association and American Red Cross International Consensus on First Aid Science With Treatment Recommendations*[7] and was completed in February 2015.[1,2]

In this in-depth evidence review process, ILCOR examined topics and then generated a prioritized list of questions for systematic review. Questions were first formulated in PICO (population, intervention, comparator, outcome) format,[8] search strategies and inclusion and exclusion criteria were defined, and then a search for relevant articles was performed. The evidence was evaluated by the ILCOR task forces by using the standardized methodological approach proposed by the Grading of Recommendations Assessment, Development and Evaluation (GRADE) Working Group.[9]

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The quality of the evidence was categorized based on the study methodologies and the 5 core GRADE domains of risk of bias, inconsistency, indirectness, imprecision, and other considerations (including publication bias). Where possible, consensus-based treatment recommendations were created.

To create this 2015 First Aid Guidelines Update, the AHA and the American Red Cross formed a joint writing group, with careful attention to avoiding conflicts of interest, to assessing the ILCOR treatment recommendations, and to writing AHA and American Red Cross treatment recommendations by using the AHA Class of Recommendation and Level of Evidence (LOE) system. The recommendations made in the 2015 Guidelines Update are informed by the ILCOR recommendations and GRADE classification, in the context of the delivery of medical care in North America. Throughout the online version of this document, live links are provided so the reader can connect directly to the systematic review on the ILCOR website, the Scientific Evidence Evaluation and Review System (SEERS) site. These links are indicated by a superscript combination of letters and numbers (eg, FA 517). We encourage readers to review the evidence and appendixes, such as the GRADE tables. For further information, please see "Part 2: Evidence Evaluation and Management of Conflicts of Interest."

A paucity of research in the field of first aid is present, although certain topics have received recent attention (eg, tourniquets for traumatic amputations, hemostatic dressings, identification of stroke symptoms). Without research into first aid interventions, all recommendations must be derived indirectly from hospital-based, animal, or, at best, emergency medical services (EMS) studies.

Definition of First Aid

We define *first aid* as helping behaviors and initial care provided for an acute illness or injury. The goals of a first aid provider include preserving life, alleviating suffering, preventing further illness or injury, and promoting recovery. First aid can be initiated by anyone in any situation and includes self-care. First aid assessments and interventions should be medically sound and based on scientific evidence or, in the absence of such evidence, on expert consensus. First aid competencies include, at any level of training,

- Recognizing, assessing, and prioritizing the need for first aid
- Providing care by using appropriate knowledge, skills, and behaviors
- Recognizing limitations and seeking additional care when needed

The scope of first aid is not purely scientific; it is influenced by both training and regulatory constraints. The definition of scope is therefore variable and should be defined according to circumstances, need, and regulatory requirements.

First Aid Education[FA 773]—New

First aid education can be accomplished through a variety of means, including online courses, classes, and public health campaigns. First aid education can increase survival rates, reduce injury severity, and resolve symptoms over a spectrum of approaches, including public health campaigns,[10,11] focused health topics, or courses that result in certification.[12] Education and training in first aid can be useful to improve morbidity and mortality from injury and illness (Class IIa, LOE C-LD). We recommend that first aid education be universally available (Class I, LOE C-EO).

Calling for Help

The goal of first aid intervention is to recognize when help is needed and how to get it. This goal includes learning how and when to access the EMS system (9-1-1), how to activate the on-site emergency response plan, and how to contact the Poison Control Center (1-800-222-1222).

Providing care for someone who is ill or injured should not usually delay calling for more advanced care if needed. However, if the first aid provider is alone with an injured or ill person and there are imminent threats to life involving the ABCs (airway, breathing, circulation), then basic care—such as opening an airway or applying pressure to the site of severe bleeding—should be provided before leaving the victim to activate the emergency response system or phone for help (EMS or 9-1-1).

Positioning the Ill or Injured Person[FA 517]—Updated

Generally, an ill or injured person should not need to be moved. This is especially important if you suspect, from the person's position or the nature of the injury, that the person may have a pelvic or spine injury. There are times, however, when the person should be moved:

- If the area is unsafe for the first aid provider or the person, move to a safe location if possible (Class I, LOE C-EO).
- If a person is unresponsive and breathing normally, it may be reasonable to place him or her in a lateral side-lying recovery position (Class IIb, LOE C-LD). There is evidence that this position will help increase total airway volume[13] and decrease stridor severity.[14] Extend one of the person's arms above the head and roll the body to the side so that the person's head rests on the extended arm. Once the person is on his or her side, bend both legs to stabilize the body. There is little evidence to suggest an alternative optimal recovery position.[1] If a person is unresponsive and not breathing normally, proceed with basic life support guidelines (see "Part 5: Adult Basic Life Support and Cardiopulmonary Resuscitation Quality").
- If a person has been injured and the nature of the injury suggests a neck, back, hip, or pelvic injury, the person should not be rolled onto his or her side and instead should be left in the position in which they were found, to avoid potential further injury (Class I, LOE C-EO). If leaving the person in the position found is causing the person's airway to be blocked, or if the area is unsafe, move the person only as needed to open the airway and to reach a safe location (Class I, LOE C-EO).

Position for Shock[FA 520]—Updated

The ILCOR 2015 International Consensus on CPR and ECC Science With Treatment Recommendations (C2015) reviewed the published evidence in support of various body positions that might be used by a first aid provider for a person in shock. Studies included normotensive volunteers; healthy individuals who underwent phlebotomy; and patients with septic, cardiogenic, or hypovolemic shock. Study results were sometimes conflicting.[15–20] One observational study found a lower cardiac index and higher heart rate for individuals following phlebotomy when placed in a standing position compared with the supine position.[20] Other studies found that the addition of passive leg raising alone compared to the supine position in hypotensive patients resulted in an improvement in various vital signs and indicators of cardiac output, but this effect was temporary, lasting no more than 7 minutes.[16,17,20] There were no reported adverse effects due to raising the feet.

If a person shows evidence of shock and is responsive and breathing normally, it is reasonable to place or maintain the person in a supine position (Class IIa, LOE C-LD). If there is no evidence of trauma or injury (eg, simple fainting, shock from nontraumatic bleeding, sepsis, dehydration), raising the feet about 6 to 12 inches (about 30° to 60°) from the supine position is an option that may be considered while awaiting arrival of EMS (Class IIb, LOE C-LD). Do not raise the feet of a person in shock if the movement or the position causes pain (Class III: Harm, LOE C-EO).

Oxygen Use in First Aid[FA 519]—Updated

Despite the common use of supplementary oxygen in various medical conditions, there is little evidence to support its use in the first aid setting. Administration of oxygen is not considered a standard first aid skill. However, oxygen may be available in some first aid environments and requires specific training in its use.

The 2015 ILCOR evidence review of oxygen in the first aid setting sought to determine the impact of oxygen supplementation, as compared with no oxygen supplementation, on outcomes of patients with shortness of breath, difficulty breathing, or hypoxia. The review attempted to identify specific medical conditions, other than chest pain, that may benefit from supplementary oxygen administration by first aid providers. Supplementary oxygen for adults with chest pain, during CPR and after return of spontaneous circulation, is addressed in "Part 5: Adult Basic Life Support and Cardiopulmonary Resuscitation Quality," "Part 7: Adult Advanced Cardiovascular Life Support," "Part 8: Post–Cardiac Arrest Care," and "Part 9: Acute Coronary Syndromes." No evidence was found in the C2015 review for or against the routine administration of supplementary oxygen by first aid providers.[1]

Evidence was identified showing a beneficial effect with the use of supplementary oxygen for the relief of decompression sickness.[21] The use of supplementary oxygen by first aid providers with specific training is reasonable for cases of decompression sickness (Class IIa, LOE C-LD).

Patients with advanced cancer may use oxygen at home. One meta-analysis[22] found that the use of oxygen for patients with advanced cancer who had normoxia and dyspnea was not of benefit in relieving dyspnea. Two small, randomized controlled trials demonstrated relief of dyspnea in patients with advanced cancer who had hypoxemia and dyspnea.[23,24] For first aid providers with specific training in the use of oxygen, the administration of supplementary oxygen to persons with known advanced cancer with dyspnea *and* hypoxemia may be reasonable (Class IIb, LOE B-R).

Although no evidence was identified to support the use of oxygen, it might be reasonable to provide oxygen to spontaneously breathing persons who are exposed to carbon monoxide while waiting for advanced medical care (Class IIb, LOE C-EO).

Oxygen delivery mechanisms and amounts will vary with the individual's underlying health problems. Specialized courses are available for persons who may potentially need to use oxygen in the settings described above.

Medical Emergencies

Bronchodilators for Asthma With Shortness of Breath[FA 534]

There are many causes of shortness of breath. Some people carry inhaled medications to relieve certain causes of shortness of breath and wheezing, such as bronchitis, asthma, reactive airway disease or chronic obstructive pulmonary disease. The incidence of severe asthma and deaths from asthma are increasing.[25] First aid providers will likely encounter persons with a previous diagnosis of asthma and prescribed inhaled medication who have acute difficulty breathing and/or wheezing.

Inhaled bronchodilators have been shown to be effective in patients with asthma and acute shortness of breath.[26–36] Evidence from included studies was extrapolated from the prehospital and emergency department settings.

The incidence of adverse events related to the use of inhaled bronchodilators is low: multiple studies show that treatment with albuterol/salbutamol causes no significant change in heart rate,[26,31–33] blood pressure,[33] serum potassium, tremor, headache, nervousness, weakness, palpitation, or dry mouth.[26] However, a single study showed a statistically significant difference in heart rate with different treatment regimens of salbutamol/albuterol.[26]

It is reasonable for first aid providers to be familiar with the available inhaled bronchodilator devices and to assist as needed with the administration of prescribed bronchodilators when a person with asthma is having difficulty breathing (Class IIa, LOE B-R).

Stroke Recognition[FA 801]—New

Worldwide, 15 million individuals are estimated to have a stroke each year. Some areas have achieved great success in decreasing the incidence and long-term effects of stroke through prevention, recognition, treatment, and rehabilitation programs. Early stroke recognition through the use of stroke-assessment systems decreases the interval between the time of stroke onset and arrival at the hospital and definitive treatment.[37–42] This is associated with better outcomes, such as improved neurologic function. From a first aid education perspective, it has been shown that 94.4% of lay providers trained in a stroke-assessment system are able to recognize signs and symptoms of a stroke, compared with 76.4% of those without training. The ability to recognize stroke with a stroke-assessment system persists at 3 months after training.[43]

The Face, Arm, Speech, Time (FAST) and Cincinnati Prehospital Stroke Scale (CPSS) stroke assessment systems are the simplest of these tools, with high sensitivity for the identification of stroke.[1] If glucose measurement is available to the first aid provider, stroke assessment systems such as the Los Angeles Prehospital Stroke Screen (LAPSS), Ontario Prehospital Stroke Scale (OPSS), Recognition of Stroke in the Emergency Room (ROSIER), and Kurashiki Prehospital Stroke Scale (KPSS) show increased specificity.[1,37–42,44–60]

The use of a stroke assessment system by first aid providers is recommended (Class I, LOE B-NR).

Chest Pain[FA 871, FA 586]

Chest pain is a common health problem with a myriad of causes, ranging from minor chest wall strains to pneumonia, angina, or myocardial infarction. It can be very difficult to differentiate chest pain of cardiac origin, such as a heart attack or myocardial infarction, from other origins. Common signs and symptoms associated with chest pain or discomfort of cardiac origin include shortness of breath, nausea, sweating, or pain in the arm(s) or back.

Aspirin has been found to significantly decrease mortality due to myocardial infarction in several large studies[61–63] and is therefore recommended for persons with chest pain due to suspected myocardial infarction (Class I, LOE B-R). There was no evidence of allergic reactions in 1 small study,[64] but there was an increased risk of bleeding among recipients of aspirin in 1 large study.[61]

The 2015 ILCOR systematic review for the use of aspirin in chest pain did not find any evidence to support the use of aspirin for undifferentiated chest pain.[1] When early aspirin administration (ie, in the first few hours after onset of symptoms) is compared with late aspirin administration (eg, after hospital arrival) for chest pain due to myocardial infarction, a reduction of mortality is found.[61,65,66]

Call EMS immediately for anyone with chest pain or other signs of heart attack, rather than trying to transport the person to a healthcare facility yourself (Class I, LOE C-EO).

While waiting for EMS to arrive, the first aid provider may encourage a person with chest pain to take aspirin if the signs and symptoms suggest that the person is having a heart attack and the person has no allergy or contraindication to aspirin, such as recent bleeding (Class IIa, LOE B-NR). The suggested dose of aspirin is 1 adult 325-mg tablet, or 2 to 4 low-dose "baby" aspirins (81 mg each), chewed and swallowed. If a person has chest pain that does not suggest that the cause is cardiac in origin, or if the first aid provider is uncertain or uncomfortable with administration of aspirin, then the first aid provider should not encourage the person to take aspirin (Class III: Harm, LOE C-EO). The decision to administer aspirin in these cases may be deferred to an EMS provider with physician oversight.

Anaphylaxis[FA 500]—Updated

Allergic reactions do not require epinephrine, but a small portion of reactions can progress to anaphylaxis. Epinephrine is recommended for anaphylaxis, and persons at risk are typically prescribed and carry an epinephrine autoinjector. An anaphylactic reaction involves 2 or more body systems and can be life-threatening. Symptoms may include respiratory difficulty (such as wheezing), cutaneous manifestations (such as hives or swelling of the lips and eyes), cardiovascular effects (such as hypotension, cardiovascular collapse, or shock), or gastrointestinal cramping and diarrhea. This update does not change the 2010 Guidelines recommendation that first aid providers assist with or administer to persons with symptoms of anaphylaxis their own epinephrine when they are having a reaction.[6] The recommended dose of epinephrine is 0.3 mg intramuscularly for adults and children greater than 30 kg, 0.15 mg intramuscularly for children 15 to 30 kg, or as prescribed by the person's physician. First aid providers should call 9-1-1 immediately when caring for a person with suspected anaphylaxis or a severe allergic reaction (Class I, LOE C-EO).

A second dose of epinephrine has been found to be beneficial for persons not responding to a first dose.[67–75] When a person with anaphylaxis does not respond to the initial dose, and arrival of advanced care will exceed 5 to 10 minutes, a repeat dose may be considered (Class IIb, LOE C-LD).

Hypoglycemia[FA 795]—New

Hypoglycemia can manifest as a variety of symptoms, including confusion, altered behavior, diaphoresis, or tremulousness. Diabetics who display these symptoms should be assumed by the first aid provider to have hypoglycemia. If the person is unconscious, exhibits seizures, or is unable to follow simple commands or swallow safely, the first aid provider should call for EMS immediately (Class I, LOE C-EO).

Evidence from the 2015 ILCOR systematic review demonstrates more rapid clinical relief of symptomatic hypoglycemia with glucose tablets compared with various evaluated dietary sugars, such as sucrose- or fructose-containing candies or foods, orange juice, or milk (Table 1).[76–78] If a person with diabetes reports low blood sugar or exhibits signs or symptoms of mild hypoglycemia and is able to follow simple commands and swallow, oral glucose should be given to attempt to resolve the hypoglycemia. Glucose tablets, if available, should be used to reverse hypoglycemia in a person who is able to take these orally (Class I, LOE B-R).

If glucose tablets are not available, other forms of dietary sugars, as depicted in Table 1, have been found to be effective as a substitute for glucose tablets to reverse hypoglycemia.[76–79] It is reasonable to use these dietary sugars as an alternative to glucose tablets (when not available) for reversal of mild symptomatic hypoglycemia (Class IIa, LOE B-R).

For diabetics with symptoms of hypoglycemia, symptoms may not resolve until 10 to 15 minutes after ingesting glucose tablets or dietary sugars (Table 1).[76–79] First aid providers should therefore wait at least 10 to 15 minutes before calling EMS and re-treating a diabetic with mild symptomatic hypoglycemia with additional oral sugars (Class I, LOE

Table 1. Types of Food Representing 20 g of Carbohydrates and Number of People With Improvement in Hypoglycemia Within 15 Minutes (Based on Included Evidence)[1]

Type of Food or Fluid	Carbohydrates/Serving	Measure Representing 20 g Carbohydrates*	Clinical Relief 15 min or Less After Ingestion
Glucose tablets	Varies	Varies	194/223 (87.0%)
Glucose 71%/oligosaccharides 29% candy (Mentos)	2.8 g/mint	5–10 mints	44/48 (91.7%)
Sucrose candy (Skittles)	0.9 g/candy	20–25 candies	150/177 (84.7%)
Jelly beans	1.1 g/jelly bean	15–20 jelly beans	33/45 (73.3%)
Orange juice (unsweetened, from concentrate)	1 g/10 mL	200 mL	35/50 (70.0%)
Fructose (fruit leather, such as Stretch Island)	10 g/strip	2 strips	111/165 (67.3%)
Whole milk	21.75 g/mL	435 mL	Not reported

*These measurements may differ from those in the evaluated studies, as the amount was not standardized across studies.

B-R). If the person's status deteriorates during that time or does not improve, the first aid provider should call EMS (Class I, LOE C-EO).

Exertional Dehydration[FA 584]—Updated

First aid providers are often called upon to assist at "hydration stations" at sporting events. Vigorous exercise, particularly in hot and humid environments, can lead to significant dehydration with loss of water and electrolytes through sweat.

Evidence from the 2015 ILCOR systematic review shows that ingestion of 5% to 8% carbohydrate-electrolyte (CE) solutions facilitates rehydration after exercise-induced dehydration and is generally well tolerated.[80,81] Studies in this review looked at the specific percentage CE solutions described and did not evaluate oral rehydration therapy or salts that are sometimes used for diarrheal illness. In the absence of shock, confusion, or inability to swallow, it is reasonable for first aid providers to assist or encourage individuals with exertional dehydration to orally rehydrate with CE drinks (Class IIa, LOE B-R). For individuals with severe dehydration with shock, confusion or symptoms of heat stroke, or symptoms of heat exhaustion or cramps, refer to the 2010 First Aid Guidelines.[6] Lemon tea-based CE drinks and Chinese tea with caffeine have been found to be similar to water for rehydration.[82] Other beverages, such as coconut water and 2% milk, have also been found to promote rehydration after exercise-associated dehydration, but they may not be as readily available.[80,82,83] If these alternative beverages are not available, potable water may be used (Class IIb, LOE B-R).

Toxic Eye Injury[FA 540]

Chemical injury to the eye occurs most commonly from chemicals in powder and liquid form. Evidence limited to a single study of eye exposure to an alkali showed improvement in ocular pH following irrigation with tap water compared with normal saline. In this study, irrigation with 1.5 L of solution occurred over 15 minutes.[84] It can be beneficial to rinse eyes exposed to toxic chemicals immediately and with a copious amount of tap water for at least 15 minutes or until advanced medical care arrives (Class IIa, LOE C-LD). If tap water is not available, normal saline or another commercially available eye irrigation solution may be reasonable (Class IIb, LOE C-LD). First aid providers caring for individuals with chemical eye injury should contact their local poison control center or, if a poison control center is not available, seek help from a medical provider or 9-1-1 (Class I, LOE C-EO).

Trauma Emergencies

Bleeding[FA 530]

Control of bleeding is an important first aid skill. Standard first aid bleeding control includes applying direct pressure with or without gauze. The 2015 ILCOR systematic review evaluated the use of pressure points, elevation, local application of ice, tourniquets, and hemostatic dressings for the control of bleeding compared with direct pressure.

Direct Pressure, Pressure Points, and Elevation

There continues to be no evidence to support the use of pressure points or elevation of an injury to control external bleeding. The use of pressure points or elevation of an extremity to control external bleeding is not indicated (Class III: No Benefit, LOE C-EO). The standard method for first aid providers to control open bleeding is to apply direct pressure to the bleeding site until it stops. Control open bleeding by applying direct pressure to the bleeding site (Class I, LOE B-NR).

Localized Cold Therapy

There are limited data from the hospital setting demonstrating a benefit from application of localized cold therapy compared to direct pressure alone to closed bleeding, such as a bruise or hematoma.[85,86] Local cold therapy, such as an instant cold pack, can be useful for these types of injuries to the extremity or scalp (Class IIa, LOE C-LD). Cold therapy should be used with caution in children because of the risk of hypothermia in this population (Class I, LOE C-EO).

Tourniquets[FA 768]

Tourniquets can be effective for severe external limb bleeding. The use of tourniquets in the prehospital setting for severe external limb bleeding has been studied in the military setting[87–94] and civilian EMS setting.[95,96] The effectiveness and complications of different types of tourniquets, such as military tourniquets compared with commercial or improvised tourniquets, was not reviewed for 2015. However, tourniquets have been found to control bleeding effectively in most cases.[87,89,93,95] Potential complications include compartment syndrome,[88] nerve damage,[88,90,93,95] damage to blood vessels,[95] and amputation or limb shortening.[87,88,90,93] Complications may be related to tourniquet pressure and duration of occlusion, but there is insufficient evidence to determine a minimal critical time beyond which irreversible complications may occur. Because the rate of complications is low and the rate of hemostasis is high, first aid providers may consider the use of a tourniquet when standard first aid hemorrhage control does not control severe external limb bleeding (Class IIb, LOE C-LD).

A tourniquet may be considered for initial care when a first aid provider is unable to use standard first aid hemorrhage control, such as during a mass casualty incident, with a person who has multisystem trauma, in an unsafe environment, or with a wound that cannot be accessed (Class IIb, LOE C-EO). Although maximum time for tourniquet use was not reviewed by a 2015 ILCOR systematic review, it has been recommended that the first aid provider note the time that a tourniquet is first applied and communicate this information with EMS providers.[6] It is reasonable for first aid providers to be trained in the proper application of tourniquets, both manufactured and improvised (Class IIa, LOE C-EO).

Hemostatic Dressings[FA 769]—Updated

Hemostatic dressings are becoming more commonly used to control bleeding, especially in the military setting.[97–99] Early-generation powder or granular hemostatic agents were poured directly into the wound and were associated with exothermic reactions that could worsen tissue injury. Because of the potential for adverse effects and the variability of effectiveness of early hemostatic agents and dressings, routine use has not previously been advised. Newer-generation hemostatic agent–impregnated dressings are safer and effective in providing hemostasis in up to 90% of participants in case series.[97–100] Both complications and adverse effects are now uncommon but may include wound infection and exothermic burns.[97] Use of newer-generation hemostatic dressings is increasing in the civilian setting.[100]

Hemostatic dressings may be considered by first aid providers when standard bleeding control (direct pressure with or without gauze or cloth dressing) is not effective for severe or life-threatening bleeding (Class IIb, LOE C-LD). Hemostatic dressings are likely of greatest use for severe external bleeding in locations where standard hemorrhage control is not effective, when a tourniquet cannot be applied (trunk or junctional areas such as the abdomen or axilla/groin), when a tourniquet is not available, or when a tourniquet is not effective to stop bleeding. Proper application of hemostatic dressings requires training (Class I, LOE C-EO).

Open Chest Wounds[FA 525]—New

Management of an open chest wound in out-of-hospital settings is challenging and requires immediate activation of EMS. The greatest concern is the improper use of a dressing or device that could lead to fatal tension pneumothorax. There are no human studies comparing the application of an occlusive device versus a nonocclusive device.[1] We recommend against the application of an occlusive dressing or device by first aid providers for individuals with an open chest wound (Class III: Harm, LOE C-EO). In the first aid situation, it is reasonable to leave an open chest wound exposed to ambient air without a dressing or seal (Class IIa, LOE C-EO). If a nonocclusive dressing, such as a dry gauze dressing, is applied for active bleeding, care must be taken to ensure that saturation of the dressing does not lead to partial or complete occlusion.

Concussion[FA 799]—New

The signs and symptoms of concussion (mild traumatic brain injury) are complex. The classic signs of concussion after head trauma include feeling stunned or dazed, or experiencing headache, nausea, dizziness and unsteadiness (difficulty in balance), visual disturbance, confusion, or loss of memory (from either before or after the injury).[101] The various grades and combinations of these symptoms make the recognition of concussion difficult.[102] Furthermore, changes may be subtle and yet progressive.

First aid providers are often faced with the decision as to what advice to give to a person after minor head trauma, and it is now widely recognized that an incorrect decision can have long-term serious or even fatal consequences.[103]

There are no clinical studies to support the use of a simple concussion scoring system by first aid providers. Any person with a head injury that has resulted in a change in level of consciousness, has progressive development of signs or symptoms as described above, or is otherwise a cause for concern should be evaluated by a healthcare provider or EMS personnel as soon as possible (Class I, LOE C-EO). Using any mechanical machinery, driving, cycling, or continuing to participate in sports after a head injury should be deferred by these individuals until they are assessed by a healthcare provider and cleared to participate in those activities (Class I, LOE C-EO).

Spinal Motion Restriction[FA 772]

The terms *spinal immobilization* and *spinal motion restriction* have been used synonymously in the past. Because true spinal immobilization is not possible, the term *spinal motion restriction* is now being used to describe the practice of attempting to maintain the spine in anatomical alignment and minimize gross movement, with or without the use of specific adjuncts such as collars.

In the 2010 review, no published studies were identified to support or refute the benefit of spinal immobilization and/or the method by which to apply spinal motion restriction (SMR) by first aid providers.[7] For the 2015 ILCOR systematic review, cervical SMR in injured persons without penetrating trauma, as a component of total SMR, was the specific focus for evidence review. Thus, the evidence evaluation was limited to the use of cervical collars. Potential adverse effects from the use of a cervical collar include increased intracranial pressure[104–109] and potential airway compromise.[110] Once again, no studies were found that demonstrated a decrease in neurologic injury with the use of a cervical collar.[111]

While complete SMR may be indicated for individuals who have blunt mechanism of injury and who meet high-risk criteria as recommended in the 2010 Guidelines,[6] the proper technique for SMR requires extensive training and practice to be performed properly and is thus not considered a skill for first aid providers.

With a growing body of evidence showing more actual harm and no good evidence showing clear benefit, we recommend against routine application of cervical collars by first aid providers (Class III: Harm, LOE C-LD). If a first aid provider suspects a spinal injury, he or she should have the person remain as still as possible and await the arrival of EMS providers (Class I, LOE C-EO).

Musculoskeletal Trauma

Suspected Long Bone Fractures[FA 503]

Long bone fractures may at times be severely angulated. The 2015 ILCOR systematic review attempted to compare straightening of angulated long bone fractures before splinting with splinting in the position found. No studies were identified that evaluate straightening of angulated long bone fractures before splinting. Thus, there is no evidence in the first aid setting for or against the straightening or gentle realignment of a suspected angulated long bone fracture before splinting, including in the presence of neurovascular compromise, for outcomes of incidence of neurologic or vascular injury, ability to splint, pain experienced, or time to medical transportation.[1]

In general, first aid providers should not move or try to straighten an injured extremity (Class III: Harm, LOE C-EO). Based on training and circumstance (such as remote distance from EMS or wilderness settings, presence of vascular compromise), some first aid providers may need to move an injured limb or person. In such situations, providers should protect the injured person, including splinting in a way that limits pain, reduces the chance for further injury, and facilitates safe and prompt transport (Class I, LOE C-EO).

If an injured extremity is blue or extremely pale, activate EMS immediately (Class I, LOE C-EO).

Burns

Thermal Burns: Cooling[FA 770]

Burns can come from a variety of sources such as hot water (scalds) and fire. It is known that applying ice directly to a burn can cause tissue ischemia.[6,7] The 2015 ILCOR systematic review of the evidence for cooling of burns evaluated agents that were cool or cold, but not frozen. Cooling was found to reduce risk of injury and depth of injury.[11,112,113] Cool thermal burns with cool or cold potable water as soon as possible and for at least 10 minutes (Class I, LOE B-NR). If cool or cold water is not available, a clean cool or cold, but not freezing, compress can be useful as a substitute for cooling thermal burns (Class IIa, LOE B-NR). Care should be taken to monitor for hypothermia when cooling large burns (Class I, LOE C-EO). This is particularly important in children, who have a larger body surface area for their weight than adults have.

Burn Dressings[FA 771]

It is common for first aid providers to cover a burn with a dressing after it has been cooled; however, based on limited data, there is no evidence that a wet dressing compared with a dry dressing is beneficial for care of a burn.[1] One study showed no benefit for a topical penetrating antibacterial versus petrolatum gauze or for a topical nonpenetrating antibacterial versus dry dressing.[114] After cooling of a burn, it may be reasonable to loosely cover the burn with a sterile, dry dressing (Class IIb, LOE C-LD).

Honey, when used as a dressing, has been shown in 2 randomized controlled trials to decrease the risk of infection and mean duration of time to healing when compared with an antibiotic–impregnated gauze dressings.[115,116] Both of these studies were downgraded for risk of bias, imprecision, and indirectness. In general, it may be reasonable to avoid natural remedies, such as honey or potato peel dressings (Class IIb, LOE C-LD). However, in remote or wilderness settings where commercially made topical antibiotics are not available, it may be reasonable to consider applying honey topically as an antimicrobial agent (Class IIb, LOE C-LD).

Burns: When Advanced Care Is Needed

Burns associated with or involving (1) blistering or broken skin; (2) difficulty breathing; (3) the face, neck, hands, or genitals; (4) a larger surface area, such as trunk or extremities; or (5) other cause for concern should be evaluated by a healthcare provider (Class I, LOE C-EO).

Dental Avulsion[FA 794] —Updated

Dental avulsion injury can damage both the tooth and the supporting soft tissue and bone, resulting in permanent loss of the tooth. Immediate reimplantation of an avulsed tooth is believed by the dental community to result in the greatest chance of tooth survival.[117] In situations that do not allow for immediate reimplantation, it can be beneficial to temporarily store an avulsed tooth in a variety of solutions shown to prolong viability of dental cells (Class IIa, LOE C-LD). The following solutions have demonstrated efficacy at prolonging dental cell viability from 30 to 120 minutes, and they may be available to first aid providers (listed in order of preference based on the C2015 evidence review): Hank's Balanced Salt Solution (containing calcium, potassium chloride and phosphate, magnesium chloride and sulfate, sodium chloride, sodium bicarbonate, sodium phosphate dibasic and glucose), propolis, egg white, coconut water, Ricetral, or whole milk.[118–128]

If none of these solutions are available, it may be reasonable to store an avulsed tooth in the injured persons saliva (not in the mouth) pending reimplantation (Class IIb, LOE C-LD). Viability of an avulsed tooth stored in any of the above solutions is limited. Reimplantation of the tooth within an hour after avulsion affords the greatest chance for tooth survival. Following dental avulsion, it is essential to seek rapid assistance with reimplantation (Class I, LOE C-EO).

Disclosures

Part 15: First Aid: 2015 Guidelines Update Writing Group Disclosures

Writing Group Member	Employment	Research Grant	Other Research Support	Speakers' Bureau/ Honoraria	Expert Witness	Ownership Interest	Consultant/ Advisory Board	Other
Eunice M. Singletary	University of Virginia; University Physicians Group	None	None	None	None	None	None	None
Nathan P. Charlton	University of Virginia	None	None	None	None	None	None	None
Jonathan L. Epstein	American Red Cross	None	None	None	None	None	None	None
Jeffrey D. Ferguson	Virginia Commonwealth University	None	None	None	None	None	None	None
Jan L. Jenson	Emergency Health Services, Dalhousie University	None	Nova Scotia Health Research Foundation*; Canadian Institutes of Health Research*	None	None	None	None	None
Luis F. Lojero-Wheatley	Swiss Hospital	None	None	None	None	None	None	None
Andrew I. MacPherson	Canadian Red Cross	None	None	None	None	None	None	None
Jeffrey L. Pellegrino	Kent State University	None	None	None	None	None	None	None
William "Will" R. Smith	Wilderness and Emergency Medicine Consulting (WEMC), LLC	None	None	None	Medicolegal consulting†	None	Chinook Medical Gear*	National Park Service*
Janel M. Swain	Emergency Health Services	None	Capital District Health Authority*	None	None	None	None	Emergency Health Services/ Emergency Medical Care Inc.†
David A. Zideman	Imperial College Healthcare NHS	None	None	None	None	None	None	None

This table represents the relationships of writing group members that may be perceived as actual or reasonably perceived conflicts of interest as reported on the Disclosure Questionnaire, which all members of the writing group are required to complete and submit. A relationship is considered to be "significant" if (a) the person receives $10 000 or more during any 12-month period, or 5% or more of the person's gross income; or (b) the person owns 5% or more of the voting stock or share of the entity, or owns $10 000 or more of the fair market value of the entity. A relationship is considered to be "modest" if it is less than "significant" under the preceding definition.

*Modest.

†Significant.

Appendix

2015 Guidelines Update: Part 15 Recommendations

Year Last Reviewed	Topic	Recommendation	Comments
2015	First Aid Education	Education and training in first aid can be useful to improve morbidity and mortality from injury and illness (Class IIa, LOE C-LD).	new for 2015
2015	First Aid Education	We recommend that first aid education be universally available (Class I, LOE C-EO).	new for 2015
2015	Positioning the Ill or Injured Person	If the area is unsafe for the first aid provider or the person, move to a safe location if possible (Class I, LOE C-EO).	updated for 2015
2015	Positioning the Ill or Injured Person	If a person is unresponsive and breathing normally, it may be reasonable to place him or her in a lateral side-lying recovery position (Class IIb, LOE C-LD).	updated for 2015
2015	Positioning the Ill or Injured Person	If a person has been injured and the nature of the injury suggests a neck, back, hip, or pelvic injury, the person should not be rolled onto his or her side and instead should be left in the position in which they were found, to avoid potential further injury (Class I, LOE C-EO).	updated for 2015
2015	Positioning the Ill or Injured Person	If leaving the person in the position found is causing the person's airway to be blocked, or if the area is unsafe, move the person only as needed to open the airway and to reach a safe location (Class I, LOE C-EO).	updated for 2015
2015	Position for Shock	If a person shows evidence of shock and is responsive and breathing normally, it is reasonable to place or maintain the person in a supine position (Class IIa, LOE C-LD)	updated for 2015
2015	Position for Shock	If there is no evidence of trauma or injury (eg, simple fainting, shock from nontraumatic bleeding, sepsis, dehydration), raising the feet about 6 to 12 inches (about 30° to 60°) from the supine position is an option that may be considered while awaiting arrival of EMS (Class IIb, LOE C-LD)	updated for 2015
2015	Position for Shock	Do not raise the feet of a person in shock if the movement or the position causes pain (Class III: Harm, LOE C-EO).	new for 2015
2015	Oxygen Use in First Aid	The use of supplementary oxygen by first aid providers with specific training is reasonable for cases of decompression sickness (Class IIa, LOE C-LD)	updated for 2015
2015	Oxygen Use in First Aid	For first aid providers with specific training in the use of oxygen, the administration of supplementary oxygen to persons with known advanced cancer with dyspnea and hypoxemia may be reasonable (Class IIb, LOE B-R).	new for 2015
2015	Oxygen Use in First Aid	Although no evidence was identified to support the use of oxygen, it might be reasonable to provide oxygen to spontaneously breathing persons who are exposed to carbon monoxide while waiting for advanced medical care (Class IIb, LOE C-EO).	new for 2015
2015	Medical Emergencies: Asthma	It is reasonable for first aid providers to be familiar with the available inhaled bronchodilator devices and to assist as needed with the administration of prescribed bronchodilators when a person with asthma is having difficulty breathing (Class IIa, LOE B-R).	updated for 2015
2015	Medical Emergencies: Stroke	The use of a stroke assessment system by first aid providers is recommended (Class I, LOE B-NR).	new for 2015
2015	Medical Emergencies: Chest Pain	Aspirin has been found to significantly decrease mortality due to myocardial infarction in several large studies and is therefore recommended for persons with chest pain due to suspected myocardial infarction (Class I, LOE B-R).	updated for 2015
2015	Medical Emergencies: Chest Pain	Call EMS immediately for anyone with chest pain or other signs of heart attack, rather than trying to transport the person to a healthcare facility yourself (Class I, LOE C-EO).	new for 2015
2015	Medical Emergencies: Chest Pain	While waiting for EMS to arrive, the first aid provider may encourage a person with chest pain to take aspirin if the signs and symptoms suggest that the person is having a heart attack and the person has no allergy or contraindication to aspirin, such as recent bleeding (Class IIa, LOE B-NR).	updated for 2015
2015	Medical Emergencies: Chest Pain	If a person has chest pain that does not suggest that the cause is cardiac in origin, or if the first aid provider is uncertain or uncomfortable with administration of aspirin, then the first aid provider should not encourage the person to take aspirin (Class III: Harm, LOE C-EO).	new for 2015
2015	Medical Emergencies: Anaphylaxis	The recommended dose of epinephrine is 0.3 mg intramuscularly for adults and children greater than 30 kg, 0.15 mg intramuscularly for children 15 to 30 kg, or as prescribed by the person's physician. First aid providers should call 9-1-1 immediately when caring for a person with suspected anaphylaxis or a severe allergic reaction (Class I, LOE C-EO).	new for 2015
2015	Medical Emergencies: Anaphylaxis	When a person with anaphylaxis does not respond to the initial dose, and arrival of advanced care will exceed 5 to 10 minutes, a repeat dose may be considered (Class IIb, LOE C-LD).	updated for 2015

(*Continued*)

2015 Guidelines Update: Part 15 Recommendations, *Continued*

Year Last Reviewed	Topic	Recommendation	Comments
2015	Medical Emergencies: Hypoglycemia	If the person is unconscious, exhibits seizures, or is unable to follow simple commands or swallow safely, the first aid provider should call for EMS immediately (Class I, LOE C-EO).	new for 2015
2015	Medical Emergencies: Hypoglycemia	If a person with diabetes reports low blood sugar or exhibits signs or symptoms of mild hypoglycemia and is able to follow simple commands and swallow, oral glucose should be given to attempt to resolve the hypoglycemia. Glucose tablets, if available, should be used to reverse hypoglycemia in a person who is able to take these orally (Class I, LOE B-R).	new for 2015
2015	Medical Emergencies: Hypoglycemia	It is reasonable to use these dietary sugars as an alternative to glucose tablets (when not available) for reversal of mild symptomatic hypoglycemia (Class IIa, LOE B-R).	new for 2015
2015	Medical Emergencies: Hypoglycemia	First aid providers should therefore wait at least 10 to 15 minutes before calling EMS and re-treating a diabetic with mild symptomatic hypoglycemia with additional oral sugars (Class I, LOE B-R).	new for 2015
2015	Medical Emergencies: Hypoglycemia	If the person's status deteriorates during that time or does not improve, the first aid provider should call EMS (Class I, LOE C-EO).	new for 2015
2015	Medical Emergencies: Dehydration	In the absence of shock, confusion, or inability to swallow, it is reasonable for first aid providers to assist or encourage individuals with exertional dehydration to orally rehydrate with CE drinks (Class IIa, LOE B-R).	new for 2015
2015	Medical Emergencies: Dehydration	If these alternative beverages are not available, potable water may be used (Class IIb, LOE B-R).	new for 2015
2015	Medical Emergencies: Toxic Eye Injury	It can be beneficial to rinse eyes exposed to toxic chemicals immediately and with a copious amount of tap water for at least 15 minutes or until advanced medical care arrives (Class IIa, LOE C-LD).	updated for 2015
2015	Medical Emergencies: Toxic Eye Injury	If tap water is not available, normal saline or another commercially available eye irrigation solution may be reasonable (Class IIb, LOE C-LD).	new for 2015
2015	Medical Emergencies: Chemical Eye Injury	First aid providers caring for individuals with chemical eye injury should contact their local poison control center or, if a poison control center is not available, seek help from a medical provider or 9-1-1 (Class I, LOE C-EO).	new for 2015
2015	Trauma Emergencies: Control of Bleeding	There continues to be no evidence to support the use of pressure points or elevation of an injury to control external bleeding. The use of pressure points or elevation of an extremity to control external bleeding is not indicated (Class III: No Benefit, LOE C-EO).	updated for 2015
2015	Trauma Emergencies: Control of Bleeding	The standard method for first aid providers to control open bleeding is to apply direct pressure to the bleeding site until it stops. Control open bleeding by applying direct pressure to the bleeding site (Class I, LOE B-NR).	updated for 2015
2015	Trauma Emergencies: Control of Bleeding	Local cold therapy, such as an instant cold pack, can be useful for these types of injuries to the extremity or scalp (Class IIa, LOE C-LD).	new for 2015
2015	Trauma Emergencies: Control of Bleeding	Cold therapy should be used with caution in children because of the risk of hypothermia in this population (Class I, LOE C-EO).	new for 2015
2015	Trauma Emergencies: Control of Bleeding	Because the rate of complications is low and the rate of hemostasis is high, first aid providers may consider the use of a tourniquet when standard first aid hemorrhage control does not control severe external limb bleeding (Class IIb, LOE C-LD).	updated for 2015
2015	Trauma Emergencies: Control of Bleeding	A tourniquet may be considered for initial care when a first aid provider is unable to use standard first aid hemorrhage control, such as during a mass casualty incident, with a person who has multisystem trauma, in an unsafe environment, or with a wound that cannot be accessed (Class IIb, LOE C-EO).	new for 2015
2015	Trauma Emergencies: Control of Bleeding	Although maximum time for tourniquet use was not reviewed by a 2015 ILCOR systematic review, it has been recommended that the first aid provider note the time that a tourniquet is first applied and communicate this information with EMS providers. It is reasonable for first aid providers to be trained in the proper application of tourniquets, both manufactured and improvised (Class IIa, LOE C-EO).	new for 2015
2015	Trauma Emergencies: Control of Bleeding	Hemostatic dressings may be considered by first aid providers when standard bleeding control (direct pressure with or without gauze or cloth dressing) is not effective for severe or life-threatening bleeding (Class IIb, LOE C-LD).	updated for 2015
2015	Trauma Emergencies: Control of Bleeding	Proper application of hemostatic dressings requires training (Class I, LOE C-EO).	updated for 2015
2015	Trauma Emergencies: Open Chest Wounds	We recommend against the application of an occlusive dressing or device by first aid providers for individuals with an open chest wound (Class III: Harm, LOE C-EO).	new for 2015

(*Continued*)

2015 Guidelines Update: Part 15 Recommendations, *Continued*

Year Last Reviewed	Topic	Recommendation	Comments
2015	Trauma Emergencies: Open Chest Wounds	In the first aid situation, it is reasonable to leave an open chest wound exposed to ambient air without a dressing or seal (Class IIa, LOE C-EO).	new for 2015
2015	Trauma Emergencies: Concussion	Any person with a head injury that has resulted in a change in level of consciousness, has progressive development of signs or symptoms as described above, or is otherwise a cause for concern should be evaluated by a healthcare provider or EMS personnel as soon as possible (Class I, LOE C-EO).	new for 2015
2015	Trauma Emergencies: Concussion	Using any mechanical machinery, driving, cycling, or continuing to participate in sports after a head injury should be deferred by these individuals until they are assessed by a healthcare provider and cleared to participate in those activities (Class I, LOE C-EO).	new for 2015
2015	Trauma Emergencies: Spinal Motion Restriction	With a growing body of evidence showing more actual harm and no good evidence showing clear benefit, we recommend against routine application of cervical collars by first aid providers (Class III: Harm, LOE C-LD).	updated for 2015
2015	Trauma Emergencies: Spinal Motion Restriction	If a first aid provider suspects a spinal injury, he or she should have the person remain as still as possible and await the arrival of EMS providers (Class I, LOE C-EO).	new for 2015
2015	Musculoskeletal Trauma	In general, first aid providers should not move or try to straighten an injured extremity (Class III: Harm, LOE C-EO).	updated for 2015
2015	Musculoskeletal Trauma	In such situations, providers should protect the injured person, including splinting in a way that limits pain, reduces the chance for further injury, and facilitates safe and prompt transport (Class I, LOE C-EO).	updated for 2015
2015	Musculoskeletal Trauma	If an injured extremity is blue or extremely pale, activate EMS immediately (Class I, LOE C-EO).	new for 2015
2015	Burns	Cool thermal burns with cool or cold potable water as soon as possible and for at least 10 minutes (Class I, LOE B-NR).	updated for 2015
2015	Burns	If cool or cold water is not available, a clean cool or cold, but not freezing, compress can be useful as a substitute for cooling thermal burns (Class IIa, LOE B-NR).	new for 2015
2015	Burns	Care should be taken to monitor for hypothermia when cooling large burns (Class I, LOE C-EO).	new for 2015
2015	Burns	After cooling of a burn, it may be reasonable to loosely cover the burn with a sterile, dry dressing (Class IIb, LOE C-LD).	updated for 2015
2015	Burns	In general, it may be reasonable to avoid natural remedies, such as honey or potato peel dressings (Class IIb, LOE C-LD).	new for 2015
2015	Burns	However, in remote or wilderness settings where commercially made topical antibiotics are not available, it may be reasonable to consider applying honey topically as an antimicrobial agent (Class IIb, LOE C-LD).	new for 2015
2015	Burns	Burns associated with or involving (1) blistering or broken skin; (2) difficulty breathing; (3) the face, neck, hands, or genitals; (4) a larger surface area, such as trunk or extremities; or (5) other cause for concern should be evaluated by a healthcare provider (Class I, LOE C-EO).	new for 2015
2015	Dental Injury	In situations that do not allow for immediate reimplantation, it can be beneficial to temporarily store an avulsed tooth in a variety of solutions shown to prolong viability of dental cells (Class IIa, LOE C-LD).	updated for 2015
2015	Dental Injury	If none of these solutions are available, it may be reasonable to store an avulsed tooth in the injured persons saliva (not in the mouth) pending reimplantation (Class IIb, LOE C-LD).	new for 2015
2015	Dental Injury	Following dental avulsion, it is essential to seek rapid assistance with reimplantation (Class I, LOE C-EO).	new for 2015
The following recommendations were not reviewed in 2015. For more information, see the *2010 AHA and American Red Cross Guidelines for First Aid*, "Part 17: First Aid."			
2010	Oxygen	There is insufficient evidence to recommend routine use of supplementary oxygen by a first aid provider for victims complaining of chest discomfort or shortness of breath (Class IIb, LOE C).	not reviewed in 2015
2010	Anaphylaxis	First aid providers should also know how to administer the auto-injector if the victim is unable to do so, provided that the medication has been prescribed by a physician and state law permits it (Class IIb, LOE B).	not reviewed in 2015
2010	Tourniquets	Specifically designed tourniquets appear to be better than ones that are improvised, but tourniquets should only be used with proper training (Class IIa, LOE B).	not reviewed in 2015
2010	Thermal Burns	Don't apply ice directly to a burn; it can produce tissue ischemia (Class III, LOE B).	not reviewed in 2015
2010	Spine Stabilization	Because of the dire consequences if secondary injury does occur, maintain spinal motion restriction by manually stabilizing the head so that the motion of head, neck, and spine is minimized (Class IIb, LOE C).	not reviewed in 2015

(*Continued*)

2015 Guidelines Update: Part 15 Recommendations, *Continued*

Year Last Reviewed	Topic	Recommendation	Comments
2010	Sprains and Strains	Place a barrier, such as a thin towel, between the cold container and the skin (Class IIb, LOE C).	not reviewed in 2015
2010	Hypothermia	If the hypothermia victim is far from definitive health care, begin active rewarming (Class IIa, LOE B) although the effectiveness of active rewarming has not been evaluated.	not reviewed in 2015
2010	Seizures	Placing an object in the victim's mouth may cause dental damage or aspiration (Class IIa, LOE C).	not reviewed in 2015
2010	Wounds and Abrasions	Superficial wounds and abrasions should be thoroughly irrigated with a large volume of warm or room temperature potable water with or without soap until there is no foreign matter in the wound (Class I, LOE A).	not reviewed in 2015
2010	Wounds and Abrasions	Wounds heal better with less infection if they are covered with an antibiotic ointment or cream and a clean occlusive dressing (Class IIa, LOE A).	not reviewed in 2015
2010	Burn Blisters	Loosely cover burn blisters with a sterile dressing but leave blisters intact because this improves healing and reduces pain (Class IIa, LOE B).	not reviewed in 2015
2010	Electric Injuries	Do not place yourself in danger by touching an electrocuted victim while the power is on (Class III, LOE C).	not reviewed in 2015
2010	Human and Animal Bites	Irrigate human and animal bites with copious amounts of water (Class I, LOE B).	not reviewed in 2015
2010	Snakebites	Do not apply suction as first aid for snakebites (Class III, LOE C).	not reviewed in 2015
2010	Snakebites	Applying a pressure immobilization bandage with a pressure between 40 and 70 mm Hg in the upper extremity and between 55 and 70 mm Hg in the lower extremity around the entire length of the bitten extremity is an effective and safe way to slow the dissemination of venom by slowing lymph flow (Class IIa, LOE C).	not reviewed in 2015
2010	Jellyfish Stings	To inactivate venom load and prevent further envenomation, jellyfish stings should be liberally washed with vinegar (4% to 6% acetic acid solution) as soon as possible for at least 30 seconds (Class IIa, LOE B).	not reviewed in 2015
2010	Jellyfish Stings	For the treatment of pain, after the nematocysts are removed or deactivated, jellyfish stings should be treated with hot-water immersion when possible (Class IIa, LOE B).	not reviewed in 2015
2010	Jellyfish Stings	If hot water is not available, dry hot packs or, as a second choice, dry cold packs may be helpful in decreasing pain but these are not as effective as hot water (Class IIb, LOE B).	not reviewed in 2015
2010	Jellyfish Stings	Topical application of aluminum sulfate or meat tenderizer, commercially available aerosol products, fresh water wash, and papain, an enzyme derived from papaya used as a local medicine, are even less effective in relieving pain (Class IIb, LOE B).	not reviewed in 2015
2010	Jellyfish Stings	Pressure immobilization bandages are not recommended for the treatment of jellyfish stings because animal studies show that pressure with an immobilization bandage causes further release of venom, even from already fired nematocysts (Class III, LOE C).	not reviewed in 2015
2010	Frostbite	Do not try to rewarm the frostbite if there is any chance that it might refreeze or if you are close to a medical facility (Class III, LOE C).	not reviewed in 2015
2010	Frostbite	Severe or deep frostbite should be rewarmed within 24 hours of injury and this is best accomplished by immersing the frostbitten part in warm (37° to 40°C or approximately body temperature) water for 20 to 30 minutes (Class IIb, LOE C).	not reviewed in 2015
2010	Frostbite	Chemical warmers should not be placed directly on frostbitten tissue because they can reach temperatures that can cause burns (Class III, LOE C).	not reviewed in 2015
2010	Chemical Burns	In case of exposure to an acid or alkali on the skin or eye, immediately irrigate the affected area with copious amounts of water (Class I, LOE B).	not reviewed in 2015
2010	Treatment With Milk or Water	Do not administer anything by mouth for any poison ingestion unless advised to do so by a poison control center or emergency medical personnel because it may be harmful (Class III, LOE C).	not reviewed in 2015
2010	Activated Charcoal	Do not administer activated charcoal to a victim who has ingested a poisonous substance unless you are advised to do so by poison control center or emergency medical personnel (Class IIb, LOE C).	not reviewed in 2015
2010	Ipecac	Do not administer syrup of ipecac for ingestions of toxins (Class III, LOE B).	not reviewed in 2015

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Part 15: First Aid: 2015 American Heart Association and American Red Cross Guidelines Update for First Aid

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