

Proceedings

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**American
Red Cross**

Scientific
Advisory Council

The Scientific Advisory Council

The American Red Cross Scientific Advisory Council is a 50+ member, voluntary committee of healthcare, public health, aquatics, preparedness, public safety and educational professionals that establishes and assures the scientific basis for Red Cross programs, products and public guidance. The Council advises the Red Cross to ensure programs are fully current with the latest science, address current needs and are prepared for future changes. Members of this independent panel are nationally-recognized experts with sub-specialties in such diverse fields as emergency medicine, first aid, resuscitation, pediatrics, cardiology, occupational health, sports medicine, school health, EMS response, aquatics, disaster health and emergency preparedness.

The Council members are organized into the following five groups:



Aquatics Sub-Council



First Aid Sub-Council



Preparedness and Disaster Health Sub-Council



Resuscitation Sub-Council



Education Sub-Council

David Markenson, MD, MBA, FCCM, FAAP, FACEP, FACHE is Co-Chair Chief Medical Officer (CMO) of the Scientific Advisory Council

Eunice (Nici) Singletary, MD, FACEP is Co-Chair Volunteer of the Scientific Advisory Council

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In Memoriam: Roy Fielding

Our friend and colleague, Roy Fielding, passed away unexpectedly on May 15, 2020. Roy, a 50-year volunteer for the American Red Cross, had been a member of the Aquatics Sub-Council of the Scientific Advisory Council since 2006.

Roy's contributions to aquatics safety and training and the field of lifeguarding were outstanding and many. As a recognized leader in aquatics management, lifeguard operations and instruction, and water quality, Roy was selected to be an advisor to the Red Cross Lifeguarding Program in the 1990s. There his pioneering development of the Lifeguard Rescue Report introduced crucial evidence-based standards into practical lifeguard training and water safety. Roy represented the Red Cross on numerous committees to establish safety standards for aquatics facilities, including the United States Lifeguard Standards Coalition and the national Model Aquatic Health Code. He also served as a Red Cross Spokesperson at national and international conferences and in media interviews.

Known as "The Pool Professor" at the University of North Carolina at Charlotte, where he taught since 1977, Roy was named as one of the most influential individuals in aquatics in the United States by *Aquatics International*. Among his many other awards and recognitions, Roy received the Red Cross Chairman's Award and the Special Citation for Exceptional Volunteer Service. He was named the Atlantic Swim Conference Men's and Women's Coach of the Year in 1990 and the Southern States Women's Coach of the Year in 1992. Roy was a member of the University of Northern Iowa Athletic Hall of Fame for Swimming and the School of Health, Physical Education and Leisure Services Hall of Excellence.

We are incredibly grateful to have had the opportunity to work with Roy over the years, and to have had the honor of calling him friend. Rest well our master of revelry, esteemed colleague and gentleman professor.

Aquatics Sub-Council

The Aquatics Sub-Council reviews ways to help keep people safe around water, including lifeguarding techniques; swimming instruction; causes, recognition and prevention of water emergencies; rescue, resuscitation and transport.

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Teresa (Terri) Lees, MS

Aquatic Specialist and Licensed Massage Therapist, self-employed

COVID-19 and Aquatics

The coronavirus disease 2019 (COVID-19) pandemic significantly impacted aquatics programs across the country. Regulations varied widely state by state, forcing the abrupt closure of many recreational facilities while others remained open with strict new limitations. Even when technically permitted to remain open, many closed due to facility design that did not allow for social distancing, a shortage of trained lifeguards and swim instructors, budgetary constraints or other reasons.

The challenges faced by recreational facilities that continued to operate during the pandemic included drastic reductions in staff, increased safety measures, and determining if and how to deliver training that required person-to-person contact. The Aquatics Sub-Council was involved in multiple efforts to support and guide aquatic facilities during these unprecedented times, including:

- **Toolkits:** The Sub-Council developed two toolkits to support aquatic facility management, lifeguard training and operations, aquatic safety teams and water safety instructors. A third toolkit uses virtual resources to engage children and adults in the community in water safety.
- **Guidance Documents:** Multiple interim policies, such as the issuance of certification extensions and provisional certificates, were enacted early in the pandemic to assist instructors across all Red Cross programs in coping with changing circumstances and needs. Two new Guidance Documents specifically address aquatics:
 - **Considerations for Aquatic Facilities and Lifeguarding:** Provides recommendations based on the latest CDC Information about the operation of aquatic facilities, education of lifeguards, lifeguarding rescues and resuscitations, and the delivery of Red Cross courses.

- **Lifeguard Interim Virtual Skills Training:** Provides guidance on virtual lifeguard education when water skills cannot be taught in person.

- **Tools and Resources for Virtual Water Safety Education:** With many aquatic facilities closed or in limited operation, few swimming options protected by lifeguards, and little or no access to swim lessons, families are in greater need than ever of water safety information. In response, the Sub-Council has updated or created new virtual water safety materials:

- **Water Safety for Parents and Caregivers:** This free online course focuses on developing an awareness of the risks of drowning, especially for young children, and how to minimize them.

- **Longfellow’s WHALE Tales:** This interactive Red Cross course was revised and made available online to teach children about water safety.

- **Red Cross Courses in Spanish:** More Red Cross courses, including those above, are being made available in Spanish.

Aquatics Centennial Campaign

Launched in May 2014 to mark the 100-year anniversary of the Red Cross’s core drowning prevention mission, the goal of the Aquatics Centennial Campaign is to make swim lessons and aquatics safety programs and trainings available, accessible and affordable in communities with high drowning rates, as measured by the CDC’s WISQARS database.

Due to the pandemic, fewer than a dozen Centennial Campaign programs were able to provide programming in the first half of 2020. In April and May, no in-person training at all was reported. Yet in spite of these formidable obstacles, the Centennial programs continue to lead the way in embracing the digital resources provided by the

Red Cross, serving as examples and inspiration for other Red Cross training providers.

As of June 30, 2020, through Licensed Training Provider partners the Aquatics Centennial Campaign has:

- Crossed a major milestone, delivering 101,746 sets of lessons (including nearly 814,000 individual lessons) to children and adults.
- Developed 2,132 future lifeguards through Junior Lifeguarding.
- Trained 2,127 lifeguards, water safety instructors and lifeguard managers.
- Equipped 17,492 parents and caregivers with water safety knowledge and skills. 774 parents and caregivers also received focused pediatric CPR/AED training, often resulting in certification.

Scientific Review

Lifeguard Visual Screening

Reviewers: Stephen Langendorfer, PhD and Angela K. Beale-Tawfeeq, PhD

Other Worksheet Author: Francesco Pia, PhD

Question

What are the best evidence-based scanning techniques for lifeguards to recognize drowning? How should visual surveillance/scanning skills be taught to American Red Cross Certified Lifeguards so that they can competently perform their surveillance duties?

Discussion and Findings

Through an extensive search of PubMed and Embase, Sub-Council members identified 755 articles as potentially relevant to this question. Fifteen peer-reviewed articles were discovered from other sources for a total of 770. Of these, reviewers examined 57 full-text articles and ultimately concluded that 20 were pertinent to their qualitative analysis of the data.

Evidence of human information processing in these studies reminds us that we have a “limited channel capacity” to sense, perceive and process information that is adversely impacted by the presence of distractors, which can be auditory or visual. Distractions such as even a brief chat with other lifeguards or friends or patrons can negatively impact a lifeguard’s surveillance and cause him or her to interrupt scanning an area of water where a swimmer may be in distress. Lifeguards must be alert, attentive and ready to react at all times as they continuously scan the water and supervise patrons of their facility.

Signal detection theory indicates that lifeguards have four possible scanning outcomes:

- Hit (correct ID of drowning victim)
- Miss (no ID of drowning victim)
- False alarm (incorrect ID when no drowning)
- Correct rejection (no reaction to lack of drowning)

The research demonstrates that novice lifeguards are less accurate in drowning recognition than guards with experience, indicating a need to enhance visual scanning training experiences. Structured training and experience-based expertise with visual scanning simultaneously speed up processing and increase consistency of responses. In lifeguard education, it is likewise critical to counter negative influences. For example, vigilance is negatively impacted by physical and mental fatigue, internal and external distractions, and lack of physical fitness.

A lack of agreement exists among lifeguards about what represents target behavior (e.g., drowning patterns). The Sub-Council concluded that the evidence on lifeguard visual screening is not strong enough to warrant recommendations at the standard level, but studies support the following guidelines and options.

Recommendations: Standards

None.

Recommendations: Guidelines

- Novice lifeguards should receive sufficient structured online video training and practice to acquire effective visual scanning skills to readily identify typical behavioral patterns of drowning persons.

Recommendations: Options

- Lifeguards should receive training to avoid inattention and distraction (e.g., talking to patrons, using cellphones, daydreaming) while on duty. They should also be schooled in simple ways to improve attention (e.g., get enough rest, use caffeine, perform simple physical change of posture movements).
- Aquatic facility managers need to understand the serious ramifications of inattention and lack of vigilance by on-duty lifeguards and must learn and practice techniques to mitigate and manage this risk.

Implications for Red Cross Programs and Materials

Evidence from this review indicates the need for practical and specific changes to the Red Cross Lifeguarding course. In the course's next revision, the Sub-Council recommends the following additions:

- Extensive online training videos displaying a wide variety of drowning incidents in multiple aquatic contexts need to be designed and studied by lifeguard candidates.
- Online course materials must provide structured training in visual scanning and detection of behavioral drowning patterns to trainees to better prepare them for identifying distressed and drowning persons.

Public Messaging

Most drowning victims do not act the way Hollywood portrays them. They do not call out or wave their arms. Drowning victims are usually silent and their arms are down, not up.

Council Action

The Council unanimously approved the revised recommendations.

Scientific Review

Efficacy of Classroom Water Safety Instruction

Reviewer: William Ramos, PhD, MS

Other Worksheet Author: Shelley Dalke, Director, Swimming and Water Safety Programs, Canadian Red Cross

Question

What is the efficacy of classroom-based or “dry land” water-safety education?

Discussion and Findings

An extensive literature review involving searches through databases PubMed, Google Scholar, ERIC and CINAHL identified 72 studies, with one additional study discovered through other sources. In an in-depth, evidence-based evaluation of these records, Sub-Council reviewers identified four that were relevant to informing best practice guidelines for classroom water safety instruction. These four studies focused on children in different age groups around the world who had been exposed to classroom water safety education programs. The youngest group (aged 5-6) demonstrated the greatest increase in knowledge from this type of instruction, while older children (aged 7-11 and 12-17) showed smaller increases in knowledge gains. At all ages, children with previous swimming classes scored higher on knowledge assessments.

Limitations of the studies were significant, including a lack of longitudinal data, no evaluation of attitudes,

and no diversity in socioeconomic status. The Sub-Council concluded that the relatively weak evidence was most supportive of an option.

Recommendations: Standards

None.

Recommendations: Guidelines

None.

Recommendations: Options

Youth should be exposed to classroom-based (dry land) water safety education programs as a means to convey knowledge related to positive water safety actions. These types of programs should be part of an overall comprehensive drowning prevention plan.

Council Action

The Council unanimously approved the revised recommendation.

Other Activities

- **Water Safety USA:** The Red Cross continues to be a key participant in this group of nonprofit and governmental organizations, which are committed to enhancing water safety messaging in the United States. Each spring, Water Safety USA develops a water safety message that all participating organizations integrate into their messaging. The 2020 message, released on PR Newswire, focuses on life jacket use for boating and swimming.

Water Safety USA is also leading the effort to develop a National Water Safety Action Plan. The goal is to formulate a model for a water-smart nation, state, and county or community. There are six working groups: Fencing/Barriers, Water Safety/Water Competency/Swim Lessons, Supervision/Lifeguards, Data/Public Health Surveillance, Life Jackets and Rescue/CPR. Co-chairs and members have been identified for each working group and

the scoping exercise is set to begin. Members of the Aquatics Sub-Council and staff are well represented on the steering committee and working groups. Upon conclusion of the scoping exercise in October 2020, there will be an environmental scan and gaps analysis which will continue through March 2021.

- **Water Safety/Water Competency Survey:** In 2014, the Aquatics Sub-Council supported the design of questions for a survey specific to the public's understanding of what it means to "know how to swim" and how that compares to the definition of water competency skills as established by SAC that same year. The survey yielded data, content and graphics that have been fully integrated into Red Cross courses, media outreach and public education.

In early 2020, the survey questions were refreshed and fielded again as an omnibus survey among a census representative sample of 1,028 American adults (18+ years). The high-level results were integrated into the existing primary graphics that are most commonly used. Additional information gleaned from the survey will serve as the basis for future articles, blogs, media releases and social media posts.

- **Commitment to Diversity:** The Sub-Council's work with Diversity in Aquatics and the Red Cross Office of Diversity and Inclusion continues. The online course, *Becoming a Water Safety Ambassador*, which will be available on the Red Cross Learning Center, is in its final stages and will be released soon. Other planned events, including the Diversity in Aquatics Convention, National Aquatics Diverse Partners Alliance Symposium and International Water Safety Day, were all cancelled due to the pandemic.
- **CARES (Cardiac Arrest Registry to Enhance Survival) and Drowning:** Cardiac arrest associated with drowning is a major public health concern, and neurologically favorable survival after

drowning remains low. In a study of drowning victims identified in the CARES database, *Bystander Cardiopulmonary Resuscitation in Cardiac Arrest Following Drowning*, by Joshua M. Tobin, MD, et al, researchers concluded that:

- Bystander CPR, witnessed drowning and younger age were associated with neurologically favorable survival.
- Public location of drowning, male gender and shockable rhythms were not associated with favorable neurological survival.
- AED application prior to EMS was associated with a decreased likelihood of favorable neurological outcome.

• **International First Aid Guidelines for Drowning:** An important Aquatics Sub-Council goal has been to develop First Aid Drowning Guidelines for 2020. To achieve this goal, reviewers and other experts from countries including the USA, UK, New Zealand, Portugal, Spain and Switzerland conducted scientific reviews on:

- How to recognize a drowning
- How to safely rescue a drowning victim
- What factors influence implementation of water safety training
- Which learning modalities impact patient, learner and/or societal outcomes

Researchers are now in the process of developing recommendations which will be published in a new chapter on drowning for the International First Aid Guidelines manual.

Future Work

The Aquatics Sub-Council sought and received unanimous approval for three triennial reviews and one position statement, all to be presented at the January 2021 Council meeting:

- **Triennial reviews:** Swim attire (Angela K. Beale-Tawfeeq, PhD; Stephen Langendorfer, PhD; Leslie White, BRec); Effective rescue equipment for use by lay responders (Angela K. Beale-Tawfeeq, PhD and Stephen Langendorfer, PhD); Sun safety (Bridget McKinney, PhD[h]; William Ramos, PhD; Stephen Langendorfer, PhD)
- **Position Statement:** Two vs five breaths in drowning resuscitation (Andrew Schmidt, DO; Kevin M. Ryan, MD; John Fitz-Clarke, MD, PhD, Department of Emergency Medicine, Dalhousie University, Canada; and other Resuscitation Sub-Council members)



First Aid Sub-Council

The First Aid Sub-Council's range of study is broad, including the care at every scale of emergency, from providing self-care to the care rendered by professional emergency responders or by laypersons providing care on the roadside, in the wilderness, in a shelter; everything up to the care provided by Emergency Medical Services or at a hospital. Sub-Council members serve on a variety of international scientific bodies including the International Liaison Committee on Resuscitation (ILCOR) First Aid Task Force and as authors of the joint American Red Cross/American Heart Association First Aid Guidelines Update and International Federation of the Red Cross (IFRC) First Aid Guidelines.

The First Aid Sub-Council membership includes a research interest subgroup that identifies gaps in scientific evidence for first aid, and designs and implements research studies to address those gaps.

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American Red Cross Scientific Advisory Council Position Statement: First Aid Education in Primary and Secondary Schools

Authors: Elizabeth Kennedy Hewett, MD and Jeffrey S. Upperman, MD

Make First Aid Training a Part of Public Education

The provision of first aid by laypersons holds immeasurable importance as the first step in survival following a medical or traumatic event, and a growing body of evidence indicates that first aid training leads both to more efficient administration of first aid and an increase in bystanders' willingness to help.

The Sub-Council advocates strongly that first aid training be made a standard component of public education in primary and secondary schools. This would render it accessible to a greater percentage of the population and potentially decrease health disparities in underserved communities.

Growing Evidence of Effectiveness

Multiple studies demonstrate that children of all ages are capable of acquiring and retaining first aid skills. Expanding children's exposure to first aid education at an early age enables them to integrate essential lifesaving skills into their daily lives, while knowledge of first aid may help promote safety awareness and encourage healthy practices such as good hand hygiene in older children.

An extensive literature review identified two key studies that evaluated the effectiveness of first aid education in children. In one, researchers found that four-year-olds were able to assess a victim's consciousness and breathing; call the correct emergency phone number and give the pertinent information; place the victim in a recovery position; and perform simple airway



management. In another study, seven-year-olds demonstrated effective hemorrhage control.

Based on the most current available evidence, the authors concluded that first aid education should begin with basic concepts in the early years of schooling and layer in more complexity as children grow older.

Overcoming Barriers

Lack of time and funding are often cited as the greatest barriers to first aid education, but researchers determined that classes can be easily integrated into a school curriculum and require little extra cost or time. The Sub-Council concluded that curricula should be developed jointly by content experts, teachers and administrators to ensure age-appropriate topics, educational methods, and recognition of and adaptation around any participant stress.

The reviewers did not uncover any reports of adverse consequences of first aid education in younger age groups. Indeed, first aid education of young children demonstrably led to desirable behavioral byproducts such as greater empathy and proffered aid by participants.

Position Statement

It is the position of the American Red Cross Scientific Advisory Council that first aid can be successfully taught to children as early as elementary school and that first aid education should be integrated into primary and secondary school curricula.

Council Action

The Council unanimously approved the Position Statement.

American Red Cross Scientific Advisory Council Position Statement: Opioid Education and Naloxone Distribution

Authors: Nathan Charlton, MD; Angela Holian, PharmD; Aaron Orkin, MD; Michael Millin, MD; Jeffrey Pellegrino, PhD

Overdose: The Leading Cause of Unintentional Death in the US

Overdose is the leading cause of accidental death in the United States and opioids are the number one cause, accounting for approximately two-thirds of drug-related fatalities. According to a 2017 National Safety Council analysis, a person in the US is now more likely to die of an unintentional opioid overdose than in a car crash. Moreover, opioid use disorder and associated harms continue to have a disproportionate impact on the most marginalized members of our communities. The Sub-Council advocates strongly that evidence-based opioid education and naloxone distribution (OEND) programs, which train laypersons to respond to overdose events and provide access to naloxone and directions for drug delivery, be made a key component of the public health response to the opioid crisis. Increasing the reach of these programs and expanding public awareness of them is critical to preventing deaths from opioid overdose.

Opioid Education and Naloxone Distribution = Reduced Mortality

It is essential to act quickly in cases of drug overdose, but untrained bystanders often have difficulty recognizing the symptoms and are unaware of the proper way to respond. OEND programs demonstrate that the lay public can be taught to recognize an opioid overdose and administer naloxone, and that this can lead to a measurable reduction on mortality in the population.

OEND programs including the Red Cross online course, “First Aid for Opioid Overdoses,” teach the public simple, straightforward steps they can take to intervene and save lives. Laypersons can learn to:

- Identify the warning signs of opioid overdose, including depressed mental status, unresponsiveness, a snoring sound, small pupils, and a blue, gray or pale skin color.
- Respond appropriately by administering naloxone. When administered in time, naloxone can reverse an opioid overdose and restore normal respiration. This drug can be used by both lay and trained medical providers and in naloxone distribution programs.

Recognizing and Managing Complications

Studies warn that complications can occur with the use of naloxone, including the induction of withdrawal symptoms and/or pulmonary edema, a complication that may develop with or without naloxone and warrants medical evaluation in all cases of opioid overdose. To decrease the risk of complications, the Sub-Council notes that in addition to teaching the proper administration of naloxone, education about the recognition and management of its potential complications must be integrated into the curricula of all OEND programs.

Because naloxone is a potentially life-saving medication, the Sub-Council concluded that the administration of naloxone in judicious doses, with careful monitoring for complications, outweighs any potential risks.

Position Statement

It is the position of the American Red Cross Scientific Advisory Council that opioid overdose education and naloxone distribution programs should be widely available to the community. Furthermore, these programs should include training on naloxone administration, the potential complications of

its administration, and the management of these complications.

Council Action

The Council unanimously approved the Position Statement.

Triennial Review

Glucose for Hypoglycemia

Reviewer: Nici Singletary, MD

Question

What are the first aid recommendations for administering glucose (sugar) to diabetics with mild to moderate symptomatic hypoglycemia?

Discussion and Findings

A version of this question was originally approved in 1999 with the last triennial review conducted in January 2019. At that time, the Council voted unanimously to retire the review. However, new findings from a 2019 ILCOR Systematic Review and CoSTR prompted the Sub-Council to revisit the question and make a slight revision to earlier recommendations.

ILCOR’s literature review identified two randomized controlled trials and two nonrandomized crossover studies as new key evidence. In one trial, for example, researchers compared buccal administration of glucose with chewed and swallowed glucose tablets. After 20 minutes, a greater number of those who took the tablets experienced an increase in blood glucose concentration compared to the buccal group. In another study, children with hypoglycemia showed a significant increase in blood glucose concentration at 20 minutes after sublingual sugar compared with 20 minutes after oral sugar.



Based on the most current information, the Sub-Council raised their recommendations from guidelines to standards, reflecting the stronger new evidence to support their use.

Recommendation: Standards

- For an individual with suspected hypoglycemia who is awake and able to swallow, the first aid provider should encourage the use of chewed or swallowed glucose (e.g., tablets, liquid, gel) or other dietary forms of sugar such as sucrose or fructose.
- The recommended amount of glucose is 15 grams for children and 20 grams for adults.
- Emergency services should be activated if symptoms do not resolve within 10 minutes or symptoms worsen.

Recommendations: Guidelines

None.

Recommendations: Options

- Sucrose, fructose and other sugar-containing foods and liquids such as orange juice, whole milk, dried fruit strips or sucrose candies, in an amount equivalent to ~ 15 grams, may be used if glucose tablets are not available.
- For young children with suspected hypoglycemia who are awake but cannot readily or independently chew or swallow glucose tablets, it may also be an option to use a slurry of granulated sugar and water under the tongue.
- Low-calorie sugar substitutes such as saccharin or NutraSweet should never be used.

Council Action

The Council voted unanimously to approve the recommendations.

Triennial Review

Minimum Contents of Bleeding Control Kits

Reviewers: Sarita Chung, MD and

Elizabeth Kennedy Hewett, MD

Original Reviewers: Craig Goolsby, MD and

Nici Singletery, MD

Question

What are the recommended minimum contents for a Red Cross Stop the Bleed Kit for personal or family use, or for use in a multi-casualty incident?

Discussion and Findings

As a stakeholder in Stop the Bleed, a national campaign that encourages members of the public to become trained, equipped and empowered to help in bleeding emergencies before first responders arrive on the scene, the Red Cross is committed to ensuring that its recommendations for the minimum requirements of a Red Cross Kit to control bleeding are consistent with those of the Stop the Bleed Personal Bleeding Control Kit, assuming no evidence suggests that an alternative would be preferable. Along with a careful consideration of existing recommendations, the Sub-Council conducted an extensive literature review, including numerous PubMed searches, which yielded no appropriate results. The reviewers concluded that peer-reviewed scientific evidence to answer this question does not exist.

Finding no evidence to the contrary, the Sub-Council recommended that the contents of the Red Cross kit for personal or family bleeding control be revised to align with those of Stop the Bleed.

Red Cross Personal Bleeding Control Kit

Minimum Contents

- An effective manufactured tourniquet
- Compressive dressing
- Rolled gauze (e.g., Kerlix)

- Trauma shears, 7”
- Nitrile gloves, large (two pair)
- A bag or container to hold the equipment
- 4 x 4 gauze pack
- Instruction card

Additional Considerations

- Hemostatic dressings (such as Celox™, ChitoGauze™ or QuickClot™) should be included in public kits. It is also reasonable to consider adding them to a personal kit.
- Because they were primarily introduced in military settings, tourniquets were originally, de facto, designed for individuals 18 and older. A family kit should include a tourniquet appropriate for children, with the Combat Application Tourniquet (C-A-T®) at present being the only one studied. As determined by the Committee on TCCC (Tactical Combat Casualty Care), the C-A-T®GEN7 is the sole tourniquet thus far found to be effective in children. Other tourniquets may be as effective.
- Public access kit contents should vary depending on the anticipated size of the population served.

SAC-Conducted Research

Hemorrhage Control Trainer Requirements

Authors: Sarita Chung, MD; Craig Goolsby, MD; CDR Thomas E. Sather, EdD; Matthew Levy, DO; Nathan Charlton, MD

Question

What are the minimum requirements for a bleeding control trainer?

Discussion and Findings

Simulators have become integral to the realistic training of both medical professionals and laypersons

in bleeding control and the management of traumatic injuries. Evidence indicates that hands-on training on hemorrhage control manikins improves the skills of wound packing and tourniquet application compared with didactic education (i.e., lectures in which students are passive listeners), as noted in the January 2020 SAC Q&A on Bleeding Control Manikins.

While prior recommendations have been made regarding minimum requirements for a low-fidelity trainer, there is little guidance on what constitutes an optimal bleeding control simulator and researchers don't technically know if high-fidelity trainers are superior to low-fidelity ones. Much of the recommendations are based primarily on expert opinion.

Due to the lack of a definitive body of evidence, the Sub-Council recommends the following general guidelines, which allow designers the flexibility to make improvements as technological knowledge and experience in this field expand.

Minimum Requirements for a Bleeding Control Simulator

- Material that has realistic tissue densities, does not contain latex and allows for decontamination.
- Circumference that permits adequate tourniquet application.
- Length that allows for both application of a tourniquet proximally and direct pressure on the same products.
- Anatomic landmarks, weight and other characteristics (such as articulating joints) for a realistic simulation experience.
- Real-time feedback mechanism that demonstrates the need for continuous appropriate pressure.
- Real-time feedback mechanism that demonstrates appropriate application of a tourniquet.



First Aid Sub-Council (continued)

- Ability to detect force from both direct pressure and a tourniquet on the same device.
- Pre-programmed curriculum in device to allow for varying scenario bleeding presentations.
- Multisensory experience that simulates the presence of bleeding and barriers to application (such as voice prompts, presence of fluids).

Implications for Programs and Instructors

- The optimal hemorrhage control trainer is currently unknown.
- Prior recommendations have been made regarding minimum requirements for a low-fidelity trainer.
- While it is unknown if a high-fidelity trainer provides more effective training than a low-fidelity trainer, some instructors may choose to use high-fidelity models.
- These recommendations permit flexibility that allow designers to make improvements as technology and knowledge grow.

Future Work

The First Aid Sub-Council sought and received Council approval to extend work on one scientific review and one Q&A and to conduct five triennial reviews. Findings will be reported at the September 2020 and January 2021 Council meetings:

- **Scientific Review:** Expired medications in first aid (Angela Holian, PharmD; Amita Sudhir, MD; Tod Schimelpfenig, WEMT; David Berry, PhD; Aaron Orkin, MD)
- **SAC Q&A:** Hemostatic algorithm (Matthew Levy, DO; S. Robert Seitz, MEd; Craig Goolsby, MD; Nathan Charlton, MD)
- **Triennial reviews:** Comparison of storage of an avulsed permanent tooth in a storage solution prior to reimplantation versus reimplantation into the socket for tooth survival or viability or success of immediate reimplantation (Morgan Hillier, MD; Nathan Charlton, MD; Aaron Orkin, MD); honeybee stinger removal (Amita Sudhir, MD and Nathan Charlton, MD); the number of bleeding control kits in public places (Nathan Charlton, MD and Craig Goolsby, MD); aspirin administration for chest pain by lay responders (Amy Kule, MD and Nathan Charlton, MD); and first aid kit contents (Adelita Cantu, PhD and David Berry, PhD).



Preparedness and Disaster Health Sub-Council

The Preparedness and Disaster Health Sub-Council looks for the best ways to prepare for emergencies of every kind, from those that occur in the home to regional disasters, including how to train people to be more resilient after hardship, and how to keep communities whole and businesses operating. As well, the Sub-Council addresses opportunities to provide acute and chronic medical and mental health care under disaster conditions, both for victims and for the emergency staff caring for them. It also routinely answers questions from local chapters and assists with media inquiries on a variety of topics.

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Guidance for Older Adults

Older adults are more vulnerable and consistently experience more casualties after a disaster compared to other age groups, according to research findings from the Preparedness and Disaster Health Sub-Council and the American Academy of Nursing (AAN). Indeed, the Centers for Disease Control and Prevention (CDC) note that 8 out of 10 COVID-19-related deaths have been in adults age 65 and older and that the risk for severe illness increases with age. While preparing for potential disaster and emergency is always especially critical for seniors, it takes on even greater urgency in the context of a pandemic.



Through a Scientific Review, a policy roundtable, and a published White Paper, the Sub-Council evaluated all available scientific evidence related to disaster preparedness among older adults and issued a series of recommendations to enable this population to prepare for the immediate dangers and aftermath of catastrophes. Their conclusions appear in the Sub-Council's following 2020 publications: *"Closing the Gaps: Advancing Disaster Preparedness, Response and Recovery for Older Adults,"* prepared in collaboration with the AAN, and *"Disaster and Emergency Preparedness for Older Adults: A Practical Guide to Help Plan, Respond and Recover,"* a comprehensive step-by-step emergency guide for seniors. Additional guidance for older adults is available in *"Disaster Preparedness: For Seniors by Seniors,"* a publication of The Greater Rochester Chapter of the American Red Cross and the Homeland Security Institute at Monroe Community College.

Evidence points to numerous factors that make older adults more vulnerable to natural disasters, emergencies and pandemics. Seniors:

- Typically have more chronic conditions and take more medications.
- Are more apt to be dependent on assistive devices such as walkers, eyeglasses, hearing aids, etc., and require support from caregivers.
- Experience an increased likelihood of social isolation, which is associated with a higher risk of dementia, heart disease, depression and other serious medical conditions.

Based on the latest science, the Sub-Council issued an extensive set of recommendations to help older adults mitigate factors such as these and cope more successfully with disasters and emergencies, including:

- Ensure access to at least a 30-day supply of medication and prepare both emergency supplies to stay at home and a portable kit of supplies for evacuation. During the pandemic, it is essential that these should include hand sanitizer, cloth face coverings, cleaning and disinfectant supplies, and personal hygiene items.
- Maintain an up-to-date list of your conditions, medications and dosages, allergies, physicians, caregivers and insurance cards.
- Develop customized emergency plans that take into account any physical or mental challenges and needs for mobility devices.
- Make arrangements to stay with friends and family in case you have to leave home and ensure that they are in a safe zone. For example, under current conditions, ask if anyone has been exposed to or diagnosed with COVID-19 at that residence or is experiencing symptoms. If this is the case, make alternate plans.
- Stay informed. Monitor TV, radio, online and emergency alerts for news. Keep extra batteries and flashlights on hand in case you lose power.

Guidance for Youth

Youth across the country have been impacted by numerous disasters this year, including the COVID-19 pandemic, wildfires and hurricanes. A number of ongoing, evidence-based Red Cross initiatives supported by the Scientific Advisory Council are designed to help children prepare for and cope with disruption in their lives:

- **Prepare with Pedro**, developed in partnership with the Federal Emergency Management Agency (FEMA), is a curriculum for children ages 5 to 7 that follows Pedro the Penguin as he learns how to stay safe in emergencies such as home fires and hurricanes. To reflect current crises and concerns,

new digital storybooks have been written on Wildfires, Power Outages, and Coping and Resilience. These are free to download in multiple languages and come with coloring sheets. The Sub-Council is also in the process of developing science-based Public Service Announcements (PSAs) featuring Pedro.

- **The Pillowcase Project** is a curriculum designed for children in grades 3 to 5. Since its inception in 2013, this program has taught over one million children specific skills such as creating an emergency supply kit (in a pillowcase) and general emergency preparedness, home fire safety and coping skills.
- **Become a Preparedness Champion** is a new addition to programs targeted toward third to fifth grade students. This video series highlights the importance of evidence-based safety practices such as proper handwashing, coping skills and fire safety. Parents can use the Red Cross *My Household Preparedness Workbook* to reinforce their children's preparedness lessons and develop a family emergency preparedness plan.
- **Be Red Cross Ready** presents basic preparedness education to teens age 14 and older. Information includes how to build an emergency kit, make an emergency plan with family, and learn what to do before, during and after disasters of all kinds, including the COVID-19 pandemic.

Other versions of Be Red Cross Ready are especially designed and available to meet the needs of a wide variety of audiences and communities. The Sub-Council has been working with the Red Cross and consultants on the rebranding and positioning of this important set of resources.

Other Activities

- **Home Fire Campaign:** The American Red Cross Home Fire Campaign provides fire safety education and installs lifesaving smoke detectors through its Sound the Alarm (#EndHomeFires) initiative. This federally funded effort, a Red Cross Flagship Program, has partnered with local fire departments and community groups to install over two million smoke detectors and save more than 700 lives. The Red Cross continues to work closely with public health officials to promote fire safety, while smoke detector installation in homes has been temporarily suspended due to the COVID-19 pandemic.

In the meantime, evaluation of the Home Fire Campaign continues at the National Opinion Research Center (NORC) at the University of Chicago. Since the campaign's launch in 2014, NORC assessments have regularly documented the program's success in areas such as targeting and assisting at-risk communities. Two new NORC papers have been drafted and publication is expected shortly.

- **Addressing Social Disparities:** The Sub-Council is reviewing all relevant literature for insights into how to better understand and address social disparities, building on an earlier scoping study that identified a number of disparities—including race, ethnicity, socioeconomic status, age and access to care—that can have a substantial negative impact on Red Cross preparedness and disaster planning. The Sub-Council will present a White Paper on actionable ways to improve outreach and effectiveness in January 2021.
- **IFRC First Aid Guidelines:** The Sub-Council has worked with the International Federation of Red Cross and Red Crescent Societies (IFRC) in the development of disaster considerations for teaching first aid. These recommendations will be included in



the upcoming IFRC publication, International First Aid and Resuscitation Guidelines.

- **Prepare Series:** This new series updates the hazard-specific Red Cross “tear sheets” to provide a comprehensive resource for a wide range of preparedness applications. The Sub-Council is working closely with the Red Cross to bring the science to the development of this resource.

Publications and Presentations

Recent releases and publications from the Sub-Council include the following:

- *Closing the Gaps: Advancing Disaster Preparedness, Response and Recovery for Older Adults.* 2020 January. The Preparedness and Disaster Health Sub-Council and the American Academy of Nursing (AAN). Available at: <https://www.redcross.org/content/dam/redcross/training-services/scientific-advisory-council/253901-03%20BRCC-Older%20Adults%20Whitepaper%20FINAL%201.23.2020.pdf>
- *Disaster and Emergency Preparedness for Older Adults: A Practical Guide to Help Plan, Respond and Recover.* 2020 June. The Preparedness and Disaster Health Sub-Council. Available at: https://www.redcross.org/content/dam/redcross/get-help/how-to-prepare/Older_Adults_Disaster_Prep_Booklet_07272020.pdf
- *Disaster Preparedness: For Seniors by Seniors.* 2020. The Greater Rochester Chapter of the American Red Cross and the Homeland Security Institute at Monroe Community College. Available at: https://www.redcross.org/content/dam/redcross/atg/PDF_s/Preparedness___Disaster_Recovery/Disaster_Preparedness/Disaster_Preparedness_for_Srs-English.revised_7-09.pdf

Other selected media: CNN, Washington Post, Nerd Wallet, Reader’s Digest, ShareCare.com.

Future Work

The Preparedness and Disaster Health Sub-Council sought and received Council approval to extend the production of one Q&A until the January 2021 meeting.

- **SAC Q&A:** Are there scientifically validated best practices for protecting the mental health of disaster and first responders following a traumatic event? (Lead: Lauren M. Sauer, MSc)

The Sub-Council will also present a White Paper on actionable ways to address social disparities in January 2021. Additionally, Council members continue to expand their role for SAC preparedness and provide ongoing support to the Red Cross, synchronizing protective action messages and evidence across the organization.

The Resuscitation Sub-Council evaluates science related to cardiopulmonary resuscitation (CPR), choking, basic life support in children and adults, advanced cardiac life support, pediatric advanced life support, and the optimized use of automated external defibrillators (AEDs).

Joseph W. Rossano, MD

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CARES Program Update

The Cardiac Arrest Registry to Enhance Survival (CARES) helps communities identify cases of out-of-hospital cardiac arrest (OHCA) and measure how well local emergency medical services (EMS) respond, enabling them to take steps to improve care and increase survival. Since its initial implementation in Atlanta, Georgia in 2004, CARES has expanded to include 28 state-based registries, over 45 community sites in 14 additional states, and the District of Columbia. CARES now represents a catchment area of approximately 145 million people, or 45% of the US population. This includes an increase of approximately 6 million in population catchment since 2019.

CARES aggregates data from more than 1800 EMS agencies and over 2200 hospitals nationwide to inform knowledge about out-of-hospital cardiac arrests. This simple but powerful database has generated a wide variety of National Data Sharing Projects:

- Disparities in Receipt and Utilization of Dispatch-Instructed CPR
- Loss of Labor Productivity following OHCA
- Impact of CPR and AED Legislation on Survival after Sudden Cardiac Arrest
- Machine-Based Learning Applications for the Exploration of OHCA Care
- Association of Sex/Gender with OHCA Characteristics, Hospital Interventions, and Survival Outcomes
- Predictive Modeling of Elderly OHCA Survivors to Guide Clinical Care and Facilitate Effective Communication
- Relationship Between Field ROSC and Rate of Field Termination

- Social Deprivation and Survival after OHCA in American Adults: A Retrospective Cohort Study
- The Association between Scene Time Arrival and Neurologic Outcomes following OHCA in the US
- Conventional vs Compression-Only CPR (Pediatric)
- Airway Management after OHCA (Pediatric)
- Public Health Impact of Drug-Related OHCA
- Left Heart Catheterization Trends
- Patient, Facility, and Geographic Factors Associated with Resuscitation Efforts in Dialysis Clinics
- Airway Interventions in Drowning Victims

The analysis of CARES data has also led to State Data Sharing Projects; the publication of numerous articles in scientific journals; and grants and grant proposals.

Scientific Advisory Council Q&A: ILCOR 2020 Updates

Reviewer: Joseph W. Rossano, MD

Question

Are the Scientific Reviews conducted by the International Liaison Committee on Resuscitation (ILCOR) and the Consensus on Science with Treatment Recommendations (CoSTR) sufficient for the American Red Cross?

Discussion and Findings

The Sub-Council examined 36 Scientific Reviews and Recommendations in ILCOR's *Executive Summary: 2020 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations*. ILCOR's methodology is rigorous and it is committed to a continuous evidence-evaluation process. The 2020 CoSTR included three types of evidence evaluation:

the systematic review, the scoping review and the evidence update. New or modified treatment recommendations could only result from systematic reviews, the most rigorous process.

In general, the Sub-Council found that the quality of the ILCOR reviews was excellent and the recommendations reasonable and in line with Red Cross teaching.

Answer

The Resuscitation Sub-Council does not recommend additional reviews on these topics be conducted. There are, however, some important additional considerations to be taken into account moving forward:

- Examine opportunities for the Council to fill gaps in knowledge (e.g., the correct placement and access to automated external defibrillators or AEDs).
- Explore recommendations regarding neurologic prognostication outside of this area of expertise.
- Incorporate contemporary cellphone use in “Call First” recommendations (i.e., using speakers, people can now call 911 and apply CPR at the same time).

Council Action

The Council unanimously approved the answer.

Scientific Advisory Council Q&A: ABC vs CAB for CPR

Reviewers: Joseph Rossano, MD and Michael Millin, MD

Question

In Guidelines for CPR, how does CAB (chest compressions first, followed by airway and breathing) compare to ABC (airway and breathing first, followed by chest compressions)?

Discussion and Findings

Based on an extensive examination of current literature, there are no strong data that would warrant changes to the Council’s current guideline

to use an ABC approach to assess and treat cases of cardiopulmonary arrest. In a systematic review of Basic Life Support conducted by ILCOR in 2019, researchers did not identify any additional studies evaluating ABC vs CAB since their 2015 review. The state of published evidence remains 4 earlier manikin studies, all of which are considered of low quality. Clinical content experts did not identify any human studies addressing this question, and the certainty of the evidence remains very low.

ABC is an important and lifesaving mnemonic to help both laypersons and medical personnel remember and perform the steps of CPR. Council members discussed whether there remained any controversy about ABC vs CAB for CPR, given that the American Heart Association (AHA) changed its recommendation from ABC to CAB in 2010. While there is ongoing debate in the scientific community as to whether CPR should begin with chest compressions or ventilations, Dr. Rossano clarified that the Sub-Council recommends ABC for non-traumatic cardiac arrest, and CAB in cases of adult non-hypoxic and sudden pediatric cardiac arrest.

Answer

The American Red Cross Scientific Advisory Council recommends that Red Cross Programs continue to teach an ABC approach as the key message for both the public and professionals in how to correctly assess and triage interventions when approaching a victim.

The Council recommends that Red Cross Programs teach rescuers to perform compressions immediately after assessment in cases of adult non-hypoxic and sudden pediatric cardiac arrest.

Council Action

The Council unanimously reaffirmed the answer.



Publications and Presentations

Recent releases and publications from the Sub-Council include the following:

Griffis H.M., et al. Characteristics and outcomes of Automated External Defibrillator use in pediatric cardiac arrest in public settings: The influence of neighborhood characteristics. *Resuscitation*; 2020 Jan 1.

Millin M., et al. Comparing the two-finger versus two-thumb technique for single person infant CPR: A systematic review and meta-analysis. *Resuscitation*; 2020 Jan 20.

Tobin, J.M., et al. Outcome of conventional cardiopulmonary resuscitation in cardiac arrest following drowning. *Prehosp Disaster Med*; 2020 Jan 24.

Additionally, the Sub-Council produced an advisory document related to COVID-19 that was unanimously approved by the Scientific Advisory Council in April.

Future Work

The Resuscitation Sub-Council sought and received Council approval to extend work on two scientific reviews, with results to be presented at the January 2021 meeting:

Scientific review: What are the guidelines for termination of resuscitation in the field and how do we make decisions about transport for people with out-of-hospital cardiac arrest? (Lead: Bryan McNally, MD)

Scientific review: In cases of sudden cardiac arrest, what is the proper placement and use of an automated external defibrillator (AED)? (Lead: Andrew MacPherson, MD)



Education Sub-Council

The Education Sub-Council works to engage members of every other Sub-Council in identifying effective methods for teaching skills and procedures to individuals and populations. We also seek the best ways to instill or build in people the confidence and desire to step forward and use those competencies to help people in need.

Jeffrey L. Pellegrino, PhD, MPH, EMT-B/FF, EMS-I

Education Sub-Council Chair

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Brian Miller, MS, PhD candidate

Assistant Professor of Health Sciences, Mary Baldwin University

Gamze Ozugul, PhD

Associate Professor of Instructional Systems Technology, School of Education, Indiana University

CDR Thomas E. Sather, EdD, MS, CAsP

Defense Health Agency, Education and Training (J-7)

Triennial Review

Songs for CPR Education

Reviewers: Nicholas Asselin, DO, MS and Jeffrey L. Pellegrino, PhD, MPH

Question

What is the evidence supporting the use of songs to promote learning and skill demonstration of effective compressions for CPR?

Discussion and Findings

Fewer than half of people who suffer out-of-hospital cardiac arrest (OHCA) receive aid from laypersons before professional medical help arrives on the scene, according to the American Heart Association (AHA). Yet studies demonstrate that bystander CPR can significantly increase a victim's odds of survival, as compressions pump oxygenated blood to vital organs throughout the body. This underlines the crucial importance of training laypersons in the proper use of CPR.

Since the Sub-Council's last review, a growing body of literature suggests that teaching lay people CPR using songs as "mental metronomes" may improve both their performance of compressions (rate and variability) and retention of compression rate knowledge. Research in a variety of learner groups suggests that songs may immediately aid in appropriate compression rates and limit variability when compared to controls. Importantly, these gains are also maintained on follow-up at varied time intervals (24 hours, 6 weeks, 6 months). In contrast, traditional metronomes appeared to aid in the moment but were not shown to maintain gains on follow-up.

In light of these findings, the Sub-Council is revising its prior review to include updated guidance and recommendations:

Recommendations: Standards

None.

Recommendations: Guidelines

None.



Recommendations: Options

Individual instructors or agencies might find songs/music a helpful means to establish compression rate during training.

Additionally, there is lower quality evidence to suggest that these mental metronomes may promote retention of appropriate compression rates after training in some learner groups.

Council Action

The Council voted unanimously to approve the recommendations.

Publications and Presentations

Recent releases and publications from the Sub-Council include the following:

- Pellegrino, J.L., Asselin, N. Theoretical organization of motivations to attend first aid education: Scoping review. *International Journal of First Aid Education* 3(1) 18-29. doi: 10.21038/ijfa.2020.0105. Available at: <https://oaks.kent.edu/ijfae/vol3/iss1/theoretical-organization-motivations-attend-first-aid-education-scoping-review>
- Pellegrino, J.L. Wearable breathing barriers to reduce droplet transmission of covid-19. *International Journal of First Aid Education* 3(1) 30-37. doi: 10.21038/ijfa.2020.0106. Available at: <https://oaks.kent.edu/ijfae/vol3/iss1/wearable-breathing-barriers-masks-reduce-droplet-transmission-covid-19>

Additionally, the Sub-Council's research findings on the educational implications of a bleeding control trainer (the value of a training device to support, demonstrate and validate learning outcomes) were used for the Red Cross 2020 guidelines update. (CDR Thomas Sather, EdD and Jeffrey L. Pellegrino, PhD, MPH)

Future Work

The Education Sub-Council sought and received Council approval for the following projects to be presented at the January 2021 meeting. In addition, manuscripts on motivations to act in emergencies and songs for CPR education are in development, and the Sub-Council is developing Survival 2020 presentations:

- **Scientific review:** What is the impact of blended learning, including pre-course preparation, on healthcare training courses? (Gamze Ozugul, PhD and Nicholas Asselin, DO, MS)
- **Manuscript development:** Motivations to act in emergencies (Brian Miller, MS and Rita V. Burke, PhD, MPH) and songs for CPR education (Jeffrey L. Pellegrino, PhD, MPH and Nicholas Asselin, DO, MS)
- **Survival 2020:** Resilience tools for local communities (Jeffrey L. Pellegrino, PhD, MPH and Rita V. Burke, PhD, MPH) and disco-izing CPR education communities (Jeffrey L. Pellegrino, PhD, MPH and Brian Miller, MS)

Operation of the Council

The Council's professional diversity gives it an important advantage: a broad, multidisciplinary foundation for evaluating the scientific evidence for emergency response methods and techniques in emergency procedures, disaster actions, nursing care, water instruction and drowning prevention, and in the educational methods used to teach this information.

In addition to being experts in their own specialties and conducting original research outside of the Red Cross, the Sub-Council members are also knowledgeable in evaluating scientific literature, research methods, study designs and evidence grading, so they can fairly judge the quality and strength of the research they review.

The Scientific Review Process

Council members continuously monitor their fields of expertise for important developments in emerging science and bring these events to the attention of the Council.

Council action can also begin elsewhere, such as when a new technology or product enters the field, or with an inquiry from a local Red Cross chapter or instructor about how to best handle a particular situation or emergency.

Once a subject merits further investigation, a Sub-Council proceeds on a structured course that may be undertaken in the form of a Scientific Review, a Triennial Review, a Sub-Council Q&A, or an Advisory. A single Sub-Council member is assigned to lead the structured review process, with a second member helping to select the reference materials, former clinical trials, published texts, expert opinion, and other evidence-based sources that will be considered. (If there is disagreement about the choices, the Sub-Council chair will act as arbiter.) The Council also has a rigorous conflict of interest process in place to assure that only scientific evidence is included in the discussions and recommendations.

The Sub-Council discusses this scientific information, summarizing the available quantitative and qualitative evidence on a standardized template designed to ensure rigor and precision, and, when warranted forwards the research and its opinion to the full Council. The final product may include recommendations for a Scientific or Triennial Review (standards, guidelines, or options); Council Answers for a Q&A; or an Advisory.

The full Council hears the recommendations presented by the Sub-Council, and all participating members vote on whether to accept the review, including the proposed recommendations, or to modify or take other action. Each recommendation is assigned a strength, based on an assessment of the current state of scientific and medical research on the subject.

The different strengths are classified as follows:

- **Standards**—Very strong evidence is available from well-designed, prospective, randomized, controlled studies.
- **Guidelines**—Current evidence is somewhat less robust, such as non-randomized cohort studies, case-control studies or retrospective observational studies.
- **Options**—Evidence includes current expert opinion, best practices, etc.

Lastly, the Sub-Council drafts any recommended changes to existing Red Cross materials and programs including suggestions for implementation by the Red Cross. After being issued, recommendations and their assigned strengths come under regular Sub-Council review and may be updated as new evidence and other scientific advances become available.

An approved recommendation is also made available to the public at large through a variety of news media and on Red Cross websites, free of charge.

Operation of the Council (continued)

Council Follow-Up

The Red Cross field organization serves as a resource for the Council, allowing it to quickly augment its scientific and medical expertise with actual data from the field. Many Council members work in the field with the Red Cross and other organizations, gathering firsthand knowledge of what works best under actual emergency conditions.

The Council seeks feedback on the effectiveness of all its recommended techniques after they are issued to the field. A range of follow-up processes includes scrutiny of program feedback from the instructors and students and on-going, proactive reviews. For example:

- **Disaster Health**—Fatality data after disasters including house fires are captured after each event.
- **Aquatics**—Data are collected on rescues by lifeguards not only in the United States but also in Canada.
- **First Aid**—National and international data on injuries and illnesses are reviewed to establish where education is needed. Surveys are conducted in the field to determine how recommended techniques are being taught, if they are clearly understood, and how well the techniques are remembered. This last aspect is very important. For example, these surveys have determined that occasional short refresher courses have a major impact on trainees' recall of course material and proper technique.

Every new recommendation is reviewed and updated three years after being issued, and all recommendations are reviewed in the light of new research such as ILCOR every five years.

Scientific Advisory Council Recommendations

The Council regularly issues recommendations on establishing the standard in first aid care, resuscitation, aquatics, preparedness and disaster health, and nursing and caregiving. Some of the issues that the Council has advised on include the following:

- Bandage Choice
- Chain of Drowning Survival
- Circle of Drowning Prevention
- Compression-Only CPR
- Control of Life-Threatening Bleeding
- CPR Skill Retention
- Critical Incident Stress Debriefing (CISD)
- Dental Avulsion Management
- Drowning and Lack of Efficacy of Abdominal Thrusts
- First Aid Kit Content
- Hypoglycemia Management
- Hyperthermia
- Infant AED
- Medical Examination Gloves for First Aid Providers
- Lightning and Pool Safety
- Minimum Age for Swimming Lessons
- Spinal Motion Restriction
- Swimming Competency
- Stroke Assessment Tools

American Red Cross Scientific Advisory Council Position Statements

Position Statements are occasionally issued by the Sub-Councils. These statements focus on a topic of concern that is typically related to public health and prevention of injury, illness or death. Statements provide background information on a topic, any supporting evidence to support a position, the Council's position, and information that may help guide future legislation related to the topic. The First Aid Sub-Council issues two Position Statements in these Proceedings:

- First Aid Education in Primary and Secondary Schools
- Opioid Education and Naloxone Distribution

The Aquatics Sub-Council is preparing a Position Statement to issue at the January 2021 meeting: Two vs Five Breaths in Drowning Resuscitation.

Leadership of the Scientific Advisory Council

Within the Red Cross organization, the Council is part of the Training Services Division, with the Council Co-Chairs (Co-Chair Chief Medical Officer and Co-Chair Volunteer) reporting directly to the Division President. The purpose of the Council is to serve as an independent scientific and technical advisory group to the American Red Cross.



**American
Red Cross**

Scientific
Advisory Council

The American Red Cross Scientific Advisory Council is a panel of nationally recognized experts in emergency medicine, sports medicine, emergency medical services (EMS), emergency preparedness, disaster mobilization and other public health and safety fields. The Council ensures that all Red Cross programs are fully current with the latest science, address current needs, and are prepared for future changes.

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