

Guidelines 2000 for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care

An International Consensus on Science

The American Heart Association in Collaboration With the
International Liaison Committee on Resuscitation (ILCOR)

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Part 1: Introduction to the International Guidelines 2000 for CPR and ECC

A Consensus on Science

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This publication presents the conclusions of the International Guidelines 2000 Conference on Cardiopulmonary Resuscitation (CPR) and Emergency Cardiovascular Care (ECC). We have achieved a long-term goal: to create valid, widely accepted international resuscitation guidelines based on international science and produced by international resuscitation experts. The Guidelines 2000 Conference was more than an update of previous recommendations for CPR and ECC published by the AHA (in 1974,¹ 1980,² 1986,³ and 1992⁴) and similar recommendations published by the European Resuscitation Council (in 1992,⁵ 1996,⁶ and 1998⁷). The Guidelines 2000 Conference was the world's first international conference assembled specifically to produce international resuscitation guidelines.

At all stages of planning, coordination, and implementation, conference planners sought and achieved active involvement of individuals and councils outside the United States.

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Important new recommendations were developed either at the 2000 conference or during the post-conference period of writing, review, and rewriting. Positive new additions had to pass our rigorous evidence-based review. Revisions of or deletions from existing guidelines occurred for any of 3 reasons: (1) lack of evidence to confirm effectiveness, (2) additional evidence to suggest harm or ineffectiveness, or (3) evidence that superior therapies have become available.

We have also produced the *International Consensus on Science: Proceedings of the 2000 Guidelines Conference on CPR and ECC*. The proceedings are detailed articles that recount the discussions and debates at the 2 conferences.

The International Guidelines 2000 represent a consensus of experts from a variety of countries, cultures, and disciplines. The conference experts, participants, and resuscitation councils do not dictate or impose these recommendations on any person, Emergency Medical Services (EMS) system, hospital, healthcare facility, community, state, country, or resuscitation council. The majority of the therapeutic interventions in the guidelines are "acts of medical practice." Most resuscitation personnel in the conference countries can use these interventions on a human being **only** when authorized by the "proper" local, state, or national agencies. Enforcement, authorization, and certification are medicolegal concepts with no role to play in the science-based International Guidelines 2000.

The recommendations of the Guidelines 2000 Conference confirm safety and effectiveness for many approaches, acknowledge ineffectiveness for others, and introduce new

treatments that have survived intensive evidence-based evaluation. These new recommendations do not imply that care using past guidelines is either unsafe or ineffective. The conference participants consider these new guidelines to be the most effective and easily teachable guidelines that current knowledge, research, and experience can provide.

Historical Perspective

During the 40 years since the introduction of modern CPR and ECC there have been many advances in ECC for cardiac arrest victims. These interventions have restored the lives of many people when breathing has ceased and the heart has stopped. For those with preserved neurological function and treatable cardiopulmonary disease, a lengthy, vigorous, and high-quality life may often follow.

Until 1960 successful resuscitation was limited to victims of respiratory arrest. Emergency thoracotomy with "open-chest heart massage" was sometimes successful when proper personnel and equipment were readily available.⁸ Termination of ventricular fibrillation by externally applied electricity was first described in 1956.⁹ The ability of defibrillators to reverse a fatal arrhythmia was a dramatic achievement. Defibrillators challenged the medical community to develop ways to get the defibrillator to the patient's fibrillating heart as fast as possible while simultaneously sustaining ventilation and circulation. These challenges will continue into the next millennium.

In the 1950s Safar et al¹⁰ and Elam et al¹¹ "rediscovered" mouth-to-mouth ventilation by reading how midwives used the technique to resuscitate newly born infants. In 1958 Safar et al confirmed the effectiveness of the mouth-to-mouth ventilation technique of Elam et al. In 1960 Kouwenhoven et al¹² observed that forceful chest compressions produced respectable arterial pulses. In a series consisting chiefly of anesthesia-induced cardiac arrests they confirmed that chest compressions alone could sustain life while awaiting more definitive care. The critical steps of modern CPR—"closed-chest" compressions and "mouth-to-mouth" ventilations—had arrived.¹²

Over the next several years, through casual conversations, Safar and Kouwenhoven saw the rationale for combining closed-chest compressions with mouth-to-mouth ventilations. Soon Safar confirmed the combined technique, now known as basic CPR. The simplicity of this technique has led to its widespread dissemination: "All that is needed is 2 hands." The technique gives hope for reducing the nearly 1000 sudden deaths (on average) that occur each day, both in the