Weight of Evidence: The 2000 ACLS Guidelines for Resuscitation/Cardiac Care

Introduction

- The International Guidelines 2000 Conference on CPR and ECC was the first international conference on guidelines for Cardiopulmonary Resuscitation (CPR) and Emergency Cardiac Care (ECC).
- The International Guidelines 2000 Conference marked an international collaboration of the American Heart Association (AHA) and International Liaison Committee on Resuscitation (ILCOR).

Objectives of the International Guidelines 2000 Conference

- Create a consensus document to explain the development of evidence-based guidelines.
- Review and revise recommendations from past conferences on the basis of scientific evidence that had accumulated since the previous guidelines were instituted.
- Review and recommend changes in methods for teaching ECC, Basic Life Support (BLS), Pediatric Advanced Life Support (PALS), and Advanced Cardiovascular Life Support (ACLS).
- Promulgate valid, widely acceptable international resuscitation guidelines based on international science and produced by international resuscitation experts.

Evidence-Based Goals

- Evaluate safety and effectiveness of approaches for CPR/ECC.
- Acknowledge the ineffectiveness of some traditional approaches (not supported by evidence-based review).
- Include treatments that survive intensive, evidence-based evaluation.

Evidence-Based Review

- A systematic method to *identify, evaluate,* and *appraise* scientific publications to propose needed changes.
- All proposed changes were reviewed for:
  - Scientific accuracy
  - Safety
  - Cost
  - Effectiveness
  - Teachability

Evidence-Based Revisions

- Changes were based on a four-step process:
  - Gather evidence
  - Determine level of evidence
  - Assess quality of evidence
  - Make a class recommendation
- Changes to existing guidelines occurred for any of three reasons:
  - Lack of evidence to confirm effectiveness
  - Additional evidence to suggest harm or ineffectiveness
  - Evidence that superior therapies have become available
- Changes were facilitated by the ECC Evidence-Based Worksheet (Table 1).

Table 1 **Summary of AHA ECC Evidence-Based Worksheet**

Step 1: *State the Proposal*

Step 1A: Refine the questions

Step 1B: Gather the evidence

Step 2: *Assess the Quality of the Evidence (Studies)*

Level 1: Prospective, randomized controlled trial (RCT), $P < 0.05$

Level 2: Neutral RCT

Level 3: Prospective, nonrandomized observational study with control

Level 4: Retrospective, nonrandomized observational study with control

Level 5: Case series; no control

Level 6: Animal/mechanical model

- **6A** Higher quality studies
- **6B** Less powerful design

Level 7: Reasonable extrapolation from data gathered for other purposes

Level 8: Common sense; current practice

Step 2A: Sort studies by level

Step 2B: Assess quality of research design/methods
(excellent, good, fair, poor, unacceptable)

Step 2C: Determine direction of results and statistics
(support proposal, neutral, oppose proposal)

Step 2D: Cross-tabulate by Level, Quality, and Direction

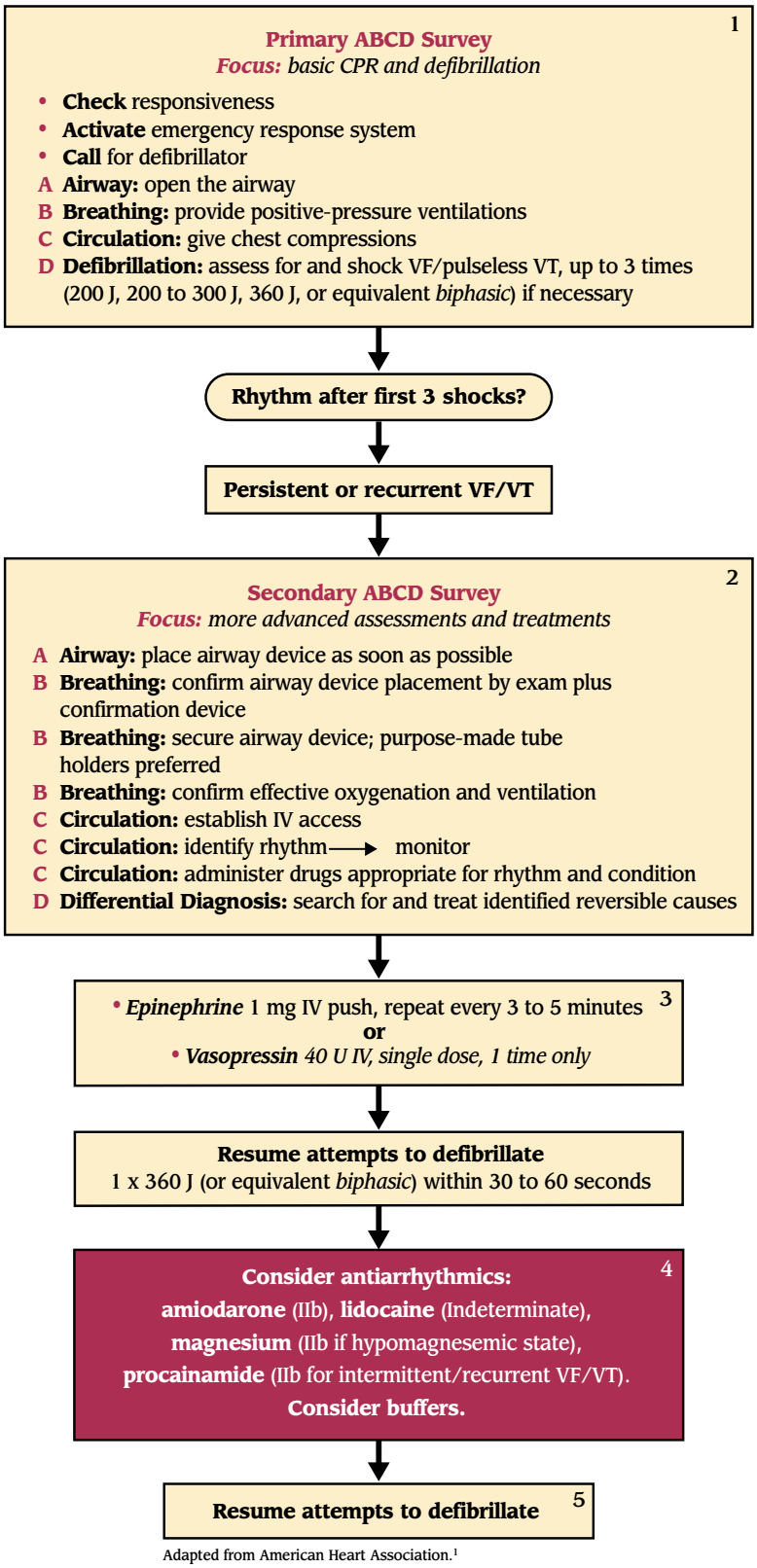
Step 3: *Determine Class of Recommendation*

Class I:	*Excellent* definitely recommended; proven efficacy and effectiveness
Class IIa:	*Acceptable/useful* good evidence; safe, clinically useful
Class IIb:	*Acceptable/useful* fair evidence; safe, clinically useful
Class III:	*Not acceptable* not clinically useful; may be harmful
Class Indeterminate:	*No recommendation* minimal evidence; preliminary research stage

Summarize Rationale for Proposal

Propose Experts for Evidence-Based Conference or Guidelines 2000 Conference

Current Ventricular Fibrillation/Pulseless Ventricular Tachycardia (VF/VT) Algorithm[1]



Adapted from American Heart Association.[1]

Evidence-Based Recommendations

- Amiodarone received a class-IIb recommendation (acceptable and useful) for both persistent and intermittent/recurrent VF/pulseless VT.
- Lidocaine received a class-indeterminate rating based on lack of evidence to confirm usefulness.
- Procainamide received a class-indeterminate rating for persistent VF/pulseless VT but did receive a IIb classification for intermittent/recurrent VF/pulseless VT only.

IV amiodarone is indicated for initiation of treatment and prophylaxis of frequently recurring ventricular fibrillation and hemodynamically unstable ventricular tachycardia in patients refractory to other therapy.

IV amiodarone can also be used to treat patients with VT/VF for whom oral amiodarone is indicated, but who are unable to take oral medication.

IV amiodarone is contraindicated in patients with cardiogenic shock, marked sinus bradycardia, and second- or third-degree AV block in the absence of a functioning pacemaker.

IV amiodarone should be administered only by physicians who are experienced in the treatment of life-threatening arrhythmias, who are thoroughly familiar with the risks and benefits of amiodarone therapy, and who have access to facilities adequate for monitoring the effectiveness and side effects of treatment.

Hypotension is the most common adverse effect seen with IV amiodarone and may be related to the rate of infusion. Hypotension should be treated by slowing the infusion or with standard therapy: vasopressor drugs, positive inotropic agents, and volume expansion.

In clinical trials, the most important treatment-emergent adverse effects were hypotension (16%), bradycardia (4.9%), liver function test abnormalities (3.4%), cardiac arrest (2.9%), VT (2.4%), congestive heart failure (2.1%), cardiogenic shock (1.3%), and AV block (0.5%).

Please see Prescribing Information available at this display.

REFERENCES

1. American Heart Association. Guidelines 2000 for cardiopulmonary resuscitation and emergency cardiac care. *Circulation*. 2000;102(suppl):1-3, 1-4, I-147.

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