

FOIA MARKER

**This is not a textual record. This is used as an
administrative marker by the William J. Clinton
Presidential Library Staff.**

Collection/Record Group: Clinton Presidential Records
Subgroup/Office of Origin: Office of Science and Technology Policy
Series/Staff Member: Jerold Mande
Subseries:

OA/ID Number: 13034
FolderID:

Folder Title:
Automatic External Defibrillators: American Heart Association

Stack:	Row:	Section:	Shelf:	Position:
S	66	4	3	2

Emergency Cardiac Care

Case for Support

More than 350,000 Americans suffer a sudden cardiac arrest each year. Less than ten percent will be discharged from a hospital alive. The key to survival is timely initiation of a series of events, coined the "Chain of Survival." The chain includes early activation of the emergency medical system; basic cardiopulmonary resuscitation (CPR); rapid defibrillation; and early advanced cardiac life support. Weakness in any link lessens the chance of survival and condemns the efforts of an emergency medical system to poor results. After as little as 10 minutes, very few resuscitation attempts are successful.

Unfortunately, pre-hospital medical care (including training, equipment and standards of care) suffers from state-by-state variation, which condemns the public to inconsistent care. It is clear that legislative interventions can substantially affect the delivery of pre-hospital care, resulting in increased survival rates. In cities such as Seattle, WA and Rochester, MN, where early access to EMS, early CPR, and early defibrillation have dramatically increased survival rates. However, according to data recently published in the Journal of Emergency Medical Services (JEMS), non-EMT first responders are legally permitted to use AEDs in only half the states and less than one half of EMTs, and less than one quarter of non-EMT first responders, in the U.S. are trained and equipped to defibrillate. As for basic life support training, more than half the states in a recent study had no secondary school curriculum requirements for first aid and CPR.

AHA position

In a few weeks, Representative Cliff Stearns (R-FL-6) will be introducing the Cardiac Arrest Survival Act. This legislation, drafted in large part by the American Heart Association, in partnership with the American Red Cross and nearly two dozen national organizations, establishes a federal program regarding training in lifesaving interventions and the use of lifesaving equipment, including automated external defibrillators (AEDs) to assist individuals experiencing cardiac arrest. Specifically, the legislation calls for:

- the National Heart, Lung, and Blood Institute (NHLBI), in cooperation with the National Highway Traffic Safety Administration (NHTSA), to develop and disseminate a model state training program for first responders and bystanders in lifesaving interventions, including cardiopulmonary resuscitation (CPR).
- the development of model state legislation to ensure access to emergency medical services, including consideration of the necessary location and placement of lifesaving equipment, including AEDs; the development of requirements for training in the core content and use of life-saving equipment, including AEDs; and the provision of good samaritan immunity for bystanders first responders instructors and owners and owners and managers of property where equipment is placed.
- the development of a national database for reporting and collecting information relating to the incidence of cardiac arrest and whether interventions, including bystander or first responder, improve the rate of survival.

Action requested

- Co-sponsor the Cardiac Arrest Survival Act, sponsored by Rep. Cliff Stearns (R-FL).

THE CASE FOR SUPPORT FOR THE CARDIAC ARREST SURVIVAL ACT

Background

Some time ago, the federal government established a program to develop nationally uniform standards for training curricula and procedures for local emergency medical services. This program is housed within the Department of Transportation, in the National Highway Traffic Safety Administration (NHTSA). NHTSA has done an admirable job in developing training materials that could be voluntarily implemented locally.

Ensuring heart disease and stroke focus -

There is significant concern that, as our knowledge about out-of-hospital cardiac arrest has expanded, NHTSA has not incorporated a heart disease and stroke focus in the standardized or proposed curricula for bystanders and first responders. Bystander and first responder CPR are essential to facilitating survival from out-of-hospital arrest, and we believe that the time has come for broadening of model EMS program to include both clinical evaluation of the results of proposed interventions - to ensure timely and appropriate changes in the curriculum - and development of a uniform national standard on the appropriate use of life-saving equipment for first responders, bystanders and other persons who may volunteer to resuscitate patients but are not trained paramedics or EMTs.

The current program, housed at NHTSA, while superb, has historically not engaged in these activities because its focus, properly so, has been on vehicular and traffic safety. NHTSA lacks clinical and research infrastructure in heart disease readily available at, for instance, the National Institutes of Health. But, the NHTSA program has been developed without significant clinical or scientific input from those components of the federal government directly involved in understanding heart disease and the potential that appropriate local management or, and training for, out-of-hospital arrest can have on mortality and disability from heart disease.

AHA (March 1997)

Removing barriers to care - In addition, legislative interventions can substantially affect the delivery of pre-hospital care, resulting in increased survival rates. The value of an unbroken *Chain of Survival* has been highlighted in cities such as Seattle, WA and Rochester, Minnesota, where early access to EMS, early CPR, early defibrillation and early advanced cardiac life support have dramatically increased survival rates. Unfortunately, the broad range of state statutes has resulted in pre-hospital care which suffers from state-by-state variation, condemning the public to inconsistent care. A 1995 poll of state EMS directors, published in the Journal of Emergency Medical Services (JEMS), identified lack of enabling legislation (34%) as a prime obstacle to implementation of early defibrillation programs. According to new data published in JEMS (January 1997), non-EMT first responders are legally permitted to use AEDs in only half the states, and less than one half of EMTs and less than one quarter of non-EMT first responders in the U.S. are trained and equipped to defibrillate. As for basic life support, more than half of the states in a recent study reported having no secondary school curriculum requirements for first aid and CPR. If a national standard were developed by the federal government, states would likely be more receptive to changes.

Summary of provisions

The bill directs the National Heart, Lung, and Blood Institute (NHLBI), in cooperation with NHTSA, to develop and disseminate a model state training program for first responders and bystanders in lifesaving interventions, including CPR, and directs the development of model state legislation to ensure access to emergency medical services, including: consideration of the necessary training in, placement of, and good samaritan protection for the use of life-saving equipment for those choosing to intervene in out-of-hospital arrest. Finally, NHLBI is called upon to develop a national database for reporting and collecting data on the incidence of cardiac arrest and to evaluate the effectiveness of bystander and first responder lifesaving interventions.

ANSWERS TO FREQUENTLY ASKED QUESTIONS ABOUT THE CARDIAC ARREST SURVIVAL ACT

Question

Is there support for the proposal?

Answer

Support for the Cardiac Arrest Survival Act in the 104th Congress was broad. A diverse cross-section of national health and safety groups endorsed the proposal, including the American Heart Association, American Red Cross, American Association for Respiratory Care, American Association of Critical Care Nurses, American College of Cardiology, American Nurses Association, Citizen CPR Foundation, Emergency Nurses Association, North American Society of Pacing and Electrophysiology, National Safety Council, Save a Life Foundation, Society for Academic Emergency Medicine, and The Institute of Critical Care Medicine.

Question

How important is rapid access to basic and advanced cardiac life support?

Answer

A recent study found that if CPR is initiated in less than four minutes, and advanced cardiac life support in less than eight minutes, then the survival rate of the cardiac arrest patient is 43%. When CPR is initiated in less than four minutes but advanced cardiac life support is not initiated for 16 minutes, the rate of survival for the patient drops precipitously to 10 percent.

Question

What is the "Chain of Survival"?

Answer

More people can survive sudden cardiac arrest when a particular sequence of events occurs as rapidly as possible: 1) recognition of early warning signs, 2) activation of the emergency medical system, 3) basic cardiopulmonary resuscitation (CPR), 4) defibrillation, and 5) advanced cardiac life support. The American Heart Association has embraced the phrase "Chain of Survival" to communicate this concept in a useful way. This legislation makes a concerted effort to remove the barriers to the Chain of Survival in order to increase the likelihood of people surviving sudden cardiac arrest.

Question

Is the Chain of Survival effective?

Answer

In Houston, 40% of patients with ventricular fibrillation/ventricular tachycardia were discharged from the hospital if they had received bystander CPR, versus 19% for patients not given bystander CPR. Some communities have widely deployed AEDs (Richmond, Seattle, Bay Area). In such places survival rates run as high as 30 percent. In other large cities, such as Chicago and New York, rates run as low as 1-2 percent. Up to 100,000 lives could be saved annually through removal of barriers to the chain of survival.

Question

Haven't most states implemented the links in the Chain of Survival?

Answer

According to a 1995 survey, 31% of the population and 65% of the land area in the U.S. is not covered by the 911 system; only 14 states offer CPR training as part of their secondary school curricula; and only 22 states allow first responders to use an automatic external defibrillator. We have a long way to go!

Question

Isn't this just another burdensome federal mandate to the states?

Answer

The bill simply directs the National Heart, Lung, and Blood Institute to develop and disseminate a model state training program for first responders and bystanders in lifesaving first aid, including CPR, and directs the development of model state legislation to ensure access to emergency medical services, including consideration of mandatory location and placement of life-saving equipment and requirements for training in the core content and use of life-saving equipment for first responders.

Question

What is an example of life-saving equipment?

Answer

Automated external defibrillators. The vast majority of sudden cardiac arrests are due to an electrical malfunction of the heart called ventricular fibrillation (VF). In VF, the heart's electrical signals, which normally induce a coordinated heartbeat, suddenly become chaotic, and the heart's function as a pump abruptly ceases. Consciousness is quickly lost and unless this condition is reversed, death follows within a matter of minutes. The only effective treatment for this condition is defibrillation, the delivery of a powerful electrical shock to the heart. Defibrillation -- which can be compared to rebooting a 'frozen' computer -- eliminated VF and allows a coordinated rhythm to resume.

Question

Isn't this issue more properly addressed at the state level. Aren't we ignoring what the public asked for during the 104th Congress when they voted for less federal bureaucracy?

Answer

Pre-hospital medical care (training, equipment, standards of care) suffers from state-by-state variation which condemns the public to inconsistent care. A 1995 poll of state EMS directors identified obstacles to implementation of early defibrillation programs. Among the major obstacles identified was a lack of enabling legislation (34%). If a national standard were developed by DHHS, states would likely be more receptive to changes.

Development and dissemination of a core content for a recommended model state training program for first responders and bystanders in lifesaving first aid, including cardiopulmonary resuscitation (CPR), throughout the U.S., in a standardized fashion using current science, would be an efficient use of government resources.

(AHA - 12/96)

Question

With Congress moving to cut federal appropriations, won't additional funds be scarce for implementing this legislation?

Answer

Existing resources at DHHS can be used if the leadership mission were assigned, because industry, academia, and the medical community would all be available to contribute to the development of the legislation's recommendations.

Question

Aren't all ambulances already equipped with defibrillators?

Answer

AEDs are designed for trained basic life support (BLS) personnel. Currently, only 25 percent of BLS responders have defibrillators. First responders include fire rescue, police, BLS, flight attendants, or security personnel with a minimum of four hours AED training.

Question

Even if first responders are authorized to use AEDs, won't the costs be prohibitive?

Answer

The expense and time involved in equipping emergency vehicles with AEDs and training all first responders how to use them is minimal in proportion to the number of lives that can be saved. A Tucson, Arizona study showed the cost per year of life saved for care of sudden cardiac arrest by paramedics to be \$8,000. The actual cost of some AEDs is now under \$3,000 and training in its use takes less than four hours per person.

1 **CARDIAC ARREST SURVIVAL ACT**
2 **105th Congress**

3
4
5 **SECTION 1. SHORT TITLE**

6 This Act may be cited as the "Cardiac Arrest Survival Act".

7 **SEC. 2. FINDINGS**

8 The Congress finds as follows:

9 (1) Each year more than 350,000 adults suffer cardiac arrest, usually away
10 from a hospital. More than 95% of them will die, in many cases because
11 lifesaving defibrillators arrive on the scene too late, if at all.

12 (2) These cardiac arrest deaths occur primarily from occult underlying heart
13 disease and from drownings, allergic or sensitivity reactions, electrical shocks, or
14 motor vehicle injuries.

15 (3) Survival from cardiac arrest requires successful early implementation of
16 a chain of events--the chain of survival--from the scene of the arrest to the
17 hospital.

18 (4) A successful chain of survival requires the first person on the scene to
19 take rapid and simple initial steps that will then lead to entry into the medical care
20 system.

21 (5) The first persons on the scene when an arrest occurs are typically lay
22 persons who are friends or family of the victim, firefighters, law enforcement
23 officers, teachers, coaches and supervisors of sports or other extracurricular
24 activities, providers of day-care, school-bus drivers, lifeguards, attendants at
25 public gatherings, co-workers and other leaders within the community.

26 (6) A federal response to this epidemic is needed -- the development of a
27 simple, short, convenient training program.

(7) The training program should be easily learned and easily retained and it should be nationally uniform.

**Sec. 3 NATIONAL INSTITUTE OF HEALTH MODEL PROGRAM ON THE
FIRST LINKS IN THE CHAIN OF SURVIVAL**

Section 421(a)(1) of the Public Health Service Act (42 U.S.C. 285b-3(a)(1)) is amended by striking (E) and inserting in lieu thereof:

"(E) establishment of programs for the conduct and direction of field studies, large-scale testing and evaluation, and demonstration of preventive, diagnostic, therapeutic, and rehabilitative approaches to, and emergency medical services for, such diseases, **which shall include:**

"(i) development and dissemination, in coordination with the emergency services guidelines promulgated under Title 23, U.S. Code, § 402(a), by the Associate Administrator for Traffic Safety Programs, Department of Transportation, of a core content for a recommended model state training program for both first responders and bystanders in life saving interventions, including cardiopulmonary resuscitation;

(ii) the core content of such program shall include age-specific criteria for the use of particular techniques which shall include infants and children;

(iii) the core content of such program should be re-evaluated as additional interventions are shown to be effective;

(iv) operation of a demonstration project to provide training in such core content for first responders and bystanders;

"(v) definition and identification of both first responders and bystanders, by personal relationship, exposure to arrest or trauma, occupation (including health professionals), or otherwise, who could

1 provide benefit to victims of out-of-hospital arrest by comprehension
2 of a core content;

3 "(vi) establishment of criteria for completion and
4 comprehension of core content, including consideration of inclusion
5 in health and safety educational curricula;

6 "(vii) identification and development of equipment and supplies
7 that should be accessible to bystanders and first responders to
8 permit life-saving interventions by pre-placement of such equipment
9 in appropriate locations;

10 "(viii) development of model state legislation (or federal
11 legislation applicable to federal territories, facilities, and employees),
12 in cooperation with the Department of Justice, to ensure: (a) access to
13 emergency medical services through consideration of a requirement
14 for public placement of life-saving equipment and/or consideration of
15 requirements for training in the core content and use of lifesaving
16 equipment for State licensure or credentialing of health professionals
17 or other licensed occupations or employment of other individuals who
18 may be defined as first responders under clause (iv); and, (b) good
19 samaritan immunity for: (1) bystanders; (2) first responders; (3) those
20 involved with the instruction of the training programs; and, (4) owners
21 and managers of property where equipment is placed.

22 "(ix) development of a national database for reporting and
23 collecting information relating to the incidence of cardiac arrest, the
24 circumstances surrounding such arrests, the rate of survival, the
25 effect of age, and whether interventions, including bystander or first

1 responder interventions, or other aspects of the chain of survival,
2 improve the rate of survival;

3 (x) publication of a biennial public report summarizing progress
4 in life saving first aid;

5 **SEC. 4 COMMISSION ON CARDIAC ARREST SURVIVAL**

6 a) **ESTABLISHMENT** - There shall be established as an
7 independent agency within the executive branch a commission to be
8 known as the Commission on Cardiac Arrest Survival (hereinafter in
9 this section referred to as the "Commission").

10 **b) MEMBERSHIP**

11 1) **COMPOSITION** - The Commission shall be composed of 15
12 members who shall be appointed by the President.

13 2) **EXPERTISE REQUIREMENTS** - The members of the
14 Commission shall consist of individuals with expertise and
15 experience in one or several of the following areas: emergency
16 medical care, cardiology, state and local emergency medical services,
17 delivery of state health services, public safety, trauma, public
18 buildings or governmental facilities management, epidemiology, life-
19 saving equipment design and manufacture, development of model
20 state legislation, human factors engineering, and professional and
21 public education. At least three of the members shall be qualified by
22 scientific training and experience to evaluate the design or conduct
23 of, and data derived from, clinical and educational research, in the
24 risks and benefits of resuscitative modalities. Ex officio liaison to the
25 commission shall be provided by the Department of Health and
26 Human Services (National Institutes of Health), Department of

1 Education, Department of Transportation (National Highway Traffic
2 Safety Administration), General Services Administration, Department
3 of Defense and Department of Justice.

4 c) FUNCTION OF THE COMMISSION - The Commission shall, in
5 consultation with the National Heart Lung and Blood Institute,
6 evaluate and provide recommendations on effective methods to
7 increase survival from cardiac arrest. Such recommendations may
8 include recommendations on implementation of this Act, further
9 studies on emergency medical systems or other modalities for early
10 intervention in the chain of survival, or further legislation to improve
11 access to cardiac arrest survival modalities.

12 d) REPORTS AND RECOMMENDATIONS - Not later than 18
13 months after the date of enactment of this Act, or during the interim
14 when the Commission believes necessary, the Commission shall
15 prepare and submit to the President and to the Congress a final
16 report.

17 e) ADMINISTRATIVE POWERS OF THE COMMISSION - The
18 commission may hold hearings, set and act at such time and places,
19 take such testimony, receive such evidence as the Commission
20 considers advisable to carry out the purpose of this section. The
21 Commission may secure directly from any federal department or
22 agency such information as the commission considers necessary to
23 carry out the provisions of this section.

24 f) AUTHORIZATION OF APPROPRIATIONS - There are
25 authorized to be appropriated such sums as may be necessary to
26 carry out the provisions of this section.

Clinton Presidential Records Digital Records Marker

This is not a presidential record. This is used as an administrative marker by the William J. Clinton Presidential Library Staff.

This marker identifies the place of a publication.

Publications have not been scanned in their entirety for the purpose of digitization. To see the full publication please search online or visit the Clinton Presidential Library's Research Room.

Special Report

American Heart Association Report on the Public Access Defibrillation Conference December 8-10, 1994

Myron L. Weisfeldt, MD (Chairman); Richard E. Kerber, MD; R. Pat McGoldrick;
Arthur J. Moss, MD; Graham Nichol, MD; Joseph P. Ornato, MD; David G. Palmer, Esq;
Barbara Riegel, DNSc; Sidney C. Smith Jr, MD;
for the Automatic External Defibrillation Task Force

During the past 20 years, morbidity and mortality rates for nearly all types of cardiovascular disease have declined. Progress in these areas is in stark contrast to that for sudden cardiac death, which continues unabated at a rate of approximately 1000 times per day in the United States, with little decline in incidence or improved outcome. Clearly, the problem of sudden cardiac death is best approached through prevention, but horizons in that area seem no more promising and in some respects less promising and substantially more costly than 2 decades ago.

The means necessary for successful resuscitation of a patient in cardiac arrest were known by the early 1960s. Externally performed cardiopulmonary resuscitation (CPR) could maintain an "oxygen plateau" and delay permanent brain damage long enough to allow external defibrillation using direct current (DC). The possibility of long-term survival was increasingly recognized, as early anecdotal experiences accumulated into published series.¹⁻³

Given the hindsight of 3 decades, the obstacles to be overcome before significant progress could be made in out-of-hospital resuscitation were formidable. First, cardiac arrest was perceived as an event that typically occurred in the hospital. In-hospital cardiac arrests are now recognized to represent only a small proportion of sudden deaths based in the community. Second, the CPR technique was known to only a limited number of hospital-based physicians. CPR is no longer restricted to hospitals or physicians; it is routinely taught to the lay public. Third, only line-powered, bulky, and awkward defibrillators were available. The first out-of-hospital defibrillation device weighed 110 lb. Contemporary external defibrillators are available that weigh less than 10 lb.

An AHA medical/scientific statement related to this topic is printed on page 2763 of this issue of *Circulation*.

This report was approved by the American Heart Association Board of Directors in June 1995.

Requests for reprints should be sent to the American Heart Association, Emergency Cardiac Care Department, 7272 Greenville Avenue, Dallas, TX 75231-4596.

(*Circulation*. 1995;92:2740-2747.)

© 1995 American Heart Association, Inc.

History of the Automatic External Defibrillation Task Force

The present report details progress made in achieving the goal of facilitating out-of-hospital resuscitation and specifies those areas in which further headway is needed. This effort began in 1990 with an American Heart Association (AHA) task force on the future of CPR, under the leadership of Dr Leonard Cobb.⁴ That task force considered the possibility of implementing an enhanced defibrillation strategy and challenged the medical manufacturing industry to produce automatic external defibrillators (AEDs) that were small, lightweight, easy to use, durable, maintenance free, and voice prompted. The task force called for an inexpensive, mass-marketed device that potentially could be implemented at a variety of sites within the community. By 1993, it was clear that the medical manufacturing industry would respond quickly to the AHA's challenge. Thus, the AHA Board of Directors appointed the Automatic External Defibrillation Task Force, with responsibility for planning a national conference on public access defibrillation; evaluating the research needed to establish the feasibility of a safe, reliable, and effective AED for broad community use; and determining the role of the AHA in the effort to bring defibrillation more rapidly to any individual facing sudden death.

The conference, titled "Public Access Defibrillation: A New Strategy to Prevent Sudden Death," was convened December 8 through 10, 1994, in Washington, DC. This conference attracted some 300 participants, with extensive representation from leaders within the scientific, industrial, medical, nursing, public health, and engineering communities; US federal government agencies (eg, the Food and Drug Administration [FDA] and the National Heart, Lung, and Blood Institute [NHLBI]); and the lay and professional press. The remainder of this report outlines the content of the sessions and the interactive workshops that constituted the formal program and the recommendations of the conference participants.

Current State of Emergency Medical Services

In cardiac arrest, virtually all survivors are experiencing ventricular fibrillation (VF) when paramedics or

*Your contributions to the
American Heart Association
will support research that
helps make publications like
this possible.*

*For more information,
contact your local American
Heart Association or call
1-800-AHA-USA1
(1-800-242-8721).*



National Center
7272 Greenville Avenue
Dallas, TX 75231-4596

AHA Medical/Scientific Statement

Task Force Report

Public Access Defibrillation

A Statement for Healthcare Professionals From the American Heart Association Task Force on Automatic External Defibrillation

Myron L. Weisfeldt, MD; Chairman; Richard E. Kerber, MD; R. Pat McGoldrick;
Arthur J. Moss, MD; Graham Nichol, MD; Joseph P. Ornato, MD; David G. Palmer, Esq;
Barbara Riegel, DNSc; and Sidney C. Smith, Jr, MD

In October 1993 the American Heart Association appointed the Task Force on Automatic External Defibrillation. The task force was charged with conducting a conference on automatic external defibrillation, evaluating research needed for broader community use of automatic external defibrillators, and overseeing evaluation of the feasibility and desirability of their use by healthcare professionals and the lay public.

In December 1994 a conference on public access defibrillation was held in Washington, DC. More than 300 persons attended, representing science, industry, the healthcare professions, law, and the federal government. During the meeting the participants reached a consensus on the general proposition of greater public access to defibrillation and the need for broad-based clinical research, public and professional education, and legislative reform. Following the conference, members of the task force, with input from others in the field of emergency cardiac care, wrote this statement, which was approved by the AHA Board of Directors in June 1995.

Early bystander cardiopulmonary resuscitation (CPR) and rapid defibrillation are the two major contributors to survival of adult victims of sudden cardiac arrest. The AHA supports efforts to provide prompt defibrillation to victims of cardiac arrest. Automatic external defibrillation is one of the most promising methods for achieving rapid defibrillation. In public access defibrillation, the technology of defibrillation and training in its use are accessible to the community. The AHA believes that this is the next step in strengthening the chain of survival. Public access defibrillation will involve considerable

societal change and will succeed only through the strong efforts of the AHA and others with a commitment to improving emergency cardiac care.

Public access defibrillation will include

- Performance of defibrillation by laypersons at home and by firefighters, police, security personnel, and non-physician care providers in the community
- Exploration of the use of bystander-initiated automatic external defibrillation in rural communities and congested urban areas where resuscitation strategies have had little success

The AHA can also play a major role by

- Increasing public awareness that defibrillation improves the rate of survival from an often fatal condition that each day affects 1000 Americans
- Ensuring that objective, current research data are used to guide implementation of these changes in performance and teaching of CPR
- Working with medical manufacturers, legislators, and governmental agencies to promote safety and efficacy, reduce cost, and update training requirements to facilitate implementation of public access defibrillation. Broader use of automatic external defibrillators should also lead to readiness tests and features that deter both misuse and misapplication.

Meaningful change will occur only with the broad public support that has traditionally characterized the AHA's efforts in the fight against heart disease and stroke.

Acknowledgments

The Public Access Defibrillation Conference was made possible by the financial support of the National Heart, Lung, and Blood Institute; the American College of Cardiology; the American Red Cross; the American Medical Association; the AHA Councils on Clinical Cardiology, Cardiovascular Nursing, Cardiopulmonary and Critical Care, and Cardiovascular Disease in the Young; the Citizens CPR Foundation; and the North American Society of Pacing and Electrophysiology.

A related report is printed in this issue of *Circulation*, beginning on page 2740.

"Public Access Defibrillation" was approved by the American Heart Association Board of Directors in June 1995.

Requests for reprints should be sent to the American Heart Association, Emergency Cardiac Care Department, 7272 Greenville Avenue, Dallas, TX 75231-4596.

(*Circulation*, 1995;92:2763.)

© 1995 American Heart Association, Inc.

KEY WORDS • defibrillation • cardiopulmonary resuscitation • AHA Medical/Scientific Statements

Clinton Presidential Records Digital Records Marker

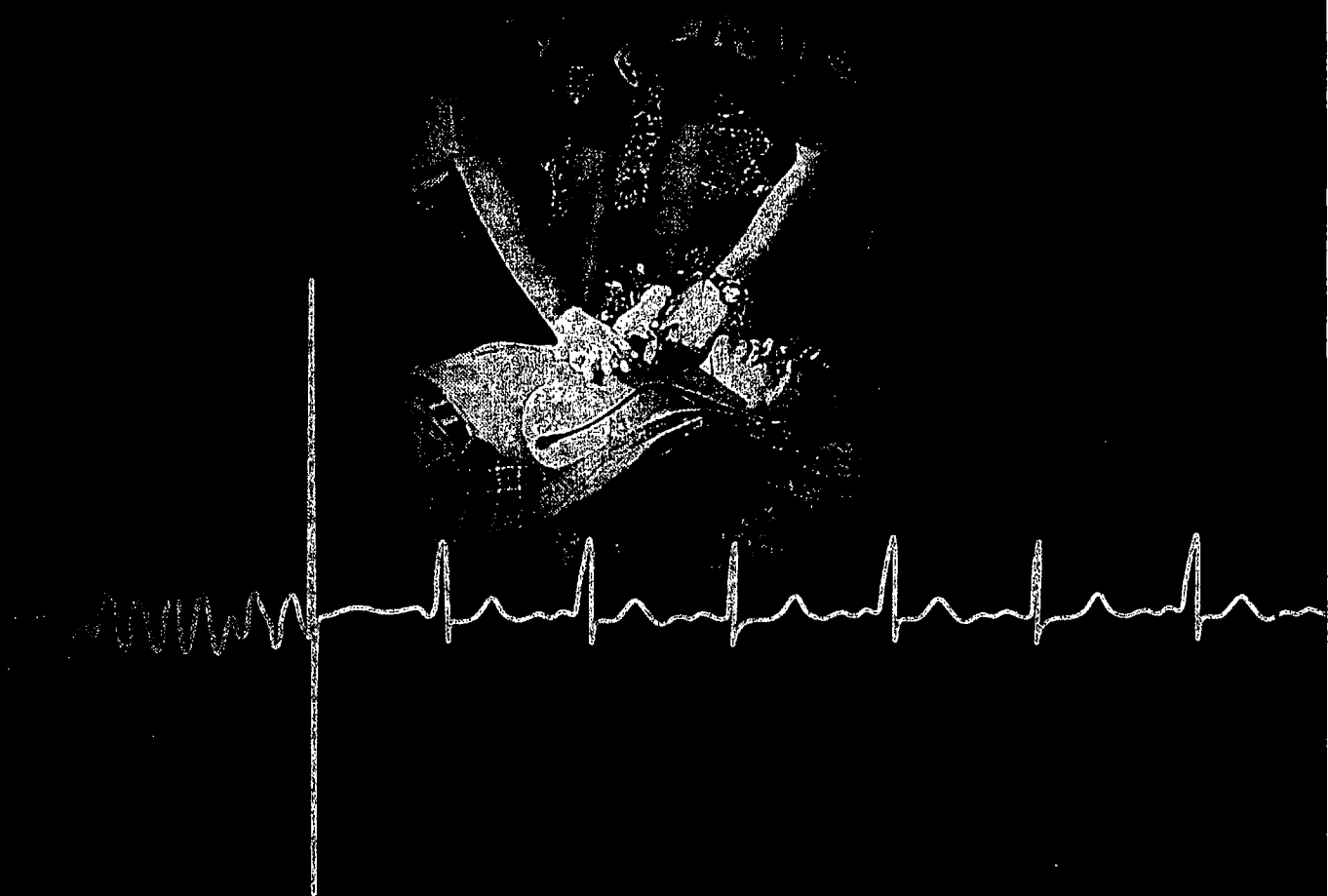
This is not a presidential record. This is used as an administrative marker by the William J. Clinton Presidential Library Staff.

This marker identifies the place of a publication.

Publications have not been scanned in their entirety for the purpose of digitization. To see the full publication please search online or visit the Clinton Presidential Library's Research Room.

the Critical Moment

When resuscitation depends
on rapid defibrillation



A JEMS/JHEMONTERSSM Supplement on Early Defibrillation

Clinton Presidential Records Digital Records Marker

This is not a presidential record. This is used as an administrative marker by the William J. Clinton Presidential Library Staff.

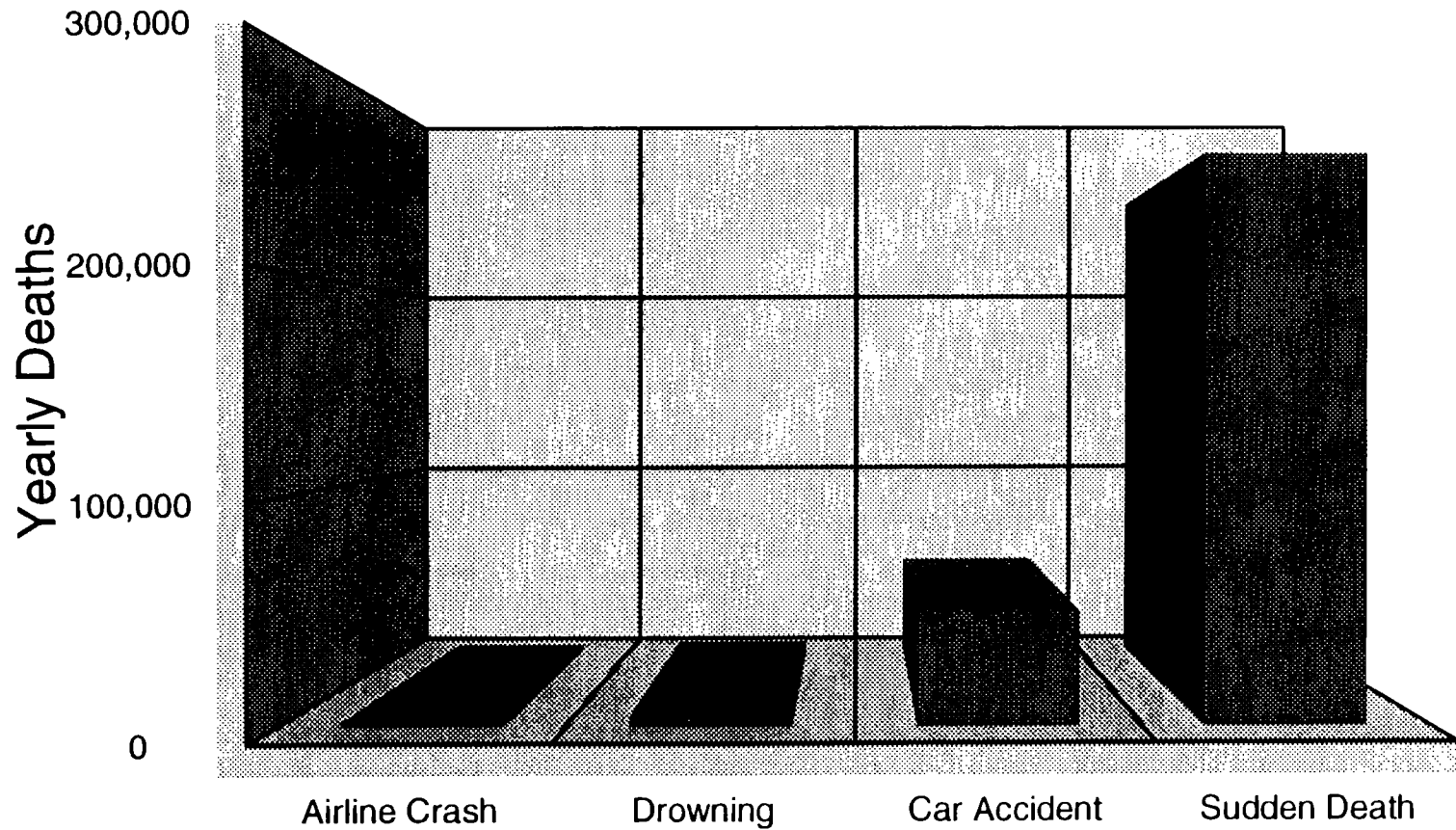
This marker identifies the place of a publication.

Publications have not been scanned in their entirety for the purpose of digitization. To see the full publication please search online or visit the Clinton Presidential Library's Research Room.

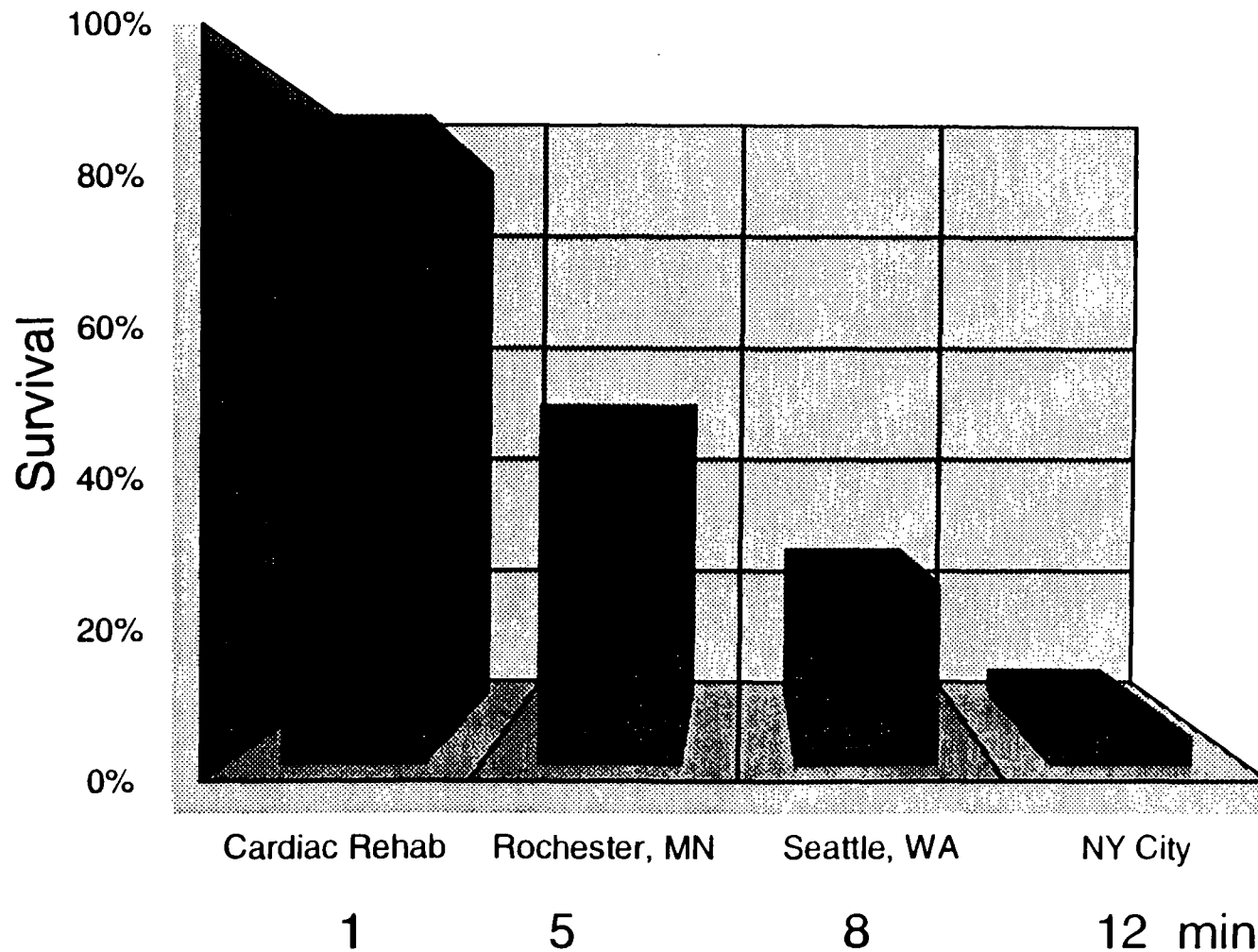
Sudden Cardiac Arrest

A Treatable Public Health Crisis

Magnitude of the Problem



Early Defibrillation is Effective Time Dependent Treatment



CARDIAC ARREST FROM VENTRICULAR FIBRILLATION

**Survival Rate as
Related to Promptness of Initiation of
CPR and ACLS***

Initiation of CPR, minutes	Arrival of ACLS, minutes	Survival Rate, %
<4	<8	43
<4	16	10
8-12	<16	6
8-12	>16	0
12	>12	0

***Data from Seattle Heart Watch**

Rapid defibrillation is essential for survival of cardiac arrest

TABLE 1. *Before and after studies of EMT-defibrillation*

Location	Before (No Defibrillation)	After (EMT-Defibrillation)	Odds Ratio for Improved Survival
Conventional Manual Defibrillators			
King County ¹²	7% (4/56)	26% (10/38)	3.7
Iowa ¹³	3% (1/31)	19% (12/64)	6.3
NE Minnesota ²⁴	2% (3/118)	10% (8/81)	5.0
Wisconsin ²⁵	4% (32/893)	11% (33/304)	3.3
Automated External Defibrillators			
SE Minnesota ⁴	4% (1/27)	17% (6/36)	4.3

Percentages indicate survival of patients in ventricular fibrillation.

The New York Times

WEDNESDAY, MARCH 2, 1994

When New Yorkers' Hearts Stop, Only a Few Live

By ELISABETH ROSENTHAL

Special to The New York Times

NEW YORK, March 1 — People who suffer cardiac arrest in New York City have only a 1 in 100 chance of survival, a much lower rate than in several smaller cities and rural areas that have been studied, new research shows.

The researchers, who studied 2,329 consecutive cardiac arrests in New York City during a six-month period in 1991, attributed the poor survival rates to factors that are common to large cities and that delay the care of such patients, whose hearts have stopped pumping.

For example, largely because of

traffic problems and the logistics of finding victims in large buildings, urban victims wait longer for trained emergency personnel to deliver advanced care, which usually consists of an electrical shock to jolt the heart back into a normal rhythm. In addition, New Yorkers are less likely to know cardio-pulmonary resuscitation than people in many smaller cities, so victims are less likely to receive C.P.R. from bystanders quickly or at all, the researchers found.

The researchers found that the median time from patient collapse to the first electrical shock was more than 12 minutes in New York, compared with 8 to 10 minutes in suburban Seattle, an

area known for its superb emergency care, where the chances of surviving cardiac arrest are 1 in 5.

"Tall buildings and the dense population prevent emergency crews from getting to victims fast," said Dr. Paul Gennis, one of the emergency medicine doctors from the Bronx Municipal Hospital Center who conducted the new study.

Cardiac arrest, also known as sudden death, occurs when the heart stops pumping effectively, generally due to an abnormal rhythm — which is sometimes precipitated by a heart attack. Through C.P.R., which consists of

Continued on Page B12, Column 1

When New Yorkers' Hearts Stop, the Chances of Survival Are Slim, a Report Finds

Continued From Page 1

mouth-to-mouth resuscitation and chest compressions, bystanders can artificially propel blood to vital organs until a normal rhythm is restored. This is generally accomplished through electrical shocks or drugs.

Patients in cardiac arrest must receive C.P.R. within four minutes and electrical shock within eight minutes to survive, prior studies have shown. Only 3 percent of cardiac arrest victims in the New York study, which appears in Wednesday's issue of *The Journal of the American Medical Association*, received such care.

There is little data about response times in other cities, although one prior study of Chicago showed delays and survival rates similar to those in New York. In contrast, smaller cities and rural areas of the country, like parts of Iowa, Minnesota and Arizona, have been found to have much higher survival rates.

The authors of the new study cautioned that part of the difference might be because of the peculiar health problems of urban residents. But they also pointed out that police officers and firefighters in many smaller cities, unlike those in New York, can administer the electrical shocks needed to save lives.

E.M.S. as a Factor

This is the first large-scale study aimed at assessing the quality of emergency medical care for cardiac victims in New York City and the most comprehensive study to date of such care in any major urban area. It comes at a time when Mayor Rudolph W. Giuliani has announced plans to fold New York City's Emergency Medical Service into the Fire Department, in part because of what he considers the E.M.S.'s poor service.

At a news conference held by the American Heart Association, which financed the study, the authors of the research praised the E.M.S., but suggested that in a city like New York its best efforts were not good enough.

"It is probably not possible for ambulance services themselves to get through city traffic in time to save people's lives," said Dr. John Gallagher, Director of Emergency Medicine at Bronx Municipal Hospital Center.

Dr. Gallagher and his colleagues concluded that the only hope for improving survival was for more New Yorkers to learn C.P.R. and for both firefighters and police officers to be trained to deliver electrical shocks. He estimated that hundreds of lives could be saved if there was a defibrillator, the machine which delivers the shocks, in every firehouse and squad car, since these professionals often reach cardiac patients ahead of the E.M.S. personnel.

"This is a wonderful study that

shows you that time is the critical thing and to have any impact on survival it just has to be shortened," said Dr. Mark Henry, chairman of the Department of Emergency Medicine at University Hospital in Stony Brook, N.Y.

Trimming Time a Challenge

He endorsed equipping all police officers and firefighters to perform cardiac resuscitations, noting that in Suffolk County, where the police arrive first at more than half of all cardiac arrests, police academy graduates are now taught the skill and some squad cars are carrying defibrillators as part of a pilot project.

But he said that in cities like New York trimming minutes was a challenge. "With traffic, it may take the ambulance two minutes longer to arrive on the scene, and then you have to find the patient up 40 stories in an elevator or in the middle of Penn Station," he said.

What is more, he said, some of the delays documented in the study are not controlled by E.M.S., like the average two-minute delay between the moment a person collapses and the first call to the police. "It may well be that in the city we have our force fields up," he said. "That we have to stop walking over bodies in the train station and stop to find out if someone is just sleeping or in trouble."

Mr. Giuliani is considering training for firefighters to perform the initial resuscitation of victims, including administering electrical shocks.

"The Mayor is aware of this and other studies in terms of it being crucial for E.M.S. to get to the scene early in cardiac arrests, and that is what prompted him to explore idea of another level of responder," said Karen Crowe, a spokeswoman for Mr. Giuliani.

But Dr. Lorraine Giordano, medical director of the city's Emergency Medical Service, said that politicians and the public have focused too much on ambulance response times and not enough on what every citizen could do to improve the city's survival rate.

"You can't improve E.M.S. response time without doing something about traffic congestion and whether that's possible I don't know," she said. "So I think we have to look elsewhere to improve the chain of survival: The presence of good bystanders. C.P.R., of citizens who know how to activate the 911 system and who recognize the signs of cardiac arrest are as critical as the response time of E.M.S."

Less than 10 percent of the patients in the new study received C.P.R. from bystanders within four minutes, and 68

percent received none at all, even though 70 percent of the incidents occurred in the home. The patients waited a median of 11.4 minutes until emergency personnel arrived and 12.4 minutes until they received an electrical shock.

"A lengthy interval between collapse and definitive care predicts a poor outcome," said Dr. Gary Lombardi, another of the study's authors. "Unless E.M.S. is accessed and bystander C.P.R. is initiated and defibrillation readily available any community's survival will be low."

Less than 10 percent of people in New York City know C.P.R., compared with more than two-thirds in Seattle.

"We have to strengthen every link in the chain of survival," said Dr. Joseph Hayes, president of the American Heart Association, New York Affiliate. "Why, New Yorkers do not even do C.P.R. in their own homes."

WEDNESDAY, MARCH 30, 1994

So Many Die Needlessly: Broken Cardiac Rescue Chain

By JANE E. BRODY

Throughout the United States, and especially in big cities and rural areas, tens of thousands of people with hearts that should be good enough to keep them alive die each year for lack of adequate first aid. In New York City, for example, a new study has shown that only one person in 100 outside of hospitals survives after the heart suddenly stops pumping. In contrast, in Seattle the survival rate after such cardiac arrests is 1 in 5.

The difference can be traced to the effectiveness of what the American Heart Association calls the "chain of survival." Dr. Joseph P. Ornato of the Medical College of Virginia, who heads the association's committee on emergency cardiac care, said "each link in the chain must be strong" for many lives to be saved.

The chain begins with an immediate telephone call for emergency help and the start within four minutes of cardiopulmonary resuscitation, known as CPR, by a family member or bystander. It continues with the prompt arrival — within 8 to 10 minutes — of a rescuer equipped with a defibrillator that can jolt the heart back to a normal rhythm. And it ends with the administration of advanced emergency care by paramedics to maintain the heart's viability until doctors at the hospital can take over.

When one or more links in this chain fail or function too slowly, the chances that a victim of cardiac arrest will survive plummet. Because of widespread weaknesses in the chain of survival, experts in emergency cardiac care estimate that 20,000 to 80,000 people die needlessly of cardiac arrest each year, a number comparable to the 55,000 killed annually in automobile accidents.

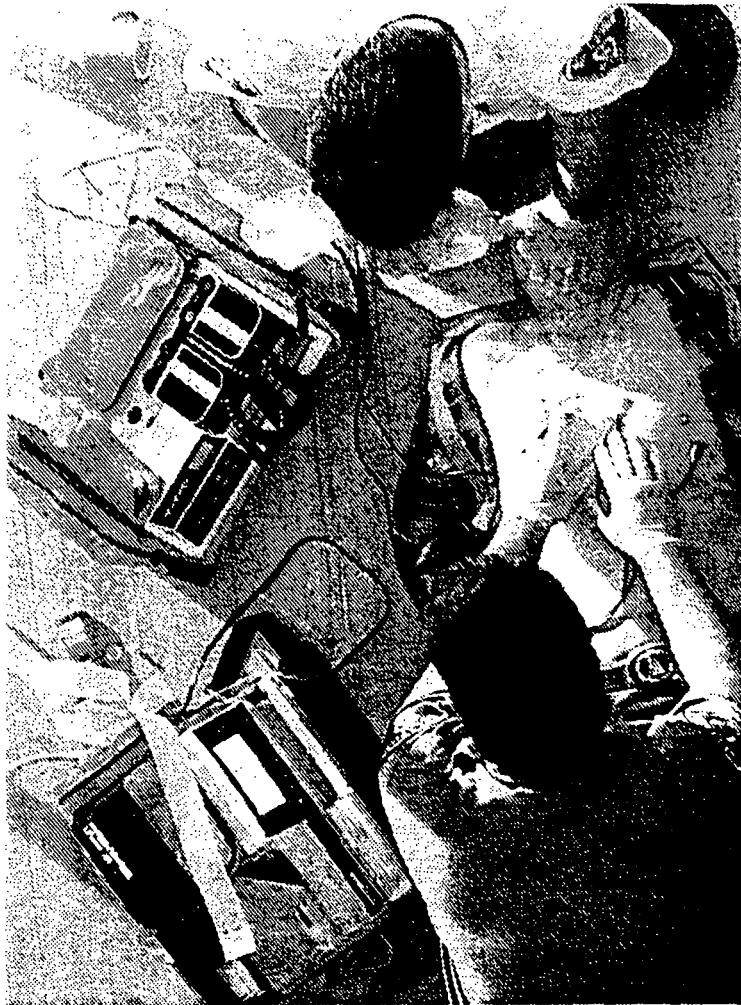
When 911 Isn't Enough

The New York study revealed that in a large city choked by traffic and crippled by anonymity and ignorance, very few people have a chance of surviving a cardiac arrest that occurs outside a hospital.

To be sure, New York and most other large cities have a 911 emergency number known to nearly everyone. But Dr. Ornato said that in half the area of the country, containing 25 percent of its population, residents must call a seven-digit number that varies from area to area, which can result in a life-robbing delay of several minutes.

Since 1973, when the heart association first recommended that CPR be taught to the general public, about 60,000 Americans have completed such training programs. But many have forgotten what they learned and many others are reluctant to apply their training for fear of making a mistake or contracting an incurable illness like AIDS or hepatitis from the unconscious person.

In New York and in many other



Physio-Control Corporation

Automatic external defibrillators, like the one being demonstrated on the dummy, can read heart rhythms, decide if a shock is needed and sometimes administer it automatically.

large cities, fewer than 10 percent of the people know how to do CPR. And, not surprisingly, in the New York study, fewer than 10 percent of the 2,329 victims of cardiac arrest received CPR soon enough and two-thirds received no CPR at all after their hearts abruptly stopped supplying the rest of their bodies with oxygen-rich blood. The brain starts to die unless circulation of oxygen-containing blood is restored within four minutes of a cardiac arrest.

Crucial Role of Defibrillators

In most cases of cardiac arrest caused by a heart attack, the heart's rhythm goes haywire and instead of strong rhythmic contractions that can push blood out into the general circulation, the pumping chambers flutter uselessly, a condition known as ventricular fibrillation. Thus, the next link in the chain of survival involves the use of the defibrillator to restore a more normal rhythm.

Such a defibrillator should be car-

ried by any emergency vehicle that is likely to be first on the scene, whether it is an ambulance, fire engine or police car, Dr. Ornato said. Unfortunately, he said, "Currently in the United States, only about one-quarter of ambulances and only 10 to 15 percent of all fire companies that do first-response work are equipped with defibrillators."

"Sending an emergency vehicle to a cardiac arrest without a defibrillator is like having policemen with guns but no bullets," he said. "They may put on a good show but they lack the weapon needed to get the job done."

Manually operated defibrillators require a trained operator to interpret the heart's rhythm, determine if a shock is needed and then activate the right buttons. They are rapidly being replaced by automatic external defibrillators equipped with a computer chip that can read the victim's heart rhythm, decide if a shock is needed and, with some machines, then administer the shock after a

computer voice cautions everyone nearby to stand back.

"These automatic devices can be used by firefighters, police, life-guards, security officers and even by family members" after minimal training, Dr. Ornato said. They cost \$5,000 to \$10,000 each, which he said was a tiny fraction of the cost of an ambulance or fire truck. Dr. Richard O. Cummins, medical director of the King County emergency defibrillation program in Seattle, said small automatic defibrillators costing \$4,000 were now available, and a \$1,000 unit was under development.

Dr. Cummins has found in studies in Seattle that "we can increase the survival rate by 7 percent for every

From a call for help to medical care, so much can go wrong.

minute that is saved in getting the defibrillator there." He emphasized that defibrillation must begin as soon as possible, and no later than 10 to 15 minutes after the onset of ventricular fibrillation, for the patient to have any chance of surviving. Studies in Seattle have shown that a vast majority of patients who are resuscitated outside the hospital and survive are able to return to normal lives with their mental and other functions intact.

Dr. Cummins, among others, suggests that since 70 percent of cardiac arrests occur in the home, families of high-risk heart patients might consider buying an automatic defibrillator for home use and learning how to use it. He also urges that automatic defibrillators and people trained in their use be available wherever large numbers of people congregate, including sports arenas, theaters and tall office and apartment buildings, as well as in communities that have large populations of elderly people.

Widespread application of CPR and ready access to a defibrillator are all the more important in a city like New York, where it takes, on average, 11.4 minutes for an ambulance to arrive at the scene of a cardiac arrest and another minute before emergency personnel can administer the needed shock. Coupled with the average two-minute delay in calling 911 after a person collapses, the time it takes before definitive treatment is administered effectively dooms 99 percent of New Yorkers whose hearts stop suddenly.

The New York Times

MEDICAL SCIENCE

TUESDAY, DECEMBER 27, 1994

To Save More Lives, Doctors Urge Making Even Cheaper Defibrillators

By WARREN E. LEARY

WASHINGTON

Most people who go into cardiac arrest can be saved only with a quick jolt of electricity to jump-start their faltering hearts. But because ambulances with the necessary equipment generally arrive too late to have much effect, health experts are looking at ways to get the shock devices to patients more quickly, including making them available in public places so ordinary bystanders can use them.

Sudden cardiac arrest is a condition set off by abnormal electrical signals that throw off the normal beating of the heart, causing the heart's main pumping chamber, the left ventricle, to fibrillate, or go into spasmodic contractions. Given in time, an electric shock can jolt the heart and return the normal electrical signals that induce regular heartbeat to their proper rhythm.

Every minute's delay in returning the heart to its normal pattern of beating decreases the patient's chance of survival by 10 percent, experts said at a meeting held by the American Heart Association this month. This means, they said, that a person's fate is essentially decided within 10 minutes of the attack.

The only way to treat sudden cardiac arrest, which the heart association says kills about 250,000 Ameri-

If ambulances can't get there faster, then more heart-starting devices are needed.

cans each year, is to apply electric shock to the heart with a device called a defibrillator. Dr. Myron L. Weisfeldt of Columbia Presbyterian Medical Center in New York City, and other experts, said a major concern was that these devices were rarely available where and when most people suffer the attack.

Dr. Weisfeldt said it was possible to develop defibrillators that were much cheaper than current models and easier to use and maintain. This would allow putting the devices in all police and rescue vehicles as well as in ambulances. Eventually, experts at the meeting said, they could be placed in office buildings, shopping malls and transportation terminals. These devices could ultimately become so automated, they said, that just picking one up would prompt it to telephone for an ambulance and would connect the user to emergency personnel who could offer advice while help was on the way.

The portable defibrillators used today, which typically cost \$6,000 to \$8,000 each, are the size of portable

typewriters and typically weigh up to 20 pounds. Powered by rechargeable batteries, they automatically sense irregular heart rhythm, determine if a shock is warranted and signal the operator to fire a charge.

At the conference, doctors and scientists joined manufacturers of medical devices, legal experts, venture capitalists and others to develop plans for making cheaper, easier-to-use defibrillators.

Dr. Weisfeldt noted that in most large cities, and in rural areas, emergency vehicles equipped with defibrillators usually took more than 10 minutes to reach stricken people. In New York City, for example, it takes emergency vehicles an average of 12 minutes to respond to a call and the survival rate for sudden cardiac arrest is less than 2 percent. In Seattle, where the average time to defibrillation is 7 minutes, the survival rate is greater than 20 percent. Nationally, the survival rate is below 10 percent.

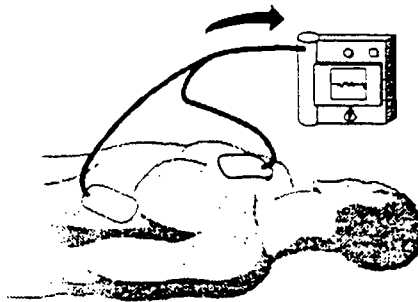
"If emergency response time can't get any better than it is now, we have to break away from the idea of putting defibrillators in ambulances only and put the devices in more places," Dr. Weisfeldt said in an interview. "This is something we can begin to do now, but to really increase access to defibrillators, we have to build more devices that cost less than they do now."

Dr. Joseph P. Ornato of the Medical College of Virginia in Richmond

A Portable Heart-Starters That Thinks for Itself

Abnormal electrical signals can throw the normal heartbeat so far off that the main pumping chamber goes into spasmodic contractions, called fibrillation, so that no blood is pumped. Now a small computerized device can decide when to jolt the heart to help restore a normal rhythm.

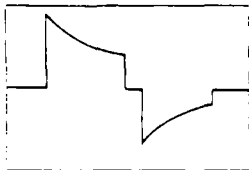
1. A miniature defibrillator can perform both diagnostic and therapeutic functions. When turned on, the device instructs the operator with both voice and text prompts



2. Once the device is attached to the victim, a computer program assesses the heart signal. The analysis is performed in less than 10 seconds.

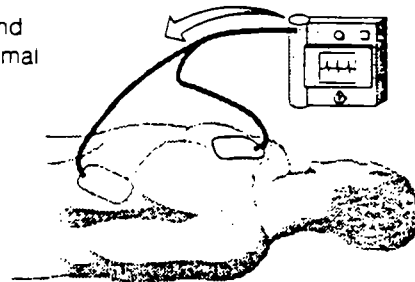
3. If the heart is in ventricular fibrillation, the device activates a shock button and instructs the operator to deliver therapy. A shock can be delivered only to a victim with life-threatening heart rhythm.

4. When the button is pushed, the device begins delivery of an electrical pulse. The polarity of the pulse is reversed at a calculated instant, resulting in a biphasic waveform (left). The pulse lasts approximately 0.012 seconds.



Shape of electrical pulse.

5. The pulse eliminates fibrillation and allows a normal rhythm to resume.



Source: Heartstream Inc.

The New York Times/Illustration by Jody Emery

said only one in three ambulances in this country carried defibrillators. Dr. Ornato and others said a first step toward saving more cardiac-arrest patients was equipping all emergency vehicles with defibrillators, including police cars and fire vehicles, which often arrive at the scene before ambulances and paramedics.

Al Weigel, a marketing director for the Laerdal Medical Corporation of Armonk, N.Y., a major manufacturer of defibrillators, said it was technically feasible to make an improved portable device within a few years that could sell for \$1,500 to \$2,000.

Alan Levy, president of Heartstream Inc., of Seattle, a company

founded in 1992 to develop a next-generation defibrillator, said new designs that reduced the amount of electrical energy needed to restore heart rhythm, coupled with advanced sensor and battery technology, could lead to the lower-cost devices that doctors say they need to improve survival from sudden cardiac arrest.

Airline To Carry Heart Device

By KATIE FAIRBANK AP Business Writer

DALLAS (AP) -- American Airlines aircraft will soon become the first U.S. carrier to fly with defibrillators -- electric shock paddles that can revive heart attack victims in the air.

The airline was expected to announce its plans Tuesday with the American Heart Association, which has been pushing to have defibrillators placed on all passenger aircraft as well as in government buildings and sports arenas.

Fort Worth-based American will receive the first of the 4-pound, \$3,000-devices in January, and get the remainder by next summer.

Australian carrier Qantas, London-based Virgin Atlantic and Air Zimbabwe already carry defibrillators, while several U.S. airlines are reviewing whether to add them.

The Federal Aviation Administration said this month it was reviewing whether defibrillators should become part of the required airline medical kit, which now contains a device to measure blood pressure, a stethoscope and medications for chest pain.

By delivering an electric shock to the heart, a defibrillator can restart a heart that has stopped or correct abnormal heart rhythms that prevent proper blood flow to the rest of the body.

"This shock stops the abnormal rhythm and allows a coordinated rhythm and normal pumping action to resume," according to heart association literature.

American plans first to install the defibrillators on jets used for longer international flights and train crew members to

use them.

The Food and Drug Administration this month approved a portable defibrillator for in-flight use made by Heartstream Inc. of Seattle. The 4-pound device, the size of a hardcover book, can be used by anyone with proper training. It costs about \$3,000 to \$4,000.

Under current American Airlines policy, a plane's captain generally asks if there is a doctor on board if a passenger has a medical emergency, and then considers making an emergency landing.

The airline made 285 emergency medical landings during 1994 and 1995.

(PROFILE (CO:AMR Corporation; TS:AMR; IG:AIR;)
(CAT:Business;) (CAT:Transportation;))

^CAP-NY-11-19-96 0839EST<

Copyright 1996 Associated Press. All rights reserved. This material may not be published, broadcast, rewritten, or redistributed.

Clinton Presidential Records Digital Records Marker

This is not a presidential record. This is used as an administrative marker by the William J. Clinton Presidential Library Staff.

This marker identifies the place of a publication.

Publications have not been scanned in their entirety for the purpose of digitization. To see the full publication please search online or visit the Clinton Presidential Library's Research Room.

Improving Survival From Sudden Cardiac Arrest: The "Chain of Survival" Concept

A Statement for Health Professionals From the
Advanced Cardiac Life Support Subcommittee
and the Emergency Cardiac Care Committee,
American Heart Association



**American Heart
Association**