

Approved

Ivan Sand

Date 2/22/88

MINUTES OF THE House COMMITTEE ON Local Government

The meeting was called to order by Representative Ivan Sand at
Chairperson

1:30 a.m./p.m. on February 18, 1988 in room 521-S of the Capitol.

All members were present except:
Representative Baker, Excused

Committee staff present:

Mike Heim, Legislative Research Dept.
Bill Edds, Revisor of Statutes' Office
Lenore Olson, Committee Secretary

Conferees appearing before the committee:

Dr. Shane Christensen, Kansas City Fire Department
Fred Thorp, Kansas City, KS Fire Department
Pat Simpson, Dodge City Fire Chief
Aaron Estabrook, Kansas State Fire Fighters Association
Tom Pollan, Sedgwick County EMS
Ted McFarlane, Kansas EMS Council
Al Dimmitt, Kansas University Medical Center
Chip Wheelen, Kansas Medical Society

A motion was made by Representative Patrick and seconded by Representative Brown to introduce a bill that would prevent one city through the annexation process from land-locking another city; and to make this bill retroactive to January 1, 1988. The motion carried.

A motion was made by Representative Fry and seconded by Representative Sawyer to introduce a bill on cemetery and funeral home audit authority. The motion carried.

A motion was made by Representative Sawyer and seconded by Representative Francisco to introduce a bill which would regulate rates newspapers can charge for legal advertising. The motion carried.

Representative Schauf distributed a balloon on HB 2835 and explained the contents of the balloon. (Attachment 1)

Dr. Shane Christensen testified in favor of HB 2835, stating that this bill will help to save lives.

Fred Thorp testified in favor of HB 2835, stating that the individual certified by the local service provider must adhere to the local policies established by the local medical component and the service director. He also stated that an individual failing to comply with these requirements shall not be protected under the provisions of this act. (Attachment 2)

Tom Pollan testified in favor of HB 2835, stating that he stresses that there be medical quality control in the use of defibrillation. (Attachment 3)

Aaron Estabrook testified in favor of HB 2835, stating that he would like the Local Government committee to take a leadership role in cutting regulations. (Attachment 4)

Ted McFarlane testified on HB 2835, stating that he opposes the bill as it was introduced, but would support it if some changes are made. (Attachment 5)

CONTINUATION SHEET

MINUTES OF THE House COMMITTEE ON Local Government,
room 521-S, Statehouse, at 1:30 a.m./p.m. on February 18, 1988

Al Dimmitt testified on HB 2835, stating that he is concerned with medical oversight and quality assurance. He also stated that the defibrillator use be limited to EMT's and not first responders.
(Attachment 6)

Pat Simpson testified in favor of HB 2835, stating that automatic defibrillation works and he recommends the committee check other states to review their programs.

Chairman Sand closed the hearing on HB 2835.

The meeting adjourned.

HOUSE BILL No. 2835

By Representatives Johnson and Schauf

2-9

0016 AN ACT concerning the use of automatic ~~and semi-automatic~~
0017 defibrillators for cardiac defibrillation; authorizing the certifi-
0018 cation of individuals in the use thereof; providing exemptions
0019 from civil liability in certain instances.

_____ certain

0020 *Be it enacted by the Legislature of the State of Kansas:*

0021 Section 1. As used in this act: (a) "Ambulance service"
0022 means any ambulance service which holds a permit to operate as
0023 an ambulance service under K.S.A. 65-4317 *et seq.* and amend-
0024 ments thereto.

0025 (b) "Automatic defibrillator" means a monitor-defibrillator
0026 capable of rhythm analysis which will charge and deliver a shock
0027 after electronically detecting the presence of ventricular fibril-
0028 lation or rapid ventricular tachycardia.

0029 ~~(c) "Semi-automatic defibrillator" means a monitor-defibril-~~
0030 ~~lator which is capable of electronically detecting ventricular~~
0031 ~~fibrillation and rapid ventricular tachycardia, but requires user~~
0032 ~~interaction in order to deliver a shock.~~

(c)

0033 ~~(d) "Council" means the emergency medical services coun-~~
0034 ~~cil established under K.S.A. 65-4316 and amendments thereto.~~

_____ certified first responder or emergency
medical technician

0035 Sec. 2. (a) Any ~~individual~~ in this state may be certified in the
0036 use of automatic ~~or semi-automatic~~ defibrillators for cardiac
0037 defibrillation in accordance with the provisions of this act. The
0038 council shall adopt rules and regulations establishing minimum,
0039 basic standards governing training in the use of automatic ~~and~~
0040 ~~semi-automatic~~ defibrillators in accordance with this act. This

_____ instructors

0041 training shall be conducted by ~~personnel of ambulance services~~
0042 who are qualified to conduct such training in accordance with
0043 the rules and regulations adopted by the council. The ~~course of~~
0044 training shall not ~~exceed six clock hours in length and shall be~~

_____ minimum

_____ be less than four clock hours
in length

*Attachment 1
2/18/88*

(b) Each local service provider shall develop medical protocols consistent with the criteria established by the council.

0045 ~~provided at no cost to the trainee~~

0046 (b) Upon the satisfactory completion of training in the use of (c)

0047 automatic ~~or semi-automatic~~ defibrillators for cardiac defibrilla-

0048 tion as authorized under this section, the ~~individual~~ who has

0049 satisfactorily completed such training shall be issued a certificate

0050 indicating that such ~~individual~~ has satisfactorily completed such

0051 training. The certificate shall be issued ~~by the ambulance service~~

0052 ~~which conducted the training and shall be~~ in a form prescribed

0053 by the council by rules and regulations. The certificate shall be

0054 valid for ~~three years~~ following the date of issuance and may be

0055 renewed upon the expiration thereof at the end of such ~~three~~ one-

0056 year period by retaking and satisfactorily completing the training

0057 in the use of automatic ~~or semi-automatic~~ defibrillators for car-

0058 diac defibrillation authorized under this section.

0059 (c) No individual who holds a valid certificate under subsec- (d)

0060 tion (b) for the satisfactory completion of training in the use of (c)

0061 automatic ~~or semi-automatic~~ defibrillators for cardiac defibrilla-

0062 tion shall be liable for civil damages as a result of the use by such

0063 individual of an automatic ~~or semi-automatic~~ defibrillator to

0064 provide cardiac defibrillation during an emergency, except such

0065 damages which may result from gross negligence or by willful or

0066 wanton acts or omissions on the part of such individual.

0067 Sec. 3. This act shall take effect and be in force from and

0068 after its publication in the statute book.

certified first responder or emergency medical technician

one year

one-

1-2

Fred Thompson



CITY OF KANSAS CITY, KANSAS
FIRE DEPARTMENT

In Reply Refer To
STANLEY J. MIROSLAW, CHIEF

February 18, 1988

The Honorable Ivan Sands, Chairman
House Committee on Local Government
House of Representatives
Topeka, Kansas 66601

Re: H.B. 2835 Automatic External Defibrillators

Mr. Chairman, Committee Members, thank you for the opportunity of this testimony today. As I prepared my remarks for today, a recurring thought was ever on my mind. Why am I here to initiate legislation for automatic or semiautomatic defibrillators? Where are the pronounced, the movers and the shakers of pre-hospital emergency medical services when Kansan's need them?

The answer to that question was debated by the Special Committee on Local Government this summer when Proposal 26 was considered. The result of the study initiated H.B. 2639, which abolished the Kansas University Emergency Medical Training Program, the Bureau of Emergency Medical Services, and the Bureau of Emergency Medical Services Council. I applaud the perception and boldness of that legislative body to establish an entire new Division of Emergency Medical Services.

At the Bureau of EMS Council meeting on January 29, 1988, I was criticized by a respected physician council member who was insulted that I had sought legislative authority without the Council blessing. The truth is, January 1988, was one year later from the time I approached the Council to reconsider the stringent, extensive regulations for Emergency Medical Technician - Defibrillators in Kansas. My concern was not appreciative that regardless of the technology available, i.e. automatic defibrillators, Kansas EMT's were going to complete a twenty-seven hour training program or were not going to be equipped with defibrillators.

Now this must be disturbing since our leadership places their work, i.e. the regulations, ahead of well documented, published scientific findings. One physician told me, he did not want to read all the articles I could find regarding automatic defibrillators in Fire Chief Magazine or other such "non-scientific" magazines. So be it then, I went to one of our local hospital medical libraries. I thought if I need "doctor" stuff, then certainly the medical library could help.

*Attachment 2
2/18/88*

The medical library was the answer. I was confronted with published - scientific - medical articles that were funded by organizations such as:

- National Center for Health Sciences Research
- National Heart, Lung and Blood Institute
- Cardiac Resuscitator Corporation (here today)
- American Heart Association
- American Heart Association of Washington
- Medic One - EMS Foundation (Seattle Fire Department)
- Blandin Foundation, Grand Rapids, Michigan
- U. S. Public Health Service
- Robert Wood Johnson Clinical Scholars Program
- U. S. Department Health, Education and Welfare
- Physio - Control Corporation
- University of Washington
- King County Washington Public Health Department
- University of Iowa College of Medicine
- University of Iowa Hospitals and Clinics
- Mayor Clinic and Mayo Foundation, Rochester, MN.
- Arrowhead Emergency Medical Services Association
- Harborview Medical Center, Seattle, Washington
- Center for the Evaluation of Emergency Medical Services
- King County Emergency Medical Services Division

These studies have been on-going since the 1970's and published in publications such as:

- Journal of American Medical Association
- Clinical Issues for Cardiology
- Circulation (Official Journal of the American Heart Association)
- American Journal of Cardiology
- New England Journal of Medicine
- Journal of American College of Cardiology
- Med Instrum
- Lancet
- International Journal of Cardiology
- Annals of Internal Medicine
- Computers in Cardiology
- Annals of New York Academy of Science
- Journal Cardiac Rehabilitation
- Annals Rev Med
- Annals of Emergency Medicine
- American Journal of Emergency Medicine
- Med Care
- Critical Care Medicine
- Journal of Emergency Medical Services
- American Journal of Public Health
- Emergency Cardiac Care: National Faculty Newsletter of the AHA, among others.

Scientific studies and findings are available since the early seventies.

Early defibrillation by Emergency Medical Technicians was endorsed by the following:

- ACT (Advanced Coronary Treatment Foundation) Medical Advisory Board - October, 1983.
- American College of Emergency Physicians - 1984
- American Heart Association - 1985

Many state EMS offices as well as national organizations are now intensely discussing the topic of EMT-defibrillation as an idea whose time has come, and are focusing on how EMT-D fits in with their particular perspective on out-of-hospital care. These organizations include the U. S. Department of Transportation, the American Heart Association, the American College of Cardiology, the American College of Emergency Physicians, the National Council of State EMS Training Coordinators, the National Association of State EMS Directors and the National Registry of Emergency Medical Technicians (Richard O. Cummins, M.D., et al; JEMS, February 1985).

In 1986, ASTM F-30.02.07 "Pre-hospital Defibrillation Provider" task group undertook the task of writing standards for early defibrillation. In 1987, the International Association of Fire Chiefs began work on a pilot (hand-off) program called "Rapid Zap" utilizing automatic external defibrillators used by firefighters with minimal training and firefighter EMT's.

Therefore, in 1985, it was automatic that "early defibrillation" works! In all of the available scientific - medical - literature, and there are literally reams of available literature regarding pre-hospital defibrillation findings in Washington, Iowa, Minnesota, and others, not one article or report discouraged pre-hospital defibrillation!

The fact is, any one who has seriously considered an early defibrillation program has implemented the program without additional study. According to Dr. Bruce E. Haynes, M.D., Director Emergency Medical Services Authority, State of California, they did just that. The California EMS Authority Council reviewed the literature and passed enabling legislation (Division 2.5 of the Health & Safety Code), effective December 31, 1987, for all public safety employees including lifeguards.

"The 1985 Kansas Legislature passed legislation authorizing a pilot study to determine the effectiveness of training select basic emergency medical technicians to defibrillate the hearts of patients who were victims of sudden unexpected cardiac arrest (BEMS report, January 1987)." Eleven cities in Kansas elected to participate using defibrillators in the demonstration program in 1985. Ten other cities in Kansas were utilized as a control group.

The Kansas Bureau of EMS Council, meeting on December 5, 1986, voted to request legislation be introduced during the 1987 session of the legislature. The Council believed the data suggests a substantial number of lives can be saved by appropriate implementation of a permanent

program to authorize emergency medical technicians to defibrillate in the pre-hospital setting (BEMS report, January 1987). The legislative session of 1987 then produced S.B. 87 creating the EMT-D certification.

The Kansas EMT-D program has not been without its problems. It is my opinion the requirements of the pre-course community conference, twenty-seven hours of training plus a monthly demonstration of skills, utilization of a cardiac arrest protocol prescribed by the BEMS Council and KUMC plus an absolute minimum of fire EMT-Ds on the roster has served to inhibit this proven life-saving technology in Kansas.

Just as in Seattle, Washington, the Kansas City Fire Department cannot afford such extensive training of 400 firefighters. "The proven advantages of an automatic defibrillator to an EMT-D program is centered around decreased knowledge and training. These devices have been proven to accurately and reliably make analysis, charge and defibrillate decisions. To subject or (demand so), an EMT to educational information that he/she cannot even use with the automatic technology makes little sense. It defeats the purpose of the device and serves as a fruitless exercise in educational minutia that could result in long-term morale problems." (personal letter - Al Weigel, M.Ed., EMT-P).

Many of you have received certain scientific articles from my office over the past year. These articles concerning early defibrillation by first responders, i.e. police and firefighters, were also sent to the Bureau of EMS Defibrillation Committee. After reviewing the articles, the Council Committee decided to conduct a survey.

"The Defibrillation Committee and Al Dimmit discussed the survey results by telephone conference call.

The Committee concludes that the dominant medical opinions as expressed in the survey results and the Kansas Medical Society EMS Committee opinion are 1) that automated defibrillation should be restricted to EMTs and above, and 2) that defibrillation should only be done when the system has strict medical controls including a designated medical director, written protocols, and a written agreement with the local ambulance service if an EMT staffed first response unit defibrillates.

THE COMMITTEE RECOMMENDS that the Council request legislation that would add defibrillation to the authorized activities of an EMT when that EMT has completed supplemental training and continuing education approved by the Council. This would replace the EMT-D licensure; and it is anticipated that the Council would approve 2 types of training and CE programs, those that utilize manual defibrillators and those that utilize automated defibrillators. At this time the Committee does not take a position on the number of hours of training required for each type of defibrillator. The Council would make that determination when authorized to do so.

The Committee also recommends that the feasibility of automated defibrillation by certified first responders be studied again in 1 to 2 years when the data from the EMT defibrillation programs is

available for review." (Council paper - January 29, 1988).

The above conclusions and recommendations were formally adopted by the full Council, January 29, 1988. Each member of the current Bureau of EMS Council was involved in the decision of December 5, 1986, to seek enabling legislation, now they want additional data. I quote again from the Bureau of EMS Council's report to the legislature and Governor in January, 1987. "As a result of this demonstration program (1985-1987), a substantial amount of medical data has been accumulated pertinent to possible future implementation of a permanent program." My friends, I submit the studies have been conducted for over ten years. "The era of early defibrillation in a first response mode has moved out of research and is now standard operations in Seattle/King County, Washington; Dallas, Texas; Jacksonville, Florida; Denver, Colorado; Tampa, Florida; Lincoln, Nebraska; Eugene-Springfield, Oregon; Des Moines, Iowa; Rochester, Minnesota; Cedar Rapids, Iowa; Allegheny County, Pennsylvania; and Salt Lake City, Utah" (Missouri Center for Health Statistics - 1987).

"Everybody wants to study everything themselves," said Briese. "It's time that the fire service - actually all EMS - realizes that what works in one part of the country is very likely to work in another part of the country. We don't need to study defibrillation. We need to implement it. EMT-D is a proven concept. We should simply accept the fact that it works. The only task left is to decide operationally how best to implement it." (Jems:1985, Mary Newman)

I ask you now to look at a graph comparing two study projects in Minnesota, with that of the Kansas study project. The findings depicted here are consistent with the accumulated data regarding defibrillation programs.

There are three essential links identified in these findings. They are "early access", early cardiopulmonary resuscitation (CPR), and early defibrillation.

Representative R.D. Miller *is to be commended* for addressing one of the problems of early access in HB 2856. County-wide, Regional-wide 9-1-1 telephone access will certainly help. Senator Feleciano told me, S.B. 493 would eliminate a loss of 45 seconds in the Sedgewick County by upgrading their 9-1-1 system. The data clearly demonstrates that approximately 1 - 2 minutes to access the system is often too late for a very high percentage of the populous.

The second key link is by-stander cardiopulmonary resuscitation in a witnessed arrest situation. In Kansas, most graduating high school students have had a CPR program twice. Almost every public safety employee is certified by the current CPR standards annually.

The third essential link that has been documented time and again in the medical literature is early defibrillation. "Since the devices are simple and safe to use, and since timing is crucial, even fire departments whose personnel are not EMTs are getting involved in order to provide early defibrillation services for a wider base of the

2.5

population. "If we can train spouses to use automatic defibrillators", said Ken Stults, a leading national authority on early defibrillation, "it would be absurd to require emergency personnel to be EMTs before they can defibrillate." (JEMS:1985, Mary Newman)

Mr. Chairman, Members of the Committee, we have delayed long enough to implement early defibrillation programs in Kansas. We must conceive innovative methods to place defibrillators as close as possible to those 2,000 plus Kansans who suffer cardiac arrest each year. H.B. 2835, by Representatives Johnson and Schauf, is a very good beginning. The Bill needs enforcement in two areas. Strong local supervision by the certifying service and local medical supervision should be included.

The individual certified by the local service provider must adhere to the local policies established by the local medical component and the service director. Annual reviews to maintain proficiency should be conducted and an audit of each cardiac arrest shall be done by the local services or its medical director. An individual failing to comply with these requirements shall not be protected under the provisions of this act.

(The above should be added to Sec.2(b)).

Your attention to my remarks this afternoon are greatly appreciated. I thank you and leave you with these remarks from King Solomon as recorded in The Bible, Proverbs 3:27, "With hold not good from those to whom it is due, when it is within thy power to do so."

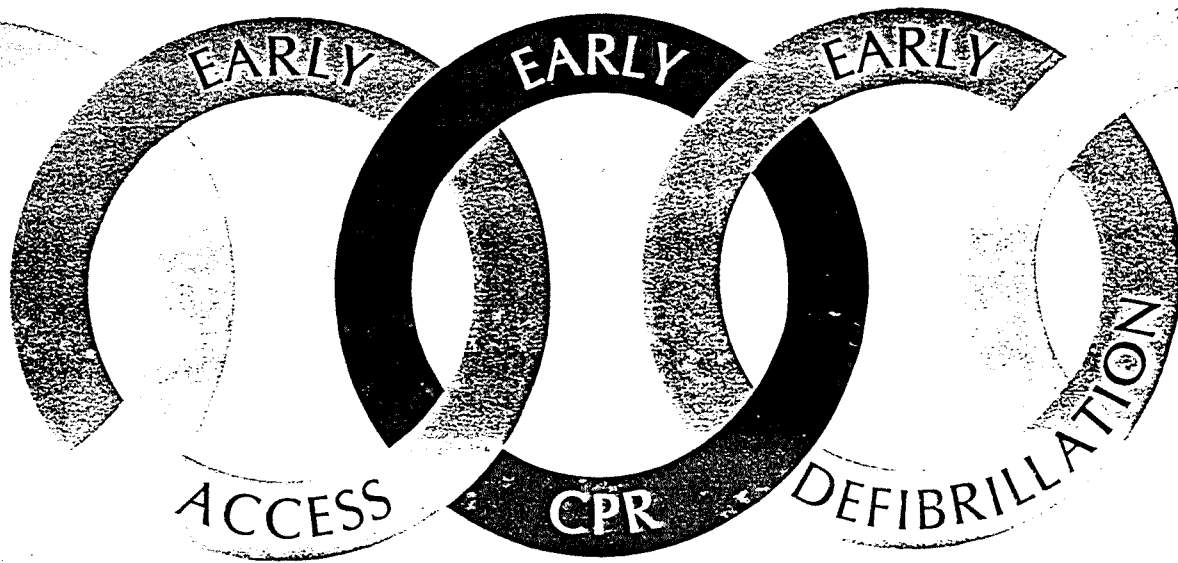
Respectfully submitted,

Fred Thorp, Director
Emergency Medical Services

FT/cd

2.6

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2-9

Prehospital Cardiac Rhythm Deterioration in a System Providing Only Basic Life Support

Access to an ambulance service trained to provide only basic cardiac life support (BCLS) and adjunctive ventilation with oxygen provided the opportunity to study cardiac rhythms during BCLS in patients with circulatory arrest. Holter monitoring was attempted in 43 patients. Technically adequate traces throughout transport to hospital were obtained in 21. The average monitored time was 11.9 minutes. A tachydysrhythmia (mainly VF/VT) was initially found in 10, heart block or bradycardia in 9, and asystole in 2 persons. During BCLS, six patients with bradycardic rhythms converted temporarily to VF. The first ECG tracing obtained in the hospital revealed, however, that only five were still in a tachydysrhythmia and 15 were asystolic. These data demonstrate that important rhythm changes occur when BCLS is continued for several minutes during circulatory arrest. Although some bradycardic rhythms convert to VF, the VF is not sustained. After an average of 12 minutes, 90% of those initially in bradycardic rhythm and 50% of those initially in VF/VT were asystolic. This study provides further evidence that BCLS does not prevent cardiac deterioration. [Enns J, Tweed WA, Donen N: Prehospital cardiac rhythm deterioration in a system providing only basic life support. *Ann Emerg Med* 12:478-481. August 1983.]

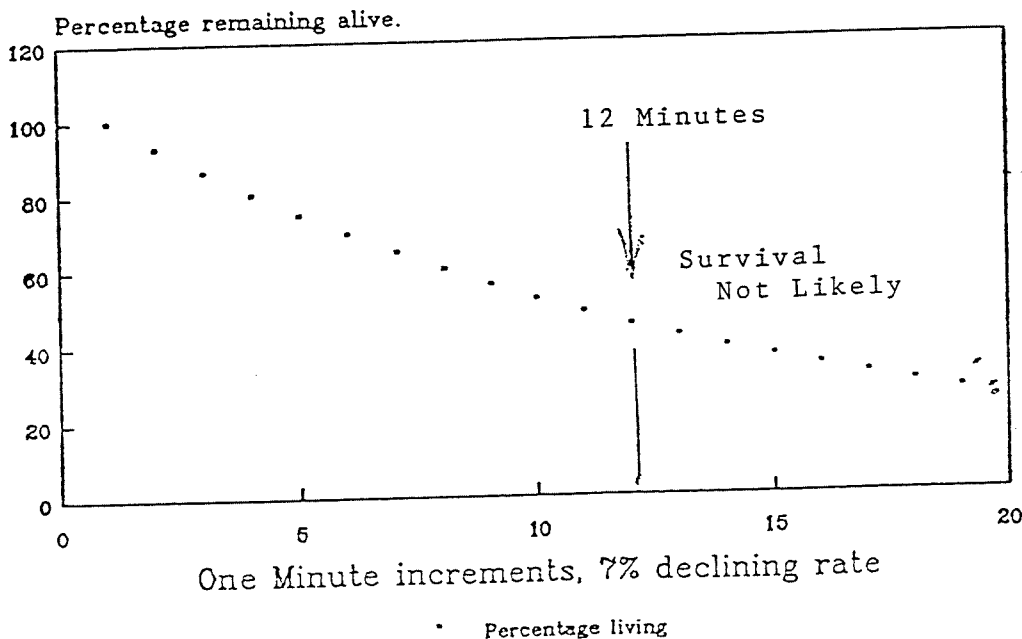
James Enns
W. A. Tweed, MD
Neil Donen, MD
Winnipeg, Manitoba, Canada

From the Department of Anesthesia,
University of Manitoba, Winnipeg,
Canada.

Received for publication July 6, 1982.
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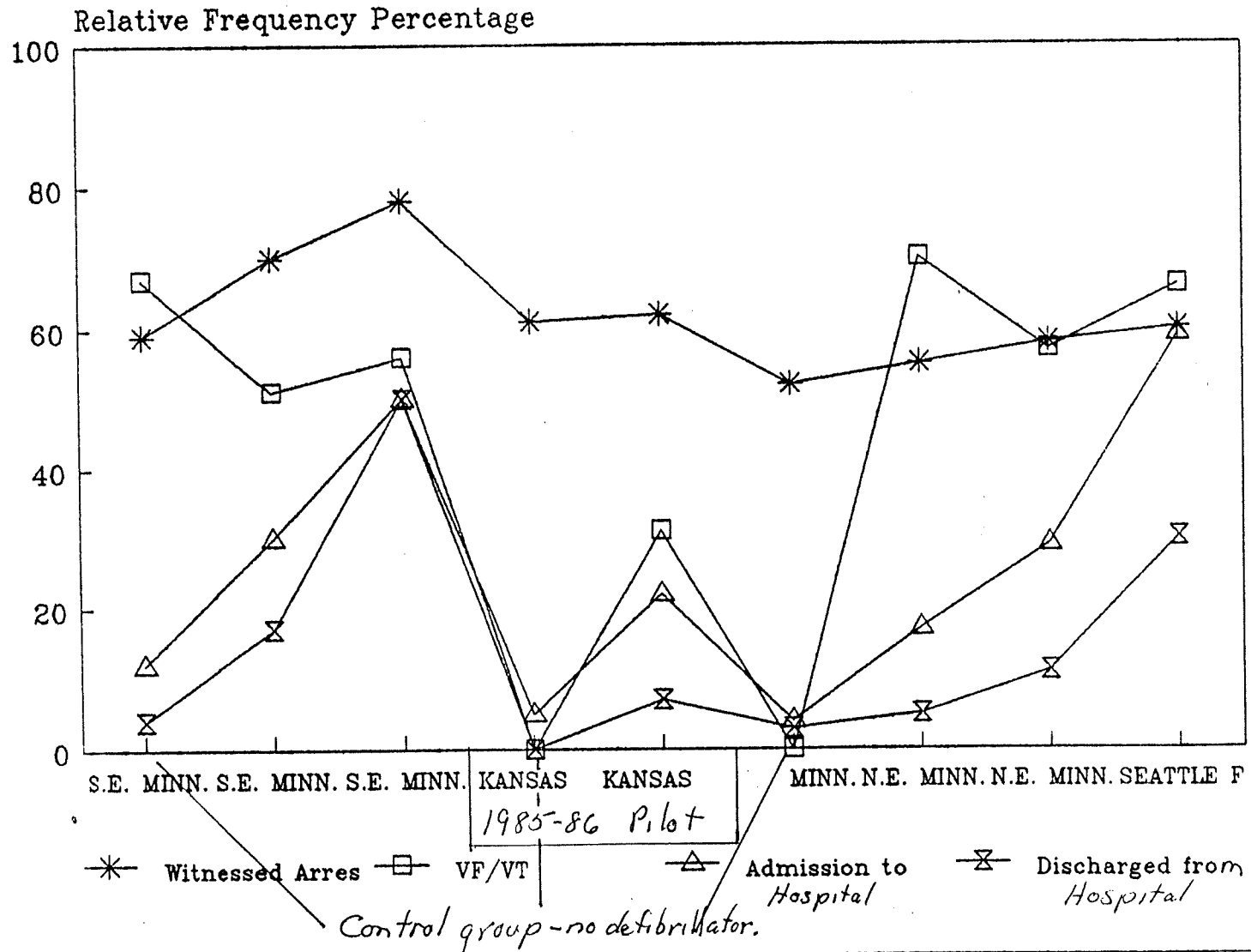
Fibrillation = Death
For every 1 min. delay, 7% die!



Based on findings of Dr. R.O. Cummins

2-8

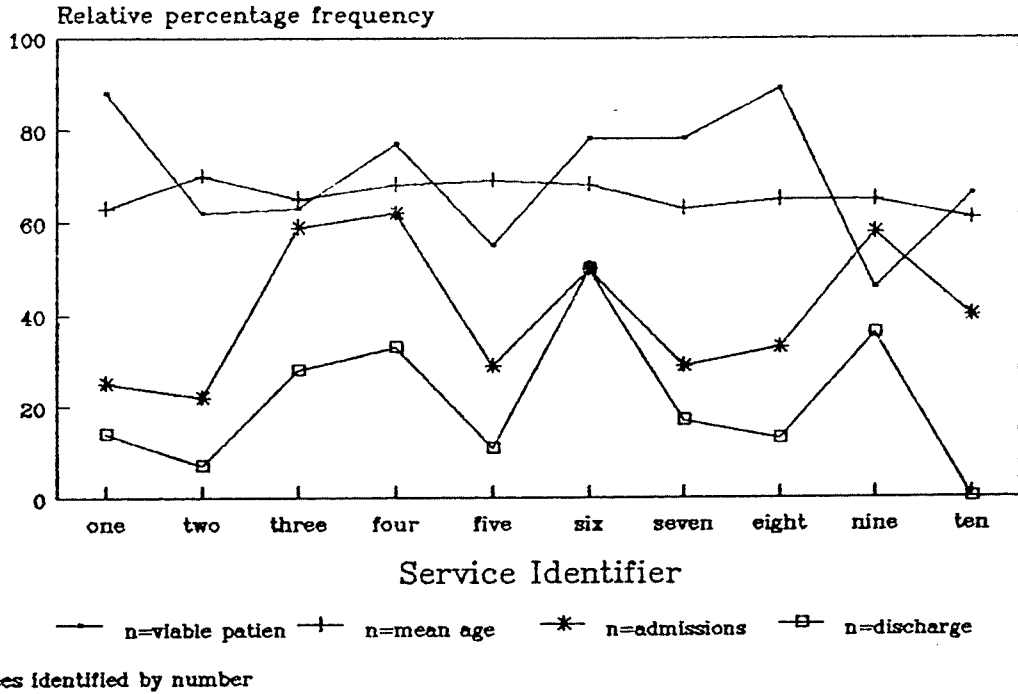
Early Defibrillation



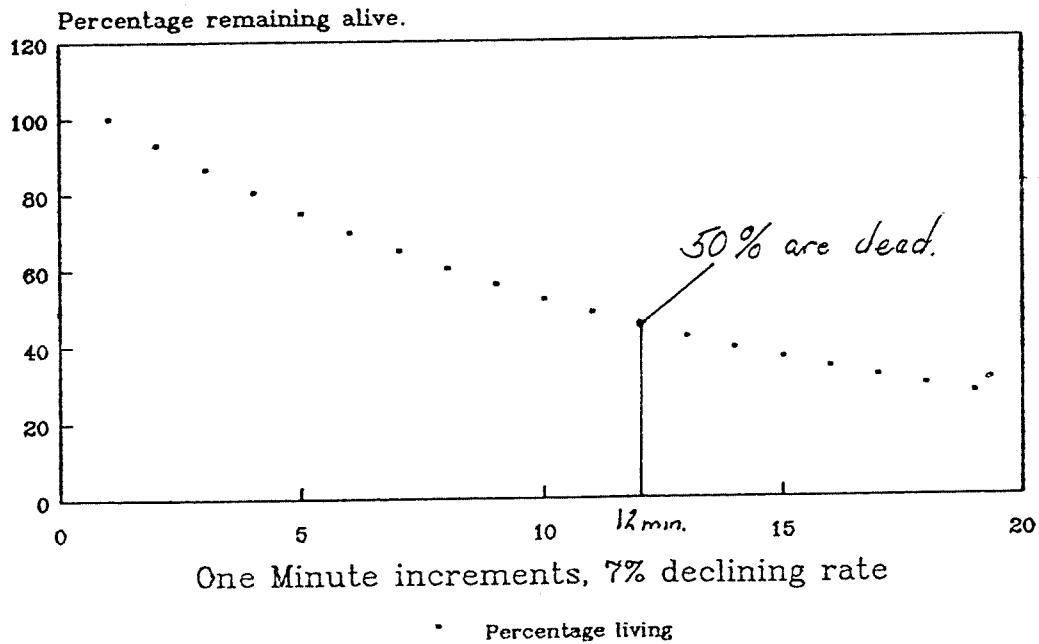
2/9

U.S.A. Re: DEFIBRILLATION

First Responders, EMTs & EMT-Ps



Fibrillation = Death
 For every 1 min. delay, 7% die!



Based on findings of Dr. R.O. Cummins

2-10

Kansas City Kansas Fire Department
Division of Emergency Medical Services

The following provides only basic information regarding the communities and services participating in the studies. The scientific journals (where appropriate) reporting the studies are also noted.

ONE..Kansas City Kansas Fire Department, K.A.R.E. (Paramedics) with fire fighter first responders. Data reviewed and compiled by Dr. Alan C. Hancock, M.D.

TWO..STATE OF KANSAS EMT-D pilot study project from July 1985 to December 1, 1986. Paper submitted to Governor by BEMS.

THREE..Seattle Fire Department's EMT-Ps. Tiered system similar to Kansas City. reported in CIRCULATION, May 1984 by Dr. W. Douglas Weaver, M.D., et al.

FOUR..Seattle Fire Department with BLS fire fighters activity prior to the paramedics arrival and subsequent care for the patient. Fire fighters received a 5 hour training program. reported in the American Journal of Cardiology, May 1986 by Dr. Richard O. Cummins, M.D., et al.

FIVE..Grand Rapids, Minnesota. Population of 12,000 with full time EMT-Ps. Part of a larger study (7 counties, Arrowhead Region) in Northeastern Minnesota, 12/82 - 12/84. Reported in JAMA, July 1986 by Dr. John W. Bachman, M.D. et al.

SIX..Austin, Minnesota. Part of a study in Southeastern Minnesota involving 15 rural ambulance services. The communities varying in size from 5,000 to 36,000, were randomized into two groups for a two year cross-over study. The Austin service is high lighted in the graph because of the Police being trained as first responders resulting in a 50% discharge rate for persons found in ventricular fibrillation. The services with defibrillators had a 30% patient discharge ratio. Reported in the Annals of Emergency Medicine, April 1987 by Dr. L. F. Vukov, M.D., et al.

SEVEN..Iowa, involving 36 small communities. All personnel were EMTs. Eighteen communities were given the AEDs and 4 hours training. Eighteen communities were given the manual defibrillators and 16 hours training. Reported in Circulation by Stults, et al, April 1986.

EIGHT..SAME AS NUMBER SEVEN, this is the Manual group!

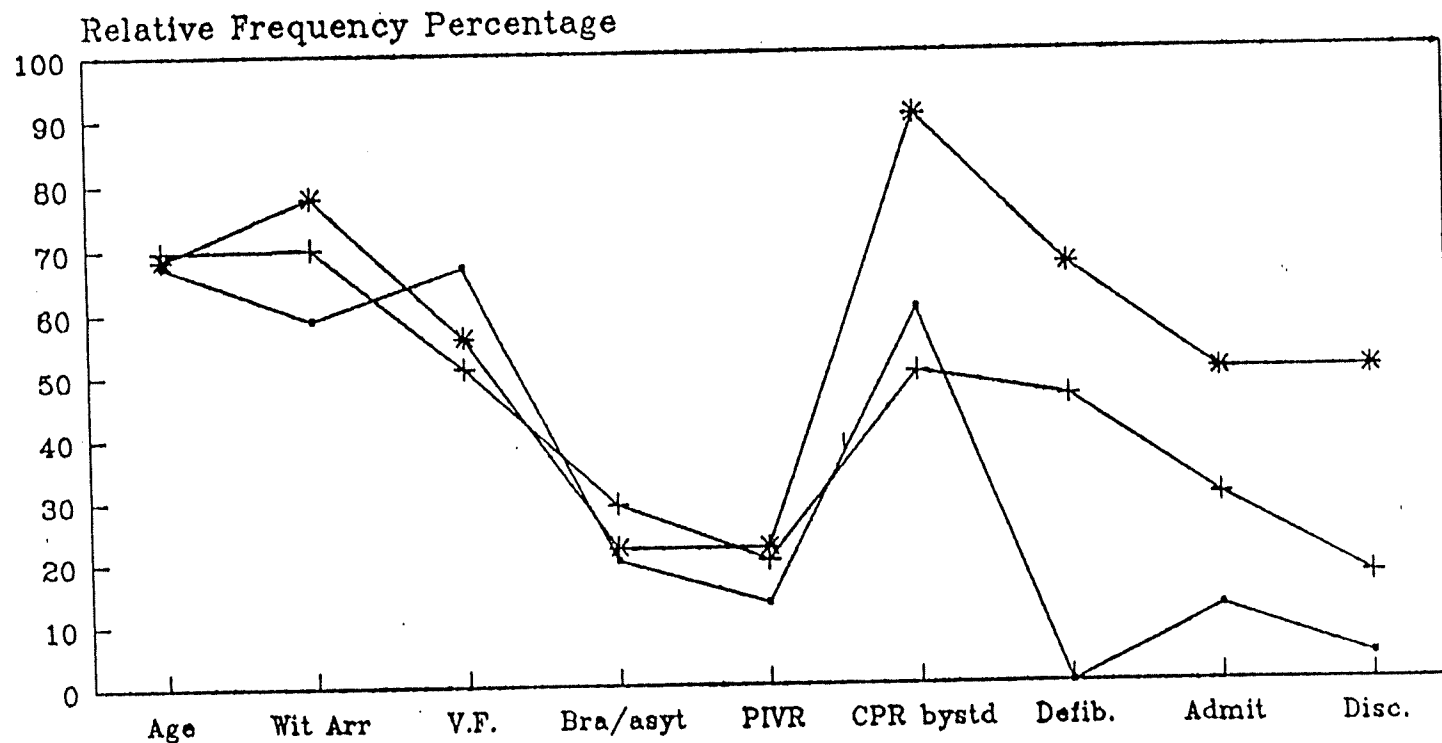
NINE..King County Washington. Eighteen fire departments with all personnel trained EMTs. Units were divided and each seventy-five days switched manual and automatic defibrillators. The AED training was 3 hours in length. Reported by Dr. Richard O. Cummins, M.D. et al in JAMA, March 1987.

TEN...SAME AS NUMBER NINE, this is the Manual group!

Fred Thorp, Director
February 18, 1988

2.11

Perspective on Rural EMT Defibrillation



Annals of Emerg. Medicine, 16:4 April 87

— Control Group + Treatment Group * Treatment grp. (Aus)

Other than age, all figures relative 1.

P.12

Moreover, there appears to be no increase in likelihood of fibrillation resulting from countershocks during the presumed critical cardiac repolarization period.

57 Comparison of Performance of Five Transcutaneous Pacing Devices MB Heller, RM Kaplan, J Peterson, PM Paris, K Iikhanipour, RD Stewart. Division of Emergency Medicine, University of Pittsburgh School of Medicine, Center for Emergency Medicine of Western Pennsylvania, Pittsburgh

Transcutaneous pacing is now recognized as a safe and effective emergency technique for the treatment of pharmacologically-resistant bradyarrhythmias. Although currently marketed pacemakers may differ significantly in the important aspects of waveform of the pacing stimulus and pad design, no study has compared the performance of different units. We studied the performance of five different transcutaneous pacemakers by comparing the capture rate, degree of discomfort and capture threshold of each among ten healthy volunteers. The five units tested were: the PaceAid™ Model 53 (Cardiac Resuscitator Corp), Redi-Pace™ (Medical Data Electronics), TransPace™ (Micromedical Devices, Inc), Zoll NTP (ZMI Corp), and LifePak-8™ (PhysioControl Corp). In this random, single-blind study, each subject received pacing stimuli of increasing amperage with each unit until mechanical capture was achieved or discomfort became intolerable. Subjects rated discomfort at several electrical output levels and at capture using a visual analogue pain scale. Our results demonstrate marked differences among the devices in their ability to achieve capture and the mean capture threshold. Capture rates varied from 40% to 80%, significant at the .10 level. The capture threshold varied from 66.5 to more than 104 MA ($P < .10$). One subject who did not capture despite withstanding the maximum output of one unit captured easily with others. Volunteers consistently noted greater discomfort with some units as compared to others but this was not clearly reflected in the visual analogue pain scale ratings. We would conclude that important differences exist among external pacing devices, and that these differences affect pacing threshold, capture rates and patient tolerance.

58 Prehospital Administration of Lidocaine — Bolus Versus Bolus Plus Infusion JM Neal, SW Collins, LD Case, LW Stringer / Wake Forest University Medical Center, Winston-Salem, North Carolina

Two protocols for the prehospital administration of lidocaine — bolus versus bolus plus infusion — were evaluated for their efficacy in producing therapeutic serum lidocaine levels. Patients receiving lidocaine for prophylaxis in the setting of acute chest pain or for ventricular ectopy were randomized into two treatment groups. Group A (bolus protocol; $n = 15$) received a 75 mg IV bolus of lidocaine, followed by repeat 50 mg bolus every 10 minutes during transport. Group B (bolus plus infusion; $n = 21$) received a 75 mg IV lidocaine bolus plus immediate institution of a 2 mg/min lidocaine infusion. Persistent ectopy was treated with incremental re-bolus of 50 mg lidocaine plus increase of the infusion rate to a maximum of 4 mg/min. Serum lidocaine levels were obtained upon arrival in the emergency department, within 10 minutes of the last bolus. Mean serum lidocaine levels — 1.62 µg/mL Group A (therapeutic levels = 1.5-5.0 µg/mL), 1.81 µg/mL Group B — did not differ significantly between the two protocols ($P = 0.641$). Forty percent (6/15) of Group A and 62% (13/21) of Group B patients had subtherapeutic lidocaine levels ($P = 0.194$). There were no differences between the groups in attainment of desired therapeutic endpoint (resolution or prevention of ectopy). No patients exhibited toxic levels of lidocaine. In conclusion, there was no clinically significant difference between bolus versus bolus plus infusion of prehospital lidocaine with respect to serum lidocaine levels and attainment of desired therapeutic endpoint. Furthermore, both protocols resulted in unacceptably high rates of subtherapeutic lidocaine levels.

59 New Perspectives on Rural EMT Defibrillation LF Vukov, RD White, JW Bachman, PC O'Brien Mayo Clinic, Rochester, Minnesota

Conflicting data exist regarding the impact of basic EMT defibrillation in rural communities. To clarify this, 15 rural ambulance services in Southeastern Minnesota were trained in the use of the Heart-Aid Model 95* Automatic External Defibrillator. The communities, varying in size from 5,000 to 36,000, were randomized into two groups for a two year cross-over study. Commencing August 1, 1984, eight communities were designated to treat patients with the AED while seven served as controls. After one year, treatment and control communities crossed over. Defibrillating electrodes were placed in an anterior apical position and initial airway management was standardized. The following table demonstrates treatment and control group data as well as data extracted from the largest community.

	Control Group	Treatment Group	Treatment (Austin)
Total pts	68	100	23
Mean age	67.4	69.8	68.4
Witnessed	40 (59%)	70 (70%)	18 (78%)
Presenting rhythm			
VF	27 (67%)	36 (51%)	10 (56%)
Bradyasystole	8 (20%)	20 (29%)	4 (22%)
PIVR	5 (13%)	14 (20%)	4 (22%)
CPR prior to ambulance	24 (60%)	35 (50%)	16 (90%)
Collapse to defib < 10 min	0	32 (46%)	12 (67%)
Admissions	5 (12%)	21 (30%)	9 (50%)
Discharge survivors from VF	1* (4%)	*6 (17%)	5 (50%)

*The control group survivor experienced VF en route to the hospital.
*P = 0.053 comparing control and treatment groups

Ambulance response times in all three groups were similar. Only one unwitnessed arrest was briefly admitted. Communities without a 911 system comprised 30 percent of the study population, accounted for 21 percent of all admissions, but had no survivors. Towns of less than 10,000 had 21 percent of all witnessed arrests, achieving 9 percent of all admissions but no survivors. Treatment communities fared better than control communities in both admissions and neurologically intact survivors. When data from Austin (a large community with 911, police first-responders and full-time EMTs) are separated from the treatment group, however, the results suggest additional considerations. In fact, only one individual in the other 14 communities during the treatment year survived a witnessed cardiac arrest in a two year period. The presence of 911 and a population service area greater than 10,000 may play a role in the benefit of rural EMT-D. Potential benefits offered from automated defibrillation may produce significant life salvage only in larger rural communities with EMS systems which include identifiable and essential prerequisites. Successful application of rural EMT-D will necessitate innovative alternatives to present practices, including more strategic placement of defibrillators.

60 Prehospital Trial of Emergent Transcutaneous Cardiac Pacing JR Hedges, SA Syverud, WC Dalsey, S Feero, R Easter, B Shultz / Department of Emergency Medicine, University of Cincinnati College of Medicine, Department of Emergency Medicine, Lackland Air Force Base, San Antonio, Texas; Thurston County Medic I, Olympia, Washington

The use of transcutaneous cardiac pacing for prehospital patients with hemodynamically significant bradycardia or asystole has received limited attention. We used a stand-alone transcuta-

Automatic External Defibrillation: Evaluations of Its Role in the Home and in Emergency Medical Services

Richard O Cummins, MD, MPH, MSc*§ / Mickey S Eisenberg, MD, PhD*§ / Lawrence Bergner, MD, MPH†§ / Alfred Hallstrom, PhD‡§ / Thomas Hearne, PhD§ / John A Murray, MD*§ / Seattle, Washington

Many recent efforts to improve emergency medical services (EMS) and increase survival rates are simply efforts to get defibrillation to patients as rapidly as possible. In the 1960s physicians traveled in mobile coronary care units to bring the defibrillator to cardiac arrest patients. Later, paramedics, rather than physicians, were used. During the late 1970s the concept of early out-of-hospital defibrillation expanded as emergency medical technicians (EMTs) learned to defibrillate. Researchers in several settings confirmed the effectiveness of early defibrillation by EMTs. The automatic detection of ventricular fibrillation (VF) creates new opportunities for the early defibrillation concept. This includes both automatic implantable defibrillators and automatic external defibrillators (AED). The King County, Washington, EMS is conducting two projects to evaluate AEDs. One is a randomized, controlled crossover study in which EMTs use either an AED or a standard manual defibrillator. Outcome measurements include time to countershock, conversion rates, and survival rates. In the second project family members of patients who have survived out-of-hospital VF randomly receive an AED and cardiopulmonary resuscitation (CPR) instruction, or CPR instruction alone. This study was designed to determine whether family members can be trained adequately to use the device effectively. Psychological tests measure the effect of learning about, living with, and using such technology. These studies may help define the role of AEDs in the future management of out-of-hospital VF. [Cummins RO, Eisenberg MS, Bergner L, Hallstrom A, Hearne T, Murray JA: Automatic external defibrillation: Evaluations of its role in the home and in emergency medical services. *Ann Emerg Med* September 1984 (Part 2);13:798-801. Key words: automated external defibrillation, cardiopulmonary resuscitation.]

Introduction

Ventricular fibrillation (VF) is the cardiac arrhythmia as-

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sociated with more than two-thirds of the 400,000 people who die annually from out-of-hospital sudden cardiac arrest.¹ Successful resuscitation of these patients is achieved only by rapid delivery of basic life support (cardiopulmonary resuscitation [CPR]) and the three definitive elements of advanced life support: defibrillation, intravenous medications, and ventilatory assistance.¹⁻³ Of these elements electric countershock is always required for patients in ventricular fibrillation. In some settings, such as cardiac rehabilitation exercise programs, defibrillation alone can be successful up to 100% of the time.^{4,5} Most of the recent efforts to improve emergency medical services (EMS) and increase survival from sudden cardiac death are simply efforts to get CPR and defibrillation to a patient as rapidly as possible.^{3,6,7}

Developments in Out-of-Hospital Defibrillation

The 1960s

In the 1960s physicians traveling in the first mobile coronary care units were used to bring the defibrillator to persons in cardiac arrest. First demonstrated in Belfast, Ireland,⁸ and then in New York City,⁹ the idea of physician-staffed mobile coronary care units slowly spread to other communities.

The Early 1970s

In the early 1970s several US cities, notably Columbus, Los Angeles, Miami, and Seattle, began using extensively trained lay personnel (paramedics), rather than physicians, in the mobile intensive care units. Evaluation research conducted in King County, Washington, demonstrated that the addition of paramedic services to communities could raise the survival rate of cardiac arrest from 7% to 17%.³ These studies also demonstrated that virtually all the improvement achieved by paramedics resulted from resuscitation of ventricular fibrillation (VF).¹⁰ The issue of physician control via telemetry or standing orders was strongly argued, and standing orders eventually gained general acceptance.¹¹

The Late 1970s

In the mid-to-late 1970s the concept of early out-of-hospital defibrillation expanded when emergency medical technicians (EMTs) were trained to recognize VF and to operate portable manual defibrillators. In suburban King County, Washington, basic EMTs were studied before and after a ten-hour course on manual defibrillation.⁶ Before the course

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Cardiac Arrest Treated with a New Automatic External Defibrillator by Out-of-Hospital First Responders

W. DOUGLAS WEAVER, MD, MICHAEL K. COPASS, MD, DEBORAH L. HILL, BA,
CAROL FAHRENBRUCH, MSPH, ALFRED P. HALLSTROM, PhD,
and LEONARD A. COBB, MD

Two hundred sixty patients in cardiac arrest were treated with an automatic external defibrillator by first-responding firefighters before arrival of paramedics. On average, first responders arrived 5 minutes before paramedics. Of 118 patients with ventricular fibrillation, 91 (77%) were administered shocks, 21 (23%) of whom had return of pulse and blood pressure by the time paramedics arrived. Fifty-six (62%) were admitted to the hospital and 30 (33%) survived. The survival rate for all 118 victims discovered with ventricular fibrillation was

27%. The device correctly classified the initial and all subsequent rhythms in 92 patients with asystole, 46 with electromechanical dissociation, and 22 others with presumed respiratory arrest; it did not deliver any inappropriate shocks to patients or to the rescuers using the device. An automatic external defibrillator can be used by first responders as an adjunct to basic life support, and its use may improve survival by shortening the time to defibrillation.

(Am J Cardiol 1986;57:1017-1021)

THERAPY AND PREVENTION SUDDEN DEATH

Improved neurologic recovery and survival after early defibrillation

W. DOUGLAS WEAVER, M.D., MICHAEL K. COPASS, M.D., DEBBIE BUFI, R.N.,
ROBERTA RAY, M.S., ALFRED P. HALLSTROM, PH.D., AND LEONARD A. COBB, M.D.

ABSTRACT Eighty-seven patients who had out-of-hospital cardiac arrests received defibrillating shocks delivered by minimally trained first responders before the arrival of paramedics in a city with short emergency response times. Their outcomes were compared with those of 370 other victims who received only basic life support by first responders until paramedics arrived. Survival was improved by early defibrillation in cases in which there was a delay in initiating cardiopulmonary resuscitation and in which paramedic response times exceeded 9 min; there was 62% survival after early defibrillation by first responders and 27% if first responders provided only basic life support ($p < .02$). Neurologic recovery was also improved after early defibrillation. Eighteen of 46 resuscitated patients (39%) receiving early defibrillation were awake at 24 hr compared with 49 of 204 patients (24%) who received only basic life support while awaiting paramedics ($p < .02$). Incorporating defibrillation as part of basic life support can reduce both mortality and morbidity from cardiac arrest, even in cities with established, rapidly responding emergency care systems.
Circulation 69, No. 5, 943-948, 1984.

2/15

Automatic External Defibrillators Used by Emergency Medical Technicians

A Controlled Clinical Trial

Richard C. Cummins, MD, MPH, MSc; Mickey S. Eisenberg, MD, PhD; Paul E. Litwin, MS;
Judith Reid Graves, RN, EMT-P; Thomas R. Hearne, PhD; Alfred P. Hallstrom, PhD

In a randomized controlled clinical trial, the effectiveness of emergency medical technician (EMT) use of automatic external defibrillators (AEDs) was compared with EMT use of standard defibrillators for patients in cardiac arrest. A total of 321 cardiac arrest patients were treated during the study: 116 were treated by EMTs using the AED (AUTO group), 153 were treated by EMTs using the standard defibrillators (standard group), and 47 were treated by EMTs using the standard defibrillator when they were assigned to use the AED. There were no significant differences in hospital admission or discharge rates between the AUTO group (54% admitted, 28% discharged) and the standard group (52% admitted, 23% discharged) for patients in ventricular fibrillation (VF), for patients in non-VF rhythms, or for all patients combined. The only significant difference observed was in the time from power ON to first shock: 1.1 minutes average AUTO group and 2.0 minutes average standard group. The treatment groups did not differ significantly in sensitivity for VF (78% AED, 76% standard), specificity for non-VF rhythms (100% AED, 95% standard), or rates of defibrillation to a non-VF rhythm (62% AED, 57% standard). We conclude that in clinical outcomes and device performance, AEDs are comparable with standard defibrillators and should be considered an acceptable alternative. Automatic external defibrillators appear to have advantages over standard defibrillators in training, skill retention, and faster operation. Such devices can make early defibrillation available for a much larger portion of the population. They are a major innovation for the prehospital care of cardiac arrest patients.

(JAMA 1987;257:1605-1610)

Prehospital Cardiac Rhythm Deterioration in a System Providing Only Basic Life Support

Access to an ambulance service trained to provide only basic cardiac life support (BCLS) and adjunctive ventilation with oxygen provided the opportunity to study cardiac rhythms during BCLS in patients with circulatory arrest. Holter monitoring was attempted in 43 patients. Technically adequate traces throughout transport to hospital were obtained in 21. The average monitored time was 11.9 minutes. A tachydysrhythmia (mainly VF/VT) was initially found in 10, heart block or bradycardia in 9, and asystole in 2 persons. During BCLS, six patients with bradycardic rhythms converted temporarily to VF. The first ECG tracing obtained in the hospital revealed, however, that only five were still in a tachydysrhythmia and 15 were asystolic. These data demonstrate that important rhythm changes occur when BCLS is continued for several minutes during circulatory arrest. Although some bradycardic rhythms convert to VF, the VF is not sustained. After an average of 12 minutes, 90% of those initially in bradycardic rhythm and 50% of those initially in VF/VT were asystolic. This study provides further evidence that BCLS does not prevent cardiac deterioration. [Enns J, Tweed WA, Donen N: Prehospital cardiac rhythm deterioration in a system providing only basic life support. Ann Emerg Med 12:478-481, August 1983.]

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2-16

Limitation on Effectiveness of Rapid Defibrillation by Emergency Medical Technicians in a Rural Setting

First-responding emergency medical technicians (EMTs) trained to defibrillate have been shown to increase survival from prehospital ventricular fibrillation (VF) almost fourfold in Washington's King County. Using Nebraska ambulance rescue run data from 1982 and published information relating ambulance response time to the likelihood that a patient would be in VF, we constructed a model to analyze the difference in expected results for EMT defibrillation among communities of varying population. The model predicts that EMTs in urban Nebraska (mean population 242,000) will use the defibrillator once every six weeks. EMTs in intermediate cities (mean population 22,300) will defibrillate once a year. In rural Nebraska (mean population 1,500), the defibrillator will be used once every 5.6 years. Despite these figures, the model predicts relatively low cost per life saved (ranging from \$566 in urban areas to \$4,785 in rural Nebraska). The major problem with EMT defibrillation in rural areas is maintenance of skills and continuing education. [Ornato JP, McNeill SE, Craren EJ, Nelson NM: Limitation on effectiveness of rapid defibrillation by emergency medical technicians in a rural setting. Ann Emerg Med December 1984;13:1096-1099.]

Out-of-Hospital Cardiac Arrest: Factors Associated with Survival

One hundred eighty-seven cases of cardiac arrest of presumed cardiac etiology were analyzed to determine factors associated with successful out-of-hospital management by paramedic teams. Field and in-hospital records were reviewed to determine the response time of the advanced life support team, the ECG rhythm on arrival, the presence of paramedics on scene at the time of the arrest, whether bystander CPR had been initiated, and the eventual outcome of the resuscitation attempt. A significant difference in survival-to-leave-hospital was seen in patients in whom ventricular fibrillation or ventricular tachycardia (VF/VT) was present on arrival (15.3%) compared to patients with asystole, idioventricular rhythms, blocks, or electromechanical dissociation (3.4%). Survival rates in patients in whom CPR was being performed by a bystander were 24% in the VF/VT group and zero in the "OTHER" rhythms group. When the advanced life support team arrived in less than four minutes, survival rates in the VF/VT group and "OTHER" rhythms group were 23.1% and 7.7%, respectively. When the field team arrived in less than four minutes and a bystander was performing CPR, the survival rates were 42.9% in the VF/VT group and 15.8% in the "OTHER." These data suggest that efforts to improve survival from out-of-hospital cardiac arrest in a community should be directed toward public education, reduction in response times of paramedic units, and lay CPR training. [Roth R, Stewart RD, Rogers K, Cannon GM: Out-of-hospital cardiac arrest: Factors associated with survival. Ann Emerg Med April 1984;13:237-243.]

2-17

Weapons Against Death

F

For the past 10 years, basic Emergency Medical Technicians (EMTs) with additional training in defibrillation (so-called EMT-Ds) have been using their skills to treat patients with life-threatening cardiac arrhythmias. Research shows that patients with ventricular fibrillation treated by EMT-Ds have significantly higher survival rates than similar patients who were treated by basic EMTs. Several states, notably Iowa and Washington, pioneered EMT-D and have been models for other states to emulate.

Currently, there is much discussion about the latest technological advance in defibrillation: the automatic external defibrillator or AED. These so-called "smart defibrillators" are simply connected to the patient and turned on. EMT-D use of AEDs appears to have advantages over the use of manual defibrillators because the automatic machines:

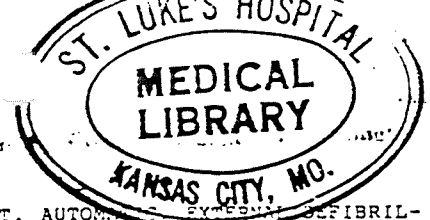
- provide more consistent performance and rhythm interpretation
- deliver countershock more rapidly
- are easier to use. This ease of use means that both initial and refresher training classes are shorter and cost less.

The current medical literature reports that AEDs are "acceptable alternatives" to their manual counterparts and are useful in the hands of trained first responders because they "shorten the time to defibrillation." Herein lies the real value of AEDs: If trained emergency personnel (either first responder or otherwise) can administer countershock quickly to patients in distress, lives can be saved.

The AED, though not infallible, is surely an important advance in emergency medical care. Once again, we become keenly aware that training and technology, human and machine working together, can improve our quality of life now and for years to come.

Richard W. Harris
EMIS Field Supervisor
Texas Department of Health

JACC Vol. 5, No. 2
February 1985:457



A NEW, COMPACT, AUTOMATIC EXTERNAL DEFIBRILLATOR DESIGNED FOR LAYPERSON USE. W Douglas Weaver MD FACC, Michael K Copass MD, Leonard A Cobb MD FACC, Deborah Hill BA, Bill H Newman MSEE, Harborview Medical Center, Seattle, WA Preliminary testing of a small semiautomatic external defibrillator specifically designed for layperson use is ongoing by firefighters who respond prior to paramedics. The device assesses cardiac rhythm and dynamic impedance for 6 sec through self adhesive defibrillating electrodes and advises the operator to deliver a shock for ventricular fibrillation (VF) or to return to basic life support depending on the underlying condition. Forty-seven patients (pts) have been treated; 20 of 22 pts (91%) discovered in cardiac arrest/VF were shocked. Each of 15 pts found in asystole and ten with other rhythms were correctly identified. Sensitivity for all 6 sec rhythm segments in which a shock was clinically indicated was 30 of 49 (61%) and specificity for nonshockable segments was 121 of 121 (100%). Sixteen of the 19 missed, shockable rhythms were either "fine" VF (≤ 0.2 mv) or ventricular tachycardia (n=4). The rescuers perceived the device to be easy and safe to use. Six of 20 pts (30%) shocked by the device had a return of pulse by the time paramedics arrived and 14 (70%) were ultimately admitted to the hospital; where 1 (5%) still remains, 3 (15%) have died and 10 (50%) have been discharged. We conclude that the size, ease of operation, and performance of such a device make it potentially usable by minimally trained emergency rescuers and possibly by families of high risk pts. ~~... and saved first aid trucks with auto...~~

2-18

Paramedic Programs and Out-of-Hospital Cardiac Arrest: I. Factors Associated with Successful Resuscitation

MICKEY EISENBERG, MD, MPH, LAWRENCE BERGNER, MD, MPH, AND ALFRED HALLSTROM, PHD

Abstract: As part of an evaluation of whether the addition of paramedic services can reduce mortality from out-of-hospital cardiac arrest compared to previously existing emergency medical technician (EMT) services, factors associated with successful resuscitation were studied. A surveillance system was established to identify cardiac arrest patients receiving emergency care and to collect pertinent information associated with the resuscitation. Outcomes (death, admission, and discharge) were compared in two areas with different types of prehospital emergency care (basic emergency medical technician services vs. paramedic services).

During the period April 1976 through August 1977, 604 patients with out-of-hospital cardiac arrest received emergency resuscitation. Eighty-one per cent

of these episodes were attributed to primary heart disease. Considered separately, four factors were found to have a significant association with higher admission and discharge rates: 1) paramedic service, 2) rapid time to initiation of cardiopulmonary resuscitation (CPR), 3) rapid time to definitive care, and 4) bystander-initiated CPR. Using multivariate analysis, rapid time to initiation of CPR and rapid time to definitive care were most predictive of admission and discharge. Age was also weakly predictive of discharge. These findings suggest that if reduction in mortality is to be maximized, cardiac arrest patients must have CPR initiated within four minutes and definitive care provided within ten minutes. (Am. J. Public Health 69:30-38, 1979.)

Paramedic Programs and Out-of-Hospital Cardiac Arrest: II. Impact on Community Mortality

MICKEY EISENBERG, MD, MPH, LAWRENCE BERGNER, MD, MPH, AND ALFRED HALLSTROM, PHD

Abstract: Out-of-hospital cardiac arrest was studied in suburban King County, Washington in an attempt to determine the impact of paramedic services on community cardiac mortality. A portion of the study area received paramedic services and the remainder received basic emergency medical technician (EMT) services. A surveillance system identified all prehospital cardiac arrest incidents. The etiology and outcome were determined. Deaths due to primary heart disease (ICDA codes 410-414) were compared to community cardiac mortality figures for the same period of time and in the paramedic and EMT areas.

Between April 1, 1976 and August 31, 1977, 1,449 deaths due to primary heart disease occurred (annual

rate of 19.2/10,000 in the EMT area and 13.4/10,000 in the paramedic area). For the same period, 487 patients with out-of-hospital cardiac arrest received emergency resuscitation. The annual incidence of out-of-hospital cardiac arrest was similar in the EMT and paramedic areas (5.6 and 6.0/10,000 respectively). Proportionately more lives of persons with cardiac arrest were saved in the paramedic area than in the EMT area. During this 17 month period, the reduction in community cardiac mortality was 8.4 per cent in the paramedic area and 1.3 per cent in the EMT area. These findings suggest that paramedic services have a small but measurable effect on community cardiac mortality. (Am. J. Public Health 69:39-42, 1979.)

TREATMENT OF OUT-OF-HOSPITAL CARDIAC ARRESTS WITH RAPID DEFIBRILLATION BY EMERGENCY MEDICAL TECHNICIANS

MICKEY S. EISENBERG, M.D., PH.D., MICHAEL K. COPASS, M.D., ALFRED P. HALLSTROM, PH.D.,
BARBARA BLAKE, B.S., LAWRENCE BERGNER, M.D., M.P.H., FLOYD A. SHORT, M.D.,
AND LEONARD A. COBB, M.D.

Abstract The survival rate for patients with out-of-hospital cardiac arrest is low in communities where emergency service is provided solely by emergency medical technicians. We trained such technicians in a suburban community of 79,000 to recognize and treat out-of-hospital ventricular fibrillation with up to three defibrillatory shocks without the use of medications or special airway protection. Outcomes from cardiac arrest due to underlying heart disease were determined during two periods: two years with standard care by emergency medical technicians and one year with defibrillator-trained technicians. During the peri-

od with standard care, four of 100 patients with cardiac arrest were resuscitated and discharged alive from the hospital, as compared with 10 of 54 patients during the period with defibrillator-trained technicians ($P < 0.01$). In 12 of 38 patients with ventricular fibrillation, a stable perfusing cardiac rhythm followed defibrillatory shocks given by defibrillator technicians. The enhanced survival after cardiac arrest is encouraging, and further trials of defibrillation by emergency medical technicians are warranted. (N Engl J Med. 1980; 302:1379-83.)

12-119

Efficacy of an automated external defibrillator in the management of out-of-hospital cardiac arrest: validation of the diagnostic algorithm and initial clinical experience in a rural environment

KENNETH R. STULTS, B.S., PA-C. DONALD D. BROWN, M.D., AND RICHARD E. KERBER, M.D.

36 Communities

ABSTRACT Automatic external defibrillators (AEDs) may have advantages over manual defibrillation in managing prehospital cardiac arrest, particularly in rural communities. We conducted a two-part evaluation of a commercially available AED. We first established the diagnostic accuracy of the AED's rhythm recognition algorithm by challenging it with 205 cardiac arrest rhythms previously recorded from actual patients in the field. The AED demonstrated 100% specificity and 92% sensitivity for ventricular fibrillation (VF) in this nonclinical setting. We then compared the clinical efficacy of AEDs in 18 small communities (study group) with that of manual defibrillation in 18 additional communities (control group) of similar size. Ambulance technicians using manual defibrillators correctly diagnosed VF more frequently than the AEDs (98% vs 83%; $p < .025$). Specificity for VF was similar in the two groups (100% for AEDs vs 94% for technicians; $p > .10$). AEDs were able to deliver shocks more quickly than was possible with the manual defibrillators (1.56 vs 2.77 min; $p < .001$). The ability of the AEDs to terminate VF was excellent, converting VF in 28 of 29 (97%) patients to some other rhythm compared with only 37 of 53 (70%) patients in the control group ($p < .01$). Hospital admission and discharge rates were similar for the two groups. Ten of the 35 (29%) patients managed with AEDs achieved admission and six (17%) were ultimately discharged. In the control group 17 of 53 (33%) patients with VF were admitted and seven (13%) were discharged ($p > .75$). AEDs are an effective alternative to manual defibrillation in small communities.

Circulation 73, No. 4, 701-709, 1986.

A Study of Out-of-Hospital Cardiac Arrests in Northeastern Minnesota

John W. Bachman, MD; Gregory S. McDonald, NREMT-P; Peter C. O'Brien, PhD

Training in advanced cardiac life support and defibrillation and community programs in cardiopulmonary resuscitation (CPR) had limited success in resuscitating patients with cardiac arrest in the Arrowhead region of Minnesota. Factors associated with survival included advanced cardiac life support within 10 minutes, ambulance traveling less than 1 mile (<1.6 km), use of paramedics, CPR within four minutes, and a call for help within two minutes. The use of technicians trained in defibrillation was associated with a statistically significant increase in hospital admissions, but not in survivors. The study failed to confirm the findings of previous studies of resuscitation in some rural areas. It was consistent, however, with reports that associated poor survival in rural areas with poor response times. No victims of unwitnessed arrests survived. Of the hospital deaths, 80% were due to neurologic causes, and overall survival was low.

(*JAMA* 1986;256:477-483)

Service Factors and Health Status of Survivors of Out-of-Hospital Cardiac Arrest

Lawrence Bergner, MD, MPH
Marilyn Bergner, PhD
Alfred P. Hullstrom, PhD
Mickey S. Eisenberg, MD, PhD
Leonard A. Cobb, MD

To determine how emergency service factors affect the health status of survivors of out-of-hospital cardiac arrest, 424 survivors were studied six months later. The principal research tool was the Sickness Impact Profile (SIP), a behaviorally-based instrument for measuring sickness-related dysfunction. Time to initiation of care and time to definitive care were significantly related to dysfunction. The critical time intervals can be influenced by the manner in which communities provide emergency care.

2.20



TO: Chairman Ivan Sand and Members of the
Local Government Committee

FROM: T. W. Pollan, Interim Director
Sedgwick County Emergency Medical Service

DATE: February 18, 1988

SUBJECT: House Bill 2835
Automatic External Defibrillators

My presence before this committee today is to represent the Emergency Medical Service of Sedgwick County and its interest in House Bill 2835. Since 1975, the political entities within Sedgwick County have devoted considerable energy and funding to develop, implement, and coordinate our sophisticated Advanced Life Support Emergency Medical Services system. The end product of these efforts is that the service provided to Sedgwick County is one of the "Best."

It is for this reason that I stand before you today to support the concept of improving EMS systems and health care by using Automatic External Defibrillators (AED). However, I am opposed to the current HB 2835, which would allow for the certification of "Wildcat" defibrillator technicians. In a recent article published by one of the EMS Regions the Editor states "Successful EMS services do not function alone, they are but one link in the SYSTEM. The system is comprised of medical control which extends all the way from a hospital to the street corner of AnyTown USA. The reverse is also true. The person out

Attachment 3
2/18/88

on the corner must be identified with and/or associated as an essential link of the local EMS system and not a wildcat with a defibrillator."¹ I agree totally with these statements. However, the proposed legislation seems to miss these major concepts stated above and is essentially allowing for field experimentation without medical authorization, control or coordination.

Four nationally published articles in 1986 recognized the necessity of medical control of such programs. The articles stated: 1)"This prospect of a proliferation of community responders equipped with automatic defibrillators raises several issues of medical control: Who will prescribe and maintain these devices? Who will be responsible for training, for skill review and for case review? And who will be named in the inevitable law suit? These issues must be resolved by gradual introduction of the devices into community settings in evaluative projects."², 2)"..it seems only prudent that a more formal review of the operation of the AED and the approved patient care protocol should be conducted..."³, 3)"An account of the events during resuscitation seems mandatory in order to determine that patients receive appropriate and safe care."⁴ and 4)"... communities were

¹ Fred Thorp: Howdy friends and neighbors.
NUS-FER-YUE-AWL!; 1987; Vol 2; Num 2

² Cummins RO, Eisenberg MS, Stults KR: Automatic external Defibrillators: clinical issues for cardiology. J AHA Circulation 3:382, 1986

³ Stults KR, Brown DD, Kerber RE: Efficacy of an automated external defibrillator in the management of out-of-hospital cardiac arrest: validation of the diagnostic algorithm and initial clinical experience in a rural environment. J AHA Circulation 4: 709, 1987

⁴ Weaver WD, Copass MK, Hill DL, Fahrenbruch C, Hallstrom AP, Dobb LA: Cardiac Arrest Treated with a New Automatic External Defibrillator by Out-of-Hospital First Responder. Amer J of (Footnote Continued)

selected to use EMTDs based on the following criteria (1) Strong Medical Control locally."⁵ (emphasis added) These are the statements made by the authorities who have researched or implemented such programs.

It is my request that you utilize the Kansas Medical Society for expertise on this issue. The Committee on EMS from the Kansas Medical Society has addressed this issue in their "Position Paper" dated December 15, 1987. Between the Kansas Medical Society and Emergency Medical Service Council, or the new EMS Board, the mechanism is in place to develop, implement and evaluate such treatment modalities. The issue of who can use AEDs is emotional, and potentially lives are at stake. But, without proper medical control and coordination of a EMS system using AEDs, it is doubtful we will ever be able to measure the success or failure of such programs.

In summary, I am not opposed to the use of AEDs by qualified lay persons when they are properly trained and retrained, medically controlled and reviewed, and are coordinated through the local EMS system.

Thank you for your attention and continued interest in the Emergency Medical Services provided to our citizens.

TWP:twp

ATTACHMENTS

(Footnote Continued)
Cardiology 57: 1020, 1986

⁵BachmanJW,McDonaldGS,O'BrienPC: A Study of
Out-of-Hospital Cardiac Arrests in Northeastern Minnesota.
JAMA 4: 478, 1986

3-3

CODE BLUE STATS 1987

TOTAL CODE BLUES 519

FIELD SAVES	99	19%	SAVE RATE
CLINICAL SAVES	25	5%	SAVE RATE
TOTAL SAVES	124	24%	SAVE RATE

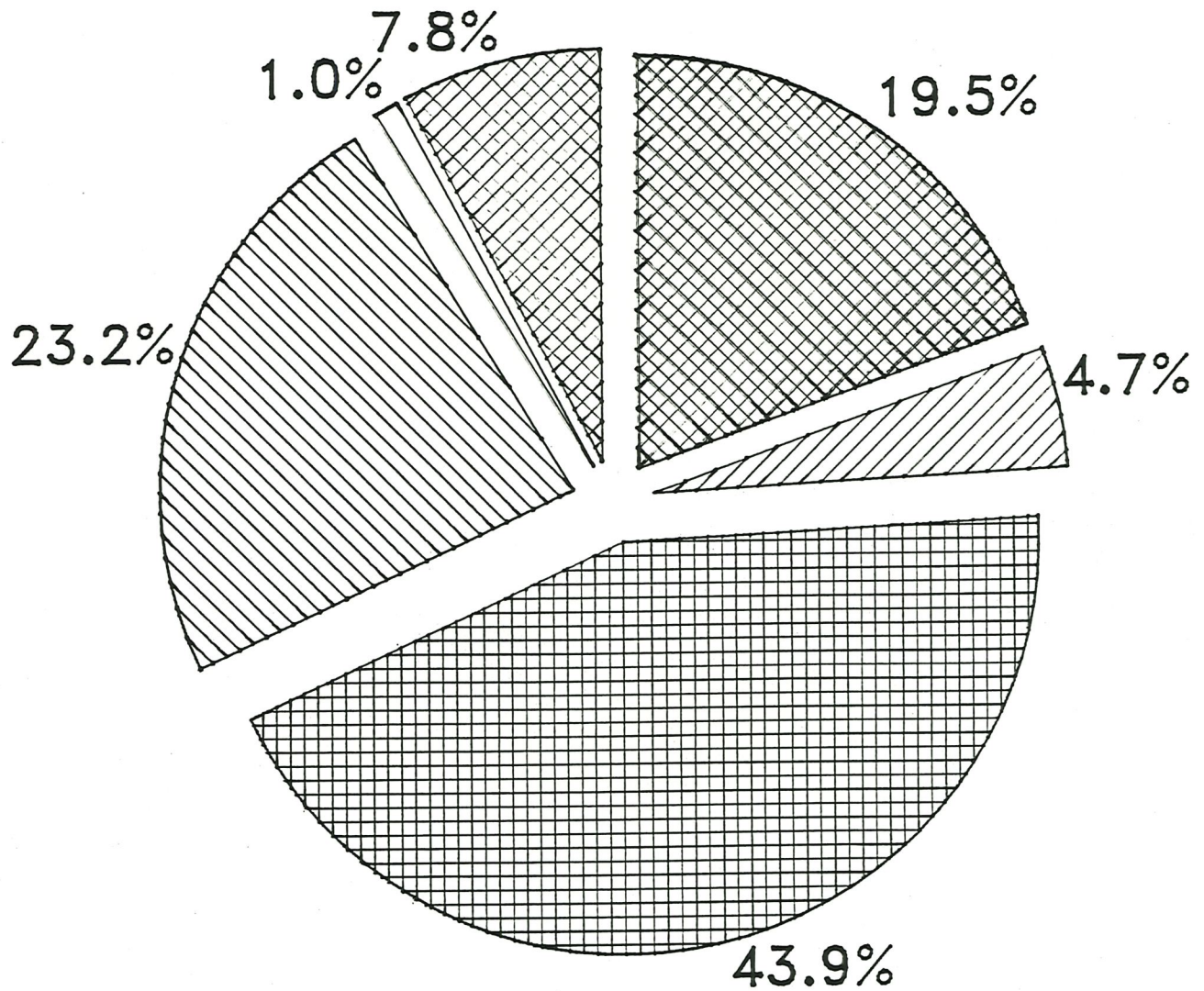
AVERAGE SCENE TIME FOR ALL CODE BLUES = 22 MINUTES



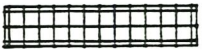

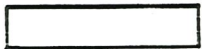

CODE BLUES BY INITIAL RHYTHM

RHYTHM	TOTALS/YR	% OF TOTAL BLUES	SAVES/YR	SAVE RATE
COARSE FIB	100	19%	35	35%
FINE FIB	24	5%	5	21%
TOTAL V-FIBS	124	24%	40	32%
ASYSTOLE	225	43%	18	8%
EMD	119	23%	32	27%
V TACH	5	1%	2	40%
OTHERS	40	8%	32	80%

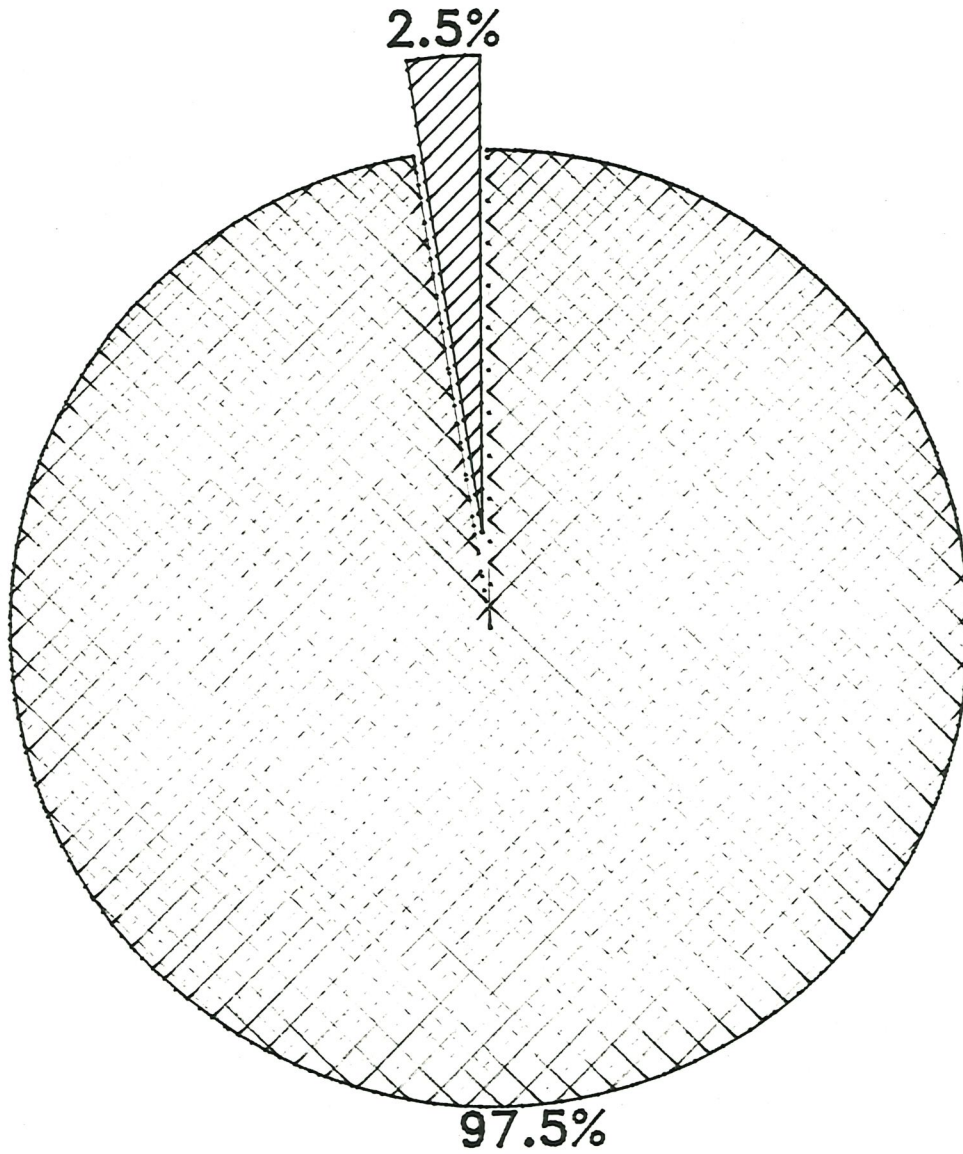
BY AGE	TOTALS/YR	% OF TOTAL BLUES	SAVES/YR	SAVE RATE
0-10	22	5%	4	18%
11-19	12	2%	1	8%
20-29	29	6%	8	23%
30-39	39	7%	6	15%
40-49	35	8%	10	28%
50-59	61	12%	5	8%
60-69	108	21%	37	34%
70-79	117	22%	24	21%
80-89	72	14%	24	33%
90 & UP	22	5%	5	22%
UNKNOWN	3	.06%	0	0%

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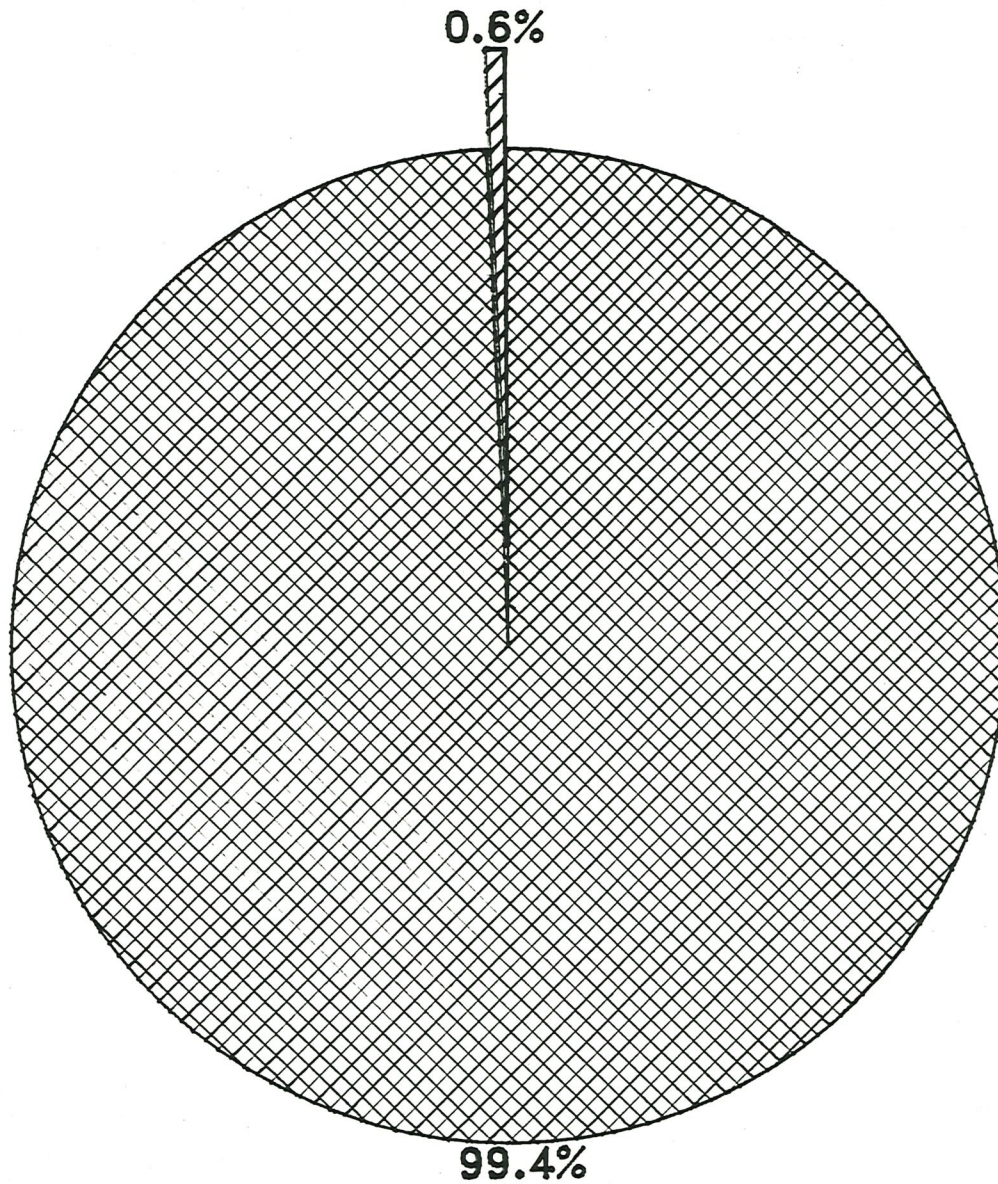
- | | | | |
|---|--------------|--|------------|
|  | COARSE V-FIB |  | FINE V-FIB |
|  | ASYSTOLE |  | EMD |
|  | V-TACH |  | OTHER |

EMERGENCY CALL BY CARDIAC ARREST



 EMERGENCY CALLS  CARDIAC ARREST

EMERGENCY CALLS BY CARDIAC ARREST PRESENTING IN V-FIB



 EMERGENCY CALLS  CARDIAC ARREST/ V-FIB

Respected Legislators. It is indeed my priviledge to speak before you about AED's. I've been in EMS some 14 years. I am an MICT with field savey. I am from Arkansas City and consider myself a country paramedic with great respect for life. I'm also a fire fighter on the present EMS Council as their representative.

I am naive about politics, bills and government even AH when I still see the Capitol, but my Senator Mr. Warren said I needed to have all horses pulling as a team when I talked with you, tell the truth and leave the decision making to you. I present these facts.

First. Fire Chief Rowe apologized for not being here but our city just lost 2 children in a fire an duties dictate he remain in Arkansas City. He wishes you to know he supports this bill with minor changes which include:

1. Certified EMT level only the first year.
2. Medical direction from local Doctors.
3. Vendor taught AED classes.
4. EMS Board Registered.

This is important not only to type I services with tier responses but to type I services with fixed MICT involvement. We have 6 MICT in Arkansas City. When one is on a run to Cedar Vale and another in route to Wichita with a transfer on a 3rd run and EMT could provide primary cardiac care with an AED until we got a third MICT called in from home to make this emergency call. This takes approximately 15 min. Single location EMS units can use the AED's as a tool to manage delivery of better patient care by using existing techs. at a time when budgets are always pressing - this is cost effective.

*Attachment 4
2/18/88*

Second. We can save lives if we get the AED to the patient in 1-4 min. as quick as we want good CPR to reach a victim.

A. We must share the use of the Defib. to achieve this, therefore:

1. We must place in fire or police units which have a quicker response time (explain) and areas with staffed EMT emergency treatment centers such as large airports, stadium, large employment facilities until an ambulance arrives.
2. In large cities with paid fire department EMT/fire-fighter's must be allowed to use the AED's.

Third. This is the birth of medical involvement from the Kansas Medical Society rather than KU employed Doctors and they will be reviewing many EMS aspects this year and its importance that a working relationship be established.

Fourth. There are already AED's in homes being used by family members hence, EMT's of type II service would be practicing beyond their scope should they transfer this defib patient in their ambulance at present. I believe the AG has stated "Using AED's is a practice of medicine". It then becomes important we should provide some legislation to correct this situation.

U.S

In summary these AED's are needed, working within the medical society guidelines and reaching closer to the cardiac patient by using certified EMT firefighters is first response engines followed by type I transport.

Arson Estabrook

For Release June 1, 1987
1:00 p.m., EDT

Contact:
Dennis Murphy
Emergency Medical Services
Committee Chairman, IAFC
(503) 726-3737

IAFC SPONSORS RAPID ZAP PROGRAM TO SAVE HEART ATTACK PATIENTS

Thousands of lives can be saved each year by equipping the nation's fire fighters with computers that automatically sense a patient's irregular heartbeat and "restart" the heart with an electrical shock. The International Association of Fire Chiefs (IAFC) is sponsoring an initiative to spread the concept, beginning with a demonstration project in the Western Oregon cities of Eugene and Springfield.

Fire departments in the two cities have equipped every fire engine with computerized devices known as Automatic External Defibrillators (AED). The AEDS allow fire fighters to deliver shocks to victims of cardiac arrest within the first few minutes after collapse, prior to the arrival of paramedic ambulances.

Cardiac arrest may follow heart attack, drowning, smoke inhalation, electrocution or other sudden interruption of normal heartbeat and breathing. The victim collapses and the heart begins a fast, irregular, quivering action which rapidly leads to death unless the heart is shocked.

According to a recent report by the American Heart Association, more than 540,000 cardiac arrest deaths occur each year as a result of heart disease alone. Nineteen percent occur before the age 65. Chances for survival decrease as much as seven percent per minute following collapse.

Recent advances in technology allows manufacturers to place computers inside small, portable cardiac treatment devices. The devices are easily operated by fire fighters with basic emergency medical training after as little as four to six additional hours of instruction and may be carried on all fire apparatus in city and rural areas. Features made possible by computer application include visual and synthesized voice instructions known as "prompts" which guide the actions of rescuers.

After fire fighters attach electrodes, the computer recognizes death-producing heart action and warns the rescuers to "stand back" while shocks are administered. Each time the equipment is used, a record of the event is automatically recorded for analysis by project physicians.

The new program, which has been in the planning stage since September 1986, has been nicknamed "RAPID ZAP" because of the emphasis on the rapid application of electric shocks. Booklets describing the steps for initiating Rapid Zap programs in local fire departments will be distributed by the IAFC before the end of the year.

Position Paper

The EMT-Defibrillator Program and The Use of Automated Defibrillators

Committee on Emergency Medical Services
Kansas Medical Society
15 December 1987

The use of manual defibrillators requires the ability to recognize potential lethal dysrhythmias. The current training requirements of 26 hours followed by state examination and certification are felt to be appropriate for those emergency medical technicians who will be using manual defibrillators. The present regulations requiring ambulance services using manual defibrillators to have a medical director, who is responsible, either personally or through his designee, for reviewing the medical indications and appropriateness each time the defibrillator is used, are necessary for medical control, quality assurance, and educational purposes. The Committee feels they should be maintained. In addition, the medical directors need to be advised as to the medical, legal, and moral responsibilities they assume in supervising and reviewing the use of manual defibrillators by emergency medical technicians under their authority.

The resuscitation of acute cardiac conditions, especially arrhythmias, does not revolve about an isolated event that can be solved by the use of a single, magic, flashy, high tech modality called defibrillation. The foundation of a successful resuscitation is built on other mundane, but more important, capabilities including the ability to rapidly provide effective basic life support; respond in an appropriate and organized manner, through repetitive training and practice, to the chaos and confusion that occur at all major cardiac incidents; and the ability to effectively maintain, support, and, if necessary, transport the patient until advanced cardiac life support is available.

To meet the above criteria, an emergency medical technician wishing to use an automated defibrillator should be certified or recertified in basic life support (CPR) at least each year, preferably every six months. The initial training program should consist of 10-15 hours in the proper and approved use of the defibrillator; the appropriate management of a cardiac patient, including patient assessment, airway management, oxygen therapy, treatment protocols, verbal and written communication skills, and medical record documentation. Because knowledge and skill retention deteriorate so rapidly, the Committee recommends a yearly, 8-10 hour refresher course covering the same areas, in addition to CPR recertification. Successful completion of the initial and yearly training requirements should be documented by a written and practical examination.

The Committee recommends the Kansas Medical Society support necessary legislative changes to enable EMT, EMT-D, and EMT-Intermediates to use automated defibrillators under the conditions outlined above, provided that each service, using automated defibrillators, have a medical director, listed with the Bureau of Emergency Medical Services, who, either personally or through his designee, would be responsible for reviewing, in accordance with guidelines developed by the Bureau, the medical indications and appropriateness each time the defibrillator was used. In addition, the local component medical society should approve the protocols for the use of the defibrillators and the review mechanism.

For those ambulance services having contractual agreements with other agencies to provide first response services, the Committee recommends the Kansas Medical Society support legislative or regulatory changes to allow the first response provider to use automated defibrillators if they are in compliance with all conditions listed above.

Because the Committee feels the patient assessment and management skills required to deal with unstable cardiac patients are beyond the scope of training of first responder, the use of automated defibrillators

by certified first responders is felt to be inappropriate. The Committee recommends the Kansas Medical Society oppose any legislative change to permit such usage.

The Committee recommends that the Kansas Medical Society adopt a position that the use of automated defibrillators by individuals, not certified or licensed as emergency medical technicians, emergency medical intensive care technicians, registered nurses, nurse clinicians/practioners, physician assistants, or medical physicians, except in the case of family members functioning on the order of and after instruction by a licensed medical or osteopathic physician, should be considered the practice of medicine without appropriate authority.

Looking at the broad medical, social, and financial implications of automated defibrillators, the Committee suggests that services considering automated defibrillators must honestly evaluate their particular situation to determine the appropriateness of their use. Medical criteria to be considered include, but are not limited to, the number of potential cardiac arrhythmia responses per year (Estimated at 1/1000 population, 1-2/10,000 savable), percentage of witnessed arrests, average response time (>8-10 minutes = brain death), availability of basic life support (CPR), availability of ACLS and ACLS response time, and transport time. Using national data to establish parameters for those criteria, there may be few areas in Kansas which can medically justify the cost and effort to establish a defibrillator program using automated defibrillators. Communities should consider the potential for greater benefit if their manpower and financial resources are utilized to improve emergency medical care through the development of "911" emergency telephone networks, or programs to promote citizen CPR and first aid programs within the community and schools.

**City of
Dodge City**



CITY HALL
P.O. Box 880
Dodge City, Ks. 67801-0880
Phone 316/225-1391

September 28, 1987

Mr. Aaron Estabrook
Kansas Firefighters Assn.
Dodge City, KS 67801

Dear Aaron:

I am writing to you in support of the use of automatic external defibrillators by E.M.T.'s and first responders in the field. The documentation exists that these programs are saving many lives of citizens and taxpayers in several states.

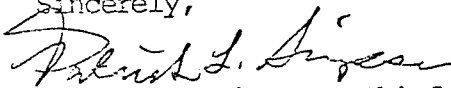
Having come to Kansas from one of these states, in particular Iowa, I know from personal observation that automatic external defibrillation in the field works. The personnel who perform this task in a timely and proper manner have saved many lives.

It would be of benefit to all Kansans to have legislation passed regarding use of these instruments with minimal training. This would appeal to fire service, law enforcement and emergency medical services. Dr. Richard O. Cummins M.D., Associate Professor of Medicine at the University of Washington, states in an article in the September 1987 issue of JEMS magazine that automatic external defibrillators do save lives even when utilized by non-medical personnel.

My argument is that Kansas needs legislation to allow E.M.T.'s and first responders with minimal training to operate automatic external defibrillators in the field and to provide Kansans the privileges of technology of modern medicine available to use today in cases of acute crisis.

Your consideration of this matter is greatly appreciated. I am at your disposal for any further assistance you may require.

Sincerely,


Patrick L. Simpson, Chief
Dodge City Fire Dept.

4-9

Robert A. Worsing, Jr., MD
8409 Huntington
Wichita, KS 67206
316 683-0002

6 January 1988

Aaron Estabrook
1518 N. Third
Arkansas City, KS 67005

Dear Aaron,

I very much enjoyed the opportunity to meet and talk with you at the EMS Council meeting last month. As I promised at that time, I am enclosing a copy of the Kansas Medical Society Committee on EMS position paper on automated defibrillators. This position paper has not yet been formally adopted by the KMS' Board, so at present it is not official KMS policy, though I doubt there will be significant changes.

As you can see in the position paper, the EMS Committee recommends that EMTs be allowed to use automated defibrillators provided they work for a service with a medical director and they have undergone the training program required for certification to use automated defibrillators. I believe many of Kansas fire departments will be able to meet these guidelines.

The Committee's position on first responders may be more difficult for some to understand, but the position paper is not written in stone. The Committee took its position on the use of automated defibrillators by first responders in part to allow a trial of the use of automated defibrillators by EMTs for a one to two year period to see if they really are medically appropriate, necessary, and cost effective in Kansas where the availability of ALS and transport times may be significantly different than in King County, Washington, and other areas around the country. If automated defibrillators are found to be efficacious in the hands of Kansas EMTs, the EMS Committee would certainly be open to reconsideration of its position, would very likely consider a liberalization of their recommendation in that area.

With respect to the training recommendations, I believe that fire department medical training officers will recognize the need for and value of the training recommendations to include patient assessment, airway management, oxygen therapy, management of cardiac patients, verbal and written communication skills, and medical record documentation, as well as

4/10

recurrent CPR/BLS training and how to use the automated defibrillator. In my experience, the areas other than the use of the defibrillator are usually included in yearly recurrent training schedules anyway, so the recommendations are merely formalizing and documenting something which is already being done.

The contractual arrangement recommendations are merely an attempt to formalize existing agreements to ensure adequate medical control and quality assurance programs will be utilized. Admittedly such agreements are more paperwork, but done in the appropriate spirit, they can significantly improve the quality of medical care being provided as well as improving the working relations between the agencies involved.

Personally, I would appreciate the support of the fire services for the intent of the last paragraph in the position paper. Human beings, being what they are, sometimes find themselves blinded by their hopes and desires to do "good", especially if they are within earshot of the siren song of the goddess, technology. Unfortunately so often in medicine, what initially looks like the greatest thing since crunchy peanut butter begins to develop the odor of bovine excrement after it's short day in the sun; leaving people with a lot of expensive toys of marginal, if any, usefulness.

I hope this will explain some of the areas of the position paper. I also hope the fire services will be supportive of the positions being taken. I truly believe they are reasonable medical compromises for the present period of time in a very medically and politically controversial area.

Looking forward to visiting with you in the future.

Respectfully,



Robert A. Worsing, Jr., MD
Chairman, Committee on Emergency Medical Services
Kansas Medical Society

xc: Paul Bogner, MD
Val Braun (KMS)

4/11

From: MEDICAL
Subject: EMT-D PROGRAM PROPOSAL
Date: 29-Sep-1987
To: STA2B

Encl:

BATTALION CHIEF J.A. TODD,

IT IS MY INTENTION TO PROPOSE TO THE WICHITA FIRE DEPARTMENT AN EMT-D PROGRAM. UPON FORMULATING STATISTICAL DATA AND ACCUMULATING THE RESOURCES NECESSARY, IT CAME TO MY ATTENTION THAT IN ORDER TO BE LICENSED BY THE STATE FOR AN EMT-D PROGRAM, THE SERVICE MUST HAVE LICENSED TYPE-IID VEHICLES. SINCE WE ARE "FIRST RESPONDERS", DOES THIS PRECLUDE US FROM BEING LICENSED?

MY FEELING IS THAT IF THE STATE WANTS TO PROVIDE STATISTICS FOR THE EMT-D PROGRAM SO AS TO COMPARE TO NATIONAL DATA, THEN WHY NOT LICENSE THE WICHITA FIRE DEPARTMENT AND OTHER SUCH DEPARTMENTS TO PROVIDE THE EMT-D PROGRAM. IT IS ESTIMATED THAT SEDGWICK COUNTY EMS RUNS APPROXIMATELY 400 CARDIAC ARREST PATIENTS A YEAR, 85% OF THOSE OCCURING IN THE CITY LIMITS OF WICHITA. MY SPECULATIVE STUDIES WOULD PROVIDE AN ADDITIONAL 19% CLINICAL SAVE RATE IF THE WICHITA FIRE DEPARTMENT WERE TO IMPLEMENT THE EMT-D PROGRAM.

HAVING THIS HURDLE OF LICENSURE HANGING OVER OUR HEADS IS WHY I HAVE NOT PROPOSED THE PROGRAM AT THIS TIME. IN ADDITION, THE FUNDING AND RESOURCES HAVE NOT BEEN APPLIED TO OR FOR.

I WOULD BE HAPPY TO ENTERTAIN ANY THOUGHTS OR PERSPECTIVES ON THIS MATTER. THANK YOU FOR YOUR ATTENTION TO THIS ISSUE.

CAPTAIN R.G. STEARNS
COORDINATOR OF FIRE/MEDICAL RESCUE SERVICE

412

2-18-88

TO: House Local Government Committee
FROM: Ted McFarlane Representing the Kansas EMS Council
REF: House Bill 2835

I am the Chairman of the defibrillation committee of the Kansas EMS Council. The Committee was formed to study the concept of expanding the use of defibrillators beyond that currently allowed by statute. Under current state laws only MICT's or EMT's with special training and defibrillation certification are allowed to defibrillate in the prehospital setting. The defibrillation committee requested the opinion of both the KUMC Emergency Medical Training Program and the Kansas Medical Society on the issue. The committee also conducted a survey of the 26 physicians in the state who are medical directors for either paramedic level services or EMT-Defibrillation services. A summary of the 13 physician responses is attached. The survey reveals that 8 of 13 responding felt that defibrillation with an automated device should be restricted to EMT's and above. All the respondents felt that the minimum level of training should be at least certified first responders.

After considering the Kansas Medical Society and KUMC opinions the Kansas EMS Council took a position on the use of automated defibrillators at its January 29, 1988 meeting. The Council supports the use of automated defibrillators; but at this time, due to the clear opinion of medical advice received from Kansas physicians, feels that their use should be limited to EMT's and above. The Council also supports a modification of the current law to allow the Council or the proposed new Board to adopt the training and program requirements for the use of defibrillators of any kind.

In summary, the EMS Council opposes H.B. 2835 as proposed but would support it if the following amendments were accepted.

1) In section 2(a) (line 0035) change "individual" to "certified emergency medical technicians".

*Attachment 5
2/18/88*

Rationale: This would limit the defibrillation procedure to EMT's and above.

2) In Section 2(a) (line 0041) strike "of ambulance services".

Rationale: As proposed some of the best trainers at our community colleges would not be allowed to conduct training. This amendment would allow Board promulgated rules and regulations to specify who conducts defibrillation training.

3) In Section 2(a) strike the last sentence and substitute "The course of training shall be a minimum of four hours in length".

Rationale: No other training program has a maximum number of hours established by statute. This should be left to the Board to determine.

4) In Section 2(b) (lines 0051-2) strike "ambulance service which" and substitute "instructor who".

Rationale: This will make it consistent with the changes made in Section 2(a).

5) Strike Section 2(c).

Rationale: This section is not needed if only EMT's are allowed to defibrillate, because they are already covered by the Good Samaritan Act. However, it would be advisable to add defibrillation to the authorized activities of an EMT in Section 20 of H.B. 2639.

6) In H.B. 2639 strike section 22 dealing with the certification of EMT-D and the references to EMT-D in Section 11(d) of H.B. 2639 which defines attendant.

Rationale: This new bill makes the certification of EMT-D obsolete. This will also help clarify the certification process because it will reduce the number of different certifications.

If the Committee favors the amendments suggested the EMS Council supports forwarding the bill to the House floor.

TED McFARLANE

5/2

PRE-HOSPITAL DEFIBRILLATION SURVEY (RESULTS)

(All questions refer to automatic or semi-automatic defibrillation.)

1. What minimum level of training should be required before automated defibrillation training is approved?
3 EMT-D (120 hours initial training, 26 hours defibrillation training)
5 EMT (120 hours initial training, 4-6 hours defibrillation training)
1 CIMT (81 hours initial training, 4-6 hours defibrillation training)
4 First Responder (45 hours initial training, 4-6 hours defibrillation training)
0 Non-certified person (no initial training, 4-6 hours defibrillation training)
2. Which of the following entities should be able to provide defibrillation?
12 ambulance services
6 fire departments which do not provide ambulance service
9 rescue squads/first responder units
1 shopping malls/department stores
2 factories (1-only by specially trained R.N.)
0 no restrictions
3. Which of the following should be a required part of a defibrillation program?
11 physician medical director
10 written protocols approved by the local component medical society
5 written agreement with an ambulance service which provides defibrillation
0 other _____
0 none of the above
4. How much annual continuing education should be required for persons who provide defibrillation?
0 none
4 one to three hours
8 four to six hours
1 six to ten hours
0 other _____

(NOTE: The survey was sent to the medical directors of 17 Type I services and nine EMT-D services which were in the pilot program; 13 surveys were returned.)

PLEASE RETURN THIS SURVEY IN THE ENCLOSED ENVELOPE BY JANUARY 15, 1988. THANK YOU.



**THE UNIVERSITY OF KANSAS
MEDICAL CENTER**

School of Allied Health
Office of the Dean
39th and Rainbow Blvd., Kansas City, Kansas 66103

Mr. Chairman and Members of the Committee:

My name is Albert Dimmitt, and I appreciate the opportunity to appear today to register the Kansas University Medical Center's opposition to House Bill 2835.

It is the position of the Medical Center that defibrillation therapy is an appropriate adjunct to the treatment capabilities of the Emergency Medical Technician and Emergency Medical Technician-Intermediate when the following conditions have been met: 1) the technician has completed a course of instruction on the equipment and procedures for its use; 2) when there is support and approval by the local medical society; 3) when the procedure is used on oral order of a physician, or standing order approved by the local medical society; 4) a mechanism for incident review with the medical adviser has been established; 5) a process for regular and periodic update is implemented; and, 6) when defibrillation occurs within the EMS system which can provide for the total emergency care of the patient.

This position is informed by a rapidly accumulating body of medical literature documenting the efficacy of early defibrillation by EMT personnel. A review of that literature reveals several themes. First, while there is broad support for defibrillation by EMT level providers, and there is some support for use by families of high risk patients, very little evidence exists supporting defibrillation by other medically untrained responders. Until research verifies the safety and the efficacy of automated defibrillation by lay people, an effort such as the one proposed in this bill is not responsible.

The second consistent theme in the literature emphasizes the importance of strong physician oversight to the success of the program. Physicians must be involved in the selection of the equipment used, in the training of the personnel, and in the quality assurance review. Further, since the administration of an electrical shock therapy can be done only under the license of a physician, some provision must be made for medical authorization, either in an on-line capacity, or through standing orders. The bill being considered today doesn't mention medical input.

Thirdly, all of the studies are clear in supporting a requirement for frequent procedure review and demonstration. Although there is not universal agreement on the frequency, most require it at least quarterly. House Bill 2835 requires only that a person complete another course at the end of three years. The research on skill deterioration is incontrovertible

*Attachment 6
2/18/88*

and frightening, especially when applied to a device like the automated defibrillator. Numerous reports have appeared in the literature over the past few years showing that cardiopulmonary resuscitation skills deteriorate rapidly, even among EMTs and other health professionals. In a 1980 study, Deliere and Schneider found that within six months of CPR training, thirty nine percent of EMTs could not pass the same CPR skills test. By the end of the second year, seventy three percent were unable to perform satisfactorily. In the automated defibrillation arena, the Seattle group which has so strongly supported early defibrillation reported last summer in the Annals of Emergency Medicine on an evaluation of skills retention among family members who had been trained in the use of an automated machine. They found that within six weeks of the training, there was a thirty three percent drop in performance proficiency, coupled with a fifty percent increase in the time required to complete the necessary steps. This decreased efficiency was noted in a group in which all training took place in a one-on-one format, taking as much time as was necessary, and in which the students were extremely motivated by the prospect of using the procedure to save an at-risk loved one. These reports are representative of the growing evidence supporting the need for frequent monitored practice.

Our overriding concern however, is that there is no evidence that placing defibrillators in the hands of "any individual" is effective at reducing the mortality from cardiac arrest. We recognize that there is tremendous appeal in a program that will "save lives," but fear that the injudicious implementation of this expensive therapy in a setting where its effectiveness has not been well documented, where care of other aspects of the patient's condition is not provided for, and where there is no mechanism for physician oversight, is not in the public health interest.

We are also alarmed at the perception that the automated defibrillator will save countless lives. Reports of discharge rates among hospitalized patients who were resuscitated have ranged from five to twenty three percent. These are cardiac arrests that occurred in the hospital where personnel and resources were immediately available. Prehospital rates of long-term survival are considered good if they are above twenty percent of those patients found in arrhythmias which may respond to countershock (about 50% of arrests.)

There's no question, the procedure for performing defibrillation is relatively simple. The applicability, however, is restricted to a narrow population. For the price of one machine many members of the community could be trained in CPR and First Aid and provided basic equipment, rendering them able to provide lifesaving care to a whole variety of victims, with a greater chance of success. With AEDs, though, we have been seduced by lights, whistles, and the perhaps unrealistic expectation that immortality is a 360 joule charge away.

I have attached to my testimony a copy of a letter from Roger White, MD of the Mayo Clinic regarding this bill. Dr White is an outspoken advocate of early defibrillation, but voices, in this letter, serious concerns about the uncontrolled use of the procedure.

Again, I appreciate the opportunity to speak, and would be pleased to answer any questions.

6-2

Mayo Clinic

Rochester, Minnesota 55905 Telephone 507 284-2511

Roger D. White, M.D.
Department of Anesthesiology

16 February 1988

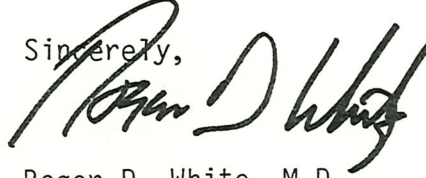
To Whom It May Concern:

As a strong and very vocal advocate of early defibrillation in out-of-hospital settings, it is important that I reaffirm the agreed upon prerequisites for the institution of early defibrillation programs as set forth in the document "Standards for EMT-Defibrillation" developed at the EMT-Defibrillation Draft Standard Setting Seminar in April 1986. If early defibrillation is to be successful on a long term basis, it is mandatory that it be implemented in a controlled and orderly fashion. The document referred to above is very explicit in this respect. This document was generated in a conference with contributions from individuals who have had extensive and published experience with early defibrillation programs.

It is absolutely critical that every early defibrillation program have a medical director whose functions are well detailed in the Standards Document. The ultimate acceptance and stability of early defibrillation is crucially dependent on medical control and accountability and there must be a physician who assumes this responsibility and assumes also the functions outlined in the Standards Document. If individuals executing early defibrillation are not emergency medical technicians or fully trained first responders, the program should be considered investigational and should be under even greater and more stringent medical control and with approval from the state EMS office. Furthermore, use of automated or semi-automated defibrillators mandates an ongoing assessment of proficiency. The Standards Document recommends a proficiency assessment on a three to six month basis which includes assessment of skills maintenance and the ability to defibrillate correctly within 90 seconds of arrival as outlined on page V-5 of the Standards Document. In accord with other Emergency Medical Technician performances, continuing education is needed and the Standards Document recommends six to twelve hours on an annual basis of continuing education as well as the skills proficiency assessment at three to six month intervals.

Early defibrillation has the exciting potential for being a major life-saving intervention and yet at the same time it has the very real and fearful potential of self-destruction because of uncontrolled implementation and conduct without stringent medical control and accountability with physicians specifically identified to assume this responsibility. Mandating physician direction, selection of candidates who are Emergency Medical Technicians or trained first responders, and the insistence on proficiency assessments every three to six months as well as continuing education are the only safeguards available to avoid self-destruction.

Sincerely,



Roger D. White, M.D.

RDW:kds

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