Maryland
E·M·S
NEWSLETTER

Vol. 17, No. 7 | For All Emergency Medical Care Providers | March 1991

Focusing on Cardiac Emergencies

COMMENTS

As this issue of the *Maryland EMS Newsletter* goes to press, Operation Desert Shield has become Operation Desert Storm and, as we said in the December/January newsletter, we have seen that "the world can be a dangerous place to live." Since action by the coalition forces began on the night of January 16, 1991, the war has been almost constantly on everyone's mind. At times it may seem difficult to focus on everyday tasks in the context of momentous events in the world. However, President Bush has reminded the country that work must go on. We must continue our work while knowing that our thoughts and prayers are with those who are at risk.

Adaptation is a remarkable human trait. If we recall the first few hours (perhaps the first 36 hours) after the night of January 16, 1991, many of us were glued to our television screens and our attention was riveted on the war. After it became obvious that the war would not be over in a few days, we adapted to the fact that life and work had to go on, and news of war events became not so much hourly news but, for many, the evening news. Adaptation is also a remarkably positive human trait, in that it allows us to adjust to new events and to incorporate new knowledge into new progress to help human beings.

Throughout history and literature, the heart has been seen not as a pump which delivers oxygen-carrying blood but often as the seat of emotions

According to 1989 data for 22 of the 24 Maryland jurisdictions, 2.4 percent of the patients transported by ambulance were in cardiac arrest.

("heartache"). One of the earliest descriptions that has been interpreted to imply cardiac resuscitation is recorded in the Old Testament (1 Kings, Chapter 17). In this passage, Elijah comes across a child who was so sick that "there was no breath left in him." Elijah "stretched himself upon the child three times" and prayed to God, and "the soul of the child came back into him and he revived." Perhaps these were the "quick breaths" of resuscitation, thousands of years before ACLS.

Some of the earliest modern advances in emergency care were developed in Baltimore. In the 1950s, Chief Marty McMahan, of the Baltimore City Fire Department, Dr. Robert Wilder, and Dr. Peter Safer (physicians at the then-Baltimore City Hospitals) were developing mouth-to-mouth resuscitation, while closed chest cardiac compression was being developed at the Johns Hopkins Hospital (see *Maryland EMS Newsletter*, April 1984). In 1958, mouth-to-mouth resuscitation became the first resuscitation technique sanctioned by the American Medical Association.

A major focus in recent years has been not only on resuscitating cardiac arrest victims but on gaining the best chance of survival by intervening *before* the arrest. In this context, emphasis is placed on public education and on recognition of the signs and symptoms of myocardial infarction before cardiac arrest has occurred. Dr. Raymond Bahr, the medical director of the Paul Dudley White Coronary System at Saint Agnes Hospital, has

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COMMENTS

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been a leader in this area, and he described this approach in a previous issue of this newsletter (September/October 1989).

In this issue of the *Maryland EMS Newsletter*, we are presenting information on several aspects of emergency cardiac care. Again we emphasize that while cardiac arrest is the most blatant and obvious cardiac emergency, we must recall that if our mission is to "deliver a viable patient to definitive care," our efforts must be directed not only to those who *have suffered* cardiac arrest, but to those who *are at risk* of suffering cardiac arrest. Early recognition of the symptoms of cardiac disorders by citizens, access by 911, and treatment of life-threatening dysrhythmias in the field in the hope of getting a patient to a coronary care unit prior to arrest provides the best long-term outlook, especially in the era of thrombolytic therapy (medications to dissolve blood clots in coronary arteries).

Several articles in this issue focus on this theme. For example, Kathy Paez, who manages the Maryland Ambulance Information System (MAIS) run sheets, provides epidemiologic data as to the incidence of cardiac arrest reflected in the MAIS. Gene Bidun, the director of EMS communications at MIEMSS, discusses the evaluation process for monitor/defibrillators in the Maryland EMS System, as well as a technique to maximize battery reliability for defibrillation. Recent emphasis on early defibrillation has led to both advances and misunderstandings. The American Heart Association's emphasis on early defibrillation is meant to incorporate early defibrillation into an entire system of emergency care including public education, early recognition of symptoms, 911 access, BLS and ALS response, and safe transport to definitive care. The best results come from a focused approach rather than a diffuse approach. "Targeting" is preferable to a "shot gun" approach. The discussion by Dr. Floccare "EMT-D: Can It Help My Program" describes a straightforward process to analyze in advance how and whether an EMT-D program can be of benefit to the citizens of a community. Such an approach can be of great help in analysis and planning, and we hope it generates discussion and further understanding.

In another area, many in the Maryland EMS community have inquired as to the discussions and issues among MIEMSS (Shock Trauma/EMS), the University of Maryland System, the University of Maryland School of Medicine, and the University of Maryland Medical System. All of the entities involved participated in candid and intense discussions which culminated in the signing of agreements which were endorsed by the University of Maryland Board of Regents in January 1991. These agreements allow for the continued growth and development of a system that has proven to be lifesaving because of a clear goal and the cooperation of all those involved. We thank all those in the Maryland EMS community who expressed their support, interest, and concern through this time of intense discussion and resolution.

◆ *Ameen I. Ramzy, MD*
State EMS Director

EMS Week: May 12-18

Maryland will join other EMS systems across the nation in celebrating EMS Week, May 12-18. Activities will center around the national theme "The Team That Cares." The nationally designated week offers an opportunity for educating the public about their role in EMS and how they can prevent injuries and about the many jobs of EMS providers. For further information, call your regional EMS administrator.

EMS Care '91

April 26-28, 1991

Greenbelt Marriott Hotel
Greenbelt, MD

Hosted by Prince George's County Fire Department

Sponsored by MIEMSS and the Region V EMS Advisory Council

Academic Program sponsored by the Physicians of Shock Trauma.

For program and registration information, call the MIEMSS Region V Office, 301-474-1485.

How to Maximize Battery Reliability for Defibrillation

Perhaps the most helpless feeling for a prehospital care provider is to set the ECG monitor/defibrillator discharge level, place the conductive gel and paddles onto the patient's chest, depress the discharge pushbuttons, wait, . . . and nothing happens. A spare set of batteries is quickly put into the unit and the procedure is started again . . . and again nothing happens. The patient didn't even have a chance to defibrillate because the ECG defibrillator didn't discharge.

We read and hear about this happening around the U.S. The problem usually involves defective or undercharged batteries. How can this type of problem be minimized or eliminated?

The first and most effective means to ensure properly charged batteries is to purchase a battery reconditioner and discharge tester. Many ambulance companies purchase only a battery charger because it costs more to buy a battery reconditioner, and cost does influence many purchases.

Most ECG monitor/defibrillators use nicad (nickel/cadmium) batteries. By constantly charging and re-charging this type of battery a "memory" is formed that does not allow the nicad battery to completely charge. Therefore, the battery has a short charge and discharge cycle. And, of course, there is also a useful life for a nicad battery. Each battery should be marked with the date it was placed into service. We recommend that a battery should be discarded after two years of service even though it appears to be functioning properly.

When placed into a battery reconditioner, the nicad battery is deep cycled and reconditioned for continued use. This discharging and recharging process allows the battery to be used to its fullest extent. The instructions contained with the battery conditioner explain what occurs in detail.

Further, it is necessary to test the battery to determine if it will discharge at the proper level. This process not only evaluates the capability of the battery, but also checks if the defibrillator is delivering the proper energy levels.

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Maryland Certified Monitor/Defibrillators

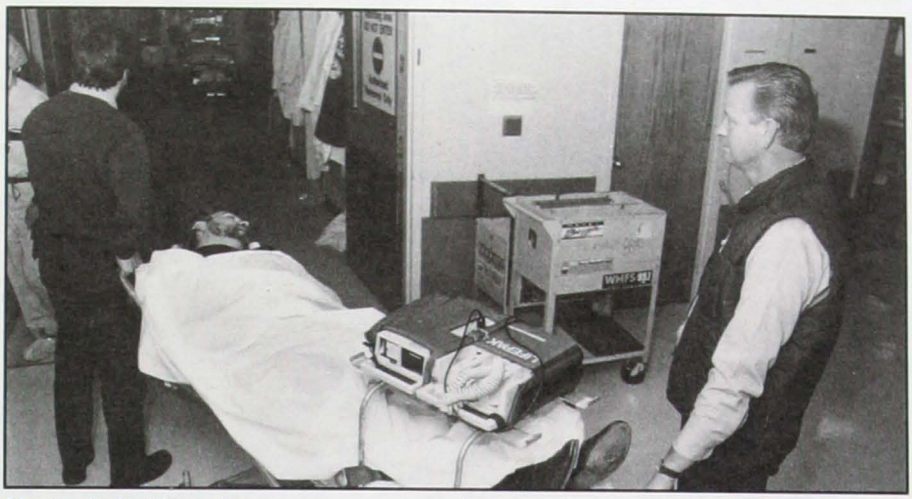
Maryland ALS medic units use med-channel UHF radios to transmit ECG signals from patientside to a hospital ED (emergency department). The physician in the ED evaluates the received ECG strip and provides medical direction to the prehospital ALS provider. This direction may be to defibrillate, administer medications, transport the patient, etc. The type of intervention prescribed by the ED physician is determined by both the ALS provider's assessment and the received ECG strip.

While this at first appears to be a simple procedure for radio and ECG telemetry, it is both complicated and costly to successfully implement. It requires a great deal of technical coordination with the ambulances, hospitals, system users, and certainly the radio and ECG equipment manufacturers.

In Maryland, the EMS Communications Department within MIEMSS is responsible for implementing the ALS radio transmission portions of these procedures. To ensure that all ALS medic units across the state have capabilities to access hospitals in every county, it was necessary to implement standards for equipment capabilities and performance. Without these standards, it would be impossible to establish voice and ECG telemetry communications between the prehospital ALS provider and the ED physician.

The EMS Communications Department has, over a period of years, written detailed performance specifications for radios, base stations, repeaters, consoles, and monitor/defibrillators. Equipment that meets these performance standards is assured to operate properly within the EMS communications system. A good analogy is the standardization of the personal computer (or PC). While there are numerous different computer manufacturers, there is compatibility of programming between the major brands. This compatibility was achieved by manufacturing products and writing programs that meet common performance specifications.

This same standardization approach is taken by the EMS Communications Department in the purchasing and distribution of monitor/defibrillator units. It was first necessary to observe the various types of portable ECG monitor/defibrillator units being sold to EMS users. It was then necessary to establish specifications that ensured that the monitor/defibrillator would work within the ECG telemetry capabilities of the existing UHF med-channel radio system. This required that signal levels be established, battery reconditioning systems determined, rain and temperature tests made, drop tests specified, and numerous performance test parameters defined.



Monitor/defibrillators have to meet strict standards in order to be certified by MIEMSS.

Perhaps the most difficult task of all is to locate an ECG monitor/defibrillator manufacturer who is willing to modify the product to meet the published specifications. While no manufacturer has ever been able to simultaneously meet all the specifications in a single unit, the ones presently certified do most closely meet the total operational and performance specifications. Many a manufacturer has expressed interest in providing a "Maryland Certified Unit," but, after evaluating the specifications, has voluntarily declined to forego the stringent testing and evaluation or modifications necessary to become certified as acceptable.

All monitor/defibrillator units must first pass EMS Communications Department tests to be considered. If a unit appears to be acceptable in a laboratory atmosphere, it is then provided to an ALS organization for field evaluation. The results of this multiweek evaluation determine if further consideration will be given to the unit. Manufacturing changes or additions may be necessary. After field comments are made, the unit returns to the laboratory for final testing. The final temperature, rain, and drop tests can be destructive and are made only after the unit passes all other tests.

After the monitor/defibrillator unit has passed all tests, it is considered to have received "conditional certification." Final certification occurs only after at least five "conditionally certified" units have performed in an acceptable manner over a 2- to 3-month period. Documentation to this effect must be provided by the ALS personnel involved.

When a monitor/defibrillator unit has been certified by the EMS Communications Department, a cost is negotiated with the manufacturer for selling the unit to non-profit ambulance companies within the state. The EMS Communications Department will provide free maintenance, batteries, and engineering modifications to the unit. In addition, the EMS Communications Department will provide operational and maintenance training information for the ALS user.

The above provides a systems approach to purchasing monitor/defibrillator units. It ensures that the unit functions as a part of the entire ALS communications system, not only in the ALS medic unit, but also in the transmission of telemetry to the ECG monitor located with the physician in the ED. It ensures a unit that ALS providers can use to communicate to ED physicians across the entire state of Maryland.

◆ *Gene Bidun*
Director, EMS Communications

Communications During Power Failures

Serious telephone failures seem to be happening more frequently for several reasons, including construction accidents, computer errors, or natural phenomena. Because communication is so vital in the delivery of EMS, particularly when treating a cardiac patient, EMS systems that rely on telephone equipment are consequently vulnerable to failure.

Gene Bidun, MIEMSS director of EMS communications, cites the following power failures occurring between 1988 and 1990 in which communications to 911 centers were disrupted.

• Hinsdale, IL: A fire in an Illinois Bell Telephone hub in May 1988 caused the failure of 350,000 voice and telephone lines, taking out telephone circuits to such large firms as FTD (Florist Transworld Delivery), Mutual Life Insurance of New York, and Spiegel Van Kampen Merritt (the mail-order company). Although Spiegel lost all voice and data services from the phone company, it had installed microwave systems in three order centers and the warehouse that enabled partial function.

• East Coast Long Distance: When AT&T long distance computers were reprogrammed during summer 1990, a computer error prevented the completion of long distance calls.

• Wall Street: Power failures due to a string of disasters halted trading several times during 1990. This could recur; it will take a year to install a battery-powered backup system.

• Oak Brooke, IL: Landscapers cut three cables connecting two telephone switching stations; it took 12 hours to restore full service.

• San Francisco Earthquake: The phone system was back in operation in a remarkably short time. However, the large number of incoming calls saturated its call-handling capacity, resulting in long periods of time when a dial tone was unavailable.

Maryland is not immune from these types of accidents; however, the MIEMSS EMS communications system is generally not affected, or is minimally affected, because many telephone equipment lines have been replaced by microwave equipment. (It is hoped that when the EMS communications system

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Data on Cardiac Arrests in Maryland

Editor's Note: Data in the following article were available for 22 of the 24 jurisdictions in Maryland.

During 1989, ambulances in Maryland transported 189,472 patients. Of these patients, 4,509 (2.4 percent) were in cardiac arrest.

An examination of the distribution of these patients by age group reveals that the smallest proportion of arrests (3.9 percent) occurred in those 15-24 years of age; the largest (23.7 percent) occurred in those 65-74 years of age (Table 1). Based on population projections from the Maryland Center for Health Statistics, cardiac arrest rates by age groups (see graph) range from 2.8 per 10,000 residents (0-14 years) to 97 per 10,000 residents (ages 85 years and older).

A comparison of the data by type of call reported (Table 2) shows the largest percentages of arrests for males and females were medical in nature, 82.3 percent and 87.6 percent, respectively. While arrests related to vehicular accidents are similar for males (4.8 percent) and females (4.7 percent), arrests resulting from industrial or recreational accidents and assaults are consistently higher for males. Based on total transports and excluding records with type of call listed as "unknown" (Table 3), the percentage of arrests related to assaults (1.2 percent) and pedestrian accidents (1.6 percent) were higher than other injury-related arrests. As would be expected, arrests reported as medical in nature were proportionally higher than all other types of calls.

For this analysis, cardiac arrests were defined as any record with one or

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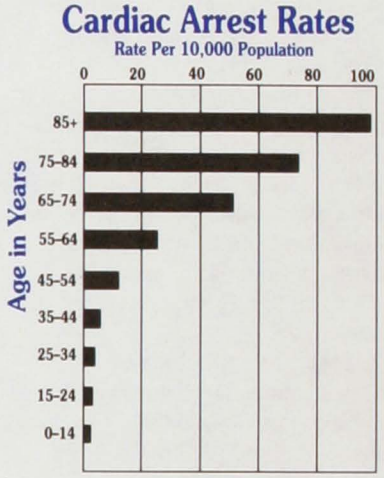

Note: Rates were based on Maryland Center for Health Statistics 1985 estimates of age group populations

Table 1

Percentage of Cardiac Arrests and Transports by Age Groups

Age Groups	Number of Cardiac Arrests	Percentage of Total Arrests	Number of Transports	Percentage of Total Transports	Percentage of Transports in Cardiac Arrest*
0 - 14 Years	183	4.1	14,285	7.5	1.3
15 - 24 Years	177	3.9	28,736	15.1	0.6
25 - 34 Years	254	5.6	28,138	14.9	0.9
35 - 44 Years	276	6.1	19,849	10.5	1.4
45 - 54 Years	353	7.8	15,134	8.0	2.3
55 - 64 Years	698	15.5	17,364	9.2	4.0
65 - 74 Years	1,070	23.7	23,472	12.4	4.6
75 - 84 Years	778	17.3	21,018	11.1	3.7
85+ Years	324	7.2	10,437	5.5	3.1
Age Unknown	396	8.8	11,039	5.8	3.6
Total	**4,509**	**100.0**	**189,472**	**100.0**	-

**Percentages are based on total transports and number of cardiac arrests within each age group.*

Cardiac Data

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more of the following criteria reported: CPR, defibrillation, one set of zero vital signs, ventricular fibrillation, asystole, ventricular tachycardia with one pulse equal zero or all vital signs blank, intravenous epinephrine administered with one pulse equal zero or all vital signs blank.

◆ *Kathy Paez, Manager*
Maryland Ambulance
Information System Data

Table 2

Cardiac Arrests by Type of Call and Gender

	Male		Female		Unspecified	
Type of Call	Number of Arrests	Percentage of Male Arrests	Number of Arrests	Percentage of Female Arrests	Number of Arrests	Percentage of Unspecified Arrests
Vehicular Acc.	131	4.8	76	4.7	6	3.1
Industrial Acc.	31	1.2	0	–	1	0.5
Recreational Acc.	30	1.1	9	0.6	3	1.6
Assault	70	2.6	10	0.6	3	1.6
Medical	2,224	82.3	1,415	87.6	157	82.3
Motorcycle Acc.	5	0.2	1	0.1	1	0.5
Pedestrian Acc.	26	0.9	16	1.0	0	–
Other	110	4.1	43	2.6	10	5.2
Unknown	76	2.8	45	2.8	10	5.2
Total	**2,703**	**100.0**	**1,615**	**100.0**	**191**	**100.0**

Table 3

Percentage of Cardiac Arrests by Type of Call*

Type of Call	Total Transports	Total Cardiac Arrests	Percentage of Transports
Vehicular Acc.	25,973	213	0.8
Industrial Acc.	4,108	32	0.8
Recreational Acc.	7,873	42	0.5
Assault	7,118	83	1.2
Medical	112,213	3,796	3.4
Motorcycle Acc.	769	7	0.9
Pedestrian Acc.	2,551	42	1.6
Other	22,164	163	0.7
Unknown	6,703	131	1.9
	189,472	**4,509**	

*Percentages are based on total transports and number of arrests within each type of call.

Communications During Power Failures

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is fully funded, there will be no reliance on standard telephone lines.)

In Maryland in 1990, construction crews severed trunked telephone cables on a number of occasions; phone services were interruped between Baltimore City and Harford County in one instance and throughout the Baltimore metropolitan region in another. Due to a water main break, telephone services were interrupted to the Johns Hopkins Medical Institutions. None of these interruptions affected EMS communications. When a trunked telephone cable was severed in Harford County later in the year, EMRC contact with Fallston General Hospital was interrupted; however, the microwave system that allows medical direction through base stations in Harford County into trauma centers and specialty referral centers remained unaffected.

The Maryland EMS communications system has reserve power sources to be used in the event of power failure. The majority of med-channel base stations and microwave radio sites have emergency power generators; some also have batteries as a third backup system. EMRC/SYSCOM has an emergency natural-gas powered generator; if that should fail, the communications center will function for 3 hours on batteries, allowing enough time to repair the emergency generators if necessary.

"Power sources for most urban centers are inadequate for future needs," says Mr. Bidun. "As the population grows, new sources will have to be generated to keep systems functioning. But until this can be accomplished, MIEMSS will continue to use microwaves to supplement the telephone system."

Battery Reliability

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So, when removing spare batteries from the battery reconditioner, don't immediately put them directly into your carrying case without first putting them into your monitor/defibrillator. Turn on the unit and discharge into the battery reconditioner test set to be sure that the battery is charged and the defibrillator is performing properly.

If you don't have a battery reconditioner and discharge tester, it is in your next patient's best interest that you purchase one.

◆ *Gene Bidun*
Director, EMS
Communications

EMT-Defibrillation . . .

More time, effort, and money has been spent on the treatment of heart attacks and cardiac arrest than any other area of emergency medical care. Probably the biggest change in the prehospital management of this problem in the last 10 years has been the introduction of programs for EMT-Defibrillation (EMT-D) in different areas of the country.

So what is EMT-D anyway?

"EMT-D" originally referred to programs in which EMT-As received additional training to recognize ventricular fibrillation and ventricular tachycardia on a cardiac monitor and then deliver a shock using a standard defibrillator. The hope was that this therapy would save many more lives by being available sooner to victims of sudden cardiac arrest. Over the last several years, EMT-D has also come to be used to refer to programs in which "Automatic External Defibrillators" are utilized, in which the machine does the abnormal rhythm recognition.

What is fibrillation?

Fibrillation is a condition in which the heart muscle goes into an uncontrolled random twitching and is the most frequent cause of cardiac arrest. It is most commonly caused by a coronary artery getting blocked off during the course of a heart attack. No blood is circulated while the heart is in fibrillation, and the most effective treatment is to apply an electrical shock (defibrillation) to stop the disorganized twitching and let the heart's own rhythm take over again. Most experts will agree that the sooner that defibrillation is performed, the more likely it is to be effective. (Although some current research in animals suggests that in the future the most successful approach may be to hold defibrillation in some cases of unwitnessed arrest until certain ALS interventions are performed, no evaluation has yet been carried out in humans to confirm this.)

What are Automatic External Defibrillators?

Automatic External Defibrillators (AEDs) are a result of the technological advances of the 1980s. These defibrillator units are computerized so that they can be attached to a patient, determine what the cardiac rhythm is, and deliver a charge if that rhythm is ventricular fibrillation. There are AED units that are semi-automatic and fully automatic. The semi-automatic units will sense the patient's rhythm and announce if defibrillation is indicated. The provider must then push a button to enable the unit to fire. The fully automatic unit needs only to be attached to the patient and turned on in order to sense the rhythm and deliver a charge. These units have been proven to be highly reliable in not delivering shocks to patients who are not actually in ventricular fibrillation. They do not shock patients in ventricular tachycardia, as patients with this rhythm are not necessarily in cardiac arrest.

So if we begin using AED units, can we back off on trying to teach citizen CPR and trying to provide around-the-clock ALS coverage with short response times?

No. Most definitely not. Early defibrillation is only one part of the overall treatment of the cardiac arrest patient. The essential components of the "chain of survival" are:

1. Patient recognition of early warning signs of heart attack.
2. Rapid access of 911. (Maryland is fortunate to be one of only a handful of states to have a true statewide 911 system.)
3. Early initiation of CPR, both by citizens and by timely BLS response. (The ideal would be to have CPR started in under 4 minutes in all cases.)
4. Early defibrillation. (This can be either by timely BLS response with defibrillation capability or by timely ALS response.)
5. Rapid ALS response. (The ideal would be within 6-10 minutes following arrest, with BLS units having arrived within 4 minutes.)
6. Rapid resuscitation and transport to an appropriate medical facility.

Will EMT-D be effective in any community?

Not necessarily. It depends on the other components of the EMS system. For example, MIEMSS has recently assisted three different counties in evaluating the potential for EMT-D in their cardiac arrest populations. One county found that its ALS units almost always arrived simultaneously with or ahead of its first responder units. Another county found that in many cases its BLS response was such that EMT-D probably would not provide near the improvement that working on BLS response times could. The third county was able to identify certain locations in which it had timely BLS response but delayed ALS response, and it is in the process of gaining final approvals for an EMT-D pilot study in these targeted areas.

How can I evaluate the potential impact of EMT-D for my program?

Step 1. *Identify all cases of medical cardiac arrest occurring during a specific time period.*

This would ideally cover at least a one-year period to allow for any seasonal differences and should be done with the most recent data that are available.

MIEMSS, through your regional administrator, can help you to identify these cases by utilizing the MAIS runsheet database. Since there is not a single box on the runsheet that identifies cardiac arrests, we first identify all cases in which "cardiac" was marked in the "illness/emergency" box. We then print out a list of patients that had any one of the following marked:

1. CPR
2. Defibrillation
3. One set of zero vital signs
4. Any rhythm of ventricular fibrillation or asystole
5. Any rhythm of ventricular tachycardia with pulse=0 or blank vital signs
6. Any case with Epinephrine IV and pulse=0 or blank vital signs

Statistically speaking, you can expect about one cardiac arrest per 1,000 population per year. If 50,000 people live in your county, for example, you will be working with about 50 cases of medical cardiac arrest from a one-year period of data.

Step 2. *Determine how many of the cases had a rhythm of ventricular fibrillation.*

An AED unit will fire only for patients who have a rhythm of ventricular fibrillation. It is estimated that 60-80 percent of cardiac arrest patients will have ventricular fibrillation as their initial rhythm; however, many

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. . . Can It Help My Program?

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of these will degenerate into asystole by the time the first rescuers with a cardiac monitor arrive. A shock will not help patients who are in asystole, EMD, or agonal rhythm. The AED unit cannot tell whether patients who are in ventricular tachycardia have a pulse, and therefore it will not fire for ventricular tachycardia. The MAIS data for your county can indicate how many patients were found to have ventricular fibrillation by an ALS unit.

Identifying the patients in ventricular fibrillation tells you how many of your cardiac arrests are potential candidates for defibrillation. The next step is to determine whether having the BLS personnel provide this defibrillation is likely to make a difference.

It is also wise to identify the group of patients in asystole. Looking at specific response times may suggest that patients with a timely BLS response may have initially been in ventricular fibrillation but then degenerated into asystole by the time the delayed ALS unit arrived to document their rhythm.

In communities in which there are high numbers of cardiac arrests without an ALS response, it will not be possible to identify what the patient's rhythm was. In these programs it may be necessary to just identify all cases of cardiac arrest and next evaluate BLS response times.

Step 3. *Determine the BLS response time for each case of ventricular fibrillation.*

This will require evaluating the dispatch record of each call. Ideally these units would be arriving in less than 4 minutes after arrest. If it turns out that the BLS response is greater than 6 minutes in a significant number of calls, there may be more to be gained from trying to reduce this response time than from going to EMT-D right away.

Step 4. *Determine the ALS response time for each case of ventricular fibrillation.*

It is generally accepted that in order for EMT-D to have any impact, the BLS unit needs to arrive at the scene at least 3-4 minutes ahead of the ALS unit. If the ALS response is about the same as the BLS response, then there is no advantage in having the BLS unit deliver the defibrillation.

Top candidates for EMT-D are patients in ventricular fibrillation for whom there is a timely BLS response and either no ALS response or an ALS response that is delayed by more than 3 or 4 minutes after the BLS response.

Less optimal, but also potential EMT-D candidates, are patients with ventricular fibrillation for whom there is a delayed BLS response and an even greater delayed or no ALS response.

Also potential candidates for EMT-D consideration are patients who had asystole documented by a delayed ALS unit, but for whom there was a timely response of a BLS unit.

Step 5. *If you are finding cases that are potential candidates for EMT-D, determine whether there are locations where these cases are repeatedly occurring.*

In this way the AED units can be targeted so that they can be used for as many potential candidates as is possible.

OK, so we've identified some areas in our community that could potentially benefit from EMT-D. How do we proceed?

After identifying target areas in which EMT-D is likely to make a difference, you should evaluate which of the AED units on the market best meets your needs. If your medical director is not already heavily involved in this project, you need to be sure to bring him into the process. Together with your medical director, you should develop a proposal as to how training will be provided and how the project will be overseen both medically and operationally. The next step would be for your program chief and your medical director to submit your proposal to your regional medical director for review and discussion with the State EMS Medical Director.

To summarize, EMT-D has been the biggest change in the prehospital approach to cardiac arrest in the last 10 years. It cannot, however, be expected to improve patient outcome in all programs. An analysis of cardiac arrest response times is necessary to appropriately target the use of EMT-D. It can be expected to be most effective in cases in which there are short BLS response times and delayed or no ALS response. It is not a substitute for any of the other components of the "chain of survival," including early recognition of warning signs by the patient, rapid 911 access, early initiation of CPR, rapid ALS response, and transport to an appropriate medical facility.

◆ *Douglas Floccare, MD, MPH, FACEP*
Maryland State Aeromedical Director; Assistant State EMS Medical Director

Poison Prevention Week: March 17-23, 1991

Since the first National Poison Prevention Week in 1962, thousands of American children under the age of 5 have been saved from accidental poisoning. The Maryland Poison Center, which is located on the campus of the University of Maryland at Baltimore and is one of the MIEMSS consultation centers, urges health care providers to actively encourage poison prevention in their communities. Materials such as posters, pamphlets, and Mr. Yuk stickers are available; for information, call 301-328-7604.

Shock Trauma Gala

The 6th annual Shock Trauma Gala will be held May 11, at the Towson Center, Towson State University. Highlighting the statewide EMS system and teamwork, this year's theme is "Shock Trauma–Maryland's One of a Kind." Maryland Governor William Donald Schaefer will again serve as honorary chairman at this black tie event.

Tom Clancy, well-known author of *The Hunt for Red October, Patriot Games, Red Storm Rising, The Cardinal of the Kremlin,* and *Clear and Present Danger*, will be the master of ceremonies. Part of *Patriot Games* is set at the Shock Trauma Center, and filming of that movie is slated to begin later this year.

For tickets and information on the gala, call 301-328-8778.

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DATED MATERIAL

New Ankle Hitch for Hare Traction Splint

MIEMSS Field Operations is distributing new padded Velcro wrap-around ankle hitches for use with the Hare traction splint. These hitches were produced specifically to be used with the Hare traction splint by its manufacturer, Dynamed, and are available to all public service emergency ambulances in Maryland through the MIEMSS regional EMS offices.

Not only is this wrap-around hitch simpler to use than the old tri-ring strap, but it also allows the Hare traction splint to be shortened significantly. With the wrap-around hitch, the Hare can be set up so that it does not extend more than 3 inches beyond the bottom of the foot. This should be of help when trying to close the back doors of the ambulance or when trying to load the patient aboard a Dauphin helicopter. However, patients who are 6-feet, 3-inches or taller and have the Hare traction splint in place may still have difficulty in fitting aboard a Dauphin.

The padded Velcro wrap-around ankle hitch attaches permanently to the traction splint, making it difficult to lose. The same hitch is used for adults or children. The Maryland Fire and Rescue Institute has used a detachable wrap-around hitch in EMT-A classes, but this hitch does not allow the splint to be shortened because the bottom strap cannot be shortened up to the bottom of the foot.

To summarize, this new hitch should be much easier to use and more difficult to lose and should allow for significant shortening of the Hare traction splint. If your ambulance has not yet been equipped with one, please contact your MIEMSS regional EMS office. For ambulance companies outside of the state of Maryland that have an interest in the wrap-around ankle hitch, it is available directly from Dynamed and can be found in their most recent catalog.

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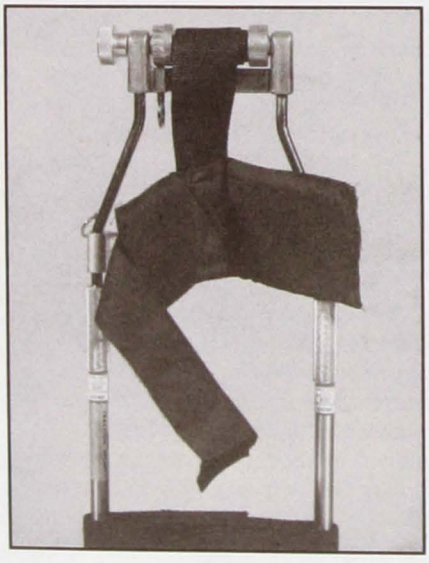
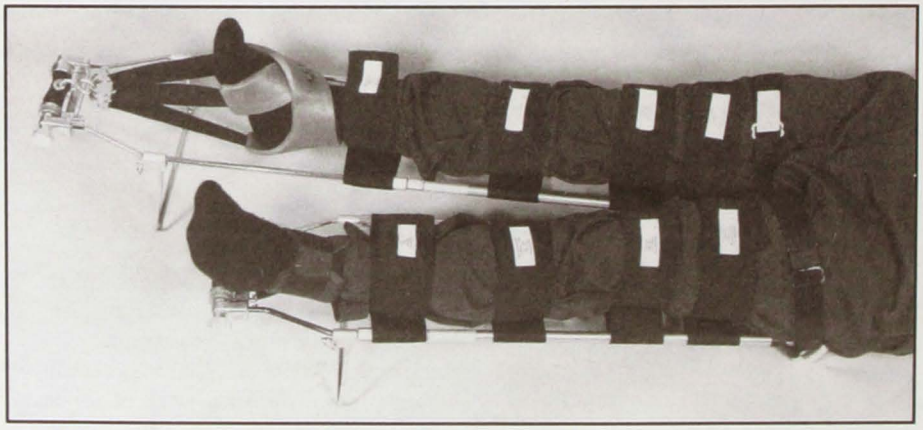


The Velcro wrap-around ankle hitch attaches permanently to the Hare traction splint.



(Top) The old tri-ring strap and (bottom) the new padded Velcro wrap-around hitch which allows the Hare traction splint to be shortened significantly.