RECOMMENDED ACTION AND JUSTIFICATION: (Policy Item: Yes_x_ No___)

Recommend resolution authorizing certain County Volunteer Fire Companies to initiate a pilot program utilizing semi-automatic external defibrillators in conjunction with First Responder activities.

See attached memo.

Because of the desire by effected fire companies to begin fund raising activities, the Board may wish to consider waiving the usual delay for action on a policy issue, and vote on October 22, 1996.

BACKGROUND AND HISTORY OF BOARD ACTIONS:

Years ago, the Board of Supervisors resolved to initiate a First Responder Program in which County employees (Volunteer Firefighters and Sheriff's Deputies) provide basic level emergency medical services. This has been helpful to the citizens of the community in that, frequently, First Responders can reach citizens in need of emergency medical care prior to the arrival of the ambulance.

LIST ALTERNATIVES AND CONSEQUENCES OF NEGATIVE ACTION:

1. Do not authorize utilization of automatic external defibrillators in the County at this time.

2. Other direction to staff.
MARIPOSA COUNTY BOARD OF SUPERVISORS

MINUTE ORDER

TO: DR. MOSHERTM
FROM: MARGIE WILLIAMS, Clerk of the Board

SUBJECT: SEMI-AUTOMATIC EXTERNAL DEFIBRILLATORS; RES. 96-449

THE BOARD OF SUPERVISORS OF MARIPOSA COUNTY, CALIFORNIA,

ADOPTED THIS Order on October 22, 1996

ACTION AND VOTE:

B) Resolution Authorizing Certain County Volunteer Fire Companies to Initiate a Pilot Program Utilizing Semi-Automatic External Defibrillators in Conjunction with First Responder Activities

BOARD ACTION: Discussion was held with Dr. Mosher, and he reviewed the issues and EMCC's recommendations and noted that this is a policy decision for the Board. (M)Parker, (S)Stewart, Res. 96-449 adopted and Board waived the policy issue to meet the deadline involved with the paperwork for this program to proceed. Dick Kunstman expressed concern that should he have a heart attack and no one administered CPR and the defibrillator was used to resuscitate him that he could survive with brain damage and would not want that to occur. Dr. Mosher advised that they are trying to address these concerns by doing CPR training throughout the community. Ayes: Reilly, Balmain, Stewart, Parker; Excused: Pickard. Art Laursen/Greeley Hill Fire Company, thanked Dr. Mosher for his study and work with this matter on behalf of the Fire Companies.

cc: Blaine Shultz, Fire Chief
    File
October 8, 1996

TO : Members, Board of Supervisors
FROM ; Charles B. Mosher, MD, Health Officer

SUBJECT: Use of semi-automatic external defibrillators in conjunction with First Responder activities

Firefighters have been providing emergency medical services as First Responders for a number of years in this County. There is now a proposal on the part of three of these companies (Midpines, Fish Camp, and Greeley Hill) to add the use of a semi-automatic external defibrillator to the skills currently provided by First Responders. This issue has been explored through the County EMCC.

I. The Problem:

In the 18 month period from January, 1995 through June, 1996, there were 23 out of hospital cardiac arrests reported in Mariposa County. According to the records, 19 of these cardiac arrests resulted in the patient being pronounced dead on arrival at the emergency room. It is well known that, if a person suffers a cardiac arrest, CPR must be started within no more than four minutes or the brain will suffer irreparable damage and, quite possibly, the heart will be so damaged that it will no longer recover either. Please note that physicians involved in cardiac care and the emergency medical systems consider a "save" to be a patient who leaves the hospital alive with a functioning brain, not just a patient who arrived at the emergency room alive. Physicians, through the American Heart Association, have identified a "chain of survival" for out of hospital cardiac arrests that includes four elements as noted below:
Currently in Mariposa County, we have two of the four links in this chain of survival well in place: early access is available through the 911 system with emergency medical dispatch, and early ACLS is available in the form of paramedics on the ambulance service. The other two links, early CPR and early defibrillation, are not dependably available.

II. Proposal by Volunteer Fire Companies:

The three Volunteer Fire Companies mentioned applied for a grant program available to help assist in the purchase of semi-automatic external defibrillators. They have been notified that they were successful applicants and will be provided funding to help defray the costs of beginning a program utilizing these machines. These three fire companies propose obtaining semi-automatic external defibrillators to provide, within the scope of their First Responder activities, link #3: "early defibrillation". Since early defibrillation will not be worthwhile if early CPR has not already been instituted, these three companies have also agreed to work diligently to increase the number of people within their jurisdictions who can provide early CPR as well.

III. The Machines:

Semi-automatic external defibrillators are defibrillators which send an electrical shock through a heart to shock it out of one of two treatable electrical rhythms seen in cardiac arrest, (ventricular fibrillation or ventricular tachycardia). Defibrillators are frequently seen on dramatic television programs where the doctor or paramedic applies paddles to the person’s chest, yells "stand clear" and then discharges an electrical shock through the patient’s heart. If the rhythm has been correctly diagnosed, and the patient’s heart has been maintained with adequate blood flow and oxygenation by CPR, the patient has a chance that the normal rhythm and, therefore, heart beat can be restored and the cardiac arrest can be reversed back into a beating heart.
Machines have now been constructed which can "read" the patient's heart rhythm, diagnose it, and decide whether applying this shock is the appropriate treatment or not. The machine then can direct the person using the machine that it is appropriate to deliver a shock. Therefore, these machines can do what paramedics and physicians currently do: analyze the heart rhythm, diagnose it, and charge the defibrillator to discharge. The advantage of this machine is that it can be utilized by people with significantly less training than a paramedic. The machines have been available for over a decade, most of the kinks have been worked out of them, and, if properly used by people adequately trained, have seldom resulted in any accidents that actually make the patients worse off.

IV. Investigation by the EMCC:

The EMCC and County staff at both Health Department and County Fire Department have investigated this issue. We identified eight areas that needed to be addressed before we could make a recommendation to the Board of Supervisors whether to begin this program. These eight areas were as follows:

1. **Realistic goals** regarding what can and cannot be achieved utilizing semi-automatic defibrillators.

2. How to avoid **accidental** or inappropriate defibrillation which may actually harm people.

3. **Accountability** for those utilizing the machines to some appropriate County official.

4. **Liability** issues.

5. **Funding** issues, both short term and long range.

6. **Training**, both initial and on-going.

7. **Policies** governing the appropriate use of the defibrillators.

8. Minimal guidelines for the **technology**.

At it's October 3, 1996, meeting, the EMCC discussed the findings of a sub-committee composed of three physicians, and analyzed the eight issues mentioned above. Subsequently, the County Fire Chief and County Health Officer met with County Counsel on liability issues. The EMCC's recommendation to the Board of Supervisors is enclosed for your perusal. The culmination of the evaluation of the eight issues mentioned above is as follows:
1. Realistic Goals. It has been discussed that the definition of a successful save is a patient who survives to leave the hospital and is neurologically intact.

2. Inappropriate defibrillation was researched in the medical literature. While this has occurred (applying a shock to a normally beating heart and stopping the heart), it appears to be a risk primarily when two factors are involved. The first factor is people using the machine inappropriately, and the second is the use of automatic defibrillators where no one has to push a button to make the machine discharge (as opposed to semi-automatic defibrillators where a button is pushed).

3. Accountability. It is the Health Officer’s recommendation to the Board of Supervisors that a mechanism be in place charging the County Fire Chief with the responsibility of taking whatever action is necessary to be certain that a Volunteer First Responder who may not be following appropriate standards of care and policies can be removed from contact with patients until the situation is corrected. An ordinance providing this "fail safe" mechanism was discussed by the Board of Supervisors at the October 15th meeting.

4. Liability. This issue has been discussed with County Counsel.

5. Funding. Initial funding appears to be being offered by the Volunteer Fire Companies. Long term funding implications can be addressed by the County Fire Chief.

6. Training. The Regional EMS Agency, County Fire Chief, and Health Department can work cooperatively to accomplish this.

7. Policies. Policies are already in place at the Regional EMS Agency with respect to this program. County Fire has drafted some policies that will also apply, if the Board decides to move forward.

8. Minimal technology for the machine is addressed in the EMCC’s report.

V. Recommendation:

It is the recommendation of the EMCC, the County Health Officer and the County Fire Chief that the Board allow implementation of a program utilizing semi-automatic external defibrillators by First Responders in the three Volunteer Fire jurisdictions mentioned above. It is further recommended that the Board adopt as policy the general guidelines recommended by the EMCC.
VI. Evaluation:

If the Board chooses to adopt this program, the various agencies involved, through the EMCC, will evaluate the results periodically (it will probably take at least a year to get enough experience to have any kind of meaningful evaluation and may take longer). The results of this evaluation will be shared with the Board of Supervisors.
1. It is the EMCC's judgement that Mariposa County's EMS system is adequately mature at the present time to begin an AED Program.

2. It is recommended that, if implemented, an AED Program should be phased in with an initial trial phase of at least a year involving the three fire companies who have successfully worked for grants to underwrite the cost of their equipment, and, if interested, MPUD (the company serving the most dense population in the County and, therefore, the company most likely achieve measurable results).

3. Any fire company instituting the AED Program should set the standard that all First Responders within that company will be trained and certified to utilize the AED's. The use of an AED in that given fire company should be considered part of the standard care for first responders. It is believed that to have a mix of some first responders who can do AED and some who cannot within a given company, is both inconsistent with the proclaimed medical standard (provision of AED) and a jeopardy to the community's expectations (which would reflect on the entire County EMS system).

4. Any first responder agency which elects to begin a program should also provide community-based CPR training as part of the AED program. Adequate treatment of cardiac arrest requires that the victim's myocardium and brain be adequately oxygenated during the period of cardiac arrest prior to application of an AED. Therefore, use of AED's without augmenting the number of CPR-trained individuals in the community may not realistically be expected to improve good patient outcomes (a viable heart and a viable brain leading to a patient who is discharged from the hospital in good neurological condition).

5. It is recommended that, whatever specific AED machine is chosen by the service providers, the same model machine should be utilized throughout the entire County for standardization within the EMS system.
6. Characteristics of the chosen AED machine should be as follows:

a. Able to perform as required by Regional EMS Agency policies (see "Early Defibrillation Program Treatment Guidelines, Attachment B").

b. Must provide documentation of the patient's rhythm and the sequence of events during use of the AED. This can be accomplished either by a hard strip from the machine or by a later computer reproduction from a computer chip installed in the machine or other acceptable method.

c. Should be programmable with an algorithm for shocking that cannot readily be changed in the field (either accidently or otherwise). The Algorithm should be programmable and under the direction of the AED Program Medical Director.

d. The AED should be manually triggered by the individual operating the machine, upon machine prompting, rather than automatically triggered by the machine (i.e., semi-automatic, not automatic).

e. A training simulator device should be both available and compatible with the AED's for routine in-service training.

7. Those service providers wishing to provide AED's should apply to the Regional EMS Agency per REMSA policies and protocols and should obtain a physician to function as Medical Director per Regional REMSA protocols.