In a Heartbeat:
New Resuscitation Protocol Expands EMS Options

California HealthCare Foundation

ISSUE BRIEF

Introduction

Emergency Medical Services (EMS) personnel (paramedics) are usually the first trained providers to make a decision about attempting resuscitation for people who experience cardiac arrest other than in a hospital.[1] Over the past several decades, the availability and use of techniques and equipment for defibrillation, intravenous life support medication, and intubation have contributed to resuscitation becoming the default mode of response to cardiac arrest in the field. This nearly universal practice of attempted resuscitation, however, does not fully align with patient and family preferences, with paramedics' own clinical judgment, or with best medical practice. Many patients wish to forego resuscitation but their choice is not recorded in a formal Do Not Resuscitate document (DNR) or other health care directive.[2] Even when a DNR exists, frequently it is not produced when paramedics respond to a cardiac arrest emergency. Further, patients with a heart rhythm that does not respond to electroshock treatment and/or who do not receive timely cardiopulmonary resuscitation (CPR) are highly unlikely to survive neurologically intact,[3] and almost all patients would not want to be resuscitated to a state of severe neurologic impairment.[4]

In an attempt to permit paramedics to make cardiac arrest resuscitation decisions more congruent with patient wishes and the likelihood of neurologically intact survival, in July 2007 the Los Angeles County (LAC) EMS system implemented a new resuscitation policy developed in partnership with the University of California, Los Angeles (UCLA). Previous policy had allowed paramedics to forego attempted resuscitation only if presented with a written DNR, or if there were obvious signs of irreversible death.[5] The new policy permits paramedics to forego attempted resuscitation in two additional circumstances:

- A family member on the scene verbally requests DNR in accordance with patient wishes but without a DNR document; or
- A patient is found in asystole (without any cardiac electrical activity) and at least ten minutes have elapsed between patient collapse and initiation of CPR.

The present study tracked EMS responses to nontraumatic cardiac arrests before and after implementation of LAC's new policy. The results showed a small but meaningful reduction in the rate at which paramedics attempted resuscitation in the field, especially when a family request was made to forgo resuscitative measures. Also, EMS personnel who worked under the new policy reported, in focus groups, their considerable satisfaction with the new policy guidelines. Almost all paramedics felt freer to solicit and act on family preferences, and were more comfortable with the circumstances under which they were allowed to forego resuscitation. Important, too, was the fact that the new policy was implemented without any reports by family members of adverse consequences attributable to the new policy. (For an explanation of the study's methodology, see Appendix A.)

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Los Angeles County EMS Change in Resuscitation Policy

LAC's Previous Resuscitation Policy

Before implementation of its new policy in July 2007, the LAC EMS system permitted paramedics to forego resuscitation in nontraumatic cardiac arrest responses only under two conditions: (1) obvious signs of irreversible death (e.g., rigor mortis or decomposition); or (2) the presence of a valid written DNR or other valid written advance health care directive with instructions not to resuscitate. While almost all patients would not want to be resuscitated to a state of severe neurological impairment, an evaluation of a six-month period of EMS responses under the previous policy revealed that only 6 percent of patients had a valid written DNR, and that even of these almost 20 percent underwent attempted resuscitation because the written DNR was unavailable.[6] The same evaluation also indicated that a majority of these cardiac arrest cases occur in the home, with a family member present 29 percent of the time and someone familiar with the patient's medical history (likely family, but not specifically identified as such) present an additional 52 percent of the time. The combination of these results led to the conclusion that in many cases a family member might be able to verbally communicate to EMS personnel a patient's DNR preference, which the paramedic could then act upon given the proper clinical circumstances.

Policies Elsewhere that Permit Forgoing Resuscitation Based on Verbal DNR Request

The notion of changing LAC policy to permit recognition of verbal family DNR instructions was supported by similar policies in at least two other EMS systems in the United States and Canada. In King County, Washington, EMS personnel may forego resuscitation if a family member makes a verbal DNR request and it is clear to the paramedic that the patient is "terminally ill." Implementing this policy, King County paramedics decided to forego resuscitation in 11.8 percent of cardiac arrest cases (53 percent of these being verbal requests) during a control period, compared to 5.3 percent among agencies that did not recognize verbal requests.[7] Notable in the King County policy change is that 90 percent of EMS personnel found the decision to forego resuscitation to be simple and straightforward in most cases. Similarly, in southeastern Ontario, Canada, where the policy now permits recognition of verbal DNR requests, a large majority of both paramedics and the family DNR decision-makers are reported to be comfortable with this process.[8]

POLST Adds Another DNR Document

On January 1, 2009, subsequent to this study of the new LAC policy, the Physician Orders for Life-Sustaining Treatment (POLST) law became effective in California.* POLST is a standardized form medical order, documenting patient wishes for treatment, signed by both the patient and physician. A POLST form is more comprehensive than a pre-hospital DNR, and can include decisions about whether to:

- Attempt cardiopulmonary resuscitation;
- Administer antibiotics and intravenous fluids; and
- Use intubation and mechanical ventilation.

POLST is recognized throughout the state medical system, transfers with the patient from one care setting to another, and must be honored wherever it is presented. POLST law provides immunity from civil or criminal liability to health care professionals who comply in good faith with a patient's POLST requests. POLST thus gives EMS providers another basis on which to honor patient wishes regarding attempted resuscitation.

*California Probate Code §4780 et seq. The POLST form has been approved by the California Emergency Medical Services Authority, effective January 1, 2009.

The New LAC Resuscitation Policy

Based on the potential for family members to express the DNR wishes of a cardiac arrest patient in many circumstances, and on the success of the verbal DNR policies in Washington and Ontario, the LAC EMS system partnered with UCLA researchers to develop a

change in its policy and in the practice of its paramedics. The new policy, which went into effect July 1, 2007 following a period of training for all EMS field personnel, permits paramedics to forego resuscitation attempts under either of the following conditions:

- If an immediate family member on the scene verbally requests it and no other family member objects; or
- If the patient has clinical characteristics that preclude the likelihood of survival without severe neurological impairment. These characteristics are defined in the policy as asystole (lack of any cardiac electrical activity) plus more than ten minutes from patient collapse to either bystander CPR or EMS-initiated basic life support measures. (For the complete text of the policy, see Appendix B; the new elements are found in the policy's Section I, Parts C3 and C5.)

No Harm Reported Under the New Policy

Balanced against the positive quantitative and qualitative results from the change in the LAC EMS resuscitation policy must be any reported negative consequences. During the present study, however, there were no reports to LAC EMS of either negligence by paramedics or emotional harm to family members attributable to the new policy. In fact, this has remained the case in the nearly three years since the policy implementation.[9]

Results From the LAC Policy Change

Quantitative and qualitative results from the LAC policy change were both positive. There was a modest but significant drop in the resuscitation attempt rate following the change.[10] And EMS personnel implementing the policy in the field were almost unanimous in expressing an improved level of decision-making comfort and empowerment under the new guidelines. Notably, too, the change was implemented without any reports from family members of adverse consequences resulting from the new policy, though the ability to investigate this issue was limited by researchers' lack of direct access to the families involved.

Quantitative Changes Under the New Policy

One of the assumptions underlying the LAC policy change was that rates of attempted resuscitation would fall somewhat, both from an increase in family-expressed DNR decisions and from the number of patients on whom resuscitation would not be attempted under the new clinical criteria guidelines. The results bore out this assumption, though after the policy change there was also an unanticipated change in reporting of those with signs of irreversible death.

In those patients without signs of irreversible death, forgoing attempted resuscitation was modestly but significantly more likely under the new policy: 8.5 percent pre-change versus 13.3 percent post-change. When patients with signs of irreversible death were removed from the analysis, the rate change in attempted resuscitation was smaller, from 82.9 percent to 79.3 percent. After adjusting for patient demographics (e.g., gender), arrest characteristics (e.g., rhythm), and EMS factors (e.g., base station), those without signs of irreversible death were somewhat more likely to have resuscitation attempts forgone under the new policy. In the target population of patients whose family made a verbal DNR request, or who met the new clinical criteria (lack of cardiac activity, plus time to resuscitation more than ten minutes), there was a small but noteworthy increase in forgoing attempted resuscitation.

An unexpected finding following implementation of the new policy was a significant decrease in reports of signs of irreversible death, from 50.4 percent to 35.8 percent. This decrease may reflect, in part, some differences in patient and EMS factors during the study periods. Additionally, given the magnitude of this reported decrease, it seems likely that paramedics changed how they document clinical findings in the field as a response to the new policy itself. Under the previous policy, resuscitation

Paramedics Continue to Rely on Considered Judgment

Although the new LAC policy for EMS cardiac arrest patients permits paramedics to forgo resuscitation efforts in a wider variety of circumstances than did the previous policy, the paramedics themselves made clear to researchers that they continue to rely on their experience and considered judgment in making the decision whether to forgo resuscitation efforts if there is no documentation of patient wishes. They asserted that they will continue to attempt resuscitation when there is no DNR wish expressed and the clinical circumstances indicate there is a reasonable chance for a positive outcome. As one paramedic put it during the course of a focus group following implementation of the policy, "If there's any chance at all that they're viable patients, then we're going to work on them." Another spoke for the group, from which there was no dissent: "I think everybody here would agree if it's someone [with no written or family-expressed DNR] who has a chance, we're going to resuscitate."

attempts were required unless there was either a valid written DNR at the scene or clear evidence of irreversible death. Paramedics may have decided to forego attempted resuscitation when they believed that it would be unsuccessful, then documented the circumstances as "irreversible death." Under the new policy, paramedics can rely on a family verbal request or more liberal clinical criteria to forgo resuscitation efforts, permitting them to practice—and to record their practice—more accurately and honestly. This, in turn, could be a boon to their job satisfaction and a mitigation of their burnout rate, as suggested by the enthusiastic reception paramedics have given to the policy change.

Qualitative Changes Under the New Policy

Perhaps the clearest result from the change in LAC EMS resuscitation policy is the level of satisfaction with the new guidelines as expressed by the paramedics who implement it.[11] In the focus groups conducted for this project, EMS personnel had an overwhelmingly positive view of the new policy, feeling that it benefitted patients, family members, EMS personnel and agencies, and the public. Many of them also expressed the belief that over time they will develop even more confidence and comfort with the new guidelines.

One of the points made by a number of paramedics was how much they appreciate the way in which the verbal DNR aspect of the policy permits them to respond to the wishes and needs of distraught families. One paramedic described such an encounter:

> We got a call about an unconscious male in full arrest. When we get there, the family is in tears. They said, "We're looking for the DNR. We don't have it." There were three family members present. Everybody's got the same thought and that's good enough for us. We don't need the paper… It really worked out nice because there was a lot of stress and worries. They were trying to be with their family member at the same time trying to look for this paper…That's where the new policy comes in.

Similarly, several paramedics spoke about how the new policy encourages improved communication with family and other caregivers, which can make their experience at least a bit less traumatic regardless of whether there is a verbal DNR. As one paramedic described such an experience:

> We received a textbook call about a man in cardiac arrest and citizen CPR was in progress. When we arrived at the man's home his live-in nurse was extremely upset so I took her to the back room to talk. I think one of the great things about this policy is that it really helps people deal with the situation. For them it's a rollercoaster ride: "Here comes the lifesavers that are going to save my loved one, take him to the hospital, and all is going to be good." We know that's not the case. With the policy in place we can talk more candidly with them and it works really well. We can set them up for what is to be expected.

Also, though paramedics operate under more specific guidelines with the new policy than previously, the majority of paramedics considered the new policy empowering, not restricting. "Before this policy," one paramedic explained, "we were working them up because that's what it says … so you were bound to do those things." Now, the paramedics feel freer to consider not only the patient's unwritten choice but also to act on a more realistic assessment—based on the new clinical characteristics—of the likely outcome of attempted resuscitation.

Paramedics expressed particular relief that the new policy allowed them to act more discerningly in nursing homes when forgoing resuscitation efforts clearly appeared to be the proper response. Several paramedics also noted how much time and effort was involved in unwarranted resuscitation attempts under the previous policy, when resources could be better used for other patients. As one veteran paramedic put it, "Up until now, all the years we've done this, it's been so futile. It's not worth the time and effort, and it comes up again and again. This last shift we were working on a cardiac arrest; meanwhile so many calls are coming in that we can't handle that are probably more viable patients."

While praise for the new policy was almost universal among the paramedics who discussed it with researchers, one paramedic did express a different opinion: "It's better for the family to see you work on their loved one," this paramedic contended. "You are leaving a lasting impression in their minds that you've done everything you possibly could to bring this person back [even though] we know, based on experience, that there's probably no hope to bring this person back." This opinion stood alone, however, with all the other paramedics asserting that it was better to give family realistic expectations than to provide false hope.

Special Circumstances May Dictate Resuscitation or Transport

Location of the patient, the presence of onlookers, or the absence of another responding agency (police or coroner) are circumstances that may call for attempted resuscitation and transport despite policy guidelines to the contrary. One such circumstance is when a body is in public view. Another is when family members do not seem emotionally prepared for paramedics to leave the body on the scene. In these instances, paramedics and EMTs agreed that that it is appropriate to attempt resuscitation and/or to transport the deceased to a hospital emergency department despite policy guidelines that would otherwise encourage no attempted resuscitation or transport.

Several paramedics mentioned the presence of the public, and particularly children, as such a factor: "I had one guy on a tennis court who went down and his buddy was doing CPR. It was a public place where people were coming to use the courts. There were kids around so he had to be transported. You almost have to transport them because of the public impression on you." Another paramedic described a situation where the patient's elderly spouse was alone and no other agency responded, leading to a situation in which the paramedics chose to engage in lengthy resuscitation attempts despite their assessment that, under the new policy, continuing such attempts was unnecessary: "It was awkward because of the situation. We had to drag her out from the bedroom into the living room because it was a small area. We had intubated her and had lines in her. The husband was there by himself so we were there for well over an hour. We didn't want to leave him there alone with his wife by himself."

Implications and Challenges

The lessons learned from the LAC EMS resuscitation policy change may be encouraging and instructive to other EMS systems considering a similar change. The overall experience of the LAC EMS system and its personnel regarding the change was almost entirely positive. However, attention to related issues could help make the new policy operate even more smoothly, and more study is needed to determine the potential costs and benefits brought about by the change.

A Family Verbal DNR Policy Can Provide Several Significant Benefits

The new LAC resuscitation policy's allowance of paramedics in the field to act on an immediate family member's verbal DNR assertion yielded positive results in several respects. First, it contributed to a small reduction in the number of attempted resuscitations, and without any reports by paramedics of forgoing resuscitation efforts when the paramedic's judgment would have dictated otherwise.[12] Even more clearly, it contributed to improvements in the complex experience of both paramedics and family members. EMS personnel almost universally expressed a decrease in stress owing to their ability to honor the wishes of immediate family members. They also reported that family members, too, were relieved by the ability to have the patient's wishes acted upon. Importantly, the policy also opened communication between paramedics and on-site family members, which relieved anxiety for both regardless of the attempted resuscitation decision.

New Clinical Characteristics May Lead to More Accurate and Honest Reporting

The inclusion in LAC's policy of new clinical characteristics which permit a paramedic to forgo attempted resuscitation had the unanticipated result of contributing to a change in paramedics' reporting. Paramedics can and do now report that some decisions to forgo attempted resuscitation were based on a medically sound assessment—relying not on "irreversible death" but on other observed clinical criteria supported by the new policy—that such an attempt would have been highly unlikely to result in a positive outcome. In addition to relieving the emotional burden on paramedics of having to stretch their reporting of irreversible death, this change may result in the LAC EMS system being able to track more accurately the nature of patient circumstances and paramedics' responses to them.

EMS Dynamics with Police, Coroner, and Emergency Departments to Be Addressed

The focus groups in this project noted some tensions between EMS providers, police, and coroner regarding how best to utilize their respective resources concerning patients in the field. The sometimes long wait before police arrived meant that paramedics had to remain on the scene, providing no service other than a cordon around the body and some company for the family, if present. This problem was compounded by paramedics not being permitted to summon the coroner until the police arrived. To increase efficient use of EMS personnel and equipment, better resource allocation coordination among EMS, police, and coroner needs to be addressed.

Paramedics also reported occasional friction with emergency department (ED) physicians over resource utilization. Under the previous LAC policy, paramedics would have to transport to the ED many cardiac arrest patients for whom there was nothing for the ED doctors to do. The new policy clearly offers the potential to reduce such transports to the ED, which may result in a reduction in unnecessary ED costs (see "Fiscal Impact of Policy Change," below).

Bereavement Training to Meet the Changing Paramedic Role

While almost all paramedics in this study had a positive overall response to the new policy, not all of them found it easy to carry out. The myriad issues around leaving a body on the scene, rather than transporting it, were clearly part of the difficulty. Among these issues were family members' disagreements and their perceived readiness to accept death. To the extent that the new policy results in a combination of greater direct engagement with family on the scene and fewer transports, paramedics may spend more time with grieving families. Effective bereavement training could increase the comfort level of paramedics, helping them embrace the new policy and their somewhat different role within it.

Los Angeles County Provides a Template for Other EMS Systems

The experience of LAC EMS in preparing, implementing, and assessing its new field resuscitation policy may help other county EMS systems that are considering a similar change. LAC EMS worked with physicians and other academic medical researchers at UCLA to develop and evaluate the policy change. When another county's EMS medical control committee meets to consider new protocols, policies, or procedures related to pre-hospital attempted resuscitation, it can look to and in some aspects rely on this LAC experience.

- **Experts Defined Best Practices.** In the LAC project's early stages, a panel of experts identified patient categories for which it was appropriate and feasible to forego resuscitation efforts. These experts included academic and practicing emergency physicians, paramedics, a trainer (nurse) of paramedics, a medical ethicist, a clergy member, and an attorney with expertise in end-of-life legal issues. The experts arrived at a set of indicators for forgoing resuscitation attempts and a process by which those indicators were to be acted upon in the field. Other county EMS systems would be able to consider such best practices without having to repeat fully this costly and time-consuming process.
- **Indicators Developed into Detailed Written Policy.** The new LAC EMS policy is not inherently specific to LAC and can serve as a model for other EMS systems, to be modified as needed by a local EMS medical control committee in consultation with its base hospital and pre-hospital provider representatives. (The LAC written policy can be found in this brief's Appendix B, with the new elements in Section I, Parts C3 and C5.)
- **Marketing to Paramedics.** The LAC project included an organized campaign to introduce paramedics to the new policy. Because of LAC's enormous size, this campaign was conducted only with the Los Angeles City Fire Department (LACF), the largest LAC EMS agency. The campaign included identifying local opinion leaders within the LACF and extensively engaging with them about the new policy. Also, all LACF paramedics were provided with simple graphic explanations of the new policy and were invited to participate in small group and one-on-one informational sessions. Paramedics outside LACF were provided with EMS policy written updates plus a video that details policy changes.
- **Quantitative Analysis.** LAC's quantitative analysis provides solid evidence to other EMS systems that the policy change resulted in a reduction in resuscitation attempts in the target population. Importantly, the data also show that the change was not so great as to raise fears that the new policy undermined longstanding EMS consensus about resuscitation practice.
- **Qualitative Analysis.** The overwhelmingly positive response to the new policy by LAC paramedics can be extremely useful to a medical control committee in presenting a proposed policy change to representatives of its pre-hospital providers.
- **No Harm.** EMS systems considering a resuscitation policy change can find confidence in the fact that despite the enormous size of the LAC EMS system, there were no reports of harm to patients or to patient families attributable to the new policy during the period studied by this project.

Fiscal Impact of Policy Change

It was beyond the scope of the present project to study the fiscal impact of the new EMS resuscitation policy, but issues related to costs and benefits are worth examining. One question is whether there is a difference in payments from the county to individual EMS agencies for field responses when paramedics attempt resuscitation and/or transport, and when they do not. If an EMS agency receives significantly less reimbursement for a response when it does not attempt resuscitation and transport, this may work against the agency's inclination to reduce the rate of attempted resuscitation and transport. On the other hand, the freeing-up of an agency's resources when no attempted resuscitation or transport occurs may offset such a reduction in payment, particularly if there is improved coordination with police and coroner.

Another site of potential fiscal impact is the ED. If there are fewer transports, there will be fewer interventions by EDs. This may affect the ED's operational costs, which

may in turn affect payments from programs such as Medicare and Medicaid, as well as from county medical systems.

Conclusion

LAC EMS has joined a small but growing number of EMS systems that address two difficult situations regularly encountered by their paramedics when responding to a cardiac arrest in the field: (1) A family member on the scene verbally requests DNR in accordance with patient wishes but without an available DNR document; and (2) A patient is found in nonshockable rhythms after prolonged down time without CPR, who is therefore highly unlikely to survive neurologically intact. By implementing a new resuscitation attempt policy, LAC EMS now permits its paramedics to make decisions congruent with patient wishes and with a clinically sound assessment of the likelihood of neurologically intact survival. Implementation of the new policy, during an initial six-month study period, was received by the system's paramedics with almost universal approval and resulted in a small but significant reduction in attempted resuscitations without any reports from family members to EMS of negative consequences.

Implementation of the new policy was not entirely without challenges, and better coordination among responding agencies (EMS, police, coroner), as well as added bereavement training to help them meet their changing role with families, could improve paramedics' experience. Nonetheless, the overwhelming success of the new policy in large and demographically complex Los Angeles, following the foundational work of LAC EMS and its UCLA partners in developing a protocol for its introduction, suggests that similar policy changes by other EMS systems may be relatively simple to achieve and very likely to meet with a comparable level of success.

About the Authors

Corita Grudzen, M.D., M.S.H.S., and Steven Asch, M.D., M.P.H., were the principal investigators who worked with William J. Koenig, M.D., medical director of Los Angeles County Emergency Medical Services, to develop, implement, and evaluate the new pre-hospital resuscitation policy.

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About the Foundation

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Appendix A: Methodology

This study of the changes in the LAC EMS cardiac arrest resuscitation policy was comprised of two basic components. The first was quantitative, comparing reporting of resuscitation attempt rates over comparable periods before and after policy implementation. The second was qualitative, assessing paramedics' own perspectives on the policy change. The study was not without certain limitations, however, including a lack of direct observation by researchers and an inability to discuss individual events with the families involved.

Quantitative Comparison of Resuscitation Attempt Rates

Following each field response, an LAC paramedic unit completes and files an EMS Report, also known as a "run sheet." Researchers for this study first examined these run sheets for a six-month period before implementation of the new policy, to determine location of the cardiac arrest, existence of a DNR, presence of a family member, condition of the patient upon EMS arrival, and whether resuscitation was attempted. The results of this analysis showed that the majority of prehospital cardiac arrests occurred at home, often in the presence of a family member, but without a written DNR being produced.[13] Even if a DNR was present, it was often not followed. This suggested that implementation of the new policy might allow considerably more EMS consultation with family members concerning the patient's choice concerning resuscitation efforts.

Researchers then studied the run sheets for a comparable six-month period after implementation of the new resuscitation policy. Results were calculated for the likelihood of foregoing resuscitation attempts and for the proportion of patients for whom signs of irreversible death were documented. An adjusted rate for foregoing resuscitation attempts was then calculated, which accounted for patient demographics, clinical characteristics, and EMS factors, and which excluded patients with signs of irreversible death.

Qualitative Comparison of Paramedics' Experience

Following analysis of the run sheets for the six-month post-change period, researchers for this study conducted a series of focus groups with EMS paramedics and Emergency Medical Technicians (EMT) who had provided responses to cardiac arrests in both the pre-change and post-change study periods. The EMS personnel were asked to discuss factors they used to decide on attempted resuscitation and transport both pre- and post-change in the policy. The EMS personnel also discussed barriers to full implementation of the new policy, as well as their personal experiences and levels of satisfaction with the policy change. Finally, they were asked to comment on how the new policy was received by their superiors, their colleagues, and patients' family members.

Study Limitations

Although researchers were able to analyze both the change in resuscitation attempt rates and paramedics' personal assessment of their work under the new policy, the present study did have some limitations. First, due to logistic and legal barriers, there was no direct observation by researchers of paramedics in the field. Such direct observation might have illuminated process changes generated by the new policy that the paramedics themselves were not sufficiently aware of to raise during focus group discussions. Similar barriers also prevented follow-up discussions with patient family members, which might have provided additional evidence of how the change in policy permitted paramedics to follow patient wishes, and of the level of family satisfaction with paramedic response under the new policy.

Appendix B: Los Angeles County EMS Policy re Determination/Pronouncement of Death in the Field

Those portions of the policy that were changed effective July 1, 2007, and discussed in this brief, are to be found in Section I, Parts C(3) and C(5).

DEPARTMENT OF HEALTH SERVICES
COUNTY OF LOS ANGELES

SUBJECT: **DETERMINATION/PRONOUNCEMENT OF DEATH IN THE FIELD** (EMT-I/PARAMEDIC/MICN) REFERENCE NO. 814

PURPOSE: This policy is intended to provide prehospital personnel with parameters to determine whether or not to withhold resuscitative efforts and to provide guidelines for base hospital physicians to discontinue resuscitative efforts and pronounce death.

AUTHORITY: California Health and Safety Code, Division 2.5
California Probate Code, Division 4.7
California Family Code, Section 297-297.5

DEFINITIONS:

Agent: An individual, eighteen years of age or older, designated in a power of attorney for health care to make health care decisions for the patient, also known as "attorney-in-fact".

Immediate Family: The spouse, domestic partner, adult child(ren) or adult sibling(s) of the patient.

Conservator: Court appointed-authority to make health care decisions for a patient.

Advanced Health Care Directive (AHCD): A written document that allows an individual to provide health care instructions or designate an agent to make health care decisions for that person. AHCD is the current legal format for a living will or Durable Power-of-Attorney for Health Care (DPAHC).

PRINCIPLES:

1. Resuscitative efforts are of no benefit to patients whose physical condition precludes any possibility of successful resuscitation.

2. EMT-Is and paramedics **may determine** death based on specific criteria set forth in this policy.

3. Base hospital physicians may **pronounce** death based on information provided by the paramedics in the field and guidelines set forth in this policy.

4. If there is any objection or disagreement by family members or prehospital personnel regarding terminating or withholding resuscitation, basic life support (BLS) resuscitation, including defibrillation, should continue or begin immediately and paramedics should contact the base hospital for further directions.

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REVISED: 2-1-07
SUPERSEDES: 7-1-03

APPROVED: _____ Director, EMS Agency _____ Medical Director, EMS Agency

SUBJECT: **DETERMINATION/PRONOUNCEMENT OF DEATH IN THE FIELD** REFERENCE NO. 814

POLICY:

I. Determination of death, base hospital contact not required:

A. A patient may be determined dead if, in addition to the absence of respiration, cardiac activity, and neurologic reflexes, one or more of the following physical or circumstantial conditions exist:

1. Decapitation

2. Massive crush injury

3. Penetrating or blunt injury with evisceration of the heart, lung or brain

4. Decomposition

5. Incineration

6. Pulseless, non-breathing victims with extrication time greater than fifteen minutes, where no resuscitative measures can be performed prior to extrication.

7. Blunt trauma patients who, based on paramedic's thorough patient assessment, are found apneic, pulseless, and without organized EKG activity* upon the arrival of EMS at the scene.

**Organized EKG activity is defined as narrow complex supraventricular.*

8. Pulseless, non-breathing victims of a multiple victim incident where insufficient medical resources preclude initiating resuscitative measures.

9. Drowning victims, when it is reasonably determined that submersion has been greater than one hour

10. Rigor Mortis (Requires assessment as described in Section I. B.)

11. Post-Mortem Lividity (Requires assessment as described in Section I. B.)

B. If the initial assessment reveals rigor mortis and/or post-mortem lividity only, EMT-Is and/or paramedics shall perform the following assessments to confirm the absence of respiratory, cardiac, and neurologic function for determination of death in the field:

NOTE: Assessment steps may be performed concurrently.

1. Assessment of respiratory status:

a. Assure that the patient has an open airway.

b. Look, listen and feel for respirations. Auscultate the lungs for a minimum of 30 seconds to confirm apnea.

2. Assessment of cardiac status:

   a. Auscultate the apical pulse for a minimum of 60 seconds to confirm absence of heart sounds.

   b. Adults and children: Palpate the carotid pulse for a minimum of 60 seconds to confirm absence of pulse.

   c. Infants: Palpate the brachial pulse for a minimum of 60 seconds to confirm absence of pulse.

3. Assessment of neurological reflexes:

   a. Check for pupil response with a penlight or flashlight to determine if pupils are fixed and dilated.

   b. Check and confirm unresponsive to pain stimuli.

C. Patients in atraumatic cardiopulmonary arrest, who do not meet the conditions described in Section I. A., require immediate BLS measures to be initiated while assessing or one or more of the following:

1. A valid Do Not Resuscitate (DNR)

2. A valid AHCD with one of the following present at scene:

   a. An AHCD with written DNR instructions.

   b. The agent identified in the AHCD requesting no resuscitation.

3. Immediate family member present at scene:

   a. With a Living Will or DPAHC on scene requesting no resuscitation.

   b. Without said documents at scene, with full agreement of others if present, requesting no resuscitation.

4. Parent or legal guardian is required and must be present at scene to withhold or terminate resuscitation for patients under 18 years of age.

5. Patient in asystole without CPR and the estimated time from collapse to bystander CPR or EMS initiating BLS measures is greater than 10 minutes.

NOTE: If one or more of the conditions in Section I. C. is met, BLS measures may be discontinued and the patient is determined to be dead.

II. Patients in cardiopulmonary arrest requiring base hospital contact.

A. Pediatric patients (equal to or less than 14 years of age) who do not meet Section I. A., of this policy should receive immediate BLS measures while establishing base contact.

B. Base contact shall be established for all patients who do not meet the conditions described in Section I. of this policy. The following are general guidelines:

1. Continuing resuscitation on scene is appropriate for patients in medical cardiopulmonary arrest until there is a return of spontaneous circulation (ROSC).

2. Transporting patients without ROSC is discouraged.

C. Base hospital physician pronouncement of death:

The base hospital physician may pronounce death when it is determined that further resuscitative efforts are futile. Patients without ROSC after 20 minutes of resuscitative efforts by EMS personnel should be considered candidates for termination of resuscitation. Exceptions may include hypothermia or patients who remain in, or whose rhythm changes to V-fibrillation or Pulseless V-tachycardia.

III. Crime scene responsibility, including presumed accidental deaths and suspected suicides:

A. Responsibility for medical management rests with the most medically qualified person on scene.

B. Authority for crime scene management shall be vested in law enforcement. To access the patient(s), it may be necessary to ask law enforcement officers for assistance to create a “safe path” that minimizes scene contamination.

C. If law enforcement is not on scene, prehospital care personnel should attempt to create a "safe path" and secure the scene until law enforcement arrives on scene.

IV. Procedures following pronouncement of death:

A. The deceased should not be moved without the Coroner’s authorization, any invasive equipment (i.e., intravenous line, endotracheal tube) used on the patient should be left in place.

NOTE: If it is necessary to move the deceased in the event, the scene is unsafe or the deceased is creating a hazard, prehospital personnel may relocate the deceased to a safer location or transport to the most accessible receiving facility.

B If the patient is confirmed by law enforcement or the Coroner not to be a coroner's case and the personal physician is going to sign the death certificate, any invasive equipment used during the resuscitation may be removed.

C. Prehospital personnel should remain on scene until law enforcement arrives, during this time when appropriate, the provider should provide grief support to family member(s).

D. Consider Critical Incident Stress Debriefing for all involved prehospital personnel for unusual cases or upon request.

V. Documentation shall include:

A. For patients determined to be dead, document the criteria utilized for death determination, condition, location, and position of the patient and any care provided.

B. If the deceased was moved, the location and the reason why. If the Coroner authorized movement of the deceased, document the coroner's case number (if available) and the coroner's representative who authorized the movement.

C. For patients on whom base hospital contact is initiated, time of pronouncement and name of the pronouncing physician must be documented. Paramedics should provide a complete description of the circumstances, findings, medical history, and estimated duration of full arrest.

D. The name of the agent identified in the AHCD or immediate family member who made the decision to withhold or withdraw resuscitative measures shall be documented along with their signature on the EMS report form.

E. If the patient was determined not be coroner's case and the patient's personal physician is going to sign the death certificate, document the name of the coroner's representative who authorized release of the patient and patient's personal physician signing the death certificate, and any invasive equipment removed.

CROSS REFERENCE:

Prehospital Care Policy Manual:
Ref. No. 518, **Decompression Emergencies/Patient Destination**
Ref. No. 519, **Management of Multiple Casualty Incidents**
Ref. No. 606, **Documentation of Prehospital Care**
Ref. No. 806, **Procedures Prior to Base Contact**
Ref. No. 808, **Base Hospital Contact and Transport Criteria**
Ref. No. 815, **Honoring Prehospital Do-Not-Resuscitate (DNR) Orders**
Ref. No. 818, **Honoring Advanced Health Care Directives (AHCD)**
Ref. No. 819, **Organ Donor Identification**

Endnotes

1. Of the approximately 400,000 nontraumatic (not a secondary result of traumatic injury) cardiac arrests per year in the United States, the majority occur in what is termed a prehospital setting: at home, at work or in a public place, or in a nursing home. Gilman, J.K., S. Jalal, and G.V. Naccarelli. 1994. "Predicting and Preventing Sudden Death from Cardiac Causes." *Circulation* 90; 1083 – 92.

2. In California at the time of this study, an enforceable patient choice not to be resuscitated could be formalized in either of two types of documents: a separate DNR document, or an advance health care directive authorized under California Probate Code §4701. For purposes of discussion in this brief, the term DNR is meant to include either of these documents. As of January 1, 2009, a DNR patient choice could also be included in a Physician Order for Life-Sustaining Treatment (POLST).

3. Eckstein, M., S.J. Stratton, and L.S. Chan. 2005. "Cardiac Arrest Resuscitation Evaluation in Los Angeles: CARE-LA." *Annals of Emergency Medicine* 45; 504 – 9; Stueven, H., P. Troiano, B. Thompson, et al. 1986. "Bystander/First Responder CPR: Ten Years' Experience in a Paramedic System." *Annals of Emergency Medicine* 15; 707–10; Herlitz J., J. Engdahl, L. Svensson, M. Young, K.A. Angquist, and S. Holmberg. 2004. "Can We Define Patients with No Chance of Survival after Out-of-Hospital Cardiac Arrest?" *Heart* 90; 1114 – 8.

4. Lockhart, L.K., P.H. Ditto, J.H. Danks, K.M. Coppola, and W.D. Smucker. 2001. "The Stability of Older Adults' Judgments of Fates Better and Worse than Death." *Death Stud.* 25; 299 – 317; Ditto, P.H., J.A. Druley, K.A. Moore, J.H. Danks, and W.D. Smucker. 1996. "Fates Worse than Death: The Role of Valued Life Activities in Health-State Evaluations." *Journal of Health Psychology* 15; 332 – 43.

5. The definition of irreversible death remained the same under both the earlier policy and the changed policy, and includes the absence of respiration, cardiac activity, and neurologic reflexes, plus at least one other physical condition or circumstance. (See Appendix B.)

6. Grudzen, C.R., et al. 2009. "Potential Impact of a Verbal Prehospital DNR Policy." *Prehospital Emergency Care* 13 (2); 169 – 72.

7. Feder, S., R.L. Matheny, R.S. Lovelace, Jr., and T.D. Tea. 2006. "Withholding Resuscitation: A New Approach to Prehospital End-of-Life Decisions." *Annals of Emergency Medicine* 144 (9); 634 – 40.

8. Mengual, R.P., M.J. Feldman, and G.R. Jones. 2007. "Implementation of a Novel Prehospital Advance Directive Protocol in Southeastern Ontario." *Canadian Journal of Emergency Medicine* 9 (4); 250 – 259.

9. California HealthCare Foundation interview with William J. Koenig, M.D., medical director, Los Angeles County Emergency Medical System, March 9, 2010.

10. The fact that the increase in forgoing resuscitation was small indicates that the new policy did not result in any unwanted or unanticipated radical changes in paramedic behavior.

11. The experiences and views of paramedics who implemented the new LAC policy are thoroughly explored in Grudzen, C.R., et al.. 2009. "Paramedics and Emergency Medical Technicians Views on Opportunities and Challenges When Forgoing and Halting Resuscitation in the Field." *Academic Emergency Medicine* 16 (6); 532 – 38.

12. The study was unable to determine how much of the drop in the attempted resuscitation rate was attributable to the new verbal DNR policy and how much to the new clinical characteristics guideline.

13. Grudzen, C.R., et al. 2009. "Potential Impact of a Verbal Prehospital DNR Policy." *Prehospital Emergency Care* 13 (2); 169 – 72.