To The Editor:

In the January–March, 1990 issue of *Prehospital and Disaster Medicine* (V5,1), Jack Ayres, Jr., offers his view of current controversies surrounding prehospital resuscitation of the terminally ill patient. While Mr. Ayres does succeed in highlighting many of the prehospital resuscitation issues facing emergency medical services (EMS) medical directors and providers, his treatment of this topic is likely to confuse rather than clarify this complicated area of law and medicine. This, I believe, will have the unintended result of inhibiting rather than promoting the development of prehospital resuscitation policies.

The premise of the problem is simple: EMS providers often encounter terminally ill patients requiring resuscitation but are confronted with apparent first- or third-party directives not to resuscitate. Decisions to resuscitate or not resuscitate then must be made instantly and under emergent circumstances.

Articulating the problem is equally simple: Most EMS systems lack policies designed to address the prehospital resuscitation decision-making process. As Mr. Ayres correctly points out, policies that do exist often are medically or legally unsound. Thus, EMS field personnel are left without proper guidance for the appropriate management of terminally ill patients requiring resuscitation. As a result, prehospital resuscitation decisions can be made on an ad hoc basis without regard to the rights of the patient or the interests of the health care provider.

The most generally accepted standard or guideline concerning prehospital resuscitation is that promulgated by the American Heart Association in its *Standards and Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiac Care* (AHA Guidelines).[1] The general rule based on these guidelines states:

> *"Prehospital care providers have an obligation to initiate CPR when medically indicated unless a valid medical or legal reason exists to withhold it."*

The question of what constitutes a valid medical or legal reason to withhold CPR is at the heart of the current controversy. Accepted *medical* reasons to withhold resuscitation include death and irreversible brain damage.[2]

The AHA Guidelines recognize decapitation, rigor mortis, and evidence of tissue decomposition and extreme dependent lividity as reliable evidence of death[3] but caution that indicia of irreversible brain damage are thought too unreliable to be used as a reason to withhold CPR.[4] The AHA approves withholding CPR for patients meeting the specified criteria for obvious death but recommend that EMS providers initiate CPR notwithstanding evidence of irreversible brain damage. Most EMS systems have little difficulty articulating policies embracing this standard and setting forth the requirement that CPR be initiated unless the patient meets AHA criteria for obvious death.

The more difficult and controversial issue surrounding prehospital resuscitation revolves around the question of what constitutes a valid *legal* reason to withhold CPR. Acceptable *legal* reasons to withhold CPR include verbal refusals and living wills (first-party directives not to resuscitate), as well as do-not-resuscitate (DNR) orders, durable powers of attorney, and court orders (third-party directives not to resuscitate).

Mr. Ayres' article focuses primarily on the medical, legal, and ethical problems associated with the recognition of directives not to resuscitate in the field setting. An important discussion omitted from the article, however, relates to the legal effect of these directives. First- and third-party directives act as legally binding refusals of offered medical care and *must* be given practical effect by health care providers. Treating a patient in the face of a valid refusal may give rise to liability consequences. Claims of negligence or medical assault and battery are likely.

While EMS providers in the field face resuscitation dilemmas different from those faced by health care providers in the institutional setting, it is inevitable that they will be presented with directives not to resuscitate certain patients medically in need of resuscitation. It is of critical importance, therefore, that field personnel receive guidance from medical directors in the appropriate management of these patients. Such guidance can be provided most appropriately in the form of system policies or protocols.

Mr. Ayres article centers on two purported impediments to the development of sound prehospital resuscitation polices. The first inquiry relates to DNRs and focuses on whether a given directive is legally and technically valid. The second relates to all directives and focuses on the practicality of validation in the field setting.

Mr. Ayres cites numerous requirements, or conditions precedent, necessary for a valid DNR order. For example, whether a DNR is written appropriately in light of definitional guidelines established by the AHA, whether an attending physician has written a DNR in accordance with AHA Guidelines rather than "based on the somewhat vague rubric of 'medical judgment,'" whether the DNR patient was selected appropriately and whether the attending physician has obtained the informed consent of the patient prior to writing a DNR. He then suggests that medical directors have a legal obligation or duty to authenticate all DNRs before they may be given practical effect in the field setting. I disagree.

In my view, the law imposes no duty on medical directors to authenticate DNR orders. The duty to comply with the legal requirements necessary to establish a valid DNR rests with the attending physician. If a directive appears on its face to be valid—that is, it appears on its face to meet state and local legal requirements—a medical director reasonably may rely on that directive in ordering that a prehospital patient not be resuscitated.

The second purported impediment raised by Mr. Ayres relates to the practicality of validating a given directive in the field setting. As with DNRs, the duty to comply with the legal requirements necessary to establish a valid directive rests with the patient for first-party directives or with the attending physician, the family member, or the court for third-party directives.

In my view, the doctrine of reasonable reliance applies with equal force to both medical directors and EMS providers in the field setting. The EMS providers reasonably may rely upon a directive apparently valid on its face as a justifiable reason to withhold CPR. Reasonable reliance on an apparently valid directive generally will not give rise to liability. In fact, many statutes authorizing the use of directives not to resuscitate immunize from liability those medical providers who withhold resuscitative efforts in reliance upon an apparently valid directive. The key is simply to teach EMS providers what a valid directive looks like.

Mr. Ayres then suggests that written directives not to resuscitate be ignored in the field setting on the basis of presumed inherent unreliability. This is to suggest a practice fraught with peril and likely to lead to the development of medically, legally, and ethically indefensible policies. A recent New York Times news article, for example, reports on a "wrongful life" suit brought by a patient claiming to have been resuscitated against his wishes. Adopting a blanket policy of ignoring directives not to resuscitate likely will lead EMS system participants into similar lawsuits.

Mr. Ayres also intimates that the issue of prehospital resuscitation is simply too complicated to be addressed by medical directors and prehospital care providers and that the only sound solution is to mandate a lawyer ride along in every ambulance. I disagree. No impediments exist to the development of legally defensible, medically sound, and ethically logical prehospital resuscitation policies that respect the rights of the patient and the interests of the prehospital care provider.

It is incumbent on the NAEMSP to develop recommended guidelines for prehospital resuscitation for use in EMS systems throughout the country. These guidelines

can be designed for modification at the local level to ensure compliance with local law. I have no doubt that solutions to the complicated medical and legal problems associated with the prehospital resuscitation decision-making process can be found. I invite members of the organization to participate in the process of developing such guidelines to ensure that the rights and interests of all parties in the system are respected and protected.

References

1. American Heart Association: Standards and guidelines for cardiopulmonary re suscitation and emergency cardiac care. *JAMA* 1986;255:2841.
2. *Ibid.* 2980-2981.
3. *Ibid.* 2980.
4. *Ibid.* 2980-2981.

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To The Editor:

It was flattering to be the subject of such an extensive commentary by Dr. Moles (Vol 5:271-272). Close reading of this "critical review" reveals three distinct types of comments. We are pleased to respond to each of them.

I. Issues that were explicitly noted and discussed in the original article in Vol 5:

A. "No rationale or criteria are given for the selection of the pacemaker electrode combination in each subject..."

However, page 146, paragraph 1 notes explicitly that "the particular pacer electrode combination selected for each subject was determined by a previous TCP study in which moderate to severe discomfort was experienced at capture threshold."

B. "Unblinded exposure in the N_2O trial...introduces a placebo-type bias; this error could and should be quantified in a comparative trial blinded by use of cylinder medical air delivered through an identical system."

Again, the issue is overtly noted. Page 146, paragraph 3 states, "...pilot trials demonstrated that subjects invariably distinguished the nitrous oxide gas from a control gas. As a result, these trials were unblinded." Then once more, on page 147, paragraph 6, we note, "...limitations to the present study...the study was unblinded due to the ability of subjects to distinguish the nitrous oxide gas from the 'control' gas."

C. Dr. Moles states, (page 272, Paragraph 1) "Prior exposure to N_2O, providing previous knowledge of effect, unequivocally (italics ours) compounds this error with a second conditioned bias favoring N_2O...."

But page 148, paragraph 1, specifically deals with this question. "...each subject had participated in a previous TCP (not nitrous oxide) study and was familiar with the technique of TCP....Previous (TCP) experience should not have introduced a consistent bias favoring the nitrous oxide or room air trial." Actually, very few of the subjects had previously experienced nitrous oxide and how this would affect their pain perception is far from "unequivocal," it is extremely speculative.

D. Dr. Moles takes us to task for "omitting comment on capture verification in the N_2O trials." Careful reading of page 146, paragraph 2, however would have revealed "Electrocardiographic (EKG) documentation of capture was required for all trials."

II. A second category of comments may be grouped under the rubric "comments that are factually wrong." Space limitations preclude an inclusive listing, but we note a few.

A. "The range given for the PVAS (Pain visual analog scale) extends only to 8, which seems paradoxical."

There is nothing paradoxical about it. The upper range of responses was indeed 8.0. The maximum possible response was 10.0 representing very severe pain. Clearly, no subject considered his pain to be "very severe" even if he elected to have his pacing discontinued. This is neither surprising or paradoxical.

B. "The last sentence of the methods section seems far from exact!"

Really? The sentence in question states, "Where appropriate, preferences for the respective trials were compared with the Chi-Square or Fisher's Exact Test." As frequent readers of medical journals already know, this is a commonly used phraseology when one of two similar statistical tests is more appropriate than the other due to cell frequency. As always, Fisher's Exact Test was utilized for analysis when cell size was low, Chi-Square in the other cases.

C. None of the statistical criticisms appear valid. The assertion (page 272, paragraph 6) states,"The pacer time trial reports means of 22.4 and 23.8 seconds....These data are not normally distributed and the t-test is invalid."

There are two errors in this statement. First, the distribution, while obviously not a perfect normal distribution, is, in fact, not markedly skewed. Further, the t-test utilized is quite robust to violation of normality assumption when n=18, as it did here.

III. The third type of comments deal with question and definitions that were not quite clear to Dr. Moles. We are happy to clarify them, although it seems likely that they would have been a source of ambiguity to most readers. The capture threshold was expressed as 103±37 ma—this does, indeed, refer to the entire range (not the standard deviation) of the responses. We did not report whether the 15 (out of 18) subjects expressing a preference for nitrous oxide was statistically significant as this type of two-tailed exact binomial test is almost trivial and likely to be misleading. For what it is worth, the value is indeed significant at p .0075. "Premature termination" means that the subject asked us to stop TCP due to discomfort. "Prolongation time" refers to how much longer a subject could be paced with nitrous than without. We are not surprised that the other peer reviewers had no difficulty understanding these concepts, even without explicit definitions. And yes, the consent from explicitly mentioned in our article was (like the study itself) approved by the University of Pittsburgh IRB.

Finally we would just note the remarkably eclectic concatenation of "confounding variables" that we are berated for not specifically excluding: "psychotropics; fasting; food; and alcohol intake; exercise; circadian endocrine/endorphin variations, e.g., menstruation and endomorphin variations...". We will allow PDM's readership to reach their own conclusion regarding the criticality of such factors in a TCP study. And, we hope that our comments will similarly allow them to evaluate the overall validity of Dr. Moles' critique.

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To The Editor:

These comments are in reference to the recent article by Schwartz et al on the "Role of the Physician in a Helicopter Emergency Medical Service," (Vol 5,1) and the follow-up correspondence from Morgan (Vol 5,2). Dr. Morgan seems convinced that patients might be treated by non-physicians for serious or minor illnesses, particularly in a helicopter EMS.

It is well-established in American medicine that physician assistants and nurse practitioners are able to provide basic medical care. Indeed, such properly licensed and supervised individuals are authorized legally to administer such care, in both the hospital and outpatient settings. Additionally, the medical profession has decided that specially trained paramedics are the appropriate health care providers for the great bulk of EMS patients, when associated with physician consultation for medical control and treatment protocol development.

Clearly, there are some complicated EMS cases which might necessitate the intervention of a physician during flight, but as Schwartz and his colleagues so nicely show in their paper, these cases remain a distinct minority. The dispatch of physicians on helicopters for every EMS call would take physicians away for areas of greater need, e.g., busy emergency departments with high acuity patient loads. It is with this reasoning in mind that prehospital medical care has evolved to its present form, with EMT-I, EMT-D, and EMT-P staff providing care for patients outside the hospital. As with so many other issues, more is not necessarily better; so it is with the presence of physicians on the great majority of helicopter EMS flights.

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