FireRescue1 News

Click to Print

Firemedically

with Mike McEvoy
Sponsored by Masimo

04/11/2007

Dead Wrong

Ben Franklin declared death and taxes the only two certainties in modern society. Annually, 2.4 million Americans die; significantly more pay taxes.

The overwhelming majority of people die within the confines of hospitals (61 percent) and nursing homes (17 percent)*1*. As a result, medical students and resident physicians in training are often given formal instruction in the pronouncement of death.

So, considering that only 22 percent of deaths occur outside of medical facilities, it seems odd that an Internet search on "mistakenly declared dead" produces far more stories involving EMS than hospital-based "resurrections."

Practically every few months, a tale of someone wrongly presumed dead by paramedics or EMTs appears in the news. Perhaps some formal training in death pronouncement would help pre-hospital providers avoid such humiliation.

Concern about alive burials prompted the state of New York to pass legislation in 1899, requiring death pronouncement by a physician*2*. Yet it wasn't until 1981 that consistent standards for pronouncement of death were developed. The report, "Defining Death on the Medical, Legal, and Ethical Issues in the Determination of Death," was published by the President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research*3*. That report remains today the basis for death pronouncement in the United States, and also describes criteria in existence at the time in other countries.

The sheer size – 170-plus pages – of the report suggests the medical community in 1981 had a bit of confusion with death pronouncements. Indeed, the boon in life support equipment appearing in the 1970s brought great uncertainties; not only could technology keep apneic individuals breathing indefinitely, but there were also remarkable strides in artificially supporting circulation.

Brain functions

Ultimately, the traditional criteria of "pulselessness" and apnea no longer recognized deaths of many ICU patients whose ability to spontaneously breathe and circulate their own blood would never return. The organ behind this brouhaha was the brain; developing standardized criteria describing irreversible loss of all functions of the entire brain consumed most of the commission's energy and a substantial part of its report.

EMS providers don't pronounce brain death, nor does a lone physician in the middle of the night. Such decisions take time, require laboratory testing, and should be made by physicians with experience in assessing the brain, such as a neurologist.

Patients we declare dead are those we find that way, or those to whom we cease delivering resuscitative efforts. For these individuals, the criteria are not incredibly complicated: “An individual with irreversible cessation of circulatory and respiratory function is dead. Cessation is recognized by an appropriate clinical exam,” whereas "Irreversibility is recognized by persistent cessation of functions for an appropriate period of observation and/or trial of therapy."

The clinical exam suggested is absence of responsiveness, heartbeat, and respiratory effort along with use of

required confirmatory tests such as an ECG. Irreversibility can be quite simple: If a patient is found decapitated, in an advanced state of decomposition, or with rigor mortis and significant dependent lividity, the observation period need not be prolonged.

For patients undergoing resuscitation as a test for cardiovascular responsiveness, it may be necessary to observe them for the total duration of action of the medications administered. Nearly every medic with a few years of street experience can recall a patient who regained vital signs following termination of resuscitative efforts, nearly always due to delayed effects of medications given.

Detailed examination

Some of these folks survive to be transported, others "live" only transiently, but none live for very long. When a patient is found dead and the death is not observed, not expected, or sudden, much more detailed examination is needed and longer observation is clearly indicated.

The typical rule of thumb taught to physicians for pronouncing death is an examination that includes, at minimum, the general appearance of the body, no response to verbal or tactile stimulation, no pupillary light reflex (pupils fixed and dilated), absence of breath sounds, and absence of heart sounds.

Note that deep painful stimuli such as deep sternal rub or nipple twisting are absolutely inappropriate. There are some authors who suggest also testing for a corneal reflex (blinking when the cornea is touched with a gauze pad or cotton swab) but this is not included in these guidelines and is duplicative of pupillary reaction to light since both reflexes require some intact brainstem to occur.

With more sophisticated monitoring equipment now available, such as an ECG or oximeter that are able to measure in low flow states, it should be used to confirm the physical exam findings.

But, here's the warning: complicating conditions may resemble death. Drug intoxication has the ability to produce complete cessation of brain function and can be completely reversible. Total paralysis can also closely simulate death.

There are certain critical illnesses such as end-stage liver disease (hepatic coma) that can make a live patient appear deceased. Shock states and profound hypothermia (body temperatures below 90 F) often require far more careful clinical exam because of reduced cerebral circulation.

Infants and children under the age of 5 bounce back remarkably better than adults after being unresponsive, even for prolonged periods. These are red flag cases, situations where a "mistakenly declared dead" headline could include your name.

Field pronouncement

Remember, looks can be deceiving. A walk through some nursing homes or hospital units would probably reveal a patient or two whose life status appears questionable on initial observation.

Field pronouncement of death should follow local protocols. At minimum, an EMS exam must include lack of response to verbal or tactile stimulation, lack of pupillary light reflex, absence of breath sounds, and absence of heart sounds (heart sounds, not absence of a pulse).

Documentation should include the exam you conducted, a description of the physical location where the body was found, the physical condition of the body, any significant medical history or trauma, the conditions that precluded resuscitative efforts, any contact with medical control, and in whose custody the body was left.

Be sure to note the time you completed your exam – this will be the official time of death in most cases. As in null the hospital setting, double check your impression with every available resource. If you have an ECG monitor, attach it to the patient and make a recording in two leads. Leave the leads on the body as confirmation of your assessment. If you don't have a monitor but do carry an AED, confirm it gives a "No Shock Advised" message when attached to the body.

Being humiliated in the media for being dead wrong is far more embarrassing than having your colleagues chide you for using every available means to make dead certain you're right.

References:

1. Levine C. Taking Sides. 11th ed. Dubuque, Iowa: McGraw-Hill, 2006: 93.
2. Anonymous. To Prevent Premature Burials. JAMA. 1899; 32:329.
3. President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research. Defining Death: Medical, Legal, and Ethical Issues in the Determination of Death. US Government Printing Office. Washington, DC. 1981.

Mike McEvoy is the EMS Coordinator for Saratoga County and the EMS Director on the Board of the New York State Association of Fire Chiefs. Formerly a forensic psychologist, he is a clinical specialist in Cardiac Surgery and teaches Critical Care Medicine at Albany Medical College. Mike is a paramedic for Clifton Park-Halfmoon Ambulance, chief medical officer for West Crescent Fire Department, and past chair and current member of the New York State EMS Council.

He is the fire-EMS editor for Fire Engineering magazine and recently published a book titled "Straight Talk About Stress for Emergency Responders." Mike is a popular speaker at fire, EMS, and medical conferences and in his free time, is an avid hiker and winter mountain climber. To contact Mike, e-mail Mike.McEvoy@firerescue1.com.

Back to previous page