# Editorials

## Cardiopulmonary Resuscitation As A Medical Intervention

Two articles that appear in this issue of *JABFP* offer helpful perspectives for thinking about cardiopulmonary resuscitation (CPR).[1,2] One article asks us to consider our approach to communicating with patients about CPR[1]; the other defends the in-hospital success of CPR during 30 years of implementation.[2]

The review by Schneider, et al. pools the results reported in 98 articles of nearly 20,000 in-hospital resuscitation attempts, searching to calculate a single overall survival rate. One could quarrel with methodological aspects of the review. In most of these studies CPR, as a medical intervention, lacked precise definition. In the United States CPR means that as a minimum rescuers should provide the ABCs, open the airways, give positive pressure ventilations, and manually compress the chest. In Europe CPR means something different, though the interpretation is understandable — CPR means "the state of having been resuscitated."[3,4] In addition, CPR, as used in published studies, might or might not include the advanced interventions of defibrillation, intubation, and administration of intravenous medications. The observed success rate of 15 percent for in-hospital CPR reported by Schneider, et al. must be viewed with some skepticism, because we do not know precisely what CPR meant in these studies. This rate of survival, however, is exactly the same rate noted for survival to 1 year following in-hospital cardiac arrest in the most meticulous study yet performed, a survey of 3765 resuscitation attempts in 12 British hospitals.[5]

Nevertheless, the remarkable compilation by Schneider, et al. of tens of thousands of patients clearly indicates that some of these CPR interventions can lead to the return of sustained, spontaneous circulation. We must never forget the important achievement of taking a person in cardiopulmonary arrest and restoring spontaneous circulation, an achievement considered almost miraculous when rediscovered and seriously evaluated in the early 1960s.[6-8] Efforts to resuscitate individuals can succeed, though the relative contributions of chest compressions, defibrillation, positive airway ventilations, and intravenous medications remain to be worked out.[9,10]

We should no longer continue to debate whether CPR is a futile intervention. This debate seems to have fueled the meticulous review of published studies by Schneider, et al. Their helpful review adds to the evidence that cardiopulmonary resuscitation clearly constitutes an effective medical therapy. We must never forget, however, that CPR is a medical intervention with proper indications and contraindications. Ventres[1] discusses some of these contraindications in his articulate article on communicating about resuscitation. One contraindication is that the interventions of CPR are not wanted or needed by the patient. Ventres's observations emphasize that physicians must question, in advance, whether a patient has suitable indications for resuscitation efforts. This question should be asked and discussed in advance, rather than at the pressured moment when the pulse finally disappears or is discovered lost. Other authors have recommended careful negotiations among physicians, patients, and family members to achieve consensus on the care of critically ill patients.[11]

Unlike other medical therapies, CPR is an intervention for which physicians must write an order to *not* administer the therapy. The American Heart Association has recommended that most patients who experience a cardiac arrest should receive a trial of CPR to test cardiovascular responsiveness.[12] There are certainly situations in hospital settings when a patient's pulse disappears, and resuscitation efforts are merited to test whether the cardiovascular system will respond. Ventricular fibrillation is an excellent example. The low blood flow produced by chest compressions can slow the process of dying and

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preserve the function of cardiac pacemaker tissues. Viable pacing centers in the myocardium can restore effective cardiac contractions, but only after electrical shocks have eliminated the chaos of fibrillation.

In most in-hospital clinical situations, however, clinicians know the patients who are "on their way" to a cardiac arrest. A patient can deteriorate despite maximal therapy. Physicians should know that chest compressions, in these circumstances, will be ineffective once the pulse is lost. If clinicians cannot keep a patient from deteriorating *into* cardiac arrest, there should be little expectation that CPR will bring them *out* of cardiac arrest. Inappropriate use of CPR contributes to the mistaken image, noted by Schneider, et al., that CPR could be an ineffective intervention.

Assertions about the ineffectiveness of CPR testify to poor advance planning by clinicians. CPR should not be used as a last desperate medical intervention when all else has failed. Failure of maximal medical therapy indicates a person for whom the last beat of his or her heart represents the end of life, not the indication for another medical intervention. CPR will nearly always appear futile if applied in these clinical situations.

The 98 studies reviewed by Schneider, et al. describe, in effect, the epidemiology of in-hospital CPR. They are a glance backward at the history of CPR as a medical intervention. The Patient Self-Determination Act of 1991, despite many clinical reservations, should move us into a new context for talking about CPR.[13-18] Now, instead of talking about probable outcomes of CPR when clinicians use it as a medical intervention, caregivers and patients will begin to communicate more about the end of life and what role, if any, resuscitation attempts should play. Ventres correctly observes that social and cultural issues will shape and influence these communications — how to judge competency and capacity, how to deal with uncertainty, and how to assimilate the deep cultural meanings people attach to impending death and attempts at resuscitation.

Family physicians should be familiar with another neglected area in discussions about resuscitation effectiveness and patient-physician communication. What happens when terminally ill patients, with a properly executed advance directive, choose to spend their final days outside the hospital? Few states permit portable do-not-attempt-resuscitation (DNAR) orders.[19] Decisions reached in the hospital after thoughtful communication might not be transported to the home or extended care facilities. Few physicians realize that when they discharge DNAR patients, the in-hospital resuscitation status of the patient does not follow them home. When expected deaths occur at home, family members might not know what to do or how to respond. Inappropriate calls to emergency medical services systems to report a death can produce undignified and emotionally devastating resuscitation attempts in homes and nursing care facilities.[20] These unfortunate scenes occur because many state laws require emergency personnel to start resuscitation attempts once family members activate the emergency medical service system.[21] Family members could have simply been looking for a way to report a death or to seek help and support during the last stages of an expected death. The communications noted by Ventres must also involve the patient, the family and physicians, the local emergency medical services system, hospice personnel, community counseling services, and even the medical examiner's office and law enforcement agencies.[19-22]

These two articles on resuscitation serve as supportive bookends around a complex topic. One teaches us that CPR is an effective medical intervention; the other teaches us that we need to consider carefully whether the patient possesses the proper indications for that medical intervention.

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# Acyclovir As A Public Health Hazard

The introduction of acyclovir (Zovirax) into the US market as a treatment of uncomplicated chickenpox represents an unprecedented step in the management of this most common of childhood illnesses. Chickenpox is caused by the varicella-zoster virus (VZV), one of six human herpesviruses, and it is estimated that approximately 97 percent of children will contract the illness before adolescence.[1] Varicella is among the most contagious of diseases. Recent evidence suggests that transmission occurs mainly through the skin lesions; one study found that there was a direct relation between number of skin lesions and spread to contacts.[2] It has also been noted that VZV can only rarely be cultured from the pharynx of index cases in outbreaks of chickenpox.[3] Complications, which include bacterial superinfection, thrombocytopenia, pneumonia, arthritis, hepatitis, and encephalitis, occur rarely in immunocompetent children. Nevertheless, the benign nature of the disease is transformed when an adolescent or adult is infected. Up to 33 percent of adults who develop chickenpox go on to develop varicella pneumonia,[4] resulting in significant morbidity and mortality.

After primary infection, the virus enters a latent phase in the dorsal root ganglia for the life of the host. In approximately 50 percent of the population, an event, probably an attenuation of cellular immunity, will reactivate the virus, causing herpes zoster, a condition that often results

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