Part 2: Ethical Aspects of CPR and ECC

Introduction

CPR and ECC have the same goals as other medical interventions: to preserve life, restore health, relieve suffering, and limit disability. One goal unique to CPR is the reversal of clinical death, an outcome achieved in only a minority of patients. The performance of CPR, however, may conflict with the patient’s own desires and requests or may not be in his or her best interest. Decisions concerning CPR are complicated and often must be made within seconds by rescuers who may not know the patient or know of the existence of an advance directive. Resuscitative efforts may be inappropriate if goals of patient care cannot be achieved. In some instances resuscitation may not be the best use of limited medical resources. Concern about costs associated with prolonged intensive care, however, should not preclude emergency resuscitative attempts in individual patients.

The purpose of this section is to guide ECC healthcare professionals in making difficult decisions to start or stop CPR and ECC. These are general guidelines. Each decision must be made for the individual, with compassion, based on ethical principles and available scientific information.

Ethical Principles

When beginning and ending resuscitation attempts, differences in ethical and cultural norms must be considered. Although the broad principles of beneficence, nonmaleficence, autonomy, and justice appear to be accepted across cultures, the priority of these principles may vary among different cultures. In the United States, the greatest emphasis is placed on individual patient autonomy. In Europe a greater emphasis on the autonomy of healthcare providers and their duty to make informed decisions about their patients is emerging. In some societies the benefits to society at large outweigh the autonomy of the individual. Physicians must play a role in decision making regarding resuscitation. Scientifically proven data and societal values should guide resuscitative efforts, while at the same time we strive to maintain cultural autonomy.

The Principle of Patient Autonomy

Patient autonomy is generally respected ethically and in most countries legally. This, however, requires a patient who can communicate and can consent to or refuse an intervention, including CPR. In many countries, including the United States, adult patients are presumed to have decision-making capacity unless a court of law has declared them incompetent to make such decisions. In other countries court decisions are not necessary to establish incompetence based on psychiatric illness.

Truly informed decisions require that patients receive and understand accurate information about their condition and prognosis, the nature of the proposed intervention, the alternatives, and the risks and benefits. The patient must be able to deliberate and choose among alternatives and be able to relate the decision to a stable framework of values. When in doubt, the patient should be regarded as competent. When decision-making capacity is temporarily impaired by such factors as concurrent illness, medications, or depression, treatment of these conditions may restore that capacity. In an emergency, patient preferences may be uncertain, with little time to determine them. In this instance it is prudent to give standard medical care.

People rarely plan for future illness. Many do not wish to prepare advance directives or to discuss CPR. Physicians seldom discuss advance directives, even with their seriously ill patients. Many patients have only a vague understanding of CPR and its consequences. The public generally overestimates the probability of survival from cardiac arrest. Some patients will decline CPR because of the possibility of severe residual neurological deficit with survival. In fact, in many studies the quality of life for survivors of cardiac arrest has been described as acceptable.

The physician and patient, however, may differ in their perceptions of quality of life. Physicians have an obligation to determine a patient’s understanding of CPR and resuscitation outcomes. Appropriate decision making rests on a good understanding and, if necessary, a discussion of perceptions and outcomes. This goal also can be complicated by physicians’ misconceptions. Many physicians, for example, cannot accurately predict chance of survival from cardiac arrest. Enabling patients to give truly informed consent for resuscitation continues to be a challenge for healthcare providers.

There is some evidence that surrogates, acting on behalf of patients who have lost their decision-making capacity, do not always accurately reflect the patients’ preferences. Approximately one third of patients with chronic renal disease would accept the decisions of a surrogate, even if those decisions conflicted with their own expressed wishes. It is most helpful to establish patient preferences in advance by discussing the subject with the patient at admission to the hospital, but patients must not be coerced into providing advance directives.

Advance Directives and Living Wills

Advance directive is the term applied to any expression of a person’s thoughts, wishes, or preferences for his or her
end-of-life care. Most often advance directives provide instructions on limitation of care, including resuscitation from cardiac arrest. Advance directives can be based on conversations, written directives, living wills, or durable powers of attorney for health care. While still competent, the patient’s conversations with relatives, friends, or physicians are the most common form of advance directives. In the United States and some other countries the courts consider written advance directives more trustworthy than recollections of conversations. Following the advance directives of patients who have lost their decision-making capacity respects their autonomy and is widely recommended.

Legal precedents in the United States have held that an advance directive cannot be used to withhold life-sustaining treatment unless these conditions are met:

- A surrogate has given authorization.
- The patient has a terminal condition certified by 2 physicians or
- The patient is in a persistent vegetative state certified by 2 physicians, including 1 with special expertise in evaluating cognitive function.

In a living will the patient gives directions to physicians about provision of medical care should the patient become terminally ill and unable to make decisions. A living will constitutes clear evidence of the patient’s wishes and can be legally enforced in most areas of the United States. Most other countries do not recognize a legal requirement that caregivers follow the directions in the living will.

Living wills and advance directives, once stated, should be reconsidered periodically. As they decline or recover from a chronic illness, people inevitably change their perceptions about their quality of life and about the importance of living days and weeks longer. Patient preferences may not be consistent over even a 2-month period. In the SUPPORT study,4 patients who initially chose a “Do Not Attempt Resuscitation” (DNAR) order changed their mind more often than those who initially chose to have CPR. Sick patients hold a deep desire not to die. Healthcare providers have an orientation to underestimate this desire. Every individual should be able to provide an advance directive, which then can be reassessed at regular intervals.

**Patient Self-Determination Act**

The Patient Self-Determination Act of 1991 requires healthcare institutions and managed-care organizations to inquire whether patients have advance directives. Healthcare institutions are required to facilitate the completion of advance directives if patients desire them. Although this Act was designed to encourage the use of advance directives, there is little evidence that this has occurred. Despite laws and education, advance directives have had minimal impact on resuscitation decisions in the United States. Such laws do not exist in most other countries.

In the SUPPORT study,5 advance directives had little impact on patient care despite an intensive education program for healthcare providers and patients. Fewer than 40% of 9000 seriously ill patients discussed their CPR preferences with their physician, and only 20% had prepared advance directives. Advance directives did not affect resuscitation decisions.4 Advance directives still provide useful information for clinicians by helping them understand patient preferences and guide clinical decisions.

**Surrogate Decision Makers**

In the United States, when patients have lost normal mental capacities, a close relative or friend can become a surrogate decision maker for that patient. Legal proceedings, however, can follow and may result in long delays or superficial review of a case, even when procedures are expedited.

Competent patients in anticipation of later incompetence can designate a surrogate decision maker or grant durable power of attorney for health care. Durable power of attorney, typically given to a relative or close friend, allows that person to make medical decisions for the patient if he or she loses the capacity to make reasonable decisions. Surrogates should base their decisions on the patient’s previously expressed preferences if known; otherwise, surrogates decide on the basis of the patient’s best interest. In some countries, relatives have no legal rights to be surrogates. Surrogate decision makers are rare in Europe and many other countries. Unlike a living will, which applies only to terminal illnesses, surrogate status and durable powers of attorney apply to any situation in which the patient is incapable of making medical decisions.

At some time, all adults should provide a written advance directive that names surrogate decision makers and people to receive durable power of attorney for health issues and states preferences about life-sustaining treatment.

Children should be involved in decision making as their level of maturity allows and should be asked to consent to healthcare decisions when able. Some cases are difficult or controversial. In such cases the attending physician should consult a knowledgeable colleague who is not directly involved in the patient’s care. Consultation helps ensure that hidden assumptions and value judgments are made explicit and that caregivers’ personal values and attitudes are not imposed on the patient. Consultants ensure that all viewpoints and alternatives are carefully considered. The opinion of the family’s primary care physician may be of particular value.

**Hospital Ethics Committees**

In the United States and some other countries, hospitals are required to have advisers for clinicians. These advisers are usually members of the ethics committee or bioethicists qualified to assist in the resolution of medical/ethical questions and to serve in a consultative and advisory capacity. Ethics committees have been effective in organizing educational programs and developing hospital policies and guidelines. There is considerable variation among hospitals with respect to committee responsibilities, authority, membership, access, and procedural protocols. Hospitals should develop explicit statements on these issues.

**The Principle of Futility**

Medical treatment is futile if its purpose cannot be achieved. The 2 major determinants of medical futility are length of life and quality of life. An intervention that cannot establish any increase in length or quality of life is futile. In resuscitation a
qualitative definition of futility must include low chance of survival and low quality of life afterward. Key factors are the underlying disease before cardiac arrest and expected state of health after resuscitation. The term qualitative futility implies the possibility of hidden value judgments. The correlation between quality-of-life evaluations by physicians and survivors can be poor.

A careful balance of the patient’s prognosis for both length of life and quality of life will determine whether CPR is appropriate. CPR is inappropriate when survival is not expected or if the patient is expected to survive without the ability to communicate. The issue becomes more difficult with changes in legal, cultural, or personal perspectives. The value of life in a patient who is completely unable to communicate is viewed differently by different cultures.

The major dilemma in making decisions about the futility of treatment centers on the patient’s chance of survival and those making the decision. When is a rate of survival to hospital discharge so low that resuscitation should not be offered to a patient who requests it—5%, 1%, 0.5%? Although prolonging life and restoring consciousness are appropriate medical goals, who determines the goal for an individual patient? Is the chance of 1 or 2 more months of life for a patient who is terminally ill an acceptable goal for resuscitation?4,5 Who decides what is appropriate as a goal or what constitutes futility—the healthcare provider at the patient’s bedside? The patient or family? A consensus of experts in the field? The values of patients, healthcare providers, and local society are all factors in the answer to this key question.

Ideally the initial decision about these very difficult questions should not be made during cardiac arrest. As noted above, physicians may be inaccurate in predicting the outcome of resuscitation from cardiac arrest, and individual bias may be of concern. The framework for decisions about futility can be best achieved by a social consensus.6 Discussion and debate among healthcare professionals and the public are encouraged so as to reach a consensus based on the values of society.

Patients or families may ask physicians to provide care that is inappropriate. Physicians are not obliged to provide such care when there is scientific and social consensus that such treatment is ineffective. Some examples are CPR for patients with signs of irreversible death, such as rigor mortis, decapitation, dependent lividity, or decomposition. In addition, healthcare providers are not obliged to provide CPR if no benefit from CPR and advanced cardiovascular life support (ACLS) can be expected. For example, CPR would not restore effective circulation in a patient whose cardiac arrest is terminal and occurs despite optimal treatment for progressive septic or cardiogenic shock.

Beyond these clinical circumstances, resuscitation should be offered to all patients who want it unless there is clear evidence of quantitative futility. Quantitative futility implies that survival is not expected after CPR under given circumstances. Several factors that predict a patient’s prognosis after resuscitation have been investigated in well-designed studies from multiple institutions. Patient variables include comorbid diseases and medications. Cardiac arrest variables include witnessed arrest, initial rhythm, and system factors, including time to CPR, defibrillation, and ACLS. No single factor or combination of factors, such as morbidity scores or unwitnessed asystolic arrest, meets the criteria for quantitative futility. A patient with metastatic cancer could be in relatively good health and have an incidental cardiac arrest. Recent studies have demonstrated a 10% rate of survival to hospital discharge for patients with metastatic cancer. Of these patients, 4% survived for 1 year.6,10 A scoring system using patient or resuscitation variables with acceptable sensitivity for accurately predicting a universally poor outcome is not available.

For the newly born, antenatal information about gestational age or congenital anomalies may be uncertain and prediction of outcome may not be accurate in these cases a trial of therapy and additional assessment of the infant may yield more accurate diagnostic and prognostic data to present to the family, allowing better-informed discussions about continuation or withdrawal of support. New developments in neonatal intensive care and changing neonatal outcomes require continued reevaluation of gestational age and birthweight criteria for noninitiation of resuscitation. Current data, however, supports the belief that resuscitation of extremely immature or extremely low birthweight infants and infants with certain chromosomal or anatomic defects is unlikely to result in survival or survival without extreme disability. This constitutes both quantitative and qualitative futility. For these infants, noninitiation of resuscitation in the delivery room, ideally after discussion with the family, is appropriate.

Criteria for Not Starting CPR

Scientific evaluation has shown that there are no clear criteria to predict the futility of CPR accurately. Therefore, it is recommended that all patients in cardiac arrest receive resuscitation unless

- The patient has a valid DNAR order.
- The patient has signs of irreversible death: rigor mortis, decapitation, or dependent lividity.
- No physiological benefit can be expected because the vital functions have deteriorated despite maximal therapy for such conditions as progressive septic or cardiogenic shock.
- Withholding attempts to resuscitate in the delivery room is appropriate for newly born infants with
  —Confirmed gestation <23 weeks or birthweight <400 g
  —Anencephaly
  —Confirmed trisomy 13 or 18

Criteria for Terminating Resuscitative Efforts

In the hospital the decision to terminate resuscitative efforts rests with the treating physician. Healthcare professionals must understand the patient, the arrest features, and the system factors that have prognostic importance for resuscitation. These include time to CPR, time to defibrillation, comorbid disease, prearrest state, and initial arrest rhythm. None of these factors alone or in combination is clearly predictive of outcome.11 The most important factor associated with poor outcome is time of resuscitative efforts.12–16 The chance of discharge from the hospital
alive and neurologically intact diminishes as resuscitation time increases.17–20 Clinicians must constantly reassess patient status. The responsible clinician should stop the resuscitative effort when he or she determines with a high degree of certainty that the arrest victim will not respond to further ACLS efforts. (See below for further discussion.) No reliable criteria are available to determine neurological outcome during cardiac arrest.

Available scientific studies have shown that, in the absence of mitigating factors, prolonged resuscitative efforts for adults and children are unlikely to be successful and can be discontinued if there is no return of spontaneous circulation at any time during 30 minutes of cumulative ACLS. If return of spontaneous circulation of any duration occurs at any time, however, it may be appropriate to consider extending the resuscitative effort. Other issues, such as drug overdose and severe prearrest hypothermia (eg, near-drowning in icy water), should be considered when determining whether to extend resuscitative efforts.

For the newly born infant, discontinuation of resuscitative efforts may be appropriate if spontaneous circulation has not returned after 15 minutes. Lack of response to intensive resuscitation for >10 minutes carries an extremely poor prognosis for survival or survival without disability.21–24

**DNAR Orders**

Unlike other medical interventions, CPR is initiated without a physician’s order under the theory of implied consent for emergency treatment. In the United States a physician’s order is necessary to withhold CPR, but this may not apply in other countries in specific circumstances. For example, since physician-staffed ambulances are much more common in Europe, those physicians are able to make such decisions themselves, without having to place a telephone call to a separate medical control person. Many patients will discuss resuscitative options, but physicians often hesitate to initiate discussion because of inappropriate concern about provoking severe anxiety or undermining a patient’s hope. There is good evidence that this is not the case.

The commonly used term *do not resuscitate* (DNR) may be misleading. It suggests that resuscitation would be successful if undertaken. The term *do not attempt resuscitation* (DNAR) may more clearly indicate that success at resuscitation often is not achieved. The terms DNR, DNAR, and no CPR are currently in use, and local custom determines the preferred term. The term DNAR is used throughout the remainder of this chapter.

In the United States, legal precedent has defined very specific requirements before an advance directive can be used to withhold CPR. DNAR orders written in the hospital are not advance directives, and these legal requirements do not apply. The scope of a DNAR order may be ambiguous. A DNAR order does not preclude interventions such as administration of parenteral fluids, nutrition, oxygen, analgesia, sedation, antiarrhythmic agents, or vasopressors. Some patients may choose to accept defibrillation and chest compressions but not intubation and artificial ventilation. The DNAR order can be written for an individual in specific clinical circumstances and should be reviewed at regular intervals.

Some physicians discuss CPR when patients are thought to be at risk of cardiopulmonary arrest. Typically the possibility of cardiopulmonary arrest becomes clear as a patient’s condition worsens. Then the patient may no longer be capable of decision making. Targeting sicker patients also reinforces the belief that discussion of DNAR orders signifies a bleak prognosis. Selective discussions may also be inequitable. Physicians discuss DNAR orders more frequently with patients who have AIDS or cancer than with patients who have coronary artery disease, cirrhosis, or other diseases with a similarly poor prognosis. Physicians must, within reason, consider initiating CPR discussions with all adults admitted for medical and surgical care or with their surrogates.

Terminally ill patients may fear abandonment and pain more than death. In discussions with such patients, physicians need to emphasize their plans to control pain and provide comfort and general overall care even if resuscitation is withheld.

All decision making begins with the physician making a recommendation based on sound medical judgment to the patient. Patients and their surrogates have a right to choose from medically appropriate options on the basis of their assessment of the relative benefits, risks, and burdens of the proposed intervention. This does not imply the right to demand care beyond options based on appropriate medical judgment and accepted standards of care. Physicians also are not required to provide care that violates their own ethical principles. In such cases they may choose to transfer care to other healthcare providers.

Conflicts of interest may lead parents to make decisions that are not in the best interest of their child. Outside consultation should be obtained if patients, surrogates, or parents cannot agree with physicians on a course of action. In such an instance the physician may seek the assistance of another consultant, the family physician, the hospital ethics committee, or—as a last resort in pediatric cases—a governmental child protection agency. A growing number of children with chronic and potentially life-threatening conditions are living in foster care under state jurisdiction. Ambiguities about the scope of decision-making authority vested in custodial guardians, especially decisions about CPR and prolonged life support, must be resolved.

Decisions to limit resuscitative efforts should be communicated to all professionals involved in the care of the patient. Such interactions provide a wider information base, ensure that staff is fully informed, and offer an opportunity for discussion and resolution of conflicts. DNAR orders carry no inherent implications for limiting other forms of treatment. Other aspects of the treatment plan should be documented separately and communicated. Admitting a patient with a DNAR order to an intensive care unit is consistent with the attitude that all patients deserve the best available care, regardless of the existence of a DNAR order.

DNAR orders should be reviewed before surgery by the anesthesiologist, attending surgeon, and patient or surrogate to determine their applicability in the operating room and postoperative recovery room.
Ethical Issues Around Out-of-Hospital Resuscitation

Withholding CPR at the Start Versus Withdrawing CPR at the End?

Basic life support training urges the average citizen responding first to a cardiac arrest to perform CPR. Healthcare professionals are expected to provide BLS and ACLS as part of their professional duty to respond. There are, however, several exceptions:

- When a person lies dead, with obvious clinical signs of irreversible death
- When attempts to perform CPR would place the rescuer at risk of physical injury
- When the patient or surrogate has indicated that resuscitation is not desired

Neither citizens nor professionals should make a judgment about the present or future quality of life of a cardiac arrest victim on the basis of current or anticipated neurological status. Such “snap” judgments are often inaccurate. Quality of life should never be used as a criterion to withhold CPR. Conditions such as irreversible brain damage or brain death cannot be reliably assessed or predicted.

In Europe and other non-US countries, the widespread use of doctor-staffed ambulances precludes many problems with advance directives, DNAR statements, and death pronouncement. In the United States, however, EMS protocols must recognize and plan for adults and children who have advance directives limiting resuscitation. Such out-of-hospital DNAR protocols must be clear to physicians, patients, family members and loved ones, and prehospital healthcare professionals. Decision making by family and patient can be distorted regarding end-of-life events, expectations, and the value of CPR. Advance directives can take many forms, such as written bedside orders from physicians, wallet identification cards, identification bracelets, and other mechanisms approved by the local EMS authority.

Honoring Advance Directives Outside the Hospital

The Washington State EMS system in the United States has adopted a “No CPR” bracelet system that allows EMS personnel to provide care and comfort at the end of a person’s life without the obligation to attempt an inappropriate resuscitation. A study in King County, Washington, showed that the No CPR bracelet stopped the EMS system from providing a full resuscitation response when a person wearing the bracelet had a cardiac arrest. On the negative side, the study revealed that few patients or their families and friends knew of the system. Furthermore, few family physicians, oncologists, internists, or other healthcare professionals knew of the system or implemented it in their own practice.

In certain cases it may be difficult to determine whether resuscitation should be initiated. For example, family members, a surrogate, or the family physician may request CPR for a patient despite the presence of a DNAR order. EMS professionals should initiate CPR and ACLS if there is good reason to believe that a DNAR order is invalid, that the patient may have changed his or her mind, or that the best interests of the patient are in question. They should initiate CPR and ACLS in cases in which there is reasonable doubt. CPR or other life support measures may be discontinued later when further information becomes available. Sometimes, within a few minutes of resuscitation being initiated, relatives or other medical personnel arrive and confirm that the patient had clearly expressed a wish that resuscitation not be attempted.

Out-of-hospital DNAR orders should not be confused with advance directives or living wills. Advance directives are statements by individuals about the level of medical care they want if they lose decision-making capacity. Advance directives and living wills require interpretation by a physician and need to be formulated into the treatment plan with specific orders for resuscitation that are consistent with the patient’s wishes. The existence of a living will does not necessarily indicate that a patient wishes to forgo aggressive medical care or CPR. A living will may, for example, specify that the patient would choose aggressive medical treatment, including CPR. In contrast, the will may specify no resuscitative attempts in a terminal illness.

The EMS professional should not be required to determine immediately whether the provisions of a living will are in effect. In the United States, resuscitation must be instituted at once if the patient does not have a clear DNAR order approved by the EMS authority. Unclear issues are clarified later in hospital. In other countries, EMS professionals can review and make these decisions without involvement of a physician.

Family members may be concerned that EMS personnel will not follow advance directives written in the hospital if an out-of-hospital arrest occurs. Families and physicians often fail to provide an advance directive or DNAR order for the out-of-hospital setting when a patient returns home. Thus, an out-of-hospital DNAR order is not available. In countries where this is applicable, EMS personnel must convey sensitively and emphatically their responsibility to initiate treatment. Families should be counseled that more definitive direction will be obtained when the patient reaches the hospital. The key to preventing these dilemmas rests with the patient’s regular physician who has been providing prearrest care.

An inappropriate out-of-hospital tracheal intubation, for example, can be corrected by responsible physicians in the Emergency Department (ED) or the hospital. It is ethical for ED personnel to discontinue treatment initiated by EMS personnel in the prehospital setting, provided that there is valid, after-the-fact evidence that these interventions are now inappropriate. This includes withdrawing the tracheal tube, removing intravenous access, and stopping infusion solutions and intravenous medications. Remember—and international ethicists are in complete agreement on this point—decisions either to not start CPR or to stop CPR once started are ethically and legally similar, without distinction. Stated more prosaically, “withholding resuscitative efforts at the initial collapse” is ethically and morally equivalent to “withdrawing resuscitative efforts at the terminal event.”
Terminating Attempted Resuscitation in Prehospital Systems That Lack ACLS Providers

BLS rescuers who start BLS should continue until one of the following occurs:

- Restoration of effective, spontaneous circulation and ventilation
- Care is transferred to a more senior level of emergency medical professional who may determine unresponsiveness to resuscitation
- Recognition of reliable criteria indicating irreversible death
- The rescuer is unable to continue resuscitation because exhaustion, the presence of dangerous environmental hazards, or continuation of resuscitation places other lives in jeopardy
- Presentation of a valid DNAR order to the rescuers

Chances of successful resuscitation decline as resuscitation time increases. Rescuers in remote environments and BLS ambulance services in some locales may have prolonged transport times before ACLS can be instituted. The risk of vehicular crashes during high-speed emergency transport must be weighed against the likelihood of a successful resuscitation after prolonged BLS fails to rescue the victim at the scene. State or local EMS authorities need to develop protocols for initiation and withdrawal of BLS in areas in which ACLS is not rapidly available or may be significantly delayed. Local circumstances, resources, and risk to rescuers should be considered. Defibrillators are now recommended as standard equipment on all ambulances. The absence of a “shockable” rhythm on the defibrillator after an adequate trial of CPR can be the key criterion for withdrawing BLS in the absence of timely ACLS arrival.

Time for Termination: Transporting Cardiac Arrest Patients Who Fail BLS and ACLS Efforts in the Out-Of-Hospital Setting

In a number of countries around the world, but especially in the United States, advanced-level personnel operate under protocols that prohibit death certification in the field. For a doctor-staffed ambulance, as in much of Europe, this does not pose a problem—the ambulance doctor pronounces death on the scene, where the arrest took place. The problem becomes more difficult in those areas in which only nonphysician personnel respond. If the EMS system does not allow nonphysicians to pronounce death and stop all resuscitative efforts, the personnel are forced to perform an unethical act—transporting from home to hospital a dead cardiac arrest victim proven refractory to proper BLS and ACLS care.

This situation creates the following contradiction: carefully executed BLS and ACLS care protocols fail in the out-of-hospital setting. How could the same protocols possibly succeed in the ED? Only in research settings such as academic centers will the ED offer interventions not already available outside the hospital. A number of studies over the past decade observe consistently that <1% of patients transported with continuing CPR survive to hospital discharge.

The new ACLS asystole algorithm has been modified to bring the issues of termination of resuscitation to the forefront for scrutiny and discussion. This new algorithm recognizes that some people in asystole can be resuscitated, and therefore it presents recommendations to follow for resuscitation. The asystole algorithm, however, also recognizes that when people have died, the heart monitor displays a flat line, or “asystole.” Therefore, the International Guidelines 2000 asystole algorithm contains notes about what to do if asystole persists, that is, when the patient is dead. The asystole algorithm focuses on the following questions:

**Asystole Persists**

- Time to terminate resuscitative efforts?
- Are all BLS/ACLS interventions completed? (CPR, ventilation and oxygenation, defibrillation, intravenous access obtained, and indicated medications given?)
- Has asystole persisted for several minutes? (documented electrical silence; no specific time criteria imposed, but default approach should be shorter time requirements, not longer)
- Consider opposing family attitudes toward stopping efforts.

**Clinical Features That Change Predictive Accuracy**

- Young age
- Toxins or electrolyte abnormalities
- Profound hypothermia
- Drug overdose

The criteria for terminating ACLS resuscitative efforts are defined above. Some EMS systems are authorized to terminate resuscitation out of hospital. Protocols for pronouncement of death and appropriate transport of the body by non-EMS vehicles should be established or available. EMS personnel must be trained to deal sensitively with family members and others at the scene. Notification and involvement of a member of the clergy or social worker should be considered when appropriate.

Ambulance and rescue personnel commonly encounter terminally ill patients in private homes, hospice programs, or nursing homes. These patients may require treatment for acute medical illness or traumatic injuries, measures to relieve suffering, or transport by ambulance to a medical facility. Local EMS authorities should adopt policies allowing patients to decline resuscitative attempts while maintaining access to other emergency medical treatment and ambulance transport.

Personal physicians should help patients who are entering the terminal stages of an illness to plan for death. Physicians must be familiar with local laws related to certification and pronouncement of death, the role of the coroner and police, and disposal of the body. Physicians may not realize that in-hospital DNAR orders are usually not transferable outside the hospital. An additional out-of-hospital DNAR form must be completed. Failure to address these issues may result in unnecessary confusion and inappropriate care.

Many patients prefer to die at home surrounded by their loved ones. The hospice movement and many societies for specific diseases (eg, multiple sclerosis, AIDS, and muscular dystrophy) provide excellent guidelines for planning an expected death at home and answering questions from physicians and families. Physicians, patients, and family mem-

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bers should discuss measures of comfort, pain control, terminal support, and hygiene; when (and when not) to call the EMS system; use of a local hospice; and when and how to contact the personal physician. Funeral plans, disposition of the body, psychological concerns surrounding death and dying, and availability of bereavement counseling and ministerial support should be discussed. Such knowledge and discussions will reduce and even eliminate many ethical and medicolegal issues related to CPR.

Nursing home facilities should develop and implement guidelines for providing CPR to their residents. A nursing home is considered an out-of-hospital setting, and residents are provided with emergency medical services if medically indicated. Advance directives and out-of-hospital DNAR orders should be considered when developing treatment plans for residents who lack decision-making capacity if this is in accord with their request.

**Resuscitation in the Hospital**

Hospitalized patients should be periodically evaluated to determine the appropriate level of care. Levels of care are usually defined as (1) aggressive emergency resuscitation; (2) intensive care monitoring and prolonged life support; (3) general medical care, including medication, surgery, artificial nutrition, and hydration; (4) general nursing care; and (5) terminal care. Selection of the appropriate level of care is a medical decision made in accordance with information from the patient or surrogate.

**Withdrawal of Life Support**

Withdrawal of life support is an emotionally complex decision for family and staff. Withholding and withdrawing life support are ethically similar. A decision to withdraw life support is justifiable if the physician and patient or surrogate agree that treatment goals cannot be met or the burden to the patient of continued treatment would exceed any benefits.

There are no reliable criteria for clinicians to use during resuscitation to predict neurological outcome for a patient in cardiac arrest. Determination of brain death must be governed by nationally accepted guidelines. Once a patient is determined to be brain dead, life-sustaining treatment is withdrawn unless consent for vascular organ donation has been given. If such consent has been given, previous DNAR orders are replaced with standard cadaver-care transplant protocols until the organ(s) has been procured. It is recommended that hospitals develop policies and guidelines for determination of death that reflect current consensus and address areas of controversy.

Some patients do not regain consciousness after cardiac arrest and restoration of spontaneous circulation by CPR and ACLS. The prognosis for adults who remain deeply comatose (Glasgow Coma Scale <5) after cardiac arrest can be predicted with accuracy after 2 to 3 days in most cases. Specific investigations may be helpful to assist with this process. A recent meta-analysis of 33 studies of outcome of anoxic-ischemic coma documented the following 3 factors to be associated with poor outcome: absence of pupillary response to light on the third day, absence of motor response to pain by the third day, and bilateral absence of cortical response to median somatosensory evoked potentials with the first week. Withdrawal of life support is ethically permissible under these circumstances.

Patients in the end stage of an incurable disease, whether responsive or unresponsive, should have care that ensures their comfort and dignity. Care is provided to minimize suffering associated with pain, dyspnea, delirium, convulsions, and other terminal complications. For such patients it is ethically acceptable to gradually increase the dosage of narcotics and sedatives to relieve pain and other symptoms, even to levels that might concomitantly shorten the patient’s life.

**Hospital DNAR Policies**

In the United States, hospitals must have written policies for limitation-of-treatment orders such as DNAR. The Joint Commission on the Accreditation of Healthcare Organizations requires such policies. These policies should be reviewed periodically to reflect developments in care and technology, changes in ECC and ACLS guidelines, and changes in the law. In other countries the situation is not drawn up in formal or legalistic terms.

The attending physician should write the DNAR order in the patient’s chart with a note explaining the rationale for the DNAR order and any other specific limitations of care. Some countries require the signatures of 2 attending physicians on the DNAR order. The limitation-of-treatment order is best if it contains guidelines for specific emergency interventions that may arise during hospitalization, such as the use of pressor agents, blood products, or antibiotics. Oral DNAR orders are not acceptable. If the attending physician is not physically present, nursing staff may accept a DNAR order by telephone with the understanding that the physician will sign the order promptly. DNAR orders should be reviewed periodically, particularly if the patient’s condition changes.

Delayed or token efforts (knowingly providing ineffective resuscitation) that appear to provide CPR and ACLS are inappropriate. This practice compromises the ethical integrity of healthcare professionals and undermines the physician-patient and nurse-patient relationship.

Orders to limit some but not all resuscitative efforts, such as withholding defibrillation or tracheal intubation, are rarely appropriate. An informed patient or surrogate may choose only limited resuscitative efforts, with the understanding that the chances of successful resuscitation are decreased.

A DNAR order is restricted to initiation of CPR, including the ACLS cascade that may follow. A DNAR order does not limit other appropriate nonresuscitative care. Orders to not attempt resuscitation should not lead to abandonment of patients or denial of appropriate and indicated medical and nursing care. DNAR orders should not convey a sense of “giving up” to the patient, family, and healthcare providers. Limitation of specific additional care, however, may be appropriate. The attending physician should clarify both the DNAR order and plans for further care with nurses, consultants, house staff, and the patient or surrogate. Interventions for diagnosis or treatment always remain appropriate after a DNAR order is written. In the intensive care unit or critical
care unit, attending physicians should clarify orders for antiarrhythmia therapy and pressor therapy for hypotension. Basic nursing and comfort care, such as oral hygiene, skin care, patient positioning, and measures to relieve pain and other symptoms, is always continued.

**Working With the Family**

**Notifying Survivors of a Loved One’s Death**

Despite our best efforts, most resuscitations fail. Survival to discharge after an in-hospital cardiac arrest has seldom been reported at rates >15%. People would not be in the hospital unless they were already ill. In some out-of-hospital reports the survival rate from out-of-hospital arrest has been as high as 20% to 25% for specific subsets of patients (usually witnessed ventricular fibrillation/ventricular tachycardia arrest with immediate bystander CPR).

Notifying family and friends of the death of their loved one from cardiac arrest is an important aspect of the resuscitation continuum. Notification of death and the discussions that follow are difficult, even for experienced healthcare providers. Survivors should be informed with compassion by a knowledgeable healthcare professional.

Healthcare professionals can be sensitive to survivors’ needs by using appropriate words and body language. Many hospitals in ethnically diverse areas now use standard protocols customized for different cultures, locales, or institutions. These protocols provide recommendations for choice of vocabulary and approaches that are appropriate for specific cultures. A packet of materials containing information on transportation of the body from a home or hospital, death certification, and autopsy and medical examiner requirements is useful. Information on body, organ, and tissue donation should be included.

**Family Presence During Resuscitation Attempts**

A growing number of hospitals and institutions, most often following a local “grassroots effort” by emergency and critical care nurses, have started programs to ask family members whether they wish to be in the same room with the patient during the resuscitation attempts. Accompanied by a calm, experienced social worker or nurse, families can view the professional efforts made by medical personnel attempting to save their loved one. Afterward they rarely ask the recurring question that so often accompanies an unsuccessful resuscitation attempt: Was everything done?

Retrospective reports on these efforts note positive reactions from family members, many of whom said that they felt a sense of having helped their loved one and of easing their own grieving process. When surveyed before they had observed resuscitative efforts and a loved one’s death, the majority of family members stated a preference for being present during attempted resuscitation. This has been confirmed by several surveys in the United States and the United Kingdom.

Parents and caretakers of chronically ill children are often knowledgeable about and comfortable with medical equipment and emergency procedures. Family members with no medical background have reported that being at a loved one’s side and saying goodbye during their final moments of life was comforting. Family members who were present during resuscitative efforts reported that it helped them adjust to the death of their loved one, and most indicated they would do so again. Standard psychological questionnaires suggest that family members who were present during resuscitative efforts demonstrated less anxiety and depression and more constructive grief behavior than family members who were not present during the resuscitation attempt.

Parents or family members seldom ask if they can be present unless they have been encouraged to do so. Healthcare providers should offer the opportunity to family members whenever possible. Medical and nursing staff should discuss the presence of family members during resuscitation attempts before bringing a spouse or other family member into such an emotional situation. Advance role-playing by resuscitation team members, with a focus on team response to a number of scenarios, is recommended by the nursing and medical staffs of hospitals that pioneered this concept. Resuscitation team members should be sensitive to the presence of family members during resuscitative efforts. One team member should be assigned to the family to answer questions, clarify information, and offer comfort.

**The Ethics of How We Allocate Resources**

Lack of consistent access to ECC and the quality of ACLS should be a major concern for healthcare providers. Efforts should continue to reduce response times and improve the quality of resuscitation attempts through all links in the Chain of Survival. Justice dictates a minimum level of emergency care for all persons who require it. Resources should be fairly allocated to ensure that ECC is available to all persons. Physicians must serve as leaders in achieving the maximum benefit from available medical resources. They should also serve as advocates for all patients, acting in the best interest of each one. Recent ethical deliberations have expressed concern about overly aggressive treatment of patients with a poor prognosis. When resources are inadequate to meet immediate patient care needs, rationing (ie, triage) of medical services occurs. Rationing, or the distribution of a scarce resource, should be based on ethically oriented criteria.

**Organ and Tissue Donation**

The ECC community supports efforts to respond to the increased need for organ and tissue donations. EMS agencies should consider contacting the organ procurement organization in their region to discuss the need for tissue from donors pronounced dead in the field. In the United States, permission for organ and tissue donations must be obtained from the patient’s relatives. Guidelines for organ and tissue procurement in hospitals and throughout the EMS system should be clearly defined and available to all healthcare professionals. There may be differences between applicable laws and societal values in procedures for organ procurement.

**Research and Training on Newly Dead Patients: Informed Consent?**

The use of newly dead patients for research and training raises important ethical and, in the United States, legal issues. Whether family consent is necessary or practical is central to
the controversy. The consent of family members is ideal and respectful of the newly dead. However, this is not always possible or practical in the immediate cardiac arrest period. Advocates of research on the newly dead claim that a greater good is served, which benefits the living. Some have claimed that consent is unnecessary because the body is “non persona” and without autonomy. This position is questionable because it is the family who suffers after death, not the deceased.

Presumed consent implies that consent is assumed if a reasonable person (in the United Kingdom a reasonable physician) would consent under the same circumstances. In many countries, including Austria, Belgium, France, and Norway, presumed consent is the basis for harvesting of organs. An extrapolation from these laws to cover training and research is probably excessive. In a Norwegian study, 60% of parents who recently had lost a newly born infant opposed presumed consent.41 Presumed consent for research and training using the newly dead should require a well-informed community, public discussion, and debate. Individuals should have the right to decline consent.

Seeking consent can be a considerable strain on both the family and physician. Of parents of newly born infants who had recently died, 8% said they would have been angry if they had been approached for permission to practice tracheal intubation on the infant. Alternatively, a consent rate of 59% was obtained for retrograde tracheal intubation and a rate of 39% for cricothyrotomy. Mandated choice on a variety of healthcare issues that might later apply is considered unethical.42 Neither the Helsinki declaration or statutes in most countries nor common law precedents in the United States or the United Kingdom cover research on the newly dead.

Ownership of the newly dead has not been established. In the United States, a quasi property right, which pertains only to the eventual disposal of the body, has been claimed. In the United Kingdom, unauthorized research or training on a cadaver is not a crime unless the body is dissected or dismembered. In the United States, someone not authorized by law who treats a cadaver in a manner he or she knows would outrage the family has committed a misdemeanor. There are significant cultural differences in the acceptance or nonacceptance of the use of cadavers.

In the United States, unlike most other countries, the issue of informed consent for resuscitation research has become one of the most crucial barriers to future progress in ECC. When first learning that resuscitation researchers almost never obtained prearrest signed informed consent from arrest subjects, regulatory agencies in the federal government simply stopped all resuscitation research. The decision to stop the research was made before there was a solution to the obvious fact that a person in cardiac arrest cannot give informed consent for interventions that need to be used within minutes of the victim’s becoming a candidate for enrollment. Having next of kin give early consent has proved to be impractical, if not impossible. It is usually not feasible or practical to obtain consent from the next of kin.

Research on such patients has attracted much public attention in the United States, and the potential for unethical studies casts a pall of public suspicion on all medical research in this country. Nonetheless, this type of research usually is well conducted and has led to significant benefits for society in general and individual patients in particular. After much public discussion and in recognition of the value of this type of human research, the US government, through the Food and Drug Administration and the National Institutes of Health, recently adopted new regulations that allow a waiver of the need to obtain informed consent in certain limited circumstances. Stringent preresearch directives require the researchers to consult with experts plus representative laypersons who might be study patients. The researchers also must make full public disclosure of the details of the study methodology and disclose this information in a public manner. Newspaper articles and radio and TV announcements have been used in several projects. The study investigators must arrange for candid public discussion of the need for resuscitation research, acknowledge the lack of an evidence-based foundation for many current practices, and detail the many potential benefits of the research.

During the Guidelines 2000 Conference, experts and attendees from Europe, Australia, Canada, and other countries discussed their different approaches to these problems. These discussions revealed a deep influence of culture and history, rather than science and clinical outcomes, on these issues.

Conclusions

Clear institutional guidelines and mechanisms are needed to address and guide the management of these sensitive issues. The work of hospital ethics committees, made up of representatives of several disciplines, has been particularly beneficial. All advance directives should be entered into the patient’s record and should be subject to routine review. The newly dead should be treated with respect and their known wishes followed. It is important to consider cultural and religious factors. Healthcare providers who require training and experience should practice lifesaving procedures on newly dead patients only in defined educational programs under the supervision of a specialist. If informed consent is not requested, the relevant ethics committee should approve this practice.

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