Part 3: Ethical Issues

2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care

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The goals of resuscitation are to preserve life; restore health; relieve suffering; limit disability; and respect individuals' decisions, rights, and privacy. Because cardiopulmonary resuscitation (CPR) efforts must be initiated immediately at the time of arrest, a rescuer may not know who the victim is, what that individual's goals of care are, or if an advance directive exists. As a result, administration of CPR may be contrary to the individual's desires or best interests.[1–3] This Part of the *2015 American Heart Association* (AHA) *Guidelines Update for CPR and Emergency Cardiovascular Care* provides updates to the 2010 AHA Guidelines[4] for healthcare providers who are faced with the difficult decision to provide or withhold emergency cardiovascular care.

Ethical Principles

Ethical, legal, and cultural factors influence decisions about resuscitation. Ideally, these decisions are guided by science, patient or surrogate preferences, local policies and legal requirements, and established ethical principles.

Principle of Respect for Autonomy

Respect for autonomy is an important social value in medical ethics and law.[5] This principle is based on society's respect for a competent individual's ability to make decisions about his or her own health care. Adults are presumed to have decision-making capability unless they are incapacitated or declared incompetent by a court of law. Informed decisions require that individuals receive and understand accurate information about their condition and prognosis as well as the nature, risks, benefits, and alternatives of any proposed interventions. Individuals must deliberate and choose among alternatives by linking their decisions to their values and personal goals of care.

When physicians strive to understand patients' goals of care, decisions can be made based on the likelihood that together they will achieve the patients' goals of care. The following 3-step process may assist healthcare providers in ensuring each patient understands and makes informed decisions: (1) the patient receives and understands accurate information about his or her condition, prognosis, nature of any proposed interventions, alternatives, and risks and benefits; (2) the patient is asked to paraphrase the information to give providers the opportunity to assess the patient's understanding and correct any misimpressions; and (3) the patient deliberates and chooses among alternatives and justifies his or her decisions.[6]

When decision-making capacity is temporarily impaired by conditions such as active illness, treatment of these conditions may restore capacity. When an individual's preferences are unknown or uncertain, it is ethically appropriate to treat emergency conditions until further information is available.

Pediatric Decision Making

As a general rule, minors are considered incompetent to provide legally binding consent about their health care. Parents or guardians are generally empowered to make healthcare decisions on the behalf of minors, and in most situations, parents are given wide latitude in terms of the decisions they make on behalf of their children. Ethically, however, a child should be involved in decision making at a level appropriate for the child's maturity. Children under 14 years of age in Canada and under 18 years of age in the United States rarely possess the legal authority to consent to their health care except under specific legally defined situations (eg, emancipated minors; mature minors; minors who have specific health conditions, such as those with sexually transmitted diseases or in need of pregnancy-related care). However, as older children develop the capacity to make decisions, it is ethically appropriate to include them in discussions about their care and the treatments using language and explanations suitable for the child's level of maturity and cognitive function.

Withholding and Withdrawing CPR (Termination of Resuscitative Efforts) Related to Out-of-Hospital Cardiac Arrest

Criteria for Not Starting CPR

While the general rule is to provide emergency treatment to a victim of cardiac arrest, there are a few exceptions where withholding CPR would be considered appropriate:

The American Heart Association requests that this document be cited as follows: Mancini ME, Diekema DS, Hoadley TA, Kadlec KD, Leveille MH, McGowan JE, Munkwitz MM, Panchal AR, Sayre MR, Sinz EH. Part 3: ethical issues: 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation.* 2015;132(suppl 2):S383–S396.

(*Circulation*. 2015;132[suppl 2]:S383–S396. DOI: 10.1161/CIR.0000000000000254.)

- Situations where attempts to perform CPR would place the rescuer at risk of serious injury or mortal peril (eg, exposure to infectious diseases).
- Obvious clinical signs of irreversible death (eg, rigor mortis, dependent lividity, decapitation, transection, decomposition).
- A valid advance directive, a Physician Orders for Life-Sustaining Treatment (POLST) form[7] (www.polst.org) indicating that resuscitation is not desired, or a valid Do Not Attempt Resuscitation (DNAR) order.

Terminating Resuscitative Efforts in Neonatal, Pediatric, or Adult Out-of-Hospital Cardiac Arrest

The 2010 Guidelines contain a complete discussion of clinical decision rules for terminating resuscitative efforts.[4] In 2015, the International Liaison Committee on Resuscitation (ILCOR) Neonatal Life Support Task Force and the Pediatric Life Support Task Force completed systematic reviews to examine whether the presence of certain prognostic factors in the newly born or in infants or children enabled prediction of good neurologic outcome (see "Part 12: Pediatric Advanced Life Support" and "Part 13: Neonatal Resuscitation").

In the absence of clinical decision rules for the neonate, infant, child, or adult out-of-hospital cardiac arrest (OHCA) victim, CPR and advanced life support protocols are used by responsible prehospital providers in consultation with medical direction in real-time or as the victim is transported to the most appropriate facility per local directives. The impact of the availability of advanced hospital-based interventions, including extracorporeal membrane oxygenation (ECMO) during refractory CPR and the use of targeted temperature management (TTM), is now being considered in the local evaluation for continuing resuscitation and transport in some emergency medical service systems.[8–10]

Use of Extracorporeal CPR for Adults With OHCA—Updated

The use of extracorporeal CPR (ECPR) may allow providers additional time to treat reversible underlying causes of cardiac arrest (eg, acute coronary artery occlusion, pulmonary embolism, refractory ventricular fibrillation, profound hypothermia, cardiac injury, myocarditis, cardiomyopathy, congestive heart failure, drug intoxication) or serve as a bridge for left ventricular assist device implantation or cardiac transplant.

2015 Evidence Summary

The 2015 ILCOR systematic review evaluated the use of ECPR techniques (including ECMO or cardiopulmonary bypass) compared with manual CPR or mechanical CPR. One post hoc analysis of data from a prospective, observational cohort of 162 OHCA patients who did not achieve return of spontaneous circulation (ROSC) with more than 20 minutes of conventional CPR, including propensity score matching, showed that at 3-month follow-up ECPR was associated with a higher rate of neurologically intact survival than continued conventional CPR.[11]

A single prospective, observational study that enrolled 454 patients with OHCA who were treated with ECPR if they did not achieve ROSC with more than 15 minutes of conventional CPR after hospital arrival demonstrated improved neurologic outcomes at 1-month and 6-month follow-ups.[12]

Pediatric OHCA was not included in the 2015 ILCOR systematic review.

2015 Recommendation[ALS 723]—Revised

There is insufficient evidence to recommend the routine use of ECPR for patients with cardiac arrest. In settings where it can be rapidly implemented, ECPR may be considered for select cardiac arrest patients for whom the suspected etiology of the cardiac arrest is potentially reversible during a limited period of mechanical cardiorespiratory support (Class IIb, LOE C-LD).

Intra-arrest Prognostic Factors for Cardiac Arrest in Infants and Children—Updated

The ILCOR Pediatric Life Support Task Force reviewed the available evidence to determine if there were intra-arrest prognostic indicators that reliably predict survival with good neurologic outcome for OHCA.

2015 Evidence Summary

For infants and children with OHCA, age of less than 1 year,[13,14] longer duration of cardiac arrest,[15–17] and presentation with a nonshockable as opposed to a shockable rhythm[13,14,16] are all predictors of poor patient outcome.

2015 Recommendation[Peds 814]—New

Multiple variables should be used when attempting to prognosticate outcomes during cardiac arrest (Class I, LOE C-LD). Although there are factors associated with better or worse outcomes, no single factor that was studied predicts outcome with sufficient accuracy to recommend termination or continuation of CPR.

Withholding and Withdrawing CPR (Termination of Resuscitative Efforts) Related to In-Hospital Cardiac Arrest

Limitation of Interventions and Withdrawal of Life-Sustaining Therapies

This topic was last reviewed in 2010. Since that time, the term *limitation of interventions* has replaced *limitations of care*.[4] In the 2010 Guidelines, it was noted that not initiating resuscitation and discontinuing life-sustaining treatment of in-hospital cardiac arrest (IHCA) during or after resuscitation are ethically equivalent, and clinicians should not hesitate to withdraw support on ethical grounds when functional survival is highly unlikely.

Criteria for Withholding and Discontinuing CPR in Newly Born Infant IHCA

In the 2010 Guidelines, the data regarding management of neonates born at the margins of viability or those with conditions that predict a high risk of mortality or morbidity were reviewed, and it was concluded that there was variation in attitudes and practice by region and availability of resources. Moreover, it was emphasized that parents desire a larger role in decisions related to initiation of resuscitation and continuation of support of severely compromised newborns. Guidelines were provided for when resuscitation is not indicated or when it is nearly always indicated. Under circumstances when the outcome remains unclear, the desires of the parents should be supported.[4]

Use of a Prognostic Score in the Delivery Room for Preterm Infants[NRP 805]—Updated

The 2015 ILCOR systematic review evaluated studies about prognostic scores applied to extremely preterm infants (below 25 weeks) compared with assessment of gestational age only.

2015 Recommendation—Updated

The data regarding prognostic scores are challenging to evaluate because of the difficulty in distinguishing between outcomes that are driven by practice and current belief about survivability, decision making by parents, and actual physiologic limitations of prematurity.

Antenatal assignment of prognosis for survival and/or disability of the neonate born extremely preterm has generally been made on the basis of gestational age alone. Scoring systems for including additional variables such as gender, use of maternal antenatal steroids, and multiplicity have been developed in an effort to improve prognostic accuracy. Indeed, it was suggested in the 2010 Guidelines that decisions regarding morbidity and risks of mortality may be augmented by the use of published tools based on data from specific populations.[18]

There is no evidence to support the prospective use of any particular delivery room prognostic score presently described, over gestational age assessment alone, in preterm infants at less than 25 weeks of gestation. Importantly, no score has been shown to improve the clinician's ability to estimate likelihood of survival through the first 18 to 22 months after birth. However, in individual cases, when counseling a family and constructing a prognosis for survival at gestations below 25 weeks, it is reasonable to consider variables such as perceived accuracy of gestational age assignment, the presence or absence of chorioamnionitis, and the level of care available for the location of delivery. It is also recognized that decisions about appropriateness of resuscitation below 25 weeks of gestation will be influenced by region-specific guidelines. In making this statement, a higher value was placed on the lack of evidence for a generalized prospective approach to changing important outcomes over improved retrospective accuracy and locally validated counseling policies. The most useful data for antenatal counseling provides outcome figures for infants alive at the onset of labor, not only for those born alive or admitted to a neonatal intensive care unit[19–24] (Class IIb, LOE C-LD).

Terminating Resuscitative Efforts in Late Preterm and Term Infants[NRP 896]—Updated

The 2015 ILCOR systematic review examined whether outcome is changed by continuing resuscitative efforts in late preterm and term infants with an Apgar score of 0 after 10 minutes of adequate resuscitation.

2015 Recommendation—Updated

An Apgar score of 0 at 10 minutes is a strong predictor of mortality and morbidity in late preterm and term infants. We suggest that, in infants with an Apgar score of 0 after 10 minutes of resuscitation, if the heart rate remains undetectable, it may be reasonable to stop assisted ventilation; however, the decision to continue or discontinue resuscitative efforts must be individualized. Variables to be considered may include whether the resuscitation was considered optimal; availability of advanced neonatal care, such as therapeutic hypothermia; specific circumstances before delivery (eg, known timing of the insult); and wishes expressed by the family[23,25–29] (Class IIb, LOE C-LD). For further information, see "Part 13: Neonatal Resuscitation."

Terminating Resuscitative Efforts in Pediatric or Adult IHCA

Use of ECPR in IHCA[ALS 723, Peds 407]—Updated

To answer the question of whether outcome is changed by the use of ECPR for individuals in IHCA, the available evidence was reviewed by the ILCOR Advanced Life Support and Pediatric Task Forces.

2015 Evidence Summary

The 2015 ILCOR review process evaluated the use of ECPR techniques (including ECMO or cardiopulmonary bypass) compared with manual CPR or mechanical CPR for adult survival from IHCA in any setting. One propensity-matched, prospective, observational study that enrolled 172 patients with IHCA reported greater likelihood of ROSC and improved survival at hospital discharge, 30-day follow-up, and 1-year follow-up with the use of ECPR among patients who received more than 10 minutes of CPR. However, this study showed no difference in neurologic outcomes.[30] A single propensity-matched, retrospective, observational study that enrolled 118 patients with IHCA who underwent more than 10 minutes of CPR and then ECPR after cardiac arrest of cardiac origin showed no survival or neurologic benefit over conventional CPR at the time of hospital discharge, 30-day follow-up, or 1-year follow-up.[30–32] A single retrospective, observational study that enrolled 120 patients with witnessed IHCA who underwent more than 10 minutes of CPR reported a modest benefit over historical controls with the use of ECPR over continued conventional CPR in both survival and neurologic outcome at discharge and 6-month follow-up.[32]

For infants and children in IHCA, the evidence comparing standard resuscitation with standard resuscitation plus ECMO was reviewed. Most studies were not robust, and there was little evidence of benefit overall; however, the outcome of some patients, such as those with underlying heart disease, may be improved.[33–38]

2015 Recommendations—New

There is insufficient evidence to recommend the routine use of ECPR for patients with cardiac arrest. In settings where it can be rapidly implemented, ECPR may be considered for select cardiac arrest patients for whom the suspected etiology of the cardiac arrest is potentially reversible during a limited period of mechanical cardiorespiratory support (Class IIb, LOE C-LD). ECPR may be considered for pediatric patients with cardiac diagnoses who have IHCA in settings with existing ECMO protocols, expertise, and equipment (Class IIb, LOE C-LD).

In making these recommendations, the reviewers noted that the published series used rigorous inclusion criteria to select patients for ECPR, and this recommendation should apply to similar populations. ECMO is a resource-intensive and invasive therapy with potential for harm that must be balanced against the potential for benefit based on individual clinical situations.

Terminating Cardiac Arrest Resuscitative Efforts in Pediatric IHCA[Peds 814]—Updated

In the 2010 Guidelines, it was noted that no predictors of pediatric (infant or child) resuscitative success or failure have been established. The 2015 ILCOR systematic review examined whether there were any intra-arrest prognostic indicators that reliably predicted survival with good neurologic outcome for IHCA in infants and children and updated several of the prior recommendations.

2015 Evidence Summary

For infants and children with IHCA, negative predictive factors include age of over 1 year[39] and longer durations of cardiac arrest.[39–42] The evidence is contradictory as to whether a nonshockable (as opposed to shockable) initial cardiac arrest rhythm is a negative predictive factor in the in-hospital setting.[39,43,44]

2015 Recommendation—Updated

Multiple variables should be used when attempting to prognosticate outcomes during cardiac arrest (Class I, LOE C-LD). Although there are factors associated with better or worse outcomes, no single factor studied predicts outcome with sufficient accuracy to recommend termination or prolongation of CPR.

Prognostication During CPR

The 2015 ILCOR ALS systematic review considered one intra-arrest modality, end-tidal CO_2 ($ETCO_2$) measurement, in prognosticating outcome from cardiac arrest in adults. This section focuses on whether a specific $ETCO_2$ threshold can reliably predict ROSC and survival or inform a decision to terminate resuscitation efforts. For further information on the use of $ETCO_2$, see "Part 7: Adult Advanced Cardiovascular Life Support."

2015 Evidence Summary

Studies on the predictive capacity of $ETCO_2$ among intubated patients during cardiac arrest resuscitation are observational, and none have investigated survival with intact neurologic outcome. An $ETCO_2$ less than 10 mm Hg immediately after intubation and 20 minutes after the initiation of resuscitation was associated with extremely poor chances for ROSC and survival in several observational studies.[45–49] Although these results suggest that $ETCO_2$ can be a valuable tool to predict futility during CPR, potential confounding reasons for a low $ETCO_2$ and the relatively small numbers of patients in these studies suggest that the $ETCO_2$ should not be used alone as an indication to terminate resuscitative efforts. However, the failure to achieve an $ETCO_2$ greater than 10 mm Hg despite optimized resuscitation efforts may be a valuable component of a multimodal approach to deciding when to terminate resuscitation.

There are no studies that assess the prognostic value of $ETCO_2$ measurements sampled from a supraglottic airway or bag-mask device in predicting outcomes from a cardiac arrest.

2015 Recommendations[ALS 459]—New

In intubated patients, failure to achieve an $ETCO_2$ of greater than 10 mm Hg by waveform capnography after 20 minutes of CPR may be considered as one component of a multimodal approach to decide when to end resuscitative efforts, but should not be used in isolation (Class IIb, LOE C-LD).

The above recommendation is made with respect to $ETCO_2$ in patients who are intubated, because the studies examined included only those who were intubated.

In nonintubated patients, a specific $ETCO_2$ cutoff value at any time during CPR should not be used as an indication to end resuscitative efforts (Class III: Harm, LOE C-EO).

Prognostication After Cardiac Arrest

Predicting Neurologic Outcome in Pediatric Patients After ROSC

There continues to be insufficient evidence to recommend or describe an approach to accurately predict the neurologic outcome of pediatric patients after cardiac arrest. Since the publication of the 2010 Guidelines, there have been an increasing number of publications associating a variety of findings with poor neurologic prognosis in these populations. Early and reliable prognostication of neurologic outcome in pediatric survivors of cardiac arrest is helpful for effective planning and family support and can inform decisions to continue or discontinue life-sustaining therapy.

Postresuscitation Use of Electroencephalography for Prognosis in Pediatric Survivors of Cardiac Arrest—Updated

The 2015 ILCOR Pediatric Life Support Task Force examined the usefulness of electroencephalography (EEG) or evoked potential assessment to predict long-term good neurologic outcome in infants and children who have survived cardiac arrest.

2015 Evidence Summary

Observational data from 2 small pediatric studies[50,51] showed that a continuous and reactive tracing on EEG performed in the first 7 days after cardiac arrest was associated with a significantly higher likelihood of good neurologic outcome at hospital discharge, whereas an EEG demonstrating a discontinuous or isoelectric tracing was associated with a poorer neurologic outcome at hospital discharge.

Predictive Factors After Cardiac Arrest in Pediatric Patients[Peds 822, Peds 813]

The 2015 systematic review examined whether there were factors that could assist with prognostication for pediatric patients who remained unconscious after cardiac arrest.

2015 Evidence Summary

Four observational studies supported the use of pupillary reactivity at 12 to 24 hours after cardiac arrest in predicting survival to discharge,[16,42,51,52] while 1 observational study found that reactive pupils 24 hours after cardiac arrest were associated with improved survival at 180 days with favorable neurologic outcome.[53]

Several serum biomarkers of neurologic injury have been considered for their prognostic value. Two small observational studies found that lower neuron-specific enolase (NSE) and S-100B serum levels post-arrest were associated with improved survival to hospital discharge and improved survival with favorable neurologic outcome.[53,54]

One observational study found that children with lower lactate levels in the first 12 hours after arrest had an improved survival to hospital discharge.[55]

2015 Recommendations—New

EEGs performed within the first 7 days after pediatric cardiac arrest may be considered in prognosticating neurologic outcome at the time of hospital discharge (Class IIb, LOE C-LD) but should not be used as the sole criterion.

The reliability of any 1 variable for prognostication in children after cardiac arrest has not been established. Practitioners should consider multiple factors when predicting outcomes in infants and children who achieve ROSC after cardiac arrest (Class I, LOE C-LD).

In situations where children have minimal prospects for recovery, we emphasize the use of multiple variables to inform treatment decisions. Given the greater neuroplasticity and potential for recovery in the developing brain, we place greater value on preserving opportunities for neonatal and pediatric recovery than on limiting therapy based on not-yet-validated prognostic tools. Accordingly, the decision to withdraw life-sustaining therapies is complex and continues to rest with the treating physician and family. Further research in this area is needed.

Predicting Neurologic Outcomes in Adult Patients After Cardiac Arrest

Scientists and clinicians continue to attempt to identify clinical, electrographic, radiographic, and biomarker data, which may be able to prognosticate neurologic outcome in patients. The primary purpose in accurately correlating specific data with poor neurologic outcome is to allow clinicians and families to make informed, but often difficult, choices for a patient who remains comatose after cardiac arrest with subsequent ROSC. There is a growing body of data that correlates specific findings with poor neurologic outcome after cardiac arrest. To date, however, there is no one specific test that can predict with certainty a poor neurologic recovery in this patient population. In making decisions, particularly the decision of whether to continue or withdraw life-sustaining therapies, clinicians and families need the most accurate information possible; typically, this information is an aggregate of clinical, electrographic, radiographic, and laboratory (eg, biomarkers) findings (see "Part 8: Post–Cardiac Arrest Care").

Timing of Prognostication in Post–Cardiac Arrest Adults[ALS 450, ALS 713]

In 2010, it was noted that there are no clinical neurologic signs, electrophysiologic studies, biomarkers, or imaging modalities that can reliably predict death or poor neurologic outcome (eg, Cerebral Performance Category of 3, 4, or 5) within the first 24 hours after cardiac arrest in patients treated with or without TTM. In 1 registry study,[56] it was noted that 63% of patients who survived an IHCA were given a DNAR status, and 43% had medical interventions actively withdrawn. These patients were often young and had no terminal illnesses but experienced death after withdrawal of life support in a time frame that was inadequate to allow thorough examination. This tendency to withdraw interventions prematurely in patients after cardiac arrest may have contributed to a selection bias in the current literature on prognostic testing. As the data are continuing to evolve, it is important to consider the potential for premature withdrawal of life support (see "Part 8: Post–Cardiac Arrest Care").

Sedatives or neuromuscular blockers received during TTM may be metabolized more slowly in patients after cardiac arrest, and injured brains may be more sensitive to the depressant effects of many drugs than normal brains. Residual sedation or paralysis can confound accurate clinical examinations.

2015 Recommendations—Updated

The earliest time for prognostication in patients treated with TTM using clinical examination where sedation or paralysis could be a confounder may be 72 hours after return to normothermia (Class IIb, LOE C-EO).

We recommend the earliest time to prognosticate a poor neurologic outcome in patients not treated with TTM using clinical examination is 72 hours after cardiac arrest (Class I, LOE B-NR). This time can be even longer after cardiac arrest if the residual effect of sedation or paralysis confounds the clinical examination (Class IIa, LOE C-LD).

Operationally, the timing for prognostication is typically 4.5 to 5 days after ROSC for patients treated with TTM. This approach minimizes the possibility of obtaining false-positive (ie, erroneously pessimistic) results because of drug-induced depression of neurologic function. In making this recommendation, it is recognized that in some instances, withdrawal of life support may occur appropriately before 72 hours because of underlying terminal disease, brain herniation, or other clearly nonsurvivable situations.

Prognostic Testing in Adult Patients After Cardiac Arrest[ALS 713, ALS 450]

The 2015 systematic evidence reviews examined numerous studies on the diagnostic accuracy of a wide range of tests for patients who did or did not receive TTM therapy.

The 2010 Guidelines recommended clinical examination, electrophysiologic measurements, imagining studies, and blood or cerebrospinal fluid markers of brain injury to estimate the prognosis for neurologic impairment in adult patients who remain comatose after cardiac arrest.[4] Updated guidelines for prognostication have been proposed by other international organizations[57] as well as the AHA in this 2015 Guidelines Update; for further information, see "Part 8: Post–Cardiac Arrest Care."

This topic continues to be an area of active research. The use of TTM has demonstrated the potential to improve the neurologic outcome in certain adult patients after cardiac arrest who might otherwise have a poor neurologic outcome. Although the data and literature are becoming more robust on this particular topic, there are few differences in the types of tests used in those who are and are not treated with TTM as relates to prognosticating neurologic outcome.

2015 Evidence Summary—New

For a full description of the evidence reviewed for each assessment of neurologic function and prognosis for adults who have had cardiac arrest, refer to "Part 8: Post–Cardiac Arrest Care."

2015 Recommendations: Clinical Examination Findings—New

In comatose patients who are not treated with TTM, the absence of pupillary reflex to light at 72 hours or more after cardiac arrest is a reasonable exam finding with which to predict poor neurologic outcome (FPR [false-positive rate], 0%; 95% CI, 0%–8%; Class IIa, LOE B-NR).

In comatose patients who are treated with TTM, the absence of pupillary reflex to light at 72 hours or more after cardiac arrest is useful to predict poor neurologic outcome (FPR, 0%; 95% CI, 0%–3%; Class I, LOE B-NR).

We recommend that, given their high FPRs, the findings of either absent motor movements or extensor posturing *should not* be used alone for predicting a poor neurologic outcome (FPR, 10%; 95% CI, 7%–15% to FPR, 15%; 95% CI, 5%–31%; Class III: Harm, LOE B-NR). The motor examination may be a reasonable means to identify the population who need further prognostic testing to predict poor outcome (Class IIb, LOE B-NR).

We recommend that the presence of myoclonus, which is distinct from status myoclonus, *should not* be used to predict poor neurologic outcomes because of the high FPR (FPR, 5%; 95% CI, 3%–8% to FPR, 11%; 95% CI, 3%–26%; Class III: Harm, LOE B-NR).

In combination with other diagnostic tests at 72 or more hours after cardiac arrest, the presence of status myoclonus during the first 72 hours after cardiac arrest is a reasonable finding to help predict poor neurologic outcomes (FPR, 0%; 95% CI, 0%–4%; Class IIa, LOE B-NR).

2015 Recommendations: EEG[ALS 450, ALS 713]—Updated

In comatose post–cardiac arrest patients who are treated with TTM, it may be reasonable to consider persistent absence of EEG reactivity to external stimuli at 72 hours after cardiac arrest, and persistent burst suppression on EEG after rewarming, to predict a poor outcome (FPR, 0%; 95% CI, 0%–3%; Class IIb, LOE B-NR).

Intractable and persistent (more than 72 hours) status epilepticus in the absence of EEG reactivity to external stimuli may be reasonable to predict poor outcome (Class IIb, LOE B-NR).

In comatose post–cardiac arrest patients who are not treated with TTM, it may be reasonable to consider the presence of burst suppression on EEG at 72 hours or more after cardiac arrest, in combination with other predictors, to predict a poor neurologic outcome (FPR, 0%; 95% CI, 0%–11%; Class IIb, LOE B-NR).

2015 Recommendation: Evoked Potentials[ALS 450]—Updated

In patients who are comatose after resuscitation from cardiac arrest regardless of treatment with TTM, it is reasonable to consider bilateral absence of the N20 somatosensory evoked potentials (SSEP) wave 24 to 72 hours after cardiac arrest or after rewarming a predictor of poor outcome (FPR, 1%; 95% CI, 0%–3%; Class IIa, LOE B-NR).

SSEP recording requires appropriate skills and experience, and utmost care should be taken to avoid electrical interference from muscle artifacts or from the intensive care unit environment. However, sedative drugs or temperature manipulation affect SSEPs less than they affect the EEG and clinical examination.[58,59]

2015 Recommendations: Imaging Tests[ALS 713]—New

In patients who are comatose after resuscitation from cardiac arrest and are not treated with TTM, it may be reasonable to use the presence of a marked reduction of the gray-white ratio on brain computed tomography obtained within 2 hours after cardiac arrest to predict poor outcome (Class IIb, LOE B-NR).

It may be reasonable to consider extensive restriction of diffusion on brain magnetic resonance imaging at 2 to 6 days after cardiac arrest in combination with other established predictors for predicting a poor neurologic outcome (Class IIb, LOE B-NR).

Note that acquisition and interpretation of imaging studies have not been fully standardized and are affected by interobserver variability.[60] Therefore, brain imaging studies for prognostication should be performed only in centers where specific experience is available.

2015 Recommendations: Blood Markers[ALS 713, ALS 450] Updated

Given the possibility of high FPRs, blood levels of NSE and S-100B should not be used alone to predict a poor neurologic outcome (Class III: Harm, LOE C-LD). When performed with other prognostic tests at 72 hours or more after cardiac arrest, it may be reasonable to consider high serum values of NSE at 48 to 72 hours after cardiac arrest to support the prognosis of a poor neurologic outcome (Class IIb, LOE B-NR), especially if repeated sampling reveals persistently high values (Class IIb, LOE C-LD).

Laboratory standards for NSE and S-100B measurement vary between centers, making comparison of absolute values difficult. The kinetics of these markers have not been studied, particularly during or after TTM in cardiac arrest patients. Finally, NSE and S-100B are not specific to neuronal damage and can be produced by extra–central nervous system sources (hemolysis, neuroendocrine tumors, myenteric plexus, muscle and adipose tissue breakdown). If care is not taken when drawing NSE levels and if multiple time points are not assessed, false-positive results could occur secondary to hemolysis. All of these limitations led the writing group to conclude that NSE should be limited to a confirmatory test rather than a primary method for estimating prognosis.

Ethics of Organ and Tissue Donation—Updated

Situations that offer the opportunity for organ donation include donation after neurologic determination of death, controlled donation after circulatory determination of death, and uncontrolled donation after circulatory determination of death. Controlled donation after circulatory death usually takes place in the hospital after a patient whose advanced directives or surrogate, family, and medical team agree to allow natural death and withdraw life support. Uncontrolled donation usually takes place in an emergency department after exhaustive efforts at resuscitation have failed to achieve ROSC. In 2015, the ILCOR Advanced Life Support Task Force reviewed the evidence that might address the question of whether an organ retrieved from a donor who has had CPR that was initially successful (controlled donation) or unsuccessful (uncontrolled donation) would impact survival or complications compared with an organ from a donor who did not require CPR (controlled donation).

2015 Evidence Summary

Studies comparing transplanted organ function between those organs from donors who had received successful CPR before donation and those whose donors had not received CPR before donation have found no difference in transplanted organ function. This includes immediate graft function, 1-year graft function, and 5-year graft function. Studies have also shown no evidence of worse outcome in transplanted kidneys and livers from adult donors who have not had restoration of circulation after CPR compared with those from other types of donors.[61–64]

2015 Recommendations[ALS 449]—Updated

We recommend that all patients who are resuscitated from cardiac arrest but who subsequently progress to death or brain death be evaluated for organ donation (Class I, LOE B-NR).

Patients who do not have ROSC after resuscitation efforts and who would otherwise have termination of efforts may be considered candidates for kidney or liver donation in settings where programs exist (Class IIb, LOE B-NR).

In making this recommendation, the decisions for termination of resuscitative efforts and the pursuit of organ donation need to be independent processes (see "Part 8: Post–Cardiac Arrest Care").

The 2010 Guidelines outlined the debate regarding the ethics of organ donation.[65] The debate continues today. Points to consider are outlined in Table 1, with opposing viewpoints on the issue.[66–73] Although this material was not reviewed as part of the ILCOR review process, this section is intended to highlight some of the ethical issues around organ donation.

Table 1. Ethical Questions and Issues Surrounding Organ Donation

Ethical Question	Viewpoint	Alternative Viewpoint
How long after loss of circulation can a practitioner declare death?	Between 2 and 10 minutes, based on current literature documenting length of time that autoresuscitation (unassisted return of spontaneous circulation) has occurred, as long as the decision to allow natural death has been made.	Not until the point in time that resuscitative efforts could not restore spontaneous circulation. Currently we do not have evidence to support how long this would be.
	Between 7 and 10 minutes after resuscitative efforts have stopped in uncontrolled donation after circulatory determination of death.	
Are individuals and surrogates truly and fully informed when consenting for organ donation?	Individuals may consent by designating the decision on a driver's license, in advance directives and wills, or through an online donor registry. If no previous consent by a patient exists, a surrogate will usually have to give consent if the patient is unable.	Individuals who consent to organ donation may not understand the dying process or be aware of the ethical dilemmas involved in organ donation.
Are there conflicts of interest?	Organ donation should not be considered until the decision has been made to allow natural death and withdraw life support.	There is perception that those who care for patients and participate in withdrawal decisions are providers who care for organ recipients and may be biased.
	Organ procurement teams and transplant surgeons are not to be involved in the decisions or act of withdrawing support or declaring death.	Some believe that it is impossible to not consider organ donation as decisions to withdraw life support are being made and, therefore, could influence the decision to withdraw support.
	Consent for donation should be requested by a trained individual who is not part of the care team.	
Should antemortem interventions be performed (eg, administration of heparin, vasodilators, bronchoscopy, cannulating large vessels—all for the purpose of preserving organ function)?	If the actual risk to the donor is low and is fully disclosed to patients and families, the procedure is ethically acceptable.	There is concern that these procedures pose risks to the donor and benefit only the recipient.
What postmortem procedures are ethically acceptable (eg, procedures such as extracorporeal membrane oxygenation that restore circulation and oxygenation)?	Restoring circulation to organs can result in better outcomes of transplanted organs. As long as oxygen and circulation are not supplied to the brain by the procedure, the diagnosis of death is still valid.	Procedures that restore oxygenation and circulation are unacceptable because they could reverse death.

A full discussion of the merits of each of these viewpoints is beyond the scope of this publication.

Summary

Managing the multiple decisions associated with resuscitation is challenging from many perspectives, and no more so than when healthcare providers are dealing with the ethics surrounding decisions to provide or withhold emergency cardiovascular care. This is especially true with the increasing availability of technologies that hold the promise of improved outcomes after cardiac arrest, such as ECPR and TTM.

In this 2015 Guidelines Update, we have provided the evidence identified by 7 systematic reviews and the clarifying language to several other topics that were covered in the 2010 systematic review process but were not subjected to a full evidence review in 2015.

There is often insufficient evidence to recommend for or against specific interventions due to the uncertainty of determining a prognosis and predicting a particular outcome. As such, a solid understanding of the ethical principles surrounding autonomy and decision making must be coupled with the best information available at the time. Beyond decisions regarding the initiation and termination of life support, family presence during resuscitations and organ donation also require healthcare providers to consider both science and ethics when providing patient-centered care.

As the science that informs resuscitation efforts continues to advance, so too must our efforts to understand the ethical implications that accompany them.

Disclosures

Part 3: Ethical Issues: 2015 Guidelines Update Writing Group Disclosures

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This table represents the relationships of writing group members that may be perceived as actual or reasonably perceived conflicts of interest as reported on the Disclosure Questionnaire, which all members of the writing group are required to complete and submit. A relationship is considered to be "significant" if (a) the person receives $10 000 or more during any 12-month period, or 5% or more of the person's gross income; or (b) the person owns 5% or more of the voting stock or share of the entity, or owns $10 000 or more of the fair market value of the entity. A relationship is considered to be "modest" if it is less than "significant" under the preceding definition.

*Modest.

†Significant.

Appendix

2015 Guidelines Update: Part 3 Recommendations

Year Last Reviewed	Guidelines Part	Topic	Recommendation	Comments
2015	Part 3: Ethical Issues	The Use of Extracorporeal CPR in OHCA	There is insufficient evidence to recommend the routine use of ECPR for patients with cardiac arrest. In settings where it can be rapidly implemented, ECPR may be considered for select patients for whom the suspected etiology of the cardiac arrest is potentially reversible during a limited period of mechanical cardiorespiratory support (Class IIb, LOE C-LD).	new for 2015
2015	Part 3: Ethical Issues	Intra-arrest Prognostic Factors for Cardiac Arrest in Infants and Children	Multiple variables should be used when attempting to prognosticate outcomes during cardiac arrest (Class I, LOE C-LD).	new for 2015
2015	Part 3: Ethical Issues	The Use of a Prognostic Score in the Delivery Room for Preterm Infants	However, in individual cases, when counseling a family and constructing a prognosis for survival at gestations below 25 weeks, it is reasonable to consider variables such as perceived accuracy of gestational age assignment, the presence or absence of chorioamnionitis, and the level of care available for location of delivery. It is also recognized that decisions about appropriateness of resuscitation below 25 weeks of gestation will be influenced by region-specific guidelines. In making this statement, a higher value was placed on the lack of evidence for a generalized prospective approach to changing important outcomes over improved retrospective accuracy and locally validated counseling policies. The most useful data for antenatal counseling provides outcome figures for infants alive at the onset of labor, not only for those born alive or admitted to a neonatal intensive care unit (Class IIb, LOE C-LD).	new for 2015
2015	Part 3: Ethical Issues	Terminating Resuscitative Efforts in Term Infants	We suggest that, in infants with an Apgar score of 0 after 10 minutes of resuscitation, if the heart rate remains undetectable, it may be reasonable to stop assisted ventilations; however, the decision to continue or discontinue resuscitative efforts must be individualized. Variables to be considered may include whether the resuscitation was considered optimal; availability of advanced neonatal care, such as therapeutic hypothermia; specific circumstances before delivery (eg, known timing of the insult); and wishes expressed by the family (Class IIb, LOE C-LD).	updated for 2015
2015	Part 3: Ethical Issues	The Use of ECPR in IHCA	There is insufficient evidence to recommend the routine use of ECPR for patients with cardiac arrest. In settings where it can be rapidly implemented, ECPR may be considered for select cardiac arrest patients for whom the suspected etiology of the cardiac arrest is potentially reversible during a limited period of mechanical cardiorespiratory support. (Class IIb, LOE C-LD).	new for 2015
2015	Part 3: Ethical Issues	The Use of ECPR in IHCA	ECPR may be considered for pediatric patients with cardiac diagnoses who have IHCA in settings with existing ECMO protocols, expertise, and equipment (Class IIb, LOE C-LD).	new for 2015
2015	Part 3: Ethical Issues	Terminating Cardiac Arrest Resuscitative Efforts in Pediatric IHCA	Multiple variables should be used when attempting to prognosticate outcomes during cardiac arrest (Class I, LOE C-LD).	new for 2015
2015	Part 3: Ethical Issues	Prognostication During CPR	In intubated patients, failure to achieve an $ETCO_2$ of greater than 10 mm Hg by waveform capnography after 20 minutes of CPR may be considered as one component of a multimodal approach to decide when to end resuscitative efforts but should not be used in isolation (Class IIb, LOE C-LD).	new for 2015
2015	Part 3: Ethical Issues	Prognostication During CPR	In nonintubated patients, a specific $ETCO_2$ cutoff value at any time during CPR should not be used as an indication to end resuscitative efforts (Class III: Harm, LOE C-EO).	new for 2015
2015	Part 3: Ethical Issues	Predictive Factors After Cardiac Arrest in Pediatric Patients	EEGs performed within the first 7 days after pediatric cardiac arrest may be considered in prognosticating neurologic outcome at the time of hospital discharge (Class IIb, LOE C-LD) but should not be used as the sole criterion.	new for 2015
2015	Part 3: Ethical Issues	Predictive Factors After Cardiac Arrest in Pediatric Patients	The reliability of any 1 variable for prognostication in children after cardiac arrest has not been established. Practitioners should consider multiple factors when predicting outcomes in infants and children who achieve ROSC after cardiac arrest (Class I, LOE C-LD).	new for 2015
2015	Part 3: Ethical Issues	Timing of Prognostication in Post–Cardiac Arrest Adults	The earliest time for prognostication in patients treated with TTM using clinical examination where sedation or paralysis could be a confounder may be 72 hours after return to normothermia (Class IIb, LOE C-EO).	updated for 2015

(*Continued*)

2015 Guidelines Update: Part 3 Recommendations, *Continued*

Year Last Reviewed	Guidelines Part	Topic	Recommendation	Comments
2015	Part 3: Ethical Issues	Timing of Prognostication in Post–Cardiac Arrest Adults	We recommend the earliest time to prognosticate a poor neurologic outcome in patients not treated with TTM using clinical examination is 72 hours after cardiac arrest (Class I, LOE B-NR).	updated for 2015
2015	Part 3: Ethical Issues	Timing of Prognostication in Post–Cardiac Arrest Adults	This time can be even longer after cardiac arrest if the residual effect of sedation or paralysis confounds the clinical examination (Class IIa, LOE C-LD).	new for 2015
2015	Part 3: Ethical Issues	Prognostic Testing in Adult Patients After Cardiac Arrest: Clinical Exam Findings	In comatose patients who are not treated with TTM, the absence of pupillary reflex to light at 72 hours or more after cardiac arrest is a reasonable exam finding with which to predict poor neurologic outcome (FPR, 0%; 95% CI, 0%–8%; Class IIa, LOE B-NR).	new for 2015
2015	Part 3: Ethical Issues	Prognostic Testing in Adult Patients After Cardiac Arrest: Clinical Exam Findings	In comatose patients who are treated with TTM, the absence of pupillary reflex to light at 72 hours or more after cardiac arrest is useful to predict poor neurologic outcome (FPR, 0%; 95% CI, 0%–3%; Class I, LOE B-NR).	new for 2015
2015	Part 3: Ethical Issues	Prognostic Testing in Adult Patients After Cardiac Arrest: Clinical Exam Findings	We recommend that, given their high FPRs, the findings of either absent motor movements or extensor posturing should not be used alone for predicting a poor neurologic outcome (FPR, 10%; 95% CI, 7%–15% to FPR, 15%; 95% CI, 5%–31%; Class III: Harm, LOE B-NR).	new for 2015
2015	Part 3: Ethical Issues	Prognostic Testing in Adult Patients After Cardiac Arrest: Clinical Exam Findings	The motor examination may be a reasonable means to identify the population who need further prognostic testing to predict poor outcome (Class IIb, LOE B-NR).	new for 2015
2015	Part 3: Ethical Issues	Prognostic Testing in Adult Patients After Cardiac Arrest: Clinical Exam Findings	We recommend that the presence of myoclonus, which is distinct from status myoclonus, should not be used to predict poor neurologic outcomes because of the high FPR (FPR, 5%; 95% CI, 3%–8% to FPR, 11%; 95% CI, 3%–26%; Class III: Harm, LOE B-NR).	new for 2015
2015	Part 3: Ethical Issues	Prognostic Testing in Adult Patients After Cardiac Arrest: Clinical Exam Findings	In combination with other diagnostic tests at 72 or more hours after cardiac arrest, the presence of status myoclonus during the first 72 hours after cardiac arrest is a reasonable finding to help predict poor neurologic outcomes (FPR, 0%; 95% CI, 0%–4%; Class IIa, LOE B-NR).	new for 2015
2015	Part 3: Ethical Issues	Prognostic Testing in Adult Patients After Cardiac Arrest: EEG	In comatose post–cardiac arrest patients who are treated with TTM, it may be reasonable to consider persistent absence of EEG reactivity to external stimuli at 72 hours after cardiac arrest, and persistent burst suppression on EEG after rewarming, to predict a poor outcome (FPR, 0%; 95% CI, 0%–3%; Class IIb, LOE B-NR).	updated for 2015
2015	Part 3: Ethical Issues	Prognostic Testing in Adult Patients After Cardiac Arrest: EEG	Intractable and persistent (more than 72 hours) status epilepticus in the absence of EEG reactivity to external stimuli may be reasonable to predict poor outcome (Class IIb, LOE B-NR).	updated for 2015
2015	Part 3: Ethical Issues	Prognostic Testing in Adult Patients After Cardiac Arrest: EEG	In comatose post–cardiac arrest patients who are not treated with TTM, it may be reasonable to consider the presence of burst suppression on EEG at 72 hours or more after cardiac arrest, in combination with other predictors, to predict a poor neurologic outcome (FPR, 0%; 95% CI, 0%–11%; Class IIb, LOE B-NR).	updated for 2015
2015	Part 3: Ethical Issues	Prognostic Testing in Adult Patients After Cardiac Arrest: Evoked Potentials	In patients who are comatose after resuscitation from cardiac arrest regardless of treatment with TTM, it is reasonable to consider bilateral absence of the N20 SSEP wave 24 to 72 hours after cardiac arrest or after rewarming a predictor of poor outcome (FPR, 1%; 95% CI, 0%–3%; Class IIa, LOE B-NR).	updated for 2015
2015	Part 3: Ethical Issues	Prognostic Testing in Adult Patients After Cardiac Arrest: Imaging Tests	In patients who are comatose after resuscitation from cardiac arrest and not treated with TTM, it may be reasonable to use the presence of a marked reduction of the gray-white ratio (GWR) on brain CT obtained within 2 hours after cardiac arrest to predict poor outcome (Class IIb, LOE B-NR).	new for 2015
2015	Part 3: Ethical Issues	Prognostic Testing in Adult Patients After Cardiac Arrest: Imaging Tests	It may be reasonable to consider extensive restriction of diffusion on brain MRI at 2 to 6 days after cardiac arrest in combination with other established predictors to predict a poor neurologic outcome (Class IIb, LOE B-NR).	new for 2015
2015	Part 3: Ethical Issues	Prognostic Testing in Adult Patients After Cardiac Arrest: Blood Markers	Given the possibility of high FPRs, blood levels of NSE and S-100B should not be used alone to predict a poor neurologic outcome (Class III: Harm, LOE C-LD).	updated for 2015
2015	Part 3: Ethical Issues	Prognostic Testing in Adult Patients After Cardiac Arrest: Blood Markers	When performed with other prognostic tests at 72 hours or more after cardiac arrest, it may be reasonable to consider high serum values of NSE at 48 to 72 hours after cardiac arrest to support the prognosis of a poor neurologic outcome (Class IIb, LOE B-NR), especially if repeated sampling reveals persistently high values (Class IIb, LOE C-LD).	updated for 2015

(*Continued*)

2015 Guidelines Update: Part 3 Recommendations, *Continued*

Year Last Reviewed	Guidelines Part	Topic	Recommendation	Comments
2015	Part 3: Ethical Issues	Ethics of Organ and Tissue Donation	We recommend that all patients who are resuscitated from cardiac arrest but who subsequently progress to death or brain death be evaluated for organ donation (Class I, LOE B-NR).	updated for 2015
2015	Part 3: Ethical Issues	Ethics of Organ and Tissue Donation	Patients who do not have ROSC after resuscitation efforts and who would otherwise have termination of efforts may be considered candidates for kidney or liver donation in settings where programs exist (Class IIb, LOE B-NR).	new for 2015
The following recommendations were not reviewed in 2015. For more information, see the *2010 AHA Guidelines for CPR and ECC*, "Part 3: Ethics."				
2010	Part 3: Ethical Issues	Principle of Futility	Conditions such as irreversible brain damage or brain death cannot be reliably assessed or predicted at the time of cardiac arrest. Withholding resuscitation and the discontinuation of life-sustaining treatment during or after resuscitation are ethically equivalent. In situations where the prognosis is uncertain, a trial of treatment may be initiated while further information is gathered to help determine the likelihood of survival, the patient's preferences, and the expected clinical course (Class IIb, LOE C).	not reviewed in 2015
2010	Part 3: Ethical Issues	Terminating Resuscitative Efforts in a BLS Out-of-Hospital System	It is recommended that regional or local EMS authorities use the BLS termination rule to develop protocols for the termination of resuscitative efforts by BLS providers for adult victims of cardiac arrest in areas where advanced life support is not available or may be significantly delayed (Class I, LOE A).	not reviewed in 2015
2010	Part 3: Ethical Issues	Terminating Resuscitative Efforts in a BLS Out-of-Hospital System	The reliability and validity of this rule is uncertain if modified (Class IIb, LOE A).	not reviewed in 2015
2010	Part 3: Ethical Issues	Terminating Resuscitative Efforts in an ALS Out-of-Hospital System	An ALS termination of resuscitation rule was derived from a diverse population of rural and urban EMS settings. This rule recommends considering terminating resuscitation when ALL of the following criteria apply before moving to the ambulance for transport: (1) arrest was not witnessed; (2) no bystander CPR was provided; (3) no ROSC after full ALS care in the field; and (4) no AED shocks were delivered. This rule has been retrospectively externally validated for adult patients in several regions in the US, Canada, and Europe, and it is reasonable to employ this rule in all ALS services (Class IIa, LOE B).	not reviewed in 2015
2010	Part 3: Ethical Issues	Terminating Resuscitative Efforts in a Combined BLS and ALS Out-of-Hospital System	In a tiered ALS- and BLS-provider system, the use of a universal rule can avoid confusion at the scene of a cardiac arrest without compromising diagnostic accuracy. The BLS rule is reasonable to use in these services (Class IIa, LOE B).	not reviewed in 2015
2010	Part 3: Ethical Issues	Providing Emotional Support to the Family During Resuscitative Efforts in Cardiac Arrest	In the absence of data documenting harm and in light of data suggesting that it may be helpful, offering select family members the opportunity to be present during a resuscitation is reasonable and desirable (assuming that the patient, if an adult, has not raised a prior objection) (Class IIa, LOE C for adults and Class I, LOE B for pediatric patients).	not reviewed in 2015
2010	Part 3: Ethical Issues	Providing Emotional Support to the Family During Resuscitative Efforts in Cardiac Arrest	In the absence of data documenting harm and in light of data suggesting that it may be helpful, offering select family members the opportunity to be present during a resuscitation is reasonable and desirable (assuming that the patient, if an adult, has not raised a prior objection) (Class IIa, LOE C for adults and Class I, LOE B for pediatric patients).	not reviewed in 2015
2010	Part 3: Ethical Issues	Ethics of Organ and Tissue Donation	It is reasonable to suggest that all communities should optimize retrieval of tissue and organ donations in brain dead post–cardiac arrest patients (in-hospital) and those pronounced dead in the out-of-hospital setting (Class IIa, LOE B).	not reviewed in 2015
2010	Part 3: Ethical Issues	Ethics of Organ and Tissue Donation	Medical directors of EMS agencies, emergency departments (EDs), and critical care units (CCUs) should develop protocols and implementation plans with the regional organ and tissue donation program to optimize donation following a cardiac arrest death (Class I, LOE C).	not reviewed in 2015
2010	Part 3: Ethical Issues	Criteria for Not Starting CPR in Newly Born Infant IHCA	There are prescribed recommendations to guide the initiation of resuscitative efforts in newly born infants. When gestational age, birth weight, or congenital anomalies are associated with almost certain early death and when unacceptably high morbidity is likely among the rare survivors, resuscitation is not indicated. Examples may include extreme prematurity (gestational age <23 weeks or birth weight <400 g), anencephaly, and some major chromosomal abnormalities such as trisomy 13 (Class IIb, LOE C).	not reviewed in 2015
2010	Part 3: Ethical Issues	Criteria for Not Starting CPR in Newly Born Infant IHCA	In conditions associated with uncertain prognosis where survival is borderline, the morbidity rate is relatively high, and the anticipated burden to the child is high, parental desires concerning initiation of resuscitation should be supported (Class IIb, LOE C).	not reviewed in 2015

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Key Words: advance directive ■ DNAR ■ life support ■ organ donation

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Circulation. 2015;132:S383-S396
doi: 10.1161/CIR.0000000000000254
Circulation is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231

Print ISSN: 0009-7322. Online ISSN: 1524-4539