Termination of Resuscitative Efforts

Aliases

Call the code

Patient Care Goals

1. When there is no response to prehospital cardiac arrest treatment, it is acceptable and often preferable to cease futile resuscitation efforts in the field.
2. In patients with cardiac arrest, prehospital resuscitation is initiated with the goal of returning spontaneous circulation before permanent neurologic damage occurs. In most situations, ALS providers are capable of performing an initial resuscitation that is equivalent to an in-hospital resuscitation attempt, and there is usually no additional benefit to emergency department resuscitation in most cases.
3. CPR that is performed during patient packaging and transport is much less effective than CPR done at the scene. Additionally, EMS providers risk physical injury while attempting to perform CPR in a moving ambulance while unrestrained. In addition, continuing resuscitation in futile cases places other motorists and pedestrians at risk, increases the time that EMS crews are not available for another call, impedes emergency department care of other patients, and incurs unnecessary hospital charges. Lastly, return of spontaneous circulation is dependent on a focused, timely resuscitation. The patient in arrest should be treated as expeditiously as possible, including quality, uninterrupted CPR and timely defibrillation as indicated.
4. When cardiac arrest resuscitation becomes futile, the patient's family should become the focus of the EMS providers. Families need to be informed of what is being done, and transporting all cardiac arrest patients to the hospital is not supported by evidence and inconveniences the family by requiring a trip to the hospital where they must begin grieving in an unfamiliar setting. Most families understand the futility of the situation and accept cessations of resuscitation efforts in the field.

Patient Presentation

Patient in cardiac arrest.

Inclusion Criteria

1. Any cardiac arrest patient that has received resuscitation in the field but has not responded to treatment
2. When resuscitation has begun and it is found that the patient has a DNR order or other actionable medical order (e.g. POLST/MOLST form)

Exclusion Criteria

- Consider continuing resuscitation for patients in cardiac arrest associated with medical conditions that may have a better outcome despite prolonged resuscitation, including hypothermia (although under certain circumstances, on-line medical control may order termination of resuscitation in these conditions).

Patient Management

Resuscitation may be terminated under the following circumstances:

1. Non-traumatic arrest
    a. Patient is at least 18 years of age
    b. Patient is in cardiac arrest at the time of arrival of advanced life support
        i. No pulse
        ii. No respirations
        iii. No evidence of meaningful cardiac activity (e.g. asystole or wide complex PEA less than 60 BPM, no heart sounds)

c. Advanced life support resuscitation is administered appropriate to the presenting and persistent cardiac rhythm.
    i. Resuscitation may be terminated in asystole and slow wide complex PEA if there is no return of spontaneous circulation after 20 minutes in the absence of hypothermia and the $ETCO_2$ is less than 20mmHg.
    ii. Narrow complex PEA with a rate above 40 or refractory and recurrent ventricular fibrillation or ventricular tachycardia:
        1. Consider resuscitation for up to 60 minutes from the time of dispatch.
        2. Termination efforts may be ceased before 60 minutes based on factors including but not limited to $ETCO_2$ less than 20mmHg, age, co- morbidities, distance from, and resources available at the closest hospital.
        3. Termination before this timeframe should be done in consultation with on-line medical control.

d. There is no return of spontaneous pulse and no evidence of neurological function (non-reactive pupils, no response to pain, no spontaneous movement).
e. There is no evidence or suspicion of hypothermia.
f. All EMS personnel involved in the patient's care agree that discontinuation of the resuscitation is appropriate.
   Note: Consider on-line medical control before termination of resuscitative efforts.
g. If a valid DNR order is discovered and confirmed, resuscitative efforts can be terminated
    i. If the patient has other actionable medical order (e.g. POLST/MOLST form), CONTACT Medical Control for guidance on continued resuscitative efforts.

2. Traumatic arrest
    a. Patient is at least 18 years of age.
    b. Resuscitation efforts may be terminated in any blunt trauma patient who, based on thorough primary assessment, is found apneic, pulseless, and asystolic on an ECG or ECG cardiac monitor upon arrival of emergency medical services at the scene.
    c. Victims of penetrating trauma found apneic and pulseless by EMS should be rapidly assessed for the presence of other signs of life, such as pupillary reflexes, spontaneous movement, response to pain, and electrical activity on ECG.
        i. Resuscitation may be terminated with on-line medical control if these signs of life are absent.
        ii. If resuscitation is not terminated, transport is indicated.
    d. Cardiopulmonary arrest patients in whom mechanism of injury does not correlate with clinical condition, suggesting a non-traumatic cause of arrest, should have standard ALS resuscitation initiated.
    e. All EMS personnel involved in the patient's care agree that discontinuation of the resuscitation is appropriate.
3. **Note**: Consider on-line medical control before termination of resuscitative efforts.

Assessment

1. Pulse
2. Respirations
3. Neurologic status assessment [purposeful movement, pupillary response]
4. Cardiac activity (including electrocardiography, cardiac auscultation and/or ultrasonography)
5. Quantitative capnography

Treatment and Interventions

1. Focus on continuous, quality CPR that is initiated as soon as possible.
2. Focus attention on the family and/or bystanders. Explain the rationale for termination.
3. Consider support for family members such as other family, friends, clergy, faith leaders, or chaplains.
4. For patients that are less than 18 yo, consultation with on-line medical control is recommended.

Documentation

- Once determination is made that the patient is not able to be resuscitated, the appropriate authorities in the jurisdiction of the call need to be notified of the death including the local coroner or medical examiner.
- The transport team may not be required to stay until the medical examiner/coroner arrives but should provide the police or pertinent authority with:
    - Time of arrival and time resuscitation stopped
    - Interventions provided by EMS crews during resuscitation.
    - Names of EMS crew and Medical Control Physician
    - Name of our organization and our business phone number
- Should resuscitation be terminated before the patient transport occurs via ambulance or helicopter, disposition will be the same as if the patient were found deceased at the scene.
- When resuscitation is discontinued after the patient has been placed in the ambulance, the deceased will be transported to a receiving hospital for disposition in the county where the patient was pronounced dead, unless Medical Control advises different

Patient Safety Considerations

All patients who are found in ventricular fibrillation or whose rhythm changes to ventricular fibrillation should in general have full resuscitation continued on scene.

Notes and Educational Pearls

Key Considerations and Pertinent Assessment Findings

1. Recent evidence has shown that, in order to capture over 99% of potential survivors from medical cardiac arrest (especially VF and pulseless VT arrests), resuscitation should be continued for approximately 40 minutes. This does not imply, however, that all resuscitations should continue this long (e.g. asystolic rhythms).
2. In remote or wilderness situations, EMS providers should make every effort to contact on-line medical control, but resuscitation may be terminated in the field without on-line medical control when the following have occurred:
    a. There has been no return of pulse despite greater than 30 minutes of CPR (this does not apply in the case of hypothermia)
    b. Transport to an emergency department will take greater than 30 minutes (this does not apply in the case of hypothermia)
    c. EMS providers are exhausted and it is physically impossible to continue the resuscitation
3. Logistical factors should be considered, such as collapse in a public place, family wishes, and safety of the crew and public.
4. Survival and functional neurologic outcomes are unlikely if ROSC is not obtained by EMS. It is dangerous to crew, pedestrians, and other motorists to attempt to resuscitate a patient during ambulance transport.
5. Quantitative end-tidal carbon dioxide measurements of less than 10 mmHg or falling greater than 25% despite resuscitation indicates a poor prognosis and provide additional support for termination.

Quality Improvement

Associated NEMSIS Protocol(s) (eProtocol.01)

- 9914201—Cardiac Arrest-Determination of Death/Withholding Resuscitative Efforts
- 9914169—Cardiac Arrest-Do Not Resuscitate
- 9914171—Cardiac Arrest-Special Resuscitation Orders
- 9914055—General-Cardiac Arrest
- 9914087—Injury-Cardiac Arrest

Key Documentation Elements

- All items (a-f in Non-traumatic or Traumatic arrest) listed under patient management must be clearly documented in the EMS patient care report in addition to the assessment findings supporting this medical decision making.
- If resuscitation is continued for special circumstance or despite satisfying the criteria in this guideline, the rationale for such decision making must be documented.

Performance Measures

- Time to CPR
- Time to AED application if applicable
- Review of CPR quality
- Duration of resuscitative efforts
- Review of biometric data and CPR quality if available
- Appropriateness of termination
- Review of every patient transport from scene with patient in arrest

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