	Procedures	Release for Public Comment	Due		
7.1	12-Lead ECG	6/28/2022	8/29/2022	No change	
7.2	Abuse and Neglect	TBD			
7.2	Vulnerable Adult Abuse, Neglect or Exploitation	TBD			
7.3	Crime Scene Management	6/28/2022	8/29/2022	Revised	
7.4	Contaminated Patient	TBD			
7.5	CPAP/BiPAP Administration (Optional)	6/28/2022	8/29/2022	Revised	
7.6	Dead on Scene/Termination of Resuscitation	6/28/2022	8/29/2022	Revised	
	***New version combines 7.6 Dead on Scene with 7.21 Termination of Resuscitation				
7.7	DNR	TBD			
7.8	Electrical Therapy	6/28/2022	8/29/2022	Revised	
7.9	Emergency Airway	TBD			
7.9s	Nasal Intubation Procedure Supplement (Optional)	***ELIMINATED			
7.10	Injured Athlete & Helmet Removal	6/28/2022	8/29/2022	No Change	
7.11	Impedence Threshold Device (ITD) (Optional)	6/28/2022	8/29/2022	No Change	
7.12	Oxygen Administration	TBD			
7.13	Pain Management	6/28/2022	8/29/2022	Revised	
7.14	Patient Assessment	6/28/2022	8/29/2022	Revised	
7.15	Documentation and Patient Care Records	6/28/2022	8/29/2022	Revised	
	Formerly Named: Patient Care Record, Electronic Documentation, EMS Info Syst				
7.16	Patient Restraint	TBD			
7.17	Patient Procedural Sedation	6/28/2022	8/29/2022	Revised	
	Formerly Named: Patient Sedation	6/28/2022	8/29/2022	Revised	
7.18	Pleural Decompression	TBD			
7.19	Refusal of Care; Adult and Minor	6/28/2022	8/29/2022	Revised	
7.20	Spinal Precautions	6/28/2022	8/29/2022	Revised	

7.21	Termination of Resusciation	Merged into new 7.6			
7.22	Tourniquet Application	TBD			
7.23	Vasular access & IV Fluid Therapy	6/28/2022	8/29/2022	Revised	
7.24	End Tidal Carbon Dioxide Monitoring (Capnometry & Capnography)	6/28/2022	8/29/2022	Revised	
7.25	MI POST	TBD			
7.26	Naloxone Leave Behind (Optional)	Merged into NEW 1.10 Opioid OD Tx and Prevention			

12-Lead ECG

Aliases: EKG, 12 lead

Indications:

1. A 12-lead ECG must be performed on patients exhibiting any of the following signs/symptoms:
    A. Chest pain or pressure
    B. Upper abdominal pain
    C. Syncope
    D. Shortness of breath
    E. Pain/discomfort often associated with cardiac ischemia
        a. Jaw, neck, shoulder, left arm or other presentation; unless no other symptoms exist and the cause of the specific pain can be identified with a traumatic or musculoskeletal injury.
        b. If there is any doubt about the origin of the pain/discomfort, or the presentation seems atypical for the mechanism, a 12-lead should be performed.

2. Patients exhibiting the following signs/symptoms should have a 12-lead ECG performed if the etiology of the illness is indicative of an Acute Coronary Syndrome or the etiology of the illness is indeterminate:
    A. Nausea
    B. Vomiting
    C. Diaphoresis
    D. Dizziness
    E. Patient expression of “feelings of doom”

3. A 12-lead ECG may be performed based on the clinical judgment of the paramedic even in the absence of the above signs/symptoms.

Procedure:

1. Follow **General Pre-hospital Care Protocol.**
2. Perform 12-lead ECG per manufacturer guidelines, if available.

☐ MCA approval for EMT to obtain and transmit ECG (and notify if STEMI)

3. Report if acute MI is suspected, either by device or **paramedic** provider interpretation.
4. Promptly relay either the 12-lead findings via MCA approved communications system or transmit 12-lead to the receiving facility.
5. Agencies in cooperation with Hospitals with 12-lead ECG pre-hospital receiving capability should have the relay done electronically immediately upon completion of the ECG in the following conditions:
    A. ST elevation ≥ 1mm in 2 contiguous leads.
    B. Chest pain patient with left bundle branch block.
    C. EMS personnel request assistance by hospital for interpretation of ECG.

D. Hospital requests ECG be sent.

6. The Acute MI Report relayed to the receiving facility should include the following:
   A. *** **Acute MI Suspected** *** or equivalent machine indication of Acute MI.
   B. Location of MI, “ST elevation, consider _____injury”.
   C. Time of onset of the Chest Pain, if present.
   D. Current level of pain.
   E. Cardiac history (previous MI, CHF, CABG, Angioplasty or Stent).
   F. Presence of possible indicators of False Positive ECG (Tachyarrhythmia, left bundle branch block, Pacemaker, wide complex QRS, noisy positive ECG after previous negative ECG).
7. Transport patients per MCA transport protocol.

Crime Scene Management

Aliases: Crime scene preservation

1. Follow **General Pre-hospital Care Protocol**
2. Preserve evidence whenever possible.
    A. Wear gloves for all patient care and other activities within the crime scene.
    B. Never cut through holes in clothing created by bullets or knives.
    C. Retain all clothing, place in a paper bag. Be alert for torn clothing, fragments of cloth, blood, or body fluids, etc. for they need to be preserved as evidence.
    D. Law enforcement is responsible for the disposition of this evidence.
    E. When transporting a patient who may be dying, ascertain name and/or description of assailant if possible.
    F. At an outdoor crime scene do not disturb shoe prints, tire marks, shell casings, etc.
    G. Limit movement at the crime scene.
    H. Attempt to keep others out of the area.
3. Advise patient to not shower, change clothes, or dispose of pertinent objects.
4. Assess patient for injury and treat according to protocol.
5. Use sensitivity in asking victim for historical information.
6. Thoroughly document all injuries and voluntary statements of patient. Red marks may disappear and your documentation may be the only witness that the victim was choked or struck, even though he/she stated it.
7. Document patient's emotional state.
8. Assure law enforcement agency has been notified.
    A. Notify the investigating law enforcement of any alteration of the crime scene by EMS personnel including:
        a. Any movement of furniture, tables, etc.
        b. The original position of the patient and items.
        c. If you turned on lights.
        d. What you touched, moved, etc.
9. Transport, treating according to appropriate protocol


If transport is refused, refer patient to support agency and/or hospital whenever possible.

NOTES:

1. Your first duty is to provide emergency medical care at the scene of an illness/injury.
2. Certain measures can be taken to assist law enforcement personnel in preserving a crime without jeopardy to the patient.
3. The investigation of the circumstances surrounding the incident is the responsibility of the law enforcement agency.

4. Do not touch firearms (loaded or unloaded) unless it poses a potential or immediate threat. Secure any weapon that can be used against you or the crew out of the reach of the patient and bystanders.

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4. Do not touch firearms (loaded or unloaded) unless it poses a potential or immediate threat. Secure any weapon that can be used against you or the crew out of the reach of the patient and bystanders. **NOTE: REMOVED ALGORITHM**

CPAP/BiPAP Administration

☐ Medical Control Authorities choosing to adopt this optional protocol may do so by selecting this check box.

Select the levels for which CPAP/BiPAP is approved

☐BLS
☐LALS
☐ALS

The CPAP portion of the protocol may be utilized by BLS/LALS/ALS agencies that have completed CPAP training, approved by the MCA, and are equipped with CPAP Equipment including pulse oximetry. BiPAP use is limited to ALS agencies that have completed BiPAP training, approved by the MCA, and are equipped with BiPAP Equipment. For use of this protocol, patients must meet the Inclusion Criteria. Contraindicated patients and those that do not meet the inclusion criteria will be treated according to existing protocols without the application of CPAP/BiPAP.

Indications:
Severe respiratory distress not responding to initial treatment with any of the following:

1. CHF/Pulmonary edema/near drowning
2. Hypoxia, i.e., SaO2 less than 92% on supplemental oxygen.
3. Acute exacerbation of asthma/COPD.

Contraindications:

1. Respiratory/cardiac arrest.
2. B/P less than 90mmHg.
3. Inability to maintain patent airway.
4. Major trauma, pneumothorax, penetrating chest trauma.
5. Vomiting or active GI bleeding with emesis.
6. Unstable facial fractures.

Procedure

1. EXPLAIN THE PROCEDURE TO THE PATIENT.
2. Apply CPAP/BiPAP per manufacturer's recommendations.
3. Place the patient on continuous pulse oximetry.
4. Secure the mask with provided straps and tighten to obtain a good seal, check for air leaks
5. Continue to coach the patient to keep the mask in place, readjust as needed.
6. Advise medical control of CPAP/BiPAP use during radio report.
7. If respiratory status deteriorates, remove the device and assist ventilations with a BVM/supplemental O2; place an appropriate airway control device.
8. Place the patient on cardiac monitor and record rhythm and vital signs.
9. Administer medications, per respiratory distress protocol, as indicated**.**

10. Consider sedation to reduce anxiety per **Patient Sedation Procedure.**

Removal Procedure

1. CPAP/BiPAP therapy needs to be continuous and should not be removed unless the patient cannot tolerate the mask or has marked deterioration including respiratory arrest, decreasing LOC or patient may vomit.
2. Assist ventilations as necessary

Special Notes:

1. For patients with a decreased level of consciousness, continuously closely monitor patient while on CPAP/BiPAP.
2. Do not remove CPAP/BiPAP until hospital therapy is ready to be placed on the patient.
3. Watch the patient for gastric distention.
4. CPAP/BiPAP may be used on DNR patients not in arrest.
5. Due to changes in cardiac preload and afterload during CPAP/BiPAP therapy, a complete set of VS must be obtained every 10 minutes (5 minutes in short transport situations).

CPAP/BiPAP Administration

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3. Acute exacerbation of asthma/COPD.

Contraindications:

1. Respiratory/cardiac arrest.
2. B/P less than 90mmHg.
3. ~~Unresponsive to speech.~~
4. ~~4.~~3. Inability to maintain patent airway.
5. ~~5.~~4. Major trauma, pneumothorax, penetrating chest trauma.
6. ~~6.~~5. Vomiting or active GI bleeding with emesis.
7. ~~7.~~6. Unstable facial fractures.

Procedure

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2. Apply CPAP/BiPAP per manufacturer's recommendations.
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~~2.~~3. Watch the patient for gastric distention.
~~3.~~4. CPAP/BiPAP may be used on DNR patients not in arrest.
~~4.~~5. Due to changes in cardiac preload and afterload during CPAP/BiPAP therapy, a complete set of VS must be obtained every 10 minutes (5 minutes in short transport situations).

Purpose: For patients in cardiac arrest, when and when not to initiate CPR, and when to terminate efforts.

Aliases: DOA, DOS, DNR, Termination of Resuscitation

A. Dead on Scene Criteria - CPR should NOT be initiated in the following cardiac arrest patients:

1. Decomposition
2. Rigor mortis (Caution: do not confuse with stiffness due to cold environment)
3. Dependent lividity
4. Decapitation
5. Traumatic cardiac arrest while entrapped (witnessed or unwitnessed)
6. Incinerated or frozen body
7. Submersion greater than 1 hour documented by the licensed health care professional after arrival on scene.
8. Gross dismemberment or obvious mortal wounds/conditions (injuries inconsistent with life – i.e., crushing injuries of the head and/or chest)
9. Unwitnessed arrest of traumatic origin, without organized electrical activity (must be asystolic or rhythm with rate less than 40/min).
10. Patient has a valid "Do Not Resuscitate" identification bracelet or order refer to **DNR Procedure Protocol**
11. Patient has MI-POST with Do Not Resuscitate selected in section A refer to **MI POST Procedure Protocol**
12. In cases of mass casualty incidents, where the number of patients exceeds the providers and resources to care for them, any patient who is pulseless and apneic may be triaged as deceased.

B. CPR should be initiated for these specific cardiac arrest patients:

1. Patients who are struck by lightning
2. Patients who are acutely hypothermic or victims of cold water drowning with submersion time of 1 hour or less.
3. No DNR or concern for validity of presented DNR orders
4. In EMS professional judgement potential viability despite meeting Dead on Scene criteria.
5. Pregnant patient traumatic arrest witnessed by either bystanders or EMS personnel
    i. Resuscitation and immediate transport to the closest receiving facility

C. For all other patients follow the **Cardiac Arrest - General Protocol**.

1. Medical cardiac arrest patients undergoing attempted resuscitation will not be transported unless return of spontaneous circulation (ROSC) is achieved, or transport is ordered by medical control. These patients will have resuscitation continued at the scene for at least 30 minutes unless otherwise directed by medical control. If ROSC is achieved **see Return of Spontaneous Circulation Protocol**

D. *If the resuscitation cannot be safely performed on scene patient should be loaded into transporting unit and vehicle should be moved to closest appropriate area to continue resuscitation efforts.*

E. ROSC Not Achieved

1. ALS Termination of Resuscitation

   a. If the resuscitation has been unsuccessful after at least 30 minutes (ALS time without ROSC), medical control should be consulted for:
      i. Termination of efforts
      ii. Further orders for on scene care/treatment
      iii. Consideration of transport in extreme situations

2. BLS Termination of Resuscitation
   a. AHA Guidelines suggest that the following are reliable and valid criteria for BLS termination of resuscitation when **ALL** of the following apply:
      i. Arrest not witnessed by EMS personnel
      ii. No return of spontaneous circulation/ pulse (prior to transport)
      iii. No AED shock was delivered (prior to transport)

   b. If the resuscitation has been unsuccessful after at least 20 minutes of high-quality CPR with an adequate airway medical control should be consulted for:
      i. Termination of efforts
      ii. Further orders for on scene care/treatment
      iii. Consideration of transport in extreme situations

3. The medical examiner system will be activated consistent with **Determination of Death, Death in Ambulance and Transport of a Body Protocol.**

4. Prehospital personnel will provide information to the family which should include medical control procedures for termination of resuscitation when applicable.

Purpose: For patients in cardiac arrest, when and when not to initiate CPR, and when to terminate efforts. ~~Dead on Scene~~

Aliases: DOA, DOS, DNR, Termination of Resuscitation *this combines 7.6 Dead on Scene with 7.21 Termination of Resuscitation.

A. Dead on Scene Criteria - CPR should NOT be initiated in the following cardiac arrest patients:

1. Decomposition
2. Rigor mortis (Caution: do not confuse with stiffness due to cold environment)
3. Dependent lividity
4. Decapitation
5. Traumatic cardiac arrest while entrapped (witnessed or unwitnessed)
6. Incinerated or frozen body
7. Submersion greater than 1 hour documented by the licensed health care professional after arrival on scene.
8. Gross dismemberment or obvious mortal wounds/conditions (injuries inconsistent with life – i.e., crushing injuries of the head and/or chest)
9. Unwitnessed arrest of traumatic origin, without organized electrical activity (must be asystolic or rhythm with rate less than 40/min).
10. Patient has a valid "Do Not Resuscitate" identification bracelet or order refer to **DNR Procedure Protocol**
11. Patient has MI-POST with Do Not Resuscitate selected in section A refer to **MI POST Procedure Protocol**
12. In cases of mass casualty incidents, where the number of patients exceeds the providers and resources to care for them, any patient who is pulseless and apneic may be triaged as deceased.

B. CPR should be initiated for these specific cardiac arrest patients:

1. Patients who are struck by lightning
2. Patients who are acutely hypothermic or victims of cold water drowning with submersion time of 1 hour or less.
3. No DNR or concern for validity of presented DNR orders
4. In EMS professional judgement potential viability despite meeting Dead on Scene criteria.
5. Pregnant patient traumatic arrest witnessed by either bystanders or EMS personnel
    i. Resuscitation and immediate transport to the closest receiving facility

C. For all other patients follow the **Cardiac Arrest - General Protocol**.

1. Medical cardiac arrest patients undergoing attempted[BE(C1)] resuscitation will not be transported unless return of spontaneous circulation (ROSC) is achieved, or

transport is ordered by medical control. , ~~or otherwise specified in protocol.~~ These patients will have resuscitation continued at the scene for at least 30 minutes unless otherwise directed by medical control. If ROSC is achieved see **Return of Spontaneous Circulation Protocol**

~~A. EXCEPTIONS:~~

~~B. *If ALS personnel believe a prolonged resuscitation at the scene will be unduly distressing to the patient's family or bystanders, transport may begin prior to the termination of resuscitation.*~~

D. *If the resuscitation cannot be safely ~~and efficiently~~ performed on scene patient should be loaded into transporting unit and vehicle should be moved to closest appropriate area to continue resuscitation efforts. ~~transport may begin whenever deemed appropriate by the ALS personnel.~~*

E. ROSC Not Achieved

1. ALS Termination of Resuscitation

a. If the resuscitation has been unsuccessful after at least 30 minutes (ALS time without ROSC), medical control should be consulted for:
   i. Termination of efforts
   ii. Further orders for on scene care/treatment
   iii. Consideration of transport in extreme situations

b. ~~If persistent Ventricular Fibrillation, contact medical control.onsider prompt emergency transport with medical direction.~~

2. BLS Termination of Resuscitation

a. AHA Guidelines suggest that the following are reliable and valid criteria for BLS termination of resuscitation when **ALL** of the following apply:
   i. Arrest not witnessed by EMS personnel
   ii. No return of spontaneous circulation/ pulse (prior to transport)
   iii. No AED shock was delivered (prior to transport)

b. If the resuscitation has been unsuccessful after at least 20 minutes of high-quality CPR with an adequate airway medical control should be consulted for:
   i. Termination of efforts
   ii. Further orders for on scene care/treatment
   iii. Consideration of transport in extreme situations

~~**A. Dead on Scene inclusion criteria:**~~

~~Initiate or continue CPR for patient found to be in cardiac arrest UNLESS one or more of the following conditions exists:~~

~~1. Decomposition~~
~~2. Rigor mortis (Caution: do not confuse with stiffness due to cold environment)~~
~~3. Dependent lividity~~

~~4. Decapitation~~
~~5. Incinerated or frozen body~~
~~6. Submersion greater than 1 hour documented by the licensed health care professional after arrival on scene.~~
~~7. Gross dismemberment or obvious mortal wounds/conditions (injuries inconsistent with life – i.e., crushing injuries of the head and/or chest)~~
~~8. Unwitnessed arrest of traumatic origin, without organized electrical activity (must be asystolic or other rhythm with rate less than 40/min).~~
~~9. Patient has a valid "Do Not Resuscitate" identification bracelet or order or MI-POST with Do Not Resuscitate selected in section A.~~

~~In cases of mass casualty incidents, where the number of patients exceeds the providers and resources to care for them, any patient who is pulseless and apneic may be triaged as decease~~3. ~~d.~~The medical examiner system will be activated consistent with 8.22 **Determination of Death, Death in Ambulance and Transport of a Body Protocol.**

4. Prehospital personnel will provide information to the family which should include medical control procedures for termination of resuscitation when applicable.

~~10.~~

~~B.~~ ~~Specific Exceptions~~

~~1. Patients who are struck by lightning, are acutely hypothermic or victims of cold water drowning (unless submersion time is over 1 hour) do not qualify for use of this policy.~~
~~2. EMS personnel may initiate resuscitation efforts based upon professional judgement of viability, or if there is any concern over the validity of DNR orders, when present.~~

~~C. Procedure~~

~~1. If none of the inclusion criteria are present, continue CPR and proceed to the appropriate treatment protocol~~
~~2. If any of the above inclusion criteria, and none of the exclusion criteria, are met, cease CPR (if performed) and refer to the **Determination of Death, Death in an Ambulance and Transport of a Body Protocol.**~~

Electrical Therapy

Aliases: AED, Cardioversion, defibrillation, pacing

Automatic External Defibrillation (AED)

The AED shall be applied only to patients found in cardiopulmonary arrest. Interruptions to CPR should be kept to a minimum. The AED should not be used on patients found lying on conductive surfaces or patients in moving vehicles. For all patients, anterior/posterior placement of pads is preferred and should be used, if possible. There are no age or weight limits for AED use. In pediatric patients, attenuated pads should be used, if available. If adult pads are used in pediatric patients, pads must be placed in an anterior/posterior configuration.

1. Follow the **Cardiac Arrest - General Protocol (Adult or Pediatric)**.
2. Stop CPR to analyze patient and shock once, if indicated.
3. Continue CPR immediately after the shock, or immediately if no shock is indicated and continue for 2 minutes (5 cycles) or when AED initiates analysis.
4. If no pulse, analyze the patient and repeat one shock, if indicated.
5. If patient converts to a non-shockable rhythm at any time, continue CPR until AED prompts to check the patient.
6. Should a patient who is successfully defibrillated arrest again, analyze the patient again.

Manual Defibrillation

1. Indications:
   A. Ventricular fibrillation
   B. Pulseless ventricular tachycardia
   C. Unstable irregular wide complex tachycardia
2. Technique:
   A. Turn defibrillator on.
   B. Apply defibrillator paddles/pads according to manufacturer specifications.
   C. Charge defibrillator to energy level specified in appropriate protocol or according to manufacturer specifications.
   D. Verify shockable rhythm.
   E. Assure that no one is touching the patient.
   F. Defibrillate patient.
   G. Immediately initiate or resume CPR.
   H. Repeat defibrillations at 2 minute intervals if the patient remains in a shockable rhythm per protocol.
   I. Continue to treat the patient according to the appropriate protocol.
3. Precautions
   A. Dry the chest-wall if wet or diaphoretic.
   B. Nitroglycerin paste should be removed; paddles should not be placed over nitroglycerin patches.
   C. Avoid placing the paddles over a pacemaker or AICD.

D. If visible muscle contraction of the patient did not occur, defibrillation did not occur; check equipment.
E. If pediatric pads were used with an AED prior to ALS management, continue using AED or use ALS monitor with appropriate pads. Do not use attenuated pediatric AED pads with an ALS monitor.
a.

4. Complications
A. Accidental shock of adjacent individual
B. Skin burns resulting from inadequate contact between paddles and skin or due to inadequate conducting gel or dry conductive pads.

Synchronized Cardioversion

1. Indications: Hemodynamically unstable patient with the following rhythms:
A. Regular Wide Complex Tachycardia (Presumed Ventricular Tachycardia).
B. Narrow Complex Tachycardia (Supraventricular Tachycardia (SVT) or Atrial Fibrillation with a rapid ventricular response).
2. Contraindications: Heart rate < 150 unless ordered by medical control
3. Technique:
A. Consider IV sedation per **Patient Sedation Procedure.**
B. Turn on defibrillator (monophasic or biphasic)
C. Attach monitor leads to the patient and ensure proper display of the patient's rhythm.
D. Turn SYNC on, assure that QRS complex is marked
E. Apply defibrillator paddles/pads according to manufacturer specifications.
F. Charge defibrillator to energy level specified in appropriate protocol or according to manufacturer specifications.
G. Check Rhythm.
H. Assure that no one is touching the patient
I. Cardiovert patient
J. Recheck pulse and rhythm
K. If rhythm does not convert, repeat cardioversion according to the appropriate protocol.
L. Recheck the "sync mode" after each synchronized cardioversion as many defibrillators default back to unsynchronized mode.
M. If ventricular fibrillation occurs, deactivate synchronized mode and defibrillate.
4. Precautions
A. Same as for defibrillation
B. In "sync" mode, the button(s) need to be held until a shock is delivered. If a shock is not delivered the first time, hold the button(s) again.
C. If a sinus rhythm is achieved by cardioversion, even briefly, and then reverts to previous rhythm, repeat the cardioversion at the same setting as was initially successful.
5. Complications
A. Accidental shock of adjacent individual

B. Skin burns resulting from inadequate contact between paddles and skin or due to inadequate conducting gel or dry conductive pads.

Transcutaneous Pacing (TCP)

1. Indications: Symptomatic Bradycardia with inadequate perfusion.
2. Technique:
   A. Monitor rhythm.
   B. Follow manufacturer's guidelines for pacing. For some monitors, ECG electrodes must be in place, along with pacing pads or combo-pads, in order for the pacer to function.
   C. Apply pacing electrodes per manufacturer's instructions.
   D. Consider sedation, per **Patient Sedation Protocol.**
   E. If QRS complexes are present, select a lead in which the QRS is the most positive or upright (so machine can sense their presence).
   F. Set external pacemaker rate to 60 bpm to begin.
   G. Initiate pacing and increase MA output until evidence of capture has occurred
   H. Increase at increments of 20 MA for unconscious patients and 5 MA for conscious patients.
      a. Use minimal MA needed for mechanical capture.
   I. Run a rhythm strip and save.
   J. Assure adequate electrical and mechanical capture.
      a. Electrical:
         1. Visible pacer spike immediately followed by wide QRS and broad T waves.
      b. Mechanical:
         1. Palpable Pulses, improved LOC; improved BP; improved patient color.
   K. If mechanical capture is not obtained, contact medical control. Perform CPR if appropriate.
3. Precautions
   A. Use of transcutaneous pacemakers can cause painful muscle contractions. Consider the use of sedation in patients that are awake. See **Patient Sedation Protocol.**
4. Contraindications
   A. Wet environment
   B. Burns to the chest (relative)

Special Considerations for Electrical Therapy:

1. Electrical therapy may not be successful in hypothermic patients; refer to **Hypothermia Cardiac Arrest Protocol.**

Electrical Therapy

Aliases: AED, Cardioversion, defibrillation, pacing

Automatic External Defibrillation (AED)

The AED shall be applied only to patients found in cardiopulmonary arrest. Interruptions to CPR should be kept to a minimum. The AED should not be used on patients found lying on conductive surfaces or patients in moving vehicles. For all patients, anterior/posterior placement of pads is preferred and should be used, if possible. There are no age or weight limits for AED use. In pediatric patients, attenuated pads should be used, if available. If adult pads are used in pediatric patients, pads must be placed in an anterior/posterior configuration.

1. Follow the **Cardiac Arrest - General Protocol (Adult or Pediatric)**.
2. Stop CPR to analyze patient and shock once, if indicated.
3. Continue CPR immediately after the shock, or immediately if no shock is indicated and continue for 2 minutes (5 cycles) or when AED initiates analysis.
4. If no pulse, analyze the patient and repeat one shock, if indicated.
5. If patient converts to a non-shockable rhythm at any time, continue CPR until AED prompts to check the patient.
6. Should a patient who is successfully defibrillated arrest again, analyze the patient again.

Manual Defibrillation

1. Indications:
   A. Ventricular fibrillation
   B. Pulseless ventricular tachycardia
   C. Unstable irregular wide complex tachycardia
2. Technique:
   A. Turn defibrillator on.
   B. Apply defibrillator paddles/pads according to manufacturer specifications.
   C. Charge defibrillator to energy level specified in appropriate protocol or according to manufacturer specifications.
   D. Verify shockable rhythm.
   E. Assure that no one is touching the patient.
   F. Defibrillate patient.
   G. Immediately initiate or resume CPR.
   H. Repeat defibrillations at 2 minute intervals if the patient remains in a shockable rhythm per protocol.
   I. Continue to treat the patient according to the appropriate protocol.
3. Precautions
   A. Dry the chest-wall if wet or diaphoretic.
   B. Nitroglycerin paste should be removed; paddles should not be placed over nitroglycerin patches.
   C. Avoid placing the paddles over a pacemaker or AICD.

D. If visible muscle contraction of the patient did not occur, defibrillation did not occur; check equipment.
E. If pediatric pads were used with an AED prior to ALS management, continue using AED or use ALS monitor with appropriate pads. Do not use attenuated pediatric AED pads with an ALS monitor.
~~a. Either use the AED with their pediatric pads or~~
~~b.~~a. ~~Remove the pediatric AED pads and use non-attenuated pediatric pads for defibrillation.~~

4. Complications
   A. Accidental shock of adjacent individual
   B. Skin burns resulting from inadequate contact between paddles and skin or due to inadequate conducting gel or dry conductive pads.

Synchronized Cardioversion

1. Indications: Hemodynamically unstable patient with the following rhythms:
   A. Regular Wide Complex Tachycardia (Presumed Ventricular Tachycardia).
   B. Narrow Complex Tachycardia (Supraventricular Tachycardia (SVT) or Atrial Fibrillation with a rapid ventricular response).
2. Contraindications: Heart rate < 150 unless ordered by medical control
3. Technique:
   A. Consider IV sedation per **Patient Sedation Procedure.**
   B. Turn on defibrillator (monophasic or biphasic)
   C. Attach monitor leads to the patient and ensure proper display of the patient's rhythm.
   D. Turn SYNC on, assure that QRS complex is marked
   E. Apply defibrillator paddles/pads according to manufacturer specifications.
   F. Charge defibrillator to energy level specified in appropriate protocol or according to manufacturer specifications.
   G. Check Rhythm.
   H. Assure that no one is touching the patient
   I. Cardiovert patient
   J. Recheck pulse and rhythm
   K. If rhythm does not convert, repeat cardioversion according to the appropriate protocol.
   L. Recheck the "sync mode" after each synchronized cardioversion as many defibrillators default back to unsynchronized mode.
   M. If ventricular fibrillation occurs, deactivate synchronized mode and defibrillate.
4. Precautions
   A. Same as for defibrillation
   B. In "sync" mode, the button(s) need to be held until a shock is delivered. If a shock is not delivered the first time, hold the button(s) again.
   C. If a sinus rhythm is achieved by cardioversion, even briefly, and then reverts to previous rhythm, repeat the cardioversion at the same setting as was initially successful.
5. Complications

A. Accidental shock of adjacent individual
B. Skin burns resulting from inadequate contact between paddles and skin or due to inadequate conducting gel or dry conductive pads.

Transcutaneous Pacing (TCP)

1. Indications: Symptomatic Bradycardia with inadequate perfusion.
2. Technique:
   A. Monitor rhythm.
   B. Follow manufacturer's guidelines for pacing. For some monitors, ECG electrodes must be in place, along with pacing pads or combo-pads, in order for the pacer to function.
   C. Apply pacing electrodes per manufacturer's instructions.
   D. Consider sedation, per **Patient Sedation Protocol.**
   E. If QRS complexes are present, select a lead in which the QRS is the most positive or upright (so machine can sense their presence).
   F. Set external pacemaker rate to 60 bpm to begin.
   G. Initiate pacing and increase MA output until evidence of capture has occurred
   H. Increase at increments of 20 MA for unconscious patients and 5 MA for conscious patients.
      a. Use minimal MA needed for mechanical capture.
   I. Run a rhythm strip and save.
   J. Assure adequate electrical and mechanical capture.
      a. Electrical:
         1. Visible pacer spike immediately followed by wide QRS and broad T waves.
      b. Mechanical:
         1. Palpable Pulses, improved LOC; improved BP; improved patient color.
   K. If mechanical capture is not obtained, contact medical control. Perform CPR if appropriate.
3. Precautions
   A. Use of transcutaneous pacemakers can cause painful muscle contractions. Consider the use of sedation in patients that are awake. See **Patient Sedation Protocol.**
4. Contraindications
   A. Wet environment
   B. Burns to the chest (relative)

Special Considerations for Electrical Therapy:

1. Electrical therapy may not be successful in hypothermic patients; refer to **Hypothermia Cardiac Arrest Protocol.**

Injured Athlete & Helmet Removal

Treatment of the injured athlete with protective gear presents unique challenges that are best considered prior to the event if possible. Whether responding to a request after an injury or responding as a standby resource, an emergency action plan that has been discussed prior to the event may provide organized consistent treatment for the athlete.

1. High Impact Helmets (i.e., motorcycle, car racing)
   A. Whether the helmet is a closed or open-faced style helmet, the helmet must always be removed.
   B. Provide constant spinal precautions.

2. Low Impact Helmets with Shoulder Pads (i.e., football, ice hockey, etc.)
   A. In those patients wearing a well-fitted helmet which conforms closely to the patient's head, **unless there is a prearranged agreement between team training/medical staff, EMS providers and the likely receiving facility**, helmet and shoulder pads should be removed as spinal precautions are maintained. Removal of all equipment at the scene provides the best access to the athlete for treatment.
   B. If prearrangement is in place to keep the helmet and shoulder pads in place the procedure would be as follows (or as determined by agreement):
      1. If the patient is awake and able to protect his/her airway, the helmet should be left in place and the patient should have spinal precautions maintained using the helmet to assist with spinal precautions. The face shield must be removed prior to transport.
      2. If the patient has an altered level of consciousness or, for any other reason, is unable to protect his/her airway, the helmet should be left in place and the patient should have spinal precautions maintained using the helmet to assist with spinal precautions. The face shield should be immediately removed to allow access to the airway.
      3. If the face shield cannot easily be removed for any patient, the helmet and shoulder pads should be removed using in-line stabilization.
      4. If the airway cannot be controlled for any reason with the helmet in place, the helmet and shoulder pads should immediately be removed, using in-line stabilization.

3. Low Impact Helmets without Shoulder Pads (i.e., baseball, bicycle, rollerblade, etc.):
   A. Whether the helmet is a closed or open-faced style helmet, the helmet must always be removed.
   B. Provide constant spinal precautions.

Impedance Threshold Device (ITD) (Optional)

☐ Medical Control Authorities choosing to adopt this supplement may do so by selecting this check box. Adopting this supplement changes or clarifies the referenced protocol or procedure in some way. This supplement supersedes, clarifies, or has authority over the referenced protocol.

Indications:

1. Cardiopulmonary arrest (medical etiology)

Contraindications:

1. Cardiopulmonary arrest related to trauma

Procedure:

1. Confirm absence of pulse and begin CPR immediately. Assure that chest wall recoils completely after each compression.

2. Using the ITD on a facemask:
   A. Connect ITD to the facemask.
   B. Connect ventilation source (BVM) to top of ITD. If utilizing a mask without a bag, connect a mouthpiece.
   C. Establish and maintain a tight face seal with mask throughout chest compressions. Use a two-handed technique or head strap.
   D. Do not use the ITD's timing lights during CPR utilizing a facemask for ventilation.
   E. Perform ACLS interventions as appropriate.
   F. Prepare for endotracheal intubation.

3. Using the ITD on an endotracheal tube or Supraglottic Airway Device (SAD):
   A. Endotracheal intubation is the preferred method of managing the airway when using the ITD.
   B. Place endotracheal tube or SAD and confirm placement. Secure the tube.
   C. Move the ITD from the facemask to the advanced airway and turn on timing assist lights (remove clear tab).
   D. Continue CPR with minimal interruptions:
      a. Provide continuous (no pauses) chest compressions and ventilate asynchronously over 1 second when light flashes
   E. Perform ACLS interventions as appropriate.
   F. If a pulse is obtained, remove the ITD and assist ventilations as needed.

Special Notes:

1. Always place $ETCO_2$ detector between the ITD and ventilation source.
2. Administer endotracheal medications directly into endotracheal tube, if indicated.
3. Do not interrupt CPR unless absolutely necessary.

4. If a pulse returns, discontinue CPR and the ITD. If the patient rearrests, resume CPR with the ITD.
5. Do not delay compressions if the ITD is not readily available.
6. Initial training and ongoing competency skills shall be monitored by the agency.

Pain Management

Aliases: Analgesia, pain control, acute pain

For patients with suspected cardiac chest pain, refer to the **Chest Pain/Acute Coronary Syndrome Protocol.**

The goal is to reduce the level of pain for patients in the pre-hospital setting.

All pain should be assessed and scored according to the "Wong Pain Scale". Reassessment should be timed according to medication onset of action, changes in patient condition, patient positioning and other treatments. Pain treatment should be based on pain scale but may need modification based on patient assessment or condition being treated.

Note: Medical Control contact is required for patients with labor pains, dental pain, established care plans that deter pain management, and patients with chronic pain who do not have a palliative care plan.

1. Place the patient in the position of comfort.
2. Verbally reassure the patient to control anxiety.
3. If not improved with BLS intervention, consider analgesia.
4. Start an IV NS KVO. If the patient's systolic blood pressure is clinically hypotensive, and signs of hypoperfusion, administer an IV/IO fluid bolus. Refer to **Vascular Access & IV Fluid Therapy Procedure**.
5. Per MCA selection, for mild to moderate pain (described as 1-4 on the Wong Pain Scale), consider non-opioid analgesia.

MCA Selected Non-Opioid Analgesia

☐ Acetaminophen 15 mg/kg PO (max dose 1 gm)
Pediatrics, see dosing chart

☐ Ibuprofen 10 mg/kg PO (Not appropriate for patients < 6 months or pregnant, maximum dose 600 mg)
Pediatrics, see dosing chart

☐ Ketorolac (Toradol ®)
Adult 15 mg IM/IV (not appropriate for pregnancy)
Pediatric 1 mg/kg IM/IV (max dose 15 mg)

6. For patients with suspected kidney stone pain of any score, Ketorolac should be considered first line if available. If pain persists after 30 minutes, consider an opioid.
7. For patients with significant pain (described as greater than 4 on the Wong Pain Scale), consider Ketamine per MCA selection.

MCA Approval of Ketamine

☐Pre Medical Control Contact ☐Post Medical Control Contact

a. Ketamine for pain management given IV/IO should be diluted by drawing up the Ketamine and diluting to 100 mL with NS and slow infusion over 5-10 minutes to avoid dissociation symptoms.
b. Adults (or > 80 lbs (approximately 36 kg.)
    i. 0.2 mg/kg IV/IO (diluted) maximum single dose 25 mg
    ii. 0.5 mg/kg IN (undiluted) maximum single dose 50 mg
    iii. May repeat after 10 minutes

c. Pediatrics (or < 80 lbs.(approximately 36 kg)
    i. 0.2 mg/kg IV/IO (diluted) maximum single dose 7.2 mg
    ii. 0.5 mg/kg IN (undiluted) maximum single dose 18 mg
    iii. May repeat after 10 minutes
d. Ketamine for pain management given IM (undiluted) if an IV is not available may only be given as a single dose, do not repeat ketamine or administer an opioid after IM ketamine administration without on-line medical direction

    i. Single dose IM 0.2 mg/kg
e. For patients with refractory pain after Ketamine administration, contact medical control for opioid administration.

f. If a patient is unable to tolerate Ketamine or has significant pain (described as greater than 8 on the Wong Pain Scale), opioid analgesia may be administered. Patients should receive only one opioid medication. If an IV is not available a single dose of opioid may be given IM. Do not administer additional pain medications after IM administration without on-line medical direction.

MCA Selected Opioid Analgesia
(Adult and Pediatric)

☐ Morphine 0.1 mg/kg IV/IO (maximum single dose 10 mg) may  one time. Total dose may not exceed 20 mg.

☐ Fentanyl 1 mcg/kg IV/IO (IN, if available) Maximum single dose 100 mcg, may repeat one time. Total dose may not exceed 200 mcg.

☐ Hydromorphone 0.5 mg IV/IO (for extended transports), may repeat every 10 minutes, for a maximum dose of 2 mg.

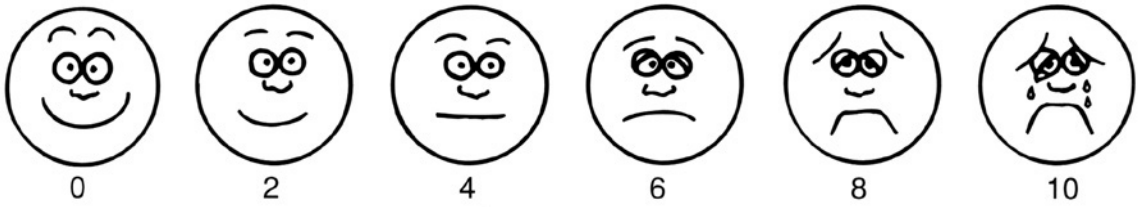
If an IV is not available a single dose of opioid may be given IM. Do not administer additional pain medications after IM administration without on-line medical direction.

8. Administer opioids slowly when using IV or IO routes (Intranasal per MCA selection). Systolic BP should be maintained at > 100 mm Hg for adult patients and > 80 + (2 x age) mm Hg for pediatric patients.
9. If nausea develops with pain medication administration, consider Ondansetron.
    g. Adults: 4 mg IV/IO or ODT
    h. Pediatrics: 0.1 mg/kg IV/IO (max dose 4 mg)
    i. May repeat one time for continued nausea.
10. For patients with evidence of hypotension or hypoperfusion, contact medical control.

Wong Pain Scale: Pain Assessment Scale
Choose a number from 1 to 10 that best describes your pain

No pain — Distressing pain — Unbearable pain

0 1 2 3 4 5 6 7 8 9 10



NO HURT | HURTS LITTLE BIT | HURTS LITTLE MORE | HURTS EVEN MORE | HURTS WHOLE LOT | HURTS WORST

Dosing Table

Child's Weight (Age)	Children's Acetaminophen Elixir (160 mg/5 mL)	Children's Ibuprofen Elixir (100 mg/ 5 mL)	Ketamine IV/IO (100 mg/1 mL) (diluted to 10 mg/ 1 mL)
6-12 lbs. (0-2 mos.)	1.5 mL (48 mg)	DO NOT GIVE	DO NOT GIVE
13-16 lbs. (3-6 mos.)	3 mL (96 mg)	DO NOT GIVE	DO NOT GIVE
17-20 lbs. (7-10 mos.)	4 mL (128 mg)	4 mL (80 mg)	0.15 mL (1.5 mg)
21-25 lbs. (11-18 mos.)	5 mL (160 mg)	5 mL (100 mg)	0.2 mL (2 mg)
26-31 lbs. (19 mos.-3 yrs.)	6 mL (192 mg)	6 mL (120 mg)	0.3 mL (3 mg)
32-35 lbs. (3-4 yrs.)	7 mL (224 mg)	7.5 mL (150 mg)	0.3 mL (3 mg)
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41-45 lbs. (5-6 yrs.)	9 mL (288 mg)	9.5 mL (190 mg)	0.4 mL (4 mg)
46-51 lbs. (6-7 yrs.)	10 mL (320 mg)	11 mL (220 mg)	0.4 mL (4 mg)
52-64 lbs. (7-9 yrs.)	12 mL (384 mg)	13 mL (260 mg)	0.5 mL (5 mg)
65-79+ lbs. (10-14 yrs.)	15 mL (480 mg)	15 mL (300 mg)	0.7 mL (7 mg)

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a.b. Adults (or > 80 lbs (approximately 36 kg.)

i. 0.2 mg/kg IV/IO (diluted) maximum single dose 25 mg

i.ii. or 0.5 mg/kg IN (undiluted) maximum single dose 50 mg(if available)

ii. Maximum single dose[BE(C1] 25 mg

iii. May repeat after 10 minutes to a maximum dose of 50 mg

b.c. Pediatrics (or < 80 lbs.(approximately 36 kg)

i. 0.2 mg/kg IV/IO (diluted) maximum single dose 7.2 mg

i.ii. or 0.5 mg/kg IN (undiluted) maximum single dose 18 mgif available)

ii. Maximum single dose 25 mg

iii. May repeat after 10 minutes to a maximum dose of 0.4 mg/kg IV/IO or 1.0 mg/kg INminutes

c.d. Ketamine for pain management given IM (undiluted) if an IV is not available may only be given as a single dose, do not repeat ketamine or administer an opioid after IM ketamine administration without on-line medical direction

i. Single dose IM 0.2 mg/kg

2.e. For patients with refractory pain after Ketamine administration, contact medical control for opioid administration.

7.

i.

3. When administering analgesic medications, patients may experience nausea as a side effect. Consider Ondansetron.

a. Adults: 4 mg IV/IO or ODT

b. Pediatrics: 0.1 mg/kg IV/IO (max dose 4 mg)

c. May repeat one time for continued nausea.

f. If a patient is unable to tolerate Ketamine or has significant pain (described as greater than 8 on the Wong Pain Scale), opioid analgesia may be administered. Patients should receive only one opioid medication. If an IV is not available a single dose of opioid may be given IM. Do not administer

additional pain medications after IM administration without on-line medical direction.

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☐ Hydromorphone 0.5 mg IV/IO (for extended transports), may repeat every 10 minutes, for a maximum dose of 2 mg.

If an IV is not available a single dose of opioid may be given IM. Do not administer additional pain medications after IM administration without on-line medical direction.

~~8.~~

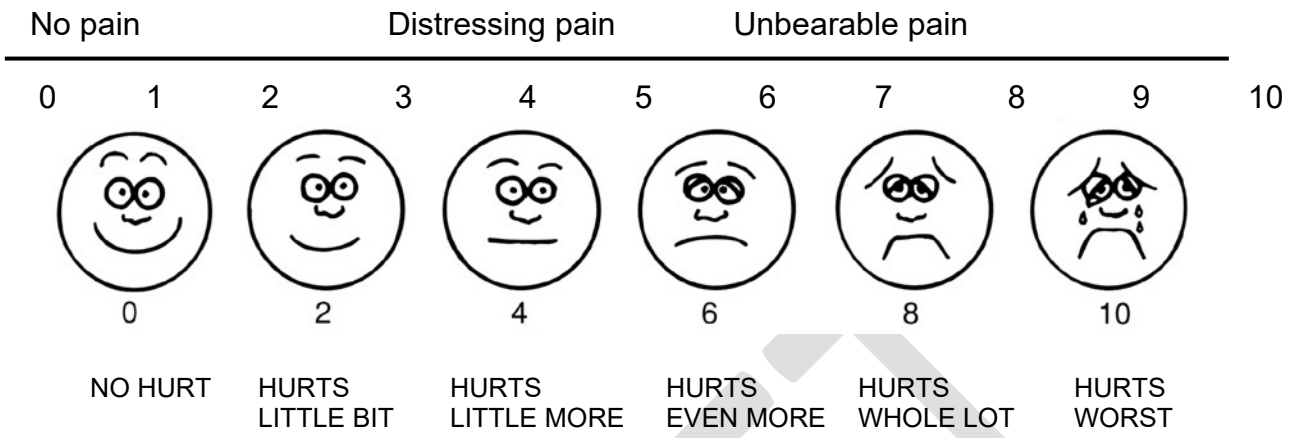
~~9. For patients with refractory pain after Ketamine administration, contact medical control for opioid administration.~~

8. Administer opioids slowly when using IV or IO routes (Intranasal per MCA selection). Systolic BP should be maintained at > 100 mm Hg for adult patients and > 80 + (2 x age) mm Hg for pediatric patients.
9. If nausea develops with pain medication administration, consider Ondansetron.
   g. Adults: 4 mg IV/IO or ODT
   h. Pediatrics: 0.1 mg/kg IV/IO (max dose 4 mg)
   i. May repeat one time for continued nausea.

~~10.~~

~~11.~~10. For patients with evidence of hypotension or hypoperfusion, contact medical control.

Wong Pain Scale: Pain Assessment Scale
Choose a number from 1 to 10 that best describes your pain



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Patient Assessment

Scene Size Up

1. Recognize environmental hazards to rescuers, and secure area for treatment.
2. Recognize hazard for patient, and protect from further injury.
3. Identify number of patients. Follow the **Mass Casualty Incident Protocol** if appropriate.
4. Observe position of patient, mechanism of injury, surroundings.
5. For pediatric patients, utilize the Pediatric Assessment Triangle.
6. Identify self.
7. Utilize universal precautions in all protocols.
8. Determine if patient has a valid Do-not-resuscitate bracelet/order or a valid MI POST.

Primary Survey

1. Airway:
    A. Protect spine from movement in trauma victims. Provide continuous spinal precautions. Follow the **Spinal Injury Assessment Protocol**.
    B. Observe the mouth and upper airway for air movement.
    C. Establish and maintain the airway. Follow the **Emergency Airway Procedure.**
    D. Look for evidence of upper airway problems such as vomitus, bleeding, facial trauma, absent gag reflex.
    E. Clear upper airway of mechanical obstruction as needed.
2. Breathing: Look, Listen and Feel
    A. Note respiratory rate, noise, and effort.
    B. Treat respiratory distress or arrest with oxygenation and ventilation.
    C. Observe skin color and level of consciousness for signs of hypoxia.
    D. Expose chest and observe chest wall movement, as appropriate.
    E. Look for life-threatening respiratory problems and stabilize.
    F. Tension pneumothorax: Follow **Pleural Decompression Procedure.**
3. Circulation
    A. Check pulse and begin CPR if no central pulse. Follow **Cardiac Arrest – General Protocol Adult or Pediatric** or **Neonatal Resuscitation Protocol**.
    B. Note pulse quality and rate; compare distal to central pulses as appropriate.
    C. Control hemorrhage by direct pressure. (If needed, use elevation, pressure points or follow the **Tourniquet Application Procedure.**)
    D. Check capillary refill time in fingertips.
    E. If evidence of shock or hypovolemia begin treatment according to **Shock Protocol.**
4. Level of consciousness:
    A. Note mental status (AVPU)
        a. Alert
        b. Verbal stimuli response
        c. Painful stimuli response
        d. Unresponsive

B. Measure Glasgow Coma Scale

Patient age > 2 years old		Patient age < 2 years old

Eye opening

Spontaneous	4	Spontaneous
To speech	3	To speech
To Pain	2	To Pain
No response	1	No response

Verbal response

Oriented and talking	5	Smiles, recognizes sounds, follows objects, interacts
Disoriented and talking	4	Cries, consolable, inappropriate interactions
Inappropriate words	3	Inconsistently inconsolable, moaning
Incomprehensible sounds	2	Agitated, restless, inconsolable
No response	1	No response

Motor response

Obeys command	6	Spontaneous movement
Localizes pain	5	Withdraws from touch
Withdraws to pain	4	Withdraws from pain
Flexion to pain	3	Abnormal flexion to pain (decorticate posturing)
Extension to pain	2	Abnormal extension to pain (decerebrate posturing)
No response	1	No response

Any combined score of less than eight represents a significant risk of mortality.

If the patient is not alert and the cause is not immediately known, consider:

A – Alcohol
E – Epilepsy
I – Insulin
O – Overdose
U – Uremia
T – Trauma
I – Ingestion
P – Psych
P – Phenothiazine
S – Salicylates
C – Cardiac
H – Hypoxia
E – Environmental
S – Stroke
S - Sepsis

5. **The secondary survey is performed in a systematic manner**.

(Steps listed are not necessarily sequential.)

A. Vital Signs:
   A. Frequent monitoring of blood pressure, pulse, and respirations
   B. Temperature as indicated in protocol.
   C. Blood glucose measurement as available and appropriate.
   D. Pulse oximetry as available and appropriate.
   E. ECG monitoring as indicated in protocol.
   F. 12 Lead if available and appropriate, follow **12 Lead ECG Procedure**.
   G. Monitor capnography, according to protocol.

B. Head and Face
   A. Observe and palpate for deformities, asymmetry, bleeding, tenderness, or crepitus.
   B. Recheck airway for potential obstruction: upper airway noises, dentures, bleeding, loose or avulsed teeth, vomitus, or absent gag reflex.
   C. Eyes: pupils (equal or unequal, responsiveness to light), foreign bodies, contact lenses, or raccoon eyes
   D. Ears: bleeding, discharge, or bruising behind ears.

C. Neck
   A. Maintain spinal motion restriction; follow the **Spinal Injury Assessment Protocol**, if appropriate.
   B. Check for deformity, tenderness, wounds, jugular vein distention, and use of neck muscles for respiration, altered voice, and medical alert tags.

D. Chest
   A. Observe for wounds, air leak from wounds, symmetry of chest wall movement, and use of accessory muscles.
   B. Palpate for tenderness, wounds, crepitus, or unequal rise of chest.
   C. Auscultate for bilateral breath sounds.
   D. Capnography/capnometry according to protocol

E. Abdomen
   A. Observe for wounds, bruising, distention, or pregnancy.
   B. Palpation.

F. Pelvis
   A. Palpate pelvis for tenderness and stability

G. Extremities
   A. Observe for deformity, wounds, open fractures, and symmetry.
   B. Palpate for tenderness and crepitus.
   C. Note distal pulses, skin color, and medical alert/DNR tags.
   D. Check sensation.
   E. Test for motor strength if no obvious fracture present.

H. Back
   A. Observe and palpate for tenderness and wounds.

Special Considerations:

1. If there is a specific mechanism of injury with only localized injury, a focused exam may

be performed in lieu of the full patient survey provided the patient is alert.

2. Follow the appropriate protocol, per patient condition:
   A. **General Pre-hospital Care**
   B. **Newborn Assessment, Treatment and Resuscitation**
   C. **Cardiac Arrest – General Protocol**
   D. **Pediatric Cardiac Arrest – General Protocol**
   E. **General Trauma**
   F. **Spinal Injury Assessment**
   G. **Crashing Adult/Impending Hemodynamic Collapse**
   H. **Crashing Pediatric Patient/Impending Hemodynamic Collapse**

Patient Assessment

Scene Size Up

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3. Identify number of patients. Follow the **Mass Casualty Incident Protocol** if appropriate.
4. Observe position of patient, mechanism of injury, surroundings.
~~4.~~5. For pediatric patients, utilize the Pediatric Assessment Triangle.
~~5.~~6. Identify self.
~~6.~~7. Utilize universal precautions in all protocols.
~~7.~~8. Determine if patient has a valid Do-not-resuscitate bracelet/order or a valid MI POST.[BE(C1]

Primary Survey

1. Airway:
   A. Protect spine from movement in trauma victims. Provide continuous spinal precautions. Follow the **Spinal Injury Assessment Protocol**.
   B. Observe the mouth and upper airway for air movement.
   C. Establish and maintain the airway. Follow the **Emergency Airway Procedure.**
   D. Look for evidence of upper airway problems such as vomitus, bleeding, facial trauma, absent gag reflex.
   E. Clear upper airway of mechanical obstruction as needed.
2. Breathing: Look, Listen and Feel
   A. Note respiratory rate, noise, and effort.
   B. Treat respiratory distress or arrest with oxygenation and ventilation.
   C. Observe skin color and level of consciousness for signs of hypoxia.
   D. Expose chest and observe chest wall movement, as appropriate.
   E. Look for life-threatening respiratory problems and stabilize.
   F. Tension pneumothorax: Follow **Pleural Decompression Procedure.**
3. Circulation
   A. Check pulse and begin CPR if no central pulse. Follow **Cardiac Arrest – General Protocol Adult or Pediatric** or **Neonatal Resuscitation Protocol**.
   B. Note pulse quality and rate; compare distal to central pulses as appropriate.
   C. Control hemorrhage by direct pressure. (If needed, use elevation, pressure points or follow the **Tourniquet Application Procedure.**)
   D. Check capillary refill time in fingertips.
   E. If evidence of shock or hypovolemia begin treatment according to **Shock Protocol.**
4. Level of consciousness:
   A. Note mental status (AVPU)
      a. Alert
      b. Verbal stimuli response
      c. Painful stimuli response

d. Unresponsive

B. Measure Glasgow Coma Scale

Patient age > 2 years old Patient age < 2 years old

Eye opening

Spontaneous	4	Spontaneous
To speech	3	To speech
To Pain	2	To Pain
No response	1	No response

Verbal response

Oriented and talking	5	Smiles, recognizes sounds, follows objects, interacts
Disoriented and talking	4	Cries, consolable, inappropriate interactions
Inappropriate words	3	Inconsistently inconsolable, moaning
Incomprehensible sounds	2	Agitated, restless, inconsolable
No response	1	No response

Motor response

Obeys command	6	Spontaneous movement
Localizes pain	5	Withdraws from touch
Withdraws to pain	4	Withdraws from pain
Flexion to pain	3	Abnormal flexion to pain (decorticate posturing)
Extension to pain	2	Abnormal extension to pain (decerebrate posturing)
No response	1	No response

Any combined score of less than eight represents a significant risk of mortality.

If the patient is not alert and the cause is not immediately known, consider:

A – Alcohol
E – Epilepsy
I – Insulin
O – Overdose
U – Uremia
T – Trauma
I – Ingestion
P – Psych
P – Phenothiazine
S – Salicylates
C – Cardiac
H – Hypoxia
E – Environmental
S – Stroke
S - Sepsis [BE(C2][KK(C3]

5. **The secondary survey is performed in a systematic manner**.

(Steps listed are not necessarily sequential.)

A. Vital Signs:
   A. Frequent monitoring of blood pressure, pulse, and respirations
   B. Temperature as indicated in protocol.
   C. Blood glucose measurement as available and appropriate.
   D. Pulse oximetry as available and appropriate.
   E. ECG monitoring as indicated in protocol.
   F. 12 Lead if available and appropriate, follow **12 Lead ECG Procedure**.
   G. Monitor capnography, ~~if available~~according to protocol.

B. Head and Face
   A. Observe and palpate for deformities, asymmetry, bleeding, tenderness, or crepitus.
   B. Recheck airway for potential obstruction: upper airway noises, dentures, bleeding, loose or avulsed teeth, vomitus, or absent gag reflex.
   C. Eyes: pupils (equal or unequal, responsiveness to light), foreign bodies, contact lenses, or raccoon eyes
   D. Ears: bleeding, discharge, or bruising behind ears.

C. Neck
   A. Maintain ~~stabilization~~spinal motion restriction; follow the **Spinal Injury Assessment Protocol**, if appropriate.
   B. Check for deformity, tenderness, wounds, jugular vein distention, and use of neck muscles for respiration, altered voice, and medical alert tags.

D. Chest
   A. Observe for wounds, air leak from wounds, symmetry of chest wall movement, and use of accessory muscles.
   B. Palpate for tenderness, wounds, crepitus, or unequal rise of chest.
   C. Auscultate for bilateral breath sounds.
   D. Capnography/capnometry ~~if available and appropriate~~according to protocol

E. Abdomen
   A. Observe for wounds, bruising, distention, or pregnancy.
   B. Palpation.

F. Pelvis
   A. Palpate pelvis for tenderness and stability

G. Extremities
   A. Observe for deformity, wounds, open fractures, and symmetry.
   B. Palpate for tenderness and crepitus.
   C. Note distal pulses, skin color, and medical alert/DNR tags.
   D. Check sensation.
   E. Test for motor strength if no obvious fracture present.

H. Back
   A. Observe and palpate for tenderness and wounds.

Special Considerations:

1. If there is a specific mechanism of injury with only localized injury, a focused exam may be performed in lieu of the full patient survey provided the patient is alert.
2. Follow the appropriate ~~assessment~~ protocol, per patient condition:[KK(C4]
    A. **General Pre-hospital Care**
    B. **Newborn Assessment, Treatment and Resuscitation**
    C. **Cardiac Arrest – General Protocol**
    D. **Pediatric Cardiac Arrest – General Protocol**
    E. **General Trauma**
    F. **Spinal Injury Assessment**
    G. **Crashing Adult/Impending Hemodynamic Collapse**~~**Voldemort Protocol**~~
    ~~F.~~H. **Crashing Pediatric Patient/Impending Hemodynamic Collapse**

Documentation and Patient Care Records

Purpose: Patient care records (PCR) are legal documents and a part of a patient's medical record. EMS Personnel must be accurate and thorough in their documentation of EMS incidents. This protocol serves as the MINIMUM elements included in a patient care record.

I. **Completion of records**
   A. An electronic EMS PCR must be completed on any request for service to which a life support agency (per MCA selection):

☐is dispatched
☐arrives on scene

   Regardless of MCA selection, this includes all emergency and non-emergency EMS incidents and patients, ambulance inter-facility transfers, patient refusals, other patient contact, no patient found and cancellations.
   B. If a patient is evaluated and/or treated and is not transported, a Refusal of Treatment and/or Transport Evaluation Form must be completed a patient signature obtained.
   C. Personnel completing PCRs must do so in a timely fashion. If an electronic record is not transmitted immediately upon leaving the receiving facility, an MCA approved paper form must be left at the receiving facility which includes at least the following:
      1. Patient demographic information
      2. Patient and history or medications obtained
      Vital signs and assessment information
      3. Any interventions performed
      4. Any diagnostics performed
   D. Patient care records must be completed within 24 hours of incident conclusion. If changes or documentation must be completed after 24 hours, an addendum to the record noting the circumstances must be created.

II. **Documentation**
   A. Electronic PCRs must be created on appropriate software as outlined in **Electronic Documentation & EMS Information** System.
   B. Each PCR (regardless of patient type) should include:
      1. All demographic, response and other general information pertinent to the EMS personnel's actions related to the response or transfer.
      2. Patient care information including:
         a. Assessment findings, including EMS obtained vital signs. If a patient refuses EMS vitals, that refusal must be documented in the PCR.
         b. Available patient history (including current medications and allergies).
         c. Treatment and interventions (including who performed the intervention). For interventions that are performed prior to arrival, document as such, and attribute to appropriate other personnel.

d. Medications administered (including dose, route, and personnel administering). For medications that are administered prior to arrival, document as such, and attribute to appropriate other personnel.
e. Changes in patient status (or lack of change)
f. Narrative including elements and descriptors unable to be documented in other sections of the PCR. *Note: treatments, vitals, interventions, and medications must be included in the flowchart, but may also be included in the narrative of the report, as appropriate.

3. Names and licensure level of each responder present on scene.
4. Signature of the personnel responsible for the documenting the encounter.

C. Specific requirements for other types of PCRs include all of the above, plus:
1. For transported patients, at least two sets of EMS obtained vital signs based on patient condition and complaint. If less than two sets of vitals are recorded, documentation must be provided justifying the omission.
2. For patients transported with time sensitive emergencies (suspected stroke, myocardial infarction, trauma):
a. Symptom onset time (last know well time, time of injury)
b. Vitals/assessment specific to the complaint:
i. 12 Lead ECG (included as an attachment)
ii. Cincinnati Stroke Scale (or other MCA approved pre-hospital stroke scale)
iii. Physical assessment (noted types and locations of injuries)
iv. Mechanism of injury (including specific elements allowable such as vehicle information), as appropriate

D. If a PCR must first be generated on paper and entered secondarily into an electronic format:
1. Content must be directly copied from the original PCR to the electronic system
2. Ideally, a scanned copy of the paper record must be attached to the electronic PCR. Otherwise, a paper copy must be maintained (according to MCL 333.16213) and available to the jurisdictional MCA or the Department upon request.
3. If someone other than the original caregiver inputs the PCR into the electronic system, it must be noted in the record.

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Patient Procedural Sedation

Purpose: Proper sedation of patients requiring a painful medical procedure. This procedure is for Paramedic use only.

Indications for Sedation

1. Electrical Therapy (Cardioversion or Transcutaneous pacing)
2. Post intubation sedation
3. CPAP/BiPAP/HFNC only under direct Medical Control Order

Contraindications

1. Inability to control the patient's airway
2. As an adjunct for establishing an airway
3. Known allergy to sedation medications

Assessment

1. Evaluate adequacy of airway, ventilation and oxygenation
2. Monitor vital signs and level of consciousness
3. Monitor ECG
4. Monitor Pulse oximetry
5. Monitor capnography, if available

Procedure

1. Maintain airway, provide oxygenation and support ventilation
2. Obtain vascular access
3. For Electrical cardioversion, transcutaneous pacing, and post intubation sedation sedate patient to a level of consciousness where procedure can be performed, per MCA selection
4. **Only one sedation medication may be given pre-radio if authorized by the MCA. Medical Control must be contacted if a different sedation medication is needed**

Pediatric Sedation:

(Titrate to minimum amount necessary)

- ☐ Midazolam 0.05 mg/kg IV/IO titrated slowly (IN, if available); may repeat once in 5 minutes to a maximum of 0.1 mg/kg.
- ☐ Fentanyl 1 mcg/kg IV/IO titrated slowly (IN, if available); may repeat every 5 minutes to a maximum of 3 mcg/kg.
- ☐ Ketamine 4 mg/kg IM or 1-2 mg/kg IV/IO (IN if available) titrated slowly to sedation.

Adult Sedation:
(Titrate to minimum amount necessary)

- ☐ Midazolam 1-5 mg (0.05 mg/kg) IV/IO titrated slowly (IN, if available); may repeat once in 5 minutes to a maximum of 0.1 mg/kg.
- ☐ Diazepam 5-10 mg (0.1 mg/kg) IV/IO titrated slowly, may repeat every 5 minutes to a maximum of 0.3 mg/kg.
- ☐ Fentanyl 50-100 mcg (1 mcg/kg) IV/IO titrated slowly (IN, if available); may repeat every 4 minutes to a maximum of 3 mcg/kg.
- ☐ Ketamine 4 mg/kg IM or 1-2 mg/kg IV/IO (IN if available) titrated slowly to sedation (max dose 500 mg).

Possible orders post radio contact

1. Additional sedation as needed.
2. Sedation for CPAP/BiPAP

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Section 7-17

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Possible orders post radio contact

1. Additional sedation as needed[BE(1].
2. Sedation for CPAP/BiPAP

Refusal of Care; Adult & Minor

EMS personnel have an affirmative duty to provide care to any patient presenting to them after a report of an emergency situation.

Individuals who are competent may object to treatment or transportation by EMS personnel. MCL 333.20969 "If emergency medical services personnel, exercising professional judgment, determine that the individual's condition makes the individual incapable of competently objecting to treatment or transportation, emergency medical services may provide treatment or transportation despite the individual's objection unless the objection is expressly based on the individual's religious beliefs."

1. **Definition**
   - A. An individual who has capacity to make medical decisions is:
     - a. One who is awake, oriented, and is capable of understanding the circumstances of the current situation. This includes risks, treatments, transport, and alternatives.
     - b. Does not appear to be under the influence of alcohol, drugs or other mind-altering substances or circumstances that may interfere with mental functioning.
     - c. Is not a clear danger to self or others.
     - d. Is 18 years of age or older, or an emancipated minor.
   - B. "Emancipated Minor" is one who is married, is on active duty with the Armed Forces of the United States, or has been granted emancipation by the court.

2. **Procedure for an individual who has capacity to Refuse Care or Transport**
   - A. All patients with signs or symptoms of illness or injury shall be offered assessment, medical treatment and transport by EMS.
   - B. Clearly explain the nature of the illness/injury and the need for emergency care or transportation.
   - C. Explain possible complications that may develop without proper care or transportation.
   -  D. For individuals with signs or symptoms of serious or potentially fatal illness or injury, contact medical control.
   - E. Request that the individual sign an EMS Refusal Form. If the individual refuses to sign the EMS Refusal Form, attempt to obtain signatures of witnesses (family, bystanders, public safety personnel).
   - F. Document assessment and complete approved EMS Refusal Form, including risks of refusal
   - G. Inform the individual that if they change their mind and desire evaluation, treatment, and/or transport to a hospital, to re-contact the emergency medical services system or seek medical attention.

3. **Procedure for the Individual who does not have the capacity to object to Treatment or Transportation**

A. Contact medical control as soon as practical and follow applicable treatment protocol.
B. Any patient with an urgent/life-threatening illness or injury who is incapable of competently objecting to treatment or transportation shall be transported by EMS for further evaluation and treatment.
C. Police assistance may be sought if needed.
D. A patient with non-urgent/non-life-threatening illness or injury who is incapable of competently objecting to treatment or transportation should be transported for further evaluation and treatment after consultation with on-line medical control.

4. Procedure for the Individual who gains capacity to make decisions after Treatment has been Initiated and Refuses Transport

A. Contact medical control in all cases when a patient (now refusing transport) has been given medications or other advanced treatment by EMS personnel (i.e., glucose, Albuterol, naloxone, IV, etc.).
B. Such patients should be strongly encouraged to seek further evaluation and treatment.
C. Comply with Section II above and document treatment on a patient care record.

5. Procedure for the Minor Patient Refusing Care or Transport

A. A minor is any individual under the age of 18 and who is not emancipated.
B. In general, minor patients are unable to consent or refuse consent for medical care. Such permission can only be provided by the minor's parent or legal guardian.
C. Treatment and transport of real or potential life-threatening emergencies will not be delayed by attempts to contact the parent or guardian.
D. For all emergency and non-emergency patients, contact medical control.

6. Procedure for Parent/Guardian Refusing Care or Transport of the Minor Patient

A. All patients with signs or symptoms of illness or injury shall be offered assessment, medical treatment and transport by EMS.
B. Clearly explain the nature of the illness/injury and the need for emergency care or transportation.
C. Explain possible complications that may develop without proper care or transportation.
D. For individuals with signs or symptoms of illness or injury, contact medical control.
E. Request that the parent/guardian sign an approved EMS Refusal Form. If the parent/guardian refuses to sign the EMS Refusal Form, attempt to obtain signatures of witnesses (family, bystanders, public safety personnel).
F. Document assessment and complete an approved EMS Refusal Form.

G. Inform the parent/guardian that if they change their mind and desire evaluation, treatment, and/or transport to a hospital, to re-contact the emergency medical services system or seek medical attention.

Note: A sample EMS Refusal Form has been included on a separate page.

SAMPLE EMS REFUSAL FORM

REFUSAL OF TREATMENT, TRANSPORT AND/OR EVALUATION

PLEASE READ COMPLETELY BEFORE SIGNING BELOW!

Because it is sometimes impossible to recognize actual or potential medical problems outside the hospital, we strongly encourage you to be evaluated, treated if necessary, and transported to a hospital by EMS personnel for more complete examination by a physician.

You have the right to choose to not be evaluated, treated or transported if you wish; however, there is the possibility that you could suffer serious complications or even death from conditions that are not apparent at this time.

By signing below, you are acknowledging that EMS personnel have advised you, and that you understand, the potential harm to your health that may result from your refusal of the recommended care; and, you release EMS and supporting personnel from liability resulting from refusal.

PLEASE CIRCLE THE FOLLOWING THAT APPLY:

I refuse:

EVALUATION TREATMENT TRANSPORT

☐ IF YOU CHANGE YOUR MIND AND DESIRE EVALUATION, TREATMENT, AND/OR TRANSPORT TO A HOSPITAL, YOU MAY RE-CONTACT THE EMS SYSTEM AT ANY TIME.

Patient's Printed Name _____Age____DOB_____Phone #_____
Patient's Address_____City_____State____Zip_____

Signature_____ Relationship, if applicable_____

Witness Signature_____ Witness Printed Name_____
Date and Time_____

BP_____Pulse_____Resp._____Skin_____Pupils_____LOC_____

1. Oriented to person, place, and time? ☐ Yes ☐ No
2. Coherent speech? ☐ Yes ☐ No
3. Auditory and/or visual hallucinations? ☐ Yes ☐ No
4. Suicidal or homicidal? ☐ Yes ☐ No
5. Able to repeat understanding of their condition and consequences of treatment refusal? ☐ Yes ☐ No
6. Narrative: describe reasonable alternatives to treatment that were offered; the circumstances of the call; specific consequences of refusal; and, names of family or witnesses present:

_____
_____
_____
_____

_____ _____ _____ _____
EMS Agency Name Printed Crew Names Signature of EMS Provider

Refusal of Care; Adult & Minor

EMS personnel have an affirmative duty to provide care to any patient presenting to them after a report of an emergency situation.

Individuals who are competent may object to treatment or transportation by EMS personnel. MCL 333.20969 "If emergency medical services personnel, exercising professional judgment, determine that the individual's condition makes the individual incapable of competently objecting to treatment or transportation, emergency medical services may provide treatment or transportation despite the individual's objection unless the objection is expressly based on the individual's religious beliefs."

1. **Definition**
   A. ~~"Competent individual":~~An individual who has capacity to make medical decisions is:
      a. One who is awake, oriented, and is capable of understanding the circumstances of the current situation. This includes risks, treatments[BE(C1)], transport, and alternatives.
      b. Does not appear to be under the influence of alcohol, drugs or other ~~mind-altering~~mind-altering substances or circumstances that may interfere with mental functioning.
      c. Is not a clear danger to self or others.
      d. Is 18 years of age or older, or an emancipated minor.
   B. "Emancipated Minor" is one who is married, is on active duty with the Armed Forces of the United States, or has been granted emancipation by the court.

2. **Procedure for ~~Competent Individual~~an individual who has capacity to ~~Refusing~~ Refuse Care or Transport**
   A. All patients with signs or symptoms of illness or injury shall be offered assessment, medical treatment and transport by EMS.
   B. Clearly explain the nature of the illness/injury and the need for emergency care or transportation.
   C. Explain possible complications that may develop without proper care or transportation.
   D. For individuals with signs or symptoms of serious or potentially fatal illness or injury, ~~consider~~ contact~~ing~~ medical control.
   E. Request that the individual sign an EMS Refusal Form. If the individual refuses to sign the EMS Refusal Form, attempt to obtain signatures of witnesses (family, bystanders, public safety personnel).
   F. Document assessment and complete approved EMS Refusal Form, including risks of refusal~~.~~
   G. Inform the individual that if they change their mind and desire evaluation, treatment, and/or transport to a hospital, to re-contact the emergency medical services system or seek medical attention.

3. **Procedure for the Individual who does not have the capacity to ~~Incapable of Competently Oo~~bject~~ting~~ to Treatment or Transportation**
   A. Contact medical control as soon as practical and follow applicable treatment protocol.
   B. Any patient with an urgent/life-threatening illness or injury who is incapable of competently objecting to treatment or transportation shall be transported by EMS for further evaluation and treatment.
   C. Police assistance may be sought if needed.
   D. A patient with non-urgent/non-life-threatening illness or injury who is incapable of competently objecting to treatment or transportation should be transported for further evaluation and treatment after consultation with on-line medical control.

4. **Procedure for the Individual who ~~becomes Competent~~gains capacity to make decisions after Treatment has been Initiated and Refuses Transport**
   A. Contact medical control in all cases when a patient (now refusing transport) has been given medications or other advanced treatment by EMS personnel (i.e., glucose, Albuterol, naloxone, IV, etc.).
   B. Such patients should be strongly encouraged to seek further evaluation and treatment.
   C. Comply with Section II above and document treatment on a patient care record.

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   A. A minor is any individual under the age of 18 and who is not emancipated.
   B. In general, minor patients are unable to consent or refuse consent for medical care. Such permission can only be provided by the minor's parent or legal guardian.
   C. Treatment and transport of real or potential life-threatening emergencies will not be delayed by attempts to contact the parent or guardian.
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6. **Procedure for Parent/Guardian Refusing Care or Transport of the Minor Patient**
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   B. Clearly explain the nature of the illness/injury and the need for emergency care or transportation.
   C. Explain possible complications that may develop without proper care or transportation.
   D. For individuals with signs or symptoms of illness or injury, contact medical control.
   E. Request that the parent/guardian sign an approved EMS Refusal Form. If the parent/guardian refuses to sign the EMS Refusal Form, attempt to obtain signatures of witnesses (family, bystanders, public safety personnel).
   F. Document assessment and complete an approved EMS Refusal Form.

G. Inform the parent/guardian that if they change their mind and desire evaluation, treatment, and/or transport to a hospital, to re-contact the emergency medical services system or seek medical attention.

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You have the right to choose to not be evaluated, treated or transported if you wish; however, there is the possibility that you could suffer serious complications or even death from conditions that are not apparent at this time.

By signing below, you are acknowledging that EMS personnel have advised you, and that you understand, the potential harm to your health that may result from your refusal of the recommended care; and, you release EMS and supporting personnel from liability resulting from refusal.

PLEASE CIRCLE THE FOLLOWING THAT APPLY:

I refuse:

EVALUATION **TREATMENT** **TRANSPORT**

☐ **IF YOU CHANGE YOUR MIND AND DESIRE EVALUATION, TREATMENT, AND/OR TRANSPORT TO A HOSPITAL, YOU MAY RE-CONTACT THE EMS SYSTEM AT ANY TIME.**

Patient's Printed Name _____Age____DOB_____Phone #_____
Patient's Address_____City_____State____Zip_____

Signature_____ Relationship, if applicable_____

Witness Signature_____ Witness Printed Name_____
Date and Time_____

BP_____Pulse_____Resp._____Skin_____Pupils_____LOC_____

1. Oriented to person, place, and time? ☐ Yes ☐ No
2. Coherent speech? ☐ Yes ☐ No
3. Auditory and/or visual hallucinations? ☐ Yes ☐ No
4. Suicidal or homicidal? ☐ Yes ☐ No
5. Able to repeat understanding of their condition and consequences of treatment refusal? ☐ Yes ☐ No
6. Narrative: describe reasonable alternatives to treatment that were offered; the circumstances of the call; specific consequences of refusal; and, names of family or witnesses present:

_____
_____
_____
_____

_____ _____ _____ _____
EMS Agency Name Printed Crew Names Signature of EMS Provider

Spinal Precautions

Indications & General Guidance

1. Refer to the **Spinal Injury Assessment Protocol**. Patients with a positive spinal injury assessment should have spinal precautions maintained during transport.
2. Major trauma patients who require extrication should have spinal precautions maintained using an extrication device (long backboard or equivalent) during extrication. If sufficient personnel are present, the patient may be log rolled from the extrication device to the ambulance cot during loading of the patient.
3. Patients may remain on the extrication device if the crew deems it safer for the patient considering stability, time and patient comfort considerations. This decision will be at the discretion of the crew.
4. Patients with penetrating traumatic injuries do not require spinal precautions unless a focal neurologic deficit is noted on the spinal injury assessment.
5. An ambulatory patient with a positive spinal injury assessment should have an appropriately sized cervical collar placed. Place the patient directly on the ambulance cot in a position of comfort, limiting movement of the spine during the process.
6. Patients, who are stable, alert and without neurological deficits may be allowed to self-extricate to the ambulance cot after placement of a cervical collar. Limit movement of the spine during the process.
7. Patients over the age of 65 with a significant mechanism of injury and evidence of a head strike will have a cervical collar applied even if the spinal injury clinical assessment is negative.

Specific Techniques

1. Cervical Collars
    A. Cervical collar should be placed on patient prior to patient movement, if possible.
    B. If no collar can be made to fit patient, towel, blanket rolls, head block or similar device may be used to support neutral head alignment.
    C. The cervical collar may be removed if interfering with airway management or airway placement, or if causing extreme patient distress.
2. Self-Extrication Procedure
    A. Patients, who are stable, alert and without neurological deficits may be allowed to self-extricate to the ambulance cot after placement of a cervical collar.
    B. Limit movement of the spine during the process.
3. Emergency Patient Removal
    A. Indicated when scene poses an imminent or potential life threatening danger to patient and/or rescuers, (e.g. vehicle or structure fire).

B. Remove the patient from danger while best attempt is made to maintain spinal precautions.
C. Rapid Extrication is indicated when patient condition is unstable (i.e.: airway or breathing compromise, shock, unconsciousness, or need for immediate intervention).

4. Long Extrication Device (e.g. long Backboard, scoop stretcher, basket stretcher)
   A. Indicated when patient requires spinal precautions and the patient condition prevents self-extrication.
   B. Patient's head and cervical spine should be manually stabilized.
   C. Rescuers should place the patient in a stable, neutral position where space is created to place backboard or other long extrication device in position near the patient.
   D. Move the patient to supine position on the long extrication device.
   E. The patient is secured to the device with torso straps applied before head stabilization.
   F. Head stabilization material should be placed to allow for movement of the lower jaw to facilitate possible airway management.
   G. The extrication device is used to move the patient to the ambulance cot.
5. Log Roll Procedure
   A. Cervical collar should be placed when indicated.
   B. Place the backboard or equivalent behind the patient.
   C. Patient is log rolled, maintaining neutral alignment of spine and extremities.
   D. Log roll procedure requires 2 or more personnel in contact with the patient.
   E. If log roll is not possible, patient should be moved to board or equivalent while attempting to maintain neutral alignment spinal precautions.
   F. Patient is secured to the backboard or equivalent for movement to the ambulance cot.
   G. Head stabilization materials such as foam pads, blanket rolls may be used to prevent lateral motion. Pad under the head when feasible.
   H. If sufficient personnel are present, the patient should be log rolled from the extrication device to the ambulance cot during loading of the patient.
   I. When log roll on to the ambulance cot is impractical, secure the patient to the extrication device and ambulance cot for transport.
6. Spinal Precautions
   A. Once the patient is placed on the ambulance cot, if no extrication device is still in place, secure the patient with seatbelts in a supine position, or in position of comfort if a supine position is not tolerated.

B. Head may be supported with head block or similar device to prevent rotation if needed. Padding should be placed under the head when practical. Do not tape the head to the ambulance cot.

Special Considerations

1. Hypoventilation is likely to occur with spinal cord injury above the diaphragm. Quality of ventilation should be monitored closely with support offered early.
2. Spinal/neurogenic shock may result from high spinal cord injury. Monitor patient for signs of shock. Refer to **Shock Protocol**.
3. Spinal precautions in the patient wearing a helmet should be according to the Helmet Removal Procedure.
4. Manual spinal precautions in the obtunded patient must be initiated and continued until the patient is secured to the ambulance cot.
5. Patients who are markedly agitated, combative or confused may not be able to follow commands and cooperate with minimizing spinal movement. Rigid immobilization should be avoided if it contributes to patient combativeness. Patients may remain on the backboard if the crew deems it safer for the patient, and this will be at the discretion of the crew.
6. Manual in line stabilization must be used during any procedure that risks head or neck movement, such as endotracheal intubation. If manual cervical stabilization is hampering efforts to intubate the patient, the neck should be allowed to move as needed to secure the airway. An unsecured airway is a greater danger to the patient than a spinal fracture.
7. Document spinal precautions techniques utilized.
8. Document the patient's neurologic status before and after establishing spinal precautions when possible.
9. Pediatric Patients and Car Seats:
    A. Infants restrained in a rear-facing car seat may be immobilized and extricated in the car seat. The child may remain in the car seat if the immobilization is secure and his/her condition allows (no signs of respiratory distress or shock).
    B. Children restrained in a car seat (with a high back) may be immobilized and extricated in the car seat; however, once removed from the vehicle, the child should have spinal precautions maintained as for an adult.
    C. Children restrained in a booster seat (without a back) need to be extricated and immobilized following standard procedures.

Spinal Precautions

Indications & General Guidance

1. Refer to the **Spinal Injury Assessment Protocol**. Patients with a positive spinal injury assessment should have spinal precautions maintained during transport.
2. Major trauma patients who require extrication should have spinal precautions maintained using an extrication device (long backboard or equivalent) during extrication. If sufficient personnel are present, the patient may be log rolled from the extrication device to the ambulance cot during loading of the patient.
3. Patients may remain on the extrication device if the crew deems it safer for the patient considering stability, time and patient comfort considerations. This decision will be at the discretion of the crew.
4. Patients with penetrating traumatic injuries do not require spinal precautions unless a focal neurologic deficit is noted on the spinal injury assessment.
5. An ambulatory patient with a positive spinal injury assessment should have an appropriately sized cervical collar placed. Place the patient directly on the ambulance cot in a position of comfort, limiting movement of the spine during the process.
6. Patients, who are stable, alert and without neurological deficits may be allowed to self-extricate to the ambulance cot after placement of a cervical collar. Limit movement of the spine during the process.
7. Patients over the age of 65 with a significant mechanism of injury and evidence of a head strike ~~with the potential for causing cervical spine injury~~ will have a cervical collar applied even if the spinal injury clinical assessment is negative.

Specific Techniques

1. Cervical Collars
    A. Cervical collar should be placed on patient prior to patient movement, if possible.
    B. If no collar can be made to fit patient, towel, blanket rolls, head block or similar device may be used to support neutral head alignment.
    C. The cervical collar may be removed if interfering with airway management or airway placement, or if causing extreme patient distress.
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    A. Patients, who are stable, alert and without neurological deficits may be allowed to self-extricate to the ambulance cot after placement of a cervical collar.
    B. Limit movement of the spine during the process.
3. Emergency Patient Removal
    A. Indicated when scene poses an imminent or potential life threatening danger to patient and/or rescuers, (e.g. vehicle or structure fire).

B. Remove the patient from danger while best attempt is made to maintain spinal precautions.
C. Rapid Extrication is indicated when patient condition is unstable (i.e.: airway or breathing compromise, shock, unconsciousness, or need for immediate intervention).

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   C. Rescuers should place the patient in a stable, neutral position where space is created to place backboard or other long extrication device in position near the patient.
   D. Move the patient to supine position on the long extrication device.
   E. The patient is secured to the device with torso straps applied before head stabilization.
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   A. Cervical collar should be placed when indicated.
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   C. Patient is log rolled, maintaining neutral alignment of spine and extremities.
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   E. If log roll is not possible, patient should be moved to board or equivalent while attempting to maintain neutral alignment spinal precautions.
   F. Patient is secured to the backboard or equivalent for movement to the ambulance cot.
   G. Head stabilization materials such as foam pads, blanket rolls may be used to prevent lateral motion. Pad under the head when feasible.
   H. If sufficient personnel are present, the patient should be log rolled from the extrication device to the ambulance cot during loading of the patient.
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6. Spinal Precautions
   A. Once the patient is placed on the ambulance cot, if no extrication device is still in place, secure the patient with seatbelts in a supine position, or in position of comfort if a supine position is not tolerated.

B. Head may be supported with head block or similar device to prevent rotation if needed. Padding should be placed under the head when practical. Do not tape the head to the ambulance cot.

Special Considerations

1. Hypoventilation is likely to occur with spinal cord injury above the diaphragm. Quality of ventilation should be monitored closely with support offered early.
2. Spinal/neurogenic shock may result from high spinal cord injury. Monitor patient for signs of shock. Refer to **Shock Protocol**.
3. Spinal precautions in the patient wearing a helmet should be according to the Helmet Removal Procedure.
4. Manual spinal precautions in the obtunded patient must be initiated and continued until the patient is secured to the ambulance cot.
5. Patients who are markedly agitated, combative or confused may not be able to follow commands and cooperate with minimizing spinal movement. Rigid immobilization should be avoided if it contributes to patient combativeness. Patients may remain on the backboard if the crew deems it safer for the patient, and this will be at the discretion of the crew.
6. Manual in line stabilization must be used during any procedure that risks head or neck movement, such as endotracheal intubation. If manual cervical stabilization is hampering efforts to intubate the patient, the neck should be allowed to move as needed to secure the airway. An unsecured airway is a greater danger to the patient than a spinal fracture.
7. Document spinal precautions techniques utilized.
8. Document the patient's neurologic status before and after establishing spinal precautions when possible.
9. Pediatric Patients and Car Seats:
    A. Infants restrained in a rear-facing car seat may be immobilized and extricated in the car seat. The child may remain in the car seat if the immobilization is secure and his/her condition allows (no signs of respiratory distress or shock).
    B. Children restrained in a car seat (with a high back) may be immobilized and extricated in the car seat; however, once removed from the vehicle, the child should have spinal precautions maintained as for an adult.
    C. Children restrained in a booster seat (without a back) need to be extricated and immobilized following standard procedures.

Vascular Access & IV Fluid Therapy

Indications

1. Patients with potential need for either fluid resuscitation or medication administration.
2. External jugular cannulation should be initiated in patients in whom access is necessary and other peripheral vascular access is not accessible or is contraindicated.
3. IO indications: Adult and pediatric life threatening situations where venous access using peripheral veins has been unsuccessful. IO access should be considered early in situations where IV access is unsuccessful or technically challenging. Indications include:
    A. Cardiac Arrest
    B. Severe burn injury with shock
    C. Shock
    D. Severe multi-system trauma with shock
    E. For other situations contact medical control. Do not delay transport.

Contraindications

1. To peripheral vascular access:
    A. No peripheral sites available
    B. Burns overlying available peripheral sites unless no other sites available
    C. Infection overlying available peripheral sites
2. To intraosseous infusion and placement:
    A. Infiltration of previously placed IO. If infiltration occurs (rare), do not reuse the same bone as fluid will leak out of the original hole; select another site.
    B. Placement in fractured extremity. If the femur is fractured do not use the tibia of same leg.

Special Considerations (Side effects/Complications)

1. Initiation of vascular access generally should not delay patient transport to the hospital.
2. General side effects or complications: infection, air embolism, catheter shear, hematoma, arterial puncture, and fluid overload.
3. Intraosseous placement:
    A. Complications include subperiosteal infusion, osteomyelitis, sepsis, fat embolism, and bone marrow damage.

Standards for IV attempts

1. Two (2) attempts per provider, maximum 4 attempts.
2. Consider IO early, as indicated above.
3. Document any reasons for deviation.

Needle size for IV placement

1. Adult TKO 18 ga - 20 ga Angiocath
2. Adult uncompensated shock or cardiac arrest 14 ga - 18 ga.
3. Pediatrics 20 ga - 24 ga Angiocath

Flow Rates

1. Saline lock IV is preferred, unless fluid resuscitation is needed.
2. Flow rates and changes in flow rates must be documented on the EMS Patient Care Record.
3. The standard IV/IO fluid bolus volume will be 1 liter normal saline with repeat as necessary, unless otherwise noted by protocol. IV/IO fluid bolus is contraindicated in patients with pulmonary edema. Volume for pediatric IV/IO fluid bolus is 20 mL/kg, unless otherwise noted by protocol.
4. Medicated drips should be piggybacked into the main IV line or saline lock.

Solutions – Unless otherwise specified, the IV solution of choice is Normal Saline 0.9% (NS).

IV Tubing

1. Macrodrip is the preferred tubing.

Procedure IV/IO Placement

1. Utilize universal precautions for all IV/IO placements.

Procedure for Peripheral Vascular Cannulation:

1. Gather and prepare equipment.
2. Place the tourniquet on the extremity.
3. Cleanse the skin
4. Make your puncture while maintaining vein stability.
5. Watch for flashback. Once you have a blood return, advance the catheter as per normal IV technique and attach the IV tubing or Normal saline lock tubing and cap.
6. If you have no blood return and you are in the vein, remove the needle hub and attach your syringe to assist in aspirating for blood.
7. Instill 2-3 mL of normal saline if normal saline lock placed.
8. Secure catheter and IV tubing.

Procedure for External Jugular Cannulation:

1. Gather and prepare equipment
2. Position patient supine (trendelenburg, if possible)
3. Turn head to opposite side of venipuncture (if no C-spine injury is suspected)
4. Cleanse the skin
5. Occlude the vein by using the side of your finger above the clavicle to facilitate filling the vein.
6. Make your puncture midway between the angle of the jaw and the middle of the clavicle.

7. Watch for flashback. Once you have a blood return, advance the catheter as per normal IV technique and attach the IV solution or normal saline lock cap, covering catheter with gloved finger while preparing to attach the IV tubing. If you have no blood return and you are in the vein, remove the needle hub and attach your syringe to assist in aspirating for blood.
8. Instill 2-3 mL of normal saline if normal saline lock placed.
9. Secure IV catheter and tubing.

Procedure for Intraosseous Placement:

1. Have all IO equipment ready prior to bone penetration.
2. Expose the extremity.
3. Stabilize the extremity to minimize motion.
4. Selection of site:
    A. Medial aspect of proximal tibia or proximal humerus.
    B. In children less than six years of age, the preferred site is the proximal tibia.
    C. In cardiac arrest, the preferred site is the proximal humerus.
5. Insertion:
    A. Follow the manufacturer's recommendations for IO insertion with the above indications.
6. Scrub the insertion site with alcohol prep/chlorhexidine. Strict adherence to aseptic technique is essential.
7. Insert the IO needle.
8. Attempt to confirm marrow placement by removing the stylet and aspirating blood and/or bone marrow.
    A. If unable to aspirate, attach 10 – 20 mL syringe with normal saline and gently infuse normal saline.
    B. Observe for normal saline leakage or SQ tissue swelling.
        a. If neither occurs, proceed.
        b. If either occurs, select a different site.
9. Connect the appropriate IV equipment (normal saline locks not indicated in IO placement).
10. Administer the appropriate fluids and/or drugs.
11. Stabilize the entire intraosseous set-up as if securing an impaled object.
12. In conscious patients experiencing pain with IO infusion, consider administering Lidocaine 2%, 20 mg IO for adult patients, 0.5 mg/kg for pediatrics administer to a maximum of 20 mg. (Lidocaine 2% = 20 mg/mL).
13. If the IO is unsuccessful after 2 attempts, contact Medical Control.

Vascular Access & IV Fluid Therapy

Indications

1. Patients with potential need for either fluid resuscitation or medication administration.
2. External jugular cannulation should be initiated in patients in whom access is necessary and other peripheral vascular access is not accessible or is contraindicated.
3. IO indications: Adult and pediatric life threatening situations where venous access using peripheral veins has been unsuccessful. IO access should be considered early in situations where IV access is unsuccessful or technically challenging. Indications include:
   A. Cardiac Arrest
   B. Severe burn injury with shock
   C. Shock
   D. Severe multi-system trauma with shock
   ~~D.~~E. For other situations contact medical control. Do not delay transport.
   ~~E. Status epilepticus~~
   ~~F. Contact medical control for other situations without delaying transport~~

Contraindications

1. To peripheral vascular access:
   A. No peripheral sites available
   B. Burns overlying available peripheral sites unless no other sites available
   C. Infection overlying available peripheral sites
2. To intraosseous infusion and placement:
   A. Infiltration of previously placed IO. If infiltration occurs (rare), do not reuse the same bone as fluid will leak out of the original hole; select another site.
   B. Placement in ~~Do not place in a fractured extremity~~~~F~~fractured ~~of intended~~ extremity. If the femur is fractured do not use the tibia of same leg. ~~, use the opposite leg.~~

Special Considerations (Side effects/Complications)

1. Initiation of vascular access generally should not delay patient transport to the hospital.
2. General side effects or complications: infection, air embolism, catheter shear, hematoma, arterial puncture, and fluid overload.
3. Intraosseous placement:
   A. Complications include subperiosteal infusion, osteomyelitis, sepsis, fat embolism, and bone marrow damage.

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   ~~2.~~ Adult uncompensated shock or cardiac arrest 14 ga - 18 ga.
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2. Place the tourniquet on the extremity.
3. Cleanse the skin
4. Make your puncture while maintaining vein stability.
5. Watch for flashback. Once you have a blood return, advance the catheter as per normal IV technique and attach the IV tubing or Normal saline lock tubing and cap.
6. If you have no blood return and you are in the vein, remove the needle hub and attach your syringe to assist in aspirating for blood.
7. Instill 2-3 mL of normal saline if normal saline lock placed.
8. Secure catheter and IV tubing.

Procedure for External Jugular Cannulation:

1. Gather and prepare equipment
2. Position patient supine (trendelenburg, if possible)
3. Turn head to opposite side of venipuncture (if no C-spine injury is suspected)
4. Cleanse the skin

5. Occlude the vein by using the side of your finger above the clavicle to facilitate filling the vein.
6. Make your puncture midway between the angle of the jaw and the middle of the clavicle.
7. Watch for flashback. Once you have a blood return, advance the catheter as per normal IV technique and attach the IV solution or normal saline lock cap, covering catheter with gloved finger while preparing to attach the IV tubing. If you have no blood return and you are in the vein, remove the needle hub and attach your syringe to assist in aspirating for blood.
8. Instill 2-3 mL of normal saline if normal saline lock placed.
9. Secure IV catheter and tubing.

Procedure for Intraosseous Placement:

1. Have all IO equipment ready prior to bone penetration.
2. Expose the extremity.
3. Stabilize the extremity to minimize motion.
4. Selection of site:
    A. Medial aspect of proximal tibia or proximal humerus.
    B. In children less than six years of age, the preferred site is the proximal tibia.
    ~~B.~~C. In cardiac arrest, the preferred site is the proximal humerus.
5. Insertion:
    A. Follow the manufacturer's recommendations for IO insertion with the above indications.
6. Scrub the insertion site with alcohol prep/chlorhexidine. Strict adherence to aseptic technique is essential.
7. Insert the IO needle.
8. Attempt to confirm marrow placement by removing the stylet and aspirating blood and/or bone marrow.
    A. If unable to aspirate, attach 10 – 20 mL syringe with normal saline and gently infuse normal saline.
    B. Observe for normal saline leakage or SQ tissue swelling.
        a. If neither occurs, proceed.
        b. If either occurs, select a different site.
9. Connect the appropriate IV equipment (normal saline locks not indicated in IO placement).
10. Administer the appropriate fluids and/or drugs.
11. Stabilize the entire intraosseous set-up as if securing an impaled object.
12. In conscious patients experiencing pain with IO infusion, consider administering Lidocaine 2%, 20 mg IO for adult patients, 0.5 mg/kg for pediatrics administer to a maximum of 20 mg. (Lidocaine 2% = 20 mg/mL).
13. If the IO is unsuccessful after 2 attempts, contact Medical Control.

End-Tidal Carbon Dioxide Monitoring (Capnometry and Capnography)[BN(1]

Aliases: ETCO2, End Tidal, Capnography

Definitions: For the purpose of all protocols the mention End Tidal Carbon Dioxide monitoring, these are the definitions:

1. Capnography is a graphic representation of exhaled carbon dioxide. Capnography is a waveform along with a numeric representation. Capnography is the preferred method of airway confirmation and mandatory for ALS airway confirmation. Capnography is also a valuable assessment tool in critically ill patients.
2. Capnometry is simply a numeric representation of exhaled carbon dioxide.
    a. A colorimetric end tidal carbon dioxide monitor is a rudimentary form of capnometry and is acceptable for use in MFR and BLS applications.
    b. Capnometry that includes a numerical read out is preferred to colorimetric capnometry.

Indications:

1. Determining appropriate placement of an airway has taken place.
    A. Capnography **must** be utilized to confirm endotracheal tube placement.
    B. Capnography/Capnometry **must** be utilized on all supraglottic airways.

2. Continuous monitoring of the integrity of the ventilatory circuit.
    A. Capnography **may** be utilized in patients receiving assisted ventilations without advanced airways (used between the face mask and the bag-valve).
    B. Capnography **must** be used for patients on transport ventilators.

3. Monitoring severity of pulmonary disease (bronchospasm) and evaluating response to therapy
    A. Capnography **may** be utilized in patients with respiratory distress, or with signs and symptoms suggestive of acidosis.

4. Monitoring therapy intended to increase coronary blood flow, reflected in CO_2 elimination
    A. Capnography **may** be utilized in patients receiving CPR (even without advanced airway placement), cardiac pacing, or when receiving medications that are intended to increase cardiac output, as a means to determine the physiological effectiveness of interventions
    B. Capnography must be utilized for critically ill patients and for patients with ROSC in ALS units.

Contraindications:

1. There are no absolute contraindications to Capnography/Capnometry

Procedure:

1. Attach the colorimetric device to airway device (supraglottic or between facemask and BVM)
2. Note presence or absence of color change.
    a. If no change in color on device, verify placement of device.
3. Document findings in patient chart.
4. When ALS arrives, switch to capnography (if available) from capnometry.
5. Attach the CO_2 sensor to the monitoring device and to the advanced airway, or between the mask and the bag valve in the ventilated patient that does not have an advanced airway placed, or using the nasal cannula style sensor for patients not receiving assisted ventilation.
6. Note the CO_2 level and waveform characteristics
7. Any loss of CO_2 detection or waveform may indicate an airway or ventilation problem and should be investigated, corrected and documented.
8. Document the use and results in the Patient Care Record (PCR).

Note: If a **"0"** value, no value, or no color change is noted for a patient:

- Ensure that the patient has adequate spontaneous circulation and ventilation, or that effective CPR is being performed
- Verify that the tubing is properly connected to the monitor and that there are no kinks in the tubing.
- If the tubing is found not to be the problem and an advanced airway has been placed, remove the advanced airway immediately and assist ventilations as needed with manual ventilation techniques.

End-Tidal Carbon Dioxide Monitoring (Capnometry and Capnography)[BN(1)]

Aliases: ETCO2, End Tidal, Capnography

Definitions: For the purpose of all protocols the mention End Tidal Carbon Dioxide[BE(C2)] monitoring, these are the definitions:

1. Capnography is a graphic representation of exhaled carbon dioxide. Capnography is a waveform along with a numeric representation. Capnography is the preferred method of ~~detection~~airway confirmation and mandatory for ALS airway confirmation. ~~for ALS providers and will be mandatory for all ALS providers by October 1, 2020.~~ Capnography is also a valuable assessment tool in critically ill patients.
2. Capnometry is simply a numeric representation of exhaled carbon dioxide.
    a. A colorimetric end tidal carbon dioxide monitor is a rudimentary form of capnometry and is acceptable for use in MFR and BLS applications.
    b. Capnometry that includes a numerical read out is preferred to colorimetric capnometry.

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    A. Capnography **may** be utilized in patients receiving assisted ventilations without advanced airways (used between the face mask and the bag-valve).
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6. Note the CO_2 level and waveform characteristics **DELETED ICON**
7. Any loss of CO_2 detection or waveform may indicate an airway or ventilation problem and should be investigated, corrected and documented.
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Note: If a **"0"** value, no value, or no color change is noted for a patient:

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- Verify that the tubing is properly connected to the monitor and that there are no kinks in the tubing.
- If the tubing is found not to be the problem and an advanced airway has been placed, remove the advanced airway immediately and assist ventilations as needed with manual ventilation techniques.