pennsylvania
DEPARTMENT OF HEALTH

Pennsylvania Statewide

Critical Care Transport Protocols

Pennsylvania Department of Health
Bureau of Emergency Medical Services

Effective April 2, 2015

April 2, 2015

Dear EMS Provider:

The Bureau of EMS, Department of Health, is pleased to provide these "Statewide Critical Care Transport Protocols" for the care of patients transported by a licensed critical care transport (CCT) service in Pennsylvania.

The regulations promulgated under the EMS System Act of 2009 includes a critical care transport service within the types of services that an EMS agency can be licensed to provide. The EMS regulations require the crew of a critical care transport ambulance service to be staffed by at least one EMS provider above the AEMT level who has successfully completed a critical transport educational program approved by the Department.

The Statewide Critical Care Transport (CCT) Protocols will guide the patient care that is provided by authorized EMS providers during a critical care interfacility transport. These protocols may only be used by authorized EMS providers who have completed the requirements of a CCT educational program approved by the Department when they are performing skills within the scope of practice of their designated EMS provider-level or the enhanced skills that are permitted for authorized EMS providers who staff a CCT ambulance service. Additionally, authorized EMS providers must only perform skills for which they have been approved and credentialed by the EMS agency medical director.

Since written protocols cannot feasibly address all patient care situations that may develop, the Department expects EMS providers to use their training and judgment regarding any protocol-driven care that would be harmful to a patient. **When the provider believes that following a protocol is <u>not</u> in the best interest of the patient, the EMS provider must contact a medical command physician if possible.** Cases where deviation from the protocol is justified are rare. The reason for any deviation should be documented. All deviations are subject to investigation to determine whether or not they were appropriate. In all cases, EMS providers are expected to deliver care within the scope of practice for their level of certification.

The Department of Health's Bureau of EMS website will contain the most current version of the EMS protocols, the scope of practice for each level of provider, important EMS Information Bulletins, and many other helpful resources. This information can be accessed online at www.health.state.pa.us. The Statewide CCT Protocols may be directly printed or downloaded into a hand-held device for easy reference.

The Department is committed to providing Pennsylvania's EMS providers with the most up-to-date protocols, and to do this requires periodic updates. The protocols will be reviewed regularly, and EMS providers are encouraged to provide recommendations for improvement at any time. Comments should be directed to the Commonwealth EMS Medical Director, Pennsylvania Department of Health, Bureau of EMS, Room 606, 625 Forster Street, Harrisburg, PA 17120.

Richard L. Gibbons
Director
Bureau of Emergency Medical Services
Pennsylvania Department of Health

Douglas F. Kupas, MD
Commonwealth EMS Medical Director
Bureau of Emergency Medical Services
Pennsylvania Department of Health

TABLE OF CONTENTS

GENERAL PROTOCOL PRINCIPLES
STATEWIDE CCT PROTOCOL

Criteria:

A. **These protocols may only be used by authorized EMS providers above the level of AEMT who have completed the requirements of a CCT educational program approved by the Department when they are performing skills within the scope of practice of their designated EMS provider-level or the enhanced skills that are permitted for authorized EMS providers who staff a CCT ambulance service. Additionally, authorized EMS providers must only perform skills for which they have been approved and credentialed by the EMS agency medical director. For the purpose of these protocols, these authorized EMS providers will be referred to as "CCT providers".**

Purpose:

A. The Statewide Protocols are written with the goal of providing the highest quality of EMS patient care to patients treated by EMS providers in the Commonwealth.

B. The Statewide Protocols provide a statewide uniformity and consistency to expected EMS care provided by EMS providers.

C. The Statewide Protocols are written based upon the most current and best scientific evidence related to prehospital/out-of-hospital EMS care, when this evidence is available.

D. The Statewide Protocols are written to provide a balance between expected patient care and some educational information related to possible variations, newer information, and important warnings/ contraindications.

Policy:

A. **Scope of Practice**

1. During an interfacility CCT, an CCT provider who is appropriately credentialed by the EMS agency and EMS agency medical director may perform EMS which may be performed by an EMS provider above the level of AEMT and may perform additional ALS skills of a CCT provider as defined by the expanded scope of practice for critical care transport ambulance services as published in the PA Bulletin and listed on the Bureau of EMS website when following the order of a medical command physician or when using Department-approved transfer and medical treatment protocols as authorized by the EMS agency medical director.

2. The Statewide BLS and ALS Protocols apply to patient care provided by CCT providers unless a statewide CCT protocol or Department-approved regional protocol supersedes the statewide BLS or ALS protocol.

3. The Statewide BLS, ALS, and CCT Protocols apply to patient care provided by air ambulances unless superseded by a Department-approved air ambulance protocol.

B. **General Principles of Care:**

1. The general principles in Statewide ALS Protocol 1000 will apply to CCT providers unless specifically superseded by a CCT or other Department-approved protocol.

C. **Use of medical command**

1. When providing critical care transport level care to a patient, CCT providers may only take orders for patient care from medical command physicians operating within the medical command facility that has been designated to take medical command requests from the CCT service, unless there is an urgent need for medical command contact and the designated facility cannot be contacted with communication equipment available at the time.

2. Medical command may be contacted at any step in patient care, and EMS providers should contact medical command if a patient's condition is unusual and is not covered by a specific protocol, if a patient's presentation is atypical and the protocol treatment may not be the best treatment for the patient, or in any situation where the EMS provider is not sure about the best treatment for the patient.

3. Agency medical directors may place limitations on an EMS provider who requires contact with medical command earlier than defined by the Statewide Protocols. These limitations may be placed upon an individual CCT provider when there is reason to restrict the skills that the provider is credentialed to perform, or the limitations may apply to all agency CCT providers for uncommon skills/procedures that may require online direction.

4. The "Medical Command Contact" Protocol # 9001C defines when medical command must be contacted and when it is appropriate to proceed beyond the "Contact Medical Command" step if communication with a medical command facility cannot be established.

D. Regional and Statewide Medication Lists

1. In addition to the medications included on the state ALS medication list, CCT providers may administer the additional medications that are listed on the Statewide CCT Medication List as published in the Pennsylvania Bulletin and posted on the Bureau of EMS website.

INITIAL PATIENT CONTACT (INTERFACILITY TRANSPORT)
STATEWIDE CCT PROTOCOL

Criteria:

All patients transported from one hospital to another by a CCT service with patient care needs that exceed the scope of practice of a paramedic on an ALS ambulance.

Exclusion Criteria:

A. None

Possible Medical Command Order:

A. Vital signs obtained and recorded less than every 5 minutes.

Procedure:

A. All Patients – Prior to accepting care of patient at sending facility:

1. Evaluate scene safety – see Protocol # 102.

2. Utilize appropriate Body Substance Isolation / Universal Precautions – see Protocol # 103.

3. Perform initial patient assessment (form a general impression of the patient; assess for immediate life-threatening problems or instability; assess responsiveness; assess airway and breathing; assess circulation)

4. Obtain transfer information from sending facility. This is to include but is not limited to:

   a. Bedside report from current rendering provider

   b. Review of appropriate clinical and diagnostic data (e.g. vital sign trends, ECG, laboratory data, diagnostic study/reports)

   c. Review and confirm all interventions intended to be continued during transport (e.g. medications, procedures, interventions).

   d. Review ventilator settings, if applicable.

5. Contact Medical Command (before leaving sending facility) to obtain orders for any medications, procedures or interventions to be continued during transport (for example medication infusions, ventilator settings, etc.), unless otherwise permitted without contact with medical command by a BLS, ALS, or CCT protocol.

B. All Patients – During interfacility transport of patient:

1. Assess and document vital signs at least every 5 minutes from initiation of care to transfer of care at the receiving facility.

2. Contact Medical Command immediately if:

   a. SaO_2 < 95%

   b. SBP < 90

   c. HR < 50 or > 120

   d. RR < 8 or > 30

   e. $ETCO_2$ < 35 or > 45

   f. Patient is otherwise not tolerating ventilator settings

---

Performance Parameters:

A. Appropriate use of personal protective equipment

B. Appropriate vital signs assessment and documentation

C. Appropriate verification and administration of medications

D. Appropriate Medical Command Contact

THIS PAGE INTENTIONALLY LEFT BLANK

INVASIVE BLOOD PRESSURE MONITORING (INTERFACILITY TRANSPORT)

STATEWIDE CCT PROTOCOL

Criteria:

A. Arterial cannulation with continuous pressure waveform display remains the accepted standard for blood pressure monitoring in hemodynamically unstable patients. The most common sites for arterial blood pressure monitoring include the radial and femoral arteries.

Exclusion Criteria:

A. Arterial lines placed in the brachial, ulnar or axillary arteries.

Procedure:

1. If referring facility transducer unit is compatible with transport unit cable, unhook referring facility cable and place transport cable to unit. Cable should be plugged into transport monitor.

 a. Place the transducer at the phlebostatic axis and secure with tape for transport.

 b. Turn to the stopcock off to the patient and open the stopcock port and remove the male end cap using aseptic technique.[1]

 c. Zero the line to obtain a 0 mmHg reading on the transport monitor.

 d. Place the male end cap back on the stopcock port and turn the stopcock upright and observe the waveform and readings.[2]

 e. Evaluate the waveform and numeric values for correlation with recent trends as per patient condition.[3, 4]

2. If the referring facility transducer unit is not compatible with transport unit cable. A compatible transducer unit line must be used.

 a. Spike a saline bag with the pressure tubing removing all the air from the IV bag.

 b. Prime the pressure tubing with the normal saline solution using the pig tail on the transducer. Remove any air bubbles from tubing; replace female end caps with male end caps.

 c. Inflate the pressure bag to the desired pressure (300 mmHg).

 d. Turn the stopcock to the off position at the distal end of the pressure tubing.

 e. Disconnect the referring facility's pressure tubing and connect to the patient's at the stopcock closest to the insertion site. Secure tightly.

 f. Place the transducer at the phlebostatic axis and secure with tape for transport.

 g. Zero the line to obtain a 0 mmHg reading on the transport monitor.

 h. Turn the stopcock upright to obtain the pressure reading.

 i. Evaluate the waveform and numeric values for correlation with recent trends as per patient condition.

3. Evaluate the insertion site for bleeding, swelling or hematoma. [5,6,7,8]

4. Document arterial blood pressure values and/or noninvasive blood pressure readings on the PCR every 5 minutes or at the frequency ordered by MCP.

Notes:

1. When changing the hemodynamic monitoring equipment for transport, use aseptic technique.

2. All stopcocks should be tightly secured and covered with male end caps.

3. If waveform is dampened on monitor, reassess position of the wrist or leg and check the inflation pressure in pressure bag.

4. Patient's with invasive monitoring in the femoral artery should have the head of stretcher maintained at less than thirty degrees with the leg straight to prevent kinking of invasive line.

5. Femoral artery sites will have distal pulses reassessed with patient movement to stretcher and hospital bed.

6. All Insertion sites will be reassessed for signs of bleeding or dislodgement with patient movement.

7. Should the invasive line become dislodged, apply direct pressure and contact medical command.

8. The pressure tubing will be monitored to prevent dislodgement of end caps or tubing that may result in hemorrhage.

Performance Parameters:

A. Review PCR's for documentation of the following.

1. Waveform assessment with monitor strip.

2. Site assessment with all patient movement.

MECHANICAL VENTILATOR MANAGEMENT (INTERFACILITY TRANSPORT)
STATEWIDE CCT PROTOCOL

Criteria:
- A. Patients (Interfacility) with a new advanced airway (orotracheal intubation or supraglottic airway), including both:
  - 1. Patients intubated by an EMS provider.
  - 2. Intubated by hospital staff and currently being ventilated by bag-valve device.
- B. All interfacility patients with existing advanced airways that are being mechanically ventilated prior to arrival.

Exclusion Criteria:
- A. Patients requiring advanced modes of ventilation will require a specialty transport team, including:
  - 1. Patients on modes that cannot be replicated by the transport ventilator (ie PRVC, APRV).
  - 2. Patients on Pressure Control where the driving pressure plus PEEP> 35 cmH$_2$O.
  - 3. Patients on Volume Control where the plateau pressure> 35 or the PIP> 40 cmH$_2$O.
- B. Any patient for whom the following parameters are met on their current ventilator settings:
  - a) SaO$_2$ < 95%.
  - b) Peak airway pressure > 45 cmH$_2$0 (or >30cm H$_2$0 with supraglottic airway).
  - c) ETCO$_2$ > 45 mmHg for patients who are not suspected of elevated intracranial pressure.
  - d) ETCO$_2$ > 40 mmHg for patients with suspected elevated intracranial pressure.
  - e) ETCO$_2$ < 35 mmHg for all patients.
  - f) Patient is otherwise not tolerating initial ventilator settings.

Procedure:
- A. All Patients:
  - 1. Confirm endotracheal tube placement or supraglottic airway placement as per Confirmation of Airway Placement protocol #2032.
  - 2. Support ventilation as needed with BVM and O$_2$.
  - 3. Any patient with advanced airway:
    - a) If sending facility has already established ventilator settings that differ from those listed below, **contact medical command physician** to verify ventilator setting for transport.
    - b) If new advanced airway or sending physician/facility has not established differing settings, initiate the following ventilator settings:
      - 1) Ventilator mode: Assist Control.
      - 2) Tidal volume: 6-8 ml/kg (based on ideal body weight).
      - 3) Rate: 12 breaths/min.
      - 4) FiO$_2$: 100%.[1]
      - 5) PEEP: 5 cm H$_2$0.
  - 4. Interfacility ventilated patients with existing advanced airways:
    - a) Continue previous ventilator settings.
    - b) Contact Medical Command if needed based on parameters below.
  - 5. Ensure adequate sedation
    - a) Confirm dosage and rate of infusions, then **contact medical command physician** for dosing orders for any continued infusions.
    - b) Infusions require use of an IV pump
    - c) If patient is hemodynamically unstable or SBP < 90mm Hg, contact medical command prior to administering sedatives
    - d) Consider administering one of the following medications:
      - 1) Midazolam 0.05 mg/kg IV (Max 5mg)
      - 2) Lorazapam 0.02 mg/kg IV (Max 2mg)
      - 3) Diazapam 0.1 mg/kg IV (Max 10mg)
- B. Contact Medical Command immediately if:
  - 1. SaO$_2$ < 95%
  - 2. Peak airway pressure > 45 cm H$_2$O (or > 30cm H$_2$O with supraglottic airway).
  - 3. ETCO$_2$ > 45 mmHg for patients who are not suspected of elevated intracranial pressure
  - 4. ETCO$_2$ > 40 mmHg for patients with suspected elevated intracranial pressure.
  - 5. ETCO$_2$ < 35 mmHg for all patients
  - 6. Patient is otherwise not tolerating ventilator settings.

Possible Medical Command Orders:

   A. Increase or decrease in sedative medication dosage
   B. Change in ventilator settings and/or mode
   C. Titrate ventilator FiO_2 down to maintain pulse oximetry between 95-99% for patients with ischemic conditions.[1]
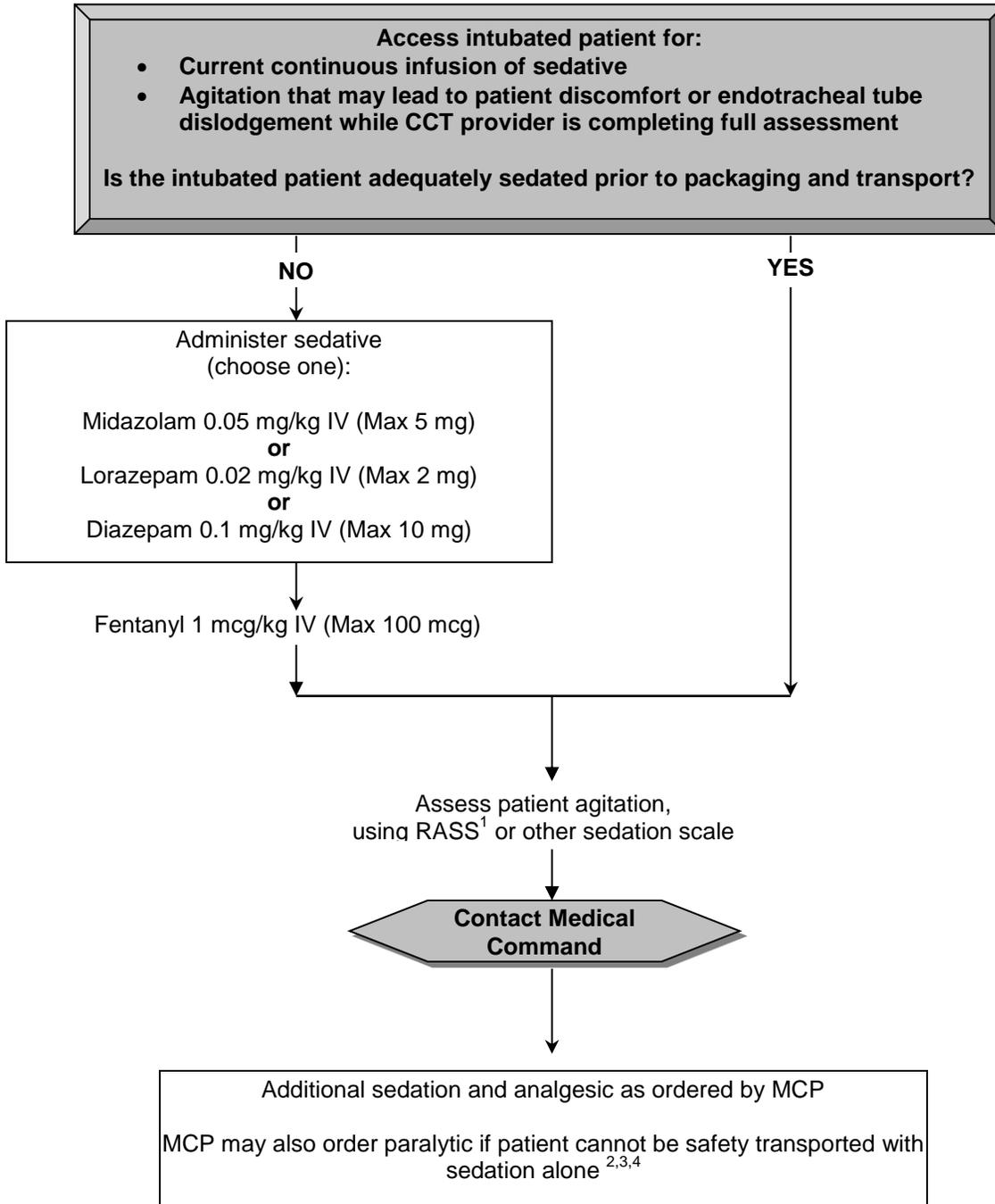
Notes:

   1. Hyperoxygenation may be harmful for patients with ischemic conditions - consider contact with medical command physician for STEMI, acute stroke, and post-cardiac arrest patients.

Performance Parameters:

   A. Proper inclusion into protocol.
   B. Initial ventilator settings appropriate.
   C. Medical command contacted appropriately.

PHARMACOLOGIC SEDATION AND PARALYSIS (INTERFACILITY TRANSPORT) STATEWIDE CCT PROTOCOL

Patients requiring therapeutic paralysis are ideally transferred by a CCT team that includes a PHRN, PE, or PHP. There are times however when this may not be possible due to weather, lack of personnel or other factors. In such situations the transferring physician, in conjunction with the receiving physician may decide it is in the patient's best interest to use an CCT paramedic based on risk/benefit analysis.

Access intubated patient for:
- **Current continuous infusion of sedative**
- **Agitation that may lead to patient discomfort or endotracheal tube dislodgement while CCT provider is completing full assessment**

Is the intubated patient adequately sedated prior to packaging and transport?

NO →

Administer sedative
(choose one):

Midazolam 0.05 mg/kg IV (Max 5 mg)
or
Lorazepam 0.02 mg/kg IV (Max 2 mg)
or
Diazepam 0.1 mg/kg IV (Max 10 mg)

Fentanyl 1 mcg/kg IV (Max 100 mcg)

YES

Assess patient agitation,
using RASS[1] or other sedation scale

Contact Medical Command

Additional sedation and analgesic as ordered by MCP

MCP may also order paralytic if patient cannot be safety transported with sedation alone [2,3,4]

PHARMCOLOGIC SEDATION AND PARALYSIS (INTERFACILITY TRANSPORT)
STATEWIDE CRITICAL CARE TRANSPORT PROTOCOL

Patients requiring therapeutic paralysis are ideally transferred by a CCT team that includes a PHRN, PE, or PHP. There are times however when this may not be possible due to weather, lack of personnel or other factors. In such situations the transferring physician, in conjunction with the receiving physician may decide it is in the patient's best interest to use a CCT paramedic based on risk/benefit analysis.

Criteria:

   A. Patient with advanced airway, 20 minutes or longer after RSI

Exclusion Criteria:

   A. Unstable Patients

      1. Pulse < 50 or > 100 bpm

      2. SBP < 100 or > 200 mmHg

      3. DBP < 50 or > 100 mmHg

      4. Pediatric patient (≤ 14 y/o)

      5. History of seizures

      6. Metabolic acidosis (pH <7.2)

System Requirements:

   A. Paralytic Medications: The use and carrying of paralytic medications on the CCT medication list is optional. The CCT service and EMS agency medical director must approve of the use and carrying of these medications, and the EMS agency medical director must credential the CCT provider to use these medications. EMS agency medical directors may restrict the use of these medications to CCTs where a PHRN, PHPE, or PHP is a member of the CCT crew.

Possible Medical Command Orders:

   A. Sedation, analgesia and/or paralytic medications tailored to patient.

   B. Sedation by continuous infusion, possibilities include:

      1. Midazolam 0.02 – 0.1 mg/kg/hr IV (max 7 mg/hr)

      2. Lorazepam 0.01 – 0.1 mg/kg/hr IV (max 4 mg/hr)

      3. Propofol 5 – 50 mcg/kg/min IV

   C. Administer paralytic, possibilities include: [2,3]

      1. Vecuronium (if available) 0.8 – 1.2 mcg/kg/min IV infusion concurrent with sedative

      2. Rocuronium (if available) 0.01 – 0.012 mg/kg/min IV infusion concurrent with sedative

Treatment:

   A. All patients:

      1. Receive report from ED staff

      2. Review orders with transferring physician

      3. Confirm placement of endotracheal tube by both auscultation and wave-form $ETCO_2$ consistent with protocol #2032.

      4. Confirm status of both sedative and paralytic drips.

      5. Attach all monitors and portable ventilator.

      6. Sedatives and paralytic (if available) medications:[2,3,4]

         a. Confirm dosage and rate of infusion, for both medications given by sending facility by bolus and infusion.

         b. Infusion requires use of an electronic IV pump.

         c. Perform RASS[1] or other sedation scale.

    d.   Document best neurologic exam prior to sedation or paralysis

7.   Contact Medical Command for continuous infusion orders.

8.   Monitor vital signs every 5 minutes. Documented vital signs/monitor strips every 5 minutes.

9.   Contact medical command for patient hypotension, awakening, movement, deterioration or extubation. Document all medical command contacts and attempted contacts.

Notes:

1.   Richmond Agitation Sedation Scale (RASS) is included in Appendix Resource 1.

2.   All pharmaceutically paralyzed patients must have adequate sedation.

3.   Use of long acting paralytics in patients with head trauma, intracranial hemorrhage and spine injury should be avoided or used with caution

4.   Use of anticonvulsants in head trauma is controversial.

Performance Parameters:

A.   The EMS agency's QI committee must review every case of transport when a CCT paramedic has administered a paralytic or continuous infusion of a sedative.
      1.   Appropriate medication use and dosing
      2.   Medical command orders for medications
      3.   Appropriate orders and prescriptions for controlled substances
      4.   Appropriate monitoring of the patient (continuous capnography with recorded graphs, frequency of vital signs including pulse oximetry, appropriate use of medical command when vital signs indicate, etc.

B.   The Regional EMS QI committee must review the use of paralytics or continuous infusions of sedation by CCT services within the region.

THIS PAGE INTENTIONALLY LEFT BLANK

CHEST TUBE MANAGEMENT (INTERFACILITY TRANSPORT)
STATEWIDE CCT PROTOCOL

Criteria:

    A. Chest tubes may be placed for evacuation of air or fluid from the pleural space. The chest tubes are placed to a water seal drainage system which provides for escape of air or fluid into a drainage bottle.

Exclusion Criteria:

    A. Mediastinal chest tubes

Procedure:

    1. Document the reason for the placement of the chest tube.
    2. Make sure the chest tube and tubing are secured to the patient with tape.
    3. Assess the function of the chest tube and drainage system before initiating patient transport.[1,2,3,4]
    4. The drainage system should be lower than the patient's chest and remain upright at all times.
    5. Evaluate breath sounds and vital signs and reassess for development of a tension pneumothorax.
    6. All tubing and connections should be monitored with all patient movements to maintain patency of the system.

    a. Ensure the dressing remains dry and occlusive.

    b. Ensure there are no kinks or dependent loops (e.g., a loop or turn in the tubing that forces the drainage to move against gravity to reach the collection chamber) in the tubing.

    c. Amount of water in the water seal chamber; if the water level appears low ask a staff member if it requires refilling prior to departure.

    7. The tubing should not be "milked" as it increases intra pleural pressure.
    8. Frequently assess vital signs and the amount and color of the drainage from the drainage system. Document drainage amount during transport.
    9. Assess for pain and treat per Musculoskeletal Trauma protocol #6003.
    10. **Contact Medical Command** for any of the following:
        a. Chest tube inadvertently dislodged
            i. If entire chest tube is inadvertently dislodged from the chest, cover with a sterile occlusive dressing.
            ii. If a tension pneumothorax develops, burp one corner of the dressing. If releasing dressing is unsuccessful and hypotension, consider needle decompression.
        b. Excessive constant bubbling in the water seal chamber, which may indicate an air leak in the drainage system. Leaking and trapping of air in the pleural space may result in tension pneumothorax.
        c. If the drainage system is crushed or broken open or the chest drain becomes detached from the chest tube (do not reconnect – you may be instructed to place a Heimlich valve to the end of the chest tube or place the end in a bottle of sterile water to create a seal.
        d. Sudden increase in bloody drainage from a hemothorax.

Notes:

    1. Gentle rise and fall of the water level, which corresponds with the patient's respirations is called "tidalling" and indicates that the system is functioning properly.
    2. Continuous air bubbling in the water seal chamber confirms a constant air leak from a tube connection or from the patient's chest (e.g., unresolved pneumothorax).
    3. Intermittent bubbling in the water seal chamber confirms an intermittent air leak from the patient's chest.
    4. No air bubbling in the water seal chamber confirms no air leak from the patient's chest and no air leak from a tube connection.

Performance Parameters:

    A. Review for documentation for reason for chest tube placement, assessment of lung sounds and proper functioning of the drainage system.

    B. Review documentation for administration of analgesia and sedation.

THIS PAGE INTENTIONALLY LEFT BLANK

ANTIMICROBIAL THERAPY– ADULT (INTERFACILITY TRANSPORT)
STATEWIDE CRITICAL CARE TRANSPORT PROTOCOL

Criteria:

    A. Diagnosis of infection or suspected infection at a referring facility (e.g. cellulitis, meningitis, pneumonia, and urinary tract infection).

Exclusion Criteria:

    A. None

Procedure:

    1. For patients with suspected sepsis and/or shock, refer to ALS Protocol #7005 (Shock / Systemic Inflammatory Response Syndrome).

    2. If patient is receiving or has been ordered to immediately receive an antibiotic listed below at the referring facility:

    a. Verify and document that the medication has been ordered by a physician at the referring facility.

    b. Verify and document the ordered dose and rate of the medication. Refer to list below for approved antibiotics and dosages. If the dose or rate is outside the parameters outlined below, contact Medical Command prior to the initiation or continuation of this medication.

    c. Verify that the patient does not have a known allergy to that medication or class of medications. If patient has an allergy to that medication or class of medications, contact Medical Command.

    d. If the above parameters are met, continue administration of the medication at the same dose and rate as ordered at the referring facility.[1,2]

    3. Monitor the patient for any signs of allergic reaction. These may include rash/hives, itching, difficulty breathing, wheezing, tongue/lip swelling, or hypotension. If signs of an allergic reaction occur, stop the medication and contact Medical Command. Follow the Allergic Reaction protocol #4011 as needed.

    4. Contact Medical Command if:

    a. Antibiotic administration at the referring facility is outside of the dosing parameters listed below.

    b. There is any concern about the medication order or administration.

Notes:

    1. If an antibiotic infusion is already running at a receiving facility, the rate of administration should be adjusted so that the total dose would be administered over the specified time of infusion in this protocol, unless ordered differently by Medical Command. For example, if patient is receiving Azithromycin (Zithromax) 500 mg IV and half of the dose has already been administered, the remaining 250 mg should be administered over 30 min.

    2. IV Ceftriaxone (Rocephin) should not be mixed with IV calcium-containing solutions and/or administered via the same IV line as IV calcium-containing products.
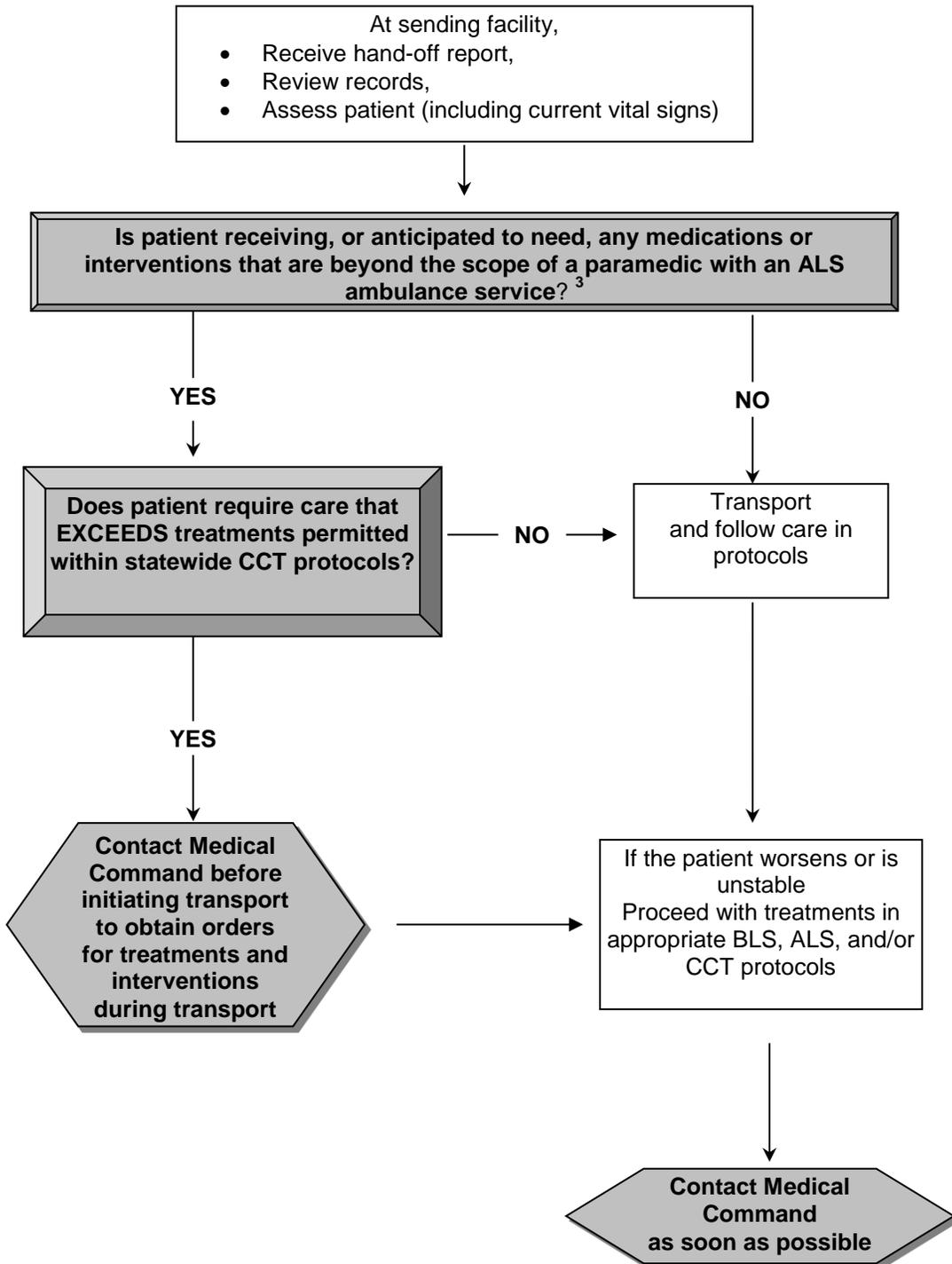

Performance Parameters:

    A. Appropriate Medical Command contact.

    B. Assessment for allergic reaction from medication.

Approved Antibiotics:

Medication	Class	Dosing Range	Time of Infusion[B]
Ampicillin (Omnipen)	Penicillins	1 – 2 gm	30 min
Ampicillin/Sulbactam (Unasyn)	Penicillins	1.5 – 3 gm	30 min
Azithromycin (Zithromax)	Macrolides	500 mg	60 min
Aztreonam (Azactam)	Other	0.5 – 2 gm	30 min
Cefazolin (Ancef)	Cephalosporins	0.25 – 2 gm	30 min
Cefepime (Maxipime)	Cephalosporins	0.5 – 2 gm	30 min
Cefotaxime (Claforan)	Cephalosporins	0.5 – 2 gm	30 min
Cefotetan (Cefotan)	Cephalosporins	0.5 – 3 gm	30 min
Cefoxitin (Mefoxin)	Cephalosporins	1 – 2 gm	30 min
Ceftazidime (Fortaz, Tazicef)	Cephalosporins	0.5 – 2 gm	30 min
Ceftriaxone (Rocephin)[C]	Cephalosporins	1 – 2 gm	30 min
Cefuroxime (Zinacef)	Cephalosporins	0.75 – 1.5 gm	30 min
Ciprofloxacin (Cipro)	Fluroquinolones	200 – 400 mg	60 min
Clindamycin (Cleocin)	Other	300 – 900 mg	30 min
Doxycycline (Vibramycin)	Tetracyclines	100 mg	60 min
Ertapenem (Invanz)	Carbapenems	1000 mg	30 min
Gentamycin (Garamycin)	Aminoglycosides	1 – 7 mg/kg	30 min
Levofloxacin (Levaquin)	Quinolones	250 – 500 mg 750 mg	60 min 90 min
Linezolid (Zyvox)	Other	600 mg	60 min
Meropenem (Merrem)	Carbapenems	500 – 1000 mg	30 min
Metronidazole (Flagyl)	Other	250 – 750 mg	60 min
Moxifloxacin (Avelox)	Quinolones	400 mg	60 min
Nafcillin (Nafcil, Unipen)	Penicillins	0.5 – 2 gm	30 min
Oxacillin (Bactocill, Prostaphilin)	Penicillins	0.25 – 2 gm	30 min
Penicillin G Potassium/Sodium	Penicillins	2 – 4 million units	60 min
Piperacillin/Tazobactam (Zosyn)	Penicillins	3.375 – 4.5 gm	30 min
Ticarcillin/Clavulanate (Timentin)	Penicillins	3.375 – 4.5 gm	30 min
Tigecycline (Tygacil)	Other	50 – 100 mg	60 min
Tobramycin	Aminoglycosides	1 – 7 mg/kg	30 min
Trimethoprim/Sulfamethoxasole (Bactrim, Septra)	Sulfonamides	10 – 20 mg/kg	60 min
Vancomycin Hydrochloride	Other	0.5 – 1 gm 1.5 – 2 gm	60 min 120 min

MEDICAL COMMAND CONTACT (INTERFACILITY TRANSPORT)
STATEWIDE BLS PROTOCOL

At sending facility,
- Receive hand-off report,
- Review records,
- Assess patient (including current vital signs)

↓

Is patient receiving, or anticipated to need, any medications or interventions that are beyond the scope of a paramedic with an ALS ambulance service? [3]

YES ↓   **NO** ↓

Does patient require care that EXCEEDS treatments permitted within statewide CCT protocols? → **NO** → Transport and follow care in protocols

YES ↓

Contact Medical Command before initiating transport to obtain orders for treatments and interventions during transport →

If the patient worsens or is unstable
Proceed with treatments in appropriate BLS, ALS, and/or CCT protocols

↓

Contact Medical Command as soon as possible

MEDICAL COMMAND CONTACT (INTERFACILITY TRANSPORT)
STATEWIDE CRITICAL CARE TRANSPORT PROTOCOL

Purpose of Medical Command contact:

A. When providing critical care transport level care to a patient, CCT providers may only take orders for patient care from medical command physicians operating within the medical command facility that has been designated to take medical command requests from the CCT service, unless there is an urgent need for medical command contact and the designated facility cannot be contacted with communication equipment available at the time.

B. This protocol establishes standards for critical care transport (CCT) providers accepting physician orders while carrying out interfacility (between hospitals or extended care facilities) patient transfers during which out-of-facility CCT treatment is necessary or should be anticipated.

System Requirements:

A. The Critical Care Transport Agency must have an agreement with a specific medical command facility for 24/7 on-line medical direction of CCT, to address initial orders required prior to transport and changes in patient condition during the transport. There must be a reliable method of contact between the CCT crew and the medical command facility through the expected geographic route of the transport, where possible.

Prior to interfacility transport:

A. Responsibilities of the sending facility

   1. The sending facility must secure an accepting facility and accepting physician.

   2. Under the Emergency Treatment and Active Labor Act (EMTALA), it is the responsibility of the sending facility to assure that appropriately trained personnel and equipment are available to ensure an appropriate patient transfer.

   3. The ambulance crew must secure from the sending facility a patient care report and pertinent medical records. This should not delay definitive care for time-dependent conditions. Information obtained should include:

      a. Copies of records from sending facility

      b. Copies of images from sending facility, unless already available to receiving facility

      c. Complete past and present medical history

      d. Current treatments/medications being administered

B. The sending/transferring physician may provide recommendations for care but cannot provide orders to the transferring team, unless the sending physician is a medical command physician at the medical command facility that is identified for medical command contact by the CCT service.

   1. Recommendations for care must be discussed with the CCT agency MCP and issued as an order.

   2. The CCT provider may not treat the patient with any medication that is not on the current list of approved medications for ALS and CCT services as published in the *Pennsylvania Bulletin* and posted on the DOH website.

C. A medical command physician must be contacted before the ambulance leaves the sending facility if any of the following conditions apply:

   1. Patient condition exceeds the scope of a CCT provider (In this case, a PHRN, PHPE, PHP, or other appropriate healthcare provider with appropriate physician oversight must also accompany the patient during the transport, and this provider must take responsibility for any skills, medications, or treatments that exceed the scope of practice of the CCT provider).

   2. Patient condition does not fit an existing CCT protocol.

3. Patient condition is exceeds the parameters of an existing CCT protocol.

4. Medications are ordered outside of the concentrations or infusion rates that are permitted by medical treatment protocols.

5. The prehospital practitioner has any concern that the practitioner's experience, ability, or available equipment may not meet the patient's anticipated needs during the transport.

D. The ambulance service, when committed to an interfacility transfer, must notify the appropriate public service answering point (PSAP) if the ambulance service will not have another ambulance available for an emergency 911 request in the relevant service area during the transfer.

E. The crew of the ambulance must consider the continuous availability of medical command during the transfer before it leaves the sending facility.

F. The CCT provider must make arrangements for continuing medical command.

During the transfer:

A. Consultation with a MCP should occur as outlined in the protocols.

B. Additionally, contact a MCP if:

1. The patient has persistent abnormal vital signs after initial interventions.

2. There is any concern regarding the appropriateness of any specific protocol-driven intervention.

3. MCP consultation is requested by the referring physician or hospital.

4. Patient is complex or requiring resources beyond those that are routinely employed.

5. There are questions about the patient condition or if it is anticipated that immediate care requirements will exceed the scope of the CCT clinical protocols.

6. There is a desire to change the planned mode of transport.

7. The patient is determined to be dead or resuscitative efforts will be terminated.

8. A patient is being diverted to a facility other than that which was initially anticipated due to clinical condition.

9. There is a question regarding the destination of a patient.

C. If a facility staff member is accompanying the patient, the prehospital practitioner who contacts MCP shall advise the physician of the facilities staff personnel's presence and level of training (i.e. physician, CCU RN, OB RN, CRT, etc). The facility staff person should also have the ability to communicate with the MCP.

D. If during the transport, the MCP cannot be contacted due to communication problems, and if the patient requires advanced care other than those specified by the previous orders:

1. The ambulance crew will follow the most appropriate medical protocol and continue attempts to contact medical command.

2. If contact cannot be made with medical command physician, the ambulance crew may also contact another medical command facility direction.

3. When medical command cannot be reached, the ambulance crew shall consider the need to divert to a closer receiving facility if available and appropriate.

4. At the first contact with medical command, the crew will advise what was done while communications were disrupted.

5. The crew shall document the circumstances surrounding the communication problem , the care provided, what justified the care, and the patient's response to therapy. It also should be documented if eventual contact with medical command is made.

Long distance transfers:

A. A CCT agency must work with its medical director and medical command facilities to identify the facility that will be contacted for interfacility transports. The CCT agency must arrange an agreement with a medical command facility to serve in this capacity.

B. It is the responsibility of the transporting ALS ambulance service to ensure the ability to contact medical command through the duration of the transport.

C. The service may be able to assure continuous command capability by calling the prearranged medical command facility by using a cellular telephone so that coverage will not be disrupted during the transport.

Medical Command:

A. A medical command order (whether written, verbal, or online) may only be given by a MCP functioning in the capacity under the auspices of a medical command facility.

B. A prehospital practitioner may only follow the orders of a sending physician if these orders are consistent with the existing CCT protocols and authorized by a medical command physician.

C. A prehospital practitioner shall also follow the orders of the agency MCP.

Performance Parameters:

A. 100% audit of cases where treatments beyond the "contact medical command" box were performed after unsuccessful contact with medical command.

B. Documentation of medical command facility contacted, medical command physician contacted, and orders received in every case where medical command is contacted.

C. Documentation of orders and prescriptions where required for administration of controlled substances.

RESOURCE TABLES

RICHMOND AGITATION SEDATION SCALE (RASS)
STATEWIDE CCT PROTOCOLS

Score	Term	Description
	Richmond Agitation Sedation Scale	
Score	**Term**	**Description**
	STEP 1: If awake, observe patient and assign initial score (0 to +4)	
+ 4	**Combative**	**Overly combative, violent, immediate danger to staff**
+ 3	**Very Agitated**	**Pulls or removes tube(s) or catheter(s), aggressive**
+ 2	**Agitated**	**Frequent non-purposeful movement, fights ventilator**
+ 1	**Restless**	**Anxious, movements not aggressive**
0	**Alert and Calm**	
	STEP 2: Not alert, state patient's name and ask to "open eyes and look at me".	
- 1	**Drowsy**	**Not fully alert, has sustained awakening (eye opening/contact) to voice (>10 seconds)**
- 2	**Light Sedation**	**Briefly awakens with eye contact to voice (< 10 seconds)**
- 3	**Moderate Sedation**	**Movement or eye opening to voice, but no eye contact**
	STEP 3: No response to verbal stimulation, then physically stimulate patient	
- 4	**Deep Sedation**	**No response to voice, but movement or eye opening to physical stimulus**
- 5	**Unarousable**	**Patient has no response to any stimulation**

APPENDICES