

This manual and its contents are
dedicated to the memory of

Dr. Edward J. Straub

Founding Medical Director

1977 to 1999

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Subject: **AGE CATEGORY DEFINITIONS AND BASIC ALS TREATMENTS**
Section #: **300.01**
Issue Date: **March 21, 2011**
Revision Date:
Approved By:  **Michael Lozano, Jr., M.D., HCFR Medical Director**

1. Basic ALS Treatments
 - a. Basic ALS treatments are defined as:
 - i. Primary survey/initial assessment
 - ii. Secondary survey/focused history and physical exam
 - iii. Vital signs
 - iv. Oxygen therapy
 - v. EKG (12-Lead)
 - vi. Pulse Oximetry
 - vii. IV access
2. Age Category Definitions – This policy provides guidance when it is necessary to make a differentiation between neonatal, infant, and adult patients in selecting appropriate policies:
 - a. **Neonate:** Any patient < 28 days of age and/or < 5 kg (11 lbs) in body weight.
 - i. The difference between neonates and infants, for the purpose of these policies, is based on age.
 - ii. A neonate is in a physiologic transition from mechanisms used in-utero to those that are used after delivery and severance of the umbilical cord.
 - iii. Thus, a patient less than twenty eight (28) days old will be considered a neonate (State of Florida definition).
 - b. **Infant:** Any patient < 1 year of age and \geq 28 days of age (also \geq 5 kg body weight).
 - i. Infants have functional differences from older children that relate to their developing physiology and their poorly developed intellect.
 1. The ability to communicate and understand is extremely limited.
 2. This is a distinction based on age, not size.
 - c. **Pediatric:**
 - i. The term pediatric is used in these Policies as a collective term that includes neonates, infants, children, and adolescents.
 - ii. **Pediatric Patient – Legal Standpoint:** Any patient < 18 years of age.
 1. Exception: emancipated minors, pregnant minors, and/or married minors.
 - iii. **Pediatric Patient – Medical Standpoint:** Patients who weigh < 50 kg (110 lbs).
 1. Drug dosages for pediatric patients assume a body weight < 50 kg.
 - iv. **Pediatric Patient – Trauma Standpoint:** Any patient \leq 15 years of age.
 1. Anatomical and physical characteristics of a person this age.
 - d. **Adult:**
 - i. **Adult Patient – Legal Standpoint:** Any patient \geq 18 years of age.
 - ii. **Adult Patient – Medical Standpoint:** Any patient \geq 50 kg (110 lbs).
 1. Drug dosages for adult patients assume a body weight \geq 50 kg.
 - iii. **Adult Patient – Trauma Standpoint:** Any patient > 15 years of age.
 1. Anatomical and physical characteristics of a person this age.
3. For medical purposes differences between neonates, infants, and children may not appear in the protocols.
 - a. Without specific notations all these groups are treated similarly.
 - b. Age in these patients may still be an important factor in the history, influencing the probability of accidental ingestion of poisons or the occurrence of certain types of accidents.

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

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4. A more subtle distinction, from a medical perspective, is made between adolescents and adults.
 - a. Adolescents are nearly equal physiologically to adults apart from age and size.
 - b. Most significantly; drug dosages for adults assume a body size between 50 – 200 kg (110 – 440 lbs) and drug dosages for pediatric patients assume a body size < 50 kg (110 lbs).

Section: **Medical Operations General**
Subject: **BAKER ACT**
Section #: **300.02**
Issue Date: **March 21, 2011**
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1. The Baker Act (F.S. Chapter 394 – Mental Health) relates to the authorization of police, physicians, and the courts to dictate certain medical care for persons who pose a threat to themselves or others.
 - a. The purpose of this policy is to describe the Act and how it relates to Hillsborough County Fire Rescue.
 - b. Special Note: The information presented in this policy is selected information from Florida Statutes Chapter 394.
 - i. Any additional questions to legal reference(s) made in your management of patient care should be though Medic-1 contact.
 - ii. Additional information about this law should be researched using Florida Statutes or legal counsel.
2. F.S. Chapter 394 – Mental Health
 - a. F.S. 394.461 Facilities – Transfer of Patients
 - i. Criminally charged or convicted mentally ill persons – no receiving facility shall be required to accept for examination and treatment any person with pending felony charges involving a crime of violence against another person.
 - b. F.S. 394.463 – Involuntary Examination
 - i. Criteria – A person may be taken to a receiving facility for involuntary examination if there is reason to believe he or she is mentally ill and because of his or her mental illness:
 1. The person has refused voluntary examination after conscientious explanation and disclosure of the purpose of the examination, - OR -
 2. The person is unable to determine for himself or herself whether examination is necessary, - AND -
 3. Without care or treatment, the person is likely to suffer from neglect or refusal poses a real and present threat of substantial harm to his or her well-being; and it is not apparent that such harm may be avoided through the help of willing family members of friends or the provision of other services; - OR -
 4. There is a substantial likelihood that without care or treatment the person will cause serious bodily harm to himself or herself or others in the near future, as evidenced by recent behavior.
3. Involuntary Examination:
 - a. Initiation of involuntary examination – An involuntary examination may be initiated by any one of the following means:
 - i. A court may enter an ex parte order stating that a person appears to meet the criteria for involuntary examination, giving the findings on which that conclusion is based.
 1. The ex parte order for involuntary examination must be based on sworn testimony, written or oral.
 2. If other less restrictive means are not available, such as voluntary appearance for outpatient evaluation, a law enforcement officer, or other designated agent of the court, shall take the person into custody and deliver him or her to the nearest receiving facility for involuntary examination.
 3. The order of the court of the court shall be made a part of the patient's record.

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4. No fee shall be charged for the filing of an order under this subsection.
 5. Any receiving facility accepting the patient based on this order must send a copy of the order to the agency for Health Care Administration on the next working day.
 6. The order shall be valid only until executed or, if not executed, for the period specified in the order itself.
 7. If no time limit is specified in the order, the order shall be valid for 72 hours after the date the order was signed.
- ii. A law enforcement officer shall take a person who appears to meet the criteria for involuntary examination into custody and deliver the person, or have him or her delivered, to the nearest receiving facility for examination.
 1. The officer shall execute a written report detailing the circumstances under which the person was taken into custody, and the report shall be made a part of the patient's clinical record.
 2. Any receiving facility accepting the patient based on this report must send a copy of the report to the Agency for Health Care Administration on the next working day.
 - iii. A physician, clinical psychologist, psychiatric nurse, or clinical social worker may execute a certificate stating that he or she has examined a person within the preceding 48 hours and finds that the person appears to meet the criteria for involuntary examination and stating the observations upon which that conclusion is based.
 1. If other less restrictive means are not available, such as voluntary appearance for outpatient examination, a law enforcement officer shall take the person named in the certificate into custody and deliver him or her to the nearest available receiving facility for involuntary examination.
 2. The law enforcement officer shall execute a written report detailing the circumstances under which the person was taken into custody.
 3. The report and certificate shall be made a part of the patient's clinical record.
 4. Any receiving facility accepting the patient based on this certificate must send a copy of the certificate to the Agency for Health Care Administration on the next working day.

Section: Medical Operations General
Subject: CONTROLLED SUBSTANCES
Section #: 300.03
Issue Date: February 1, 2013
Revision Date: December 1, 2017
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1. Crew Change Inventory / Transfer of Control

- a. The quantity, concentration, condition and expiration date of each controlled substance shall be jointly inventoried daily by the off-going and on-coming Rescue Officer (Rescue Unit) or Stand Alone qualified Fire Medic, D/E or Captain (Suppression Unit). In the event no Rescue Officer or Stand Alone qualified personnel are available as identified, the Suppression Captain shall be responsible for this function until such time as a qualified Stand Alone employee/Rescue Officer becomes available (i.e. Fire Medic goes home emergency leave and no other Stand Alone qualified personnel immediately available). This joint inventory will be conducted in a face-to-face manner. **If there is a change in personnel responsible for the controlled substances at any point during the shift, the same procedures shall be followed.**
 - i. The quantity and concentration shall be recorded in the Controlled Substance Log.
 - ii. Until the crew change inventory/transfer of control, as detailed above, has been completed and the log book is signed by each of the above identified responsible personnel, the off-going employee responsible for the controlled substances is deemed to still be on duty and responsible to respond to calls as dispatched. The completion of this process shall in no way delay the response of the unit to a dispatched call.
 - iii. Any discrepancy (missing signature, incorrect entry, etc.) noted in the Controlled Substance Log book shall be immediately reported to the Battalion Chief and a tracking form initiated.

2. Drug Compartment

- a. Medications carried by HCFR units that are regulated by the U.S. Food and Drug Administration as a controlled substance shall be securely locked in the apparatus drug compartment, except during the crew change inventory / transfer of control as detailed above or when administering a drug to a patient. **No other access is authorized.**
 - i. Although Etomidate does not fall into the above classification, it shall be treated similarly.
- b. A unit specific Controlled Substance Log shall be kept in the apparatus drug compartment.
- c. Apparatus without an electronic safe shall use pre-identified storage with a serialized key
- d. Electronic safes shall be the primary storage compartment on units where they have been installed

3. Key Custody and Control

- a. The Serialized Key which provide access to controlled substances shall be maintained by the Rescue Officer (Rescue Unit) or Stand Alone qualified Fire Medic, D/E or Captain (Suppression Unit).
 - i. The key, where applicable, shall be passed from the off-coming Rescue Officer (Rescue Unit) and Stand Alone qualified Fire Medic, D/E or Captain(Suppression Unit) to the on-coming Rescue Officer, Fire Medic, D/E or Captain after the crew change inventory / transfer of control procedures as detailed above have been completed.
 - ii. At no time shall the Controlled Substance key be left unattended. The key shall remain in the sole possession of the documented responsible employee, as described above, at all times.

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4. Electronic Safe Individual PIN access code

- a. Individual PIN code access numbers to the electronic drug safe are **NOT** to be shared with anyone under any circumstances, nor shall they be stored in such a manner as to allow anyone else access to or knowledge of the issued individual PIN access code. Any breach of individual PIN access code security must be immediately reported to the Battalion Chief, Shift Commander, and Rescue Chief.
- b. The department shall randomly audit access data.

5. Controlled Substance Usage and Documentation

- a. When a controlled substance is used:
 - i. Every effort shall be made to use medications with the earliest expiration date first.
 - ii. A Controlled Substance Usage Form (FF-307) shall be completed and attached to a printed copy of the ePCR for each vial of medication used.
 1. A scanned copy of the FF-307 form(s) should also be attached to the ePCR prior to closing the report.
 - iii. Any medication remaining after use in a partially used vial will be disposed of in the emergency room, under the supervision of a nurse or physician, with the witness signing the FF-307 and also the Controlled Substance Log.
 1. In the event that a nurse or physician is unable, or refuses, to witness the disposal of the remaining medication or refuses to sign the FF-307 or Controlled Substance Log, a second on-duty HCFR crew member may serve as witness to the disposal.
 - a. If an on-duty HCFR crew member serves as witness to the disposal, a memo detailing the circumstances necessitating that action shall be attached to the FF-307 and a copy of both documents shall be scanned into the ePCR.
 2. In the event the entire amount of medication in the vial has been used and hospital staff either refuses to or is unavailable to witness the disposal of the empty container, then another member of the crew shall serve as the witness to disposal.
- b. Under no circumstances shall a controlled substance be transferred to another agency.
- c. Controlled substances may only be administered by on-duty HCFR paramedics as authorized by the Medical Director.
- d. At no time shall Controlled Substances be left unsecure to include during the transfer of patient care.

6. Expired and/or Damaged Controlled Substances

- a. Controlled substances that are within **two weeks** of expiration will be returned intact to HCFR Headquarters by the Battalion Chief. This shall be accomplished prior to expiration date of the medication.
 - i. An FF-307 will be completed indicating the expiration date and concentration for each vial.
 - ii. An entry shall be completed on the Controlled Substance Log indicating "*Expired Drug*" in the patient section.

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- b. In the event Logistics personnel are unable to replace the controlled substance upon presentation, Logistics personnel will sign the FF-307 indicating replacement pending and provide the Battalion Chief a photocopy for record keeping purposes.
- c. In the event a controlled substance vial or its packaging is damaged and tampering is not suspected, that package/vial shall be immediately secured and returned unopened to headquarters by the Battalion Chief with an FF-307 indicating a damaged drug.
 - i. An entry will be completed on the Controlled Substance Log indicating "*Damaged Drug*" in the patient section.
 - ii. Damaged controlled substances should immediately be reported to the Battalion Chief upon discovery.
 - iii. The officer(s) who discover the damage will complete and attach a memorandum to the FF-307 detailing the damage and events surrounding the damaged package/vial.
 - iv. The FF-307 and associated statements shall be reviewed by the Rescue Chief or designee prior to replacement being issued.
 - v. Damaged drugs/vials may be randomly tested by an independent lab for verification purposes.

7. Replacement Procedure

- a. When the proper paperwork has been processed, replacement packages will be delivered by the Battalion Chief.
- b. The quantity, concentration, condition and expiration date of each controlled substance shall be jointly inventoried by the Battalion Chief and issuing Logistics personnel prior to accepting the controlled substance for delivery.
 - i. Upon receipt of a replacement drug, the transaction will be recorded in the receiving unit's Controlled Substance Log.
 - ii. The quantity, concentration, condition and expiration date of each controlled substance shall be jointly inventoried by the Battalion Chief and receiving officer prior to completing the transaction.
 - iii. The receiving officer and the Battalion Chief must ensure the paperwork corresponds to the correct drug, patient, and usage, and then sign the Controlled Substance Log indicating a replacement has been made.
 - iv. The paperwork indicating transaction completion as detailed above shall be returned to the Logistics Section by no later than the next business day.
- c. Controlled Substances being transported in the Battalion Chief vehicle shall be secured in the appropriate vehicle mounted lock box until such time as they are exchanged. The vehicle lock box shall be inspected jointly in a face to face manner by the off-going and on-coming Battalion Chief to ensure knowledge of its contents and proper distribution.
 - i. The key shall be passed from the off-coming Battalion Chief to the on-coming Battalion Chief after the joint inspection has occurred.
 - ii. At no time shall the Controlled Substance key be left unattended. The key shall remain in the sole possession of the Battalion Chief at all times.
- d. If an Engine Company uses a controlled substance prior to the rescue arriving on the scene, the rescue crew will replace the used drug to the Engine Company when possible, provided the rescue unit has sufficient stock to do so and time permits.
 - i. The remainder of the controlled drug will be transferred to the rescue crew which will allow the rescue crew to have the disposal of the unused portion witnessed at the hospital.

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- ii. In an urgent setting, this procedure may be deferred.
- e. On the first and fifteenth calendar day of every month, the Controlled Substance Log will be checked for outstanding medications and upcoming expirations for the next month noted for timely replacement.
- i. Any medication outstanding for more than two weeks will be reported to the Battalion Chief for follow-up.
- f. Should discrepancies be discovered at any time during the replacement process, the controlled substance in question shall be secured with the Battalion Chief and returned to logistics until the situation can be clarified and/or resolved.

8. Missing/Tampered With Controlled Medication

- a. In the event a controlled substance is discovered to be missing or appears to have been tampered with, immediate notification to the following chief officers will be made: Battalion Chief, Shift Commander, and Rescue Division Chief. The unit should be placed out-of-service until such time as an investigation can be initiated by fire rescue personnel and/or law enforcement as deemed appropriate by the Fire Chief or his designee. During such an event, all crew members from both affected shifts and all apparatus in that station shall remain at the station in a paid status until released by the Shift Commander.

9. The department shall randomly audit Controlled Substance Logs and inspect the Controlled Substance container and its contents.

10. PAR levels:

- a. Suppression apparatus :
- i. Two (2) Morphine
ii. Two (2) Valium
iii. Two (2) Fentanyl
iv. Two (2) Versed
v. Two (2) Ketamine
- b. Rescue :
- i. Five (5) Morphine
ii. Five (5) Valium
iii. Eight (8) Fentanyl
iv. Five (5) Versed
v. Five (5) Etomidate
vi. Five (5) Ketamine
vii. Five (5) short term paralytic
viii. Five (5) long term paralytic

Section: Medical Operations General
Subject: END OF LIFE POLICY
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1. **No CODES – MEDICAL:**

- a. The American Heart Association recognizes several situations in which it is permissible to withhold (i.e. not initiate) CPR. These conditions are termed "evidence of irreversible death" and are as follows:
 - i. Decapitation
 - ii. Rigor mortis
 - iii. Dependent lividity
 - iv. Tissue decomposition
- b. HCFR Paramedics, EMTs, and First Responders may upon the identification of "evidence of irreversible death", withhold resuscitative efforts (CPR).
 - i. In all cases where CPR is withheld, an HCFR Paramedic will continue to the scene to complete documentation, which will address the following areas:
 1. Absence of pulse
 2. Apnea
 3. No heart sounds or electrical activity on monitor (asystole) or wide complex tachycardia with a rate less than 20 beats per minute
 - a. Rhythm strip must be included in documentation.
 4. Any and all conditions listed in section (1)(b) of this policy that are applicable
- c. It is understood that sometimes first responders, acting under their own agency's guidelines and without the benefit of an EKG monitor, may have started CPR on a person who fits the criteria in section (1)(a) of this policy.
 - i. Paramedics, EMTs, and First Responders may recognize death, but do not legally pronounce death, and have a responsibility to continue CPR already in progress.
 - ii. If, in the opinion of the Charge Medic (**Paramedics ONLY**), the patient exhibits any of the signs listed in section (1)(a) of this policy and CPR has been initiated, CPR may be discontinued without contacting Medic-1.
 1. The Charge Medic must document thoroughly the signs exhibited at the time of CPR termination.
 - iii. All other persons upon whom CPR has been initiated will continue to have resuscitative efforts maintained until such time as HCFR Paramedics arrive on scene and care is provided to a receiving facility or until all the requirements described in section (3) of this policy, "Discontinuing Resuscitation Efforts", are fulfilled.
- d. "*Do not resuscitate orders*" (DNRO's):
 - i. HCFR personnel will honor properly completed DNRO's in accordance with F.S. 401.45 and Chapter 64E F.A.C.
 - ii. The DNRO may be presented as the long form or the DNRO device (wallet card) but must be signed by the patient, the physician, and properly witnessed/notarized.
 1. A copy of a properly completed original is acceptable provided it is legible and printed on **yellow** paper.
 2. A copy of the DNRO should be scanned into the ePCR whenever possible.
 - iii. In the absence of a DNRO, resuscitation efforts may be withheld if a properly identified physician states to you, in person, that no resuscitative measures are to be initiated.
 1. Request that the physician stay on scene until law enforcement arrives.
 2. Document physician's name and license number in patient care report.
 3. If any unusual circumstances arise, contact Medic-1.
 - iv. A Living Will or other legal document which clearly identifies the patient's desire to **withhold** CPR may be honored with the approval of Medic-1 in conjunction with the patient's family and/or physician agreement.

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1. A copy of the living will/other legal document should be scanned into the ePCR.
- v. It is otherwise your responsibility to provide treatment and/or resuscitative measures as indicated by State law and HCFR policy.
2. **No CODES – TRAUMA:**
 - a. Extensive research supports the fact that the outcome of patients who suffer cardio-respiratory arrest from ***BLUNT trauma*** is uniformly poor.
 - i. These patients do not benefit from further intervention.
 - b. Any victim of ***BLUNT trauma*** who meets ALL of the following criteria can be assumed to have sustained a terminal injury, no further resuscitative measures are necessary, and BLS interventions in progress may be stopped:
 - i. Present history of ***SEVERE BLUNT trauma***
 - ii. Pulseless
 - iii. Apnea
 - iv. No heart sounds or no electrical activity on monitor (asystole) or wide complex ventricular rhythm with a rate less than 20 beats per minute.
 - c. Again, as in section (1)(b) of this policy, an HCFR Paramedic will continue to the scene to complete documentation.
 - i. Documentation must address each of the areas in section (2)(b) of this policy.
 1. Documentation shall also include a rhythm strip unless obtaining the strip is waived in preference of delivering care at the same scene to other victims.
 - a. In the instance of one (1) victim only, a rhythm strip shall be used as part of the criteria for ***BLUNT trauma*** code and included with the ePCR.
 - d. A copy of the complete medical record (ePCR, EKG, etc.) shall be faxed to the Medical Examiner's Office.
 - e. The Charge Medic may decide to continue resuscitative efforts for any reason, including scene safety, and will transport expeditiously to the nearest appropriate facility.
 - f. The handling of patient remains requires a high degree of sensitivity to public perception, human dignity, and scene decorum.
 - i. Transfer of the patient remains should take place in a protected location in order to avoid the negative perception of any onlookers.
 - g. Contact should be made with a Battalion Chief if any difficulties are encountered.
 3. **DISCONTINUING RESUSCITATION EFFORTS: (Paramedics ONLY)**
 - a. Resuscitation may be discontinued in the pre-hospital setting when the patient appears clinically dead after an adequate trial of ACLS and with an order from Medic-1.
 - i. Because the HCFR Medical Director remains ultimately responsible for determination of death, this decision must be made in conjunction with the Medic-1.
 - b. Before contacting Medic-1 for approval to discontinue resuscitation efforts, the following criteria MUST be met:
 - i. An airway has been achieved by intubation or other approved rescue airway.
 - ii. Vascular access has been achieved by either intravenous or intraosseous line.
 - iii. Rhythm appropriate medications and countershocks for ventricular fibrillation have been administered according to ACLS guidelines for at least 20 minutes.
 - iv. Asystole or slow electrocardiographic patterns are present and no reversible causes are present.
 - v. The patient IS NOT hypothermic.
 - vi. Appropriate treatment for drug overdose has been administered, if indicated.

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- vii. Family members have been consulted prior to termination of resuscitation, if possible.
1. Based on discussion of the patient's pertinent medical history and the situation encountered on the call, transport may be warranted in certain circumstances, despite the extremely small likelihood of benefit to the patient.
 2. The Charge Medic of the resuscitation effort can always elect to continue resuscitation and transport.
 3. When Medic-1 authorizes the cessation of resuscitative efforts, the body is to be covered with a clean sheet.
 - a. IV/IO lines and advanced airway adjuncts shall be left in place and the local law enforcement agency notified immediately.
4. Unless the patient meets the **BLUNT trauma** criteria, once the patient has been loaded into the ambulance, resuscitation should continue until arrival at the receiving facility.
- a. Stopping resuscitation with the patient in the ambulance creates a complex legal situation that would involve the local law enforcement agency, the medical examiner, and any potential receiving facility.
 - b. Once resuscitation begins in an HCFR vehicle, it SHALL continue until the patient is delivered to an appropriate hospital.
5. When there is **ANY** doubt as to whether or not resuscitation should be initiated, **START RESUSCITATION**.
6. **PALLIATIVE CARE:**
- a. Defined as supportive care for a patient with a valid DNRO
 - i. A copy of the DNRO should be scanned into the ePCR
 - ii. Respiratory Distress
 1. Supplemental O2
 2. Suction as needed
 3. Position of comfort
 4. No Ventilation
 - iii. External bleeding
 1. Standard hemorrhage control measures.
 - iv. Fractures
 1. Standard treatment to include pain management.
 - v. Pain
 1. See **HCFR PAIN MANAGEMENT** protocol
 2. IM/IN route is preferred for medication administration.
 3. If patient is refusing transport, contact Medic 1 for authorization prior to the administration of a controlled substance.
 - vi. Reversible conditions (i.e. hypoglycemia, dehydration, pain control etc.)
 1. Establish an IV line for supportive care.

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Subject: **HIPAA COMPLIANCE AND PRIVATE HEALTH INFORMATION**
Section #: **300.05**
Issue Date: **March 21, 2011**
Revision Date: **December 1, 2017**
Approved By:  **Michael Lozano, Jr., M.D., HCFR Medical Director**

1. It shall be Department policy to ensure that Private Health Information (PHI) is not disclosed inappropriately.
2. Members of HCFR shall follow all Department standards in regards to the safeguarding of PHI.
 - a. All information contained within this policy and the Department's full HIPPA compliance policy (located on the County computer system) shall be adhered to.
3. All HCFR members shall successfully complete training on HIPAA privacy and no member will be permitted to respond to a request for assistance until he/she has completed said training.
 - a. No non-department member may ride on any HCFR apparatus until they have had documented training in HIPAA privacy and security rules.
4. All members will use discretion when obtaining patient information on scenes, en route to the hospital, and disseminating information at the hospital.
 - a. This policy should not in any way interfere with the obtaining of necessary information for emergency treatment or patient care.
5. All members will ensure that PHI is not disclosed to persons not involved in the patient's treatment, billing for services, or other necessary department operations, unless specifically authorized by the Department's Privacy Liaison (Quality Management Chief).
 - a. This includes disclosures to HCFR personnel not involved in the patient's care or quality assurance.
6. Any written documentation that includes PHI will be reasonably secured at all times.
 - a. If PHI is to be transported, it will be done so in an approved container with a privacy statement attached.
 - b. Any documented PHI will be secured at the station in the appropriate locked security box with the privacy statement affixed.
 - c. No copies (e.g. no carbon required sheets) will be removed from written documents containing PHI, unless provided to person's involved in the patient's care.
 - d. PHI will not be disposed of in the field without being shredded first.
 - i. Example: a Tear and Go printout with any identifiable patient information or address, an internal report copy, etc.
7. Computer screens with PHI will be kept out of the view of any potential passersby and will not be left unattended.
8. Telephone or personal requests for any PHI (verbal or written) will be politely referred to the Department's Privacy Liaison.
9. PHI will not be:
 - a. Documented by any student, observer, or other person that is identifiable to any patient.
 - i. Example: a patient name, date of birth, etc.
 - b. Transported unsecured in a vehicle.
 - c. Sent via email or included in an email attachment.
 - d. Left on voicemails, answering machines, etc.

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10. Work force members seeking reports or filed documents must coordinate through the Department's Privacy Liaison.
11. If sending a fax containing PHI to an approved recipient (e.g. Medical Examiner), ensure that you have a correct and current fax number and direct someone to be standing by to receive the fax.
 - a. They should also be instructed to contact you immediately if there is a problem receiving.
12. All photocopying of PHI will be conducted in a reasonably secured area.
13. Station log books must be treated as PHI and must have a confidentiality notice affixed.
14. PHI shall ONLY be used for approved Department business as outlined by Department policy and applicable laws.
 - a. At no time shall PHI be used for personal interest.

Section: **Medical Operations General**
Subject: **MANDATORY REPORTING REQUIREMENTS**
Section #: **300.06**
Issue Date: **March 21, 2011**
Revision Date:
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1. The State of Florida Health and Rehabilitative Services has mandatory reporting requirements that may pertain to the operations of Hillsborough County Fire Rescue.
 - a. The information presented in this policy is selected information from F. S. Chapters 39 and 415.
 - i. Any additional questions, to any legal reference(s) made in your management of patient care, should be through Medic-1.
 - ii. Additional information needed about this law should be researched using Florida Statutes and legal counsel.
2. Suspected Child Abuse :
 - a. F.S. Title V Chapter 39 Part II covers the mandatory reporting requirements of child abuse/neglect.
 - i. F.S. 39.201(1)(a) requires that "any person who knows, or has reasonable cause to suspect, that a child is abused, abandoned, or neglected by a parent, legal custodian, caregiver, or other person responsible for the child's welfare, or that a child is in need of supervision and care and has no parent, legal custodian, or responsible adult relative immediately known and available to provide supervision and care **shall** report such knowledge or suspicion to the department."
 - b. Each report of known or suspected child abuse, abandonment, or neglect **shall** be made immediately to the State Central Abuse Hotline on the statewide toll free number; **1-800-96-ABUSE (1-800-962-2873)**, which is operated 24 hours a day.
 - i. If the report is filed by a non-caretaker, the call shall be immediately transferred to the appropriate County Sheriff's Office by the Central Abuse Hot Line.
 - ii. Unlike when reporting abuse of the elderly/vulnerable adults, EMS personnel are NOT required to provide their names to the Hot Line staff.
 - c. For the purposes of guiding our decisions and actions, the following legal definitions are provided from F.S. 39.01.
 - i. They are paraphrased, have a statute reference, and essential sections of concern have emphasis added.
 - ii. **Abuse:** any willful act or threatened act that results in any physical, mental, or sexual injury or harm that causes or is likely to cause the child's physical, mental, or emotional health to be significantly impaired. Abuse of a child includes acts or omissions. Corporal discipline of a child by a parent or legal custodian for disciplinary purposes does not in itself constitute abuse when it does not result in harm to the child.
 - iii. **Harm:** Harm to a child's health or welfare can occur when any person:
 1. Inflicts, or allows to be inflicted, upon the child physical, mental or emotional injury. In determining whether harm has occurred, the following factors must be considered in evaluating any physical, mental, or emotional injury to a child: the age of the child; any prior history of injuries to the child; the location of the injury on the body of the child; the multiplicity of the injury; and the type of trauma inflicted. Such injury includes, but is not limited to:
 - a. Willful acts that produce the following specific injuries:
 - i. Sprains, dislocations, or cartilage damage
 - ii. Bone or skull fracture
 - iii. Brain or spinal cord damage
 - iv. Intracranial hemorrhage or injury to other internal organs

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- v. Asphyxiation, suffocation, or drowning
 - vi. Resulting from the use of deadly weapon
 - vii. Burns or scalding
 - viii. Cuts, lacerations, punctures, or bites
 - ix. Permanent or temporary loss or impairment of a body part or function
- b. Purposely giving a child poison, alcohol, drugs, or other substances that substantially affect the child's behavior, motor coordination, or judgment or that result in sickness or internal injury.
 - c. Leaving a child without adult supervision or arrangement for the child's age or mental or physical condition, so that the child is unable to care for the child's own needs...
 - d. Excessive corporal punishment or other excessively harsh or inappropriate disciplinary action.
- 2. Commits, or allows to be committed, sexual battery, as defined in F.S. 794, or lewd or lascivious acts, as defined in chapter 800, against the child.
 - 3. Exploits a child, or allows a child to be exploited, as provided in F.S. 450.151.
 - 4. Abandons the child.
 - 5. Neglects the child:
 - a. Fails to supply the child with adequate food, clothing, shelter, or health care although financially able to do so or although offered financial or other means to do so.
 - i. However, a parent or other person responsible for the child's welfare legitimately practicing their religious beliefs, who by reason thereof does not provide specified medical treatment for a child, may not be considered abusive or neglectful for that person alone.
 - 6. Exposes a child to a controlled substance or alcohol.
- iv. Even though the statutes indicate that mandatory reporting must be accomplished using the established Central Abuse Hot Line, there is nothing to prevent any EMT or Paramedic professional from reporting a suspected act of child abuse to the law enforcement agency with jurisdiction "where the alleged abuse occurred".
 - 1. This report is not mandatory, but if personnel feel an immediate law enforcement action is necessary, they are encouraged to report the incident to the local law enforcement agency in addition to the required Central Abuse Hot Line notification.
- 3. Suspected Adult Abuse:
 - a. F.S. 415.101 & 415.103(2) extend the same reporting conditions described for children to aged adults.
 - i. The same mandatory reporting requirements for telephone Hot Line reporting are required.
 - b. Definitions that pertain to this section that may be useful in guiding our decisions are listed below with emphasis added for important consideration. These definitions are extracted from F.S. 415.102:

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- i. **Abuse** means the non-accidental infliction of physical or psychological injury or sexual abuse upon a disabled adult or an elderly person by a relative, caregiver, or household member.
 - 1. It is also an action by any of those persons which could reasonably be expected to result in physical or psychological injury, or sexual abuse of a disabled adult or elderly person by any person.
 - 2. **Abuse** also means the active encouragement of any person by a relative, caregiver, or household member to commit an act that inflicts or could reasonably be expected to result in physical or psychological injury to a disabled adult or an elderly person.
- ii. **Elderly Person** means a person 60 years of age or older who is suffering from infirmities of aging as manifested by advanced age or organic brain damage, or other physical, mental, or emotional dysfunction.
 - 1. These infirmities must be to the extent that the ability of the person to provide adequately for the person's own care or protection is impaired.
- iii. **Neglect** means the failure or omission on the part of the caregiver to provide the care, supervision, and services necessary to maintain the physical and mental health of the disabled adult or elderly person.
 - 1. This includes, but is not limited to, food, clothing, medicine, shelter, supervision, and medical services that a prudent person would consider essential for the well-being of a disabled adult or elderly person.
 - 2. **Neglect** also means the failure of a caregiver to make a reasonable effort to protect a disabled adult or elderly person from abuse, neglect, or exploitation by others.
 - 3. Neglect is repeated conduct or a single incident of carelessness which produces, or could reasonably be expected to result in, serious physical or psychological injury or a substantial risk of death.
- iv. **Exploitation** means a person who:
 - 1. Stands in a position of trust and confidence with a disabled adult or an elderly person and knowingly, by deception or intimidation, obtains or uses, or endeavors to obtain or use, a disabled adult's or an elderly person's funds, assets, or property with the intent to temporarily or permanently deprive a disabled adult or elderly person of the use, benefit, or possession of the funds, assets, or property for the benefit of someone other than the disabled adult or elderly person; - **or -**
 - 2. Knows or should know that the disabled adult or elderly person lacks the capacity to consent, and obtains or uses, or endeavors to obtain or use, the disabled adult's or elderly person's funds, assets, or property with the intent to temporarily or permanently deprive the disabled adult or elderly person of the use, benefit, or possession of the funds, assets, or property for the benefit of someone other than the disabled adult or elderly person.
 - 3. **Exploitation** may include, but is not limited to:
 - a. Breaches of fiduciary relationships, such as the misuse of power of attorney or the abuse of guardianship duties resulting in the unauthorized appropriation, sale, or transfer of property.
 - b. Unauthorized taking of personal assets.

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- c. Misappropriation, misuse, or transfer of moneys belonging to a disabled adult or elderly person from a personal or joint account;
- or -
- d. Intentional or negligent failure to effectively use a disabled adult's or elderly person's income and assets for the necessities required for that person's support and maintenance.
- c. The reporting of such instances to the Central Abuse Hot Line is mandatory and required by the statute.
 - i. Nothing in the statutes precludes any EMT or Paramedic professional from reporting an incident to the law enforcement agency of jurisdiction where the alleged abuse occurred.
 - ii. Personnel are encouraged to report to the law enforcement agency as well as the Central Abuse Hot Line when, in their judgment, the situation warrants law enforcement investigation.
- d. In ALL cases of reporting, a full incident report shall be completed.

Section: **Medical Operations General**
Subject: **MARCHMAN ACT**
Section #: **300.07**
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1. The information presented in this policy is selected information from F.S. 397.
 - a. The information presented in this policy is selected information from F. S. Chapter 415.
 - i. Any additional question to any legal reference(s) made in your management of patient care should be through Medic-1.
 - ii. Additional information needed about this law should be researched using Florida Statutes and legal counsel.
2. The purpose of this policy is to describe the Marchman Act and how it relates to Hillsborough County Fire Rescue operations.
3. The Marchman Act (F.S. 397) concerns the detention and treatment of persons found incapacitated and impaired in public places.
 - a. Impaired, or substance abuse impaired, means a condition involving the use of alcoholic beverages or any psychoactive or mood altering substance in such a manner as to induce mental, emotional, or physical problems and causes socially dysfunctional behavior.
4. F.S. Chapter 397:
 - a. F.S. 397.675 – Criteria for involuntary admissions, including protective custody, emergency admission, and other involuntary assessment, involuntary treatment, and alternative involuntary assessment for minors, for purpose of assessment and stabilization, and for involuntary treatment.
 - b. A person meets the criteria for involuntary admission if there is good faith reason to believe the person is substance abuse impaired and because of such impairment has lost the power of self-control with respect to substance use **and** either:
 - i. Has inflicted, or threatened or attempted to inflict, or unless admitted is likely to inflict, physical harm on himself or herself or another, **– or –**
 - ii. Is in need of substance abuse services and, by reason of substance abuse impairment, his or her judgment has been so impaired that the person is incapable of appreciating his or her need for services and of making a rational decision in regard to such services.
 1. However; mere refusal to receive such services does not constitute evidence of lack of judgment with respect to his or her need for such services.
5. F.S. 397.6759 – Parental participation in treatment:
 - a. A parent, legal guardian, or legal custodian who seeks involuntary admission of a minor pursuant to F.S. 397.675 & 397.6977 is required to participate in all aspects of treatment as determined appropriate by the director of the licensed service provider.
6. F.S. 397.677 – Protective custody, circumstances justifying:
 - a. A law enforcement officer may implement protective custody as specified in this part when a minor or an adult appears to meet the involuntary admission criteria is:
 - i. Brought to the attention of law enforcement, **– or –**
 - ii. In a public place.

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7. F.S. 397.6771 – Protective custody with consent:
 - a. A person in circumstances which justify protective custody, as described in F.S. 397.6771, may consent to be assisted by a law enforcement officer to his or her home, to a hospital, or licensed detoxification or addictions receiving facility, whichever the officer determines is most appropriate.
8. F.S. 397.6772 – Protective custody without consent:
 - a. If a person, in circumstances which justify protective custody, as described in F.S. 397.6772, fails or refuses to consent to assistance and a law enforcement officer has determined that a hospital or a licensed detoxification or addiction receiving facility is the most appropriate place for the person; the officer, after giving due consideration to the expressed wishes of person may:
 - i. Take the person to a hospital or licensed detoxification or addiction receiving facility against the person's will but without using unreasonable force, – **or** –
 - ii. In the case of an adult, detain the person for his or her own protection in any municipal or county jail or other appropriated detention facility.
 1. Such detention is not to be considered an arrest for any purpose, and not entry or other record may be made to indicate that the person has been detained or charged with any crime.
 2. The officer in charge of the detention facility must notify the nearest appropriate licensed service provider within the first 8 hours after the person has been detained.
 3. It is the duty of the detention facility to arrange, as necessary, for transportation of the person to an appropriate licensed service provider with an available bed.
 4. Person taken into protective custody must be assessed by the attending physician within the 72-hour period (without unnecessary delay) to determine the need for further assistance.
 - iii. The nearest relative of a minor in protective custody must be notified by the law enforcement officer, as must the nearest relative of an adult, unless the adult requests that there be no notification.
9. F.S. 397.6774 – Department to maintain lists of licensed facilities:
 - a. The department shall provide each municipal and county public safety office with a list of licensed hospitals, detoxification facilities, and addictions receiving facilities; including the name, address, phone number, and services offered by the licensed service provider.
10. F.S. 397.6775 – Immunity from liability:
 - a. A law enforcement officer acting in good faith pursuant to this part may not be held criminally or civilly liable for false imprisonment.

Section: **Medical Operations General**
Subject: **MEDICAL AUTHORITY AND RESPONSIBILITY**
Section #: **300.08**
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1. HCFR currently provides three levels of medical care: First Responder, EMT, and Paramedic.
 - a. BLS transport is provided by private companies and the volunteers of the Sun City Rescue Squad.
 - b. Regardless of initial units dispatched to an incident, the decision to transfer a patient to a BLS provider for transport shall only be made after an appropriate level patient evaluation, vital sign measurement and evaluation of the patients past medical history has been completed.
 - c. Patient transfer of care decisions must always be in the best interest of the patient you are treating.
 - d. Pediatric patients 5 years of age and younger shall be transported via HCFR when an HCFR rescue unit is dispatched initially and there are not more patients on scene than Rescue units dispatched. (Suppression units are not required to call for a Rescue unit if BLS was initially dispatched with them to the call).
2. It is HCFR policy to provide the best possible medical care while maintaining good relations with all other providers. In order to accomplish these goals, it is important that all pre-hospital care providers work together to provide the appropriate care to all patients.
3. The officer in charge of the ALS transport unit shall be the lead medical authority on-scene and will be ultimately responsible for all patient care.
 - a. If a promoted paramedic officer (Stand Alone qualified) is assigned to a non-transport unit, *and* the paramedic in charge of the transporting rescue is an *Acting Officer*, the promoted paramedic officer (Stand Alone qualified) will have the option of maintaining or assuming the lead role so long as they accompany the patient to the receiving facility, performs the transfer of care, and completes all the appropriate documentation for the call.
 - b. The Rescue Officer (promoted or acting) shall be in the patient compartment partaking in and supervising care during the transport of all critical patients, unstable patients, patients whose condition is likely to deteriorate during transport and HCFR members being transported while on duty.
 - c. If there are conflicting opinions regarding the proper course of treatment or any other medical issue, Medic-1 shall be consulted and their decision shall be final.
4. Hillsborough County Fire Rescue paramedics, who are assigned to a non-transport unit and are on the scene with an ALS patient, will only turn the patient over to a provider with a Hillsborough County COPCN for "**ALS Emergency Scene Response**".
 - a. This would include ALS transport units from Hillsborough County Fire Rescue, Tampa Fire Rescue, Temple Terrace Fire Rescue, Plant City Fire Rescue, Bayflite, and Aeromed.
 - b. If it is determined that immediate transport is in the patient's best interest and the closest transport unit available is a unit that only has a Hillsborough County COPCN for "**BLS emergency scene response**" (i.e. AMR, AMC, Transcare, Sun City Rescue), whether or not they have a paramedic on board or not, the on-scene Hillsborough County Fire Rescue paramedic will accompany the patient to the receiving facility and will be responsible for all care provided.

Section: **Medical Operations General**
Subject: **MEDICAL EXPOSURE CONTROL**
Section #: **300.09**
Issue Date: **March 21, 2011**
Revision Date:
Approved By:

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- 1. HAND WASHING IS THE SINGLE MOST EFFECTIVE PREVENTIVE MEASURE YOU CAN TAKE!**
2. All body fluids shall be considered to be contaminated and contagious.
3. It is the responsibility of all members to be familiar with the Hillsborough County Fire Rescue Exposure Control Plan (see Policies Section 380).
4. As metal objects close to the skin can harbor germs, it is recommended that rings (including wedding bands), bracelets and earrings be removed during duty hours.
5. It is the responsibility of the Company Officer to insure all members under his/her supervision take appropriate measures to protect against communicable/infectious diseases during operations.
6. If other health care providers are on the scene when Fire Rescue members arrive, the Company Officer will question the senior health care provider about the possibility of exposure to infectious disease prior to committing Fire Rescue members to assist with patient care.
7. When acquiring medical history and determining the type of assistance needed place particular emphasis on the possibility of exposure to infectious disease.
8. Fire Rescue members shall take the standard precautions wearing disposable medical grade gloves and eye protection in all situations that require any patient handling or when there is the possibility of coming in contact with blood or body fluids.
 - a. This includes motor vehicle accidents.
9. In addition, disposable masks will be worn if there is any doubt about the patient's health problem or where blood and/or body secretions could be splashed into the firefighter's mouth.
10. When multiple patients are being treated, HCFR members shall change disposable gloves prior to moving from one patient to another.
11. Keep track of all potentially contaminated disposable items including cleaning materials used to disinfect equipment used.
 - a. Contaminated items will be secured in a department provided red bio-hazardous waste bag and kept for proper disposal.
12. When removing exposed gloves and garments, be careful not to further contaminate yourself, equipment, or others.
13. When the patient is loaded and you are released from the call, wash your hands and wrists thoroughly with an approved hand cleaning solution.
14. All members that participate in emergency medical calls will meticulously wash their hands before boarding the apparatus to return to quarters.
 - a. Use an approved disinfectant solution, copious amounts of water, and follow with an isopropyl alcohol rinse.

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Section: **Medical Operations General**
Subject: **MEDICAL EXPOSURE CONTROL**
Section #: **300.09**
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15. Before leaving the emergency scene, if replacement equipment is not available from the on-scene Rescue Company, clean and disinfect all equipment used for patient care.
 - a. Medical grade gloves will be worn during this process.
 - b. This can be accomplished by using hospital-strength spray disinfectant provided by HCFR or a solution of household bleach and water at a ratio of 1:10.
 - c. Do not use alcohol to clean equipment.
16. After returning to quarters, refer to the Hillsborough County Fire Rescue Exposure Control Plan (Policy Section 380) for further instructions on cleaning of equipment, necessary forms to be completed, log entries and reports to be made.
17. Contaminated uniforms should be changed at the station to reduce the chance of cross-contamination of family members, friends, and other contacts.
 - a. If a uniform becomes contaminated with blood or body fluids, place the uniform in a red plastic contamination bag and give it to your Battalion Chief for proper decontamination and/or disposal.

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: **Medical Operations General**
Subject: **MEDICAL OVERSIGHT**
Section #: **300.10**
Issue Date: **March 21, 2011**
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1. Medic-1 System - Hillsborough County Fire Rescue has contracted with several physicians to provide medical advice and orders for Hillsborough County Fire Rescue paramedics.
 - a. The Medic-1 physician is reached via direct dial cell or cell phone patch via the Emergency Dispatch Center (EDC).
 - b. If a physician is needed because it is mandated by protocol, or if the "charge medic" would like to consult with a physician, contact the appropriate on-call Medical Control Physician via cell phone.
 - i. Calls should be placed using the department issued cell phone when possible.
 - ii. If the Medic-1 physician does not answer his/her phone, then:
 1. Leave a message with your title/name, unit number and return phone number. If they do not return your call within 2-3 minutes:
 2. Attempt to call the HCFR Medical Director via cell phone.
 3. If the Medical Director does not answer his/her phone, then:
 4. Contact EDC and advise them that the unit is requesting Medic-1 consult from Tampa General Hospital.
 5. EDC will contact a Tampa General Hospital (TGH) adult emergency department attending physician and will coordinate communication between the unit's cell phone and the hospital.
 6. Only *Attending* emergency department physicians will be used; no residents or medical students.

Section: **Medical Operations General**
Subject: **MEDICAL WASTE**
Section #: **300.11**
Issue Date: **March 21, 2011**
Revision Date:
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1. BIO-HAZARDOUS WASTE – GENERAL

- a. All contaminated linen, sharps or medical waste shall only be disposed of in properly marked and provided for containers.
 - i. At NO time shall any type of contaminated medical waste be disposed of in a non-medical trash container.
- b. All non-medical waste will be discarded in properly marked containers.
 - i. DO NOT discard non-bio-hazardous waste in a biohazard container (doing this increases the cost of disposal to taxpayers).
- c. Any contaminated non-disposable stretcher linens/towels shall be left at hospitals in properly designated receptacles as designated by the facility.
- d. All contaminated patient clothing/belongings shall be placed in red bags and turned over to the ER or transporting unit along with the patient.

2. BIO-HAZARDOUS WASTE – NON SHARPS

- a. All HCFR ALS units, transport capable or otherwise, shall have at least one (1) bio-hazardous waste receptacle with a red bag.
 - i. On transport units this container shall be kept in the patient compartment.
 - ii. Sufficient spare red plastic biohazard bags shall be maintained on the unit for replacement and for securing a reasonable amount of unexpected bio-hazardous waste.
- b. All waste contaminated with potentially contaminated bodily fluids or substances shall be placed in containers lined with a red bag.

3. BIO-HAZARDOUS WASTE – SHARPS

- a. All sharps will be disposed of in an appropriate sharps container.
 - i. All HCFR ALS transport units shall maintain at least two of the large sharps containers appropriately secured in the patient compartment in addition to any other sized containers necessary to ensure that all built-in sharps storage areas are properly equipped.
 - ii. All HCFR ALS non-transport units shall maintain one (1) large sharps container for the disposal of large items.
 - iii. All HCFR medical bags, whether on an ALS or BLS capable unit, shall be maintained with at least one (1) of the small sharps containers for the disposal of small needles/lancets.
- b. No sharps containers will be left at hospitals for disposal.

4. FIRE STATION STORAGE

- a. All contaminated sharps containers and medical waste shall be secured in a designated area of the station away from the general activity areas of members and secured from any visiting person.
- b. All medical waste shall be placed in the appropriate, department provided, disposal containers.
 - i. Once provided containers are full (not overfull) they shall be closed and sealed with provided packing tape.
- c. Once Sharps containers are full they shall have their lids closed securely and then wrapped with packing tape to ensure the lid stays in place.

Section: **Medical Operations General**
Subject: **MEDICAL WASTE**
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- i. Sharps containers shall be placed in the stations bio-hazardous secure area for pick-up.
- ii. Sharps containers shall NOT be placed inside the large cardboard disposal containers with other waste.

5. FIRE RESCUE HEADQUARTERS STORAGE

- a. All contaminated sharps containers and medical waste shall be secured in a designated area of the facility away from the general activity areas of members and secured from any visiting person.
- b. All medical waste shall be placed in the appropriate, department provided, disposal containers.
 - i. Once provided containers are full (not overfull) they shall be closed and sealed with provided packing tape.
- c. Once Sharps containers are full they shall have their lids closed securely and then wrapped with packing tape to ensure the lid stays in place.
- d. All waste shall remain secured to provide separation from all other routine activities until turned over to the waste disposal vendor.

6. CITIZEN REQUEST FOR DISPOSAL OF WASTE

- a. HCFR facilities are not approved disposal sites for medical waste generated by the general public.
- b. Citizens requesting HCFR to take possession of medical waste shall be informed that we cannot take such waste and they should be directed to one of the following resources:
 - i. Hillsborough County Health & Social Services Department at:
 1. (813) 272-5040
 - ii. Florida Department of Health at:
 1. (850) 245-4250
 - iii. The Coalition for Safe Community Needle Disposal at:
 1. (800) 643-1643

Section: Medical Operations General
Subject: Medication Administration Error Prevention and Reporting
Section #: 300.12
Issue Date: December 1, 2017
Revision Date:
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1. Ensure six basic "rights" of medication handling prior to medication administration
 - a. Right patient
 - b. Right drug
 - c. Right dose
 - d. Right route of administration
 - e. Right time and frequency
 - f. Right documentation
2. Steps prior to medication administration
 - a. When possible, always ask about the patient's allergies to medications prior to administering any medication.
 - b. Ensure that vials and packaging with similar appearance are separated in storage and clearly marked to avoid choosing the wrong one
 - c. Double check to make certain the medication you intend to administer is the one you are holding prior to administration
 - d. Always double check the medication, dose, concentration and expiration date prior to administration.
3. Error notification process
 - a. Error is known at the time of transfer to the hospital.
 - i. Rescue Officer shall advise the hospital staff (RN who receives the patient and preferably the Charge Nurse of the emergency department or the ER physician who will be treating the patient) of the error during the transfer of care, making note of the name(s) and title(s) of the person(s) receiving report. The medication/procedure administered in error, dose, route, time administered, any observed clinical reaction or lack thereof, and other medically pertinent information shall be included in the ePCR. Battalion Chief/Shift Commander notification is required.
 - ii. The Battalion Chief shall obtain statements expounding upon the circumstances of the event from all crew members with knowledge of the incident and/or assigned to the apparatus reporting the error prior to end of shift. These statements shall be forwarded to the Quality Management Chief for review.
 - iii. The Quality Management Chief will formally investigate the incident *and* ensure compliance with FAC 64J and applicable FSS (i.e. Medical Director notification etc.) as applicable.
 - b. Error is discovered after the transfer of care at the hospital.
 - i. Rescue Officer shall immediately, upon discovery of the error, contact the hospital staff caring for the patient and inform them of the error. The notification should be made to the Charge Nurse of the department caring for the patient and/or the treating physician. Document the name, title of the person notified of the error and the date and time notification occurred.
 - ii. Battalion Chief/Shift Commander notification is required.
 - iii. Statements from all crew members with knowledge of the incident and/or those assigned to the apparatus reporting the error shall be obtained by the Battalion Chief prior to end of shift and forwarded to the Quality Management Chief for review.

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Section: Medical Operations General
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- iv. The Quality Management Chief will investigate the incident *and* ensure compliance with requirements set forth in FAC 64J and FSS (i.e. Medical Director notification etc.) as applicable.
- v. The ePCR shall be edited to record the medication/procedure administered in error to include dose, route, time administered, any observed clinical reaction or lack thereof, and other medically pertinent information.
- vi. If the ePCR had previously been closed and submitted, a copy of the edited ePCR shall be securely faxed to the attention of the hospital staff member to whom the error was reported so it can be added to the patients chart. A copy of the fax receipt, if available, shall be scanned into the ePCR.

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STANDING ORDERS AND PROTOCOL

Section: **Medical Operations General**
Subject: **MINIMUM MEDICAL EQUIPMENT FOR PATIENT CONTACT**
Section #: **300.13**
Issue Date: **March 21, 2011**
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1. The nature of our work mandates a properly equipped and professional team.
2. Although it is understood that the exact nature of a call may be uncertain prior to locating the patient, this uncertainty does not change the responder's responsibility to avoid situations that require returning to the apparatus for equipment.
3. It is HCFR policy that the following equipment will be taken to the patient's location on every emergency medical response:
 - a. Oxygen/Airway Equipment (including suction capability)
 - b. Portable Radios
 - c. Fully stocked Medical Equipment Bag
 - d. Automatic External Defibrillator (AED) or Cardiac Monitor/Defibrillator
 - i. AEDs and Monitors are not required as part of the initial equipment for scenes such as motor vehicle collisions when the apparatus is parked adjacent to the location of the injured patient.
 - e. If there is a concern that cardiopulmonary arrest may be present, bring an automated CPR device, if it is available.
 - i. Given that short device deployment times are a goal that HCFR has committed to achieve, it is important for HCFR personnel to anticipate the need for an automated CPR device in situations where it is likely to be needed. Not all cardiac arrest calls that are dispatched end up being arrests. Likewise, there are a significant number of cardiac arrests that are called in as something other than cardiac arrest. To that end, unless there are extenuating circumstances the automated CPR device shall be carried to all calls initially dispatched as Unconscious, Seizures, Man down, Unknown, Delta level Respiratory distress, in addition to Cardiac Arrest. Extenuating circumstances that prevent adherence to this policy shall be noted in the patient care report.

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Section: **Medical Operations General**
Subject: **ON-SCENE PHYSICIAN**
Section #: **300.14**
Issue Date: **March 21, 2011**
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1. It shall be the policy of Hillsborough County Fire Rescue to provide medical care according to the policies set by the department and approved by the Department Medical Director.
2. If a physician (State of Florida licensed M.D. or D.O.) arrives on the scene and **after providing proper identification** requests to take over patient care or to give you orders, politely inform the physician that they will be required to do **ALL** of the following:
 - a. Speak directly to Medic-1 to assume responsibility for medical care.
 - b. Agree to accompany the patient to the hospital to provide direct and uninterrupted supervision of the patient.
 - c. Acknowledge that they have accepted ALL responsibility for the patient and will be required to sign the patient treatment record at the receiving hospital.
3. If the physician is insisting on providing medical care, contact Medic-1.
 - a. HCFR personnel will only follow orders that you have been trained to perform and that are in the best interest of the patient.
4. If the physician is not willing to do all of the things listed in section (2) above, do not follow his/her orders and request law enforcement assistance via EDC and treat the patient per HCFR policy.

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Section: **Medical Operations General**
Subject: **OXYGEN AND VENTILATION**
Section #: **300.15**
Issue Date: **March 21, 2011**
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1. The following are approved devices for the delivery of **oxygen**:
 - a. Nasal Cannula (NC):
 - i. For patients with adequate respiratory rate and tidal volume.
 - b. Non-Rebreather Mask (NRBM):
 - i. For patients with adequate respiratory rate and tidal volume.
 - c. Simple face mask or blow-by **oxygen** therapy (for infants):
 - i. For patients with adequate respiratory rate and tidal volume.
 - d. Nebulizer mask and/or pipe flowing at 6 lpm
 - e. Bag Valve Mask (BVM) device with reservoir and oxygen line
 - f. CPAP (Continuous Positive Air Pressure device)
 - g. Mechanical Ventilator
2. The following are approved **airway adjuncts**:
 - a. OPA (oropharyngeal airway)
 - b. NPA (nasopharyngeal airway)
 - c. Rescue Airways (supra-glottic airway)
 - d. Endotracheal Tubes (*Paramedics Only*)
 - e. Quick-Trach® (*Paramedics Only*)

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STANDING ORDERS AND PROTOCOL

Section: **Medical Operations General**
Subject: **PROVIDING MEDICAL CARE OFF-DUTY**
Section #: **300.16**
Issue Date: **March 21, 2011**
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1. Off-Duty HCFR Paramedics and EMTs are authorized to perform basic life support medical care by standing orders while awaiting the arrival of a summoned (911) emergency medical provider.
 - a. This authorization only applies to events that occur in Hillsborough County and when the patient's condition warrants.
 - b. This authorization does not apply if the off-duty member is under the influence of alcohol or other mind altering prescription or non-prescription substance.
2. The on-duty member that responded will notify his/her Battalion Chief of all medical care rendered by off-duty members as soon as the call is completed.
3. All off-duty members who provide necessary emergency medical services while off-duty will be placed on the payroll by the notified Battalion Chief for the duration of their patient encounter.
4. All treatment provided by the off-duty member will be documented in the medical treatment record along with the name and badge number of the off-duty employee.

Section: **Medical Operations General**
Subject: **QUALITY ASSURANCE**
Section #: **300.17**
Issue Date: **March 21, 2011**
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1. Each Battalion Chief/Shift Commander will ensure that **all** ePCRs for their battalion are closed and submitted in compliance with the HCFR Standards of Documentation requirements every shift.
2. All medical procedures which require critical care interventions will be reviewed by the Quality Assurance Officer, Quality Management Chief, Rescue Division Chief, and/or Medical Director.
3. Any questionable treatment or documentation discovered during the routine assessment of treatment records will be discussed between the appropriate Rescue Division personnel, Battalion Chief/Shift Commander and the member(s) involved.
 - a. Serious medical issues, or significant quality improvement opportunities, will be forwarded to the Quality Management Chief and/or the Rescue Chief for further review.
 - b. In addition, any inquiries from independent sources (i.e., the Trauma Agency, citizen complaints, hospitals, private providers etc.) will be facilitated and reviewed by the Quality Management Chief.
4. The QA Committee may review incidents brought to its attention by the Quality Management Chief.
 - a. These may include, but are not limited to, issues referred by the Trauma Audit Committee, medical care concerns and medical documentation.
5. After review by the Quality Management Chief, Rescue Division Chief, Medical Director and/or the QA Committee, incidents that are determined to need further review may be scheduled for one of the following types of meetings:
 - a. *Quality Assurance Meeting* - This is an informal meeting chaired by the Quality Assurance Officer and/or Quality Management Chief.
 - i. This type of meeting is used to determine if quality improvement or training opportunities exist that can be addressed without the need for disciplinary action.
 - ii. No Discipline can result from a QA Meeting.
 - iii. Union representation is at the employee's discretion.
 - b. *Fact Finding Meeting* - This is a meeting which is more formal than a QA meeting and is chaired by the Personnel Chief, Rescue Chief or Quality Management Chief.
 - i. This type of meeting is used to determine if there are any policy or protocol issues that need to be addressed.
 - ii. Discipline *may* result from this type of meeting.
 - iii. Union representation is at the employee's discretion, but will be strongly encouraged.
6. In compliance with Florida Statute 401.411 (Disciplinary action; penalties) any violations of state rules or regulations will be reported to the Florida Department of Health Bureau of EMS for their review.
 - a. They may, at their discretion, initiate an independent investigation without the involvement of our department.

Section: **Medical Operations General**
Subject: **REHABILITATION MEDICAL GUIDELINES**
Section #: **300.18**
Issue Date: **March 21, 2011**
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1. This protocol establishes the parameters for evaluation and treatment of emergency responders who have been assigned to the Rehabilitation Sector for the purpose of rest, recovery, and medical care as needed.
2. Medical care providers of Hillsborough County Fire Rescue shall follow this protocol when establishing and functioning within the Rehabilitation Sector as directed by the Incident Commander and in accordance with NFPA 1584.
 - a. Unless there are patients/personnel requiring assessment and treatment, upon arrival at a structure fire or multi-company alarm, the first due Rescue Company will report to command for assignment and the second arriving rescue will be responsible for establishment of a Rehab Sector.
 - b. The medical officer in charge of the Rehab Sector will have the final say in who remains or is released from the Rehab Sector, and who will be transported to a receiving facility for further treatment.
3. Rehab Sector shall be established and maintained according to the size of the incident and within the scope of Rehab Sector Policy.
 - a. Preferred staffing for any HCFR Rehab Sector shall be one (1) Rescue Company with two (2) paramedics.
4. Treatment of Personnel:
 - a. All personnel requiring medical care shall be treated according to HCFR Standing Orders and Protocol.
 - b. All personnel entering the Rehab Sector shall be evaluated and the following findings documented:
 - i. Heart Rate
 - ii. Blood Pressure
 - iii. CO Level
 - iv. SpO₂
 - v. Temperature
 - vi. Medical Complaints
 - c. Personnel with medical complaints (i.e. altered level of consciousness, short of breath, dizziness, chest pain, nausea or vomiting, irregular pulse, etc.) shall be moved to the medical treatment area and cared for per standing orders/protocols.
 - d. Personnel in the Rehab Sector will be reevaluated at least every 10 minutes.
 - e. Personnel shall not be released from Rehab if upon reevaluation they demonstrate any of the following findings or have developed medical symptoms:
 - i. Heart rate exceeds 120 bpm
 - ii. Blood pressure is either > 160 mmHg systolic and/or 100 mmHg diastolic
 - iii. CO level exceeds 5% (non-smoker) or 10% (smoker)
 - iv. Oral body temperature > 100.6° F.
 - v. Respiratory rate > 24/min
 - vi. SpO₂ < 95%
 - f. If personnel's vital signs return to normal, they may move to the rest and refreshment area to finish out their rehab time.
 - i. Members shall be evaluated again before being allowed to leave the Rehab area.

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Subject: **REHABILITATION MEDICAL GUIDELINES**
Section #: **300.18**
Issue Date: **March 21, 2011**
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- g. Members shall not be released from the Rehab area prior to:
- i. Having spent the minimum required time in Rehab (per **HCFR REHAB POLICY**)
 - ii. Heart rate dropping below 120 bpm
 - iii. Blood pressure being below 160 systolic and/or 100 diastolic
 - iv. Respiratory rate being between 10 – 20/min
 - v. SpO₂ is > 95% and CO level is below 5% (non-smoker) or 10% (smoker)
 - vi. Oral body temperature below 100.6° F.
 - vii. The member is free of complaint/observable injury
 - viii. The member states that he/she feels well and is ready to return to duty
- h. If after 20 minutes of rest any personnel whose physical parameters exceed those listed shall be transported to an appropriate receiving facility for medical evaluation.
- i. Do not delay transport in the event of a medical emergency or when the need for higher level evaluation and/or further diagnostic testing is recognized.
- i. Any personnel with a CO level exceeding 15% shall be transported to an appropriate receiving facility.
- j. Any personnel, who in the judgment of the medical officer in charge, have not sufficiently responded to cooling, rest, and other rehabilitation measures, or who display signs and symptoms that warrant further evaluation shall be transported to an appropriate receiving facility.
- i. The medical officer in charge of the Rehab Sector has the authority to insist that personnel be transported to an appropriate receiving facility. Personnel refusing transport will be relieved of duty until they are cleared by a Worker's Compensation physician.
5. Documentation: The following shall be the procedure for documentation of all events for which a Rehab Sector was established.
- a. The medical officer in charge shall be responsible for ensuring that all documentation is completed.
 - b. The HCFR Rehab Accountability form shall be used to maintain a record of all personnel who are evaluated in the Rehab Sector.
 - c. Electronic Patient Care Report (ePCR):
 - i. At least one ePCR form shall be completed for every event for which a Rehab Sector is established.
 - ii. In the demographics section, list Rehab Sector Report.
 - iii. All medical documentation should follow the Standards for Medical Documentation Policy.
 - d. Incident Rehabilitation Form:
 - i. This form shall be used to record the entry and exit medical evaluation data for all personnel who are assigned to the Rehab Sector.
 - ii. Once the incident has been completed, these forms shall be included as an attachment to the event ePCR.

Section: **Medical Operations General**
Subject: **RESTRAINING PATIENTS**
Section #: **300.19**
Issue Date: **March 21, 2011**
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1. **General:** From time to time HCFR personnel may encounter individuals who because of either internal or external forces have diminished cognitive ability such that they are rendered unable to provide informed consent for evaluation, treatment or transport that a reasonable person would have provided consent. Such incapacitated persons shall be afforded the best level of care possible using the most reasonable methods available.
 - a. Make every effort to avoid entering into a dangerous situation until law enforcement has arrived to assist.
 - b. Contact law enforcement immediately upon realization that you have encountered a situation with an incapacitated patient who will require examination and potentially treatment and transport.
 - c. Law enforcement officers should be involved with all patients who pose a threat to themselves or other persons.
2. **Inclusion criteria** for this protocol are the following:
 - a. The patient is intoxicated, under the influence of drugs, or otherwise incapable of providing informed consent, and
 - b. At the time of examination or treatment, the patient is experiencing an emergency medical condition, and
 - c. Under all the surrounding circumstances, a reasonable person would undergo such examination, treatment, or procedure if he or she were properly advised (i.e. informed consent) by the EMT, paramedic, or physician.
3. **Authorization:** Pursuant to Florida statute 401.445 (Emergency Examination and Treatment of Incapacitated Persons), HCFR EMTs and paramedics are authorized to employ reasonable methods to evaluate, examine, treat, and transport those persons who are incapacitated and may be experiencing an emergency medical condition.
 - a. HCFR EMTs and paramedics may receive direction from a physician, advanced registered nurse practitioner, physician assistant, or any person acting under the direct medical supervision of a physician if they are on scene and can indicate that a person is incapacitated.
 - b. HCFR EMTs and paramedics may also act in accordance with a court order regarding a person remanded for treatment of mental illness or substance abuse.
4. **Restraints** fall under three broad categories, and HCFR personnel may employ any combination of the three to achieve the desired goal with a minimum of harm to the patient and other persons present at the scene. HCFR personnel shall only use a reasonable amount of force necessary for the situation in the restraint of a patient. All efforts will be made to preserve the dignity of any patient being restrained.
 - a. **Verbal de-escalation** is the first method that is employed, and many times is sufficient to control some minimally disturbed individuals. In all cases, HCFR personnel shall make the effort to obtain cooperation from the incapacitated patient. Verbal techniques may be abandoned when the patient suddenly demonstrates violent behavior.
 - i. Avoid direct eye contact and encroachment upon the patient's personal space.
 - ii. Have an escape route available should situational safety deteriorate
 - b. **Physical restraints** are sometimes necessary.
 - i. Determine the presence of sufficient personnel to accomplish patient restraint in a given situation.

Section: Medical Operations General
Subject: RESTRAINING PATIENTS
Section #: 300.19
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- ii. Use the least restrictive or invasive method of restraint which will protect the patient and others. You may start with one upper extremity and the contra-lateral lower extremity, but in many instances, full restraints on all four extremities will be appropriate to insure patient and provider safety during transport.
- iii. Nothing restrictive should be placed over the face, head or neck of the patient.
- iv. A surgical mask, spit-sock or oxygen mask may be placed loosely on the patient to prevent exposing others to body fluids as a result of the patient's spitting.
- c. **Chemical restraints** are most appropriately the last method of restraint employed because they represent the most serious violation of personal liberty and can cause harm in the form of unanticipated side effects. That being said, there are many clinical situations where the patient is so out of control that they are necessary and represent the safest course of action for both the patient and the crew. It is assumed that if chemical restraints are used that some form of physical restraint is used in combination. This shall not be construed that four point restraints are necessary prior to initiating chemical restraints.
 - i. An HCFR paramedic must be on scene to administer and monitor the effects of chemical restraints.
 - ii. Refer to **HCFR BEHAVIORAL EMERGENCIES** protocol.
- 5. Paramedics and EMTs that are required to restrain a patient, regardless of the reason, will thoroughly document the condition of the patient, the nature of the restraint order, and the persons ordering the restraint.
 - a. In the case of hostile patients, document the circumstances of the situation and the rationale for restraining the patient.
 - b. In the case of physical or chemical restraints, the patient shall be monitored continuously and vital signs documented every five minutes.
 - c. Because these are high risk situations, at a minimum document the following:
 - i. The patient's mental status
 - ii. Lack of response to verbal control
 - iii. The need for restraint, the method of restraint used
 - iv. The type of restraint used
 - v. The results of patient restraint
 - vi. Any injuries to patient or others resulting from the restraint efforts
 - vii. Methods of monitoring the restrained patient during transport.
 - viii. Patient position during treatment and transportation
 - ix. Vital signs
 - x. Distal neurovascular checks
 - xi. Patient status at time of transfer of care
- 6. Every reasonable step will be taken to prevent further illness or injury to the patient.
 - a. Patients shall not be restrained, or transported, in a prone position or with their feet shackled to their hands (i.e. hobble restraints) or placed between two long spine boards.
 - b. Should law enforcement have the patient in one of the two positions listed above, or any other position that the paramedic feels may be dangerous to the patient, the paramedic officer shall have the law enforcement agency move the patient to a supine position on the stretcher and re-secure the patient in that position.

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Section: **Medical Operations General** Page 1 of 2
Subject: **SPINAL MOTION RESTRICTION (SMR)**
Section #: **300.20**
Issue Date: **March 21, 2011**
Revised Date: **December 1, 2017**
Approved By:  **Michael Lozano, Jr., M.D., HCFR Medical Director**

1. Initiate manual in line cervical support if a potential for traumatic spinal injury exists or if the patient exhibits any neurologic signs or symptoms after a known or suspected traumatic event until a comprehensive examination can be performed to determine the appropriate level of SMR.
2. If SMR is indicated, but the patient resists, evaluate the mental status to determine if the patient is capable of making an informed refusal.
 - a. If the patient is able to make an informed refusal of SMR, document this clearly in the report, and have the patient or legally authorized representative sign a refusal for the procedure.
 - b. If the patient is able to make an informed refusal and refuses all care and transport, proceed as per **HCFR STANDARDS OF DOCUMENTATION**.
3. A detailed neurological exam must be documented before and after the application of SMR as applied. Documentation of the pre-SMR neurological examination may be deferred in cases where doing so would place the patient in greater danger (e.g. immediate life or limb threat in a vehicle or structure, unstable vital signs, etc.).
4. SMR guidelines for application
 - a. Immobilize with a cervical collar only (properly sized and secured) **low risk patients**.
 - i. All of the following shall be confirmed and documented
 1. Normal level of consciousness (GCS = 15)
 2. No midline spine pain, tenderness or anatomic deformity
 3. No neurological findings or complaints
 4. No distracting injuries present
 - a. Long bone fractures/multiple fractures
 - b. Visceral injury suspected to require surgical intervention
 - c. Soft tissue injury with significant pain (i.e. large laceration, degloving injury, crush injury, significant burn)
 - d. Any injury causing acute functional impairment
 - e. Patients \geq 65 years of age shall be treated with a higher index of suspicion of C-Spine injury.
 5. No intoxication or impairment
 6. Patient \geq 18 years old
 - b. Full SMR shall be applied for intermediate and high risk patients
 - i. Full SMR, as defined below, shall be indicated if the patient presents with any of the below findings
 1. Spinal tenderness or pain (midline)
 2. Neurological complaint (e.g. numbness, motor weakness etc.)
 3. Anatomical deformity of the spine
 4. Altered level of consciousness
 5. Drug or alcohol intoxication or impairment
 6. Presence of distracting injuries (defined above)
 7. Patient \leq 18 years of age
 8. Trauma Alert due to blunt trauma
 9. When in doubt, apply full SMR
 5. Full SMR shall consist of:
 - a. Manual in-line support.

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- i. Head held in the neutral position in-line with the spine
 - ii. Just enough support to maintain C-spine in neutral position if in a standing or seated position.
 - iii. Pulling or traction on the head is contraindicated.
 - b. C-collar of proper size, properly secured per the manufacturer's instructions.
 - i. If return to the neutral position is contraindicated or the patient's neck is too short for a rigid cervical collar, provide support and immobilization with rolled towels around the neck, taking care not to compress the trachea.
 - ii. Document reasons for not using the cervical collar.
 - c. Head motion restriction device.
 - d. Multiple straps applied to sufficiently restrict longitudinal and lateral movement.
 - e. If the patient is found in a seated position and full SMR is indicated, the KED will be used unless it is otherwise contraindicated (e.g. patient size, need for rapid extrication, etc.).
6. QA Points:
- a. SMR is not indicated for penetrating injuries in which the patient exhibits no signs or symptoms of neurological deficit upon initial examination and the patient does not have distracting injuries.
 - b. Not all patients will require full SMR, but if there are signs or symptoms of suspected spinal injury take full spinal motion restriction precautions.

Section: **Medical Operations General**
Subject: **TOURNIQUET USE – STATE OF FLORIDA COMMON PROTOCOL**
Section #: **300.21**
Issue Date: **March 21, 2011**
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1. **Indications for tourniquet use** – To stop bleeding when:
 - a. Life-threatening limb hemorrhage is not controlled with direct pressure or other simple measures, e.g. a mangled extremity.
 - b. Traumatic amputation has occurred.
2. **Application** – Combat Application Tourniquet (CAT)
 - a. Placement:
 - i. Expose the extremity by removing clothing in proximity to the injury.
 - ii. Place directly over exposed skin at least 5 cm proximal to the injury.
 - iii. Route the self-adhering band tight.
 - iv. Pass the band through the outside slit of the buckle.
 - v. Pull the self-adhering band tight.
 - vi. Twist the rod until bright red bleeding stops.
 - vii. Lock the rod in place with the clip.
 - viii. Record the date and time of application on the tourniquet and in your report.
 - b. Evaluation:
 - i. The tourniquet is effectively applied when there is cessation of bleeding from the injured extremity indicating a total occlusion of arterial blood flow.
 - ii. Any pre-existing distal pulse should be absent at that time as well.
 - c. Tourniquet time and removal:
 - i. Tourniquets should be removed as soon as possible under conditions where the hemorrhage can be directly controlled, i.e. hospital or casualty collection center (CCC).
 - ii. Tourniquet placement must be communicated verbally and in writing in patient care reports for all pre-hospital to hospital and inter-hospital transfers.
3. QA Point:
 - a. Tourniquet use greater than 6 hours is associated with distal tissue loss.
 - b. In patients who have sustained devastating extremity injuries after an explosion, early application of a tourniquet may be life saving.

Section: Medical Operations General
Subject: TRAUMA ALERT CRITERIA - ADULT
Section #: 300.22
Issue Date: March 21, 2011
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1. Identification of an Adult Trauma Alert patient:

- a. For purposes of this protocol, an adult patient is an individual greater than fifteen (15) years of age.
- b. Upon arrival at the location of an incident, the EMT or paramedic shall:
 - i. Assess the condition of each adult trauma patient using the adult trauma scorecard methodology provided in section 64J-2.004 Florida Administrative Code (FAC) to determine whether the patient should be a trauma alert.
 - ii. In assessing the condition of each adult trauma patient, the following components shall be used: airway, circulation, the best motor response (BMR) component of the Glasgow Coma Scale, cutaneous (skin condition and integrity), long bone fracture, age, and mechanism of injury.

2. Adult Trauma Scorecard Methodology

- a. An Adult Trauma Alert *shall* be called if any of the following four (4) criteria is met:
 - i. Criteria #1: Patient earns a score of two or greater when assessed according to the following criteria as set forth in 64J-2.004 F.A.C.:

Criteria #1		
Component	Item = 1 point	Item = 2 points
Airway	<ul style="list-style-type: none">Sustained RR greater than or equal to 30 / min	<ul style="list-style-type: none">Active airway assistance beyond oxygen administration
Circulation	<ul style="list-style-type: none">Sustained HR greater than or equal to 120 bpm	<ul style="list-style-type: none">Lack of radial pulse with sustained HR greater than or equal to 120 bpm, orBP less than or equal to 90 mmHg
Best Motor Response	<ul style="list-style-type: none">BMR = 5 (on GCS Scale)	<ul style="list-style-type: none">BMR less than or equal to 4 (on GCS Scale), orParalysis, orSuspicion of a spinal cord injury, orLoss of sensation
Cutaneous	<ul style="list-style-type: none">Soft tissue loss from either a major degloving injury or a major flap avulsion greater than 5 inches (12.7 cm.)GSW to the extremities	<ul style="list-style-type: none">Amputation proximal to the wrist or ankle, or2nd or 3rd degree burns greater than or equal to 15% TBSA, orPenetrating injury to the head, neck, or torso (excluding superficial wounds where the depth of the wound can be determined)
Longbone Fracture	<ul style="list-style-type: none">MVC or a fall greater than ten (10) feet causing signs or symptoms of a longbone fracture (humerus; radius or ulna; femur; tibia or fibula)	<ul style="list-style-type: none">Signs or symptoms of fractures at two or more longbone fracture sites: humerus; radius or ulna; femur; tibia or fibula
Age	<ul style="list-style-type: none">Patient greater than or equal to 55 years of age	
Mechanism of Injury	<ul style="list-style-type: none">Ejection from a vehicle (excluding any motorcycle, moped, all terrain vehicle, bicycle, or open body of a pickup truck), orThe driver of a motor vehicle strikes the steering column with sufficient force to cause deformity	

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ii. Criteria #2 as set forth in 64J-2.004 F.A.C.:

Criteria #2	<ul style="list-style-type: none">Patient has a Glasgow Coma Score (GCS) less than or equal to 12 (excluding those persons who's normal GCS would be less than or equal to 12)
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iii. Criteria #3 as set forth in Hillsborough County Trauma Agency Uniform Trauma Transport Protocol, Change 11, and January 2011.

Criteria #3	<ul style="list-style-type: none">A trauma alert shall be called for any patient who has a neck laceration with associated swelling, sustained bleeding, escape of air from wound or stridor, and (the patient shall be) transported to the nearest trauma center¹. A patient with any other neck laceration not meeting the above-described conditions shall be transported to the nearest trauma center, but not trauma alerted.
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iv. Criteria #4 EMS provider high index of suspicion as set forth in 64J-2.004 F.A.C.:

Criteria #4	<ul style="list-style-type: none">In cases where the patient does not meet any of the above criteria for a trauma alert, and the senior paramedic on the scene has a strong suspicion of the presence of a serious injury in the patient, the paramedic may use their judgment to transport the patient as a trauma alert as long as the reason is justified on the patient care record left at the trauma center.
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3. Trauma Notifications

- a. The senior paramedic on scene shall ensure that a prehospital trauma alert is issued upon determination that a patient meets any of the above criteria. The words "trauma alert" shall be used when notifying the trauma center or hospital that the unit is en route with a trauma alert patient.
- b. When notifying dispatch of a trauma alert, include the following information:
 - i. Type of trauma alert(s): adult or pediatric
 - ii. Number of patients
 - iii. Mechanism of injury
 - iv. Destination
 - v. Airway and ventilation status, oxygen saturation, if known
 - vi. Hemodynamic status (e.g. characteristics of peripheral pulses, or vital signs if available)
- c. The report given to the trauma center shall include at a minimum, the following information:
 - i. Estimated time of arrival
 - ii. Approximate age
 - iii. Nature and mechanism of injury
 - iv. Body area involved
 - v. GCS
 - vi. Airway and ventilation status

¹ No detailed wound exploration will be attempted by paramedics or EMTs other than to make the above determinations. Treatment will be directed towards ABCs and rapid transport.

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- vii. Oxygen saturation, if known
- viii. Hemodynamic status (e.g. characteristics of peripheral pulses, or vital signs if available)

4. Elder gray-area criteria: as set forth in Hillsborough County Trauma Agency Uniform Trauma Transport Protocol, Change 11, January 2011.

- a. The older or geriatric trauma patient who does not meet any of the aforementioned trauma alert criteria, but is 65 years or older, is "at-risk" and might benefit from the services available at a trauma center. The lead paramedic should consider transporting that patient to a trauma center if one or more of the following conditions are satisfied:
 - i. Mechanism of injury
 - Motor vehicle collision associated with:
 - a. Rapid deceleration of automobile (> 35 mph)
 - b. Pedestrian/bicycle/golf cart
 - c. Motorcyclist
 - d. Vehicle occupant with lack of restraints
 - e. Significant passenger space invasion
 - f. Prolonged extrication greater than 20 minutes
 - g. Significant vehicular damage
 - h. Rollover
 - i. Fatality of other occupant
 - Other events associated with high-energy dissipation:
 - a. Fall
 - b. Blast
 - Injuries associated with an above mechanism:
 - a. Evidence of chest or pelvic trauma
 - Traumatic injury and currently taking:
 - a. Anticoagulants and blood thinners
 - b. Cardiac medications such as beta blockers and antiarrhythmics
 - c. Diabetic medications
 - Medical History of:
 - a. Cardiac
 - b. CHF
 - c. COPD
 - d. Paralysis
 - e. Dementia
 - f. Surgical: recent surgery, transplant recipient
 - g. Diabetes

Section: Medical Operations General
 Subject: TRAUMA ALERT CRITERIA - PEDIATRIC
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1. Identification of an Pediatric Trauma Alert patient:

- a. For purposes of this protocol, a pediatric patient is an individual less than or equal to fifteen (15) years of age.
- b. Upon arrival at the location of an incident, the EMT or paramedic shall:
 - i. Assess the condition of each pediatric trauma patient using the pediatric trauma scorecard methodology provided in section 64J-2.005 Florida Administrative Code (FAC) to determine whether the patient should be a trauma alert.
 - ii. In assessing the condition of each pediatric trauma patient, the following components shall be used: airway, consciousness, circulation, fracture, cutaneous (skin condition and integrity), and the patient's size.

2. Pediatric Trauma Scorecard Methodology

- a. A Pediatric Trauma Alert *shall* be called if any of the following three (3) criteria is met:
 - i. Criteria #1: Patient earns a score of two or greater when assessed according to the following criteria as set forth in 64J-2.005 F.A.C.:

<i>Criteria #1</i>			
Component	Item = 0 points	Item = 1 point	Item = 2 points
Size	<ul style="list-style-type: none"> • Weight greater than 11 kg (24 lbs) 	<ul style="list-style-type: none"> • Weight less than or equal to 11 kg, or • Measures less than or equal to 33 inches (84 cm.) 	
Airway	<ul style="list-style-type: none"> • Normal, or • Supplemental oxygen without the use of airway adjuncts 		<ul style="list-style-type: none"> • Intubated, or • Breathing maintained through measures such as manual jaw thrust, continuous suctioning, or other adjuncts.
Consciousness	<ul style="list-style-type: none"> • Awake, alert, and oriented for age 	<ul style="list-style-type: none"> • Amnesia, or • Reliable history of loss of consciousness 	<ul style="list-style-type: none"> • Altered mental status (e.g. drowsiness, lethargy, the inability to follow commands, unresponsiveness to voice, totally unresponsive, coma, etc.), or • Paralysis, or • Suspected spinal cord injury or • Loss of sensation
Circulation	<ul style="list-style-type: none"> • All peripheral pulses palpable, or • SBP is greater than or equal to 90 mmHg 	<ul style="list-style-type: none"> • The carotid or femoral pulse is palpable, but neither the radial or pedal pulses are palpable, or • SBP is less than 90 mmHg 	<ul style="list-style-type: none"> • Faint or non-palpable radial or femoral pulse, or • SBP less than 50 mmHg
Fracture	<ul style="list-style-type: none"> • No signs or symptoms of fracture 	<ul style="list-style-type: none"> • Signs and symptoms of a single closed long-bone (humerus; radius or ulna; femur; tibia or fibula) fracture. 	<ul style="list-style-type: none"> • Any open long-bone (humerus; radius or ulna; femur; tibia or fibula) fracture, or • Multiple fractures sites ¹, or • Multiple dislocations ²

¹ Except for isolated wrist or ankle fractures

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Criteria #1	Component	Item = 0 points	Item = 1 point	Item = 2 points
Cutaneous		<ul style="list-style-type: none"> • No visible injury, or • Contusion, abrasion, minor laceration 		<ul style="list-style-type: none"> • Major soft tissue disruption (i.e. major degloving injuries, major flap avulsions), or • 2nd or 3rd degree burns ≥ 10% TBSA, or • Amputation at or above the wrist or ankle, or • Any penetrating injury to the head, neck, or torso, except those where the depth of the wound can be determined

ii. Criteria #2 as set forth in Hillsborough County Trauma Agency Uniform Trauma Transport Protocol, Change 11, January 2011.

Criteria #2	<ul style="list-style-type: none"> • A trauma alert shall be called for any patient who has a neck laceration with associated swelling, sustained bleeding, escape of air from wound or stridor, and (the patient shall be) transported to the nearest state approved pediatric trauma center ³. • A patient with any other neck laceration not meeting the above-described conditions shall be transported to the nearest State approved pediatric trauma center, but not trauma alerted.
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iii. Criteria #3 EMS provider high index of suspicion as set forth in 64J-2.004 F.A.C.:

1. In cases where the patient does not meet any of the above criteria for a pediatric trauma alert, and the senior paramedic on the scene has a strong suspicion of the presence of a serious injury in the patient, the paramedic may use their judgment to transport the patient as a trauma alert as long as the reason is justified on the patient care record left at the state approved pediatric trauma center.

3. Trauma Notifications

- a. The senior paramedic on scene shall ensure that a prehospital trauma alert is issued upon determination that a patient meets any of the above criteria. The words "trauma alert" shall be used when notifying the trauma center or hospital that the unit is en route with a trauma alert patient.
- b. When notifying dispatch of a trauma alert, include the following information:
 - i. Type of trauma alert(s): adult or pediatric
 - ii. Number of patients
 - iii. Mechanism of injury
 - iv. Destination
 - v. Airway and ventilation status, oxygen saturation, if known

² Except for isolated wrist or ankle dislocations

³ No detailed wound exploration will be attempted by paramedics or EMTs other than to make the above determinations. Treatment will be directed towards ABCs and rapid transport.

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- vi. Hemodynamic status (e.g. characteristics of peripheral pulses, or vital signs if available)
- c. The report given to the trauma center shall include at a minimum, the following information:
 - i. Estimated time of arrival
 - ii. Approximate age
 - iii. Nature and mechanism of injury
 - iv. Body area involved
 - v. GCS
 - vi. Airway and ventilation status
 - vii. Oxygen saturation, if known
 - viii. Hemodynamic status (e.g. characteristics of peripheral pulses, or vital signs if available)

Section: Patient Transport
Subject: HOSPITAL DESTINATION
Section #: 301.01
Issue Date: March 21, 2011
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1. IN-COUNTY TRANSPORT DESTINATIONS

- a. Within Hillsborough County, patients shall be transported to the hospital of their choice unless otherwise directed by the Medic-1 Physician, Hillsborough County Uniform Trauma Transport Protocol, or HCFR disease-specific transport policy.
 - i. For the purposes of this policy, Lakeland Regional Medical Center, Manatee Memorial Hospital, Florida Hospital Wesley Chapel, Florida Hospital Zephyrhills, Trinity Medical Center and Mease Countryside Hospital may be treated as in-county hospitals.
- b. The closest appropriate receiving facility shall be used for patients who do not or cannot indicate a choice.

2. OUT-OF-COUNTY TRANSPORT DESTINATIONS

a. Out-of-County/Nearest Facility

- i. If the patient requests an out-of-county hospital, AND it is the *nearest appropriate* receiving facility, paramedics may transport to that facility without further authorization.

b. Out-of-County

- i. If the patient requests an out-of-county hospital, AND that facility is in a county that is contiguous with Hillsborough County, paramedics may transport to that facility but shall notify the appropriate Battalion Chief prior to leaving Hillsborough County.
- ii. If the patient request transport to a facility beyond a contiguous county, the lead paramedic shall contact the on-duty Shift Commander for approval.
- iii. When transporting a patient to a county other than Hillsborough, Pasco, Pinellas, Polk, or Manatee, mileage shall be recorded for the distance to the receiving facility plus the distance back to the Hillsborough County line.

3. TRANSPORT TO A HOSPITAL ON BYPASS

- a. Patient or legally authorized representative (LAR) is able to provide informed consent:
 - i. If an alert and fully oriented patient or their LAR requests transport to a hospital that has notified HCFR that they are on a "bypass status", inform the patient that they may experience a delay in their care and recommend the next closest appropriate facility.
 - ii. Should the patient insist on transport to the facility that is on bypass honor the patient's wishes, and have the patient, or LAR, read and sign an HCFR "Requested Hospital on Bypass" form.
 - iii. Upon arrival at the hospital on bypass, notify the staff that the patient had requested their facility and had signed an informed consent.
 - iv. An HCFR crew will not supersede the wishes of a patient who is competent to make such a decision, or their LAR except in a life threatening situation or on the express order of the Medic-1 Physician.
- b. Neither patient nor LAR is able to provide informed consent:
 - i. The lead paramedic shall take the patient to the closest appropriate facility.

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- c. Unstable patient:
- i. If the closest appropriate hospital is on bypass for the type of condition the patient is suspected of experiencing, the lead paramedic shall make the decision as to whether the patient will tolerate transport to the next closest appropriate facility.
 - ii. If it is determined that it is not in the patient's best interest to drive past a facility which is on bypass, the patient shall be transported to the closer facility to allow the medical staff to stabilize the patient.
 - iii. The lead paramedic's decision making shall be clearly documented in the patient record and communicated to the staff at the facility on bypass status.

4. TRANSPORT TO A FREE STANDING EMERGENCY DEPARTMENT (FSED)

- a. Patients who are experiencing a minor injury or illness may be transported to a FSED if they request to go there.
 - i. These types of patients are normally not admitted to the hospital following an ER evaluation. Examples include but are not limited to:
 1. Minor Medical: uncomplicated medical symptoms such as flu-like symptoms, sore throat, respiratory infection, rashes, fever, urinary symptoms, and uncomplicated nosebleeds.
 2. Minor Trauma: uncomplicated musculoskeletal injuries, including bruises, lacerations, sprains, back pain and non-displaced, closed suspected fractures or dislocations.
 3. Behavioral health or emotional complaint patients who do not meet Baker Act criteria: anxiety, panic attack, depression.
 4. Spinal motion restricted patients who are stable and lack significant mechanism of injury
- b. Patients who are experiencing signs and symptoms which historically ended up in an operating room or admission to a hospital are NOT candidates for transport to a FSED under normal circumstances.
 - i. The following types of patients are NOT candidates for transport to a FSED under normal circumstances:
 1. Critical patients with unstable vital signs, altered levels of consciousness, or other potentially life threatening conditions
 2. Cardiac Arrest patients
 3. Patients meeting Trauma Alert or Elder Gray criteria
 4. STEMI Alert or any patients with chest pain of suspected cardiac origin
 5. Patients with difficulty in breathing who do not respond to treatment or who are receiving CPAP therapy
 6. Stroke Alert patients
 7. Patients who may require neuro-surgical services
 8. Pregnant patients at greater than 20 week's gestation with a pregnancy related complaint.
 9. Patients with angulated and/or open fractures – they will need an operating room.
 10. Patients requiring soft restraints or chemical sedation.
 11. Patients with abdominal pain age 65 and over

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- c. Notwithstanding the statements above, if the patient's airway is not maintainable with EMS advanced or basic airway management techniques and the FSED is the closest ED facility, it shall be appropriate in that circumstance to transport a patient meeting the exception criteria above to an FSED
- d. As with any patient, if there is uncertainty on the treatment plan or appropriate receiving facility, please contact the Medic 1 physician for guidance.
- e. The transport destination shall ultimately remain the patient's choice in non-trauma alert type situations. Consider communication with the patient as noted in the QA Points of this protocol when the patient requests transport to a FSED for a condition listed as an exception.

5. TRAUMA ALERT TRANSPORT

- a. Nothing in this policy should be construed to supersede the statutory requirement of transporting persons meeting Trauma Alert criteria to the appropriate Trauma Center.

6. OTHER CONSIDERATIONS

- a. Patients placed under a Baker or Marchman Act shall be taken to the appropriate receiving facility without regard to their wishes.
- b. Patients who are to remain in the custody of HCSO after transport (i.e. patients who are under arrest, etc.) shall go to a healthcare facility contracted by HCSO to receive these patients, unless a specific condition warrants a specialty resource center.
- c. Un-emancipated patients less than 18 years of age shall have their parents or legal guardians indicated a preference of destination facility. However, such an indication of preference shall not supersede the other parts of this policy.

7. QA POINTS

- a. The Medic-1 Physician is always available for consultation.
- b. The transport destination is ultimately the patient's choice in non-trauma situations.
- c. Studies have shown that stroke patients do better at approved stroke centers even when they are not candidates for t-PA.
- d. There is a preponderance of evidence in the medical literature that patients experiencing STEMI will do better when treated at a facility that can consistently perform primary coronary intervention within the time frames as promulgated by the American College of Cardiology.
- e. Example of how to suggest another facility to the alert and oriented patient or their LAR: "*I understand that you are requesting transport to hospital X. However, from what we are able to determine, you may be experiencing a problem which could require services not available at that hospital. My recommendation is that you consider being transported to hospital Y which has those services.*"
- f. Derogatory or inflammatory statements to the patient or their family about any receiving facility are NEVER appropriate.
- g. Always completely document any unusual occurrence or decision that causes you to deviate from this policy.

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Section: Patient Transport
Subject: HOSPITAL BYPASS GUIDELINES
Section #: 301.02
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1. To promote community cooperation in the delivery of emergency medical services, the Hillsborough County Emergency Planning Council (EMPC) has approved Ambulance Diversion and Bypass Guidelines.
2. If the patient's requested facility is on Bypass status, pre-hospital crews will make a sincere effort to honor the Bypass status.
 - a. If the patient adamantly insists on being taken to a hospital that is on Bypass status despite being notified of its stated inability to care for the patient, or if medical conditions warrant, the paramedics will contact the hospital to inform them of the ETA.
 - b. The patient who insists on transport to a facility on bypass will sign a "Requested Hospital on Bypass" form.
3. Should all Hillsborough County State Approved Trauma Centers be on Trauma Bypass at the same time, EDC will contact those Trauma Centers to determine what specific capabilities each has.
 - a. In the above event, other Hillsborough County hospitals may need to receive trauma patients for initial stabilization and care.
4. Should all the hospitals in a geographic area of the county request Bypass status:
 - a. Bypass status will be canceled for all the hospitals in that geographic region.
 - b. EDC will notify the ambulance services of the updated status and patients will be transported to the closest appropriate facility.
5. Any problem identified as directly or indirectly related to a diversion will be followed up by the Hillsborough County Bypass Committee.

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: Patient Transport
Subject: SUPPRESSION UNIT PROVIDING A DRIVER TO A RESCUE
Section #: 301.03
Issue Date: March 21, 2011
Revision Date:
Approved By:

Page 1 of 1

Michael Lozano

Michael Lozano, Jr., M.D., HCFR Medical Director

1. HCFR members from suppression companies may be required to drive HCFR rescue units to the hospital. The rescue officer shall determine if this shall be *necessary* due to the *medical condition* of the patient.
 - a. The suppression company officer will provide a qualified member to drive the rescue unit.
 - b. In the event there is only one paramedic assigned to the rescue company for the day (e.g. rescue officer and EMT), the suppression company's paramedic will, if available, assist with patient care and the EMT crew member assigned to the rescue will drive.
 - c. In all situations where a member from the suppression company is temporarily assigned to the rescue company the rescue officer **shall** be in the patient compartment attending to the patient.
2. If the rescue officer is uncertain of their paramedic's ability to care for the patient and such condition *does not warrant* two (2) paramedics attending the patient, the rescue officer will attend the patient and the other paramedic drive.
3. Once the suppression company has provided members to the rescue company, the suppression officer will notify EDC of the situation and operate under guidelines for "short crew" response as applicable.
4. If the rescue unit is transporting to a hospital in the suppression company's first due territory, the suppression company will proceed to the hospital to retrieve their crew member.
 - a. The suppression officer will have the option of retrieving personnel in the same manner if the hospital is near but outside the first due area.
 - b. If the hospital is outside the suppression company's first due territory, the provided member may be returned to their station by the rescue company, taxi, or Battalion Chief.

Section: Patient Transport
Subject: TIME IN HOSPITAL
Section #: 301.04
Issue Date: March 21, 2011
Revision Date: December 1, 2017
Approved By:

Michael Lozano

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Michael Lozano, Jr., M.D., HCFR Medical Director

1. All rescue companies shall expedite the transfer of patients to hospital staff upon arrival at the receiving facility.
2. Initial medical documentation, cleaning of the apparatus and equipment, and the reorganization of supplies with the company being returned to an in-service status should routinely be completed within thirty (30) minutes or less.
3. Twenty (20) minutes after the rescue company arrives at the receiving facility, EDC will consider that unit for possible response if needed due to a lack of coverage.
 - a. **All crews will monitor the dispatch frequency** while at the receiving facility and respond in a timely manner when possible.
 - b. If the response will be delayed for any reason, contact EDC immediately and advise them of your situation.
4. Problems encountered at the receiving facility, which delay the transfer of patients or prevent the crew from returning to service within forty-five (45) minutes, will be documented and reported to the Battalion Chief.

Section: **Patient Transport** Page 1 of 1
Subject: **TRANSPORTATION OF MINORS AND UNATTENDED MINORS**
Section #: **301.05**
Issue Date: **March 21, 2011**
Revision Date: **December 1, 2017**
Approved By:  **Michael Lozano, Jr., M.D., HCFR Medical Director**

1. Due to the fact that pediatric patients can deteriorate rapidly, and the need to maintain pediatric assessment skills, all patients \leq 5 years of age shall be transported ALS by HCFR personnel.
 - a. Because younger children are capable of looking reasonably stable one minute, and then having their medical condition worsen precipitously, **extreme care** must be exercised when transporting patients less than six (6) years of age.
 - b. Nothing in this policy shall preclude the transfer of pediatric patients to an air ambulance for transport.
2. It is HCFR policy that in the absence of a parent or legal guardian, a minor needing transport, will be transported to the closest appropriate hospital.
 - a. Every attempt to contact the parent or guardians should be made prior to transport in non-urgent situations.
 - i. An exception to this would be an emancipated minor who shall be treated as an adult with respect to destination choice assuming that the patient otherwise has the ability to provide informed consent.
 - b. The Hillsborough County School District has parents complete an Emergency Information Card giving instructions and authorization for their child's care in case the parent or guardian cannot be reached. Therefore, if you are called to either a school or a school bus where there is a school district employee requesting assistance for a minor patient, you are authorized to transport the child.
 - c. Children with life-threatening problems requiring immediate medical care will be transported without delay.
3. When personnel are operating at an incident and the parent or guardian of an otherwise unattended child is transported, law enforcement will immediately be requested.
 - a. A company will remain on the scene and the company officer will assume custody of the child until such time as law enforcement personnel assume this responsibility.
 - i. The company officer will assign a minimum of two personnel to be with the child at all times.
 - ii. When law enforcement personnel assume custody of the child, record the child's name, and the name of the deputy or police officer, along with their badge number, on the incident report, and in the station log book.
 - b. It is not acceptable to leave unattended minors with a non-relative unless prior approval was obtained from the parents or guardians.

Section: **Patient Transport**
Subject: **FAMILY MEMBERS / SERVICE ANIMALS RIDING DURING TRANSPORT**
Section #: **301.06**
Issue Date: **March 21, 2011**
Revision Date:
Approved By:



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Michael Lozano, Jr., M.D., HCFR Medical Director

1. FAMILY MEMBERS

- a. Any individuals riding in the patient compartment of the rescue unit shall do so at discretion of the rescue officer.
- b. Parents of small children and HCFR personnel are *generally* the only persons allowed to ride in the patient compartment of the Rescue.
- c. Officers are strongly advised to avoid allowing potentially violent or uncontrollable family members to ride along with the patient.

2. SERVICE ANIMALS

- a. It is the intent of HCFR to aid in the transportation of a patient's service animal whenever possible.
- b. Service Animals – the Americans with Disabilities Act (ADA) defines a service animal as any guide dog, signal dog, or other animal individually trained to provide assistance to an individual with a disability.
 - i. If they meet this definition, animals are considered service animals under the ADA regardless of whether they have been licensed or certified by a state or local government.
 - ii. A person claiming an animal as a service animal is NOT required to provide proof or documentation as to the legitimacy of the animal's purpose.
- c. Exclusion of a service animal:
 - i. Under the ADA HCFR members may exclude the service animal from transport in an HCFR vehicle if:
 1. The animal is out of control and the animal's owner does not take effective action to control it.
 2. The animal poses a direct threat to the health or safety of others.
 - ii. If an animal cannot be transported due to behavior problems HCFR personnel should attempt to make other arrangements for the animal either through Hillsborough County Animal Control, other family members, or HCSO.

Section: Patient Transport
Subject: PATIENT PROPERTY
Section #: 301.07
Issue Date: March 21, 2011
Revision Date: December 1, 2017
Approved By: *Michael Lozano*

Michael Lozano, Jr., M.D., HCFR Medical Director

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1. Upon finding any lost or left behind items belonging to patients or any other persons riding in the unit, an immediate attempt will be made to return the item to the patient or family member at the scene or receiving facility as soon as possible.
 - a. Any patient belongings handled in this manner will be noted and described in the narrative of the ePCR.
2. If an item is found after returning to the station, the Battalion Chief will immediately be notified and the crew shall attempt to contact and return the item to the patient or a family member.
 - a. The item(s) will be placed in a secure area in the station with that location logged in the station log.
 - b. Crews will, at the direction of the Battalion Chief, return to the scene or receiving facility to return found items.
 - c. Any patient belongings handled in this manner will be noted and described in the narrative of the ePCR.
 - d. In the event a found item cannot be returned after multiple good faith attempts by the crew and Battalion Chief, the Quality Management Chief shall be notified during normal business hours for additional direction.
3. Patient Medications:
 - a. Thorough documentation must occur for the disposition of any medications that are presented to HCFR members.
 - b. This is particularly important when dealing with controlled substances.
 - c. Document in the ePCR if the medications were *handled* by HCFR members and how they were returned to the patient.
 - i. Example: "*The patient's medications, as listed, were handled for the purpose of recording type, dose, and frequency. All medications returned to the patient at his residence*" – or – "*All medications returned to the patient's spouse*", etc.

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: **Medical Evacuation (Medevac) / Air ambulance Operations**
Subject: **REQUESTING AIR AMBULANCE STANDBY**
Section #: **302.01**
Issue Date: **March 21, 2011**
Revision Date:
Approved By:

Michael Lozano

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Michael Lozano, Jr., M.D., HCFR Medical Director

1. At any time prior to arrival and based upon information obtained by EDC the company officer or Battalion Chief may request that an air ambulance be placed on standby.
 - a. The intent of HCFR in placing an air ambulance on standby is not for the helicopter to launch, but to provide information to the air ambulance provider in an attempt to reduce response times in the event the air ambulance is actually needed.
 - b. It is not HCFR's intent that air ambulance providers launch prior to a formal launch request from the incident commander at the emergency scene.
2. Prior to requesting the standby or response of a medical evacuation helicopter, the company officer should consider:
 - a. Is the incident located within HCFR Ground Transport Zone? (Refer to Ground Transport Zone policy)
 - b. Is there an appropriate landing zone within the area? (Refer to Landing Zone Selection & Preparation policy)
 - c. Would ground transportation to the hospital exceed 30 minutes?
 - d. Is the mechanism of injury or pre-arrival information suggestive of a possible patient condition requiring rapid transport?
 - e. Is the patient's condition requiring rapid transportation to a specialized medical facility, such as cardiac care, Level I or Level II trauma center?
 - f. Is a doctor needed on the scene before patient is transported to a medical facility?
3. Once the determination has been made to fly the patient and the air ambulance provider has been given the order to launch, the Incident Commander will dedicate a suppression company to set up and operate the landing zone.
 - a. If there is not enough equipment or HCFR members on the scene to make this possible, he/she will request an additional suppression company for this purpose.

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: Medical Evacuation (Medevac) / Air ambulance Operations
Subject: AIR AMBULANCE FIRST RESPONSE
Section #: 302.02
Issue Date: March 21, 2011
Revision Date:
Approved By:

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Michael Lozano

Michael Lozano, Jr., M.D., HCFR Medical Director

1. The decision to use a helicopter as a transport unit prior to the arrival of a ground transport unit shall be based upon the patient's condition following completion of the initial patient survey by an HCFR qualified paramedic.
 - a. Evaluation of the mechanism of injury as the sole parameter is not appropriate criteria when determining the need for a helicopter as a first response unit.
2. Before an HCFR Company Officer request is made for helicopter first response, the following criteria should be considered:
 - a. Does the patient have a life threatening traumatic injury or medical condition that requires prompt medical intervention?
 - i. Will the total time from initial patient survey to arrival at the destination facility exceed thirty (30) minutes?
 - b. Is the patient located in an area which is inaccessible to regular ground vehicle response?
 - c. Is there an appropriate landing zone within the area to accommodate safe landing of the aircraft?
 - d. Are sufficient members and equipment available to manage the landing zone, provide scene security, and assist the flight crew upon arrival and throughout the mission prior to departure?
 - e. Is the distance from the landing zone to the emergency site reasonable so flight crew members are able to respond on foot with appropriate equipment?
 - f. If the distance from the landing zone to the emergency site prohibits flight crew response, is ground vehicle transportation available at the landing zone to transport personnel and essential equipment (i.e. BC Vehicle, Brush Truck, etc.)?

Section: Medical Evacuation (Medevac) / Air ambulance Operations
Subject: SAFETY AROUND HELICOPTERS
Section #: 302.03
Issue Date: March 21, 2011
Revision Date:
Approved By: *Michael Lozano*

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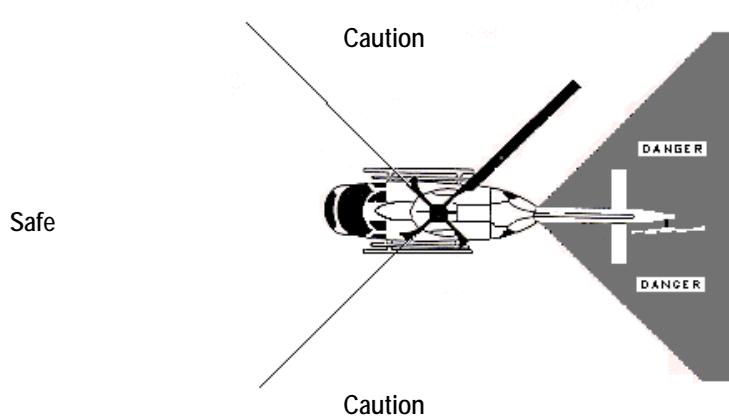
Michael Lozano, Jr., M.D., HCFR Medical Director

1. Landing Zone

- a. Landing zones are to be considered high hazard areas..
- b. It is important to assign sufficient personnel for landing zone.
- c. All civilians (including patient's family), media personnel, and bystanders from the emergency services operating on the scene, must be kept clear of the landing zone at all times.
- d. No smoking, flares or open flames are permitted in or near the marked boundaries of the landing zone.
- e. No one is to be inside the designated landing zone until the helicopter is on the ground.
- f. No vehicles are permitted inside the designated landing zone at any time.

2. Approaching the aircraft:

- a. Never approach the aircraft until instructed by the pilot or flight crew.
- b. Tail rotor systems are very difficult to see and low enough to cause injury or death; therefore, eye contact with the pilot should be established before approaching the helicopter.
- c. Always approach the aircraft from the front, in a crouched position, and in full view of the pilot or flight crew, unless given other directions by the pilot or flight crew.
- d. If the landing zone is on a slope or uneven ground, always approach the helicopter from the downhill side. *Never* from the uphill side.
- e. Before approaching the helicopter remove hats and loose objects. If wearing a helmet, hook the chin strap.
- f. Always lower your head when approaching the helicopter to protect your eyes from debris which may be thrown up by the rotor-wash.
- g. Keep intravenous lines and other equipment below the level of your head when approaching the helicopter.
- h. Never open or secure helicopter compartment doors. This will only be done by the flight crew.
- i. Only the minimum number of ground members as indicated by the flight crew will assist in loading patient on-board the helicopter.
- j. Any member assigned this duty will depart when directed by the flight crew; exiting towards the front of the aircraft.



Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: Medical Evacuation (Medevac) / Air ambulance Operations
Subject: LANDING ZONE OFFICER AND COMMUNICATIONS
Section #: 302.04
Issue Date: March 21, 2011
Revision Date:
Approved By:

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 Michael Lozano, Jr., M.D., HCFR Medical Director

1. Upon notification from EDC that a helicopter has been dispatched, the IC will designate a Landing Zone (LZ) Officer.
 2. The LZ Officer will be responsible for the establishment and safety of a Landing Zone.
 - a. If a roadway is to be closed and used as the LZ, this information must be clearly and specifically communicated to the appropriate law enforcement agency along with a request for their assistance.
 - b. Try to minimize the time that the road is closed and notify law enforcement as soon as the roadway is clear for reopening.
 3. Upon locating a site, the LZ Officer will survey the area for all hazards which will be of interest to the helicopter pilot.
 - a. All hazards will be identified on all sides of the LZ, including approximate distances away from the area in which the helicopter will actually be landing.
 4. The LZ Officer will identify from which direction the wind is coming from, and will stand in the center of the upwind boundary of the LZ, with their back to the wind.
 5. The LZ Officer will establish communications with the helicopter pilot as soon as possible.
 - a. Communications between ground units and helicopters will utilize the LZ CNTRL sub-fleet under the Field Operations fleet on the Hillsborough County Fire Rescue 800 MHz system.
 - b. All communications with the helicopter will be done by the LZ Officer.
 - i. No other units are to communicate on the LZ CNTRL sub-fleet during LZ operations
 - c. All communications are to be brief, clear, and concise.
 - i. Make certain that all communications are acknowledged between the flight crew and ground units.
 - ii. Messages that are not acknowledged will be considered not received.
 - d. Be patient if the pilot does not acknowledge your transmission right away.
 - e. If the LZ is not ready for the helicopter to land shortly after arriving on the scene, advise the pilot and have them circle the scene until the LZ is safe for landing.
 - f. Be as specific as possible when giving directions to the pilot using compass directions. (i.e., "Engine 1 to Aero-Med, the LZ is approximately ¼ mile to the east of your present position.")
 - i. This eliminates confusion and gives the pilot specific reference points to work with in correlation to the position and flight direction of the aircraft.
 6. When the helicopter arrives in the area of the LZ, the LZ Officer will advise the pilot of all pertinent information, including hazards and their type, location and distance from the LZ, wind direction and relative speed (light, moderate), and any other information that is pertinent to the safe approach, landing, and subsequent takeoff of the aircraft.

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: Medical Evacuation (Medevac) / Air ambulance Operations
Subject: LANDING ZONE OFFICER AND COMMUNICATIONS
Section #: 302.04
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7. The LZ Officer will focus their concentration on the landing zone and aircraft safety, and will not participate in any other activities at the emergency scene.
8. The LZ Officer will insure that people are assigned to prevent anyone from walking into the tail rotor or from doing something that would endanger the flight crew, helicopter, patient, or any other safety related operation.
9. Safety is the primary responsibility of everyone involved in a helicopter evacuation operation!

Section: Medical Evacuation (Medevac) / Air ambulance Operations
Subject: LANDING ZONE SELECTION AND PREPARATION
Section #: 302.05
Issue Date: March 21, 2011
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Michael Lozano, Jr., M.D., HCFR Medical Director

1. DEFINITIONS

- a. "Landing Zone" (LZ) - General area, surrounding the landing area, where the aircraft will approach and depart.
- b. "Landing Area" – portion of the LZ where a helicopter actually touches the ground.

2. LZ Selection

- a. The LZ should be located as close to the incident scene as possible, without causing problems with rotor-wash debris at the incident scene.
- b. If there is not an LZ available directly adjacent the incident scene, then select an adequate LZ within a ¼ mile radius of the incident location.
- c. All landing zones will be in an area that is free from excessive loose sand or debris.
- d. The landing zone will be thoroughly searched for any trash that could be blown by the rotor wash and create a hazard for the aircraft or ground personnel.
- e. Secure the landing zone from general public and traffic.
- f. Any landing zone will be of adequate size to permit the helicopter to make an approach with an adequate final landing approach angle. This means the overall area and height of surrounding hazards must be taken into consideration, along with the minimum dimensions of the actual landing area.

3. DAYTIME OPERATIONS

- a. The minimum landing area of a daytime LZ, without adverse weather conditions will be 60 feet by 60 feet.
- b. If adverse weather or high wind conditions are present, the minimum LZ landing area shall be 100 feet by 100 feet.
- c. The LZ is to be flat and free of obstructions or debris.
- d. Mark the LZ with strobes or fluorescent orange cones so that the rotor wash will not blow them away.
- e. Place a vehicle beneath overhead wires. Make sure emergency lights are on.
- f. Inform the pilot of all pertinent landing zone information and of all obstructions, including approximate height, location, and distance from the landing area (power lines, trees, poles, radio towers, etc.).
- g. If incident scene location is obstructed from view of the helicopter pilot due to trees or buildings, contact pilot as early as possible for guidance to your location.
- h. LZ Officer will stand in the center of the upwind LZ boundary, with their back to the wind.
- i. The LZ Officer will leave this position just prior to the aircraft departing with the patient.

4. NIGHT-TIME OPERATIONS

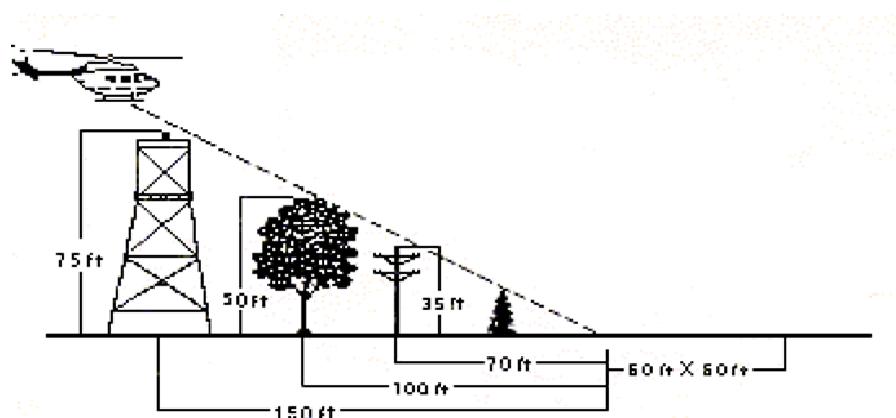
- a. The minimum landing area of a night-time LZ, without adverse weather conditions will be 100 feet by 100 feet.
- b. If adverse weather or high wind conditions are present, the minimum LZ landing area shall be 150 feet by 150 feet.
- c. Place strobe lights in each corner of the landing area. If for some reason, strobe lights are not available, the following alternatives are permissible:
 - i. Use a fluorescent cone, place on its side with points toward the center of LZ, with a hand light inside.

Section: Medical Evacuation (Medevac) / Air ambulance Operations
Subject: LANDING ZONE SELECTION AND PREPARATION
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- ii. Utilize one emergency vehicle with red lights, positioned approximately 30 feet from the landing zone, preferably located on the upwind side of the LZ.
 - d. If at all possible, place a vehicle or other lighted indicator underneath any overhead wire obstructions.
 - e. Inform the pilot of all pertinent landing zone information and of all obstructions, including approximate height, location, and distance from the landing area (power lines, trees, poles, radio towers, etc.).
 - f. If incident scene location is obstructed from view of the helicopter pilot due to trees or buildings, contact pilot as early as possible for guidance to your location.
 - g. Light Discipline
 - i. Do Not wave lights around to direct the aircraft!
 - ii. Do Not shine lights directly at the aircraft!
 - iii. Keep all headlights and spot lights off on all vehicles around the landing zone when the aircraft is on its final landing approach. (approx. 50 feet from touchdown)
 - iv. Make sure the landing zone is thoroughly checked for obstructions and complete information is relayed to the pilot!
 - v. The LZ Officer will have attached to his person, a strobe with a lens color contrasting with the landing area strobes, or a hand light,
 - vi. LZ Officer will stand in the center of the upwind LZ boundary, with their back to the wind.
5. Upon the aircraft landing, at least one person will be assigned to the left-hand side of the aircraft, and will maintain a safety position to prevent the accidental contact of any person with the tail rotor and to insure nobody approaches the aircraft.



Considerations for Landing Zones

Section: Medical Evacuation (Medevac) / Air ambulance Operations
Subject: GROUND TRANSPORT ZONES
Section #: 302.06
Issue Date: March 21, 2011
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Michael Lozano, Jr., M.D., HCFR Medical Director

1. Hillsborough County Fire Rescue has determined that there are zones within Hillsborough County where ground transport to the three trauma centers most commonly used is routinely less than twenty (20) minutes. Air ambulances should not be used in these zones unless there are extenuating circumstances. These areas are termed "Ground Transport Zones".
 - a. Situations that may dictate the use air ambulance helicopters within this zone may include, but are not limited to, prolonged entrapment, need to transport to a distant specialized trauma center, extreme traffic, etc.
 - b. The rationale for utilizing an air ambulance at a scene within a ground transport zone shall be fully documented in the patient care report.

2. GROUND TRANSPORT BOUNDARIES

- a. Central Zone:
 - i. Northern Border – Lutz Lake Fern Rd east to Interstate 75 and west to Gunn Hwy.
 - ii. Southern Border – Big Bend Rd. east to U.S. 301 and west to Hillsborough Bay
 - iii. Eastern Border – Interstate 75 from Lutz Lake Fern Rd. south to Hwy 60 Hwy 60 east to U.S. 301 U.S. 301 south to Big Bend Rd.
 - iv. Western Border – Gunn Hwy. from Lutz Lake Fern Rd. south to Sheldon Rd. Sheldon Rd. south to Old Tampa Bay
- b. Eastern Zone: (Adult patients only who are going to Lakeland Regional Medical Center):
 - i. Northern Border – Knights Griffin Rd. from C.R. 39 east to Polk County.
 - ii. Southern Border – Trapnell Rd. from C.R. 39 east to Polk County.
 - iii. Eastern Border – Polk County line.
 - iv. Western Border – C.R. 39 from Knights Griffin Rd. south to Interstate 4 Interstate 4 west to Alexander St. Alexander St. south to C.R. 39 C.R. 39 south to Trapnell Rd.

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: **Medical Evacuation (Medevac) / Air ambulance Operations**
Subject: **MEDEVAC TRANSFER OF CARE GUIDELINES**
Section #: **302.07**
Issue Date: **March 21, 2011**
Revision Date:
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Michael Lozano

Michael Lozano, Jr., M.D., HCFR Medical Director

1. When the patient is placed onto the air ambulance crew's stretcher, transfer of care will be considered complete.
 - a. It is at this point that medical responsibility passes to the EMS medical director of the air ambulance service.
2. HCFR crews shall cooperate with air ambulance crews in a patient centered approach to care.
3. Providing treatment that is in the best interest of the patient must be the primary goal of all caregivers and differences of opinion regarding responsibility for patient care should not compromise the immediate rendering of treatment.

Section: BLS Medical Care – Standing Orders
Subject: BLS AIRWAY MANAGEMENT
Section #: 320.01
Issue Date: March 21, 2011
Revision Date:
Approved By:

Michael Lozano

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Michael Lozano, Jr., M.D., HCFR Medical Director

1. All members of HCFR providing BLS level care will provide airway management in accordance with this policy.
2. **Oxygen Administration:**
 - a. High-Flow Oxygen:
 - i. Oxygen administration using a non-rebreathing mask (NRBM) attached to **100% oxygen** at 15 lpm is indicated whenever the patient:
 1. Has signs and symptoms of shock; (e.g. pale, cool, or diaphoretic (sweaty) skin, altered mental status, thready pulse).
 2. Is complaining of difficulty in breathing.
 - a. ANY patient meeting these benchmarks should receive oxygen via NRBム even if they have a history of COPD, chronic bronchitis, or emphysema.
 3. Has an illness or injury that raises the index of suspicion for the development of shock.
 4. Is unconscious or has a sudden onset of altered level of consciousness (LOC).
 5. GCS score of < 13.
 6. After spinal motion restriction (SMR) is put in place, if the patient is exhibiting chest pain, shortness of breath, or any signs of shock.
 7. Has abnormal lung sounds.
 8. Complains of chest or epigastric pain.
 9. Is hypotensive with weak peripheral or central pulses.
 10. Is hypertensive with symptoms
 11. Has signs and symptoms of CVA with no SpO₂ measurement available or SpO₂ of < 92%.
 12. Has been resuscitated from cardiac or respiratory arrest.
 13. Actively seizing patient.
 - b. Low-Flow Oxygen:
 - i. Oxygen administration using a nasal cannula (NC) attached to **oxygen** at 2 - 6 lpm is indicated whenever the patient:
 1. Has GCS of 14 without other indications for high-flow oxygen.
 2. Who has SMR precautions in place without other indications for high-flow oxygen.
 3. Post-ictal patients who are beginning to show signs of recovery.
 4. Signs or symptoms of CVA with SpO₂ of 93-95%.
 5. Any other time the EMT feels the patient may benefit from the administration of oxygen.
 - c. When uncertain as to deliver high-flow or low-flow oxygen, use high-flow.
3. **Ventilatory Assistance:**
 - a. Positive pressure ventilations via a bag-valve mask (BVM) are indicated when the patient is apneic or has a respiratory effort that is ineffective in perfusing the patient's body with enough oxygen as evidenced by:

Section: **BLS Medical Care – Standing Orders**
Subject: **BLS AIRWAY MANAGEMENT**
Section #: **320.01**
Issue Date: **March 21, 2011**
Revision Date:
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- i. A respiratory rate (RR) too fast or too slow.
- ii. A respiratory tidal volume (V_t) that is poor such that you can't appreciate air coming from mouth or nose.
- iii. Is otherwise short of breath to the point the patient's level of consciousness (LOC) is becoming affected.
- b. When performing ventilatory assistance:
 - i. Attach the BVM and 100% oxygen at 15 lpm.
 - ii. Use an oropharyngeal, nasopharyngeal, or rescue airway as tolerated by LOC.
 - iii. When possible, use two people for ventilating with the BVM.

4. Pharyngeal Suctioning:

- a. Pharyngeal suctioning is indicated when the patient:
 - i. Is unconscious or semi-conscious and has vomited.
 - 1. Being mindful of the need for SMR. If necessary, roll the patient to the side while the SMR patient is vomiting. Then suction the oropharynx to remove any residual residue.
 - ii. Is unconscious or semi-conscious and is unable to swallow excess saliva (as in a CVA or overdose patient).
 - iii. Has facial trauma with bleeding into the upper airway.
 - iv. Any other time the patient has secretions or other fluids interfering with the breathing process.
- b. Suctioning should be done with an appropriate suction device.
 - i. The Yankauer (rigid) suction catheter is the preferred catheter as it typically allows for the removal of larger particles.
 - ii. If a flaccid suction catheter is used, it should be measured from the corner of the patient's mouth to the corner of the earlobe on the same side of the head.
 - iii. The catheter is inserted into the patient's mouth and the suction is engaged while withdrawing the catheter in a circular motion over a five (5) second period.

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: **BLS Medical Care – Standing Orders**
Subject: **BLS ACUTE ABDOMINAL PAIN**
Section #: **320.02**
Issue Date: **March 21, 2011**
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1. Basic BLS treatments
2. Assess the patient's abdomen and document findings.
3. Treatment:
 - a. Place the patient in the position of comfort and administer oxygen by appropriate means if indicated.
 - b. See **HCFR BLS AIRWAY MANAGEMENT** protocol for indications for oxygen
4. ALS transport criteria:
 - a. All patients presenting with the signs and symptoms of an acute abdomen or abnormal vital signs
 - b. Abdominal surgery within the last 60 days (especially be mindful of patients who have had bariatric [obesity] surgery)
 - c. Evidence of trauma
 - d. Blood issuing from any orifice or bleeding into the skin
 - e. Age less than 14 or greater than 65 years old

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: **BLS Medical Care – Standing Orders**
Subject: **ANAPHYLAXIS / ALLERGIC REACTION**
Section #: **320.03**
Issue Date: **March 21, 2011**
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1. Basic BLS treatments
2. Any patient complaining of shortness of breath, has wheezing, decreased tidal volume, or any other physical sign of allergic reaction involving the airway, shall have **oxygen** administered via non-rebreather mask at 15 lpm.
3. If the patient has signs or symptoms of an allergic reaction or anaphylaxis **-and-** the patient has a physician prescribed **epinephrine** auto injector, assist the patient with administration of epinephrine.
 - a. Use caution with patients who have a cardiac history or are tachycardic/hypertensive. Defer use of the auto injector until the arrival of ALS personnel or unless s/s become severe.
4. ALS evaluation/transport criteria:
 - a. Any patient with signs or symptoms of an allergic reaction or anaphylaxis shall receive a paramedic evaluation and be transported via ALS.

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: **BLS Medical Care – Standing Orders**
Subject: **ALTERED STATE OF CONSCIOUSNESS**
Section #: **320.04**
Issue Date: **March 21, 2011**
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1. Basic BLS treatments
2. Check blood glucose level.
 - a. If the patient has a diabetic history plus has signs and symptoms consistent with hypoglycemia, then:
 - i. Administer **Oral dextrose** 25 grams by mouth, ONLY if the patient is awake and have adequate gag reflex
 - ii. May be repeated every twenty (20) minutes as needed until the symptoms are resolved
3. ALS evaluation/transport criteria:
 - a. Any known diabetic with a decreased LOC unresponsive to **oral glucose** is ALS
 - i. A known diabetic who responds appropriately to oral dextrose may be transported without a paramedic evaluation
 - ii. A known diabetic who responds appropriately to oral dextrose requires a paramedic evaluation prior to signing a refusal of further care and transport
 - b. Any patient whose diabetic status is unknown or does not have a history of diabetes with an altered mental status and hypoglycemia requires a paramedic evaluation

Section: BLS Medical Care – Standing Orders
Subject: CARDIAC ARREST
Section #: 320.05
Issue Date: March 21, 2011
Revision Date: December 1, 2017
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1. The treatment of cardiac arrest is generally to be provided in accordance with the current American Heart Association Basic Cardiac Life Support Guidelines, but given the rapid pace of medical knowledge growth, HCFR policy may vary according to the standard of care at the time of the adoption or renewal of this policy.
2. Emphasis shall be placed on the quality of CPR for all arrest victims.
3. The following are important points which shall be adhered to in treating the person suffering from cardiac arrest:
 - a. When resuscitation is indicated, the patient will be treated ***quickly and aggressively*** where found, if possible.
 - b. Compressions will be immediate and sufficient to produce a central pulse, with rate/depth in accordance with current American Heart Association guidelines and **HCFR COMPRESSIONS – VENTILATIONS GUIDE**.
 - i. If available, and indicated an automated CPR device shall be used as soon as possible (preferably within 60 seconds).
 - ii. Any interruption of compressions shall be extremely limited and for as brief a period as possible.
 - c. The compression to ventilation ratio will be in accordance with current AHA BLS guidelines.
 - i. Once a rescue airway is in place; compressions will be continuous and ventilations shall be no more than 6 to 10 per minute.
 - d. The AED should be placed on the patient upon arrival at the bedside; but the *Analyze* button should not be pressed until three (3) minutes of CPR have been completed unless the arrest is witnessed in which case the *Analyze* button should be pressed immediately after placement.
 - e. After any shock is administered, immediately perform two (2) minutes of CPR prior to a pulse check or re-analyzing the rhythm.
 - f. If the patient is hypothermic, only one shock is to be administered.
4. **General Cardiac Arrest Algorithm** for Out-of-Hospital Cardiac Arrest of Cardiac Origin (OOHCA-CO):
 - a. Assess:
 - i. Confirm the lack of a pulse and apnea.
 1. Use standard approved methods (AHA-BLS) to open and maintain the airway.
 - ii. Turn on the AED and, if available, an automated CPR device.
 - iii. Administer two (2) rescue breaths.
 - iv. Compressions begin immediately:
 1. Rate is at least 100/min.
 2. Push hard and fast, releasing the chest completely on the upstroke, but not bouncing on the chest.
 3. Maintain a ratio of 30 compressions to 2 breaths.
 - v. AED pads are applied to the chest.
 - vi. If available and indicated apply an automated CPR device.
 - vii. Press *Analyze* on the AED as soon as pads have been applied to the patient's chest.
 1. If shock advised, clear the patient and administer the shock.
 2. If NO shock advised, brief pulse check (~ 4 seconds) and if none, resume CPR.

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Section: **BLS Medical Care – Standing Orders**
Subject: **CARDIAC ARREST**
Section #: **320.05**
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3. Begin cycle of two (2) minutes of CPR and then analyze rhythm. Continue this cycle until return of spontaneous circulation (ROSC) is achieved or otherwise directed by arriving ALS members.
- viii. Upon ROSC, continue ventilatory support as needed at a rate of 1 every 6 seconds (10/minute.)

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Section: **BLS Medical Care – Standing Orders**
Subject: **CHEST PAIN**
Section #: **320.06**
Issue Date: **March 21, 2011**
Revision Date:
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1. Basic BLS Treatments
2. Interventions:
 - a. **Oxygen (O₂):**
 - i. If patient's skin is warm and dry, then use nasal cannula @ 2 lpm
 - ii. If patient's skin is cyanotic, ashen, cool or moist, then use a non-rebreather mask (NRBM) @ 15 lpm
 - iii. If in doubt, use the NRB
 - b. **Aspirin (ASA):**
 - i. Patient must agree to take the medication and be alert and able to protect their airway
 - ii. Four (4) 81 mg baby aspirin (324 mg total) by mouth.
 1. DO NOT give if the patient has taken aspirin with the last 24 hours or has allergies to ASA
 - c. **Nitroglycerin (NTG):**
 - i. HCFR EMTs may assist the patient in taking their own prescribed NTG if:
 1. If the patient's systolic BP is > 100 mmHg, **AND**
 2. The patient HAS NOT taken any erectile dysfunction medications within the last 48 hours
 - ii. Administer NTG 0.4 mg SL (tablet or spray form).
 1. May repeat this dose q5 minutes as needed as long as the systolic BP remains > 100 mmHg
 2. Max dose is 1.2 mg (3 doses) including any the patient may have taken on their own prior to HCFR arrival.
 - iii. If the patient becomes hypotensive (SBP < 100 mmHg) discontinue **NTG** therapy, lie the patient supine, and if the systolic BP remains below 100 mmHg, place the patient in the Trendelenburg position
3. ALS evaluation/transport criteria:
 - a. Patients with the following symptoms will be evaluated by ALS:
 - i. Any discomfort suspected to be of cardiac origin
 - ii. Suspected cocaine, methamphetamine or other stimulant use
 - iii. Cardiac history (CAD, previous MI, HTN)
 - iv. Indigestion or nausea in a patient >35 years old
 - v. Associated upper back pain
 - vi. Associated dyspnea
 - vii. Altered vital signs
 - viii. Diaphoresis
 - ix. Irregular pulse
 - x. Syncope
 - b. If **ANY** doubt as to the origin of the chest pain, the patient is ALS

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Section: **BLS Medical Care – Standing Orders**
Subject: **CHEST PAIN**
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4. QA points:

- a. Reproducible chest pains either by deep inhalation or palpation of the chest DOES NOT rule out a cardiac event
- b. Co-administration of NTG and erectile dysfunction medications has been known to produce precipitous drops in SBP that may worsen ischemia and are difficult to reverse:
 - i. Serum levels of **sildenafil (Viagra®)** 24 hours after a single 100 mg dose are approximately 0.5% of the peak serum level
 1. However, there is no safety information regarding the co-administration of nitrates at this time interval.
 - ii. At least 48 hours should have passed between taking **tadalafil (Cialis®)** and administering nitrates.
 1. Long acting preparations of this medication may extend this unsafe period beyond 48 hours.
 - iii. A safe time period for the administration of nitrates after taking **vardenafil (Lavitra®)** has not been determined.

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STANDING ORDERS AND PROTOCOL

Section: **BLS Medical Care – Standing Orders**
Subject: **BLS DIFFICULTY IN BREATHING**
Section #: **320.07**
Issue Date: **March 21, 2011**
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1. Basic BLS Treatments
2. Oxygen (O₂):
 - a. If patient has adequate respiratory rate and adequate tidal volume then :
 - i. Nasal Cannula @ 2 lpm (patient skin is warm, dry, and of good color)
 - ii. Non-Rebreather Mask @ 15 lpm (patient cyanotic, ashen, skin cool/moist)
 - b. If in doubt, use the NRB with high flow O₂
 - c. DO NOT withhold high flow O₂ from COPD patients complaining of shortness of breath
3. Closely assess the patient's lung sounds and be ready to provide findings to arriving ALS members
4. Pediatric patients with signs and symptoms of croup or epiglottitis:
 - a. Administer blow-by oxygen
 - b. Allow the patient to stay with the parent or caretaker if by doing so you reduce anxiety
 - c. Keep the child in the sitting position
 - d. Keep the child calm
 - e. Rapid transport
5. ALS evaluation and transport criteria:
 - a. All patients complaining of shortness of breath shall have a paramedic evaluation and be transported ALS
6. QA points:
 - a. Shortness of breath can be the only presenting complaint in the following conditions:
 - i. cardiac ischemia
 - ii. significant anemia
 - iii. metabolic acidosis
 - iv. new onset renal failure
 - v. pulmonary embolism
 - vi. sepsis

Section: BLS Medical Care – Standing Orders
Subject: BLS ENVIRONMENTAL EMERGENCIES
Section #: 320.08
Issue Date: March 21, 2011
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1. Heat Emergencies (Hyperthermia):

- a. Basic BLS treatments
- b. Heat Cramps:
 - i. Move patient to cool environment.
 - ii. Administer oral fluids in small quantities q 5 minutes as tolerated.
- c. Heat Exhaustion:
 - i. Move patient to a cool environment.
 - ii. Watch for signs and symptoms of developing heat stroke; if neurological signs and symptoms develop, then treat as for heat stroke
 - iii. Administer oral fluids as tolerated.
 - iv. Loosen overly restrictive or heavy clothing and apply cool packs as tolerated.
- d. Heat Stroke:
 - i. Move patient to a cool environment
 - ii. Immediately remove clothing and cool the patient with water, air conditioning, and cold packs.
 1. Apply the cold packs to the arm pit, neck, and groin regions
- e. ALS evaluation and transport criteria:
 - i. Any patient with neurologic symptoms
 - ii. Abnormal vital signs including irregular pulse
 - iii. Patient with signs and symptoms of heat exhaustion or heat stroke

2. Cold Emergencies (Hypothermia):

- a. Basic BLS treatments
- b. Initiate passive re-warming procedures
 - i. Remove any wet clothing
 - ii. Cover the patient, including the head, with blankets
 - iii. Move the patient into the heated unit or other warm environment
- c. Severe hypothermia (core temp \leq 95° F or decreasing level of consciousness(LOC)):
 - i. Apply hot packs to the arm pit, groin, trunk, and behind the neck regions
 - ii. Handle the patient gently because they are prone to spontaneous dysrhythmias
 - iii. BLS modifications for cardiac arrest in hypothermia:
 1. Start CPR
 2. Secure the airway with a rescue airway
 3. Limit any AED use to one shock only
- d. ALS evaluation and transport criteria:
 - i. Any patient with an altered LOC
 - ii. Abnormal vital signs including irregular pulse
 - iii. Any patient who appears to be suffering from severe hypothermia

Hillsborough County Fire Rescue
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Section: **BLS Medical Care – Standing Orders**
Subject: **BLS OVERDOSE AND POISONING**
Section #: **320.09**
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1. Basic BLS treatments
2. Determine whether the situation represents a single ingestion or an excessive amount of a single item or multiple items.
 - a. In most cases a single additional dose of a prescribed medication will not produce toxicity
3. Contact the Florida Poison Center in Tampa:
 - a. **1-800-222-1222**
 - b. They should be able to assist in identifying possible problems associate with the ingestion which may assist in determining the need for ALS evaluation and transport.
 - c. Only take specific actions recommended by the Florida Poison Center after contacting the Medic-1 physician
4. ALS evaluation and transport criteria:
 - a. Any patient with altered LOC (GCS < 15)
 - b. Abnormal vital signs including irregular pulse
 - c. Any patient confirmed or strongly suspected of having taken more than one additional dose of a medication prescribed specifically for them.
 - d. Any patient taking known or unknown amounts of medications for which they do not have a prescription or appropriate medical condition for.

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STANDING ORDERS AND PROTOCOL

Section: **BLS Medical Care – Standing Orders**
Subject: **BLS POISONOUS STINGS AND BITES**
Section #: **320.10**
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1. Basic BLS treatments
2. Keep the patient calm and immobilize the limb.
3. Apply constricting band **only if** the victim or a bystander has applied a tourniquet
 - a. Place constricting band two (2) inches above the tourniquet and then remove the tourniquet.
4. Treat allergic reaction or anaphylaxis as per **HCFR ANAPHYLAXIS/ALLERGIC REACTION protocol**
5. Treat seizures as per **HCFR SEIZURE protocol**
6. Some poisonous stings and bites may cause a significant amount of pain for the patient:
 - a. If the patient is in significant discomfort, request ALS for pain management if they can arrive at the patient before the patient would otherwise arrive at a receiving facility.
7. Do not apply ice or cold pack to bites or stings.
8. ALS evaluation/transport criteria:
 - a. Any patient with signs and symptoms of an allergic reaction or anaphylaxis shall receive a paramedic evaluation.
 - b. Any patient suffering a seizure secondary to a sting or bite shall be ALS.

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Section: **BLS Medical Care – Standing Orders**
Subject: **SEIZURES**
Section #: **320.11**
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1. Basic BLS treatments
2. Maintain the patient's airway and assure that they do not injure themselves or someone else.
3. Administer high flow **oxygen**, if the patient will tolerate, until their GCS returns to normal.
4. ALS evaluation/transport criteria:
 - a. First time seizure
 - b. GCS <15 (or patient's norm) ten minutes after seizure activity ends
 - c. History of head trauma within the last two (2) weeks
 - d. Any seizure lasting >five (5) minutes (status epilepticus)
 - e. Multiple seizures

Section: BLS Medical Care – Standing Orders
Subject: BLS STROKE, TIA, AND OTHER ACUTE NEUROLOGICAL CHANGES
Section #: 320.12
Issue Date: March 21, 2011
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1. Clinical Intent

a. Inclusion criteria

- i. Patients who have an acute episode of a focal neurological deficit that can include any combination of the following:
 1. Unilateral paralysis
 2. Focal numbness
 3. Language disturbance (speaking and/or understanding, including slurred speech)
 4. Sudden, severe, unusual headache
 5. Visual disturbance
 6. Monocular blindness
 7. Acute onset vertigo
 8. Acute onset double vision
 9. New onset of poor balance

b. Exclusion criteria

- i. Significant preceding or accompanying head or spine trauma being the proximate cause of the acute neurological emergency
- ii. Overdose or intoxication (intentional, accidental, or otherwise)
- iii. Symptomatic hypoglycemia responding to treatment

c. Expected Outcome

- i. All patients who are experiencing an ischemic or hemorrhagic stroke are identified in the pre-hospital setting, stabilized, treated appropriately, and efficiently delivered to a healthcare facility that is best suited to provide the patient with the opportunity for a successful outcome.¹

2. Diagnostics and Evaluation:

- a. Ensure that the patient's airway is open, and that breathing and circulation are adequate.
- b. Obtain and record the patient's initial vital signs, repeat enroute as often as the situation indicates.
- c. Obtain and document the blood glucose level:
 - i. Avoid the administration of glucose-containing fluids unless the patient is hypoglycemic (less than 60 mg/dL.)
- d. Gather and document the following information:
 - i. The last date and time that the patient was known to be normal or at their neurologic baseline (Last Known Normal, or LKN). This shall be expressed in hours and minutes, and not simply relative to EMS arrival. (i.e., 9/11/01 at 08:45, and not "30 minutes ago".)
 - ii. The name and all contact information for a witness who can communicate with the destination facility regarding the patient's baseline and acute medical condition
 1. If possible, transport the reliable witness with the patient.
 - iii. Current medications

¹ "Implementation Strategies for Emergency Medical Services within Stroke Systems of Care: A Policy Statement from the American Heart Association/American Stroke Association Expert Panel on Emergency Medical Services Systems and the Stroke Council." *Stroke* (00392499), vol. 38, no. 11, Nov. 2007, p. 3097.

Section: BLS Medical Care – Standing Orders
Subject: BLS STROKE, TIA, AND OTHER ACUTE NEUROLOGICAL CHANGES
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- e. Perform a rapid structured stroke assessment using the FAST exam (Cincinnati Stroke Scale):
 - i. Facial movements: Ask the patient to smile or show their teeth. If one side does not move well, document which side is affected.
 1. Normal: Both sides of the face appear symmetrical
 2. Abnormal: There is a new unequal smile, grimace, or obvious facial asymmetry.
 3. Questionable: It is unclear to the examiner if there is a new unequal smile, grimace, or obvious facial asymmetry.
 - ii. Arm movements: Lift the patient's arms up to 90 degrees if they are sitting or 45 degrees if they are supine. Ask them to keep their arms up, and then let go. If one arm drifts or falls, document which side is affected.
 1. Normal: Neither arm drifts or falls down.
 2. Abnormal: One arm either drifts or falls down.
 3. Questionable: It is unclear to the examiner if one arm drifts or falls down.
 - iii. Speech: If the patient attempts to engage in a conversation, look for a new disturbance in speech. Listen for slurred speech or word-finding difficulties. Identify the latter by asking the patient to name commonplace objects that are nearby such as computer, phone, keys, or pen. You can also place an object in the patient's hand and ask them to name it.
 1. Normal: There is no evidence for a new abnormality of speech.
 2. Abnormal: There appears to be a new abnormality of speech.
 3. Questionable: It is unclear to the examiner if there is a new abnormality in speech present.
 - f. If at least one FAST criteria is abnormal call a Stroke Alert.
 - g. Once a potential stroke has been identified, perform an assessment of the severity of the potential stroke using the Simple 3-Item (3-ISS, or a.k.a. LAG) Scale:
 - i. Level of consciousness (Use AVPU scoring)
 1. Alert or Verbal only: 0 points
 2. Pain only or Unresponsive: 2 points
 - ii. Arm strength
 1. Can lift arm and maintain in air for 5 seconds: 0 points
 2. Can't lift arm, or can't maintain in air for 5 seconds: 2 points
 - iii. Gaze
 1. Patient's eyes can track your finger across the midline: 0 points
 2. Patient's eyes can't cross the midline when tracking a finger or object: 2 points
 - iv. A positive LAG Score is four or six points.
3. Destination determination:
- a. Once the potential for a stroke has been determined to exist and the severity of the neurologic impact has been graded, the patient shall be transported to the closest appropriate stroke center (primary or comprehensive), unless they are experiencing cardiac arrest.
 - b. Stroke patients shall be placed into one of two categories: **complex strokes** and **simple strokes**.

Section: BLS Medical Care – Standing Orders
Subject: BLS STROKE, TIA, AND OTHER ACUTE NEUROLOGICAL CHANGES
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- i. The following conditions shall define a patient as having a **complex stroke**:
 1. Known pregnancy²
 2. LAG score ≥ 4
 3. LKN time > 3.5 hours and < 24 hours.
 4. LKN time > 2 hours and < 24 hours if patient is:
 - a. Taking anticoagulants other than aspirin, or
 - b. Has a history of both diabetes and prior CVA.
 5. Any "Wake-up Stroke" in which patient went to bed asymptomatic and woke up with stroke symptoms.
 6. Patient with a high clinical suspicion of subarachnoid hemorrhage defined as:³
 - a. Abrupt onset of severe head pain reaching maximum intensity in <1 minute, **lasting for ≥ 5 minutes**, and accompanied by one or more of the following symptoms⁴:
 - i. Age > 40 years
 - ii. Impaired consciousness
 - iii. Neck stiffness
 - iv. Headache occurred immediately after exertion or Valsava
 - v. Systolic BP > 160 mmHg or diastolic BP > 100 mmHg
 - vi. Nausea or vomiting
 - b. Patients with intravenous thrombolytic exclusions:
 - i. Any of the following within the past 3 months: intracranial or spinal surgery, head trauma, previous stroke
 - ii. Known pregnancy⁵
 - iii. Known cerebral aneurysm
 - ii. A patient meeting none of the complex stroke criteria, with a positive FAST exam shall be considered to be having a **simple stroke**.
 - c. Transport criteria:
 - i. The use of an air ambulance may be considered when the benefits of rapid transport outweigh the risks and delays inherent in air-medical care.
 1. Such cases would include situations when the transport time by ground exceeds 60 minutes,
4. Treatments
- a. Position
 - i. Protect any paralyzed or partially paralyzed extremities from undue compression or injury due to malposition.
 - ii. Position of comfort with head of bed slightly elevated or flat, as tolerated

² There is 24-hour OB coverage at all Comprehensive Stroke Centers.

³ Schwedt, Todd J., and David W. Dodick. "Thunderclap headache." Up-to-Date. Ed. Jerry W. Swanson and John F. Dashe. Wolters Kluwer Health, 10 Dec. 2014. Retrieved 22 July 2017. Available from www.uploadate.com.

⁴ Ducros, A., et al. "The International Classification of Headache Disorders, (Beta Version)." *Cephalgia* 33.9 (2013): 629-808.

⁵ Albers, Gregory W., et al. "Antithrombotic and thrombolytic therapy for ischemic stroke: American College of Chest Physicians evidence-based clinical practice guidelines." *Chest* 133.6 (2008): 630S-669S.

Section: BLS Medical Care – Standing Orders
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- b. Oxygen
 - i. If oxygen saturation <95%, then apply oxygen at 2 L/min via nasal cannula.
 - ii. If oxygen saturation <92%, then apply respiratory support with BVM as tolerated.
 - iii. Consider intubation if the patient is not able to handle their secretions, or has a level of consciousness diminished to the point that their Glasgow Coma Scale (GCS) is < 8
 - 1. If necessary, call ALS for intubation.
 - c. Blood Pressure Control
 - i. Monitor blood pressure every five minutes to establish a trend.
5. Documentation
- a. Record all patient care information, including the patient's medical history and all treatment provided, on the electronic Patient Care Report (ePCR). Particular care should be taken to document accurate information as regards to the following:
 - i. Telephone numbers, including cellular telephone numbers, of witnesses or relatives may help the ED to clarify the history or seek consent for treatment.
 - ii. A list of the patient's medications, or the medication containers themselves, should be sought, with particular attention paid to identifying anticoagulant (both oral and injectable), antiplatelet, and antihypertensive medication use.
 - b. Complete Stroke Alert form with all exam findings
 - i. Provide the original to the receiving facility
 - ii. Scan a copy into the ePCR.
6. ALS evaluation and transport criteria
- a. All patients with signs and symptoms of stroke, TIA, or other acute neurologic change are ALS.
7. QA Points
- a. The most important thing that you can do to help a patient who may be having a stroke is correctly identify that the symptoms are present, and get them headed toward a stroke center.
 - b. Do not become distracted by the level of blood pressure, avoiding aspiration will help your patient out much more in the long run than lowering blood pressure.

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Section: **BLS Trauma – Standing Orders**
Subject: **BLS ABDOMINAL TRAUMA**
Section #: **321.01**
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1. Basic BLS treatments
2. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated.
3. Evaluate for Trauma Alert criteria
4. If patient is hypotensive (systolic BP <100 mmHg or missing peripheral pulses), treat for shock
5. ALS evaluation/transport criteria:
 - a. Any patient meeting trauma alert criteria
 - b. Any patient with abnormal vital signs
 - c. Any patient with a significant mechanism of injury who displays any sign of internal hemorrhage

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Section: BLS Trauma – Standing Orders
Subject: BURNS – CHEMICAL/ELECTRICAL/THERMAL
Section #: 321.02
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1. Basic BLS treatments
2. Chemical Burns:
 - a. Reference HCFR Decontamination policies
 - b. Contaminated patients should have their clothing and jewelry removed, bagged, and tagged
 - c. Flush with copious amounts of fluid
 - d. Prevent loss of body heat – after decontamination
 - e. Contact Poison Control @ **1-800-222-1222** for specific treatment of chemical exposures
 - f. ALS evaluation/transport criteria:
 - i. All burns meeting trauma alert criteria are ALS
 - ii. All chemical burns require an ALS evaluation
3. Electrical Burns:
 - a. Spinal motion restriction
 - b. Dry sterile dressings over burned areas
 - c. ALS evaluation/transport criteria:
 - i. All suspected electrical injuries are ALS
 - ii. All burns meeting trauma alert criteria are ALS
4. Thermal Burns:
 - a. Prevent loss of body heat
 - b. Continuous wet sterile dressings over not more than 10% TBSA at one time
 - c. Sterile dressings or burn sheets over all other burned areas
 - d. Any burn with suspected respiratory involvement, high flow **oxygen** via NRB^M
 - e. ALS evaluation/transport criteria:
 - i. 2° or 3° burns >10% TBSA
 - ii. 1° burns >50% TBSA
 - iii. Explosions
 - iv. Dyspnea
 - v. Facial burns
 - vi. Altered vital signs
 - vii. Circumferential burns

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Section: BLS Trauma – Standing Orders
Subject: BLS CARDIAC ARREST - TRAUMATIC
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1. Basic BLS treatments including CPR with BVM
2. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated.
3. Rapid transport if ALS is not available
4. Further treatment as indicated according to HCFR BLS Protocols.
5. No Codes – See **HCFR END OF LIFE** protocol for guidelines
6. ALS transport criteria
 - a. All cardiac arrests are ALS assessment and transport

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: **BLS Trauma – Standing Orders**
Subject: **CHEST TRAUMA**
Section #: **321.04**
Issue Date: **March 21, 2011**
Revision Date:
Approved By:



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Michael Lozano, Jr., M.D., HCFR Medical Director

1. Basic BLS treatments
2. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated.
3. Evaluate for trauma alert criteria
4. **Oxygen** administration to any patient who is complaining of chest pain with dyspnea
 - a. If the patient presents with pale, cool, diaphoretic, or otherwise abnormal skin condition, consider high flow O₂ via NRBMs.
5. Stabilize any flail segments and seal any open wounds.
6. ALS evaluation and transport criteria:
 - a. Any patient meeting trauma alert criteria is ALS
 - b. Any patient with a significant mechanism of injury and associated chest trauma is ALS
 - c. Any patient that it is unclear as to whether the chest pain is of traumatic origin or not is ALS

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: BLS Trauma – Standing Orders
Subject: BLS DIVING, SCUBA, AND OTHER FORMS OF DECOMPRESSION SICKNESS (DCS)
Section #: 321.05
Issue Date: March 21, 2011
Revision Date:
Approved By:  Michael Lozano, Jr., M.D., HCFR Medical Director

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1. Basic BLS treatments
2. 100% **Oxygen** via NRB
3. Position and transport the patient in the supine position to maximize arterial-venous flow.
4. Document a thorough neurological exam.
5. Have the patient transported to the closest facility.
6. ALS evaluation and transport criteria:
 - a. All diving emergencies require an ALS transport.
7. QA Points:
 - a. The most efficacious intervention for the patient experiencing decompression sickness is 100% oxygen. It reduces intravascular bubble size by increasing the differential pressure for nitrogen diffusion out of the bubbles and speeds the washout of nitrogen from the tissues.¹
 - b. Ground transport is preferred over air transportation because an increase in altitude lowers the ambient pressure and allows microbubbles to expand.
 - c. Trendelenburg position, once thought to reduce the degree of cerebral embolization, increases intracranial pressure, facilitates coronary gas embolization, and should be avoided.²

¹ Strauss MB, Borer Jr RC: Diving medicine: Contemporary topics and their controversies. *Am J Emerg Med* 2001; 19:232.

² Butler BD, et al: Effect of the Trendelenburg position on the distribution of arterial air emboli in dogs. *Ann Thorac Surg* 1988; 45:198.

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STANDING ORDERS AND PROTOCOL

Section: **BLS Trauma – Standing Orders**
Subject: **BLS DROWNING AND SUBMERSION INJURIES**
Section #: **321.06**
Issue Date: **March 21, 2011**
Revision Date: **December 1, 2017**
Approved By: *Michael Lozano*

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Michael Lozano, Jr., M.D., HCFR Medical Director

1. Basic BLS treatments
2. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated.
3. High flow **oxygen** via NRBMs and airway control
4. If in cardiac arrest, see **HCFR BLS CARDIAC ARREST** protocol
5. ALS evaluation and transport criteria:
 - a. All suspected drowning patients are ALS
 - b. This includes patients who are alert but suffered some type of submersion exposure

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: **BLS Trauma – Standing Orders**
Subject: **BLS FRACTURES AND DISLOCATIONS**
Section #: **321.07**
Issue Date: **March 21, 2011**
Revision Date:
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Michael Lozano, Jr., M.D., HCFR Medical Director

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1. Basic BLS treatments
2. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated.
3. Splint as appropriate
4. For severe pain, request ALS for pain management unless travel time to the closest appropriate facility is shorter than ALS estimated time of arrival
5. ALS evaluation and transport criteria:
 - a. Any patient who has received analgesia
 - b. Any patient with compromised circulation in the affected limb
 - c. Any patient with long bone fractures or dislocations that cannot be stabilized without analgesia

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STANDING ORDERS AND PROTOCOL

Section: BLS Trauma – Standing Orders
Subject: BLS HEAD INJURIES
Section #: 321.08
Issue Date: March 21, 2011
Revision Date:
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1. Basic BLS treatments
2. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated.
3. Elevate the head of the long spine board approximately 30° if GCS less than 13
4. High flow **oxygen** via NRBPM for any patient with a GCS less than 15
5. Be prepared for aggressive airway management in patients with:
 - a. Inability to protect the airway
 - b. Unable to maintain O₂ saturation greater than or equal to 90%
 - c. Consider use of BVM with **oxygen**
 - i. **Do Not** hyperventilate unless the patient has signs of elevated intracranial pressure:
 1. Increasing systolic BP and slow strong pulse
6. ALS evaluation and transport criteria:
 - a. Any patient with a GCS of less than or equal to 13
 - b. Any patient meeting trauma alert criteria
 - c. Any patient the care provider believes may decompensate prior to arrival at a receiving facility

Section: BLS OB/GYN Emergencies
Subject: BLS COMPLICATED BIRTH CONDITIONS
Section #: 322.01
Issue Date: March 21, 2011
Revision Date:
Approved By:

Michael Lozano

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1. Basic BLS treatments
2. High flow oxygen via NRBPM and airway management
3. Rapid transport to the closest obstetrical capable hospital unless birth is in progress
4. ***Breech Delivery***
 - a. Support baby's legs and trunk when they appear, but do not pull on any presenting parts.
 - b. Keep the presenting part warm.
 - c. Do not encourage the mother to push.
 - d. If the child's body has delivered and the head appears caught in the vagina, insert sterile gloved fingers along the sides of the nose to push the vaginal wall away from the face forming an airway passage. Maintain this position until the infant is completely delivered.
 - e. May help rotate baby's head beneath the symphysis pubis and allow delivery.
 - f. Provide supplemental oxygen near hand created vaginal airway.
 - g. If delivery is not imminent, transport in the knee-chest position.
5. ***Limb Presentation***
 - a. Elevate the mother's pelvis into the knee-chest position.
 - b. Support the protruding limb.
6. ***Prolapsed Cord***
 - a. Elevate the mother's pelvis into the knee-chest position.
 - b. Do not attempt to replace the umbilical cord in the vaginal canal.
 - c. Check the umbilical cord to see if there is a pulse present.
 - d. Insert sterile gloved fingers to relieve pressure on the umbilical cord if the presenting part of the infant is compressing it.
 - e. Apply gentle counter pressure to the baby's head, in an attempt to control the delivery.
 - f. Keep the umbilical cord moist.
7. ALS transport criteria:
 - a. All field deliveries by HCFR personnel require ALS transport.
8. QA Points:
 - a. Do not place a gloved hand inside the vagina except in the case of:
 - i. Prolapsed cord
 - ii. Breech delivery with entrapment of the head
 - b. Placing of the hand in the vagina under other circumstances may cause fatal bleeding infection, or even accidental rupture of membranes and possible cord prolapse.

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STANDING ORDERS AND PROTOCOL

Section: BLS OB/GYN Emergencies
Subject: BLS MATERNAL TREATMENT AND POST-PARTUM HEMORRHAGE
Section #: 322.02
Issue Date: March 21, 2011
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Michael Lozano

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Michael Lozano, Jr., M.D., HCFR Medical Director

1. Basic BLS Treatments.
2. High-flow **oxygen** via NRBMs and airway control.
3. **Maternal Treatment**
 - a. If delivery is NOT imminent, transport mother on left side.
4. **Post-Partum Hemorrhage**
 - a. Place the mother in the shock position
 - b. Uterine massage
 - c. Allow baby to nurse
 - d. RAPID transport
5. ALS transport criteria:
 - a. All field deliveries by HCFR members will be transported via ALS.

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STANDING ORDERS AND PROTOCOL

Section: BLS OB/GYN Emergencies
Subject: BLS NEWBORN TREATMENT
Section #: 322.03
Issue Date: March 21, 2011
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1. Basic BLS treatments
2. If there is evidence of an obvious obstruction to spontaneous breathing or a need for positive-pressure ventilation, suction immediately; preferably before the delivery is completed.
 - a. Place the newborn in a slight Trendelenburg position with the head turned to the side to facilitate drainage
 - b. Suction the mouth and then the nose
 - c. Watch for bradycardia
3. Dry patient promptly and vigorously, especially the head
4. Wrap in approved swaddle garment
5. **Oxygen:** by mask if indicated
6. Record the time of delivery
7. Record 1 minute and 5 minute APGAR scores

CRITERIA	Score = 0	Score = 1	Score = 2	Score Total
A ppearance (Skin Color)	Blue all over	Blue extremities Pink body (acrocyanosis)	Body and extremities pink	
P ulse Rate	Absent	< 100 bpm	≥ 100 bpm	
G rimace (Reflex Irritability)	No response to stimulation	Grimace / feeble cry when stimulated	Sneeze, cough, pulls away when stimulated	
A ctivity (Muscle Tone)	None	Some Flexion	Active movement	
R espiration	Absent	Weak or irregular	Strong	
			Total	

8. Delay the clamping of the umbilical cord for at least a minute in term and preterm infants not requiring resuscitation.
9. Record the name of the person cutting the cord and the time in which it was cut must be recorded in the medical treatment record.

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STANDING ORDERS AND PROTOCOL

Section: **BLS OB/GYN Emergencies**
Subject: **BLS NEWBORN TREATMENT**
Section #: **322.03**
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10. ALS transport criteria:

- a. All field deliveries by HCFR members will be transported via ALS.

11. QA Points:

- a. There is increasing evidence of benefit in delaying umbilical cord clamping for at least one minute in newborns not needing resuscitation. There is not enough evidence either for or against this practice in newborns needing resuscitation, so the recommendation is to proceed as in the past; clamp and cut the cord, and immediately proceed with resuscitation.
- b. Suctioning immediately after birth should be reserved for babies who have an obvious obstruction to spontaneous breathing or require positive-pressure ventilation.
- c. There is no evidence that active babies benefit from airway suctioning, even in the presence of meconium, and there is evidence of risk associated with suctioning (i.e. bradycardia).

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Section: **BLS OB/GYN Emergencies**
Subject: **BLS ABNORMAL VAGINAL BLEEDING**
Section #: **322.04**
Issue Date: **March 21, 2011**
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1. Basic BLS treatments
2. High-flow **oxygen** via NRBMs and airway control
3. Keep the patient calm and quiet
4. Do not place gloved fingers or hand in the vaginal canal
5. Treat patient for shock if indicated:
 - a. Keep the patient warm
 - b. Place the patient in Trendelenburg position on her left side
6. For miscarriage patients, preserve all materials discharged from the vagina and present to the medical facility.
7. ALS evaluation and transport criteria:
 - a. All suspected miscarriage patients with abnormal vital signs or uncontrolled bleeding require an ALS assessment.
 - b. ALL suspected cases of placenta previa, abruptio placenta, or ectopic pregnancy will be transported via ALS.

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STANDING ORDERS AND PROTOCOL

Section: **BLS OB/GYN Emergencies** Page 1 of 1
Subject: **BLS GESTATIONAL HYPERTENSION EMERGENCIES (PRE-ECLAMPSIA, ECLAMPSIA,
AND HELLP SYNDROME)**
Section #: **322.05**
Issue Date: **March 21, 2011**
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1. Basic BLS treatments
2. High-flow oxygen via NRBMs and airway control
3. If delivery is not imminent:
 - a. Transport immediately to an obstetrical capable hospital.
 - b. Have the mother lay on her left side.
 - c. Keep the patient calm, and if possible, keep lighting low.
 - d. Minimize noise and other external factors that may increase the patient's anxiety level.
4. If delivery is imminent, proceed with the delivery.
5. ALS transport criteria:
 - a. ALL cases of suspected pre-eclampsia or eclampsia are ALS.
 - b. ALL pregnancies in which the mother has been determined by a physician to be pre-eclamptic will be transported via ALS.
 - c. Any pregnancy with associated hypertension or visual disturbances will be transported via ALS.
6. QA Points:
 - a. HELLP Syndrome – A syndrome featuring a combination of "H" for hemolysis (breakage of red blood cells), "EL" for elevated liver enzymes, and "LP" for low platelet count (an essential blood clotting element).
 - b. The HELLP syndrome is a recognized complication of preeclampsia and eclampsia (toxemia) of pregnancy, occurring in 25% of these pregnancies.

Section: **Adult Medical**
Subject: **ACUTE ABDOMEN**
Section #: **340.01**
Issue Date: **March 21, 2011**
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1. Basic ALS Treatment
2. ALS Transport Criteria:
 - a. All patients with signs and symptoms of acute abdomen or abnormal vital signs
 - b. Call Medic-1 for pain control orders if appropriate.
3. QA Points:
 - a. The primary goal of treating abdominal pain in the pre-hospital setting is to identify life-threatening conditions and alleviate suffering.
 - b. Abdominal pain in the elderly is a complex condition that more often than not requires a hospitalization to determine the presence or absence of an acute medical emergency.
 - c. Flank pain in the elderly may be the only presenting sign or symptom of an abdominal aortic aneurysm.
 - d. When dealing with lower abdominal pain in females, a good rule of thumb is the following set of assumptions:
 - i. Assume all women 12 to 55 years of age are pregnant.
 - ii. Assume all pregnant women have an ectopic pregnancy until proven otherwise.

Section: **Adult Medical**
Subject: **ALTERED STATE OF CONSCIOUSNESS**
Section #: **340.02**
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1. Basis ALS Treatment
2. ALS Treatment
 - a. **D₅₀W** (for known hypoglycemia ≤ 60 mg/dl)
 - i. 12.5 grams IV (over 1 to 2 mins)
 - ii. May be repeated one (1) time
 - b. **Oral dextrose** (only if the patient has an adequate gag reflex)
 - i. 25 to 30 grams PO
 - ii. May be repeated as necessary every five minutes to raise blood glucose level to ≥ 90 mg/dl
 - c. **Glucagon** (when unable to establish an IV)
 - i. 1.0 mg IM only once
 - d. **Naloxone** (when narcotic toxidrome is suspected)
 - i. 0.5 mg IV, IM, SC or IN
 - ii. Repeat q2 minutes as needed (titrated to desired effect)
3. QA points:
 - a. The administration of **naloxone** should be limited to those patients exhibiting signs and symptoms consistent with the opiate toxidrome. To do otherwise may be expending resources when a more viable treatment may be otherwise instituted.
 - b. **Naloxone** has been shown to reliably reverse the effects of *opiates only* and NOT cocaine, ethanol, ecstasy, or any other non-opiate substance.
 - c. Consider the patient's possible use of sleep medications such as Ambien®, Lunesta®, Sonata®, to account for the alteration in mental status. These will present with the sedative-hypnotic toxidrome.

Section: **Adult Medical**
Subject: **ANAPHYLAXIS/ALLERGIC REACTION**
Section #: **340.03**
Issue Date: **March 21, 2011**
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1. Basic ALS Treatments

2. ALS Treatments

a. **Epinephrine (for symptoms beyond hives)**

- i. 0.3 mg of a 1:1,000 solution IM
 - 1. Dose may be repeated q 3 minutes PRN for ongoing severe symptoms
- ii. If unresponsive to IM epinephrine, give 0.3 mg of a 1:10,000 solution IV q 5 minutes PRN for ongoing life threatening symptoms.

b. **Diphenhydramine**

- i. 50 mg IM or IV (flush thoroughly), once

c. **Methylprednisolone**

- i. 125 mg IV over 2 minutes, once

d. **Albuterol**

- i. 5 mg nebulized
- ii. May be repeated q 20 minutes PRN ongoing bronchospasm.
- iii. If the patient's tidal volume is inadequate then consider administering **albuterol** via BVM with an in-line nebulizer or ETT after the airway has been secured.

Section: **Adult Medical**
Subject: **ASTHMA**
Section #: **340.04**
Issue Date: **March 21, 2011**
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1. Basic ALS treatments
 - a. Continuous capnography should be used if available, especially in severe cases.
2. ALS Treatment
 - a. **Albuterol** (preferred for primary asthma patients)
 - i. 5.0 mg nebulized
 - ii. May be repeated q 20 minutes (not exceeding 15 mg per hour)
 - b. **Albuterol and ipratropium bromide** (preferred for COPD and emphysema patients)
 - i. Ipratropium bromide 0.5 mg (500 mcg) mixed with albuterol 2.5 mg
 - ii. May be repeated up to two (2) times if there has been a response to the initial treatment [total of 1.5 mg (1500 mcg) of ipratropium bromide and 7.5 mg of albuterol]
 - iii. If the patient's tidal volume is inadequate then consider administering ipratropium bromide and albuterol via BVM with in-line nebulizer or ETT after securing the airway.
 - c. **Methylprednisolone** (if the patient has not had steroids within the past 24 hours, and is not responding to initial albuterol)
 - i. 125 mg IV over 2 minutes, once.
 - d. **Magnesium sulfate** (for severe symptoms)
 - i. 2.0 grams in 50 mL over 20 minutes IV, once.
 - e. **CPAP** (primarily for COPD patients)
 - i. Indications:
 1. Moderate to severe respiratory distress
 2. Tachypnea (RR > 24 breaths/min)
 3. Accessory muscle use or abdominal breathing
 - ii. Contraindications:
 1. Respiratory arrest
 2. Medically unstable
 3. Unable to protect airway
 4. Excessive secretions
 5. Uncooperative or agitated
 6. Unable to fit mask
 7. Recent (< 30 days) upper airway or upper gastrointestinal surgery
 - iii. Start at 5.0 cm H₂O
 1. Increase as tolerated.
 - iv. Use waveform capnography, if available, to better monitor the clinical course.
 - f. **Epinephrine** (for near-fatal asthma or COPD)
 - i. If unable to nebulize the patient and the patient's tidal volume is inadequate:
 1. 0.3 mg of a 1:1,000 solution IM q 20 minutes PRN
 - g. Consider **intubation** if no response to any therapy and deterioration is noted.
3. QA points
 - a. In very symptomatic patients, an absence of wheezing may be a pre-terminal event.
 - b. All that wheezes is not asthma.

¹ Adapted from Liesching T, Kwok H, Hill NS: Acute applications of noninvasive positive pressure ventilation. Chest 124:699-713, 2003.

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Section: **Adult Medical**
Subject: **ASTHMA**
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- i. Adult patients without a history of pulmonary disease do not develop acute asthma overnight; evaluate the patient further for pulmonary edema.
- ii. An aspirated foreign body in a pediatric patient can present as wheezing.

Section: **Adult Medical**
Subject: **CARDIAC ARREST – GENERAL CARE**
Section #: **340.05**
Issue Date: **March 21, 2011**
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1. Treatment of cardiac arrest will place particular emphasis on high quality CPR.
2. The following are important points to be followed for all patients in cardiac arrest:
 - a. When resuscitation is indicated, the patient will be treated **quickly and aggressively** where found if possible.
 - i. If it is subsequently determined that the patient's intention was for a DNRO to be in effect, efforts at resuscitation may be stopped in order that the natural course of disease may proceed. See **HCFR END OF LIFE** protocol.
 - b. Continuous and effective chest compressions, an adequate airway, and proper ventilation and oxygenation are more important than administering medications and therefore take precedence over attempts at placing an advanced airway, initiating an IV/IO line, or administering medications.
 - c. Pulse checks will take no more than 5 seconds, and be initiated within 10 seconds of arrival.
 - d. As long as the patient is pulseless (e.g. asystole, PEA, VF/pVT) two minutes of CPR will follow the administration of any drug or shock.
 - e. **Compressions / Ventilations:**
 - i. Compressions will be immediate and sufficient to produce a central pulse, with rate/depth in accordance with current American Heart Association guidelines and **HCFR COMPRESSIONS – VENTILATIONS GUIDE**.
 1. Any interruption in compressions must be extremely limited and for as brief a period as possible.
 2. Rotate personnel performing CPR every two minutes.
 3. If available and indicated, an automated CPR device may be used.
 - ii. Given that maintaining continuous compressions is of paramount importance, the initial capture of the airway will be with a supra-glottic airway device.
 1. If there is return of spontaneous circulation (ROSC), the airway may be converted to an ETT by an approved method at the discretion of the paramedic in charge.
 2. If a previously intubated patient experiences cardiac arrest, the ETT may continue to be used.
 - iii. The compression to ventilation ratio will be per American Heart Association guidelines
 1. Once an advanced airway is placed, compression will be continuous with ventilations performed at a rate of 8 to 10 per minute.
 2. Avoid excessive ventilations.
 3. Capnography shall be used in all cardiac arrest patients.
 - f. **Defibrillation:**
 - i. All initial defibrillation attempts for adult patients will be at 200 joules
 1. Subsequent defibrillation attempts may be increased to 300 joules.
 2. Upon recognition of VF/pVT, the goal is to defibrillate in <60 seconds
 3. All defibrillator models used by HCFR are biphasic.
 4. If the patient remains in VF/VT after an antiarrhythmic has been administered, the defibrillation energy may be increased to 360 joules.
 - ii. Immediately after each defibrillation, perform 200 chest compressions (two minutes of CPR) prior to performing a pulse and rhythm check.
 1. Remember in all situations, chest compression will only be interrupted for the briefest amount of time possible.

Section: **Adult Medical**
Subject: **CARDIAC ARREST – GENERAL CARE**
Section #: **340.05**
Issue Date: **March 21, 2011**
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g. Intravenous Therapy:

- i. The primary route of medication administration will be intravenous, but intraosseous will also be acceptable.
 - 1. All doses listed as IV can also be given IO.
- ii. The largest bore catheter possible *shall* be used.
- iii. The external jugular vein may be considered acceptable for use in patients suffering cardiac arrest.
- iv. The internal jugular and subclavian veins are not authorized to be accessed by HCFR personnel.
- v. When using an extremity vein, medication administration should be followed by a 20 mL bolus of normal saline and immediate elevation of the extremity to facilitate flow into the into the central circulation.
- vi. If narcotic overdose is suspected, give **naloxone** 4.0 mg IV/IO.
- vii. The administration of dextrose during resuscitation in adult patients with cardiac arrest was found to be associated with significantly decreased chances of survival and a decreased chance of good neurological outcome. Therefore, the focus should be on high quality CPR.¹ Only treat hypoglycemia in the event of ROSC.

h. Post Intubation Care:

- i. End-tidal CO₂ detection will be used and documented in all patients which have an advanced airway in place.
- ii. Capnography will be used and documented when available
 - 1. If the ETCO₂ <10 mmHg attempt to improve CPR quality.
- iii. Airway protection:
 - 1. When an automated CPR device is in use, it may be secured to a long spine board using approved lashing materials.
 - 2. When using manual CPR, minimize the possibility of airway device dislodgement by securing the patient to a long spine board with head immobilization devices.

i. Return of Spontaneous Circulation (ROSC):

- i. See **HCFR ROSC protocol**.

¹ Peng, Teng J., et al. "The Administration of Dextrose during In-Hospital Cardiac Arrest is Associated with Increased Mortality and Neurological Morbidity." *Critical Care*, 2015.

Section: **Adult Medical**
Subject: **CARDIAC ARREST – GENERAL ALGORITHM**
Section #: **340.06**
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1. General Algorithm for Out-of-Hospital Cardiac Arrest of Cardiac Origin

- a. Assess:
 - i. Check for unresponsiveness.
 - ii. Confirm the presence of apnea or ineffective breathing.
 - iii. Turn on the cardiac monitor and, if available, an automated CPR device
 - iv. Use standard approved methods (AHA-ACLS) to open and maintain the airway.
- b. Circulation:
 - i. Confirm no pulse within the first 10 seconds.
 - ii. Begin chest compressions immediately using rate/depth in accordance with current American Heart Association guidelines.
 - iii. Push hard and fast releasing the chest completely, but not bouncing on the chest.
 - iv. Limit interruptions to chest compressions to less than ten (10) seconds.
 - v. If indicated and available, an automated CPR device may be placed.
 - vi. With manual CPR, rotate personnel performing compressions every two minutes.
- c. Breathing:
 - i. After the initial thirty (30) compressions, administer two (2) rescue breaths.
 - ii. Apply defibrillation pads to the chest.
- d. Perform CPR for two (2) minutes.
- e. Perform pulse/rhythm check and refer to appropriate HCFR protocol.
 - i. Non-perfusing rhythms:
 1. Shockable rhythms:
 - a. V-Fib/Pulseless V-Tach
 2. No-shock rhythms:
 - a. Asystole
 - b. Pulseless Electrical Activity
 - ii. Perfusing rhythms:
 1. A-Fib/A-Flutter
 2. Bradycardia/Conduction Block
 3. SVT
 4. Ventricular Ectopy
 5. Ventricular Tachycardia
 6. Wide Complex Tachycardia of Unknown Etiology

2. QA Points:

- a. Although ventilations are an important part of resuscitation, evidence shows that compressions are the critical element in adult resuscitation.
- b. If a pulse is not detected right away, do not delay the start of compressions.
- c. Faster and deeper compressions are required to generate the pressures necessary to perfuse the coronary and carotid arteries.

Section: **Adult Medical**
Subject: **CARDIAC ARREST ALGORITHM – ASYSTOLE**
Section #: **340.07**
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1. General Cardiac Arrest Algorithm
2. Specific ALS Treatment
 - a. **Epinephrine**: 1.0 mg (1:10,000) IV/IO q 3 to 5 minutes
3. If there is return of spontaneous circulation (ROSC), Continue with the **HCFR ROSC protocol**
4. If after twenty (20) minutes of asystole and ETCO₂ is <10 mm Hg, contact Medic-1 for consideration of termination of resuscitation efforts.
5. QA Points:
 - a. Consider possible causes that we can address:
 - i. Hypoxia
 - ii. Hypovolemia
 - iii. Drug Overdose
 - iv. Hypothermia
 - v. Tension Pneumothorax
 - b. Available evidence suggests that the routine use of atropine during PEA or asystole is unlikely to have a therapeutic benefit. Pauses in compressions must be as short as possible.
 - c. Given that maintaining continuous compressions is of paramount importance, the initial capture of the airway will be with a multi-lumen airway device or a blind (LMA) airway device.
 - d. If there is return of spontaneous circulation (ROSC), the airway may be converted to an ETT by an approved method at the discretion of the paramedic in charge.

Section: **Adult Medical**
Subject: **CARDIAC ARREST ALGORITHM – PULSELESS ELECTRICAL ACTIVITY**
Section #: **340.08**
Issue Date: **March 21, 2011**
Revision Date: **December 1, 2017**
Approved By: 

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Michael Lozano, Jr., M.D., HCFR Medical Director

1. General Cardiac Arrest Algorithm
2. Specific ALS Treatment
 - a. Epinephrine 1.0 mg (1:10,000) IV/I/O q 3 to 5 minutes
 - b. If hypovolemia is a consideration, infuse **normal saline** of 20 mL/kg IV
3. QA Points:
 - a. Consider possible causes that we can address
 - i. Hypoxia
 - ii. Hypovolemia
 - iii. Drug Overdose
 - iv. Hypothermia
 - v. Tension Pneumothorax
 - b. Available evidence suggests that the routine use of atropine during PEA or asystole is unlikely to have a therapeutic benefit.

Section: **Adult Medical**
Subject: **CARDIAC ARREST ALGORITHM – VENTRICULAR FIBRILLATION/PULSELESS V-TACH**
Section #: **340.09**
Issue Date: **March 21, 2011**
Revision Date: **December 1, 2017**
Approved By:  **Michael Lozano, Jr., M.D., HCFR Medical Director**

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1. General Cardiac Arrest Algorithm
2. Specific ALS Treatment
3. **Defibrillation:**
 - a. Initial energy is 200 Joules
 - b. Upon recognition of VF/pVT, the goal is to defibrillate in <60 seconds
4. **Treatment Sequence:**
 - a. A circular algorithm will be followed:
 - i. Defibrillate, then
 - ii. CPR for two minutes, then
 - iii. Medications, then
 - iv. Pulse check, then repeat
 - b. Defibrillation
 - i. 200 j, 300 j, and then 360 j after medication cycle
 - c. Medications:
 - i. **Epinephrine** 1.0 mg (1:10,000) IV/IO q 3-5 min
 - ii. **Amiodarone**
 1. First dose 300 mg bolus IV/IO over 1 minute
 2. Second dose: 150 mg IV/IO over 1 minute
 3. If cardioversion is successful, begin an infusion at 1.0 mg/min with adequate signs of perfusion
 4. For recurrent VF/VT while on the drip, administer an additional 150 mg IV/IO, and restart the protocol
 - iii. For **Torsades de Pointes** magnesium sulfate 2.0 grams IV/IO as a bolus.
 1. IV drip of 1.0 mg/min if successful conversion
 - iv. **Lidocaine:**
 1. 1.0 mg/kg IV/IO loading dose
 2. If cardioversion is successful, begin an infusion at 2.0 mg/min IV/IO and repeat the bolus if the infusion is started more than 15 minutes after the initial bolus.
 3. If the patient is in CHF, renal failure, or liver failure, the dose of the infusion is halved to 1 mg/min IV/IO.
5. Return of Spontaneous Circulation (ROSC)
 - a. Continue to HCFR ROSC protocol
 - b. Treat lethal arrhythmias appropriately (remember a resuscitated patient will still be affected by prior drug therapy)
6. QA Points:
 - a. Pauses in compressions must be as short as possible.
 - b. When an automated CPR device is in use:
 - i. There is no pause in compressions to deliver a shock
 - ii. All efforts should be made to deliver a shock on the "down stroke" while the thorax is at maximum compression.

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STANDING ORDERS AND PROTOCOL

Section: **Adult Medical** Page 2 of 2
Subject: **CARDIAC ARREST ALGORITHM – VENTRICULAR FIBRILLATION/PULSELESS V-TACH**
Section #: **340.09**
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- c. Given that maintaining continuous compressions is of paramount importance, the initial capture of the airway will be with a supra-glottic airway device.
 - i. If there is return of spontaneous circulation (ROSC), the airway may be converted to an ETT by an approved method at the discretion of the paramedic in charge.
- d. **Amiodarone** has a very long half-life, therefore stabilize the vital signs prior to initiating an amiodarone drip.

Section: **Adult Medical**
Subject: **CARDIAC DYSRHYTHMIAS – ATRIAL FIBRILLATION/ATRIAL FLUTTER**
Section #: **340.10**
Issue Date: **March 21, 2011**
Revision Date: **December 1, 2017**
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Michael Lozano, Jr., M.D., HCFR Medical Director

1. Basic ALS Treatment.
 - a. Must evaluate patients' pulse for 60 seconds.
 - b. **Do NOT use the EKG heart rate displayed on monitor for calculation of pulse.**
2. Specific ALS Treatment
 - a. Stable patients with signs of rapid ventricular response (RVR) and heart rate sustained >150/minutel
 - i. **Diltiazem**
 1. 0.25 mg/kg IV over 2 minutes.
 2. Systolic blood pressure must be > 100 mmHg.
 3. May repeat once after 15 minutes at 0.35 mg/kg IV over 2 minutes.
 - b. Stable patients without signs of RVR:
 - i. Monitor and apply general supportive care.
 - c. Unstable patients
 - i. At the discretion of the paramedic in charge you may elect to try one round of pharmacological intervention before cardioversion.
 - ii. Perform immediate synchronized cardioversion.
 1. Energy levels sequence for SVT and Atrial flutter 50j, 100j, 200j, 300j, and 360j.
 2. Energy levels sequence for Atrial Fibrillation 125j, 200j, 300j, and 360j
 - iii. If the systolic blood pressure is > 100 mmHg:
 1. Sedation: **Midazolam** 1.25 mg IV once.
 2. Analgesia: **Fentanyl** 50 mcg IV once.
3. QA Points:
 - a. **Unstable condition must be related to the tachycardia.**
 - i. Signs and symptoms may include chest pain, shortness of breath, decreased level of consciousness, low blood pressure, shock, pulmonary congestion, CHF, or acute MI.
 - b. Immediate cardioversion is seldom needed for heart rates < 150 bpm.
 - c. If delays in synchronization occur and clinical conditions are critical, switch to immediate unsynchronized cardioversion.
 - b. Atrial flutter often responds to lower energy levels, therefore that is why you start at 50 j.

Section: **Adult Medical**
Subject: **CARDIAC DYSRHYTHMIAS – BRADYCARDIA/BLOCK**
Section #: **340.11**
Issue Date: **March 21, 2011**
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1. Basic ALS Treatment
2. Treat either pharmacologically or with transcutaneous pacing *only* if the patient is showing serious signs and symptoms. (see QA points below)
3. Bradycardia and symptomatic:
 - a. **Atropine**
 - i. 0.5 mg rapid IVP q 3 – 5 minutes (total max dose of 3.0 mg)
 - b. **Transcutaneous Pacing**
 - c. **Dopamine infusion**
 - i. Start at 5 mcg/kg/min IV/IO
 - ii. Increase by 5 mcg/kg/min q 5 minutes PRN titrated to return of peripheral pulses.
 - iii. Maximum dose of 20 mcg/kg/min
 - d. **Epinephrine infusion**
 - i. Start at 2 mcg/min IV/IO
 - ii. Increase by 2 mcg/min q 5 minutes PRN titrated to return of peripheral pulses.
 - iii. Maximum dose of 10 mcg/min
4. Adjuncts to transcutaneous pacing if the systolic blood pressure is > 100 mmHg:
 - a. **Midazolam** 1.25 mg IV q 5 minutes PRN anxiety
 - b. **Fentanyl** 50 mcg IV q 5 minutes PRN pain (total dose of 350 mcg)
5. QA Points:
 - a. Serious signs and symptoms must be related to the slow rate and *shall*/include:
 - i. Symptoms: chest pain, shortness of breath, or decreased level of consciousness.
 - ii. Signs: low BP, shock, pulmonary congestion, CHF, or acute MI.
 - b. Atropine is not effective for infranodal block (i.e. type II AV block and third degree block with wide QRS complexes). In these patients it may cause a paradoxical slowing, so be prepared to initiate transcutaneous pacing.
 - c. Denervated transplanted hearts will not respond to atropine.
 - i. Proceed at once to transcutaneous pacing, catecholamine infusion, or both.
 - d. Never treat ventricular escape beats with **lidocaine** or **amiodarone**.
 - e. For transcutaneous pacing:
 - i. Confirm mechanical capture and patient tolerance..
 - ii. Use sedation and analgesia to ensure patient tolerance of the procedure
 - iii. Do not delay TCP while awaiting IV access or for atropine to take effect if the patient is symptomatic.

Section: **Adult Medical**
Subject: **CARDIAC DYSRHYTHMIAS – SUPRAVENTRICULAR TACHYCARDIA (SVT)**
Section #: **340.12**
Issue Date: **March 21, 2011**
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1. Basic ALS Treatment.
2. Stable patient:
 - a. Vagal maneuvers. **DO NOT USE CAROTID MASSAGE**
 - b. **Adenosine:**
 - i. 6 mg IV over 1-3 seconds; followed by **normal saline** 20 mL bolus,
 - ii. If no response in 1 to 2 minutes, then give 12 mg IV over 1-3 seconds; followed by **normal saline** 20 mL bolus,
 - c. If the patient remains in SVT or if SVT reoccurs:
 - i. Administer **diltiazem**: 0.25 mg/kg IV over 2 minutes.
 1. Systolic BP must be > 100 mmHg.
 2. May repeat once after 15 minutes at a dose of 0.35 mg/kg IV.
3. Unstable patient:
 - a. At the discretion of the paramedic in charge you may elect to try one round of **adenosine** 12 mg IV (as above) before cardioversion.
 - b. **Synchronized Cardioversion:**
 - i. Energy levels: 50 j, 100 j, 200 j, 300 j, 360 j.
 - ii. Adjuncts to cardioversion if the systolic blood pressure is > 100 mmHg:
 1. Sedation: **midazolam** 1.25 mg IV once.
 2. Analgesia: **fentanyl** 50 mcg IV once.
4. Obtain a 12-lead EKG as soon as the patient is stabilized.
5. QA Points:
 - a. This protocol covers both SVT and pSVT.
 - b. Unstable condition must be related to the tachycardia.
 - i. Signs and symptoms may include chest pain, shortness of breath, decreased level of consciousness, low blood pressure, shock, pulmonary congestion, CHF, or acute MI.
 - c. Immediate cardioversion is seldom needed for heart rates < 150 bpm.
 - d. If delays in synchronization occur and clinical conditions are critical, switch to immediate unsynchronized cardioversion.
 - e. PSVT often responds to lower energy levels. That is why you start at 50 j.

Section: **Adult Medical**
Subject: **CARDIAC DYSRHYTHMIAS – VENTRICULAR ECTOPY**
Section #: **340.13**
Issue Date: **March 21, 2011**
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1. Basic ALS Treatment
2. Treat "R on T" phenomenon on unstable patients only.
3. **Amiodarone:** 150 mg IV/IO over 10 minutes
 - a. May repeat once
4. Obtain a 12-lead EKG as soon as the patient is stabilized.
5. QA Points:
 - a. Very few patients experiencing ectopy need acute treatment.
 - b. Beware, treating ventricular escape beats as PVCs can be fatal.
 - c. Do not treat asymptomatic bigeminy or trigeminy.

Section: **Adult Medical**
Subject: **CARDIAC DYSRHYTHMIAS – VENTRICULAR TACHYCARDIA**
Section #: **340.14**
Issue Date: **March 21, 2011**
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1. Basic ALS Treatment
 - a. Perform 12-Lead EKG to confirm the **absence** of a paced rhythm.
2. If the patient is hemodynamically stable:
 - a. Administer **amiodarone**:
 - i. 150 mg IV/IO over 10 minutes.
 - ii. If successful conversion occurs, begin **amiodarone** 1 mg/min IV infusion.
 - b. If patient becomes unstable proceed to synchronized cardioversion.
3. If the patient is hemodynamically unstable:
 - a. Perform immediate synchronized cardioversion:
 - i. Energy levels: 100 j, 200 j, 300 j, 360 j.
 - ii. Adjuncts to cardioversion if the systolic blood pressure is > 100 mmHg:
 1. Sedation: **midazolam** 1.25 mg IV once.
 2. Analgesia: **fentanyl** 50 mcg IV once.
4. Obtain a 12-lead EKG as soon as the patient is stabilized.
5. QA Points:
 - a. Unstable condition must be related to the tachycardia.
 - i. Signs and symptoms may include chest pain, shortness of breath, decreased level of consciousness, low blood pressure, shock, pulmonary congestion, CHF, or acute MI.
 - b. If delays in synchronization occur and clinical conditions are critical, switch to immediate unsynchronized cardioversion.
 - c. Treat polymorphic VT (irregular form and rate) like VF not synchronized: 200 j, 300 j, 360 j.

Section: **Adult Medical**
Subject: **CARDIAC DYSRHYTHMIAS – WIDE COMPLEX TACHYCARDIA OF UNKNOWN ETIOLOGY**
Section #: **340.15**
Issue Date: **March 21, 2011**
Revision Date: **December 1, 2017**
Approved By: 
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1. Basic ALS Treatment:
 - a. Perform 12-Lead EKG to confirm the **absence** of a paced rhythm.
2. If the patient is hemodynamically stable:
 - a. Administer **amiodarone**:
 - i. 150 mg IV/IO over 10 minutes.
 - ii. If successful conversion occurs, begin **amiodarone** 1 mg/min IV infusion.
 - b. If patient becomes unstable, proceed to synchronized cardioversion.
3. If the patient is hemodynamically unstable:
 - a. Perform immediate synchronized cardioversion:
 - i. Energy levels: 100 j, 200 j, 300 j, 360 j.
 - ii. Adjuncts to cardioversion if the systolic blood pressure is > 100 mmHg:
 1. Sedation: **midazolam** 1.25 mg IV once
 2. Analgesia: **fentanyl** 50 mcg IV once.
4. Obtain a 12-lead EKG as soon as the patient is stabilized.
5. QA Points:
 - a. Unstable condition must be related to the tachycardia.
 - i. Signs and symptoms may include chest pain, shortness of breath, decreased level of consciousness, low blood pressure, shock, pulmonary congestion, CHF, or acute MI.
 - b. If delays in synchronization occur and clinical conditions are critical, switch to immediate unsynchronized cardioversion.
 - c. Treat polymorphic VT (irregular form and rate) like VF not synchronized: 200 j, 300 j, 360 j.

Section: **Adult Medical**
Subject: **CARDIAC STEMI (ST ELEVATION MI)**
Section #: **340.16**
Issue Date: **April 1, 2006**
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Approved By:

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1. Basic ALS Treatment must include a 12 lead EKG
 - a. Evaluate for STEMI Alert criteria.
 - i. Patient MUST HAVE cardiac symptoms (e.g. chest pain/pressure, angina, dyspnea alone, weakness, nausea/vomiting, or palpitations¹) lasting for greater than 15 minutes and less than 12 hours, or a significant event (i.e. syncope or cardiac arrest) and AT LEAST ONE of the following:
 1. Machine interpretation reports ***Meets ST Elevation Criteria*** or ***Acute MI Suspected***
 - a. The presence of LBBB negates this finding.
 2. Paramedic interpretation of new ST elevation at the J point of ≥ 1 mm (0.1 mV) in at least two contiguous chest or limb after mimics are ruled out.
 - b. If the patient fulfills the above criteria, notify the receiving hospital as soon as possible using the specific words, "STEMI Alert."
 - c. If you suspect that the patient's symptoms are cardiac in origin, but the above very specific "STEMI Alert" criteria are not met, continue with **HCFR CHEST PAIN OF SUSPECTED CARDIAC ORIGIN** protocol and DO NOT call a STEMI Alert.
 - d. When available, transmit the 12 Lead to the receiving facility as soon as possible.
 - e. For patients with STEMI, the goal scene time is <15 minutes from arrival to departure.
 2. Transport:
 - a. All STEMI patients are to be transported to a PCI capable facility
 - i. If the patient refuses transport to a PCI center, an informed refusal shall be obtained.
 - ii. The closest PCI capable facility is recommended but ultimately destination is at the patient's final discretion.
 1. Reason for deviation from the closest PCI capable facility shall be documented in the ePCR.
 2. An informed refusal to closest (appropriate) hospital shall be completed when, in the Rescue Officer's evaluation, conditions warrant (i.e. 20 minute deviation to a more distant facility.)
 - iii. A list of approved PCI centers is maintained by the Rescue Division and will be updated in the event of a change.
 3. Pharmacological Therapy:
 - a. Oxygen
 - i. If the oxygen saturation is less than 94%, start with **oxygen** at 2 L/min via nasal cannula and titrate to maintain SpO₂ between 94% and 96%^{2 3 4}

¹ Pope, J. Hector, et al. "Missed Diagnoses of Acute Coronary Ischemia in the Emergency Department." The New England Journal of Medicine, no. 16, 2000, p. 1163.

² McNulty P.H., King N., Scott S., et al; Effects of supplemental oxygen administration on coronary blood flow in patients undergoing cardiac catheterization. Am J Physiol Heart Circ Physiol. 2005; 288:H1057-H1062.

³ Stub D. A randomized controlled trial of oxygen therapy in acute ST-segment elevation myocardial infarction: the Air Versus Oxygen in Myocardial Infarction (AVOID) study. Presented at: American Heart Association Scientific Sessions; November 19, 2014; Chicago, IL.

⁴ Cabello J.B., Burls A., Emparanza J.I., et al; Oxygen therapy for acute myocardial infarction. Cochrane Database Syst Rev. 2010;CD007160

Section: **Adult Medical**
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Section #: **340.16**
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- b. **Nitroglycerin (NTG)**
- i. Determine if there is a contraindication to the use of NTG (see QA points below and **Section 348 – Drug Reference**)
 - ii. The patient's systolic blood pressure (SBP) must remain > 100 mmHg during treatment
 - iii. Administer **nitroglycerin** 0.4 mg SL q5 minutes.
 - 1. If SBP remains >120 mmHg after 1.2 mg of NTG SL, then proceed to intravenous NTG (**Tridil®**) when available, regardless of pain level.
 - a. Titrate Tridil to maintain a SBP between 100 mmHg and 120 mmHg regardless of pain level.
 - i. Increase Tridil in increments of 10mcg/min as long as SBP remains \geq 120mmHg.
 - ii. Once SBP drops below 120 mmHg, maintain current infusion rate.
 - b. If **Tridil®** is not available, then continue with NTG SL as above until the SBP drops below 120 mmHg.
 - c. **Intravenous Nitroglycerin (Tridil®)** The starting dose is 10 mcg/min IV/IO by infusion
 - d. Use of an IV pump is required for administration of **Tridil®**
 - e. It is highly recommended that two paramedics accompany the patient in the back of the rescue when infusing **Tridil®**
 - f. There is no maximum dose assuming the patient's SBP can tolerate it
 - g. If the SBP drops below 100 mmHg pause the infusion and administer normal saline 200 mL IV/IO bolus once.
- c. **Aspirin**
- i. Confirm allergy status prior to administration
 - ii. Administer **aspirin** 324 mg PO if it has not been taken within the past 24 hours
 - 1. As part of the pre-arrival instructions EDC may have instructed the patient to take ASA prior to our arrival – confirm with the patient that they did or did not take ASA prior to your arrival and document findings.
- d. Nausea and vomiting
- i. **Ondansetron hydrochloride** 4 mg IV/IM PRN for severe nausea/vomiting
 - ii. May repeat the dose one time in 10 minutes, if needed
- e. For STEMI precipitated by cocaine or other sympathomimetics
- i. Administer **nitroglycerin** as above⁵
 - ii. In addition, administer **diazepam** 5 mg IV/IO q15 minutes PRN discomfort or **midazolam** 2.5mg IV/IN/IO q15 minutes PRN discomfort⁶.

⁵ Baumann BM, Perrone J, Hornig SE, et al. Randomized, double-blind, placebo-controlled trial of diazepam, nitroglycerin, or both for treatment of patients with potential cocaine-associated acute coronary syndromes. *Acad Emerg Med*. 2000; 7: 878–885.

⁶ Honderick T, Williams D, Seaberg D, Wears R. A prospective, randomized, controlled trial of benzodiazepines and nitroglycerin or nitroglycerin alone in the treatment of cocaine-associated acute coronary syndromes. *Am J Emerg Med*. 2003;21(1):39–42.

Section: **Adult Medical**
Subject: **CARDIAC STEMI (ST ELEVATION MI)**
Section #: **340.16**
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4. QA Points

- a. Most cases of LBBB at time of presentation are "not known to be old" because the prior electrocardiogram (ECG) is not available for comparison. New or presumably new LBBB at presentation occurs infrequently, may interfere with ST-elevation analysis, and should not be considered diagnostic of acute myocardial infarction (AMI) without associated cardiac related symptoms.⁷
- b. Administer nitrates with caution in patients with an inferior or posterior wall AMI as both can have right ventricular involvement. In those cases, nitrates can cause a precipitous blood pressure drop and should be monitored closely.
- c. Whereas in the past it was allowable with direct Medic-1 approval, **nitroglycerin in all forms** is now *contraindicated* in HCFR patients who have recently taken medications for erectile dysfunction. Because of their respective half-lives and duration of action, "recently" is defined for this protocol as being 24 hours for **sildenafil (Viagra®)**, and 48 hours for **vardenafil (Lavitra®)** or **tadalafil (Cialis®)**.

⁷ Jain S., Ting H.T., Bell M., et al; Utility of left bundle branch block as a diagnostic criterion for acute myocardial infarction. Am J Cardiol. 2011; 107:1111-1116.

Section: **Adult Medical**
Subject: **CARDIOGENIC SHOCK**
Section #: **340.17**
Issue Date: **March 21, 2011**
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1. Definition: A patient having the signs and symptoms of cardiac failure and a systolic blood pressure of <90 mmHg.
2. Basic ALS treatment and 12-lead EKG.
 - a. Evaluate for STEMI Alert criteria:
 - i. Patient MUST HAVE cardiac symptoms (e.g. chest pain/pressure, angina, dyspnea alone, weakness, nausea/vomiting, or palpitations¹) lasting for greater than 15 minutes and less than 12 hours, or a significant event (i.e. syncope or cardiac arrest) and AT LEAST ONE of the following:
 1. Machine interpretation reports ***Meets ST Elevation Criteria*** or ***Acute MI Suspected***
 - a. The presence of LBBB negates this finding.
 2. Paramedic interpretation of new ST elevation at the J point of ≥ 1 mm (0.1 mV) in at least two contiguous chest or limb leads after mimics are ruled out.
 - b. Use the words "STEMI Alert" when calling the receiving facility.
 3. Fluid Challenge of 200 mL normal saline IV if no signs of pulmonary edema
 4. If no response:
 - a. **Dopamine**: start at 5 mcg/kg/min IV/IO drip
 - b. Increase by 5 mcg/kg/min q5 minutes titrated to effect
 - c. Maximum infusion rate is 20 mcg/kg/min.
 5. QA Points:
 - b. Transport to a PCI capable facility.
 - i. If the patient refuses transport to a PCI capable center, an informed refusal shall be obtained
 - ii. The closest PCI capable facility is recommended, but ultimately the destination is at the patient's discretion.
 1. Reasons for deviation from the closest PCI capable facility shall be documented in the ePCR
 - c. A list of approved PCI centers is maintained by the Rescue Division and will be updated as changes are made.
 - d. The term "cardiac alert" is confusing to facilities as it means different things to different people. For that reason, the term "cardiac alert" is not to be used. If you want to convey to the hospital that you have a complicated or critical patient suffering some sort of cardiovascular emergency, then use plain speech and just say so.

¹ Pope, J. Hector, et al. "Missed Diagnoses of Acute Coronary Ischemia in the Emergency Department." The New England Journal of Medicine, no. 16, 2000, p. 1163.

Section: **Adult Medical**
Subject: **CHEST PAIN OF SUSPECTED CARDIAC ORIGIN**
Section #: **340.18**
Issue Date: **April 1, 2006**
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1. Basic ALS Treatment must include a 12 lead EKG.
 - a. Evaluate for STEMI Alert criteria [**HCFR CARDIAC STEMI (ST ELEVATION MI) protocol.**]
 - b. If STEMI Alert criteria are NOT met and, if you suspect that the patient's symptoms are cardiac in origin, continue with pharmacologic therapy.
2. Pharmacologic Therapy:
 - a. **Oxygen**
 - i. If the oxygen saturation is less than 94%, start with **oxygen** at 2 L/min via nasal cannula and titrate to maintain SaO₂ between 94% and 96%¹
 - b. **Nitroglycerin (NTG)**
 - i. Determine if there is a contraindication to the use of **NTG** (see QA points below and **Section 348 – Drug Reference**)
 - ii. The patient's systolic blood pressure (SBP) must remain > 100 mmHg during treatment
 - iii. Administer **nitroglycerin** 0.4 mg SL q5 minutes PRN ongoing discomfort
 1. If the discomfort completely resolves with 1.2 mg or less of **NTG SL**, and the SBP permits, apply 1 inch of **NTG paste** to the chest.
 2. If the symptoms do not completely resolve with **NTG SL**, then proceed to intravenous **NTG (Tridil®)** when available
 - a. If **Tridil®** is not available, then continue with **NTG SL** as above until either the patient's symptoms resolve or the SBP is too low
 3. **Intravenous Nitroglycerin (Tridil®)³**
 - a. Use of an IV pump is required for administration of **Tridil®**
 - b. It is highly recommended that two paramedics accompany the patient in the back of the rescue when infusing **Tridil®**
 - c. The starting dose is 10 mcg/min IV/IO by infusion
 - d. Increase by 10 mcg/min IV/IO q5 minutes and titrate to symptoms
 - e. There is no maximum dose assuming the patient's SBP can tolerate it
 - f. If the SBP drops below 100 mmHg:
 - i. Pause the infusion and administer normal saline 200 mL IV/IO bolus once
 4. If there is no response to **nitroglycerin** at all, then reconsider if the patient is experiencing chest pain due to cardiac ischemia.
 - c. **Aspirin**
 - i. Confirm allergy status prior to administration
 - ii. Administer **aspirin** 324 mg PO if it has not been taken within the past 24 hours
 1. As part of the pre-arrival instructions EDC may have instructed the patient to take ASA prior to our arrival – confirm with the patient that they did or did not take ASA prior to your arrival and document findings.

¹ McNulty P.H., King N., Scott S., et al; Effects of supplemental oxygen administration on coronary blood flow in patients undergoing cardiac catheterization. Am J Physiol Heart Circ Physiol. 2005; 288:H1057-H1062.

² Moradkhan R., Sinoway L.I.; Revisiting the role of oxygen therapy in cardiac patients. J Am Coll Cardiol. 2010;56:1013-1016.

³ Kaplan K., Davison R., Parker M., et al; Intravenous nitroglycerin for the treatment of angina at rest unresponsive to standard nitrate therapy. Am J Cardiol. 1983;51:694-698.

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Subject: **CHEST PAIN OF SUSPECTED CARDIAC ORIGIN**
Section #: **340.18**
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- d. Nausea and vomiting is common in inferior and posterior wall AMI
 - i. **Ondansetron hydrochloride** 4 mg IV/IM PRN for severe nausea and /or vomiting
 - ii. May repeat the dose one time in 10 minutes, if needed
 - e. For chest pain or discomfort precipitated by cocaine or methamphetamine⁴
 - i. Administer **nitroglycerin** as above⁵
 - ii. In addition, administer **diazepam** 5 mg IV/IO once PRN discomfort⁶
 - iii. For agitation due to cocaine, or methamphetamine go to HCFR BEHAVIORAL EMERGENCIES protocol.
3. ALS Transport Criteria – Chest Pain:
- a. Patients with the following symptoms in conjunction with chest pain *shall* be transported by ALS:
 - i. Any discomfort suspected to be of cardiac origin
 - ii. Any combination of chest pain, dyspnea, diaphoresis, or syncope
 - iii. Suspected cocaine or other stimulant use
 - iv. Cardiac history (CAD, previous MI, HTN)
 - v. Altered vital signs
 - vi. Severe indigestion or nausea in a patient older than 35 years
 - vii. Chest pain with associated upper back pain
 - viii. New dysrhythmias
 - b. Other patients may be transported by ALS at the discretion of the charge medic on scene.
4. QA Points:
- a. Reproducible chest pains either by deep inhalation or palpation of the chest DOES NOT rule out a cardiac event.
 - b. Administer nitrates with caution in patients with an inferior or posterior wall AMI as both can have right ventricular involvement. In those cases, nitrates can cause a precipitous blood pressure drop and should be monitored closely.
 - c. Whereas in the past it was allowable with direct Medic-1 approval, **nitroglycerin** in all forms is now *contraindicated* in HCFR patients who have recently taken medications for erectile dysfunction. Because of their respective half-lives and duration of action, "recently" is defined for this protocol as being 24 hours for **sildenafil** (**Viagra®**), and 48 hours for **vardenafil** (**Lavitra®**) or **tadalafil** (**Cialis®**).
 - d. When using **Tridil®** or **nitroglycerin** paste do not continue to use **nitroglycerin** SL.

⁴ Watts DJ, McCollester L. Methamphetamine-induced myocardial infarction with elevated troponin I. *Am J Emerg Med* 2006;24:132–4.

⁵ Baumann BM, Perrone J, Hornig SE, et al. Randomized, double-blind, placebo-controlled trial of diazepam, nitroglycerin, or both for treatment of patients with potential cocaine-associated acute coronary syndromes. *Acad Emerg Med*. 2000; 7: 878–885.

⁶ Honderick T, Williams D, Seaberg D, Wears R. A prospective, randomized, controlled trial of benzodiazepines and nitroglycerin or nitroglycerin alone in the treatment of cocaine-associated acute coronary syndromes. *Am J Emerg Med*. 2003;21(1):39–42

Section: **Adult Medical** Page 1 of 3
Subject: **DECOMPENSATED CONGESTIVE HEART FAILURE / ACUTE CARDIOGENIC PULMONARY EDEMA**
Section #: **340.19**
Issue Date: **April 1, 2006**
Revision Date: **April 17, 2015**
Approved By:  Michael Lozano Jr., MD, FACEP HCFR Medical Director

1. **Clinical Intent:** The management of acute exacerbations of heart failure has evolved in recent years. It is important to understand that shortness of breath doesn't always fit into neat categories and there is frequently difficult to diagnose overlap between pulmonary congestion caused by systolic dysfunction, diastolic dysfunction, valvular heart disease, cor pulmonale, and dyspnea of a primary pulmonary nature in a patient who happens to also have a history cardiac disease. Our intent is to impact most favorably in those patients who are experiencing distress due to acute pulmonary congestion, and minimize the potential for harm in those whose condition mimics it. The clinical goal of this protocol is the resolution of the patient's respiratory distress.
2. This is an HCFR protocol where the treatments are listed in the preferred order of administration.
3. Basic ALS Treatment must include a 12 lead EKG and **oxygen** therapy
 - a. If available, continuous wave capnography monitoring should be used
4. Cardiovascular support is initially achieved through the use of **Nitroglycerin (NTG)**
 - a. Determine if there is a contraindication to the use of NTG (see QA points below and Section 348 - Drug Reference)
 - i. If NTG is contraindicated, move immediately to **CPAP** therapy
 - b. Administration of nitroglycerin depends upon the patient's systolic blood pressure (SBP)
 - i. For SBP >140 mmHg administer **NTG 0.8 mg SL q5 minutes** provided that the systolic BP remains >140 mmHg
 - ii. For SBP between 100 and 140 mmHg administer **NTG 0.4 mg SL q5 minutes** provided that the systolic BP remains >100 mmHg
 - iii. For SBP less than 100 mmHg administer **normal saline 200 mL IV bolus once**.
5. Ventilatory support is achieved through **CPAP therapy**^{2 3} and can be instituted at the same time as the **nitroglycerin** therapy
 - a. Indications
 - i. Moderate to severe respiratory distress (usually with tachycardia or hypertension)
 - ii. Tachypnea (RR > 24 breaths/min)
 - iii. Accessory muscle use or abdominal breathing
 - b. Contraindications
 - i. Apnea, respiratory arrest or ineffective spontaneous respirations
 - ii. Medically unstable (SBP <100 mmHg; think cardiogenic shock (**HCFR CARDIOGENIC SHOCK protocol**)
 - iii. Unable to protect airway
 - iv. Excessive secretions
 - v. Uncooperative or agitated

¹ Collins S, Storrow AB, Kirk JD, et al. Beyond pulmonary edema: diagnostic, risk stratification, and treatment challenges of acute heart failure management in the emergency department. Ann Emerg Med 2008; 51:45-57.

² Mal, S., McLeod, S., Iansavichene, et al. (2014). Effect of out-of-hospital noninvasive positive-pressure support ventilation in adult patients with severe respiratory distress: a systematic review and meta-analysis. Annals of emergency medicine, 63(5), 600-607.

³ Goodacre, S., Stevens, J. W., Pandor, et al. (2014). Prehospital Noninvasive Ventilation for Acute Respiratory Failure: Systematic Review, Network Meta-analysis, and Individual Patient Data Meta-analysis. Academic Emergency Medicine, 21(9), 960-970.

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Section #: **340.19**
Issue Date: **April 1, 2006**
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- vi. Unable to fit the mask or to keep it on continuously
 - vii. Recent (<30 days) upper airway or upper gastrointestinal surgery
 - c. Start at 5 cm H₂O, and increase in increments of 2 cm H₂O, as tolerated by the patient
 - i. Use the lowest amount of pressure that produces an improvement in symptoms
 - ii. The target goal of therapy is a respiratory rate <25 breaths/min and oxygen saturation >90%, with hemodynamic stability; however, patient comfort or preference may be just as important an outcome measure.⁴
 - d. Use continuous wave capnography, if available, to better monitor the clinical course
 - e. If the patient's condition deteriorates to the point that they have developed a contraindication to its use, then discontinue **CPAP therapy** immediately
6. Maintenance nitrate therapy may be used if the patient responded well to NTG SL
- a. **IV Nitroglycerin** (Tridil®) may be started if there is sufficient SBP, and you anticipate a long transport
 - i. Use of an IV pump is required for administration of Tridil®
 - ii. It is highly recommended that two paramedics accompany the patient in the back of the rescue when infusing Tridil®
 - iii. The starting dose is 10 mcg/min IV by infusion
 - iv. Increase by 10 mcg/min IV q5 minutes and titrate to symptoms and clinical response
 - v. There is no maximum dose assuming the patient's SBP can tolerate it
 - vi. If the SBP drops below 100 mmHg:
 - 1. Pause the infusion and administer normal saline 200 mL IV bolus once
 - b. **Nitroglycerin paste** can be used as an alternative if Tridil® is unavailable
 - i. The dose depends upon the SBP:
 - 1. For SBP > 100 and < 160 mmHg apply 1" to the chest
 - 2. SBP > 160 and < 200 mmHg apply 1.5" to the chest
 - 3. SBP > 200 mmHg apply 2" to the chest
7. Bronchospasm
- a. If there is wheezing (bronchospasm) present that has not fully responded to CPAP administer **Ipratropium bromide** 0.5 mg (500 mcg) mixed with **albuterol** 2.5 mg via nebulizer.
 - i. May be repeated two (2) times q20 minutes if there has been a response to the initial treatment
 - ii. Total dose maximum dose of 1.5 mg (1500 mcg) of **ipratropium bromide** and 7.5 mg of **albuterol**
 - b. If the patient's tidal volume is inadequate then consider administering **ipratropium bromide** and **albuterol** via BVM with in-line nebulizer or ETT after securing the airway.
 - c. Use continuous wave capnography, if available, to better monitor the clinical course
8. Consider intubation if no response to any therapy and deterioration is noted.
- a. See **HCFR RAPID SEQUENCE INTUBATION (RSI)** protocol when indicated

⁴ Panacek EA, Kirk JD. Role of noninvasive ventilation in the management of acutely decompensated heart failure. Rev Cardiovasc Med. 2002; 3 Suppl 4:S35-40.

Section: **Adult Medical** Page 3 of 3
Subject: **DECOMPENSATED CONGESTIVE HEART FAILURE / ACUTE CARDIOGENIC PULMONARY EDEMA**
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9. Hypotension with signs of shock
 - a. If the patient's SBP falls below 90 mmHg initiate **dopamine**
 - i. Start at 5 mcg/kg/min IV/IO infusion
 - ii. Increase by 5 mcg/kg/min q5 minutes titrating to effect
 - iii. Maximum infusion rate is 20 mcg/kg/min.
 - b. Go to HCFR **CARDIOGENIC SHOCK** protocol.
10. QA Points
 - a. Whereas in the past it was allowable with direct Medic-1 approval, **nitroglycerin in all forms** is now *contraindicated* in HCFR patients who have recently taken medications for erectile dysfunction. Because of their respective half-lives and duration of action, "recently" is defined for this protocol as being 24 hours for **sildenafil (Viagra®)**, and 48 hours for **vardenafil (Lavitra®)** or **tadalafil (Cialis®)**.
 - b. Carefully monitor the level of conscious, BP and respiratory status with these patients
 - c. Appropriate use of **CPAP therapy** can often stave off respiratory failure and the need for intubation.^{5 6}
 - d. Allow the patient to be in a position of comfort to maximize breathing effort
 - e. If CHF or cardiogenic shock resulting from an inferior (II,III,aVF) MI, **nitroglycerin** may cause hypotension requiring fluid bolus. Use caution, and monitor closely.
 - f. When using **Tridil®** or **nitroglycerin paste** do not continue to use **nitroglycerin SL**.
 - g. **Furosemide (Lasix®)** used to be a mainstay in the EMS treatment of CHF, but in the past decade its appropriateness in the EMS setting has been challenged.⁷ Recent research has shown that its routine use in this setting is associated with a 15% greater risk of an adverse effect if the patient doesn't have CHF. In the same study, paramedics were only able to identify true decompensated CHF 40% of the time.⁸

⁵ Rasanen J, Heikkila J, Downs J, et al. Continuous positive airway pressure by face mask in acute cardiogenic pulmonary edema. Am J Cardiol. 1985; 55:296–300.

⁶ Lin M, Chiang HT. The efficacy of early continuous positive airway pressure therapy in patients with acute cardiogenic pulmonary edema. J Formos Med Assoc. 1991; 90:736–43.

⁷ Jaronik J, Mikkelsen P, Fales W, et al. Evaluation of prehospital use of furosemide in patients with respiratory distress. Prehospital Emergency Care. 10(2):194-197, 2006.

⁸ Pan, A., Stiell, I. G., Dionne, R., Maloney, J. Prehospital use of furosemide for the treatment of heart failure. Emergency Medicine Journal, 2015; 32(1), 36-43.

Section: **Adult Medical**
Subject: **COPD (EMPHYSEMA/CHRONIC BRONCHITIS)**
Section #: **340.20**
Issue Date: **March 21, 2011**
Revision Date: **December 1, 2017**
Approved By:

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1. Basic ALS Treatment.
2. **Albuterol and ipratropium bromide** (preferred for COPD and emphysema patients)
 - a. Ipratropium bromide 0.5 mg (500 mcg) mixed with albuterol 2.5 mg
 - b. May be repeated up to two (2) times if there has been a response to the initial treatment [total of 1.5 mg (1500 mcg) of ipratropium bromide and 7.5 mg of albuterol]
 - c. If the patient's tidal volume is inadequate then consider administering ipratropium bromide and albuterol via BVM with in-line nebulizer or ETT after securing the airway.
3. **Albuterol** (preferred for asthma patients)
 - a. 5.0 mg nebulized
 - b. May be repeated q 20 minutes (not exceeding 15 mg per hour)
4. **CPAP** (primarily for COPD patients)
 - a. Indications:¹
 - i. Moderate to severe respiratory distress
 - ii. Tachypnea (RR > 24 breaths/min)
 - iii. Accessory muscle use or abdominal breathing
 - b. Contraindications:¹
 - i. Respiratory arrest
 - ii. Medically unstable
 - iii. Unable to protect airway
 - iv. Excessive secretions
 - v. Uncooperative or agitated
 - vi. Unable to fit mask
 - vii. Recent (< 30 days) upper airway or upper gastrointestinal surgery
 - c. Predictors of success for CPAP in the acute setting:²
 - i. Able to cooperate
 1. Good neurologic status
 2. Patient's acceptance of the technique
 - ii. Able to protect airway
 1. Low secretions
 2. Minimal amount of air leak
 3. Dentition intact (either their own or dentures in place)
 - iii. Not too acutely ill
 1. No pneumonia
 2. Not too elevated ETCO₂

¹ Adapted from Liesching T, Kwok H, Hill NS: Acute applications of noninvasive positive pressure ventilation. Chest 124:699–713, 2003.

² Adapted from Ambrosino N, Foglio K, Rubini F, et al: Non-invasive mechanical ventilation in acute respiratory failure due to chronic obstructive pulmonary disease: Correlates for success. Thorax 50:755–757, 1995; and Soo Hoo GW, Santiago S, Williams AJ: Nasal mechanical ventilation for hypercapnic respiratory failure in chronic obstructive pulmonary disease: Determinants of success and failure. Crit Care Med 22:1253–1261, 1994.

Section: **Adult Medical**
Subject: **COPD (EMPHYSEMA/CHRONIC BRONCHITIS)**
Section #: **340.20**
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- iv. Good initial response
 - 1. Reduction in respiratory rate
 - 2. Improving ETCO₂
 - 3. Improving level of consciousness
 - d. Start at 5 cm H₂O
 - i. Increase as tolerated for COPD.
 - ii. Keep at 5 cm H₂O for asthma, and discontinue if no response.
 - e. Use continuous wave capnography, if available, to better monitor the clinical course.
5. **Methylprednisolone** (if the patient has not had steroids within the past 24 hours, and is not responding to initial albuterol)
 - a. 125 mg IV over 2 minutes
6. **Epinephrine** (for near-fatal asthma or COPD)
 - a. If unable to nebulize the patient and the patient's tidal volume is inadequate:
 - i. 0.3 mg of a 1:1,000 solution IM q 20 minutes PRN
7. **Consider intubation if no response to any therapy and deterioration is noted.**
8. **QA Points:**
 - a. In very symptomatic patients, an absence of wheezing may be a pre-terminal event.
 - b. All that wheezes is not asthma.
 - i. Adult patients without a history of pulmonary disease do not develop acute asthma overnight; evaluate the patient further for pulmonary edema.
 - ii. An aspirated foreign body in a pediatric patient can present as wheezing.
 - c. Caution should be exercised when applying CPAP to asthma patients, at least at levels exceeding 5 cm H₂O
 - i. CPAP should be reduced to 5 cm H₂O or less if there is no further improvement of respiratory distress at higher levels in asthmatic patients.

Section: **Adult Medical**
Subject: **HEAT EMERGENCIES**
Section #: **340.21**
Issue Date: **March 21, 2011**
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1. Basic ALS Treatments
2. Heat Cramps
 - a. Move the patient to a cool environment.
 - b. Stretch the muscles involved.
 - c. Administer oral fluids as tolerated.
3. Heat Exhaustion
 - a. Move the patient to a cool environment.
 - b. Watch for signs of heat stroke developing.
 - c. Hydration and cooling:
 - i. Normal saline 20 mL/kg IV/IO.
 - ii. Cool saline if possible
 - iii. Give oral fluids as tolerated.
 - d. Monitor for dysrhythmias.
4. Heat Stroke (hyperthermia with neurologic signs or symptoms):
 - a. Move the patient to a cool environment.
 - b. Immediately
 - i. Remove clothing
 - ii. Cool the patient with water and air conditioning.
 - iii. Cool packs should be place in the axilla, neck, and groin regions.
 - c. IV normal saline 20 mL/kg IV/IO
 - i. Cool if possible
 - ii. Hydrate until capillary refill time is < 2 seconds
 - iii. Watch for seizures and precipitous cardiopulmonary arrest
 - iv. Monitor for dysrhythmias
 - d. Monitor for dysrhythmias

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: **Adult Medical**
Subject: **HYPERGLYCEMIA**
Section #: **340.22**
Issue Date: **March 21, 2011**
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1. Basic ALS Treatment
2. Check blood glucose to confirm hyperglycemia is present.
3. Evaluate for signs and symptoms of dehydration.
4. If hyperglycemic greater than 300 mg/dl and signs and symptoms of dehydration:
 - a. 2,000 mL of normal saline infused over 45 minutes.
5. QA Points:
 - a. Use caution if patient has CHF history.

Section: **Adult Medical**
Subject: **HYPERTENSION (ASYMPTOMATIC)**
Section #: **340.23**
Issue Date: **March 21, 2011**
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1. Definitions and clinical intent:

- a. A hypertensive emergency is an acute, severe elevation in blood pressure accompanied by **end-organ compromise**.
- b. The presence of end organ damage is the critical factor to look for in assessing these patients, and not simply an elevation in a number. The goal of this protocol is to identify and treat those patients in whom an acute life-threatening emergency is occurring rather than a non-life threatening elevation of systemic blood pressure.

2. Evaluation

- a. Thorough and ongoing neurologic exams are crucial to perform and document.
- b. Pre-hospital treatment of hypertension may be considered when:
 - i. Systolic BP is ≥ 200 mmHg or diastolic BP is ≥ 120 mmHg, **AND**
 - ii. Symptoms of end organ damage such as chest pain, dyspnea, confusion, or altered level of consciousness are present.
 1. Presence of a headache alone does not signify end-organ damage.

3. Treatment

- a. Basic ALS Treatment.
- b. Position of comfort.
- c. The initial goal for BP reduction is not to obtain a normal blood pressure, but to achieve a progressive controlled reduction to minimize the risk of hypoperfusion to vital organs.
 - i. In all cases DO NOT lower the systolic BP by more than 10% from the initial reading.
- d. Medic-1 consult is required before ANY medications are administered for the treatment of hypertension that is not already addressed by another HCFR protocol (e.g. chest pain, stroke, eclampsia, anxiety, etc).

4. QA Points:

- a. The most common cause of asymptomatic hypertension is not taking prescribed anti-hypertension medication or high dietary salt intake.¹
- b. Thirty (30) minutes of supine rest in a quiet part of an ED was associated with a 10 to 20 mmHg drop in BP without the administration of medication.²
- c. One study of 59,535 patients showed no difference in ambulatory patients with asymptomatic hypertension treated in an ED versus managed as an outpatient.³
- d. Aggressive treatment of asymptomatic hypertension may be associated with harm to the patient in some cases.⁴

¹ Boudville, Neil, et al. "Increased Sodium Intake Correlates with Greater Use of Antihypertensive Agents by Subjects with Chronic Kidney Disease." *American Journal of Hypertension*, no. 10, 2005, p. 1300.

² Grassi, Daniel, et al. "Hypertensive Urgencies in the Emergency Department: Evaluating Blood Pressure Response to Rest and to Antihypertensive Drugs with Different Profiles." *Journal of Clinical Hypertension*, vol. 10, no. 9, Sept. 2008, p. 662.

³ Patel, Krishna K., et al. "Characteristics and Outcomes of Patients Presenting with Hypertensive Urgency in the Office Setting." *JAMA Internal Medicine*, no. 7, 2016, p. 981.

⁴ Grant, Jed and Karimeh Borghei. "Asymptomatic Hypertension in the Emergency Department." *Physician Assistant Clinics*, vol. 2, no. Emergency Medicine, 01 July 2017, pp. 465-472.

Section: **Adult Medical**
Subject: **HYPOGLYCEMIA**
Section #: **340.24**
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Revision Date: **April 16, 2013**
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1. Basic ALS Treatment.
2. ALS Treatment:
 - a. **D₅₀W** (for known hypoglycemia ≤ 60 mg/dl)
 - i. 12.5 grams IV (over 1 to 2 mins)
 - ii. May be repeated one (1) time
 - b. **Oral dextrose** (only if the patient has an adequate gag reflex)
 - i. 25 to 30 grams PO
 - ii. May be repeated as necessary every five minutes to raise blood glucose level to ≥ 90 mg/dl
 - c. **Glucagon** (when unable to establish an IV)
 - i. 1.0 mg IM only once.

ALTERNATIVE PROTOCOL
To Be Used In The Absence of D₅₀W

1. Basic ALS Treatment.
2. **Oral Glucose** (only if the patient has an adequate gag reflex)
 - a. 25 to 30 grams PO
 - b. May be repeated as necessary every five minutes to raise blood sugar glucose level to >90 mg/dl
3. **Glucagon**
 - a. 1.0 mg IM
4. **Dextrose D₁₀W** in 250 ml (25g) IV over 15-20 minutes
 - a. Contraindicated if the patient is in pulmonary edema
 - b. It is an acceptable approach to administer both glucagon and dextrose 10% if you are not initially able to establish an IV of adequate flow. Having given glucagon does not prevent you from giving dextrose 10% later in the call.
 - c. Monitor lung sounds and pulse oximetry during administration and discontinue flow if pulmonary edema is suspected.
5. **NOTE:** It is likely under this protocol alternative we will transport more patients with hypoglycemia, as glucagon at times does not suffice, and administration of Dextrose D₁₀W may take a long amount of time.

Section: **Adult Medical**
Subject: **HYPOTHERMIA**
Section #: **340.25**
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1. Basic ALS Treatments.
2. Initiate passive re-warming procedures:
 - a. Remove any wet clothing
 - b. Cover the patient, including the head, with blankets
 - c. Move the patient into the heated unit or other warm environment
3. Severe hypothermia (core temp \leq 95° F):
 - a. Apply hot packs to the arm pit, groin, trunk, and behind the neck regions
 - b. Handle the patient gently because they are prone to spontaneous V-fib
4. ACLS modifications for cardiac arrest in hypothermia:
 - a. Start CPR
 - b. Intubation and IV access
 - c. For V-fib/pVT, limit defibrillation to one (1) shock at 360j
 - d. Withhold IV medications pending Medic-1 contact
5. Contact Medic-1:
 - a. For the administration of drugs
 - b. Electrical therapy beyond the first counter shock

Section: **Adult Medical**
Subject: **NAUSEA AND VOMITING**
Section #: **340.26**
Issue Date: **March 21, 2011**
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1. Basic ALS Treatments
2. **Ondansetron hydrochloride (Zofran®):**
 - a. 4 mg IV/IM
 - b. May repeat the dose once in 10 minutes, if needed
3. *Central Nervous System* – there have been rare reports of extrapyramidal reactions in patients receiving ondansetron.
 - a. If extrapyramidal reactions or agitation occurs:
 - i. **Diphenhydramine** 0.5 mg/kg IV/IM (max dose of 50 mg) over 1 – 2 minutes.

Section: **Adult Medical**
Subject: **OVERDOSE / ORAL POISONING**
Section #: **340.27**
Issue Date: **March 21, 2011**
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Michael Lozano

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1. Basic ALS Treatments.
 - a. Determine if the situation represents a single ingestion of an excessive amount of a substance.
 - b. Chronic ingestions may not respond to these treatments.
 - c. In most cases, a single additional dose of medication will not produce toxicity requiring treatment protocol.
 - d. If time allows, contact Poison Control (1-800-222-1222) for treatment recommendations
 - i. Contact Medic-1 for recommendations from Poison Control not covered by HCFR policy.
2. Beta blocker overdose:
 - a. The primary determinant of β-blocker toxicity and death is respiratory arrest, so be vigilant to support the patient's respiration.
 - b. For seizures, follow **HCFR SEIZURE** protocol
 - c. Transcutaneous pacing, if available, as a bridge measure until pharmacology is available.
 - d. **Atropine**: 0.5 mg IV, once.
 - e. **Dopamine**: 5.0 mcg/kg/min initial IV infusion, and titrated q5 minute to effect (maximum 20 mcg/kg/min).
 - f. **Normal saline (0.9% NaCl)**: 250 ml q5 min for SBP < 100 mmHg.
3. Calcium channel blocker overdose:
 - a. Transcutaneous pacing, if available, as a bridge measure until pharmacology is available.
 - b. **Atropine**: 0.5 mg IV, once.
 - c. **Dopamine**: 5.0 mcg/kg/min initial IV infusion, and titrated q5 minute to effect (maximum 20 mcg/kg/min).
 - d. **Normal saline (0.9% NaCl)**: 250 ml q5 min for SBP < 100 mmHg.
4. Narcotic overdose:
 - a. **Naloxone**: 0.5 mg IV/IM/SQ/IN
 - i. Repeat q2 minutes PRN (titrated to effect).
 - ii. Some narcotics such as methadone require more than 10 mg of naloxone.
 - iii. Complete reversal of symptoms may not be the optimal therapeutic goal. Rather, resolution of respiratory depression, hypotension, and hypoperfusion should be the treatment goal.
5. Phenothiazine overdose or extrapyramidal reactions:
 - a. Dystonia present (distorted twisting or movement of a body part):
 - i. **Diphenhydramine**: 0.5 mg/kg (max dose of 50 mg)IV/IM.
6. Tricyclic Antidepressant overdose (TCAs):
 - a. If hypotension, heart blocks, tachycardia, and/or cardiac conduction disturbances (QRS > 0.12 msec) are present:
 - i. **Sodium Bicarbonate**: 1.0 mEq/kg IV
 - ii. **Saline (0.9% NaCl)** bolus 1,000 mL and then 250 mL/hr IV.
 - b. If they are intubated, hyperventilate the patient to an ETCO₂ of 20 mmHg

Section: **Adult Medical**
Subject: **OVERDOSE / ORAL POISONING**
Section #: **340.27**
Issue Date: **March 21, 2011**
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7. Organophosphate poisoning (commercial and agricultural products):

- a. Decontaminate per HCFR protocol and policy
- b. Avoid skin contact.
- c. Flush area of exposure with copious amounts of water.
- d. **Atropine**: 2.0 mg IV q 5 minutes until bronchial secretions and hemodynamically significant bradycardia are controlled (no maximum dose).
- e. Contact HIT for **2-PAM (pralidoxime)** treatment.

Section: **Adult Medical**
Subject: **Poisonous STINGS / BITES**
Section #: **340.28**
Issue Date: **March 21, 2011**
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1. Basic ALS Treatments
2. Keep the patient calm and immobilize the limb parallel to the heart.
3. Apply a constricting band **only** if the victim or a bystander has applied a tourniquet.
 - a. In that case, place a constricting band two (2) inches above the tourniquet and then remove the tourniquet.
4. Contact Poison Control (1-800-222-1222) for ALL poisonous stings and bites.
 - a. Contact Medic-1 for recommendations from Poison Control not covered by HCFR policy.
5. Treat anaphylaxis as per **HCFR ANAPHYLAXIS** protocol.
6. Treat seizures as per **HCFR SEIZURES** protocol.
7. Treat pain as per **HCFR PAIN MANAGEMENT** protocol.
8. Do not apply ice or cold packs unless otherwise directed by Poison Control
9. If the source of the envenomation cannot be positively identified, HCFR personnel may attempt to bring the offending animal or insect to the receiving facility, but only if in doing so it will not put responders or receiving facility personnel at risk. In this day and age, an image would be an acceptable substitute.

Section: **Adult Medical**
Subject: **SEIZURES**
Section #: **340.29**
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1. Basic ALS Treatments.
2. Specific ALS treatments:¹
 - a. Position the patient to avoid an injury
 - b. If possible, place in the left lateral decubitus position
 - c. All seizure patients should receive supplemental **oxygen** to maintain oxygen saturation >94%
 - d. Benzodiazepine: (midazolam is preferred, but use what is available)
 - i. **Midazolam:**
 1. 2.5 mg IV/IN/IO/IM q10 minutes PRN
 2. Maximum dose of 15 mg.
 - ii. **Diazepam** (if midazolam is ineffective or unavailable):
 1. 5 mg IV/IO/IM q10 minutes PRN
 2. Maximum dose of 25 mg
 3. After the first dose of benzodiazepine, check the patient for hypoglycemia.
 - a. If hypoglycemia is present, treat per **HCFR HYPOGLYCEMIA Protocol**
 4. Reaching the maximum dose on a benzodiazepine is an indication of a complex patient, and you need to leave the scene if you have not already done so.
 5. Contact Medic-1:
 - a. For doses of **diazepam** beyond 25 mg
 - b. For doses of **midazolam** beyond 15 mg
 6. QA Points:
 - a. The onset of action following IV administration of midazolam occurs in 1.5—5 minutes.
 - b. Onset of action following IM midazolam is 5—15 minutes.
 - c. Never wait for longer than a few minutes of continuous seizure activity before beginning antiepileptic therapy.
 - d. Spinal precautions are not routinely necessary in all seizure patients.
 - e. The classical definition of status epilepticus is a single seizure lasting continuously for more than 30 minutes, or two or more seizures with no recovery of normal mental status and function in between episodes. The operational definition of status epilepticus in the pre-hospital setting should be simplified, and includes any seizure that continues from the initial 911 call until HCFR arrives on the scene, or any patient who remains postictal on our arrival and then experiences another seizure.

¹ Michael GE. The Diagnosis and Management of Seizures and Status Epilepticus in the Prehospital Setting. *Emerg Med Clin North Am* - February, 2011; 29(1); 29-39

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: **Adult Medical**
Subject: **SEPSIS AND SEVERE LIFE-THREATENING INFECTIONS**
Section #: **340.30**
Issue Date: **December 1, 2017**
Revision Date:
Approved By: *Michael Lozano*

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1. Initiate standard HCFR assessment protocols with the following required steps:
 - a. Establish IV or IO access – at least one site
 - b. Continuous cardiac monitoring; including pulse oximetry
 - c. Continuous end tidal CO₂ (ETCO₂) monitoring
2. Identify the presence of a documented or suspected infection.
 - a. This can be either noted on report from a licensed healthcare provider or based upon the paramedic's own clinical assessment.
3. If there is documented or suspected infection perform all of the following steps:
 - a. Obtain a measurement of the patient's temperature.
 - b. Obtain an end tidal CO₂ (ETCO₂) measurement
 - c. Administer the Quick Sequential Organ Failure Assessment (qSOFA) Screening Tool.¹ Each positive finding is worth one (1) point:
 - i. Altered mentation.
 - ii. Systolic blood pressure <100mmHg
 - iii. Respiratory Rate > 22/min
 1. Any assisted ventilations with a BVM or more invasive device shall be considered a positive finding for Respiratory Rate
4. Sepsis Alert notification
 - a. A "Sepsis Alert" will be called to the receiving hospital for those patients meeting all three of the following criteria:
 - i. Presence of a documented or suspected infection;
 - ii. qSOFA score ≥ 2 ; and
 - iii. ETCO₂ ≤ 25 mmHg²
5. Early Goal Related Treatment
 - a. If the patient is demonstrating signs of end organ dysfunction or hypoperfusion (i.e. hypotension, narrow pulse pressure, tachypnea, tachycardia, delayed capillary refill, or mottled skin appearance³) - administer **Normal Saline** (0.9% NaCl) 30 mL/kg IV/IO as a bolus.
 - i. Endpoints:
 1. Full 30 mL/kg bolus administered
 2. Development of pulmonary edema
 - a. Monitor closely for early signs of acute pulmonary edema or fluid overload.
 - ii. If signs of end organ dysfunction persist after the first bolus, additional boluses may be administered as long as the above endpoints have not been reached.

¹ Finkelsztein, Eli J., et al. "Comparison of qSOFA and SIRS for Predicting Adverse Outcomes of Patients with Suspicion of Sepsis outside the Intensive Care Unit." *Critical Care*, vol. 21, 26 Mar. 2017, p. 1.

² Hunter, Christopher L., et al. "A Prehospital Screening Tool Utilizing End-Tidal Carbon Dioxide Predicts Sepsis and Severe Sepsis." *American Journal of Emergency Medicine*, vol. 34, 01 May 2016, pp. 813-819.

³ Herlitz, Johan, et al. "Suspicion and Treatment of Severe Sepsis. An Overview of the Prehospital Chain of Care." *Scandinavian Journal of Trauma, Resuscitation & Emergency Medicine*, vol. 20, no. 1, Jan. 2012, p. 42.

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- b. Documentation requirements:
 - i. Document vital sign measurements and at least after every 500 mL of fluid
 - ii. With respect to the fluid bolus, document all of the following on the Sepsis Screening Form:
 1. The fluid type (i.e. Normal Saline, 0.9% NaCl)
 2. Time the fluid was started and stopped
 3. Total amount of fluid infused.
 - iii. Complete the Sepsis Screening Form in its entirety
 1. Leave the original at the receiving facility
 2. Scan a copy into the ePCR.
6. ALS evaluation/transport criteria:
 - a. All patients who meet Sepsis Alert criteria are ALS

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Section: **Adult Medical**
Subject: **SICKLE CELL CRISIS**
Section #: **340.31**
Issue Date: **March 21, 2011**
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1. Basic ALS Treatments
2. Fluids:
 - a. IV bolus: **normal saline** 500 mL wide open
 - b. IV maintenance infusion: 250 mL/hr normal saline
3. **HCFR PAIN MANAGEMENT** protocol as needed.

Section: **Adult Medical**
Subject: **STROKE**
Section #: **340.32**
Issue Date: **March 21, 2011**
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1. Clinical Intent

a. Inclusion criteria

- i. Patients who have an acute episode of a focal neurological deficit that can include any combination of the following:
 1. Unilateral paralysis
 2. Focal numbness
 3. Language disturbance (speaking and/or understanding, including slurred speech)
 4. Sudden, severe, unusual headache
 5. Visual disturbance
 6. Monocular blindness
 7. Acute onset vertigo
 8. Acute onset double vision
 9. New onset of poor balance

b. Exclusion criteria

- i. Significant preceding or accompanying head or spine trauma being the proximate cause of the acute neurological emergency
- ii. Overdose or intoxication (intentional, accidental, or otherwise)
- iii. Symptomatic hypoglycemia responding to treatment

c. Expected Outcome

- i. All patients who are experiencing an ischemic or hemorrhagic stroke are identified in the pre-hospital setting, stabilized, treated appropriately, and efficiently delivered to a healthcare facility that is best suited to provide the patient with the opportunity for a successful outcome.¹

2. Diagnostics and Evaluation:

- a. Ensure that the patient's airway is open, and that breathing and circulation are adequate.
- b. Obtain and record the patient's initial vital signs, repeat enroute as often as the situation indicates.
- c. Obtain and document the blood glucose level:
 - i. Avoid the administration of glucose-containing fluids unless the patient is hypoglycemic (less than 60 mg/dL.)
- d. Gather and document the following information:
 - i. The last date and time that the patient was known to be normal or at their neurologic baseline (Last Known Normal, or LKN). This shall be expressed in hours and minutes, and not simply relative to EMS arrival. (i.e., 11/1/17 at 09:00, and not "30 minutes ago".)
 - ii. The name and all contact information for a witness who can communicate with the destination facility regarding the patient's baseline and acute medical condition
 1. If possible, transport the reliable witness with the patient.
 - iii. Current medications

¹ "Implementation Strategies for Emergency Medical Services within Stroke Systems of Care: A Policy Statement from the American Heart Association/American Stroke Association Expert Panel on Emergency Medical Services Systems and the Stroke Council." *Stroke* (00392499), vol. 38, no. 11, Nov. 2007, p. 3097.

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- e. Perform a rapid structured stroke assessment using the FAST exam (Cincinnati Stroke Scale):
 - i. Facial movements: Ask the patient to smile or show their teeth. If one side does not move well, document which side is affected.
 1. Normal: Both sides of the face appear symmetrical
 2. Abnormal: There is a new unequal smile, grimace, or obvious facial asymmetry.
 3. Questionable: It is unclear to the examiner if there is a new unequal smile, grimace, or obvious facial asymmetry.
 - ii. Arm movements: Lift the patient's arms up to 90 degrees if they are sitting or 45 degrees if they are supine. Ask them to keep their arms up, and then let go. If one arm drifts or falls, document which side is affected.
 1. Normal: Neither arm drifts or falls down.
 2. Abnormal: One arm either drifts or falls down.
 3. Questionable: It is unclear to the examiner if one arm drifts or falls down.
 - iii. Speech: If the patient attempts to engage in a conversation, look for a new disturbance in speech. Listen for slurred speech or word-finding difficulties. Identify the latter by asking the patient to name commonplace objects that are nearby such as computer, phone, keys, or pen. You can also place an object in the patient's hand and ask them to name it.
 1. Normal: There is no evidence for a new abnormality of speech.
 2. Abnormal: There appears to be a new abnormality of speech.
 3. Questionable: It is unclear to the examiner if there is a new abnormality in speech present.
 - f. If at least one FAST criteria is abnormal call a Stroke Alert.
 - g. Once a potential stroke has been identified, perform an assessment of the severity of the potential stroke using the Simple 3-Item (3-ISS, or a.k.a. LAG) Scale:
 - i. Level of consciousness (Use AVPU scoring)
 1. Alert or Verbal only: 0 points
 2. Pain only or Unresponsive: 2 points
 - ii. Arm strength
 1. Can lift arm and maintain in air for 5 seconds: 0 points
 2. Can't lift arm, or can't maintain in air for 5 seconds: 2 points
 - iii. Gaze
 1. Patient's eyes can track your finger across the midline: 0 points
 2. Patient's eyes can't cross the midline when tracking a finger or object: 2 points
 - iv. A positive LAG Score is four or six points.
 - h. Perform a 12 lead EKG if time permits.
3. Destination determination:
- a. Once the potential for a stroke has been determined to exist and the severity of the neurologic impact has been graded, the patient shall be transported to the closest appropriate stroke center (primary or comprehensive), unless they are experiencing cardiac arrest.
 - b. Stroke patients shall be placed into one of two categories: **complex strokes** and **simple strokes**.
 - i. The following conditions shall define a patient as having a **complex stroke**:

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1. Known pregnancy²
2. LAG score ≥ 4
3. LKN time > 3.5 hours and < 24 hours.
4. LKN time > 2 hours and < 24 hours if patient is:
 - a. Taking anticoagulants other than aspirin, or
 - b. Has a history of both diabetes and prior CVA.
5. Any "Wake-up Stroke" in which patient went to bed asymptomatic and woke up with stroke symptoms.
6. Patient with a high clinical suspicion of subarachnoid hemorrhage defined as:³
 - a. Abrupt onset of severe head pain reaching maximum intensity in <1 minute, **lasting for ≥ 5 minutes**, and accompanied by one or more of the following symptoms⁴:
 - i. Age > 40 years
 - ii. Impaired consciousness
 - iii. Neck stiffness
 - iv. Headache occurred immediately after exertion or Valsalva
 - v. Systolic BP > 160 mmHg or diastolic BP > 100 mmHg
 - vi. Nausea or vomiting
 - b. Patients with intravenous thrombolytic exclusions:
 - i. Any of the following within the past 3 months: intracranial or spinal surgery, head trauma, previous stroke
 - ii. Known cerebral aneurysm
- ii. A patient meeting none of the complex stroke criteria, with a positive FAST exam shall be considered to be having a **simple stroke**.
- c. Transport criteria:
 - i. All **complex strokes** shall be transported to the nearest Comprehensive Stroke Center.
 - ii. All **simple strokes** shall be transported to the nearest stroke center - Primary or Comprehensive.
 - iii. Justification for any deviation shall be documented in the ePCR.
 - iv. A list of current hospital capabilities is maintained by the Rescue Division and updated as changes occur.
 - v. The use of an air ambulance may be considered when the benefits of rapid transport outweigh the risks and delays inherent in air-medical care.
 1. Such cases would include situations when the transport time by ground exceeds 45 minutes.

² There is 24-hour OB coverage at all Comprehensive Stroke Centers.

³ Schwedt, Todd J., and David W. Dodick. "Thunderclap headache." Up-to-Date. Ed. Jerry W. Swanson and John F. Dashe. Wolters Kluwer Health, 10 Dec. 2014. Retrieved 22 July 2017. Available from www.uptodate.com.

⁴ Ducros, A., et al. "The International Classification of Headache Disorders, (Beta Version)." *Cephalgia* 33.9 (2013): 629-808.

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4. Notification

- a. Include the following information in your report to the hospital:
 - i. Identify your unit and clearly state that you are bringing in a Stroke Alert patient
 - ii. Patient's age and sex
 - iii. FAST exam findings
 - iv. Simple 3-Item (LAG) Scale findings
 - v. Elapsed time since the patient was last seen normal (or at their baseline neurologic status). If the information is not available or is unreliable, say "unknown time since last seen normal."
- b. If patient is a WAKE UP STROKE, convey this to the hospital, along with LKN time and time discovered.
- c. Relate if there was a seizure at symptom onset, or since your arrival.

5. Treatments

- a. Position
 - i. Protect any paralyzed or partially paralyzed extremities from undue compression or injury due to malposition.
 - ii. Position of comfort with head of bed slightly elevated or flat, as tolerated
- b. Oxygen
 - i. If oxygen saturation <95%, then apply oxygen at 2 L/min via nasal cannula.
 - ii. If oxygen saturation <92%, then apply respiratory support with BVM as tolerated.
 - iii. Consider intubation if the patient is not able to handle their secretions, or has a level of consciousness diminished to the point that their Glasgow Coma Scale (GCS) is < 8
 1. If necessary, call ALS for intubation.
- c. Blood Pressure Control (Medic-1 consult not required if the patient is a Stroke Alert.)
 - i. Monitor blood pressure every five minutes to establish a trend.
 - ii. If after second blood pressure check the systolic BP remains > 200 mmHg or the diastolic BP remains > 120 mmHg:
 1. **Labetalol** 10 mg IV once.
 - iii. If the systolic BP remains between 180 and 200 mmHg, you may contact Medic-1 for consultation.

6. Documentation

- a. Record all patient care information, including the patient's medical history and all treatment provided, on the electronic Patient Care Report (ePCR). Particular care should be taken to document accurate information as regards to the following:
 - i. Telephone numbers, including cellular telephone numbers, of witnesses or relatives may help the ED to clarify the history or seek consent for treatment.
 - ii. A list of the patient's medications, or the medication containers themselves, should be sought, with particular attention paid to identifying anticoagulant (both oral and injectable), antiplatelet, and antihypertensive medication use.
- b. Complete Stroke Alert form with all exam findings
 - i. Provide the original to the receiving facility
 - ii. Scan a copy into the ePCR.

7. ALS evaluation and transport criteria

- a. All patients with signs and symptoms of stroke, TIA, or other acute neurologic change are ALS.

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8. QA Points

- a. The most important thing that you can do to help a patient who may be having a stroke is correctly identify that the symptoms are present, and get them headed toward a stroke center.
- b. Do not become distracted by the level of blood pressure, avoiding aspiration will help your patient out much more in the long run than lowering blood pressure.

Section: **Adult Trauma**
Subject: **ABDOMINAL TRAUMA**
Section #: **341.01**
Issue Date: **March 21, 2011**
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1. Basic ALS Treatments
2. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated.
3. Evaluate for Trauma Alert criteria
4. If hypotensive and **without** peripheral pulses:
 - a. **Normal Saline:** 20 mL/kg IV (repeat as needed to maintain peripheral pulses)
 - b. Change infusion to KVO when signs and symptoms of shock have resolved.

Section: **Adult Trauma**
Subject: **BLEEDING / WOUND CARE**
Section #: **341.02**
Issue Date: **March 21, 2011**
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1. BLS hemorrhage control measures
2. If bleeding is uncontrolled by standard methods, apply approved hemostatic agent/device directly to wound site, followed by a bandage and dressing.
3. If bleeding is uncontrolled by standard methods, and the location is an extremity apply the CAT (Combat Application Tourniquet).
4. QA Points:
 - a. Recent data obtained by the US military has demonstrated the safety and efficacy of tourniquet application in devastating extremity wounds as being life saving.

Section: **Adult Trauma**
Subject: **BURNS – CHEMICAL AND ELECTRICAL**
Section #: **341.03**
Issue Date: **March 21, 2011**
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1. Basic ALS Treatments
2. Chemical Burns:
 - a. Reference HCFR Decontamination policies
 - b. Contaminated patients should have their clothing and jewelry removed, bagged, and tagged
 - c. Flush with copious amounts of fluid
 - d. Prevent loss of body heat after decontamination
 - e. Pain management as per HCFR protocol
 - f. Poison Control **1-800-222-1222**
3. Electrical Burns:
 - a. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated
 - b. Cardiac monitor
 - c. **Normal Saline** 20 mL/kg IV/IO over 20 minutes
 - d. Treat cardiac dysrhythmias as per appropriate HCFR protocol
 - e. Dry sterile dressings over burned areas
4. ALS Transport Criteria:
 - a. All chemical and electrical burns are ALS
 - b. All suspected electrical injuries (regardless of the present of external burns) are ALS.
 - c. Consider transport to a burn center

Section: **Adult Trauma**
Subject: **BURNS – THERMAL**
Section #: **341.04**
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1. Basic ALS Treatments.
2. Evaluate for Trauma Alert criteria
3. Specific treatments:
 - a. Stop the burning process:
 - i. Continuous wet sterile dressings over not more than 10% TBSA at one time.
 - ii. Dry sterile dressings or burn sheets over all other burned areas.
 - iii. Prevent loss of body heat.
 - b. Stabilize and resuscitate
 - i. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated
 - ii. Administer a **normal saline bolus IV/IO** according to the following formula:
 1. 0.25 times the % body surface area with 2nd or 3rd degree burns times the weight (Kg)
 2. Sample: $(0.25) \times (25\%) \times (70 \text{ kg}) = 437.5 \text{ mL}$
 3. Round up to the nearest 50 mL
 - iii. Refer to **HCFR PAIN MANAGEMENT** protocol.
 - c. For inhalation injuries see **HCFR INHALATION OF HOT SMOKE AND GASES** protocol.
4. ALS transport criteria:
 - a. Burn Center transport criteria
 - i. 2° or 3° burns > 10% TBSA
 - ii. 1° burns > 50% TBSA
 - iii. Explosions
 - iv. Chemical burns
 - v. Dyspnea
 - vi. Facial burns
 - vii. Altered vital signs
 - viii. Circumferential burns
 - ix. Burns to hands or feet

Section: **Adult Trauma**
Subject: **CARDIAC ARREST - TRAUMATIC**
Section #: **341.05**
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1. Basic ALS Treatments
2. Per the Hillsborough County Uniform Trauma Transport Protocols, a patient who has sustained blunt force trauma resulting in cardiopulmonary arrest may be declared dead at the scene, and no further resuscitative efforts are indicated.
3. Initiate CPR and initiate ventilatory support
4. Establish two intravenous or intraosseous access sites.
 - a. Administer **normal saline** 20 mL/kg IV/IO
5. If there is return of spontaneous circulation (ROSC):
 - a. Evaluate for Trauma Alert criteria.
 - b. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated
 - c. Rapid transport to a trauma center
6. No Codes – see **HCFR END OF LIFE** protocol for guidelines.

Section: **Adult Trauma**
Subject: **CHEST TRAUMA**
Section #: **341.06**
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1. Basic ALS Treatments
2. Specific ALS treatments
 - a. Establish two intravenous or intraosseous access sites.
 - i. Administer normal saline 20 mL/kg IV/IO
 - b. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated
 - c. Chest decompression, if indicated by signs and symptoms of tension pneumothorax.

Section: **Adult Trauma**
Subject: **DECOMPRESSION SICKNESS AND RELATED EMERGENCIES**
Section #: **341.07**
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1. Basic ALS Treatments
2. Position and transport the patient in the supine position to maximize arterial-venous flow.
3. **100% Oxygen** via NRB
4. Document a thorough neurological exam
5. Transport to the closest facility
6. QA Points:
 - a. The most efficacious intervention for the patient experiencing decompression sickness is 100% oxygen; it reduces intravascular bubble size by increasing the differential pressure for nitrogen diffusion out of the bubbles and speeds the washout of nitrogen from the tissues.¹
 - b. Ground transport is preferred over air transportation because an increase in altitude lowers the ambient pressure and allows microbubbles to expand.
 - c. Trendelenburg position, once thought to reduce the degree of cerebral embolization, increases intracranial pressure, facilitates coronary gas embolization, and should be avoided.²

¹ Strauss MB, Borer Jr RC: Diving medicine: Contemporary topics and their controversies. *Am J Emerg Med* 2001; 19:232.

² Butler BD, et al: Effect of the Trendelenburg position on the distribution of arterial air emboli in dogs. *Ann Thorac Surg* 1988; 45:198.

Section: **Adult Trauma**
Subject: **DROWNING AND SUBMERSION INJURIES**
Section #: **341.08**
Issue Date: **March 21, 2011**
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1. Basic ALS Treatments.
2. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated.
3. In order to support oxygen saturation greater than 94%, use **CPAP**
 - a. Indications:¹
 - i. Moderate to severe respiratory distress
 - ii. Tachypnea (RR > 24 breaths/min)
 - iii. Accessory muscle use or abdominal breathing
 - b. Contraindications:¹
 - i. Respiratory arrest
 - ii. Medically unstable
 - iii. Unable to protect airway
 - iv. Excessive secretions
 - v. Uncooperative or agitated
 - vi. Unable to fit mask
 - vii. Recent (< 30 days) upper airway or upper gastrointestinal surgery
 - c. Start at 5 cm H₂O
 - i. Increase as tolerated.
 - d. Use continuous wave capnography, if available, to better monitor the clinical course.
4. If in cardiac arrest, follow **HCFR TRAUMATIC CARDIAC ARREST** protocol
5. ALS transport criteria:
 - a. ALL suspected drowning patients are ALS
 - b. This includes patients who are alert but suffered some type of submersion or immersion event.
6. QA Points
 - a. The early institution of resuscitative efforts is an important factor influencing survival after drowning.²
 - b. The terms "near-drowning," "wet/dry drowning," and "secondary drowning" are potentially confusing and these terms are no longer recommended.³

¹ Adapted from Liesching T, Kwok H, Hill NS: Acute applications of noninvasive positive pressure ventilation. Chest 124:699–713, 2003.

² Matthew, J., et al. "Update on Drowning." South African Medical Journal, no. 7, 2017, p. 562.

³ Main, Alison B and Andrew J Hooper. "Trauma: Drowning and Immersion Injury." Anaesthesia & Intensive Care Medicine, vol. 18, 01 Aug. 2017, pp. 401-3

Section: **Adult Trauma**
Subject: **FRACTURES / DISLOCATIONS**
Section #: **341.09**
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1. Basic ALS Treatments.
2. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated.
3. Splint as appropriate.
4. For severe pain, follow **HCFR PAIN MANAGEMENT** protocol.
 - a. Long bone fractures and multiple fractures will be transported and treated with the pain management protocol unless the patient refuses pain management and signs informed refusal.
5. ALS evaluation and transport criteria:
 - a. Any patient who has received analgesia.
 - b. Any patient with compromised circulation in the affected limb.
 - c. Any patient with long bone fractures or dislocations that cannot be stabilized without analgesia.

Section: **Adult Trauma**
Subject: **GUNSHOT WOUNDS**
Section #: **341.10**
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1. Basic ALS Treatments
2. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated, note, SMR is not indicated for penetrating injuries in which the patient exhibits no signs or symptoms of neurological deficit upon initial examination and the patient does not have distracting injuries
3. **Rapid transport to an appropriate facility.**
4. **Normal saline:**
 - a. To maintain peripheral pulses and minimize signs and symptoms of shock
 - b. **Normal Saline:** 20 mL/kg IV (repeat as needed to maintain peripheral pulses)
 - c. Change infusion to KVO when signs and symptoms of shock have resolved.
5. For severe pain, follow **HCFR PAIN MANAGEMENT** protocol.
6. Initiate chest needle decompression if signs and symptoms of tension pneumothorax are present
7. ALS transport criteria:
 - a. Any GSW to the head, torso, upper arm, or upper leg
 - b. Any GSW (including extremity) where the trajectory of the projectile is undetermined
 - c. Any GSW patient with abnormal vital signs
 - d. Any GSW to the buttocks will be considered to be in the torso, unless proven otherwise

Section: **Adult Trauma**
Subject: **HEAD INJURY**
Section #: **341.11**
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1. Basic ALS Treatments
2. Evaluate for Trauma Alert criteria
3. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated.
4. Elevate the head of the long spine board approximately 30° if GCS is less than 13.
5. Be prepared for aggressive airway management in patients with:
 - a. Inability to protect the airway
 - b. Unable to maintain O₂ saturation greater than or equal to 94%
 - c. Rapidly decreasing Glasgow Coma Scale
6. If the patient is intubated, **do not** routinely hyperventilate unless the patient has signs of elevated intracranial pressure:
7. QA Points:
 - a. The two factors that are most associated with poor outcome after head injury are hypoxia and hypotension. Make sure that you take every precaution to avoid those two situations in head injury patients.
 - b. Cushing's reflex, Cushing's response, and Cushing's triad all refer to the same thing; bradycardia, respiratory depression, and hypertension as a sign of elevated intracranial pressure. Invariably, this will include an alteration in the level of consciousness.

Section: **Adult Trauma** Page 1 of 2
Subject: **INHALATION OF HOT SMOKE AND GASES**
Section #: **341.12**
Issue Date: **March 21, 2011**
Revision Date: **December 1, 2017**
Approved By: *Michael Lozano* Michael Lozano, Jr., M.D., HCFR Medical Director

1. Basic ALS Treatments
 - a. Continuous capnography should be used if available, especially in severe cases.
2. ETCO₂, CO, and HbCO Monitoring.
3. **Albuterol:**
 - a. Nebulized **albuterol** 5 mg
 - b. May be repeated q20 minutes PRN
4. **Epinephrine:**
 - a. If unable to nebulize the patient or the patient is unresponsive to nebulized medication, then:
 - i. 0.3 mg of a 1:1,000 solution IM q 20 minutes PRN
 - ii. Use caution with severe tachycardia or hypertensive patients.
5. CPAP (primarily for COPD patients)
 - a. Indications: ¹
 - i. Moderate to severe respiratory distress
 - ii. Tachypnea (RR > 24 breaths/min)
 - iii. Accessory muscle use or abdominal breathing
 - b. Contraindications:¹
 - i. Respiratory arrest
 - ii. Medically unstable
 - iii. Unable to protect airway
 - iv. Excessive secretions
 - v. Uncooperative or agitated
 - vi. Unable to fit mask
 - vii. Recent (< 30 days) upper airway or upper gastrointestinal surgery
 - c. Start at 5 cm H₂O
 - i. Increase as tolerated.
 - d. Use continuous waveform capnography, if available, to better monitor the clinical course.
6. Consider intubation if no response to any therapy and deterioration is noted
7. CyanoKit™ (known or suspected cyanide poisoning)
 - a. Prior to the administration of hydroxocobalamin for injection (CyanoKit™) to known or suspected cyanide poisoning victims, **ALL** four of the following criteria must be present:
 - i. Exposure to fire smoke in an enclosed area.
 - ii. Patient must be \geq 16 years of age.
 - iii. Soot in the mouth as well as sputum (indication of significant smoke exposure).
 - iv. Altered mental status.
 - b. If the patient is exhibiting life-threatening symptoms of suspected cyanide poisoning as indicated above with ALL four criteria present, administer **hydroxocobalamin (CyanoKit™)**.

¹ Adapted from Liesching T, Kwok H, Hill NS: Acute applications of noninvasive positive pressure ventilation. Chest 124:699–713, 2003.

Section: **Adult Trauma** Page 2 of 2
Subject: **INHALATION OF HOT SMOKE AND GASES**
Section #: **341.12**
Issue Date: **March 21, 2011**
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Approved By: *Michael Lozano* - **Michael Lozano, Jr., M.D., HCFR Medical Director**

- i. Follow product directions for administration of **hydroxocobalamin (CyanoKit™)**, 5 gm IV over 15 minutes.
- ii. If symptoms persist, contact Medic-1 for a repeat dose of **hydroxocobalamin (CyanoKit™)**, 5 gm IV over 15 minutes to 2 hours, depending on the patient's condition
- iii. Remove contaminated clothing
- iv. Decontaminate skin to the best of your ability
- c. If all four criteria **not** met, monitor closely and transport via ALS
 - i. Remove contaminated clothing
 - ii. Decontaminate skin to the best of your ability
 - iii. Administer high flow oxygen
 - iv. Establish an IV
 - v. Continuously monitor for developing signs of HCN poisoning to include mental status, cardiac and respiratory status.

8. QA points

- a. Inhalation burns need to be followed vigilantly, but do not necessarily mean an automatic intubation. You need to follow the patient closely to determine if they are starting to deteriorate, or show signs of early airway obstruction. In those cases, you need to quickly move to capture the airway.
- b. Carboxyhemoglobin, produced by carbon monoxide poisoning, is misinterpreted by the pulse oximeter as oxyhemoglobin causing values to tend towards 100%. A pulse oximeter is extremely misleading in cases of carbon monoxide poisoning for this reason and should not be used as the sole method of monitoring the patient.
- c. The routine administration of corticosteroids does not appear to confer any benefit following smoke inhalation.

Section: **Adult Trauma**
Subject: **SHOCK – HYPOVOLEMIA**
Section #: **341.13**
Issue Date: **March 21, 2011**
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Approved By: *Michael Lozano*

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1. Basic ALS Treatments
2. Evaluate for Trauma Alert criteria
3. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated.
4. If hypotensive and **without** peripheral pulses:
 - a. **Normal Saline:** 20 mL/kg IV (repeat as needed to maintain peripheral pulses)
 - b. Change infusion to KVO when signs and symptoms of shock have resolved.
5. In cases of prolonged (> 4 hours) entrapment, and access is possible, infuse **normal saline** 20 mL/kg IV/IO immediately prior to extrication, and call HCFR Medical Director for orders regarding potential crush injury.

Section: **Adult Trauma**
Subject: **SHOCK – NEUROGENIC**
Section #: **341.14**
Issue Date: **March 21, 2011**
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Michael Lozano, Jr., M.D., HCFR Medical Director

1. Basic ALS Treatments
2. Evaluate for Trauma Alert criteria
3. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated.
4. Fluid administration:
 - a. **Normal saline** 20 mL/kg IV bolus to maintain peripheral pulses.
 - b. When peripheral pulses return, the flow rate is changed to KVO with close monitoring of vital signs.
5. Rapid transport.
6. **Dopamine:**
 - a. If the presumptive diagnosis is neurogenic shock, and hypotension persists after a total of 20 mL/kg (one bolus) of fluids have been administered, begin **dopamine** infusion:
 - i. Start at 5 mcg/kg/min IV/IO
 - ii. Increase by 5 mcg/kg/min q5 minutes PRN titrated to effect
 - iii. Maximum dose of 20 mcg/kg/min
7. QA Point:
 - a. Neurogenic shock is shock a distributive type of shock resulting in hypotension, occasionally with bradycardia, that is attributed to the disruption of the autonomic pathways within the spinal cord. Hypotension occurs due to decreased systemic vascular resistance resulting in pooling of blood within the extremities lacking sympathetic tone. Bradycardia results from unopposed vagal activity and has been found to be exacerbated by hypoxia

Section: **ALS OB/GYN**
Subject: **BREECH DELIVERY / PROLAPSED CORD / SINGLE LIMB PRESENTATION**
Section #: **342.01**
Issue Date: **March 21, 2011**
Revision Date:
Approved By: 

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1. Basic ALS Treatments
2. Rapid Transport
3. IV Normal Saline (large bore)
4. Oxygen and airway control
5. **Breech Delivery**
 - a. Support baby's legs and trunk when they appear.
 - b. Insert sterile gloved hand into the vagina to form an airway.
 - i. Elevate and support baby's trunk.
 - ii. Help rotate baby's head beneath the symphysis pubis and allow delivery.
 - iii. Hold the **oxygen** tubing near the hand created airway.
6. **Prolapsed Cord**
 - a. Elevate mother's pelvis (knee/chest position).
 - b. Insert sterile gloved hand into the vagina and apply gentle counter pressure to the baby's head.
 - c. Keep cord moist.
7. **Single Limb Presentation**
 - a. Elevate mother's pelvis (knee/chest position).

Section: **ALS OB/GYN**
Subject: **MATERNAL TREATMENT AND POST PARTUM HEMORRHAGE**
Section #: **342.02**
Issue Date: **March 21, 2011**
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1. Basic ALS Treatments
2. Oxygen and airway control
3. **Maternal Treatment**
 - a. IV Normal Saline (large bore).
 - b. If delivery is NOT imminent, transport mother on left side.
4. **Post-Partum Hemorrhage**
 - a. IV Normal Saline (large bore).
 - i. Fluid replacement PRN to maintain peripheral pulses.
 - b. Place the mother in the shock position.
 - c. Uterine massage.
 - d. Allow baby to nurse.

Section: **ALS OB/GYN**
Subject: **NEWBORN TREATMENT**
Section #: **342.03**
Issue Date: **March 21, 2011**
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1. Basic ALS Treatments
2. Dry patient promptly & vigorously, especially the head.
3. Slight Trendelenburg with head turned to the side for drainage.
 - a. Suction the mouth first and then the nose.
 - i. Watch for bradycardia
4. Wrap in approved swaddle garment.
5. **Oxygen:** if indicated.
6. Record the time of delivery.
7. Record 1-minute and 5-minute APGAR scores, if practical.

Acronym	Score = 0	Score = 1	Score = 2	Score Total
A pppearance (Skin Color)	Blue all over	Blue extremities Pink body (acrocyanosis)	Body and extremities pink	
P ulse Rate	Absent	< 100 bpm	≥ 100 bpm	
G rimace (Reflex Irritability)	No response to stimulation	Grimace / feeble cry when stimulated	Sneeze, cough, pulls away when stimulated	
A ctivity (Muscle Tone)	None	Some Flexion	Active movement	
R espiration	Absent	Weak or irregular	Strong	
Total				

8. If the newborn is in distress, follow the American Heart Association's PALS guidelines.
9. If evidence of meconium staining, suction immediately.
 - a. If possible suction before delivery is complete.
10. Remember, the name of the medic cutting the cord and the time in which it was cut must be recorded in the medical treatment record.

Section: **ALS OB/GYN** Page 1 of 1
Subject: **MISCARRIAGE / PLACENTA PREVIA – ABRUPTIO PLACENTA/RUPTURED ECTOPIC PREGNANCY**
Section #: **342.04**
Issue Date: **March 21, 2011**
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Approved By:  **Michael Lozano, Jr., M.D., HCFR Medical Director**

1. Basic ALS Treatments
2. Rapid transport
3. Oxygen and airway control
4. IV Normal Saline (large bore)
 - a. Fluid replacement PRN to maintain peripheral pulses.
5. For miscarriage patients, preserve all materials discharged from the vagina and present to the medical facility.

Section: **ALS OB/GYN**
Subject: **TOXEMIC PREGNANCIES**
Section #: **342.05**
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1. Basic ALS Treatments
2. Oxygen and airway control
3. IV Normal Saline (large bore)
4. **Pre-Eclampsia**
 - a. If delivery is not imminent, transport the mother on her left side.
 - b. Keep the patient calm, and if possible, keep the lighting in the patient compartment low.
 - c. Minimize noise and other external factors that may increase the patient's anxiety level.
5. **Eclamptic Seizures**
 - a. **Magnesium Sulfate:**
 - i. Loading Dose: 5.0 grams IV infused over 10 – 15 minutes.
 - ii. Maintenance Drip: 1.0 – 2.0 grams/hr.
 - b. If no response, follow **HCFR SEIZURES** protocol.

Section: OB/GYN Emergencies Page 1 of 1
Subject: GESTATIONAL HYPERTENSION EMERGENCIES (PRE-ECLAMPSIA, ECLAMPSIA, AND HELLP SYNDROME)
Section #: 342.06
Issue Date: March 21, 2011
Revision Date:
Approved By:  Michael Lozano, Jr., M.D., HCFR Medical Director

1. Basic ALS treatments
2. High-flow oxygen via NRBMs and airway control
3. Specific treatments: ¹
 - a. Have the mother lay on her left side.
 - b. If delivery is not imminent:
 - i. Transport immediately to an obstetrical capable hospital.
 - ii. Minimize noise and other external factors that may increase the patient's anxiety level.
 - iii. Keep the patient calm, and if possible, keep lighting low.
 - c. If delivery is imminent, proceed with the delivery.
 - d. For SBP greater than 160 mmHg or diastolic BP above 105 mmHg:
 - i. **Magnesium sulfate** two (2.0) grams IV slow over 20 minutes.
 - e. For seizures (eclampsia)
 - i. **Magnesium sulfate** five (5.0) grams IV over 10-15 minutes.
4. QA Points:
 - a. Eclampsia complicates 1 in 1000 deliveries in the United States.
 - b. HELLP syndrome is a variant of pre-eclampsia that consists of hemolysis, elevated liver enzymes, and low platelets, and cannot be diagnosed in the EMS setting.

¹ Committee ACOG: on Practice Bulletins—Obstetrics: ACOG practice bulletin. Diagnosis and management of preeclampsia and eclampsia. Number 33, January 2002. *Obstet Gynecol* 2002; 99:159-167.

Section: **Pediatric Medical**
Subject: **ACUTE ABDOMEN**
Section #: **343.01**
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1. Basic ALS Treatment
2. ALS Transport Criteria:
 - a. ALL pediatric acute abdomen patients are ALS.
3. QA points:
 - a. Contact Medic-1 for narcotic administration to pediatric patients with abdominal pain.

Section: Pediatric Medical
Subject: ALTERED STATE OF CONSCIOUSNESS
Section #: 343.02
Issue Date: March 21, 2011
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1. Basic ALS Treatments
2. Check blood glucose level
3. If blood glucose demonstrates hypoglycemia (<50 mg/dL):
 - a. **Oral dextrose** (patient who is awake with an adequate gag reflex)
 - i. Pt is <20 kg, administer 7.5 g PO (one-half tube)
 - ii. Pt is ≥ 20 kg, administer 15 g PO (whole tube)
 1. May be repeated in 10 minutes if there is a partial response. Otherwise, proceed to IV/IO dextrose.
 - b. **Glucagon** (when unable to establish an IV):
 - i. 0.03 mg/kg up to a maximum of 1 mg IM.
 - c. **Intravenous dextrose**:
 - i. Patients <20 kg, administer 0.25 g/kg of Dextrose 10% ($D_{10}W$) IV/IO
 - ii. Patients ≥20 kg, administer 0.25 g/kg of Dextrose 25% ($D_{25}W$) IV/IO
 - iii. Refer to **HCFR PEDIATRIC MEDICATION DOSAGES** protocol for mixing instructions.
 - iv. It is an acceptable approach to administer both glucagon and $D_{10}W$ if you are not initially able to establish an IV, as having glucagon does not prevent you from giving $D_{10}W$ later in the call.
4. If signs and symptoms of narcotic overdose are present:
 - a. **Naloxone**: 0.1 mg/kg IV, IM, ET or IN.
 - b. May be repeated twice, if inadequate response and narcotic OD is strongly suspected.
5. QA points:
 - a. The administration of **naloxone** should be limited to those patients exhibiting signs and symptoms consistent with opiate toxicodrome.

Section: Pediatric Medical
Subject: ANAPHYLAXIS / ALLERGIC REACTION
Section #: 343.03
Issue Date: March 21, 2011
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1. Basic ALS Treatments
2. Specific ALS treatments:
 - a. **Epinephrine (for symptoms beyond hives)**
 - i. Administer 0.01 mg/kg of a 1:1,000 solution (max single dose of 0.3mg) IM
 - ii. May be repeated once in 3 – 4 minutes.
 - b. **Albuterol: If patient is wheezing or complaining of dyspnea:**
 - i. For weight < 20 kg, administer 2.5 mg via nebulizer q 20 minutes PRN
 - ii. For weight ≥ 20 kg, administer 5 mg via nebulizer q 20 minutes PRN
 - c. **Diphenhydramine:**
 - i. 1.0 mg/kg (max dose 50 mg) IM or IV (flush thoroughly)
 - d. **Methylprednisolone:**
 - i. Children ≤ 12 years, 1 mg/kg (max dose of 80 mg) IV/IO over 1-2 min, or IM if IV/IO is not available.
 - ii. Children > 12 years, 80 mg IV/IO over 2 minutes, or IM if IV/IO is not available.
 - e. **Epinephrine IV:**
 - i. For life threatening symptoms, administer 0.01 mg/kg of a 1:10,000 solution IV over 1 – 2 minutes.

Section: Pediatric Medical
Subject: ASTHMA
Section #: 343.04
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1. Basic ALS Treatments
2. **Albuterol:** (nebulized)
 - a. For weight < 20 kg, administer 2.5 mg via nebulizer q 20 minutes PRN
 - b. For weight \geq 20 kg, administer 5 mg via nebulizer q 20 minutes PRN
3. **Methylprednisolone:**
 - a. Children \leq 12 years, 1 mg/kg (max dose 80 mg) IV/IO over 1-2 minutes, or IM if IV/IO is not available.
 - b. Children $>$ 12 years, 80 mg IV/IO over 1 – 2 minutes, or IM if IV/IO is not available.
4. **Magnesium Sulfate:** If the patient does not respond to beta agonists and the patient is in severe respiratory distress:
 - a. 40 mg/kg in 50 mL of **normal saline** infused over 20 minutes
 - i. Monitor the patient closely for respiratory depression.
 - b. Be prepared to provide ventilatory support while administering **magnesium sulfate**.
5. **Epinephrine:** If unable to nebulize the patient or the patient is unresponsive to nebulized medication:
 - a. 0.01 mg/kg IM of **1:1,000** (max single dose of 0.3 mg)
 - b. Use caution with severe tachycardia or hypertensive patients

Section: Pediatric Medical
Subject: BRONCHIOLITIS
Section #: 343.05
Issue Date: March 21, 2011
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1. Basic ALS Treatments
2. **Albuterol:** nebulized
 - a. For weight < 20 kg, administer 2.5 mg via nebulizer q 20 minutes PRN
 - b. For weight \geq 20 kg, administer 5.0 mg via nebulizer q 20 minutes PRN

Section: Pediatric Medical
Subject: CARDIAC ARREST – GENERAL PROTOCOL
Section #: 343.06
Issue Date: March 21, 2011
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Approved By:

Michael Lozano

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1. Treatment of cardiac arrest will place particular emphasis on high quality CPR.
2. The following are important points to be followed for all patients in cardiac arrest:
 - a. Continuous and effective chest compressions, an adequate airway, and proper ventilation and oxygenation are more important than administering medications and therefore take precedence over attempts at endotracheal intubation, initiating an IV line, or injecting medications.
 - b. When resuscitation is indicated, the patient will be treated quickly and aggressively where found if possible.
 - i. If it is subsequently determined that the patient's intention was for a DNRO to be in effect, efforts at resuscitation may be stopped in order that the natural course of disease may proceed.
 - c. Pulse checks will be no more than 5 seconds, and be initiated within 10 seconds of arrival
 - d. As long as the patient is pulseless (e.g. asystole, PEA, VF/pVT) 200 compressions (two minutes of CPR) will follow the administration of any drug or shock.
 - e. Compressions / Ventilations:
 - i. Compressions will be immediate and sufficient to produce a central pulse at a rate of at least 100 per minute.
 1. Any interruption in compressions must be extremely limited and for as brief a period as possible.
 2. Rotate personnel performing CPR every two minutes.
 - ii. Given that maintaining continuous compressions is of paramount importance, the initial capture of the airway will be with a multi-lumen airway device.
 1. If there is return of spontaneous circulation (ROSC), the airway may be converted to an ETT by an approved method at the discretion of the paramedic in charge.
 2. If a previously intubated patient experiences cardiac arrest, the ETT may continue to be used.
 - iii. The compression to ventilation ratio will be 15:2 for 2 rescuers. The ratio for single rescuers is 30:2. In either case, use the ratio until such time an advanced airway is established.
 1. Once an advanced airway is placed, compression will be continuous with ventilations performed at a rate of 8 to 10 per minute.
 2. Avoid excessive ventilations.
 3. Capnography shall be used in all cardiac arrest patients.
 - f. Defibrillation:
 - i. All initial defibrillation attempts for pediatric patients will be at 2 joules/kg
 1. All defibrillator models used by HCFR are biphasic.
 2. Subsequent doses are 4J/kg or higher (not to exceed 10 J/kg or standard adult dose)
 - ii. Immediately after each defibrillation, perform 200 chest compressions (two minutes of CPR) prior to performing a pulse and rhythm check.
 1. Remember in all situations, chest compression will only be interrupted for the briefest amount of time possible.

Section: **Pediatric Medical**
Subject: **CARDIAC ARREST – GENERAL PROTOCOL**
Section #: **343.06**
Issue Date: **March 21, 2011**
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g. Intravenous Therapy:

- i. The primary route of medication administration will be intravenous, but intraosseous will also be acceptable.
 - 1. All doses listed as IV can also be given IO.
- ii. The largest bore catheter possible *shall* be used.
- iii. The external jugular vein may be considered acceptable for use in adolescents suffering cardiac arrest.
- iv. The internal jugular and subclavian veins are not authorized to be accessed by HCFR personnel.
- v. When using an extremity vein, medication administration should be followed by a 20 mL bolus of normal saline and immediate elevation of the extremity to facilitate flow into the into the central circulation.
- vi. If the patient is hypoglycemic (≤ 50 mg/dL), follow the **HCFR PEDIATRIC HYPOGLYCEMIA** protocol.
- vii. If narcotic overdose is suspected, give **naloxone** 0.1 mg/kg IV/IO.

h. Post Intubation Care:

- i. End-tidal CO₂ detection will be used and documented in all intubated patients or patients with an advanced airway.
- ii. Capnography will be used and documented when available
 - 1. If the ETCO₂ <10 mmHg attempt to improve CPR quality.
- iii. An NG tube shall be inserted in intubated pediatric patients to maximize tidal volume.
- iv. Airway protection:
 - 1. When using manual CPR, minimize the possibility of airway device dislodgement by securing the patient to a long spine board with head immobilization devices.

i. Return of Spontaneous Circulation (ROSC):

- i. See **HCFR ROSC** protocol.

Section: Pediatric Medical
Subject: CARDIAC ARREST – ASYSTOLE
Section #: 343.07
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1. General Cardiac Arrest Algorithm
2. Specific ALS Treatment
 - a. Epinephrine 0.01 mg/kg of a 1:10,000 solution (0.1 mL/kg) q 3-5 min IV/IO
3. If there is return of spontaneous circulation (ROSC), continue with the HCFR ROSC protocol.
4. If after twenty (20) minutes of asystole and ETCO₂ is <10 mm Hg, contact Medic-1 for consideration of termination of resuscitation efforts.
5. QA Points:
 - a. Consider possible causes that we can address:
 - i. Hypoxia
 - ii. Hypovolemia
 - iii. Hypoglycemia
 - iv. Drug Overdose
 - v. Hypothermia
 - vi. Tension Pneumothorax
 - b. Available evidence suggests that the routine use of atropine during PEA or asystole is unlikely to have a therapeutic benefit.
 - c. Pauses in compressions must be as short as possible.
 - d. Given that maintaining continuous compressions is of paramount importance, the initial capture of the airway will be with a multi-lumen airway device or a blind (LMA) airway device
 - e. If there is return of spontaneous circulation (ROSC), the airway may be converted to an ETT by an approved method at the discretion of the paramedic in charge

Section: Pediatric Medical
Subject: CARDIAC ARREST – PULSELESS ELECTRICAL ACTIVITY
Section #: 343.08
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1. General Cardiac Arrest Algorithm
2. Specific ALS Treatment
 - a. Epinephrine 0.01 mg/kg of a 1:10,000 solution (0.1 mL/kg) q 3-5 min IV/IO
 - b. If hypovolemia is a consideration, infuse normal saline of 20 mL/kg IV.
3. If there is a return of spontaneous circulation (ROSC), then proceed to the HCFR ROSC protocol
4. QA Points:
 - a. Consider possible causes that we can address:
 - i. Hypoxia
 - ii. Hypovolemia
 - iii. Hypoglycemia
 - iv. Drug Overdose
 - v. Hypothermia
 - vi. Tension Pneumothorax
 - b. Available evidence suggests that the routine use of atropine during PEA or asystole is unlikely to have a therapeutic benefit.
 - c. Pauses in compressions must be as short as possible.
 - d. Given that maintaining continuous compressions is of paramount importance, the initial capture of the airway will be with a supra-glottic airway device.
 - i. If there is return of spontaneous circulation (ROSC), the airway may be converted to an ETT by an approved method at the discretion of the paramedic in charge.

Section: Pediatric Medical
Subject: CARDIAC ARREST – VENTRICULAR FIBRILLATION / PULSELESS VENTRICULAR TACHYCARDIA
Section #: 343.09
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Approved By: *Michael Lozano* - Michael Lozano, Jr., M.D., HCFR Medical Director

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1. General Cardiac Arrest Algorithm
2. Specific ALS Treatment
3. **Defibrillation**
 - a. Initial energy is 2 J/kg
4. **Treatment Sequence**
 - a. A circular algorithm will be followed:
 - i. Defibrillate, then
 - ii. CPR for two minutes, then
 - iii. Medications, then
 - iv. Pulse check, then repeat
 - b. Defibrillation:
 - i. 4 J/kg for the second and subsequent shocks
 - c. Medications:
 - i. **Epinephrine:**
 1. 0.01 mg/kg (0.1 mL/kg of a 1:10,000 solution) IV/IO
 2. Repeat every 3 – 5 minutes.
 - ii. **Amiodarone:**
 1. 5.0 mg/kg IV/IO bolus
 2. May repeat up to two times for refractory VF/pulseless VT.
 - iii. For *Torsades de Pointes* magnesium sulfate 50 mg/kg (maximum 2.0 grams) IV/IO as a bolus.
 5. Return of Spontaneous Circulation (ROSC)
 - a. Continue to HCFR ROSC protocol
 - b. Treat lethal arrhythmias appropriately (remember a resuscitated patient will still be affected by prior drug therapy)
 6. QA Points:
 - a. In resistant VF/pVT, the maximum amperage is 10 J/kg.
 - i. Not to exceed the adult dose
 - ii. Contact Medic-1 for authorization
 - b. Pauses in compressions must be as short as possible.
 - c. Given that maintaining continuous compressions is of paramount importance, the initial capture of the airway will be with a supra-glottic airway device.
 - d. If there is return of spontaneous circulation (ROSC), the airway may be converted to an ETT by an approved method at the discretion of the paramedic in charge.

Section: Pediatric Medical
Subject: CARDIAC DYSRHYTHMIAS – BRADYCARDIA / BLOCK
Section #: 343.10
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1. Basic ALS Treatments
 - a. Maintain patent airway; assist breathing as necessary
 - b. Monitor vital signs
 - c. Establish IV or IO access
 - d. 12-lead EKG if it doesn't delay therapy
2. Specific ALS treatments:
 - a. Evaluate for signs of cardiopulmonary compromise
 - i. hypotension
 - ii. acutely altered mental status
 - iii. signs of shock
 - b. Perform **chest compressions** if heart rate is < 60/min with poor perfusion despite oxygenation and ventilation.
 - c. **Epinephrine:**
 - i. 0.01 mg/kg of a 1:10,000 solution IV/IO
 - ii. Repeat q 3 – 5 minutes
 - d. **Atropine** (patient \geq 6 months of age):
 - i. 0.02 mg/kg I(minimum dose of 0.1 mg; maximum dose 0.5 mg) IV/IO
 - ii. May repeat once in five minutes
 - e. **Transcutaneous Pacing:**
 - i. Set rate according to age:
 1. < 1 year = 100/min.
 2. \geq 1 year = 80/min.
 - ii. Increase amperage until capture is achieved.
 - iii. Analgesia and sedation (for normal to high BP):
 1. **Fentanyl** 1 mcg/kg slow IV or IN q10 minutes PRN.
 2. **Midazolam** 0.05 mg/kg (max dose of 2.5 mg) IV or IN q10 minutes PRN.
3. Special conditions apply in severe hypothermia – see **HCFR PEDIATRIC HYPOTHERMIA** policy.
4. QA Points:
 - a. Bradycardia and heart block in the pediatric setting is usually due to hypoxia.

Section: Pediatric Medical
Subject: CARDIAC DYSRHYTHMIAS –NARROW COMPLEX TACHYCARDIA
Section #: 343.11
Issue Date: March 21, 2011
Revision Date: December 1, 2017
Approved By: *Michael Lozano*

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1. Basic ALS Treatments.
2. Adequate perfusion and QRS normal (≤ 0.09 sec)
 - a. Probable sinus tachycardia
 - i. Search for and treat cause
 - b. Probable SVT
 - i. Consider vagal maneuvers
 - ii. Adenosine: 0.1 mg/kg (max dose of 6mg); if no response then
 - iii. Adenosine dose of 0.2 mg/kg (max dose of 12 mg) in two (2) minutes if no response then:
 - iv. Obtain 12-lead EKG if not already done.
 - v. Amiodarone: 5.0 mg/kg IV/IO over 20-60 minutes
3. Poor perfusion and QRS normal (≤ 0.09 sec):
 - a. If rapid IV access is available:
 - i. Adenosine: 0.1 mg/kg (max dose of 6mg); if no response then
 - ii. Adenosine dose of 0.2 mg/kg (max dose of 12 mg) in two (2) minutes if no response then
 - b. If IV access is NOT immediately available:
 - i. Synchronized cardioversion:
 1. First energy level: 0.5 – 1.0 J/kg.
 2. Subsequent energy levels 2.0 J/kg
 - ii. Establish IV/IO once stabilized
 - iii. Analgesia and sedation (for normal to high BP):
 1. Fentanyl 1 mcg/kg (max dose of 50 mcg) slow IV once.
 2. Midazolam 0.05 mg/kg (max dose of 2.5 mg) IV or IN once.
4. Obtain a 12-lead EKG as soon as the patient is stabilized.
5. QA Points:
 - a. EKG findings consistent with sinus tachycardia:
 - i. QRS normal (≤ 0.09 sec)
 - ii. P waves present and normal
 - iii. Variable R-R with constant PR interval
 - iv. Rate in infants usually < 220/min
 - v. Rate in children usually < 180/min
 - b. EKG findings consistent with SVT
 - i. QRS normal (≤ 0.09 sec)
 - ii. P waves absent or abnormal
 - iii. Rate is not variable with activity
 - iv. Rate in infants usually > 220/min
 - v. Rate in children usually > 180/min
 - c. EKG findings consistent with SVT with QRS aberrancy
 - i. QRS wide (> 0.09 sec)
 - ii. Uniform QRS morphology

Section: **Pediatric Medical**
Subject: **CARDIAC DYSRHYTHMIAS –NARROW COMPLEX TACHYCARDIA**
Section #: **343.11**
Issue Date: **March 21, 2011**
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- d. Unstable condition must be related to the tachycardia.
 - i. Signs and symptoms may include chest pain, shortness of breath, decreased level of consciousness, low blood pressure, shock, pulmonary congestion, CHF, or acute MI.
- e. Immediate cardioversion is seldom needed for heart rates < 150 bpm.
- f. If delays in synchronization occur and clinical conditions are critical, switch to immediate unsynchronized cardioversion.

Section: Pediatric Medical
Subject: CARDIAC DYSRHYTHMIAS – WIDE COMPLEX TACHYCARDIA
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1. Basic ALS Treatments
2. Adequate perfusion and wide QRS (> 0.09 sec):
 - a. Amiodarone: 5 mg/kg IV/IO over 20 minutes
 - b. Obtain 12-lead EKG
3. Poor perfusion and wide QRS (> 0.09 sec):
 - a. Synchronized cardioversion:
 - i. First energy level: 0.5 – 1.0 J/kg.
 - ii. Subsequent energy levels 2.0 J/kg
 - iii. Establish IV/IO once stabilized
 - iv. Analgesia and sedation (for normal to high BP):
 1. Fentanyl 1 mcg/kg (max dose of 50 mcg) slow IV once.
 2. Midazolam 0.05 mg/kg (max dose of 2.5 mg) IV or IN once.
4. Obtain a 12-lead EKG as soon as the patient is stabilized.
5. QA Points:
 - a. EKG findings consistent with sinus tachycardia:
 - i. QRS normal (\leq 0.09 sec)
 - ii. P waves present and normal
 - iii. Variable R-R with constant PR interval
 - iv. Rate in infants usually < 220/min
 - v. Rate in children usually < 180/min
 - b. EKG findings consistent with SVT
 - i. QRS normal (\leq 0.09 sec)
 - ii. P waves absent or abnormal
 - iii. Rate is not variable with activity
 - iv. Rate in infants usually > 220/min
 - v. Rate in children usually > 180/min
 - c. EKG findings consistent with SVT with QRS aberrancy
 - i. QRS wide (>0.09 sec)
 - ii. Uniform QRS morphology
 - d. Unstable condition must be related to the tachycardia.
 - i. Signs and symptoms may include chest pain, shortness of breath, decreased level of consciousness, low blood pressure, shock, pulmonary congestion, CHF, or acute MI.
 - e. Immediate cardioversion is seldom needed for heart rates < 150 bpm.
 - f. If delays in synchronization occur and clinical conditions are critical, switch to immediate unsynchronized cardioversion.

Section: **Pediatric Medical**
Subject: **CROUP**
Section #: **343.13**
Issue Date: **March 21, 2011**
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1. Basic ALS Treatments
2. Specific ALS Treatments
 - a. **Oxygen:**
 - i. May use blow-by face administration technique to reduce anxiety in appropriate age group.
 - b. **Albuterol:**
 - i. For weight < 20 kg, administer 2.5 mg via nebulizer q20 minutes PRN
 - ii. For weight ≥ 20 kg, administer 5 mg via nebulizer q20 minutes PRN
 - c. **Normal saline:**
 - i. 3 mL nebulized if patient will tolerate.
 - ii. May repeat as needed if there is response

Section: **Pediatric Medical**
Subject: **EPIGLOTTITIS**
Section #: **343.14**
Issue Date: **March 21, 2011**
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1. Basic ALS Treatments
2. Specific treatment:
 - a. Keep patient calm.
 - b. Place child in sitting position with parent or caregiver if they do not agitate the patient.
 - c. Blow-by **oxygen**
 - d. Rapid transport
3. QA points:
 - a. If child's airway occludes and ETT required, then use a tube that is 1 size smaller than normal.
 - b. Ever since the development of the *Hemophilus influenza* vaccination, severe epiglottitis has all but disappeared in the U.S.

Section: Pediatric Medical
Subject: HEAT EMERGENCIES
Section #: 343.15
Issue Date: March 21, 2011
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1. Heat Cramps:
 - a. Move the patient to a cool environment
 - b. Stretch the muscles involved
 - c. Give oral fluids as tolerated
2. Heat Exhaustion:
 - a. Move patient to cool environment
 - b. Avoid overcooling and subsequent hypothermia
 - c. Watch for signs of heat stroke developing
 - d. Hydration and cooling:
 - i. **Normal saline** 20 mL/kg IV/IO
 - ii. Cool saline if possible
 - iii. Give oral fluids as tolerated
 - e. Monitor for dysrhythmias
3. Heat Stroke (hyperthermia with neurologic signs or symptoms):
 - a. Move patient to cool environment
 - b. Immediately:
 - i. Remove clothing
 - ii. Cool patient with water and air conditioner
 - iii. Cool packs should be place in the axilla, neck, and groin regions
 - c. IV **normal saline** 20 mL/kg IV/IO:
 - i. Cool if possible
 - ii. Hydrate until capillary refill time is < 2 seconds
 - iii. Watch for seizures and precipitous cardiopulmonary arrest
 - iv. Monitor for dysrhythmias
4. QA Points:
 - a. Children with sickle cell anemia are more susceptible to suffer heat related emergencies than the general population.

Section: Pediatric Medical
Subject: HYPOGLYCEMIA
Section #: 343.16
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1. Basic ALS Treatments.
2. Check blood glucose level
3. If blood glucose demonstrates hypoglycemia (<50 mg/dL):
 - a. Oral dextrose (patient who is awake with an adequate gag reflex)
 - i. Pt is <20 kg, administer 7.5 g PO (one-half tube)
 - ii. Pt is \geq 20 kg, administer 15 g PO (whole tube)
 1. May be repeated in 10 minutes if there is a partial response. Otherwise, proceed to IV/IO dextrose.
 - b. Glucagon (when unable to establish an IV):
 - i. 0.03 mg/kg up to a maximum of 1 mg IM.
 - c. Intravenous dextrose:
 - i. Patients <20 kg, administer 0.25 g/kg of Dextrose 10% ($D_{10}W$) IV/IO
 - ii. Patients \geq 20 kg, administer 0.25 g/kg of Dextrose 25% ($D_{25}W$) IV/IO
 - iii. Refer to **HCFR PEDIATRIC MEDICATION DOSAGES** protocol for mixing instructions.
 - iv. It is an acceptable approach to administer both glucagon and $D_{10}W$ if you are not initially able to establish an IV, as having glucagon does not prevent you from giving $D_{10}W$ later in the call.
4. NOTE: It is likely under this protocol that we will transport more patients with hypoglycemia, as glucagon at times does not suffice, and the administration of Dextrose $D_{10}W$ may take a long amount of time.

Section: Pediatric Medical
Subject: HYPOTHERMIA
Section #: 343.17
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1. Basic ALS Treatments
2. Initiate passive re-warming procedures:
 - a. Remove wet clothing and remove patient from cold environment.
 - b. Cover patient, including head, with blankets.
 - c. Move patient inside heated ambulance.
3. Severe hypothermia (core temp < 95°):
 - a. Place hot packs in the axilla, groin, and carotid regions.
 - b. Handle patient gently because rough handling may precipitate VF
4. PALS modifications for cardiac arrest in hypothermia.
 - a. Bradycardia:
 - i. Hypothermic patients may tolerate bradycardia very well.
 - ii. Bradycardia and slow atrial fibrillation are common manifestation of severe hypothermia
 - b. Asystole:
 - i. Perform CPR.
 - c. VF/pVT:
 - i. Defibrillate once at 4 j/kg.
5. Contact Medic-1:
 - a. For the administration of drugs.

Section: Pediatric Medical
Subject: NAUSEA / VOMITING
Section #: 343.18
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1. Basic ALS Treatments
2. Specific ALS treatment:
 - a. Ondansetron hydrochloride 0.1 mg/kg (maximum 4.0 mg) IV/IM.
 - b. May repeat in 20 minutes if needed.
 - c. If extrapyramidal reactions occur: diphenhydramine: 0.5 mg/kg (max 25 mg) IV over 1 – 2 minutes or IM.

Section: Pediatric Medical
Subject: OVERDOSE / ORAL POISONING
Section #: 343.19
Issue Date: March 21, 2011
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1. Basic ALS Treatments:
 - a. If time allows, contact Poison Control (1-800-222-1222) for treatment recommendations
 - i. Contact Medic-1 for recommendations from Poison Control not covered by HCFR policy.
2. Beta blocker overdose:
 - a. The primary determinant of β-blocker toxicity and death is respiratory arrest, so be vigilant to support the patient's respiration.
 - b. For seizures, follow HCFR PEDIATRIC SEIZURE protocol
 - c. Transcutaneous pacing, if available, as a bridge measure until pharmacology is available.
 - i. Set rate according to age:
 1. < 1 year = 100/min.
 2. ≥ 1 year = 80/min.
 - ii. Increase amperage until capture is achieved.
 - iii. Analgesia and sedation (for normal to high BP):
 1. Fentanyl 1 mcg/kg (max dose of 50 mcg) slow IV or IN q10 min PRN.
 2. Midazolam 0.05 mg/kg (max dose of 2.5 mg) IV or IN q10 min PRN.
 - d. Atropine (for patients ≥ 6 months of age):
 - i. 0.02 mg/kg (minimum dose 0.1 mg; maximum dose 0.5 mg) IV/IO q5 min.
 1. Maximum dose in children = 1 mg.
 2. Maximum dose in adolescents = 3 mg.
 - e. Dopamine:
 - i. Start with 5 mcg/kg/min IV/IO infusion
 - ii. Titrated by 5 mcg/kg/min q5 minutes to desired effect
 - iii. Maximum dose is 20 mcg/kg/min IV/IO.
 - f. Normal Saline (0.9% NaCl): 250 mL q5 min for hypotension.
3. Calcium channel blocker overdose:
 - a. For seizures, follow HCFR PEDIATRIC SEIZURE protocol
 - b. Transcutaneous pacing, if available, as a bridge measure until pharmacology is available.
 - i. Set rate according to age:
 1. < 1 year = 100/min
 2. ≥ 1 year = 80/min
 - ii. Increase amperage until capture is achieved.
 - iii. Analgesia and sedation if systolic BP ≥ 100 mmHg):
 1. Fentanyl 1 mcg/kg (max dose of 50 mcg) slow IV or IN q10 min PRN.
 2. Midazolam 0.05 mg/kg (max dose of 2.5 mg) IV or IN q10 min PRN.
 - c. Atropine (for patients ≥ 6 months of age):
 - i. 0.02 mg/kg (minimum dose 0.1 mg; maximum dose 0.5 mg) IV/IO q 5 min.
 1. Maximum dose in children = 1.0 mg
 2. Maximum dose in adolescents = 3.0 mg
 - d. Dopamine:
 - i. Start with 5.0 mcg/kg/min IV/IO infusion
 - ii. Titrated by 5.0 mcg/kg/min q 5 minute to desired effect
 - iii. Maximum does is 20 mcg/kg/min IV/IO
 - e. Normal Saline (0.9% NaCl): 250 ml q 5min for SBP < 100 mmHg.

Section: Pediatric Medical
Subject: OVERDOSE / ORAL POISONING
Section #: 343.19
Issue Date: March 21, 2011
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4. Phenothiazine overdose:
 - a. Dystonia present (distorted twisting or movement of a body part):
 - i. **Diphenhydramine**: 1.0 mg/kg (maximum dose of 50 mg) IV/IM.
5. Tricyclic antidepressant overdose (TCAs):
 - a. If hypotension, heart block, tachycardia, or cardiac conduction disturbances (QRS > 0.12 msec) are present:
 - i. **Sodium Bicarbonate**: 1.0 mEq/kg IV/IO
 - ii. **Normal saline** (0.9% NaCl) 20 mL/kg bolus IV/IO, and then 250 mL/hr IV.
 - b. If they are intubated. hyperventilate the patient to an ETCO₂ of 20 mmHg
6. Narcotic overdose:
 - a. **Naloxone**: 0.1 mg/kg IV/IO/IM/SQ/IN
 - i. Repeat q2 minutes PRN (titrated to effect).
 - ii. Some narcotics such as methadone require more naloxone than you would normally use.
 - iii. Complete reversal of symptoms may not be the optimal therapeutic goal. Rather, resolution of respiratory depression, hypotension, and hypoperfusion should be the treatment goal.
7. Organophosphate poisoning (commercial and agricultural products):
 - a. Decontaminate per HCFR protocol and policy
 - b. Avoid skin contact.
 - c. Flush area of exposure with copious amounts of water.
 - d. **Atropine**:
 - i. Less than 12 years old
 1. 0.02 mg/kg (minimum dose 0.1 mg) IV/IO q 5 min until bronchial secretions and hemodynamically significant bradycardia are controlled (no maximum dose).
 - ii. 12 years or older
 1. 2.0 mg IV q 5 minutes until bronchial secretions and hemodynamically significant bradycardia are controlled (no maximum dose).
 - e. Contact HIT for 2-PAM (**pralidoxime**) treatment if available and administration is timely

Section: Pediatric Medical
Subject: POISONS – INHALED OR ABSORBED
Section #: 343.20
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1. Basic ALS Treatments
2. Specific ALS treatments:
 - a. Decontaminate the patient per HCFR policy and protocol.
 - b. Contact Poison Control (1-800-222-1222) if any doubt as to toxicity or expected adverse effects.
3. If wheezing is present **albuterol** (nebulized):
 - a. For weight < 20 kg, administer 2.5 mg via nebulizer q20 minutes PRN
 - b. For weight ≥ 20 kg, administer 5 mg via nebulizer q20 minutes PRN
4. Organophosphates (see also policy section on Organophosphates and Military Nerve Type Agents):
 - a. Avoid skin contact.
 - b. Flush area of exposure with copious amounts of water.
 - c. **Atropine:**
 - i. Less than 12 years old
 1. 0.02 mg/kg (minimum dose 0.1 mg) IV/IO q 5 min until bronchial secretions and hemodynamically significant bradycardia are controlled (no maximum dose).
 - ii. 12 years or older
 1. 2 mg IV q 5 minutes until bronchial secretions and hemodynamically significant bradycardia are controlled (no maximum dose).
 - d. Contact HIT for **2-PAM (pralidoxime)** treatment if available and administration is timely
5. Contact Medic-1:
 - a. Recommendations from Poison Control not covered by HCFR policy.

Section: Pediatric Medical
Subject: POISONOUS STINGS AND BITES
Section #: 343.21
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1. Basic ALS Treatments
2. Specific ALS treatments:
 - a. Keep the patient calm and immobilize the limb parallel to the heart.
 - b. Contact Poison Control (1-800-222-1222) for ALL poisonous stings and bites.
 - i. Contact Medic-1 for recommendations from Poison Control not covered by HCFR policy.
 - c. Apply a constricting band only if the victim or a bystander has applied a tourniquet.
 - i. In that case, place a constricting band two (2) inches above the tourniquet and then remove the tourniquet.
3. Treat anaphylaxis as per appropriate HCFR PEDIATRIC ANAPHYLAXIS protocol.
4. Treat seizures as per appropriate HCFR PEDIATRIC SEIZURES protocol.
5. Treat pain as per appropriate HCFR PAIN MANAGEMENT protocol.
6. Do not apply ice or cold packs unless otherwise directed by Poison Control.
7. If the source of the envenomation cannot be positively identified, HCFR personnel may attempt to bring the offending animal or insect to the receiving facility, but only if in doing so it will not put responders or receiving facility personnel at risk. In this day and age, an image would be an acceptable substitute.

Section: Pediatric Medical
Subject: SEIZURES
Section #: 343.22
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1. Basic ALS Treatments
2. Specific ALS treatments:¹
 - a. Position the patient to avoid an injury
 - b. If possible, place in the left lateral decubitus position
 - c. All seizure patients should receive supplemental **oxygen** to maintain oxygen saturation >94%
 - d. Benzodiazepine: (midazolam is preferred, but use what is available.)
 - i. **Midazolam**² (intranasal is an acceptable route of delivery³)
 1. 0.2 mg/kg (maximum 5.0 mg) IN/IV/IO/IM now and then q10 min times two PRN
 2. Maximum total dose = 15 mg
 - ii. **Diazepam**, if no response to midazolam
 1. 0.2 mg/kg (maximum 8 mg) IV/IO now and then q 10 min times two
 2. Maximum total dose = 24 mg
 3. After the first dose of benzodiazepine, check the patient for hypoglycemia.
 - a. If hypoglycemia is present, treat per HCFR PEDIATRIC HYPOGLYCEMIA protocol
 4. Reaching the maximum dose on a benzodiazepine is an indication of a complex patient, and you need to leave the scene if you have not already done so.
 5. Contact Medic-1:
 - a. For doses of **midazolam** beyond 0.6 mg/kg
 - b. For doses of **diazepam** beyond 0.6 mg/kg
 6. QA Points:
 - a. Never wait for longer than a few minutes of continuous seizure activity before beginning antiepileptic therapy.
 - b. Spinal precautions are not routinely necessary in all seizure patients.
 - c. The classical definition of status epilepticus is a single seizure lasting continuously for more than 30 minutes, or two or more seizures with no recovery of normal mental status and function in between episodes. The operational definition of status epilepticus in the pre-hospital setting should be simplified, and includes any seizure that continues from the initial 911 call until HCFR arrives on the scene, or any patient who remains postictal on our arrival and then experiences another seizure.

¹ Chamberlain, James M., et al. "Lorazepam versus Diazepam for Pediatric Status Epilepticus: A Randomized Clinical Trial." JAMA, the Journal of the American Medical Association, no. 16, 2014, p. 1652.

² Rainbow J. Controlling seizures in the prehospital setting: diazepam or midazolam? *J Paediatr Child Health* - 01-DEC-2002; 38(6): 582-6

³ Holsti M. Prehospital intranasal midazolam for the treatment of pediatric seizures. *Pediatr Emerg Care* - 01-MAR-2007; 23(3): 148-53

Section: Pediatric Medical
Subject: SICKLE CELL CRISIS
Section #: 343.23
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1. Basic ALS Treatments
2. Fluids:
 - a. IV bolus: **normal saline** 20 mL/kg IV
 - b. IV maintenance infusion¹ is determined by weight.
 - i. **Less than 10 kg:** start at 4 mL/kg/hr.
 - ii. **10 kg – 20 kg:** 40 mL/hr **plus** 2 mL/kg/hr over 10 kg.
 - iii. **>20 kg:** 60 mL/hr **plus** 1 mL/kg over 20kg to a maximum of 100 mL/hr.
3. HCFR PAIN MANAGEMENT policy as needed.

¹ [Modified from] Holliday MA< Segar WE. The maintenance need for water in parenteral fluid therapy. Pediatrics, 1957 May;19(5):823-32.

Section: Pediatric Trauma
Subject: PEDI ABDOMINAL TRAUMA
Section #: 344.01
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1. Basic ALS Treatments
2. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated , note, all patients <18 years of age will receive FULL SMR when indicated, C-collar only is not indicated for pediatric patients
3. Evaluate for Trauma Alert criteria
4. If hypotensive and **without** peripheral pulses:
 - a. Normal Saline: 20 ml/kg IV (repeat as needed to maintain peripheral pulses)
 - b. Change infusion to KVO when signs and symptoms of shock have resolved.

Section: Pediatric Trauma
Subject: PEDI BLEEDING / WOUND CARE
Section #: 344.02
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1. BLS hemorrhage control measures
2. If bleeding is uncontrolled by standard methods, apply approved hemostatic agent/device directly to wound site, followed by a bandage and dressing.
3. If bleeding is uncontrolled by standard methods, and the location is an extremity apply the CAT (Combat Application Tourniquet).
4. QA Point:
 - a. Recent data obtained by the US military has demonstrated the safety and efficacy of tourniquet application in devastating extremity wounds as being life saving.

Section: Pediatric Trauma
Subject: PEDI BURNS
Section #: 344.03
Issue Date: March 21, 2011
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1. Basic ALS Treatments.
2. **Chemical Burns:**
 - a. Reference HCFR Decontamination policies.
 - b. Contaminated patients should have their clothing and jewelry removed, bagged, and tagged.
 - c. Flush with copious amounts of fluid.
 - d. Prevent loss of body heat after decontamination.
 - e. Pain management as per HCFR protocol.
 - f. Contact **Poison Control 1-800-222-1222** for specific treatment of chemical exposures
 - i. Contact Medic-1 for recommendations from Poison Control not covered by HCFR policy.
3. **Electrical Burns:**
 - a. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated.
 - b. Cardiac monitor
 - c. **Normal Saline** 20 mL/kg IV/IO over 20 minutes
 - d. Treat cardiac dysrhythmias as per appropriate HCFR protocol
 - e. Dry sterile dressings over burned areas
4. **Thermal Burns:**
 - a. Stop the burning process:
 - i. Continuous wet sterile dressings over not more than 10% TBSA at one time.
 - ii. Dry sterile dressings or burn sheets over all other burned areas.
 - iii. Prevent loss of body heat.
 - b. Stabilize and resuscitate
 - i. Apply SMR precautions as indicated by mechanism of injury and patient complaint
 - ii. Administer a **normal saline bolus** IV/IO according to the following formula:
 1. 0.25 times the % body surface area with 2nd or 3rd degree burns times the weight (Kg)
 2. Round up to the nearest 50 mL
 - iii. Administer **morphine sulfate** 0.1 mg/kg (maximum 5.0 mg) IV/IO/IM/SQ q 5 minutes PRN pain to a maximum of 10 mg.
 - c. For inhalation injuries see **HCFR INHALATION OF HOT SMOKE AND GASES** protocol.
5. ALS transport criteria:
 - a. Burn Center destination criteria:
 - i. 2° or 3° burns > 10% TBSA
 - ii. 1° burns > 50% TBSA
 - iii. Explosions
 - iv. Chemical burns
 - v. Dyspnea
 - vi. Facial burns
 - vii. Altered vital signs
 - viii. Circumferential burns
 - ix. Burns to hands or feet

Section: Pediatric Trauma
Subject: PEDI CARDIAC ARREST – TRAUMATIC
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1. Basic ALS Treatments
2. Per the Hillsborough County Uniform Trauma Transport Protocols, a patient who has sustained blunt force trauma resulting in cardiopulmonary arrest may be declared dead at the scene, and no further resuscitative efforts are indicated.
3. Initiate CPR and initiate ventilatory support
4. Establish two intravenous or intraosseous access sites.
 - a. Administer normal saline 20 mL/kg IV/IO
5. If there is return of spontaneous circulation (ROSC):
 - a. Evaluate for Trauma Alert criteria.
 - b. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated, note, all patients <18 years of age will receive FULL SMR when indicated, C-collar only is not indicated for pediatric patients.
 - c. Rapid transport to a trauma center as identified in the Hillsborough County Uniform Trauma Transport Protocols
6. No Codes – see **HCFR END OF LIFE** protocol for guidelines.

Section: Pediatric Trauma
Subject: PEDI CHEST TRAUMA
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Michael Lozano, Jr., M.D., HCFR Medical Director

1. Basic ALS Treatment
2. Specific ALS treatments
 - a. Establish two intravenous or intraosseous access sites.
 - i. Administer normal saline 20 mL/kg IV/IO
 - b. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated, note, all patients <18 years of age will receive FULL SMR when indicated, C-collar only is not indicated for pediatric patients.
 - c. Chest decompression, using the mid-clavicular line approach, if indicated by signs and symptoms of tension pneumothorax.

Section: Pediatric Trauma
Subject: PEDI DECOMPRESSION SICKNESS AND RELATED EMERGENCIES
Section #: 344.06
Issue Date: March 21, 2011
Revision Date: December 1, 2017
Approved By:

Michael Lozano Michael Lozano, Jr., M.D., HCFR Medical Director

1. Basic ALS treatment
2. Position and transport the patient in the supine position to maximize arterial-venous flow
3. 100% Oxygen via NRB
4. Document a thorough neurological exam
5. Transport to the closest facility
6. QA Points
 - a. The most efficacious intervention for the patient experiencing decompression sickness is 100% oxygen; it reduces intravascular bubble size by increasing the differential pressure for nitrogen diffusion out of the bubbles and speeds the washout of nitrogen from the tissues.¹
 - b. Ground transport is preferred over air transportation because an increase in altitude lowers the ambient pressure and allows microbubbles to expand.
 - c. Trendelenburg position, once thought to reduce the degree of cerebral embolization, increases intracranial pressure, facilitates coronary gas embolization, and should be avoided.²

¹ Strauss MB, Borer Jr RC: Diving medicine: Contemporary topics and their controversies. *Am J Emerg Med* 2001; 19:232.

² Butler BD, et al: Effect of the Trendelenburg position on the distribution of arterial air emboli in dogs. *Ann Thorac Surg* 1988; 45:198.

Section: Pediatric Trauma
Subject: PEDI DROWNING AND SUBMERSION INJURIES
Section #: 344.07
Issue Date: March 21, 2011
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1. Basic ALS treatment
2. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated, note, all patients <18 years of age will receive FULL SMR when indicated, C-collar only is not indicated for pediatric patients.
3. If in cardiac arrest, follow **HCFR PEDIATRIC TRAUMATIC CARDIAC ARREST** protocol
4. ALS transport criteria:
 - a. ALL suspected drowning patients are ALS
 - b. This includes patients who are alert but suffered some type of submersion or immersion event.
6. QA Points:
 - a. The early institution of resuscitative efforts is an important factor influencing pediatric survival after drowning.¹
 - b. The terms "near-drowning," "wet/dry drowning," and "secondary drowning" are potentially confusing and are no longer recommended.²

¹ Orlowski JP. Prognostic factors in pediatric cases of drowning and near-drowning. Journal of the American College of Emergency Physicians Volume 8, Issue 5, May 1979, Pages 176-179

² Main, Alison B and Andrew J Hooper. "Trauma: Drowning and Immersion Injury." Anaesthesia & Intensive Care Medicine, vol. 18, 01 Aug. 2017, pp.401-3.

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: Pediatric Trauma
Subject: PEDI FRACTURES / DISLOCATIONS
Section #: 344.08
Issue Date: March 21, 2011
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1. Basic ALS Treatment
2. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated, note, all patients <18 years of age will receive FULL SMR when indicated, C-collar only is not indicated for pediatric patients.
3. Splint as appropriate.
4. For severe pain, follow **HCFR PAIN MANAGEMENT** protocol.
 - a. Long bone fractures and multiple fractures will be transported and treated with the pain management protocol unless the parent or legally authorized representative refuses pain management and signs informed refusal.

Section: Pediatric Trauma
Subject: PEDI HEAD INJURY
Section #: 344.09
Issue Date: March 21, 2011
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1. Basic ALS treatment
2. Evaluate for Pediatric Trauma Alert criteria
3. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated, note, all patients <18 years of age will receive FULL SMR when indicated, C-collar only is not indicated for pediatric patients.
4. Elevate the head of the long spine board approximately 30° if GCS is less than 13
5. Be prepared for aggressive airway management in patients with:
 - a. Inability to protect the airway
 - b. Unable to maintain O₂ saturation greater than or equal to 94%
 - c. Rapidly decreasing Glasgow Coma Scale
6. If the patient is intubated:
 - a. **Do Not** hyperventilate unless the patient has signs of elevated intracranial pressure
7. QA points:
 - a. The two factors that are most associated with poor outcome after head injury are hypoxia and hypotension. Make sure that you take every precaution to avoid those two situations in head injury patients.
 - b. Cushing's reflex, Cushing's response, and Cushing's triad all refer to the same thing: bradycardia, respiratory depression, and hypertension as a sign of elevated intracranial pressure. Invariably, this will include an alteration in the level of consciousness.

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: Pediatric Trauma
Subject: PEDI INHALATION OF HOT SMOKE AND GASES
Section #: 344.10
Issue Date: March 21, 2011
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1. Basic ALS treatments
 - a. Continuous capnography should be used if available, especially in severe cases.
2. ETCO₂, CO, and HbCO monitoring
3. **Albuterol:** (nebulized)
 - a. For weight < 20 kg, administer 2.5 mg via nebulizer q 20 minutes PRN
 - b. For weight ≥ 20 kg, administer 5 mg via nebulizer q 20 minutes PRN
 - c. Consider intubation if no response to any therapy and deterioration is noted.
4. QA points:
 - a. Inhalation burns need to be followed vigilantly, but do not necessarily mean an automatic intubation. You need to follow the patient closely to determine if they are starting to deteriorate, or show signs of early airway obstruction. In those cases, you need to quickly move to capture the airway.
 - b. Carboxyhemoglobin, produced by carbon monoxide poisoning, is misinterpreted by the pulse oximeter as oxyhemoglobin causing values to tend towards 100%. A pulse oximeter is extremely misleading in cases of carbon monoxide poisoning for this reason and should not be used as the sole method of monitoring the patient.
 - c. The routine administration of corticosteroids does not appear to confer any benefit following smoke inhalation.

Section: Pediatric Trauma
Subject: PEDI SHOCK - HYPOVOLEMIC
Section #: 344.11
Issue Date: March 21, 2011
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1. Basic ALS Treatment
2. Evaluate for Pediatric Trauma Alert criteria
3. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated, note, all patients <18 years of age will receive FULL SMR when indicated, C-collar only is not indicated for pediatric patients.
4. If hypotensive and **without** peripheral pulses:
 - a. **Normal saline** 20 mL/kg IV (repeat as necessary to maintain peripheral pulses)
 - b. Change infusion to KVO when signs and symptoms of shock have resolved.
5. In cases of prolonged (> 4 hours) entrapment, and IV/IO access is possible, infuse **normal saline** 20 mL/kg IV/IO prior to extrication, and call HCFR Medical Director for orders regarding potential crush injury.

Section: Pediatric Trauma
Subject: PEDI SHOCK – NEUROGENIC
Section #: 344.12
Issue Date: March 21, 2011
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1. Basic ALS treatment
2. Evaluate for Pediatric Trauma Alert criteria
3. Refer to **HCFR SPINAL MOTION RESTRICTION** protocol and apply as indicated, note, all patients <18 years of age will receive FULL SMR when indicated, C-collar only is not indicated for pediatric patients.
4. Fluid administration:
 - a. **Normal saline** 20 mL/kg IV bolus to maintain peripheral pulses.
 - b. When peripheral pulses return, the flow rate is changed to KVO with close monitoring of vital signs.
5. Rapid transport
6. **Dopamine:**
 - a. If the presumptive diagnosis is neurogenic shock, and hypotension persists after a total of 20 mL/kg of fluids (one bolus) have been administered, begin **dopamine** infusion:
 - i. Start at 5.0 mcg/kg/min IV/IO
 - ii. Increase by 5.0 mcg/kg/min q 5 minutes PRN titrated to effect
 - iii. Maximum dose of 20 mcg/kg/min
7. QA Point:
 - a. Neurogenic shock is shock a distributive type of shock resulting in hypotension, occasionally with bradycardia, that is attributed to the disruption of the autonomic pathways within the spinal cord. Hypotension occurs due to decreased systemic vascular resistance resulting in pooling of blood within the extremities lacking sympathetic tone. Bradycardia results from unopposed vagal activity and has been found to be exacerbated by hypoxia.

Section: **ALS Protocols**
Subject: **AIRWAY PROTOCOLS**
Section #: **345.01**
Issue Date: **March 21, 2011**
Revision Date: **December 1, 2017**
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1. The assessment, clearing, capturing, and securing of the patient's airway will be a primary goal in treating any critical patient.
2. Proactive airway management is encouraged.
 - a. Any patient who has a Glasgow Coma Score (GCS) < 8 and does not have an easily reversible condition (diabetes, narcotic OD) should have their airway actively controlled.
 - b. Any patient for whom oxygen saturation cannot be maintained above 94% by non-invasive means shall have their airway controlled.
 - c. Any patient whom the lead paramedic anticipates will suffer harm due to serious decompensation of their clinical status such that they will not be able to protect their own airway or sustain oxygen saturation above 94% despite non-invasive means shall have their airway controlled.

3. AIRWAY OBSTRUCTION

- a. Airway obstruction due to a foreign body will be treated in the following manner:
 - i. Responsive patients:
 1. Adult and adolescents after puberty:
 - a. Ask, "Are you choking?"
 - b. Give abdominal thrusts (Heimlich maneuver)
 - i. Chest thrusts for pregnant or obese patients
 - c. Repeat thrusts until effective or victim becomes unresponsive.
 2. Children from 1 year of age to puberty:
 - a. Ask, "Are you choking?"
 - b. Give abdominal thrusts (Heimlich maneuver)
 - c. Repeat thrusts until effective or victim becomes unresponsive.
 3. Infants less than one year of age:
 - a. Confirm severe airway obstruction
 - b. Perform up to five (5) back blows and up to five (5) chest compressions
 - c. Repeat this cycle until effective or victim becomes unresponsive.
 - ii. Unresponsive patients of all ages:
 1. Lower to floor if the victim is unresponsive with no breathing or no normal breathing.
 2. Place in rescue position (e.g. supine with arms at sides, and legs extended) and begin CPR at once
 3. Apply monitor/defibrillator
 4. Before delivering breaths at the end of the first CPR cycle, look into the mouth.
 - a. If you see a foreign body that can be easily removed, remove it. Do not perform blind finger sweep.
 - b. Magill forceps are authorized for paramedics to use in removal of a visualized foreign body.

Section: **ALS Protocols**
Subject: **AIRWAY PROTOCOLS**
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4. AIRWAY CAPTURE

- a. Rapid Sequence Induction shall be the primary method of performing endotracheal intubation in those patients who are not in a pre-terminal state (i.e. pulseless, apneic, GCS= 3, flaccid).
- b. The airway is to be controlled as deemed appropriate by the Medic-in-Charge.
Acceptable airway interventions are:
 - i. Positioning: Jaw thrust (preferred), head tilt/chin lift (contraindicated in trauma).
 - ii. Temporizing Measures (used as a bridge to definitive airway measures, or as a supplement to those measures):
 1. Nasopharyngeal airway
 2. Oropharyngeal airways
 - iii. Secure Airways:
 1. Endotracheal tube (*preferred unless otherwise stated*)
 - a. Endotracheal intubation methods:
 - i. Endotracheal intubation via direct laryngoscopy (ET Tube) – (*preferred* method of tracheal intubation for HCFR personnel).
 - ii. Endotracheal intubation via video laryngoscopy (*preferred* method for difficult airways)
 - iii. Endotracheal intubation via gum bougie
 2. Blind Insertion, supra-glottic airway
 3. Cricothyrotomy (see **HCFR CRICOHYROTOMY protocol**):
 - c. Airway control of the suspected cervical spine injured patient will be performed without distracting from the neutral in-line position unless absolutely necessary.

5. ENDOTRACHEAL INTUBATION

- a. Placing the tube
 - i. Advance the tube until the cuff is approximately 1 cm past the vocal cords.
 1. Ideally the tip of the tube should be positioned halfway between the vocal cords and the carina.
- b. If endotracheal intubation is unsuccessful after three (3) attempts, a supraglottic airway shall be immediately placed.
 - i. An attempt shall be limited to approximately 30 seconds, or the development of clinical signs of hypoxia
- c. Verifying tube placement (Techniques for verifying tube placement will be as follows):
 - i. All intubations shall be assessed immediately.
 1. Following tube insertion.
 2. Every time the patient is moved.
 3. Periodically throughout the management of the patient.
 4. Immediately prior to handing off to a hospital or another EMS agency.
 - ii. Detection of exhaled carbon dioxide (**primary confirmation method**):
 1. With an ETCO₂ capnography unit attached to the monitor/defibrillator, look for an appropriate waveform change on the monitor.

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2. When the changes in ETCO₂ described above occur it is an absolute indication of tracheal placement.
 - a. If these ETCO₂ changes do not occur it suggests:
 - i. Esophageal placement.
 - ii. Blood flow or gas exchange is severely impaired.
 - iii. Secretions in the ETCO₂ filter.
- iii. Supplemental confirmation methods:
 1. Visualization of tube passage between the vocal cords during insertion (**best method**).
 2. Visualization of tube placement between the vocal cords via video laryngoscopy after insertion.
 - a. Every attempt should be made to visualize tube placement in this manner after intubation via gum bougie.
 3. Confirmation of placement via auscultation of the following areas:
 - a. Over the epigastrium
 - b. Right anterior chest wall
 - c. Left anterior chest wall
 - d. Right mid-axillary chest wall
 - e. Left mid-axillary chest wall
 4. Confirmation by attaching the Esophageal Detector Device (EDD) to the endotracheal tube.
 - a. Squeeze the EDD prior to attaching to the ETT and verify the bulb inflates rapidly
 5. Phonation is a negative indicator.
 - a. If the patient can make vocal sounds after the alleged intubation it is an absolute sign the tube is **NOT** in the trachea.
 - iv. Note centimeter mark on ETT, once proper placement is confirmed.
 - v. Documentation in the ePCR shall include:
 1. Individual entries for each intubation attempt, to include method of intubation, outcome of attempt, and name of paramedic performing the attempt.
 2. Confirmation of ETT placement and reassessment.
 - a. Must include initial ETCO₂ value and continuous ETCO₂ monitoring.
 - b. Physician Verification Form required if unable to document ETCO₂
 3. Centimeter mark of ETT at the teeth.
 4. EDD result (if used)

6. ENDOTRACHEAL TUBE ANCHORING

- a. Intubated patients will have their endotracheal tubes secured using HCFR provided commercial devices in compliance with the manufacturer's instructions.
 - i. Use of devices that have not been authorized by the HCFR Medical Director is prohibited.
- b. On those occasions where such devices are not available or do not fit the patient, the tube should be secured with tape.
 - i. The tape should wrap around the tube as close to the mouth as possible.

Section: **ALS Protocols**
Subject: **AIRWAY PROTOCOLS**
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1. Anchor point should be the maxilla and not the mandible.

- ii. Wrap the tape completely around the back of the neck (without disturbing the cervical spine in cases where this is a concern).
1. Do not wrap around the back of the cervical collar.
c. Unless detrimental to the patient the use of a head immobilizer and cervical collar is required in conjunction with endotracheal tubes to reduce head movement and the potential for dislodging the ETT.
d. Methods used to secure the ETT shall be thoroughly documented in the ePCR.

7. QA Points:

- a. It is important to quickly recognize the rare but potentially disastrous, "can't intubate/can't oxygenate" scenario, and rapidly move to cricothyrotomy. Rapid transportation to a location where additional airway resources can be gathered is essential for survival in this select patient population.
b. Adequate ventilation DOES NOT necessarily require ETT intubation.
c. In an average size adult, inserting until the front teeth are even with the 21 cm mark on the tube will usually assure that the tip is above the carina.
d. ETCO₂ monitoring will not detect a right mainstem intubation.
e. The EDD is not 100% reliable. False indications can occur in very obese patients, and patients with lots of gas in the stomach.

Section: **ALS Protocols**
Subject: **AUTOMATIC IMPLANTABLE CARDIOVERTER/DEFIBRILLATOR(AICD)**
Section #: **345.02**
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1. Overview:
 - a. Devices take 2 – 5 seconds to recognize rhythm.
 - b. Touching the patient when the AICD fires may cause a mild “tingling” shock, although there is no danger of the rescuer’s rhythm being affected.
 - c. Always check the patient’s pulse after each set of defibrillations.
2. Defibrillation of the patient with an AICD:
 - a. Place paddles/quick pads in standard position.
 - b. Use the standard energy settings.
3. QA Point:
 - a. If repetitive shocks are ineffective change pad placement

Section: **ALS Protocols**
Subject: **BEHAVIORAL EMERGENCIES**
Section #: **345.03**
Issue Date: **December 1, 2017**
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1. Guiding principles:
 - a. Assure physical safety of the patient and First Responders
 - b. Diagnose and treat organic causes of behavioral disturbances such as, but not limited to, hypoglycemia, hypoxia or poisoning
 - c. Use reasonable physical restraint only if attempts at verbal control are unsuccessful. See **HCFR RESTRAINING PATIENTS** protocol for physical restraint guidance.
2. ALS Treatment
 - a. Simple anxiety not responsive to psychological first aid
 - i. Midazolam 2.5 mg IV/IM/IN
 - b. Violent/severely agitated patient:
 - i. Midazolam
 1. Adults and pediatric patients above 50 kg:
 - a. 5 mg IN/IM and then q5 min to a maximum of 20 mg
 2. Geriatrics (>65 y/o):
 - a. 2.5 mg IN/IM and then q5 minutes to a maximum of 10 mg.
 - ii. Diazepam (if midazolam is unavailable)
 3. Adults and pediatric patients weighing above 50 kg:
 - a. 10 mg IM, and then as needed q5 min to a maximum of 20 mg.
 4. Geriatrics (>65 y/o):
 - a. 5 mg IM, and then as needed q5 min to a maximum of 20 mg.
 - ii. Ketamine (for violent and excited delirium only after administration of at least one dose of benzodiazepine has not been effective)
 1. 2 mg/kg IM once, and if no response in 5 minutes can give an additional 1 mg/kg IM.
OR
2. 1 mg/kg IN once, and if no response in 5 minutes can give 0.5 mg/kg IN.
 - c. Monitor EKG, SpO₂ and EtCO₂ on all patients medicated under this protocol.
 - d. Initiate oxygen if needed to maintain saturation greater than 94%.
 - e. If not previously done, establish intravenous access.
 - f. In cases of excited delirium with abnormal vital signs
 - i. Transport emergently to the closest appropriate receiving facility able to accept the patient.
 - ii. If patient has elevated temperature above 102 degrees F, consider cooling the patient using cold packs to neck, axilla, and groin.
 3. Contact Medic-1 for additional doses of any medication under this protocol and for patients weighing less than 50 kg,
 4. QA points:
 - a. Law enforcement, if present, should actively participate in all cases of physical restraint.
 - i. If not present, they should be requested if this protocol is applied.
 - ii. Do not delay transport awaiting Law Enforcement arrival
 - b. The prone position **will not** be used under any circumstances.
 - c. Always administer a benzodiazepine prior to ketamine.

Section: **ALS Protocols**
Subject: **BEHAVIORAL EMERGENCIES**
Section #: **345.03**
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- d. Excited Delirium Syndrome is a state in which a person is in a hyperdynamic and extremely agitated state. The patient frequently is unable to focus rationally. The condition can be brought on by overdose of stimulant or hallucinogenic drugs, acute drug withdrawal, or psychiatric decompensation. Typical signs and symptoms to suspect excited delirium are elevated temperature, nudity, profuse sweating, and swings from aggressive behavior to tranquility. These patients should be closely observed for cardiovascular and respiratory changes.
- e. Make certain that when chemical or physical restraint is employed that you have an adequate number of members available and the appropriate equipment (for patient age and size) is available for monitoring and intervention.
- f. Patients over the age of 40 with new psychiatric symptoms are more likely to have an organic cause.
- g. Geriatric patients are at a higher risk for organic delirium due to medical illness or adverse reactions to medications.

Hillsborough County Fire Rescue
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Section: **ALS Protocols**
Subject: **BLOOD ALCOHOL COLLECTION**
Section #: **345.04**
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1. Legal blood collection will be performed upon the request of a law enforcement agency officer for any patient under the care of Hillsborough County Fire Rescue.
 - a. HCFR paramedics will not delay the transport of a critical or potentially critical patient solely to draw a legal blood collection.
2. Legal blood collection may be performed upon the request of a law enforcement agency officer who presents at the Fire Station (suppression or rescue may perform) and requests such lawful action.
 - a. An incident number shall be requested and ePCR completed.
3. The following will be the procedures followed for drawing a requested legal blood collection:
 - a. Use only a new, sealed, and pre-approved blood collection kit that is provided by the requesting law enforcement agency.
 - b. Perform an inventory of the collection kit that has been provided.
 - c. Perform the legal blood collection as directed by the instructions.
 - i. Note that different jurisdictions may require different procedures.
 - ii. Any deviation from the provided instructions must be documented in the ePCR.
 - d. Perform the legal blood collection in the presence of the requesting law enforcement officer.
 - i. Keep the collection handling to a minimum.
 - e. Document the name(s) of the requesting law enforcement agency, officer, and the receiver of the blood collection kit.
4. Complete the Hillsborough County Fire Rescue Legal Blood Collection form and scan it into the ePCR.

Section: **ALS Protocols**
Subject: **CPAP (CONTINUOUS POSITIVE AIR PRESSURE)**
Section #: **345.05**
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1. The use of CPAP, when available, will be at the discretion of the Medic-in-Charge.
2. CPAP therapy may be used for the following situations in conscious adult patients:
 - a. CHF with adequate tidal volume.
 - b. Exacerbation of COPD or asthma.
 - c. Near-drowning with adequate tidal volume.
 - d. Non-cardiogenic pulmonary edema with adequate tidal volume.
3. CPAP therapy:
 - a. Thoroughly explain the procedure to the patient.
 - b. Coach the patient as needed.
 - c. Indications: ¹
 - i. Moderate to severe respiratory distress
 - ii. Tachypnea (RR > 24 breaths/min)
 - iii. Accessory muscle use or abdominal breathing
 - d. Contraindications: ¹
 - i. Respiratory arrest
 - ii. Medically unstable
 - iii. Unable to protect airway
 - iv. Excessive secretions
 - v. Uncooperative or agitated
 - vi. Unable to fit mask
 - vii. Recent (< 30 days) upper airway or upper gastrointestinal surgery
 - e. Predictors of success for CPAP in the acute setting: ²
 - i. Able to cooperate
 1. Good neurologic status
 2. Patient's acceptance of the technique
 - ii. Able to protect airway
 1. Low secretions
 2. Minimal amount of air leak
 3. Dentition intact (either their own or dentures in place)
 - iii. Not too acutely ill
 1. No pneumonia
 2. Not too elevated ETCO₂

¹ Adapted from Liesching T, Kwok H, Hill NS: Acute applications of noninvasive positive pressure ventilation. Chest 124:699–713, 2003.

² Adapted from Ambrosino N, Foglio K, Rubini F, et al: Non-invasive mechanical ventilation in acute respiratory failure due to chronic obstructive pulmonary disease: Correlates for success. Thorax 50:755–757, 1995; and Soo Hoo GW, Santiago S, Williams AJ: Nasal mechanical ventilation for hypercapnic respiratory failure in chronic obstructive pulmonary disease: Determinants of success and failure. Crit Care Med 22:1253–1261, 1994.

Section: **ALS Protocols**
Subject: **CPAP (CONTINUOUS POSITIVE AIR PRESSURE)**
Section #: **345.05**
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- iv. Good initial response
 - 1. Reduction in respiratory rate
 - 2. Improving ETCO₂
 - 3. Improving level of consciousness
- f. Start at 5 cm H₂O
 - i. Increase as tolerated for COPD, near drowning and non-cardiogenic pulmonary edema.
 - ii. Keep at 5 cm H₂O for asthma, and discontinue if no response.
- g. Use continuous wave capnography, if available, to better monitor the clinical course.
- h. If the patient's condition deteriorates, discontinue immediately.

Section: **ALS Protocols**
Subject: **CARBON MONOXIDE MONITORING**
Section #: **345.06**
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1. The following are situations where the CO monitor will be used:
 - a. Smoke inhalation in a fire scene patient.
 - b. Firefighter/Rescuer rehab
 - i. Especially at the scene of the fire or chemical incident involving methylene chloride.
 - c. Patients removed from confined space areas around a combustion reaction (e.g. gas stoves, furnaces, propane heaters, generators, fireplaces, charcoal or gas grills, gasoline or diesel engines, etc.).
 - d. Any exposure or suspected exposure to methylene chloride.
 - e. Any patients with symptoms suggestive of CO poisoning.
 - f. Any patients present at an incident with an active CO alarm.
 - g. At the discretion of the Medic-in-Charge, for any other situation in which the use of CO monitoring may be off potential benefit to the patient.
2. Any patient with SpCO levels exceeding 3% should be evaluated for CO exposure.
3. Any patient with signs or symptoms of CO exposure **OR** SpCO > 12% should be treated with 100% **oxygen** (to include HCFR ALS airway management) and be transported to a medical facility.
4. QA Points:
 - a. Patients with serious signs or symptoms of CO exposure or SpCO > 25% should be considered to have had a severe exposure.
 - b. ANY elevated CO level in a pregnant patient is dangerous and significant.
 - c. Patients who are smokers may have a higher baseline, but will rarely reach the level of SpCO 10%.

Section: **ALS Protocols**
Subject: **CARDIAC PACING (TRANSCUTANEOUS CARDIAC PACING, TCP)**
Section #: **345.07**
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1. Connect EKG electrodes to the EKG cable and apply to the patient.
 - a. In order to minimize artifact, apply electrodes to appropriate areas on the patient's torso.
2. Select the lead (I, II, or III) that demonstrates the most prominent R-wave with a minimum of electrical noise and motion artifact.
 - a. The monitor/defibrillator/pacer monitors the intrinsic EKG rhythm and inhibits the pacing stimulus when the intrinsic rate of the patient's heart is greater than that set on the machine.
 - b. If the EKG leads are detached or if the machine cannot sense a QRS complex, it will not pace.
3. Connect the pacing cable.
4. Connect pacing electrodes to the pacing cable, remove the protective plastic from the electrode, and position the pacing electrodes on the patient.
5. The patient's skin should be clean and dry.
 - a. DO NOT use alcohol or Betadine® to prepare the skin as this may cause arcing and increased patient discomfort.
6. Avoid placement over a bony prominence such as the scapula or spine.
7. Start at 20 millamps and increase in 20 millamp increments until mechanical capture is obtained as evidenced by a pulse.
8. Once you achieve mechanical capture DO NOT reduce the current.
 - a. On patients with large breasts it may be necessary to position the black anterior (-) electrode slightly more medial.
 - b. In very obese patients, you should attempt to place the electrodes on a flat area of skin if possible.
 - i. If fatty rolls preclude good adherence, spread the tissue apart.
 - c. In thin patients, follow the contour of the ribs and the intercostal spaces when pressing the electrodes in place.
 - d. Use pediatric pacing pads when appropriate.

Section: **ALS Protocols**
Subject: **CHEST DECOMPRESSION (NEEDLE THORACOSTOMY)**
Section #: **345.08**
Issue Date: **March 21, 2011**
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1. Procedure:

- a. Use standard body fluid isolation techniques with sterile gloves.
- b. Identify the intended puncture site:
 - i. The second (2nd) intercostal space at the mid-clavicular line, OR
 - ii. The fifth (5th) intercostal space in the mid-axillary line.
 - iii. For pediatric patients, ONLY the mid-clavicular site will be use.
- c. Prep the site:
 - i. Clean, if necessary, with alcohol or sterile water.
 - ii. Use povidone iodine swab in an expanding circular motion to cover an area about 4 – 6 inches wide.
- d. Insert the needle / catheter at the top of the rib because the artery and nerve run along the bottom of the rib.
- e. Advance the needle / catheter carefully; a "pop" and rush of air indicates entry into pleural space filled with air under tension.
- f. Advance slightly.
- g. Remove needle from the catheter.
- h. Secure the catheter.
- i. Document thoroughly in the ePCR
- j. Notify the QA Officer via email once you return to quarters.

2. QA Points:

- a. Avoid Z-tracking, which may pinch and collapse the catheter.
- b. If first tap is unsuccessful, or if ventilation becomes more difficult and signs and symptoms of tension pneumothorax reappear consider inserting a second catheter adjacent to the first.

Section: **ALS Protocols**
Subject: **CRICOHYROTOMY – QUICK TRACH®**
Section #: **345.09**
Issue Date: **March 21, 2011**
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1. This device and procedure will only be performed by paramedics thoroughly trained in its use and certified by the HCFR Medical Director.
2. Cricothyrotomy procedures will only be used when all other means of obtaining an airway have been exhausted.
3. Quick Trach® sizing:
 - a. The adult size (4mm) shall be used for all patients of an adult size or who appear to weigh \geq 45 kg (~100 lbs).
 - b. The pediatric size (2mm) shall be used on all patients who appear to weigh $<$ 45 kg (~100 lbs).
 - c. Consult with Medic-1 if unsure the patient is large enough for the device.
4. Technique for insertion:
 - a. Place the patient in a supine position and, if there is not potential for spinal injury, hyperextend the neck.
 - b. Don sterile gloves and clean the area with alcohol and Betadine®.
 - c. Locate the cricothyroid membrane, THIS IS YOUR PUNCTURE SITE.
 - d. Firmly hold the device and puncture the cricothyroid membrane at a 90° angle.
 - e. Check the entry of the needle into the trachea by aspirating air through the syringe.
 - i. If air is present, the needle is within the trachea.
 - f. Now change the angle of insertion to ~ 60° (needle tip towards the feet) and advance the device forward into the trachea to the level of the stopper.
 - g. Remove the stopper, hold the needle and syringe firmly, and slide the cannula along the needle until the flange rests on the neck.
 - h. Carefully remove the needle and syringe and secure the cannula to the neck with tape.
 - i. Apply the connecting tube to the 15 mm connection and connect the other end to the BVM.
 - j. Auscultate breath sounds.
 - k. Observe for change in ETCO₂ with ventilations.
 - l. Document thoroughly the circumstances in the ePCR.
5. Voicemail the Quality Management Chief for ALL uses of the device.
 - a. Additionally, notify the HCFR Medical Director for any difficulties in the application of this device.
6. QA points:
 - a. DO NOT use the QuickTrach® if you are ABLE to ventilate the patient by any other ALS or BLS airway technique.
 - b. The surgical approach is no longer an approved method of cricothyroidotomy for HCFR personnel.

Section: **ALS Protocols**
Subject: **INTERFACILITY TRANSPORTS – STANDARDS OF CARE**
Section #: **345.10**
Issue Date: **March 21, 2011**
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1. Initial Patient Contact

- a. Minimum equipment requirements (to be taken to the bedside):
 - i. Sufficient number of IV pumps
 - ii. Monitor/defibrillator
 - iii. Bag-valve-mask (BVM)
 - iv. Sufficient oxygen supply for the ventilator
 - v. Suction
- b. Upon arrival at the originating facility, the Medic-in-Charge will request a thorough report concerning the patient's condition.
- c. When assessing the patient:
 - i. Note isolation precautions
 - ii. Obtain current set of vitals
 - iii. Assess the ABCs and LOC
 - iv. Perform a thorough physical examination
 - v. Check all IVs, drains, sheaths, and any other man-made devices attached or inserted into the patient.
 - vi. Glucose level check for all unresponsive patients
 - vii. Note ABGs for all ventilated patients (must be <6 hours old)
- d. As soon as it is determined that two (2) paramedics will be required in the patient compartment, contact EDC and request a driver.
- e. If necessary, the Medic-in-Charge will call the Medic-1 physician prior to leaving the originating facility and present a thorough report concerning the patient's status.

2. Ongoing Patient Care

- a. Assuming care of the patient:
 - i. The patient becomes the responsibility of HCFR once the patient has left the unit of origin.
 - ii. When treatment becomes necessary during transport, HCFR policies and protocols or verbal Medic-1 orders shall be followed.
 - iii. It is the policy of some hospitals that one or more of their staff members accompany the patient during transport.
 1. All HCFR personnel are expected to relate professionally with the hospital staff and consider their input on all patient care issues.
 2. However; since the patient is at this time in the care of HCFR, the Medic-1 physician will resolve all differences.
 3. Anytime a physician accompanies the patient, they shall assume patient care responsibility, and HCFR personnel will assist the physician and follow orders within the scope of their training
- b. Intravenous Drips:
If there is any question regarding a drip that the patient is receiving, the Medic-in-Charge will contact Medic-1.
- c. Chest Pain Patient:
 - i. If a patient develops chest pain during the transport to the receiving facility, you may follow the **HCFR CHEST PAIN protocol**.

Section: **ALS Protocols**
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- ii. If the patient is currently on IV NTG, follow the same dosing regimen as the HCFR CHEST PAIN protocol describes for IV NTG.
- d. Epiglottitis and Airway Obstruction:
 - i. No patient with suspected epiglottitis or airway obstruction will be transported interfacility without definitive airway management in place prior to departure.

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Subject: **INTRAOSSEOUS INFUSIONS**

Section #: **345.11**

Issue Date: **March 21, 2011**

Revision Date: **December 1, 2017**

Approved By: *Michael Lozano*

Michael Lozano, Jr., M.D., HCFR Medical Director

1. Intraosseous (IO) access shall only be performed by individuals thoroughly trained in the technique.
 - a. Approved site locations:
 - i. Tibial Tuberosity (Adults and Pediatrics)
 - ii. Humeral Head (Adults only)
 - b. Approved needle sizes
 - i. Yellow – Humeral Head or Tibial Tuberosity (with presence of excessive tissue at site)
 - ii. Blue – Tibial Tuberosity
 - iii. Pink – Tibial Tuberosity (ages <1 month)
2. Two (2) peripheral IV attempts must be made and documented prior to obtaining intraosseous access.
3. All drugs and solutions authorized for IV administration may be given by the intraosseous route.
4. **INDICATIONS:**
 - a. Critical or unstable patients
 - i. Intravenous fluids or medications needed and a peripheral IV cannot be established in two (2) attempts.
5. **CONTRAINdications**
 - a. Fracture of the tibia or femur (consider the contralateral side).
 - b. Previous orthopedic procedures, e.g. intraosseous within last 24 hours, knee replacement (consider the contralateral side).
 - c. Pre-existing medical condition (tumor near site or peripheral vascular disease).
 - d. Infection at the insertion site (consider the contralateral side).
 - e. Inability to locate landmarks (significant edema).
 - f. Excessive tissue at the insertion site.
 - i. At least one black depth marker must be visible outside of skin before driver activation
 - ii. If excessive tissue is present at insertion site, consider using the next larger needle size
6. **CONSIDERATIONS**
 - a. Pain:
 - i. Insertion of intraosseous device in conscious patients causes mild to moderate discomfort and is usually no more painful than a large bore IV.
 - ii. Intraosseous infusions may cause discomfort for conscious patients.
 1. Prior to intraosseous bolus or flush on an alert patient, **SLOWLY** administer 0.5 mg/kg up to a maximum of 40 mg of 2% **lidocaine** (preservative free; 20 mg/mL) through the intraosseous hub. May be repeated **once** at half dose in 15 minutes if necessary to control pain.
 - b. Flow rates:
 - i. Due to the anatomy of the intraosseous space, the flow rates will be slower than those achieved with IV access.
 1. Ensure the administration of a 10 mL rapid bolus (flush) of NS with a syringe.
 2. Use a pressure bag or pump for continuous infusions.

Section: **ALS Protocols**
Subject: **INTRAVENOUS THERAPY**
Section #: **345.12**
Issue Date: **March 21, 2011**
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1. All patients who have the potential need for IV fluid or drug therapy will have an IV catheter placed.
2. It is preferred that you use a "reseal with saline flush" in place of an IV fluid bag and administration set to obtain and preserve venous access for patients whose condition does not require fluids or drug therapy at the present time.
3. Critical patients or those with the potential to require treatment interventions should not have a "reseal".
4. Peripheral catheter size will be determined by situation and anatomy. Large bore catheters should be used on patients who may become hypotensive either from our drug therapy (e.g.NTG) or from the patient's injuries or illness.
5. The following locations are authorized:
 - a. Any peripheral IV placement
 - b. External jugular in the adult patient.
 - c. External jugular in pediatric patient > 3 years of age in the presence of cardiac arrest.
 - d. Fluid Challenge can be done on any patient exhibiting signs or symptoms of hypovolemic shock.
 - e. 20 ml/kg wide open bolus, and repeated PRN.
 - i. The end point for fluid replacement shall be the presence of peripheral pulses, not the blood pressure.
6. IV Drip - Medication Guidelines:
 - a. Label all medications that are being infused with the medication added stickers and fill out completely.
7. IV Reseals:
 - a. The reseal luer adapter can be used for venous access in patients who do not meet specified guidelines for:
 - i. Intravenous fluid replacement.
 - ii. Medication administration.
8. QA Point:
 - a. Be aware that patients with low cardiac ejection fractions can go into "flash pulmonary edema".

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Subject: **LEFT VENTRICULAR -ASSIST DEVICES (LVAD)**
Section #: **345.13**
Issue Date: **April 1, 2015**
Revision Date:
Approved By:  **Michael Lozano, Jr., M.D., FACEP** HCFR Medical Director

1. Basic ALS Treatment If available, continuous wave capnography monitoring should be used to assess ventilation and perfusion
2. Oxygenation
 - a. If the oxygen saturation is less than 94%, start with **oxygen** at 2 L/min via nasal cannula and titrate to maintain SaO₂ between 94% and 96%^{1 2 3}
3. Treat non-LVAD associated conditions in accordance with standard HCFR protocols
4. Initial LVAD assessment
 - a. Determine type of device
 - b. Assess alarms
 - c. Contact the patient's LVAD coordinator
5. Additional treatment depends upon the patient's level of responsiveness
 - a. If responsive
 - i. Transport to appropriate destination as directed by the LVAD coordinator
 - b. If unresponsive
 - i. Determine blood glucose level and treat per **HCFR HYPOGLYCEMIA** protocol if indicated
 - ii. Change Batteries
 - iii. Reconnect cables
 - iv. Auscultate for pump sounds
 - v. If there are signs of hypoperfusion, administer **normal saline** bolus 250 mL IV/IO
 - vi. Monitor capnography and assist ventilation as indicated (**HCFR AIRWAY** protocol)
 - vii. After the above assessments are completed, consider CPR if:
 1. Patient is completely unresponsive, apneic, and has blood glucose > 60 mg/dL
 2. Non-functioning LVAD (no pump sounds)
 3. All cables are connected and no alarms are sounding
 4. Follow HCFR cardiac arrest protocols
 5. The presence of an LVAD is NOT a contraindication for defibrillation or advanced life support medications.
6. Transport
 - a. All LVAD patients are to be transported by ALS
 - b. For any condition that is suspected to be related to the LVAD, transport to the patient's requested LVAD Center if it is in Hillsborough, Pinellas, Polk, Pasco or Manatee counties. If outside of the immediate area, transport to the closest LVAD center within our response area.

¹ McNulty P.H., King N., Scott S., et al; Effects of supplemental oxygen administration on coronary blood flow in patients undergoing cardiac catheterization. Am J Physiol Heart Circ Physiol. 2005; 288:H1057-H1062.

² Stub D. A randomized controlled trial of oxygen therapy in acute ST-segment elevation myocardial infarction: the Air Versus Oxygen in Myocardial Infarction (AVOID) study. Presented at: American Heart Association Scientific Sessions; November 19, 2014; Chicago, IL.

³ Cabello J.B., Burls A., Emparanza J.I., et al; Oxygen therapy for acute myocardial infarction. Cochrane Database Syst Rev. 2010;CD007160

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Subject: **LEFT VENTRICULAR –ASSIST DEVICES (LVAD)**
Section #: **345.13**
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- c. If the patient meets Trauma, STEMI or Stroke alert criteria, transport them to the appropriate receiving facility.
 - d. Always bring all available LVAD equipment to the destination emergency department with the transported patient.
7. QA Points:
- a. LVADs are surgically implanted circulatory support devices designed to assist the pumping action of the heart. Caring for these patients is complicated, and every effort should be made to contact the patient's primary care-giver (spouse, guardian etc.) and the LVAD coordinator early in your evaluation. If patient or caregiver does not have coordinator contact information, look on the device for a phone number.
 - b. Patients with properly functioning LVAD devices, may NOT have a detectable pulse, normal blood pressure or oxygen saturation.

Section: **ALS Protocols**
Subject: **NASOGASTRIC TUBE PLACEMENT**
Section #: **345.14**
Issue Date: **March 21, 2011**
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1. Insertion of a nasogastric (NG) tube should be considered as an adjunct to airway control and ventilation.
2. A nasogastric tube may be inserted on cardiac arrest patient whenever possible.
 - a. This can help prevent aspiration and increase tidal volume during ventilations.
 - b. This is a mandatory procedure in all intubated pediatric patients.
3. Select the proper size nasogastric tube for placement.
 - a. To ensure a proper size NG tube in the pediatric patient, refer to the Broselow® tape.
 - b. Proper sizing in the adult patient will consist of nare size and patient body weight.
4. To approximate the proper length of insertion for the NG tube:
 - a. Place the NG tube distal tip at the xiphoid process, run it up the sternum, around the ear, and back down to the tip of the nose.
 - b. Mark this with tape or fingers prior to insertion to avoid placing too much of the tube in the stomach.
 - c. This technique will work for both adult and pediatric patients.
5. To be assured that the NG tube is properly placed:
 - a. Use a syringe to insert air into the tube and auscultate over the epigastrium.
 - b. The sound of air bubbling will confirm placement.
6. Secure the NG tube to the bridge of the nose with tape.
7. Document in the ePCR the proper placement of the NG tube and that it was secured in place.

Section: **ALS Protocols**
Subject: **NEBULIZED DRUG ADMINISTRATION**
Section #: **345.15**
Issue Date: **March 21, 2011**
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1. Proper technique in the administration of nebulized bronchodilators is crucial to its successful delivery into the lower airways.
2. A patient's cardiac rhythm shall be monitored at all times during nebulized drug administration.
3. Use the following procedure to administer the drug:
 - a. Pour contents into the nebulizer reservoir.
 - b. Assemble the unit including the mouth piece and oxygen supply tubing.
 - c. Ensure that the unit is held upright to facilitate proper updraft and nebulization of the medication.
 - d. Connect to an oxygen source and adjust the flow rate until vapor is coming out of the unit.
 - e. Have the patient sit upright and keep their lips closed around the mouthpiece.
 - i. Have them breathe the medication in and out as slowly and deeply as possible.
 - ii. Make sure the patient keeps their lips sealed around the mouthpiece.
 - f. To assist in effectively administering the drug, the patient should be coached in deep smooth slow breaths.
4. Nebulizer treatments can also be administered by in-line nebulizer via BVM or ETT.

Section: **ALS Protocols**
Subject: **ORGANOPHOSPHATES AND MILITARY NERVE AGENTS**
Section #: **345.16**
Issue Date: **March 21, 2011**
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1. General:

- a. Nerve agents are the most toxic of the known chemical warfare agents.
 - i. They are chemically similar to organophosphate pesticides.
 - ii. Both exert their biological effects by inhibiting the neurotransmitter acetylcholinesterase.
 1. The result is a buildup of acetylcholinesterase in the nervous system of the body.
 2. This excess of neurotransmitter produces over stimulation and hyperactivity in muscles, glands, and brain tissues.
- b. The three (3) main routes of intoxication are:
 - i. Inhalation (lungs).
 - ii. Absorption (dermis, eyes, mucous membranes)
 - iii. Ingestion (alimentary canal)
- c. Rapidly fatal systemic effects may occur.
- d. Most organophosphates are volatile liquids that produce vapor with relative ease.
- e. **Caution:**
 - i. Persons whose skin or clothing is contaminated with nerve agent or pesticides can contaminate rescuers by direct contact or through the off-gassing of vapor.
 - ii. Persons whose skin is exposed only to nerve agent vapor have no direct risk of secondary contamination; however, their clothing can trap vapor and this CAN affect the rescuer.

2. Signs and Symptoms:

- a. The signs and symptoms of organophosphate/nerve agent exposure differ between the central and peripheral nervous systems.
 - i. In the peripheral nervous system the net effect depends upon the number of receptor sites (either nicotinic or muscarinic) that are affected.
 1. The muscarinic receptor effects can be summarized by the mnemonics "SLUDGE" or "DUMBELS".
 2. The nicotinic receptor effects can be summarized by the mnemonic "MTWHF".

Peripheral Nervous System Effects of Organophosphates / Nerve Agents		
Muscarinic		Nicotinic
Salivation	Diarrhea	Mydriasis (pupil dilation)
Lacration	Urination	Tachycardia
Urination	Miosis (pupil constriction)	Weakness
Defecation	Bradycardia / Bronchorrhea / Bronchospasm	Hypertension / Hyperglycemia
Gastric irritation	Emesis	Fasciculations
Emesis	Lacration	
	Salivation / Secretion / Sweating	

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- ii. The central nervous system effects can be recalled by the mnemonic "C3" (Confusion, Convulsions, and Coma).
- b. The initial effects seen in a victim differ depending on whether exposure was to a vapor or to a liquid and what the route of exposure was.
 - i. Inhalation (pulmonary): Absorption by inhalation begins within seconds. Rhinorrhea and tightness in the throat or chest begin within seconds to minutes after vapor exposure. Nerve agent vapors are heavier than air. Odor does not provide adequate warning of detection.
 - ii. Topical (skin and mucus membranes): Nerve agent liquids are readily absorbed from the skin and eyes.
 - 1. Vapors are not absorbed through the skin except at very high concentrations.
 - 2. As little as one drop of VX on the skin can be fatal and 1.0 – 10 mL of GA, GB, or GD can be fatal.
 - iii. Ingestion (gastrointestinal): Organophosphates / Nerve Agents are readily absorbed from the GI tract.
 - 1. Ingestion of nerve agents is expected to be relatively rare compared to inhalation or absorption.

3. Treatment:

- a. Rapidly remove the patient from the contaminated area.
- b. Using soap and water (or water alone if no soap is available) to perform field expedient decontamination in accordance with the HCFR Decontamination Plan.
- c. Standard ALS and BLS should be initiated as per HCFR protocol after the patient has been decontaminated.
- d. Atropine and pralidoxime chloride (2-PAM) are antidotes for nerve agent toxicity; however, pralidoxime must be administered within minutes to a few hours following exposure (depending on the specific agent) to be effective. Treatment consists of supportive measures and repeated administration of antidotes.
- e. If the military autoinjectors are available, they provide the best way to administer the antidotes.
 - i. The Mark 1 (NAAK) Kit contains two autoinjectors. One delivers 2.0 mg atropine and the other 600 mg 2-PAM.
 - ii. The ATNAA (Antidote Treatment – Nerve Agent, Auto-Injector) Kit consists of a single needle autoinjector. It delivers 2.1 mg of atropine and 600 mg of 2-PAM.
- f. Specific treatment for organophosphate/nerve agent exposure depends upon the symptoms present, the degree of disability, and the route of exposure.
 - i. Inhalation exposure:
 - 1. Mild: Patient is ambulatory, miosis, eye pain, dim or blurred vision, conjunctival injection, rhinorrhea, mild dyspnea.
 - 2. Moderate: Usually seated or prostrate on the ground, moderate to marked dyspnea, coughing, wheezing, nausea, vomiting, fasciculations, muscle weakness
 - 3. Severe: The patient is in extremis, manifested by loss of consciousness, seizures, flaccid paralysis, respiratory arrest, or cardiopulmonary arrest.

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4. QA Points:

- a. By knowing the anatomic location of nicotinic and muscarinic receptors, you will better understand the symptoms produced, and the importance of combination therapy with both atropine and 2-PAM (pralidoxime)*.
- b. Autoinjectors must never be used as a prophylaxis for exposure because in and of themselves, they can be incapacitating.

System	Peripheral Nervous System				Neuroendocrine	Central Nervous System
Location	Autonomic Ganglia		Neuromuscular junction	Parasympathetic junctions (e.g. glands, smooth muscle, etc.)	Adrenal medulla	Brain and spinal cord
	Sympathetic	Parasympathetic				
Receptor	Nicotinic	Nicotinic	Nicotinic	Muscarinic	Nicotinic	Muscarinic and Nicotinic

* Adapted from University of Arizona Emergency Medicine Research Center, and American Academy of Clinical Toxicology. AHLS: Advanced HAZMAT Life Support. (3rd edition) 2003.

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Treatment Guidelines for Organophosphate / Nerve Agent Exposure [†]				
Patient Age	Initial Medications, Doses, and Routes of Administration ¹			Additional Therapy
	Mild Symptoms	Moderate Symptoms	Severe Symptoms	
Adults (18-65 yr)	Atropine 2.0 mg IM 2-PAM 600 mg IM ²	Atropine 4.0 mg IM 2-PAM 1200 mg IM ³	Atropine 6.0 mg IM 2-PAM 1800 mg IM ⁴	Assisted ventilation should be started after antidote administration for severe cases. Repeat atropine dose q 5 – 10 min until symptoms have remitted, secretions diminish, or airway resistance decreases.
Adults (> 65 yr)	Atropine 1.0 mg IM 2-PAM 10 mg / kg IM (max dose 600 mg)		Atropine 4.0 mg IM 2-PAM 25 mg/kg IM (max dose 1500 mg)	
Pediatric (11-17 yr)	Atropine 2.0 mg IM 2-PAM 15 mg / kg IM (max dose 900 mg)		Atropine 4.0 mg IM 2-PAM 25 mg/kg IM (max dose 1500 mg)	
Pediatric (2-10 yr)	Atropine 1 mg IM 2-PAM 15 mg/kg IM (max dose 900 mg)		Atropine 2 mg IM 2-PAM 25 mg/kg IM (max dose 1500 mg)	
Pediatric (< 2 yr)	Atropine 0.05 mg/kg IM 2-PAM 15 mg/kg IM (max dose 900 mg)		Atropine 0.1 mg/kg IM 2-PAM 25 mg/kg IM (max dose 1500 mg)	

1. IM is the preferred route when the number of patients exceeds the number of paramedics available.
2. May treat HCFR and other public safety personnel who fall into this category with the contents of one (1) Mark I Antidote kit or one (1).ATNAA kit
3. May treat HCFR and other public safety personnel who fall into this category with the contents of two (2) Mark I Antidote kits or two (2).ATNAA kits
4. May treat HCFR and other public safety personnel who fall into this category with the contents of three (3) Mark I Antidote kits or three (3).ATNAA kits.
5. Monitor closely for the cardiac effects of atropine and the hypertensive effects of 2-PAM.

[†] Adapted from Managing Hazardous Material Incidents (MHMI). Volumes III. Agency for Toxic Substances and Disease Registry (ATSDR). 2001. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service and University of Arizona Emergency Medicine Research Center, and American Academy of Clinical Toxicology. AHLS: Advanced HAZMAT Life Support. (3rd edition) 2003.

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Mass CASUALTY TRIAGE GUIDELINES FOR ORGANOPHOSPHATE EXPOSURE [‡]		
Category (Priority)	Effects	Clinical Signs
Immediate (RED)	Unconscious talking but not walking; severe or moderate to severe effects in two or more body systems (e.g. respiratory, GI, muscular, CNS)	Seizing or post-ictal; respiratory distress or apneic; recent cardiac arrest
Delayed (YELLOW)	Recovering from agent exposure or antidote	Diminished secretions, improved respirations
Minimal (GREEN)	Walking and talking	Miosis, rhinorrhea, mild to moderate dyspnea
Expectant (BLACK)	Unconscious	Cardiopulmonary arrest of long duration

1. Immediate: casualties who require lifesaving care within a short time, when that care is available and is of short duration. This care may be a procedure that can be done within minutes at an emergency treatment station (e.g. relief of an airway obstruction, administering antidotes).
2. Delayed: casualties with severe injuries who are in need of major or prolonged surgery or other care and who will require hospitalization, but delay of this care will not adversely affect the outcome of the injury (e.g. fixation of a stable fracture).
3. Minimal: casualties who have minor injuries, can be helped by non-physician medical personnel, and will not likely require hospitalization
4. Expectant: casualties with severe life threatening injuries who would not survive even with optimal medical care or casualties whose injuries are so severe that their chance of survival does not justify expenditure of limited resources. As circumstances permit, casualties in this category may be reexamined and possibly be re-triaged to a higher category.

[‡] Managing Hazardous Material Incidents (MHMI). Volumes III. Agency for Toxic Substances and Disease Registry (ATSDR). 2001. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Section: **ALS Protocols**
Subject: **PAIN MANAGEMENT**
Section #: **345.17**
Issue Date: **March 21, 2011**
Revision Date: **December 1, 2017**
Approved By:

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1. Intent:
 - a. Whereas many patients treated by HCFR personnel will be complaining of varying degrees of pain, it is desirable to diminish the degree of suffering that a patient experiences.
 - b. The intent of this protocol is to provide a standing order for the treatment of severe pain when the source of the pain is clear.
 - i. Examples of painful conditions that may be addressed by this protocol include, but are not limited to:
 1. Isolated orthopedic injuries
 2. Burns
 3. Kidney stones
 4. Muscle spasms
2. Contraindications:
 - a. Altered mental status (due to any internal or external cause)
 - b. Hypotension (Adult) – defined as systolic BP < 100 mmHg
 - c. Hypotension (Pediatric) – refer to age appropriate BP chart
 - d. Hypoxia, defined as SpO₂ of <95%
 - e. Head Injury
 - f. Undiagnosed abdominal Pain (contact Medic-1 for orders)
 - g. New onset back or flank pain in patients > 65 years of age
 - i. This is due to a concern for masking a potential acute abdominal aneurysm
 - ii. Contact Medic 1 for kidney stone pain management for patients \geq 65 years of age.
3. Standards of Care:
 - a. Standard ALS/BLS supportive care
 - b. Reliable oximetry
 - c. The narcotic antidote, **naloxone** (0.1 mg/kg IV, IM, IN or SQ) must be quickly and readily available when using this protocol.
 - d. Parental consent is required, if available, before treating pediatric patients with narcotics
 - e. For medication associated nausea and vomiting, follow the **HCFR NAUSEA/VOMITING** protocol.
 - i. Prophylactic administration of ondansetron is **not** authorized under this or any protocol
4. Treatments:
 - a. Basic ALS Treatments.
 - i. Document the patient's perception of their pain severity on a scale from 0 – 10 before, during and post medication administration
 1. A visual analog scale may be appropriate for pediatric patients and those for whom a 0 – 10 scale is not feasible (i.e. language barrier).
 - ii. Document vital signs, mental status, and drug allergies prior to medication administration. Repeat and document vital signs and mental status again post medication administration.
 - iii. Document provocation, quality, region, severity, and timing (PQRST) for any patient presenting with a primary complaint of pain, not just those for given pain management measures.
 - b. Inhalational analgesia and anxiolytic agent (if available)
 - i. **Nitrous oxide:** (if available) by self-administered patient inhalation
 - ii. This can be used in all age groups

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- c. Analgesia agents: (use one or the other)
 - i. **Fentanyl:** (for normal to high BP; contraindicated if hypotensive)
 - 1. Adults: Initial dose of 100 mcg IV/IM/IN, and then 50 mcg IV/IM/IN as needed q5 minutes to a maximum dose 350 mcg.
 - 2. Pediatrics: Initial dose of 1 mcg/kg IV/IM/IN, and then 0.5 mcg/kg IV/IM/IN as needed q5 minutes to a maximum of 3.5 mcg/kg.
 - ii. **Morphine:** (for normal to high BP; contraindicated if hypotensive)
 - 1. Adults: 2 mg IV/IM/SQ, and then as needed q5 minutes to a maximum of 20 mg.
 - 2. Pediatrics: 0.1 mg/kg IV/IM/SQ (maximum 2 mg), and then as needed q5 minutes to a maximum of 20 mg.
 - d. Adjunctive agents (if needed)
 - i. **Midazolam:** (for anxiety with normal to high BP)
 - 1. Adults: 2.5 mg IV/IM/IN, and then as needed q5 min to a maximum of 10 mg.
 - 2. Pediatrics: 0.025 mg/kg (max dose of 2.5 mg) IV/IM/IN, and then as needed q5 min to a maximum of 10 mg.
 - 3. Geriatrics: 1.25 mg IV/IM/IN, and then as needed q5 min to a maximum of 5 mg.
5. Contact Medic-1:
- a. For additional doses of pain medications above the listed total maximum dosages
 - b. If source of pain is unclear or if there are extenuating or unusual circumstances about the call
 - c. For advice on situations beyond this protocol

Section: **ALS Protocols**
Subject: **PATIENT ASSESSMENT**
Section #: **345.18**
Issue Date: **March 21, 2011**
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1. Patient assessment will always begin with an assessment of the scene ("Size-up") and the creation of a "General Impression" of the patient as they are approached.
 - a. **"Scene Size-up"**
 - i. This is what the responder sees, hears, smells, and senses as it pertains to scene safety and operations.
 - ii. At a minimum, complete these steps when performing a size-up:
 1. Identify and secure any physical hazards to personnel, bystanders, or the patient.
 2. Identify a means of egress for safety zone incase the scene should unexpectedly deteriorate.
 3. Determine the ETA(s) of any other responding apparatus.
 4. Determine which level of body substance isolation is indicated.
 5. Determine if there is a need for additional resources and request them from EDC if so indicated.
 - b. **"General Impression"**
 - i. This is your assessment based up what you see, hear, smell, and senses when first approaching the patient.
 - ii. At a minimum, answer the following questions when forming a general impression:
 1. What is the appearance of the patient (do they look serious?).
 2. Are there any respiratory problems indicated? (e.g. labored breathing, tachypnea, poor skin color)
 3. Is there a mechanism of injury or environmental causes for the medical condition:
 - a. Is there a traumatic mechanism of injury and what types of injuries does it suggest.
 - i. Is there a need for spinal motion restriction (SMR)?
 - b. Is there the possibility of a chemical or toxic exposure?
 - iii. Many times a priority/ALS patient can be determined based upon the general impression.
2. Once the patient has been reached, the assessment shall continue by conducting a "Primary Assessment".
 - a. **"Primary Assessment"**
 - i. The primary assessment of the patient is designed to identify any immediate threat to life and to quickly determine if the patient needs any critical interventions.
 - ii. The priorities within the primary assessment shall be:
 1. Circulation
 2. Airway
 3. Breathing
 4. Disability
 5. Expose
 - iii. **"Circulation"**
 1. Assessment of circulation during the initial assessment is simply finding where the pulses are located and the characteristics of that pulse.
 - iv. **"Airway and Breathing"**
 1. Quickly assess the patient for stability of the airway and the quality of the respiratory effort.

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2. If the airway is not stable:
 - a. Open the airway manually with the appropriate method (head tilt/chin lift or modified jaw thrust).
 - b. If the patient is not breathing or if the tidal volume is inadequate:
 - i. Begin assisted ventilatory support with a bag-valve mask device (BVM).
 - ii. Use an appropriate airway adjunct, endotracheal intubation, or rescue airway as indicated.
3. Refer to the **HCFR AIRWAY** protocol for specific directions.
- v. *"Disability (Mental Status)"*
 1. Quickly assess the patient's level of consciousness (LOC) using the **AVPU** method.
 - a. Alert – Obviously awake and aware; reacting normally to environmental conditions.
 - b. Verbal – Responds only to verbal stimuli.
 - c. Pain – Responds only to painful stimuli.
 - d. Unresponsive – Does not respond to any stimuli.
 2. The Glasgow Coma Score can be used later for a more detailed assessment of the LOC, but for the initial assessment the AVPU is all that is needed.
- vi. *"Expose"*
 1. Expose the body, as appropriate, to identify any immediate life threats.
 2. In trauma this would entail searching for hidden areas of bleeding and other critical traumatic injuries.
 3. With a medical patient this may be locating a medic alert bracelet or other item identifying what medical conditions the patient may suffer from.
- vii. At this point, if it has not already been determined, the practitioner should make a decision identifying if the patient is a "Priority/ALS" patient.
 1. A priority/ALS patient is one who will need rapid transport to the hospital and/or one who needs, or will benefit from, Paramedic level care while en route.
 2. Remember that logistical concerns may play a role in the ALS/BLS transport decision.
 - a. If a patient falls into the category of an ALS patient and an ALS providing unit (Rescue/Engine) is not available within a reasonable time frame (i.e. the closest ALS provider is significantly further away than the closest appropriate receiving facility) than transport by a BLS unit that is READY on scene may be appropriate.
 - b. Also, transport via an on scene BLS unit with an HCFR Paramedic from Engine Company attending may be appropriate if ALS transport will be significantly delayed.
 - c. A thorough knowledge of hospital locations and capabilities as well as the ETA of the responding ALS provider is essential to being able to make a competent transport decision.

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3. Once the primary assessment has been completed and initial critical interventions have been accomplished, the responder will complete a "Secondary Assessment" and repeat it throughout the duration of care as dictated by patient condition.
 - a. **Secondary Assessment**
 - i. The secondary assessment shall include vital signs, a complete head-to-evaluation (appropriate to the type of patient encountered), and a focused patient history.
 - ii. **Vital signs** shall include all of the following:
 1. Skin temperature and condition (warm, cool, hot, dry, moist, etc.)
 2. Pulse rate, regularity, and strength
 3. Respiratory rate, tidal volume, and lung sounds
 4. Blood pressure
 5. EKG, ETCO₂, SpO₂, and CO monitoring as appropriate
 6. Glasgow Coma Score (GCS)
 7. Pupil response
 8. Blood sugar level when indicated by the patient's condition
 - iii. The **head-to-toe** exam shall:
 1. Be a complete and thorough exam of the patient to look for any injury or sign that may have gone previously unnoticed.
 - iv. **Focused patient history:** (SAMPLE)
 1. Signs and symptoms
 2. Allergies
 3. Medications
 4. Pertinent past medical history
 5. Last oral intake
 6. Events leading up to the injury or illness
4. After completion of the focused assessment, all patient's will receive an ongoing assessment until such time the patient is transferred to an appropriate level of care for transport to or at an appropriate receiving facility.
 - a. The ongoing assessment should be a repeat of the primary and secondary assessments, a check of any intervention or ongoing treatment, and an observation of any developing trends in the patient condition.
5. All information gathered and interventions performed throughout patient care shall be thoroughly documented in the patient's treatment record.

Section: **ALS Protocols**
Subject: **RAPID SEQUENCE INDUCTION (RSI)**
Section #: **345.19**
Issue Date: **March 21, 2011**
Revision Date: **December 1, 2017**
Approved By: *Michael Lozano*

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1. All patients undergoing RSI by HCFR personnel must have the Fast Patches applied and be monitored in "Paddles" mode before the induction medications are pushed.
2. Indications:
 - a. All medical and trauma patients who, according to the Charge Medic's judgment, require an airway to be established are to be intubated following the current **HCFR AIRWAY** protocol.
 - b. If the qualified paramedic cannot accomplish intubation through conventional techniques and there are no contraindications for paralytic administration, then RSI drugs may be used.
 - c. RSI will only be administered for patients older than 5 years of age unless authorization is concurrently received from Medic-1.
3. Preparation:
 - a. Basic ALS Treatments.
 - b. Pre-oxygenate with high flow **oxygen** via BVM or NRBPM.
 - c. Confirm that you can effectively ventilate the patient with BVM.
 - d. If orders are received to RSI a patient five years of age or younger (< 5 yrs.) who will be given **succinylcholine**:
 - i. Pre-treat with **atropine** 0.02 mg/kg IV (min dose = 0.1 mg, max dose = 0.5 mg).
4. Initial Sedation:
 - a. **Etomide** (preferred for patients with normal to high BP)
 - i. 0.3 mg/kg IV/IO.
-OR-
 - b. **Ketamine** (preferred for patients with severe bronchospasm, septic shock, or hypotension; can also be used in patients with MAP < 120 mmHg)
 - i. 2 mg/kg IV/IO.
5. Initial Paralysis:
 - a. To minimize the chance of aspiration, apply cricoid pressure prior to administration, and maintain it until the airway is secured.
 - b. **Succinylcholine**:
 - i. 1.5 mg/kg IV/IO over 30 seconds.
 - ii. If no response to initial dose after 60 seconds, repeat **succinylcholine** 1.0 mg/kg IV over 30 seconds.
 - iii. After a second dose of **succinylcholine**:
 1. In adults, be *prepared* to give **atropine** 0.5 mg IV/IO for bradycardia
 2. In pediatric patients, *give* **atropine** 0.02 mg/kg IV (min dose = 0.1 mg, max dose = 1.0 mg).
 - c. **Rocuronium**: (in case **succinylcholine** is unavailable or contraindicated)
 - i. 1.2 mg/kg IV/IO
6. Intubation per **HCFR AIRWAY PROTOCOL**:
 - a. Video laryngoscope (when available) will be used on all difficult airways, or after two missed attempts.
 - b. For bradycardia during intubation attempts:
 - i. Stop the intubation and ventilate using a BVM and high flow **oxygen**.

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- ii. If the patient remains bradycardic, give **atropine**:
1. Adult dose = 0.5 mg IV/IO.
 2. Pediatric dose = 0.02 mg/kg IV/IO (min dose = 0.1 mg, max dose = 0.5 mg)
- c. If intubation is unsuccessful after three (3) attempts, a rescue airway device will be placed.
- d. Cricothyrotomy procedures will ONLY be performed for the "can't intubate/can't ventilate" scenario, and will follow the appropriate HCFR protocol.
- e. Once intubation is successful, follow the current HCFR protocol for confirming tube placement and securing the endotracheal tube.
7. Post-procedural Maintenance:
- a. Sedation with: (Always do this)
 - i. **Midazolam**: (for normal to high BP)
 1. In adults give 2.5 mg IV/IO over 30 to 60 seconds to start, and then repeat q5 minutes PRN for sedation.
 2. In pediatrics, give 0.05 mg/kg IV/IO over 30 to 60 seconds to start, and then repeat q5 minutes PRN for sedation.
-OR-
 - ii. **Ketamine**: (for borderline to low BP)
 1. 1.0 mg/kg IV//IO over 30 to 60 seconds, and then 1.0 mg/kg IV//IO q5 minutes PRN for sedation.
 - b. Pain control in obvious injuries:
 - i. **Fentanyl**: (if normal to high BP)
 1. In adults, give 100 mcg IV/IO over 30 to 60 seconds to start, and then 50 mcg IV/IO over 30 to 60 seconds q5 minutes PRN for pain.
 2. In pediatrics, give 1 mcg/kg IV/IO over 30 to 60 seconds to start, and then 0.5 mcg/kg IV/IO over 30 to 60 seconds q5 minutes PRN for pain.
 - c. Paralysis with either: (at charge medic discretion when clinically indicated, **and only** after sedation)
 - i. **Vecuronium**: 0.1 mg/kg slow IV/IO over 30 to 60 seconds OR
 - ii. **Rocuronium**: 0.6 mg/kg IV/IO over 30 to 60 seconds
8. QA points:
- a. If intubation was initially achieved without RSI (i.e. in cardiac arrest), but the patient is now waking up, you can proceed directly to the Maintenance section of the protocol.
 - b. Initial steps in RSI shall always include sedation and paralysis
 - c. For maintenance, follow up paralytics are not required and should be considered when unable to achieve adequate sedation.
 - d. Bradycardia can sometimes occur following a second dose of **succinylcholine**.
 - i. The incidence and severity of bradycardia after **succinylcholine** is higher in children 5 and under, so that is why they always get a pre-treatment dose of **atropine**.
 - ii. It may happen in adults, but not frequently, so that is why you monitor adults for the development of bradycardia before giving **atropine**.
9. Documentation for RSI will include:
- a. Who performed the procedure
 - b. Indications for intubation
 - c. Tube size

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- d. Method of pre-oxygenation used and initial SpO₂
 - e. Confirmation of tube placement
 - f. Number of attempts and by whom
 - g. Depth of insertion and method of securing the ET tube
 - h. Any use of cricoid pressure (Sellick Maneuver)
 - i. Method of ventilating the patient after intubation
 - j. Cardiac rhythm strips
 - k. Note the method of tube placement confirmation after each time the patient is moved
 - l. Status of the tube at the receiving facility, breathe sounds, and SpO₂
 - m. ETCO₂ readings
10. Mandatory Notification requirements:
- a. Email the incident number for any of the below instances to assigned Quality Assurance Officer
 - i. RSI of any patient < 10 years of age
 - ii. Do not email PHI

Section: **ALS Protocols** Page 1 of 2
Subject: **RETURN OF SPONTANEOUS CIRCULATION (ROSC) IN ADULTS**
Section #: **345.20**
Issue Date: **April 17, 2015**
Revision Date: **December 1, 2017**
Approved By:  Michael Lozano, Jr., M.D., FACEP HCFR Medical Director

1. **Clinical intent:** There is increasing recognition that systematic post-cardiac arrest care after return of spontaneous circulation (ROSC) can improve the likelihood of patient survival with good quality of life. This is based in part on the publication of results of randomized controlled clinical trials as well as a description of the post-cardiac arrest syndrome. Post-cardiac arrest care has significant potential to reduce early mortality caused by hemodynamic instability and later morbidity and mortality from multi-organ failure and brain injury.¹
2. General care:
 - a. Confirm return of spontaneous circulation (ROSC).
 - b. Elevate the head of the bed 30 degrees.
 - c. Ensure an adequate airway and support breathing immediately after ROSC
 - i. It may be necessary to replace the supraglottic airway used for initial resuscitation with an endotracheal tube, although the timing may vary depending on how well the supraglottic airway is functioning and the relative security of the location where the ROSC occurred..
 - ii. For patients with assisted ventilations, provide 10 to 12 breaths per minute with a target ETCO₂ of 35-40 mmHg.
 - d. Perform a detailed neurological exam and document it in the ePCR.
 - e. Perform a 12-Lead EKG and initiate STEMI alert if criteria exists per the **HCFR CARDIAC STEM^I (ST ELEVATION MI)** protocol.
 - f. **Oxygen**
 - i. Titrate the delivery of **oxygen** to maintain SaO₂ between 94% and 96%²³
3. Targeted care:
 - a. Hemodynamic instability is common after cardiac arrest and should be treated aggressively. For hypotension (systolic blood pressure (SBP) <120 mmHg):
 - i. Administer **normal saline** 200 mL IV bolus once
 - ii. If no response, start **dopamine** at 5 mcg/kg/min IV/IO and increase by 5 mcg/kg/min q5 min to target a SBP >120 mmHg
 - b. Treat arrhythmia as directed by appropriate HCFR arrhythmia protocol.
 - c. If cardiac arrest re-occurs, refer to the appropriate HCFR protocol based on the presenting rhythm
 - d. If seizures occur, use **HCFR SEIZURES** protocol.
4. Transport:
 - a. All patients with ROSC are to be transported to the nearest PCI (Percutaneous Coronary Intervention) capable hospital

¹ Peberdy MA, Callaway CW, Neumar RW, et al. 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Part 9: Post-Cardiac Arrest Care. Circulation. 2010; 122: S768-S786

² Liu Y, Rosenthal RE, Haywood Y, Miljkovic-Lolic M, Vanderhoek JY, Fiskum G. Normoxic ventilation after cardiac arrest reduces oxidation of brain lipids and improves neurological outcome. Stroke. 1998;29:1679-1686.

³ Kuisma M, Boyd J, Voipio V, Alaspaa A, Roine RO, Rosenberg P. Comparison of 30 and the 100% inspired oxygen concentrations during early post-resuscitation period: a randomised controlled pilot study. Resuscitation. 2006;69:199-206.

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Subject: **RETURN OF SPONTANEOUS CIRCULATION (ROSC) IN ADULTS**
Section #: **345.20**
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- b. The Rescue Division maintains a list of Hospital Capabilities and it is updated any time there are changes.
5. QA Points:
- a. Ensure that the airway is secured and maintained.
 - b. Many patients with ROSC suffer from pulmonary edema secondary to a stunned myocardium. If the patient requires PEEP to keep their oxygen saturation at an acceptable level, consider changing over to a cuffed endotracheal tube. If you choose to do so, perform the procedure in a relatively secure location.
 - c. Hyperventilation or "over-bagging" the patient is common after cardiac arrest and should be avoided because of potential adverse hemodynamic effects
 - d. Although 100% oxygen may have been used during initial resuscitation, providers should titrate inspired oxygen to the lowest level required to achieve an arterial oxygen saturation of $\geq 94\%$, so as to avoid potential oxygen toxicity.

Section: **ALS Protocols**
Subject: **VAGAL MANEUVERS**
Section #: **345.21**
Issue Date: **March 21, 2011**
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1. The degree of tone in the vagus nerve determines the heart rate.
 - a. The greater the degree of vagal stimulation, the more the vagus nerve will slow the heart rate by directly inhibiting the SA node.
 - b. Vagal stimulation is a modality used in the treatment of clinically dangerous supraventricular tachycardias (SVT).
2. Carotid sinus massage is **NOT** an authorized procedure.
3. Valsalva Maneuver:
 - a. This is the least dangerous method and should be used before others are attempted.
 - b. The patient is instructed to take a deep breath and bear down, trying to turn their face red.
 - c. Alternatively, hand pressure may be exerted against the abdomen if it is not tender.
 - i. The patient is then instructed to attempt to push the hand off their abdomen by bearing down.
 - d. The breath and pressure should be held as long as possible.
 - i. The procedure may be repeated.

Section: **ALS Hazardous Materials**
Subject: **INTRODUCTION AND REFERENCE MATERIALS**
Section #: **346.01**
Issue Date: **March 21, 2011**
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1. Introduction:

- a. These protocols address the specialized treatment of patients exposed to hazardous substances.
- b. Some of the agents covered in these protocols may be used as a weapon of mass destruction in a terrorist attack.
 - i. In these instances, **scene safety and a need to stage at a safe distance should be a primary concern for members.**
- c. These protocols cover exposure to chemical, biological, and radiological agents.
 - i. A color code is assigned to each protocol in the Chemical section which coincides with the color-coded chemical treatment guide and color-coded antidote drug box.
- d. The Chemical Treatment Guidelines include information relevant to both adult and pediatric patients.
- e. The references to medical and trauma supportive care refer the practitioner to the appropriate Standing Order and/or Protocol section of the HCFR Medical Operations Manual.

2. Reference Materials:

- a. The treatment protocols presented in this section represent a distillation of the information derived from the following sources:
 - i. Managing Hazardous Materials (MHMI) Volume III – Agency for Toxic Substances and Disease Registry (ATSDR) 2001: Atlanta, GA; US Department of Health and Human Services, Public Health Service
 - ii. Advanced Life Support Response to Hazardous Materials Incidents – Course Code 0247; US Fire Administration, 16825 S. Seton Avenue, Emmetsburg, MD 21227
- b. Additionally, the protocols are, in the opinion of the Medical Director, the safest compromise between the span of control in the Department, current medical practice at the time of promulgation, and degree of training provided to members of HCFR.
- c. Given that the nature of medicine is always in flux, HCFR Paramedics are encouraged to consult with the local Poison Control Center for modifications to these protocols.

Section: **ALS Hazardous Materials**
Subject: **TRAINING OF PARAMEDIC MEMBERS**
Section #: **346.02**
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1. HCFR shall use a tiered system of hazardous materials treatment response and HCFR Paramedics shall be trained accordingly to support the delivery of this care.
 - a. The first tier shall be at the "Paramedic Level".
 - i. All HCFR Paramedics shall be responsible for understanding the basic concepts of each protocol and how to deliver the medical care called for by these protocols within the scope of their training.
 - ii. These members must attend a training program covering the following topics:
 1. Medical response to hazardous materials (policy & procedures review)
 2. Review of multi-casualty incident management procedures and START triage
 3. The treatment protocol to the level that they are authorized to provide
 - b. The second tier shall be at the "Medical Special Operations Team (MSOT) – HazMat Medic Level".
 - i. All MSOT – HazMat Medics are capable of providing all care defined within these protocols without direct medical control unless otherwise noted in these protocols.
 - ii. MSOT – HazMat Medics must meet the following requirements:
 1. Be a certified HCFR Paramedic in good standing
 2. Be assigned to the Special Operations Division and approved by the Medical Director
 3. Attend a class of instruction of not less than 64 hours covering the topics of Advanced Life Support Response to Hazardous Materials which shall include the chemistry, physiological effects, and medical treatment of hazardous material exposures
2. HCFR medics shall only practice at the level to which they have been trained and as authorized by the Medical Director.
3. MSOT – HazMat Medics shall be trained to provide the full medical treatment as defined by these protocols.
 - a. During multi-casualty events or other situations requiring the assistance of other paramedics, the MSOT – HazMat Medic may provide direction to other HCFR paramedics in carrying out the delivery of care covered under this section.

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: ALS Hazardous Materials
Subject: CHEMICAL TREATMENT GUIDE INDEX
Section #: 346.03
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1.

CHEMICAL / GROUP NAME	TREATMENT GUIDE
Acids & Acid Mists	Guide 1 - Yellow
Alkaline Compounds	Guide 1 - Yellow
Ammonia (liquid & gas)	Guide 1 - Yellow
Aromatic Hydrocarbons (benzene, toluene, xylene)	Guide 2 - Blue
Arsenic Trioxide Compounds (or other heavy metal poisonings)	Guide 2 - Blue
Azides	Guide 5 - Red
Blister Agents (H, HD, HS)	Guide 1 - Yellow
Carbamates (insecticide poisoning)	Guide 4 - Green
Carbon Monoxide (CO)	Guide 2 - Blue
Chlorinated Hydrocarbons (methylene chloride)	Guide 2 - Blue
Chlorine Gas (Cl)	Guide 1 - Yellow
Cyanide (CN)	Guide 5 - Red
Cyanogen Chloride (CK)	Guide 5 - Red
Dinitrobenzene (DNB)	Guide 3 - Gray
Ethylene Glycol	Guide 6 - Pink
Ethyl Isocyanate	Guide 1 - Yellow
Hydrocyanic Acid (AC)	Guide 5 - Red
Hydrogen Cyanide, Hydrocyanic Acid (AC)	Guide 5 - Red
Hydrofluoric Acid (HF)	Guide 7 - Orange
Hydrogen Sulfide, Sulfides	Guide 5 - Red
Ketones	Guide 8 - Purple
Lewisite (L, HI)	Guide 1 - Yellow
Mercaptans	Guide 5 - Red
Methanol	Guide 6 - Pink
Methylene Biphenyl Isocyanate	Guide 1 - Yellow
Methylene Dilisocyanate (MDI)	Guide 1 - Yellow
Mustard (Nitrogen Mustard) (HN-1,HN-2,HN-3)	Guide 1 - Yellow
Nerve Agents (GA, GB, GD, GF, VX)	Guide 4 - Green
Nitrogen Products (and other products causing methemoglobinemia)	Guide 3 - Gray
Organophosphates (insecticides & nerve agents – GA,GB,GD,GF,VX)	Guide 4 - Green
Phenol (Carbolic Acid)	Guide 9 - White
Phosgene (CG)	Guide 1 - Yellow
Phosphine	Guide 8 - Purple
Potassium Cyanide	Guide 5 - Red
Sodium Cyanide	Guide 5 - Red
Vicane	Guide 7 - Orange

Section: **ALS Hazardous Materials**
Subject: **ADULT CHEMICAL TREATMENT GUIDE 1A: YELLOW**
Section #: **346.04**
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1. Covered Substances:

- a. Acids and Acid Mists
- b. Alkaline Compounds
- c. Methylene Biphenyl Isocyanate, Ethyl Isocyanate, and Methylene Dilsocyanate (MDI)
- d. Ammonia (liquid and gas)
- e. Chlorine Gas (Cl) and Phosgene
- f. Nitrogen Mustard (HN-1, HN-2, HN-3); Lewisite (L, HI); and Blister Agents (H, HD, HS)

2. Signs and Symptoms:

- a. Low concentrations of airborne acids and alkalis can produce rapid onset of eye, nose, and throat irritation.
- b. Higher concentrations of acids and alkalis, or low concentrations of ammonia, can produce cough, stridor, wheezing, or chemical pneumonitis also known as non-cardiogenic pulmonary edema (NCPE).
- c. Ingestion of acids and alkalis can result in severe injury to the upper airway, esophagus, and stomach.
- d. There may be circulatory collapse as well as partial or full thickness burns to any internal or external skin surfaces that come in contact with the acid or alkali.
- e. Some of the gases are stored in a liquid state and pose a significant risk of frostbite.

3. General Supportive Care:

- a. Ensure that members are using appropriate PPE.
 - i. Obtain HIT-9 assistance, if needed.
- b. Decontamination:
 - i. Remove the patient from the hazardous area.
 - 1. If victims can walk, lead them out of the Hot Zone to the Decon Zone.
 - 2. Victims who are unable to walk may be removed on backboards or gurneys; if these are not available carefully drag victims to safety.
 - 3. Consider appropriate management of chemically contaminated children, such as measures to reduce separation anxiety.
 - ii. Victims who are able may assist with their own decontamination.
 - 1. Remove contaminated clothing while flushing exposed areas.
 - 2. Double-bag contaminated clothing and personal belongings.
 - 3. If indicated, irrigate exposed or irritated eyes with plain water or saline for at least 15 minutes.
 - a. Remove contact lenses if easily removable.
 - b. Continue irrigation while transferring the victim to the Support Zone.
 - c. Do not cover the eyes with bandages.
 - iii. Handle frostbitten skin and eyes with caution.
 - 1. Do not irrigate eyes that have sustained frostbite injury.
 - 2. Place frostbitten skin in warm water, about 108°F (42°C).
 - a. If warm water is not available, wrap the affected part gently in blankets.
 - 3. Let the circulation reestablish itself naturally.
 - 4. Encourage the victim to exercise the affected part while it is being warmed.
 - 5. Continue passive warming while initiating transport.

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- iv. Do not attempt to neutralize the agent with another solution.
 - v. If the patient has external burns, irrigate copiously and cover with a dry dressing.
 - c. Initiate medical and / or trauma supportive care as indicated.
 - i. NG tube placement is contraindicated.
 - ii. Avoid the use of oral airways.
 - iii. In case of ingestion, do not induce emesis.
 - d. *Contact Poison Information Center (1-800-222-1222).*
 - e. If the patient has signs and symptoms of pulmonary edema, maintain adequate ventilation and oxygenation.
 - i. Non-cardiogenic pulmonary edema should not be treated with furosemide.
 - ii. If intubated, use positive end expiratory pressure (PEEP) per protocol.
 - iii. If spontaneously breathing, apply CPAP at the lowest level needed to alleviate dyspnea.
4. **Paramedic Level Care:**
- a. If the patient has bronchospasm, administer **albuterol** 5.0 mg via nebulizer q 20 minutes PRN.
 - b. For seizures, follow appropriate HCFR protocol.
 - c. Phosgene will sensitize the myocardium to catecholamines, so place the patient in a calm reassuring environment if possible.
 - i. If dysrhythmias develop, treat with the indicated HCFR protocol.
 - d. Treat hypotension with vasopressors rather than with fluids unless there are signs and symptoms of hypovolemic shock.
 - i. **Dopamine** starting at 5.0 mcg/kg/min IV and titrating to SBP > 100 mmHg in adults or the lower end of the normal range adjusted for age in pediatric patients (max dose 20 mcg/kg/min).
5. **MSOT – HazMat Medic Level Care:**
- a. Treat hypotension with vasopressors rather than with fluids unless there are signs and symptoms of hypovolemic shock.
 - i. **Phenylephrine (Neo-synephrine™)**
 - 1. *Adults:* 100 – 180 mcg/min IV as a brief initial infusion until the blood pressure stabilizes, with dosage titrated to a mean arterial pressure (MAP) of 75 – 100 mmHg.
 - a. The usual maintenance infusion rate ranges between 40 and 60 mcg/min IV.
 - 2. *Pediatrics:* 20 mcg/kg IV bolus, followed by an initial IV infusion of 0.1 – 0.5 mcg/kg/min, with dosage titrated to a mean arterial pressure (MAP) of 75 – 100 mmHg.
 - b. Consider **racemic epinephrine** aerosol for children who develop stridor:
 - i. 0.5 ml of 2.25% **racemic epinephrine (Vaponephrine™)** solution in water q 20 min PRN – hold for tachycardia.
6. **Quality Assurance Points:**
- a. End-stage symptoms may resemble organophosphate poisoning. However, patients will have normal or dilated pupils – the patient will not have pinpoint pupils.
 - i. These patients should not be given either atropine or 2-PAM.

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: **ALS Hazardous Materials**
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- b. Do not attempt to neutralize the agent with another solution.
- c. Chemical burns to the upper airway or pharynx preclude the use of a supraglottic airway.
 - i. Your only alternative as a rescue airway may well be a device assisted cricothyrotomy.
- d. Children may be more vulnerable to corrosive agents than adults because of the smaller diameter of their airways.
 - i. Children may also be more vulnerable because of failure to evacuate an area promptly when exposed.
- e. The following exposed persons must be evaluated at a medical facility:
 - i. Those who have ingested ammonia.
 - ii. Those who have persistent upper respiratory irritation or other acute symptoms of severe inhalation exposure.
 - iii. Those who have eye or skin burns that cover a large surface area.
- f. Persons who have been exposed only to ammonia gas and are currently asymptomatic are not likely to develop complications.
- g. Patients exposed to blister agents may not experience symptoms at first. Since there is no known antidote, early decontamination is the only effective treatment.

Section: **ALS Hazardous Materials**
Subject: **ADULT CHEMICAL TREATMENT GUIDE 2A: BLUE**
Section #: **346.05**
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1. Covered Substances

- a. Aromatic Hydrocarbons (Benzene, Toluene, Xylene)
- b. Arsenic Trioxide Compounds
- c. Carbon Monoxide Poisoning
- d. Chlorinated Hydrocarbons (Methylene Chloride)

2. Signs and Symptoms

- a. Mild exposures:
 - i. Cough, hoarseness, headache, poor concentration, irritability, agitation, anxiety, drowsiness, dizziness, weakness, tremors, transient euphoria, vision and hearing disturbances, nausea/vomiting, salivation, diarrhea, stomach pain, and chemical burns w/ chlorinated hydrocarbons.
 - ii. For arsenic specific signs and symptoms see below.
- b. Moderate to severe exposures:
 - i. Cardiovascular collapse, tachy-dysrhythmias (especially V-fib), chest pain, pulmonary edema, dyspnea, tachypnea, respiratory failure, paralysis, altered LOC, seizures, excessive salivation, pale skin, cyanosis, rarely cherry red skin w/ CO, and delayed carcinogenic effects.
 - ii. For arsenic specific signs and symptoms see below.
- c. Arsenic exposure:
 - i. Severe GI fluid loss, burning ABD pain, watery or bloody diarrhea, muscle spasm, seizures, cardiovascular collapse, tachycardia, hypotension, ventricular dysrhythmias, shock, and coma. In severe cases, there may be respiratory or cardiac arrest. Acute renal failure with bronze urine within a few minutes.
- d. **CAUTION:** Products may be flammable.

3. General Supportive Care

- a. Ensure that personnel are using appropriate PPE.
 - i. Obtain HIT assistance if needed.
- b. For cases of carbon monoxide or methylene chloride exposure follow HCFR standing orders for CO poisoning.
- c. Decontamination:
 - i. Remove the patient from the hazardous area.
 - 1. If victims can walk, lead them out of the Hot Zone to the Decon Zone.
 - 2. Victims who are unable to walk may be removed on backboards or gurneys; if these are not available carefully drag victims to safety.
 - 3. Consider appropriate management of chemically contaminated children, such as measures to reduce separation anxiety.
 - ii. Victims who are able may assist with their own decontamination.
 - 1. Remove contaminated clothing while flushing exposed areas.
 - 2. Double-bag contaminated clothing and personal belongings.
 - 3. If indicated, irrigate exposed or irritated eyes with plain water or saline for at least 15 minutes.
 - a. Remove contact lenses if easily removable.
 - b. Continue irrigation while transferring the victim to the Support Zone.
 - iii. If the patient has external burns, irrigate copiously and cover with a dry dressing.

Section: **ALS Hazardous Materials**
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- d. Initiate medical / trauma supportive care as indicated.
 - i. In case of ingestion, do not induce emesis.
- e. *Contact Poison Information Center (1-800-222-1222).*
- f. If the patient has signs and symptoms of pulmonary edema, maintain adequate ventilation and oxygenation.
 - i. Non-cardiogenic pulmonary edema should not be treated with furosemide.
 - ii. If intubated, use positive end expiratory pressure (PEEP) per protocol.
 - iii. If spontaneously breathing, apply CPAP at the lowest level needed to alleviate dyspnea.

4. Paramedic Level Care

- a. Hydrocarbons will sensitize the myocardium to catecholamines, so place the patient in a calm reassuring environment if possible.
 - i. If dysrhythmias develop, treat with the indicated HCFR protocol.
- b. For seizures, follow appropriate HCFR protocol.
- c. For CO exposure, initiate high-flow / high-concentration O₂ (preferably 100% via NRB).
- d. Treat hypotension with vasopressors rather than with fluids unless there are signs and symptoms of hypovolemic shock.
 - i. **Dopamine** starting at 5.0 mcg/kg/min IV and titrating to SBP > 100 mmHg in adults or the lower end of the normal range adjusted for age in pediatric patients (max dose 20 mcg/kg/min).

5. MSOT – Medic Level Care

- a. Treat hypotension with vasopressors rather than with fluids unless there are signs and symptoms of hypovolemic shock.
 - i. **Phenylephrine** (Neo-synephrine™)
 - 1. *Adults:* 100 – 180 mcg/min IV as a brief initial infusion until the blood pressure stabilizes, with dosage titrated to a mean arterial pressure (MAP) of 75 – 100 mmHg.
 - a. The usual maintenance infusion rate ranges between 40 and 60 mcg/min IV.
 - 2. *Pediatrics:* 20 mcg/kg IV bolus, followed by an initial IV infusion of 0.1 – 0.5 mcg/kg/min, with dosage titrated to a mean arterial pressure (MAP) of 75 – 100 mmHg.

6. Quality Assurance Points

- a. End-stage symptoms may resemble organophosphate poisoning. However, patients will have normal or dilated pupils – the patient will not have pinpoint pupils.
 - i. These patients should not be given either atropine or 2-PAM.

Section: ALS Hazardous Materials
Subject: ADULT CHEMICAL TREATMENT GUIDE 3A: GRAY
Section #: 346.06
Issue Date: March 21, 2011
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1. Covered Substances
 - a. Dinitrobenzene (DNB)
 - b. Nitrogen products and other products causing Methemoglobinemia
2. Signs and Symptoms
 - a. Methemoglobinemia is characterized by:
 - i. Chocolate-brown colored blood, CNS depression, headache, dizziness, ataxia, vertigo, tinnitus, dyspnea, tachypnea, violent coughing, choking, upper airway spasm, edema of the glottis, ABD pain, hypotension, heart blocks, ventricular dysrhythmias, seizures (rare), pallor, cyanosis, and cardiovascular collapse.
3. General Supportive Care
 - a. Ensure that personnel are using appropriate PPE.
 - i. Obtain HIT assistance if needed.
 - b. Decontamination:
 - i. Remove the patient from the hazardous area.
 1. If victims can walk, lead them out of the Hot Zone to the Decon Zone.
 2. Victims who are unable to walk may be removed on backboards or gurneys; if these are not available carefully drag victims to safety.
 3. Consider appropriate management of chemically contaminated children, such as measures to reduce separation anxiety.
 - ii. Victims who are able may assist with their own decontamination.
 1. Remove contaminated clothing while flushing exposed areas.
 2. Double-bag contaminated clothing and personal belongings.
 3. If indicated, irrigate exposed or irritated eyes with plain water or saline for at least 15 minutes.
 - a. Remove contact lenses if easily removable.
 - b. Continue irrigation while transferring the victim to the Support Zone.
 - iii. In case of ingestion, do not induce emesis.
 - c. Initiate medical / trauma supportive care as indicated.
 - d. Initiate high-flow / high-concentration O₂ (preferably 100% via NRB).
 - e. *Contact Poison Information Center (1-800-222-1222).*
 - f. If nitrogen product ingestion and the victim is alert, asymptomatic, and has a gag reflex; administer **activated charcoal** 1.0 gm/kg.
 - i. A soda can and a straw may be of assistance when offering charcoal to a child.
4. Paramedic Level Care
 - a. Dinitrobenzene will sensitize the myocardium to catecholamines, so place the patient in a calm reassuring environment if possible.
 - i. If dysrhythmias develop, treat with the indicated HCFR protocol.
 - b. For seizures, follow appropriate HCFR protocol.
 - c. Treat hypotension with vasopressors rather than with fluids unless there are signs and symptoms of hypovolemic shock.
 - i. **Dopamine** starting at 5.0 mcg/kg/min IV and titrating to SBP > 100 mmHg in adults or the lower end of the normal range adjusted for age in pediatric patients (max dose 20 mcg/kg/min).

Section: ALS Hazardous Materials
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5. MSOT – Medic Level Care

- a. If the patient is dyspneic with a normal SpO₂, cyanotic, and has chocolate-brown colored blood, administer **Methylene Blue** (1% solution) 1.0 mg/kg slow IV over 5 minutes, followed by saline 30 ml as a flush to decrease pain at the site.
- b. If cyanosis persists after one hour, and the patient has not already been transported, consult with Medic-1 regarding the possibility of a repeat dose of **Methylene Blue** (1% solution) 1.0 mg/kg slow IV over 5 minutes, followed by saline 30 ml as a flush to decrease pain at the site.
- c. Treat hypotension with vasopressors rather than with fluids unless there are signs and symptoms of hypovolemic shock.
 - i. **Phenylephrine** (Neo-synephrine™)
 1. *Adults:* 100 – 180 mcg/min IV as a brief initial infusion until the blood pressure stabilizes, with dosage titrated to a mean arterial pressure (MAP) of 75 – 100 mmHg.
 - a. The usual maintenance infusion rate ranges between 40 and 60 mcg/min IV.
 2. *Pediatrics:* 20 mcg/kg IV bolus, followed by an initial IV infusion of 0.1 – 0.5 mcg/kg/min, with dosage titrated to a mean arterial pressure (MAP) of 75 – 100 mmHg.

6. Quality Assurance Points

- a. Toxic gases and vapors (such as oxides of nitrogen and carbon monoxide) may be released in a fire involving dinitrobenzene.
- b. When faced with hypoxia that is refractory to good oxygenation in the HazMat setting, assess closely for methemoglobinemia.
- c. Symptoms of methemoglobinemia may be immediate or may be delayed for up to 72 hours.
- d. Side effects of **Methylene Blue** include nausea, ABD and precordial pain, dizziness, headache, profuse sweating, mental confusion, and the formation of methemoglobin.

Section: **ALS Hazardous Materials**
Subject: **ADULT CHEMICAL TREATMENT GUIDE 4A: GREEN**
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1. Covered Substances

- a. Carbamate – Insecticide Poisoning
- b. Organophosphates – Insecticide Poisoning and Nerve Agents (GA, GB, GD, GF, VX)

2. General Supportive Care

- a. Ensure that personnel are using appropriate PPE.
 - i. Obtain HIT assistance if needed.
- b. Decontamination:
 - i. Remove the patient from the hazardous area.
 - 1. If victims can walk, lead them out of the Hot Zone to the Decon Zone.
 - 2. Victims who are unable to walk may be removed on backboards or gurneys; if these are not available carefully drag victims to safety.
 - 3. Consider appropriate management of chemically contaminated children, such as measures to reduce separation anxiety.
 - ii. Victims who are able may assist with their own decontamination.
 - 1. Remove contaminated clothing while flushing exposed areas.
 - 2. Double-bag contaminated clothing and personal belongings.
 - 3. If indicated, irrigate exposed or irritated eyes with plain water or saline for at least 15 minutes.
 - a. Remove contact lenses if easily removable.
 - b. Continue irrigation while transferring the victim to the Support Zone.
 - iii. In case of ingestion, do not induce emesis.
- c. Initiate medical / trauma supportive care as indicated.
- d. Initiate high-flow / high-concentration O₂ (preferably 100% via NRB).
- e. *Contact Poison Information Center (1-800-222-1222).*

3. Paramedic Level Care

- a. Initiate HCFR protocols for triage and care of patients suffering from Organophosphates and Military-Type Nerve Agents.

Section: **ALS Hazardous Materials**
Subject: **ADULT CHEMICAL TREATMENT GUIDE 5A: RED**
Section #: **346.08**
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1. Covered Substances

- a. Cyanide – Hydrogen Cyanide, Hydrocyanic Acid (AC)
- b. Cyanogen Chloride (CK)
- c. Hydrogen Sulfide, Sulfides and aMercaptans
- d. Azides

2. Signs and Symptoms

- a. Cardiovascular – initially, pulse decreases and BP rises, in later stages, possible tachycardia, dysrhythmias and cardiovascular collapse can occur, there may also be palpitations and / or chest tightness.
- b. Respiratory – can cause immediate respiratory arrest, although initially there is usually an increase in the rate and depth of respirations, and later becoming slow and gasping, possible irritation of the respiratory tract, cough, dyspnea, tachypnea, and pulmonary edema.
- c. CNS – can cause immediate coma, although initially there is usually weakness, headache, and confusion; seizures are common.
- d. GI – nausea / vomiting, salivation may be profuse, possible garlic taste in mouth.
- e. Skin – pale, cyanotic, reddish color, dermatitis, and sweating.

3. General Supportive Care

- a. Ensure that personnel are using appropriate PPE.
 - i. Obtain HIT assistance if needed.
- b. If the patient is *symptomatic of cyanide poisoning*, immediately institute emergency life support measures including the use of the **hydroxocobalamin** for injection (**CyanoKit™**).
- c. *Speed of treatment is critical for these patients.*
 - i. For symptomatic victims, provide treatment with 100% O₂ and specific antidotes as needed.
 - ii. Treatment should be given simultaneously with decontamination procedures.
- d. Decontamination:
 - i. Remove the patient from the hazardous area.
 - 1. If victims can walk, lead them out of the Hot Zone to the Decon Zone.
 - 2. Victims who are unable to walk may be removed on backboards or gurneys; if these are not available carefully drag victims to safety.
 - 3. Consider appropriate management of chemically contaminated children, such as measures to reduce separation anxiety.
 - ii. Victims who are able may assist with their own decontamination.
 - 1. Remove contaminated clothing while flushing exposed areas.
 - 2. Double-bag contaminated clothing and personal belongings.
 - 3. If indicated, irrigate exposed or irritated eyes with plain water or saline for at least 5 minutes.
 - iii. Some of these products may pose the risk of frostbite.
 - iv. Handle frostbitten skin and eyes with caution.
 - 1. Do not irrigate eyes that have sustained frostbite injury.
 - 2. Place frostbitten skin in warm water, about 108°F (42°C).
 - a. If warm water is not available, wrap the affected part gently in blankets.
 - 3. Let the circulation reestablish itself naturally.

Section: **ALS Hazardous Materials**
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4. Encourage the victim to exercise the affected part while it is being warmed.
5. Continue passive warming while initiating transport.
- e. Initiate medical and/or trauma supportive care as indicated.
- f. In cases of ingestion, do not induce emesis.
- g. If the victim is alert, asymptomatic, and has a gag reflex; administer **activated charcoal** 1.0 gm/kg.
 - i. A soda can and a straw may be of assistance when offering charcoal to a child.
4. Paramedic Level Care
 - a. Dinitrobenzene will sensitize the myocardium to catecholamines, so place the patient in a calm reassuring environment if possible.
 - i. If dysrhythmias develop, treat with the indicated HCFR protocol.
 - b. For seizures, follow appropriate HCFR protocol.
5. MSOT – Medic Level Care
 - a. Prior to the administration of hydroxocobalamin for injection (CyanoKit™), to smoke inhalation victims, **ALL** four of the following criteria must be present:
 - i. Exposure to fire smoke in an enclosed area.
 - ii. Patient must be \geq 16 years of age.
 - iii. Soot in the mouth as well as sputum (indication of significant smoke exposure).
 - iv. Altered mental status.
 - b. If the patient is exhibiting life-threatening symptoms of suspected cyanide poisoning, administer **hydroxocobalamin (CyanoKit™)**.
 - i. Follow product directions for administration of **hydroxocobalamin (CyanoKit™)**, 5.0 gm IV over 15 minutes.
 - ii. If severe exposure, contact Medic-1 for a repeat dose of **hydroxocobalamin (CyanoKit™)**, 5.0 gm IV over 15 minutes to 2 hours, depending on the patients condition.
 - c. For seizures, follow appropriate HCFR protocol.
 - d. Treat hypotension with vasopressors rather than with fluids unless there are signs and symptoms of hypovolemic shock.
 - i. **Phenylephrine (Neo-synephrine™)**
 1. *Adults:* 100 – 180 mcg/min IV as a brief initial infusion until the blood pressure stabilizes, with dosage titrated to a mean arterial pressure (MAP) of 75 – 100 mmHg.
 - a. The usual maintenance infusion rate ranges between 40 and 60 mcg/min IV.
 2. *Pediatrics:* 20 mcg / kg IV bolus, followed by an initial IV infusion of 0.1 – 0.5 mcg/kg/min, with dosage titrated to a mean arterial pressure (MAP) of 75 – 100 mmHg.
 - e. Consider **racemic epinephrine** aerosol for children who develop stridor:
 - i. 0.5 ml of 2.25% **racemic epinephrine (Vaponephrine™)** solution in water q 20 min PRN – hold for tachycardia.
 - f. Contact Medic-1 for treatment of hydrogen sulfide exposure using nitrite therapy.
 - i. If approved by Medic-1, administer **sodium nitrite**.
 1. *Adults:* 300 mg IV (10ml of a 3% solution) slowly over more than 5 minutes.

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2. *Pediatrics*: 10 mg/kg to a max of 300 mg (0.33 ml/kg of a 3% solution – max 10 ml) slow IV push over more than 5 minutes.

6. Quality Assurance Points

- a. The antidotal efficacy of nitrite therapy is controversial, but is currently recommended if it can be started shortly after exposure. The usefulness of nitrite therapy given beyond the first few minutes after exposure is questionable. There is only anecdotal evidence that nitrite therapy is effective, and victims of hydrogen sulfide poisoning have survived without sequelae after supportive care alone. Nitrite therapy should not be allowed to interfere with the establishment of adequate ventilation and oxygenation.
- b. Sodium nitrite may produce hypotension when administered intravenously in large doses or rapidly.
- c. High methemoglobin levels may exacerbate ischemia in patients with poor underlying cardiopulmonary reserve as they decrease oxygen carrying capacity – monitor closely for ischemia.
- d. Sodium azide produces a clinical picture similar to that of cyanide poisoning. However, there is no specific antidote.
 - i. Exposure to small quantities can produce symptoms including, but not limited to:
 1. Tachypnea
 2. Restlessness
 3. Dizziness
 4. Weakness
 5. Headache
 6. Nausea/Vomiting
 7. Tachycardia
 8. Red eyes (gas or dust exposure)
 9. Clear drainage from the nose (gas or dust exposure)
 10. Cough (gas or dust exposure)
 11. Skin burns and blisters (explosion or direct skin contact)
 - ii. Exposure to larger quantities can produce symptoms including, but not limited to:
 1. Convulsions
 2. Hypotension
 3. Bradycardia
 4. Loss of consciousness
 5. Lung injury
 6. Respiratory failure leading to death

Section: **ALS Hazardous Materials**
Subject: **ADULT CHEMICAL TREATMENT GUIDE 6A: PINK**
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1. Covered Substances
 - a. Ethylene Glycol
 - b. Methanol
2. Signs and Symptoms
 - a. Ethylene Glycol exposure (poisoning is described in three phases):
 - i. Phase 1 (30 minutes to 12 hours) – ethanol like inebriation, metabolic acidosis, seizures, and coma.
 - ii. Phase 2 (12 to 36 hours) – tachycardia, tachypnea, hypertension, and pulmonary edema.
 - iii. Phase 3 (36 to 48 hours – crystalluria, acute tubular necrosis with oliguria and renal failure.
 - b. Methanol exposure:
 - i. Cardiovascular – dysrhythmias and hypotension.
 - ii. Respiratory – Insufficiency or arrest, pulmonary edema, chemical pneumonitis, and bronchitis.
 - iii. CNS – Depression and coma, seizures, headache, muscle weakness, and delirium.
 - iv. GI – Bleeding, nausea / vomiting, and diarrhea.
 - v. Eyes – Chemical conjunctivitis.
 - vi. Skin – Mild irritation to full thickness burns.
3. General Supportive Care
 - a. Ensure that personnel are using appropriate PPE.
 - i. Obtain HIT assistance if needed.
 - b. Decontamination:
 - i. Remove the patient from the hazardous area.
 1. If victims can walk, lead them out of the Hot Zone to the Decon Zone.
 2. Victims who are unable to walk may be removed on backboards or gurneys; if these are not available carefully drag victims to safety.
 3. Consider appropriate management of chemically contaminated children, such as measures to reduce separation anxiety.
 - ii. Victims who are able may assist with their own decontamination.
 1. Remove contaminated clothing while flushing exposed areas.
 2. Double-bag contaminated clothing and personal belongings.
 - c. If indicated, irrigate exposed or irritated eyes with plain water or saline for at least 5 minutes.
 - d. Initiate medical / trauma supportive care as indicated.
 - e. Contact Poison Information Center (**1-800-222-1222**).
4. Paramedic Level Care
 - a. For seizures, follow appropriate HCFR protocol.
 - b. If dysrhythmias develop, treat with the appropriate HCFR Standing Order.

Section: **ALS Hazardous Materials**
Subject: **ADULT CHEMICAL TREATMENT GUIDE 7A: ORANGE**
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1. Covered Substances
 - a. Hydrofluoric Acid (HF)
 - b. Vicane
2. Signs and Symptoms
 - a. Hypovolemic shock and collapse, tachycardia with weak pulse, non-cardiogenic pulmonary edema, asphyxia, chemical pneumonitis, upper airway obstruction with stridor, pain and cough, decreased LOC, nausea/vomiting, diarrhea, possible GI bleeding, and possible blindness. HF also causes severe skin burns. The damage may be severe with no outward signs, except that the patient will complain of severe pain out of proportion to the physical exam.
3. General Supportive Care
 - a. Ensure that personnel are using appropriate PPE.
 - i. Obtain HIT assistance if needed.
 - b. Decontamination:
 - i. Remove the patient from the hazardous area.
 1. If victims can walk, lead them out of the Hot Zone to the Decon Zone.
 2. Victims who are unable to walk may be removed on backboards or gurneys; if these are not available carefully drag victims to safety.
 3. Consider appropriate management of chemically contaminated children, such as measures to reduce separation anxiety.
 - ii. Victims who are able may assist with their own decontamination.
 1. Remove contaminated clothing while flushing exposed areas.
 2. Double-bag contaminated clothing and personal belongings.
 - iii. If indicated, irrigate exposed or irritated eyes with plain water or saline for at least 15 minutes.
 1. Remove contact lenses if easily removable.
 2. Do not cover the eyes with bandages.
 - c. Initiate medical / trauma supportive care as indicated.
 - d. Contact Poison Information Center (**1-800-222-1222**).
 - e. If the patient has signs and symptoms of pulmonary edema, maintain adequate ventilation and oxygenation.
 - i. Non-cardiogenic pulmonary edema should NOT be treated with furosemide.
 - ii. If intubated, use positive end expiratory pressure (PEEP) per protocol.
 - iii. If spontaneously breathing, apply CPAP at the lowest level needed to alleviate the dyspnea.
4. Paramedic Level Care
 - a. For inhalation exposures immediately initiate aggressive ventilatory support.
 - b. Hydrofluoric acid will leach the calcium out of the blood leading to systemic hypocalcemia in severe cases. If dysrhythmias develop, treat with the appropriate HCFR Standing Order.
 - c. Treat hypotension with vasopressors rather than with fluids unless there are signs and symptoms of hypovolemic shock.
 - i. **Dopamine** starting at 5.0 mcg/kg/min IV and titrating to SBP > 100 mmHg in adults or the lower end of the normal range adjusted for age in pediatric patients (max dose 20 mcg/kg/ min).

Section: **ALS Hazardous Materials**
Subject: **ADULT CHEMICAL TREATMENT GUIDE 7A: ORANGE**
Section #: **346.10**
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5. MSOT – Medic Level Care

- a. If the patient has burns to the eye(s):
 - i. Prepare an eye wash solution by mixing **calcium gluconate (10%)** 50 ml with saline 500 ml.
 - ii. Instill calcium gluconate eye wash and continue until arrival at the receiving facility.
- b. If the patient has burns to the skin:
 - i. Prepare a skin gel by mixing **calcium gluconate (10%)** 10 ml into a 2 oz. tube of **KY jelly** – this creates a 2.5% gel.
 - ii. Apply the 2.5% **calcium gluconate gel** on the burned area.
 - iii. For burns to the hand(s) place hand in glove filled with the **calcium gluconate gel**.
- c. Treat hypotension with vasopressors rather than with fluids unless there are signs and symptoms of hypovolemic shock.
 - i. **Phenylephrine (Neo-synephrine™)**
 1. Adults: 100 – 180 mcg/min IV as a brief initial infusion until the blood pressure stabilizes, with dosage titrated to a mean arterial pressure (MAP) of 75 – 100 mmHg.
 - a. The usual maintenance infusion rate ranges between 40 and 60 mcg/min IV.
 2. Pediatrics: 20 mcg/kg IV bolus, followed by an initial IV infusion of 0.1 – 0.5 mcg/kg/min, with dosage titrated to a mean arterial pressure (MAP) of 75 – 100 mmHg.

Section: **ALS Hazardous Materials**
Subject: **ADULT CHEMICAL TREATMENT GUIDE 8A: PURPLE**
Section #: **346.11**
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Michael Lozano, Jr., M.D., HCFR Medical Director

1. Covered Substances
 - a. Ketones
 - b. Phosphine
2. Signs and Symptoms
 - a. Hypovolemic shock and collapse, tachycardia with weak pulse, non-cardiogenic pulmonary edema, asphyxia, chemical pneumonitis, upper airway obstruction with stridor, pain and cough, decreased LOC, nausea/vomiting, diarrhea, possible GI bleeding, and possible blindness. HF also causes severe skin burns. The damage may be severe with no outward signs, except that the patient will complain of severe pain out of proportion to the physical exam.
3. General Supportive Care
 - a. Ensure that personnel are using appropriate PPE.
 - i. Obtain HIT assistance if needed.
 - b. Decontamination:
 - i. Remove the patient from the hazardous area.
 1. If victims can walk, lead them out of the Hot Zone to the Decon Zone.
 2. Victims who are unable to walk may be removed on backboards or gurneys; if these are not available carefully drag victims to safety.
 3. Consider appropriate management of chemically contaminated children, such as measures to reduce separation anxiety.
 - ii. Victims who are able may assist with their own decontamination.
 1. Remove contaminated clothing while flushing exposed areas.
 2. Double-bag contaminated clothing and personal belongings.
 - iii. If indicated, irrigate exposed or irritated eyes with plain water or saline for at least 15 minutes.
 1. Remove contact lenses if easily removable.
 2. Do not cover the eyes with bandages.
 - c. Initiate medical / trauma supportive care as indicated.
 - d. Contact Poison Information Center (**1-800-222-1222**).
 - e. If the patient has signs and symptoms of pulmonary edema, maintain adequate ventilation and oxygenation.
 - i. Non-cardiogenic pulmonary edema should NOT be treated with furosemide.
 - ii. If intubated, use positive end expiratory pressure (PEEP) per protocol.
 - iii. If spontaneously breathing, apply CPAP at the lowest level needed to alleviate the dyspnea.
4. Paramedic Level Care
 - a. For inhalation exposures immediately initiate aggressive ventilatory support.
 - b. Hydrofluoric acid will leach the calcium out of the blood leading to systemic hypocalcemia in severe cases. If dysrhythmias develop, treat with the appropriate HCFR Standing Order.
 - c. Treat hypotension with vasopressors rather than with fluids unless there are signs and symptoms of hypovolemic shock.
 - i. **Dopamine** starting at 5.0 mcg/kg/min IV and titrating to SBP > 100 mmHg in adults or the lower end of the normal range adjusted for age in pediatric patients (max dose 20 mcg/kg/min).

Section: **ALS Hazardous Materials**
Subject: **ADULT CHEMICAL TREATMENT GUIDE 8A: PURPLE**
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5. MSOT – Medic Level Care

- a. If the patient has burns to the eye(s):
 - i. Prepare an eye wash solution by mixing **calcium gluconate (10%)** 50 ml with saline 500 ml.
 - ii. Instill calcium gluconate eye wash and continue until arrival at the receiving facility.
- b. If the patient has burns to the skin:
 - i. Prepare a skin gel by mixing **calcium gluconate (10%)** 10 ml into a 2 oz tube of **KY jelly** – this creates a 2.5% gel.
 - ii. Apply the 2.5% **calcium gluconate gel** on the burned area.
 - iii. For burns to the hand(s) place hand in glove filled with the **calcium gluconate gel**.
- c. Treat hypotension with vasopressors rather than with fluids unless there are signs and symptoms of hypovolemic shock.
 - i. **Phenylephrine (Neo-synephrine™)**
 1. Adults: 100 – 180 mcg/min IV as a brief initial infusion until the blood pressure stabilizes, with dosage titrated to a mean arterial pressure (MAP) of 75 – 100 mmHg.
 - a. The usual maintenance infusion rate ranges between 40 and 60 mcg/min IV.
 2. Pediatrics: 20 mcg/kg IV bolus, followed by an initial IV infusion of 0.1 – 0.5 mcg/kg/min, with dosage titrated to a mean arterial pressure (MAP) of 75 – 100 mmHg.

Section: **ALS Hazardous Materials**
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1. Covered Substances
 - a. Phenol
2. Signs and Symptoms
 - a. Nausea/vomiting, diarrhea, excessive sweating, headache, dizziness, tinnitus, seizures, loss of consciousness, coma, respiratory depression, inflammation of the respiratory tract, shock, and death. Exposure to the skin can result in severe burns, which will cause the skin to have a white, red, or brown appearance.
3. General Supportive Care
 - a. Ensure that personnel are using appropriate PPE.
 - i. Obtain HIT assistance if needed.
 - b. Decontamination:
 - i. Remove the patient from the hazardous area.
 1. If victims can walk, lead them out of the Hot Zone to the Decon Zone.
 2. Victims who are unable to walk may be removed on backboards or gurneys; if these are not available carefully drag victims to safety.
 3. Consider appropriate management of chemically contaminated children, such as measures to reduce separation anxiety.
 - ii. Victims who are able may assist with their own decontamination.
 1. Remove contaminated clothing while flushing exposed areas.
 2. Double-bag contaminated clothing and personal belongings.
 3. After thoroughly rinsing skin, apply vegetable oil, mineral oil, or polyethylene glycol (PEG) to exposed areas.
 4. Isopropyl alcohol may be used for very small skin burns only.
 - c. Initiate medical / trauma supportive care as indicated.
 - d. Contact Poison Information Center (1-800-222-1222).
4. Paramedic Level Care
 - a. For seizures, follow appropriate HCFR protocol.
 - b. Treat hypotension with vasopressors rather than with fluids unless there are signs and symptoms of hypovolemic shock.
 - i. Dopamine starting at 5.0 mcg/kg/min IV and titrating to SBP > 100 mmHg in adults or the lower end of the normal range adjusted for age in pediatric patients (max dose 20 mcg/kg/min).
5. Quality Assurance Points
 - a. Failure to decontaminate the skin may allow the phenol to absorb into the system and result in death.

Section: ALS Hazardous Materials
Subject: CONFINED SPACE MEDICINE
Section #: 346.13
Issue Date: March 1, 2016
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1. Indications:
 - a. A patient who has been subject to a significant blunt force trauma over a significant body surface area (BSA) for a more than 150 minutes.
 - i. The significance of the BSA involved and the compressive force shall be determined at the discretion of the senior MSOT paramedic on the scene.
 - b. If there is doubt, contact the HCFR medical director for guidance.
2. Contraindications - Do not initiate this protocol for:
 - a. Patients who would be triaged as expectant under HCFR triage protocols.
 - b. Unmovable patients in a location that is or will imminently become an immediate life threat.
3. Initial Assessment
 - a. Obtain medically relevant information prior to physical contact with the patient.
 - b. Upon first physical contact initiate standard HCFR assessment protocols with the following variations:
 - i. Apply oxygen only if the patient's room air oxygen saturation (SpO_2) is less than 93%.
 - ii. Titrate to maintain SpO_2 between 93% and 95%.
 - iii. For purposes of this protocol, the external jugular vein shall be considered to be a peripheral vein.
 - c. Assess for the presence of any risk factors for crush injury. If any indications (see above) are present, and there are no contraindications, continue with this protocol.
 - d. Contact the HCFR Medical Director and provide a status report.
4. MSOT Medic Level Care - Crush Injury treatment and Crush Syndrome prophylaxis
 - a. Initial resuscitation and management
 - i. Administer **normal saline** 20 mL/kg as a bolus.
 1. If the patient does not have a peripheral pulse, repeat the bolus up to two more times (60 mL/kg max.) until peripheral pulses are regained.
 2. Notify Medic 1 or the HCFR Medical Director for >60 mL/kg of fluid resuscitation is needed.
 - ii. Utilize **HCFR PROTOCOL PAIN MANAGEMENT** if indicated
 - iii. If not done so already, place appropriate personal protective equipment on the patient.
 - b. Pre-release management
 - i. Maintain the patient as warm and dry as permitted by the immediate environment.
 - ii. If possible, monitor the cardiac rhythm.
 - iii. If ordered by a physician, draw blood for point of care (if available) or off-site analysis.
 - iv. Vital signs shall be recorded at least hourly, and also every time there is a significant movement of the patient.
 - v. Once physical contact has been made with the patient, maintain at least one caregiver with the patient at all times unless safety concerns supervene.
 - vi. Proceed with hyperkalemia treatment if ordered to do so by the HCFR Medical Director or Medic 1
 1. Hyperkalemia treatment:
 - a. Administer **sodium bicarbonate** 1 mEq/kg IV/IO over 10 minutes.
 - b. Administer **dextrose** and **insulin**:
 - i. For adult patients: **regular insulin** 10 units IV/IO, immediately followed by **dextrose** 50% solution in water ($D_{50}W$) 25 grams (50 mL) IV/IO.

Section: ALS Hazardous Materials
Subject: CONFINED SPACE MEDICINE
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- ii. For pediatric patients: **regular insulin** 0.1 units/kg IV/IO, immediately followed by 25% dextrose ($D_{25}W$) 0.5 gm/kg (2 mL/kg) IV/IO.
 - c. Administer **albuterol**:
 - i. Adults and Pediatrics weighing ≥ 20 kg., 5 mg nebulized.
 - ii. Pediatrics weighing < 20 kg., 2.5 mg nebulized.
 - c. Immediately pre-release
 - i. Administer **albuterol** if it has not been given within the past hour.
 - 1. Adults and Pediatrics weighing ≥ 20 kg., 5 mg nebulized.
 - 2. Pediatrics weighing < 20 kg., 2.5 mg nebulized.
 - ii. Administer **normal saline** (0.9% NaCl) 20 mL/kg bolus IV/IO.
 - iii. Administer **sodium bicarbonate** 1.0 mEq/kg IV/IO if it has not been given within the past hour.
 - d. Immediate post-release
 - i. Be prepared to immediately treat the following conditions:
 - 1. Hypovolemia with **normal saline** (0.9% NaCl) 20 mL/kg bolus IV/IO.
 - 2. Hyperkalemia (as above).
 - 3. Cardiac arrhythmias – see appropriate HCFR protocol
 - e. After the patient has been moved to a secure location:
 - i. Variations to standard HCFR assessment protocols:
 - 1. Repeat vital signs hourly, after every significant move, and upon arrival at the medical treatment area.
 - 2. Monitor blood glucose hourly.
 - 3. Document urine output hourly and report to the physician the urine's color and appearance, pH (if possible), and hourly flow rate.
 - 4. Apply a clean dry dressing to all disruptions in the skin on the crushed extremity.
 - 5. Apply a non-compressive splint to any affected extremities.
 - 6. Do not apply ice to the affected area.
 - 7. Maintain any affected extremities level with the patient's heart.
 - ii. Initiate the following maintenance fluid: add 50 mEq of **sodium bicarbonate** to a premixed liter of **dextrose** 5% in water (D_5W) plus 0.45% **normal saline** ($D_5 \frac{1}{2}NS$) and infuse at 2 mL/kg/hr.
5. ALS evaluation/transport criteria:
- a. All patients treated under this protocol are ALS
 - b. Once stabilized, a crush injury patient may be transferred to another agency at the discretion of the Incident Commander.

**Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL**

Section: **ALS Quick Reference Guides**
 Subject: **RAPID SEQUENCE INDUCTION (RSI) MEDICATIONS**
 Section #: **347.01**
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RSI Quick Reference Chart

Etomidate:

Concentration as Packaged = 2.0 mg/ml Dosage = 0.3 mg/kg IV

Weight/kg	50	55	60	65	70	75	80	85	90	95	100	110	115	120
Weight/lbs	110	121	132	143	154	165	176	187	198	209	225	242	253	264
mg	15	16.5	18	19.5	21	22.5	24	25.5	27	28.5	30	33	34.5	36
ml	7.5	8.25	9	9.75	10.5	11.25	12	12.75	13.5	14.25	15	16.5	17.25	18

Succinylcholine:

Concentration as Packaged = 20 mg/ml Dosage = 1.5 mg/kg IV over 30 seconds

Weight/kg	50	55	60	65	70	75	80	85	90	95	100	110	115	120
Weight/lbs	110	121	132	143	154	165	176	187	198	209	225	242	253	264
mg	75	82.5	90	97.5	105	112.5	120	127.5	135	142.5	150	165	172.5	180
ml	3.75	4.125	4.5	4.875	5.25	5.625	6	6.375	6.75	7.125	7.5	8.25	8.625	9

Vecuronium:

Concentration as Packaged = 1.0 mg/ml Dosage = 0.1 mg/kg IV over 1 – 2 minutes

Weight/kg	50	55	60	65	70	75	80	85	90	95	100	110	115	120
Weight/lbs	110	121	132	143	154	165	176	187	198	209	225	242	253	264
mg	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	11	11.5	12
ml	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	11	11.5	12

Rocuronium:

Concentration as Packaged = 10 mg/ml Dosage = 0.6 mg/kg IV

Weight/kg	50	55	60	65	70	75	80	85	90	95	100	110	115	120
Weight/lbs	110	121	132	143	154	165	176	187	198	209	225	242	253	264
mg	30	33	36	39	42	45	48	51	54	57	60	66	69	72
ml	3	3.3	3.6	3.9	4.2	4.5	4.8	5.1	5.4	5.7	6	6.6	6.9	7.2

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: ALS Quick Reference Guides
Subject: RAPID SEQUENCE INDUCTION (RSI) MEDICATIONS
Section #: 347.01
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Ketamine (for Induction):

Concentration as Packaged = 50 mg/ml

Dosage = 2.0 mg/kg IV

Weight/kg	50	55	60	65	70	75	80	85	90	95	100	110	115	120
Weight/lbs	110	121	132	143	154	165	176	187	198	209	225	242	253	264
mg	100	110	120	130	140	150	160	170	180	190	200	220	230	240
ml	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.4	4.6	4.8

Ketamine (for post-procedural sedation):

Concentration as Packaged = 50 mg/ml

Dosage = 1.0 mg/kg IV

Weight/kg	50	55	60	65	70	75	80	85	90	95	100	110	115	120
Weight/lbs	110	121	132	143	154	165	176	187	198	209	225	242	253	264
mg	50	55	60	65	70	75	80	85	90	95	100	110	115	120
ml	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.2	2.3	2.4

Section: ALS Quick Reference Guides
Subject: INFUSION RATES - ADULT
Section #: 347.02
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IV INFUSION RATES – ADULT

(All drips are based on the use of a 30 mL syringe)

Amiodarone

Bolus Dose (150 mg over 10 min)

1. Draw up 3 mL (150 mg) of amiodarone
2. Draw up 27 mL of normal saline in same syringe to total 30 mL
3. Infuse 30 mL over 10 minutes (vol./ time)

Maintenance Drip (drip 1 mg/min)

1. Place 1 mL (50 mg) of Amiodarone in a 50 mL bag of D₅W and shake well
2. Draw up 30 mL from that 50 mL bag (concentration = 1 mg/ml)
3. Infuse at 1.0 mL/min which is 1.0 mg/min

Dopamine (5 – 20 mcg/kg/min)

Pre-mixed bag concentration 1600 mcg/mL = 1.6 mg/mL

1. Draw up 30 mL from premix bag
2. Begin drip at 5 mcg/kg/min

Epinephrine (2 – 10 mcg/min)

1. Place 0.5 mg of 1:10,000 solution in 50 mL bag of D₅W
2. Draw up 30 mL from 50 mL bag (concentration = 0.01 mg/mL or 10 mcg/mL)
3. Begin drip at 2 mcg/min

***for pediatric infusion see pediatric card*

Lidocaine (2 mg/min)

Pre-mixed bag concentration is 4 mg/mL

1. Draw up 30 mL from pre-mixed bag
2. Infuse at 30 mL/hour

***for pediatric infusion see pediatric card*

Magnesium Sulfate (2 grams over 10 min)

1. Draw up 4 mL (2 gm) of magnesium sulfate in a 30 mL syringe
2. Draw up 26 mL of saline
3. Infuse over 10 min (vol. / time)

***for pediatric infusion see pediatric card*

Nitroglycerin (Tridil®) (10 mcg/min)

1. Place 5 mg (1 mL) of Tridil in 50 mL bag of D₅W
2. Draw up 30 mL from 50 mL bag / concentration = 0.1 mg/mL or 100 mcg/mL
3. Begin at 10 mcg/min

Section: **ALS Quick Reference Guides**
Subject: **INFUSION RATES - PEDIATRIC**
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IV INFUSION RATES – PEDIATRIC

(All drips are based on the use of a 30 mL syringe)

Epinephrine **0.1 mcg/kg/min**

1. Place 0.5 mg of 1:10,000 solution in 50 mL bag of D₅W
2. Draw up 30 mL from 50 mL bag/concentration = 0.01 mg/ml or 10 mcg/ml
3. Begin drip at 0.1 mcg/kg/min

Lidocaine **20 mcg/kg/min**

- Pre-mixed bag concentration is 4 mg/ml
1. Draw up 30 mL from pre-mixed bag
 2. Infuse at 20 mcg/kg/min

Magnesium Sulfate

40 mg/kg over 30 min

1. Draw up desired amount of Magnesium Sulfate (see weight based chart) in a 30mL syringe

Weight (kg)	Amount	Volume
5	200 mg	0.4 mL
10	400 mg	0.8 mL
15	600 mg	1.2 mL
20	800 mg	1.6 mL
25	1000 mg	2.0 mL
30	1200 mg	2.4 mL

2. Draw up saline to a total volume of 30 mL in the syringe
3. Infuse over 30 min (volume/time)

Section: ALS Quick Reference Guides
Subject: PEDIATRIC MEDICATION DOSAGES ("MAGIC NUMBERS")
Section #: 347.04
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PEDIATRIC MEDICATION DOSAGES

Formula:

Patient's Weight (kg) x "Magic Number" = **Volume (mL)** to be administered

Example:

You have an 11 kg baby in cardiac arrest.

You want to administer Epinephrine 1:10,000. How much (mL) should you give?

Weight = 11 kg; Magic Number = 0.1

Answer:

$$11 \times 0.1 = 1.1 \text{ mL}$$

Magic Numbers: ‡

Medication	Dose	Magic Number	Current Packaging
Adenosine 1 st Dose	0.1 mg/kg	0.033	6.0 mg in 3 mL
Adenosine 2 nd Dose	0.2 mg/kg	0.067	6.0 mg in 3 mL
Amiodarone	5.0 mg/kg	0.1	300 mg in 3 mL
Atropine (minimum 1.0 mL)	0.02 mg/kg	0.2	1.0 mg in 10 mL
Dextrose 10% (D ₁₀ W)	0.25 gm/kg	2.5	Varies based on pt weight
Dextrose 25% (D ₂₅ W)	0.25 gm/kg	1.0	12.5 gm in 50 mL
Diazepam	0.2 mg/kg	0.04	10 mg in 2 mL
Diphenhydramine – anaphylaxis	1.0 mg/kg	0.02	50 mg in 1 mL
Diphenhydramine – dystonia	0.5 mg/kg	0.01	50 mg in 1 mL
Epinephrine 1:1,000	0.01 mg/kg	0.01	1.0 mg in 1 mL
Epinephrine 1:10,000	0.01 mg/kg	0.1	1.0 mg in 10 mL
Fentanyl	1.0 mcg/kg	0.02	250 mcg in 5 mL
Lidocaine	1.0 mg/kg	0.05	100 mg in 5 mL
Magnesium Sulfate	40 mg/kg	0.08	5.0 gm in 10 mL
Methylprednisolone	1.0 mg/kg	0.016	125 mg in 2 mL
Midazolam	0.2 mg/kg	0.04	10 mg in 2 mL
Morphine Sulfate	0.1 mg/kg	0.1	10 mg in 10 mL
Naloxone	0.1 mg/kg	0.1	2.0 mg in 2 mL
Ondansetron (max 4.0 mg)	0.1 mg/kg	0.05	4.0 gm in 2 mL

How to Mix Pediatric Dextrose:

D₂₅W: Push out 25 mL of D₅₀W preloaded syringe and draw up 25 mL of **normal saline (NOT D₅W)**.

D₁₀W: Draw up 0.5 mL/kg of D₅₀W and 2 mL/kg of **normal saline** into an appropriately sized syringe.

‡ ALL "Magic Numbers" are based on current HCFR protocols and packaging. ANY change in the dose or concentration will make the "Magic Number" inaccurate!

**Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL**

Section: **ALS Quick Reference Guides**
 Subject: **DOPAMINE / IV NITROGLYCERIN (TRIDIL®)**
 Section #: **347.05**
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Dopamine Quick Reference Chart
Weight Base Drug Calculation in gtts/min or mL/hr

mcg/kg/min	Patient Weight in kg												
	5	10	20	30	40	50	60	70	80	90	100	110	120
5.0 mcg	1	2	4	6	8	9	11	13	15	17	19	21	23
10 mcg	2	4	8	11	15	18	23	26	30	34	38	42	46
15 mcg	3	6	11	17	23	28	34	39	45	51	56	62	67
20 mcg	4	8	15	23	30	38	45	53	60	68	75	83	90

Dose Ranges:

Medium: 5-10 mcg/kg/min

High: 10-20 mcg/kg/min

IV Nitroglycerin Quick Reference Chart
Mix: 25 mg of IV Nitroglycerin in 250 ml of D₅W to a concentration of 100 mcg/mL

Dosage / Flow Rate											
Dose mcg / min	10	20	30	40	50	60	70	80	90	100	110
Rate ml / hr	6	12	18	24	30	36	42	48	54	60	66

Dosage / Flow Rate											
Dose mcg / min	120	130	140	150	160	170	180	190	200	210	220
Rate ml / hr	72	78	84	90	96	102	108	114	120	126	132

Section: ALS Quick Reference Guides
 Subject: COMPRESSIONS-VENTILATIONS GUIDE
 Section #: 347.06
 Issue Date: December 1, 2017
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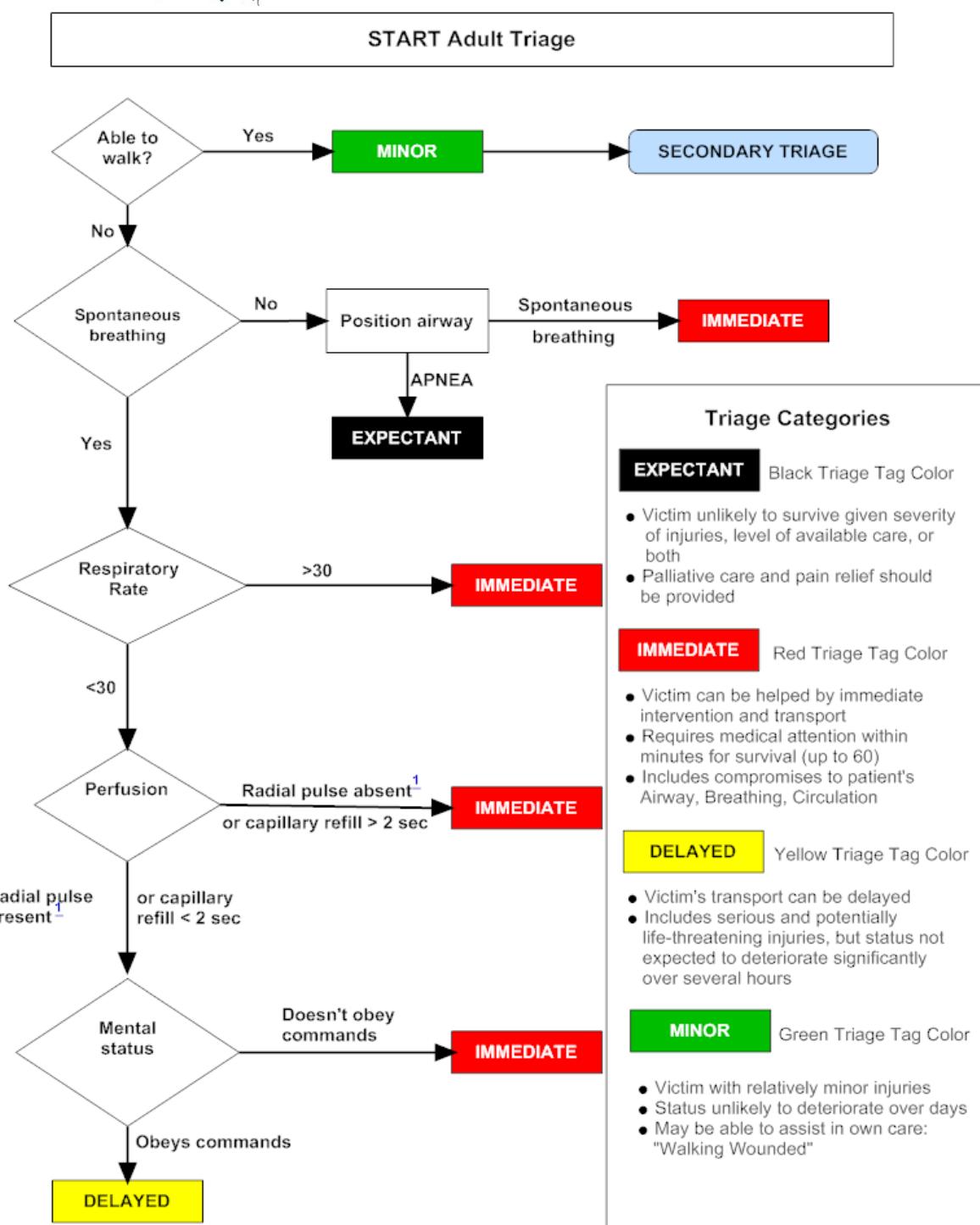
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Component	Adults and Adolescents	Children (Age 1 Year to Puberty)	Infants (less than 1 year, excluding newborns)
Recognition of Cardiac Arrest	Check for responsiveness No breathing or only gasping (no normal breathing) No definite pulse felt within 10 seconds (Breathing and pulse check can be performed simultaneously in less than 10 seconds)		
Compression-ventilation ratio without advanced airway	1 or 2 rescuers 30:2	1 rescuer 30:2 2 or more rescuers 15:2	
Compression-ventilation ratio with advanced airway	Continuous compressions at a rate of 100-120/min Give 1 breath every 6 seconds (10 breaths/min)		
Compression rate	100-120/min		
Compression depth	At least 2 inches but no more than 2.4 inches	At least one third the AP diameter of the chest (about 2 inches)	At least one third the AP diameter of the chest (about 1½ inches)
Hand placement	2 hands on the lower half of the sternum	2 hands of 1 hand (optional for a small child) on the lower half of the sternum	1 rescuer 2 fingers in center of chest, just below nipple line 2 rescuers 2 thumb-encircling chest, with thumbs just below nipple line
Chest recoil	Allow full recoil of chest after each compression Do not lean on the chest after each compression		
Minimize interruptions	Limit all interruptions in compressions to less than 10 seconds		

Section: ALS Quick Reference Guides
 Subject: START ADULT TRIAGE
 Section #: 347.07
 Issue Date: December 1, 2017
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Section: Drug Reference
Subject: ADESINE (ADENOCARD®)
Section #: 348.01
Issue Date: March 21, 2011
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Adenosine

1. CLASSIFICATION
 - a. Endogenous Nucleoside
2. ACTIONS / DESCRIPTIONS
 - a. Slows tachycardia associated with the AV node via modulation of the automatic nervous system without causing negative inotropic effects.
 - b. Interrupts re-entry pathways in supraventricular tachycardia.
 - c. It acts directly on sinus pacemaker cells and vagal nerve terminals to decrease chronotropic and dromotropic activity.
3. INDICATIONS
 - a. Conversion of SVT to sinus rhythm
4. CONTRAINDICATIONS
 - a. Second or third degree AV block
 - b. Poison induced tachycardia
 - c. Volume depletion tachycardia
5. PRECAUTIONS
 - a. Patients taking Digoxin or/and verapamil. Monitor closely for v-fib potential.
 - b. Dipyridamole may potentiate adenosine's effects.
 - c. Methylxanthines may require higher doses.
6. ADVERSE REACTIONS
 - a. Metallic taste
 - b. Hypotension
 - c. Paresthesia (tingling, prickly sensations)
 - d. Shortness of Breath (especially if history of bronchospastic disease)
 - e. Ectopy (transient)
 - f. Lightheadedness/syncope
 - g. Transient periods of sinus bradycardia or asystole
 - h. Chest pressure/pain
7. DRUG ACTION TIME
 - a. Onset = 20 seconds
 - b. Duration = 10 seconds
8. INFORMATIONAL POINTS
 - a. A brief period of asystole (up to 15 seconds) followed by NSR is common.
 - b. Important points for administration:
 - i. Large bore in the antecubital
 - ii. Close port (no three-way)
 - iii. Fast
 - iv. Close to the catheter
 - v. Flush directly after drug administration

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Section: Drug Reference
Subject: ADENOSE (ADENOCARD®)
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- c. With atrial fibrillation there is transient slowing of the rate due to increase block at the AV node.
This will not result in chemical conversion.
- d. Patients on methylxanthines (theophylline) may require larger doses.
- e. Patients taking carbamazepine (Tegretol®) may be more sensitive.

Section: Drug Reference
Subject: ALBUTEROL (PROVENTIL®)
Section #: 348.02
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Albuterol

1. CLASSIFICATION
 - a. Sympathomimetic Bronchodilator
2. ACTIONS / DESCRIPTIONS
 - a. Bronchodilator that stimulates beta₂ receptors
 - b. Relaxes bronchial smooth muscles
 - c. Minimal vasoconstriction
3. INDICATIONS
 - a. Asthma
 - b. Emphysema
 - c. Bronchospasm from any source
 - d. Inhalation of hot smoke and gases
4. CONTRAINDICATIONS
 - a. Contraindicated in patients with hypersensitivity to drug or its ingredients.
5. PRECAUTIONS
 - a. Heart rate may increase because β₂-adrenergic receptors also occur in the heart at concentrations of 10–50%.
6. ADVERSE REACTIONS
 - a. Restlessness and anxiety
 - b. May exacerbate angina and cause arrhythmias
 - c. Increased heart rate and blood pressure
7. DRUG ACTION TIME
 - a. Onset: 5 – 15 minutes
 - b. Duration: 3 – 6 hours
8. INFORMATIONAL POINTS
 - a. Often used in combination with ipratropium bromide
 - b. Monitor peak volume
 - c. Long term use will cause down regulation of receptors
 - d. Patient's wheezing may initially become louder upon administration
 - e. For patients with poor tidal volume consider an in-line nebulizer
 - f. Expect poor effectiveness for patients on beta-blockers
 - g. Used in compartment syndrome for K⁺ effect (forces K⁺ back into cells)
 - h. Make sure the patient knows the difference between the rescue inhaler and steroid inhaler
 - i. ETCO₂ may be normal (40) with moderate dyspnea
 - j. ETCO₂ has shark fin appearance with bronchospasm

Section: Drug Reference
Subject: AMIODARONE (CORDARONE®)
Section #: 348.03
Issue Date: March 21, 2011
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Amiodarone

1. CLASSIFICATION
 - a. Class III anti-arrhythmic with characteristics of all four classes of anti-arrhythmics
2. ACTIONS / DESCRIPTIONS
 - a. Blocks sodium channels at rapid pacing frequencies
 - b. Exerts a non-competitive anti-sympathetic action
 - c. Inhibits potassium and lengthens cardiac action potential
 - d. Possesses negative chronotropic effect and causes vasodilation
3. INDICATIONS
 - a. V-fib / pulseless V-Tach
 - b. Hemodynamically stable V-Tach
 - c. Wide Complex tachycardia of unknown etiology
 - d. Ventricular ectopy
4. CONTRAINDICATIONS
 - a. Hypotension
 - b. Known allergy to iodine
 - c. Marked bradycardia
 - d. 2nd or 3rd degree AV block
5. PRECAUTIONS
 - a. Beware of the high incidents of adverse reactions.
6. ADVERSE REACTIONS
 - a. Hypotension
 - b. Bradycardia and AV block
 - c. CHF
7. DRUG ACTION TIME
 - a. Variable
8. INFORMATIONAL POINTS
 - a. BEWARE – treating ventricular escape beats as PVCs can be fatal.
 - b. Sodium Bicarbonate – forms a precipitate when mixed with amiodarone.

Section: Drug Reference
Subject: AMYL NITRITE
Section #: 348.04
Issue Date: March 21, 2011
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Amyl Nitrite

1. CLASSIFICATION
 - a. Vasodilator related to nitroglycerin.
2. ACTIONS / DESCRIPTIONS
 - a. Induces the formation of methemoglobin. Thus changes the iron (Fe^{+2}) in the blood to (Fe^{+3}). In cases of cyanide poisoning, the methemoglobin combines with the cyanide to form non-toxic cyanmethemoglobin.
 - b. The vapors are absorbed rapidly through the alveoli causing effects within one minute after inhalation.
 - c. Rapid acting vasodilator administered by inhalation.
 - d. Causes a non-specific relaxation of smooth muscle primarily vascular smooth muscle.
 - e. Causes coronary vasodilation, decreased systemic vascular resistance, and decreased left ventricle preload and afterload.
3. INDICATIONS
 - a. Cyanide poisoning in the conscious patient
 - b. Cyanide poisoning without complications from carbon monoxide poisoning
4. CONTRAINDICATIONS
 - a. Glaucoma: acute narrow angle
 - b. Recent head trauma or cerebral hemorrhage due to increases in intraocular and intracranial pressures
5. PRECAUTIONS
 - a. Glaucoma
 - b. Hypotension
6. ADVERSE REACTIONS
 - a. Dizziness
 - b. Blushing of the face
 - c. Syncope
 - d. Hypotension
 - e. Tachycardia
 - f. Restlessness
 - g. Weakness
 - h. Methemoglobinemia in high doses
 - i. Cold sweats
 - j. Muscle twitching
7. DOSAGE
 - a. Inhalations for up to 30 seconds. Inhale for 15 seconds then stop for 15 seconds.
 - b. Every two (2) minutes use a fresh capsule.
 - c. Once an IV has been established, give sodium nitrite and discontinue amyl nitrite.

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Section: Drug Reference
Subject: AMYL NITRITE
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8. DRUG ACTION TIME

- a. Effects begin within one (1) minute of inhalation.

9. INFORMATIONAL POINTS

- a. Keep the patient sitting or lying during drug administration.
- b. Methylene blue is the antidote for severe methemoglobinemia.
- c. Do not give if elevated HbCO level in the blood has not been corrected.

Section: Drug Reference
Subject: ASPIRIN
Section #: 348.05
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Aspirin

1. CLASSIFICATION
 - a. Salicylate, analgesic, antipyretic
 - b. NOT an anticoagulant
2. ACTIONS / DESCRIPTIONS
 - a. Major actions appear to be associated primarily with inhibiting the formation of prostaglandins involved in the production of inflammation, pain, and fever.
 - b. Inhibits clotting factor
 - c. Stops clotting cascade
 - d. Powerfully inhibits platelet aggregation
 - e. Antipyretic
3. INDICATIONS
 - a. Myocardial Infarction
 - b. Unstable angina
 - c. Fever in adults
 - d. Mild pain
4. CONTRAINDICATIONS
 - a. History of GI ulceration
 - b. Hemophilia or other bleeding disorders
 - c. Allergy to aspirin
5. PRECAUTIONS
 - a. Patients with history of chronic alcohol use because of hepatotoxicity
6. ADVERSE REACTIONS
 - a. Dizziness
 - b. Confusion
 - c. Tinnitus
 - d. Heartburn
 - e. Stomach pains
7. INFORMATIONAL POINTS
 - a. Administration to patients with GI problems
 - b. Baby aspirin used
 - c. Do not need to repeat if the patient has taken within the past 24 hours

Section: Drug Reference
Subject: ATROPINE
Section #: 348.06
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Atropine

1. CLASSIFICATION
 - a. Parasympatholytic
2. ACTIONS / DESCRIPTIONS
 - a. Receptors found in GI and pulmonary smooth muscle, the heart, and the eye
 - b. Blocked vagal effects results in positive chronotropic and positive dromotropic (limited or no inotropic effect)
 - c. Does not block the actions of acetylcholine at the neuromuscular junction
 - d. Inhibits salivary and bronchial secretions, dilates pupils
3. INDICATIONS
 - a. Hemodynamically significant bradycardia / high degree blocks
 - b. Organophosphate poisoning (drug of choice)
 - c. During RSI to decrease secretions and bradycardia in children
4. CONTRAINDICATIONS
 - a. Known allergy to drug
5. PRECAUTIONS
 - a. Watch for signs and symptoms of glaucoma
 - i. Ocular pain
 - ii. Headache
 - iii. Blurred vision
6. ADVERSE REACTIONS
 - a. Tachycardia (increases MVO_2)
 - b. Paradoxical bradycardia (pushed slowly at a dose less than 0.5 mg)
 - c. Palpitations
 - d. Dysrhythmias
 - e. Flushed and dry skin
 - f. Dry mouth/nose
 - g. Dilated pupils, blurred vision, and photophobia

Section: Drug Reference
Subject: CYANOKIT®
Section #: 348.07
Issue Date: March 21, 2011
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Cyanokit®

1. CLASSIFICATION
 - a. Antidote
2. ACTIONS / DESCRIPTIONS
 - a. Hydroxocobalamin is a precursor to vitamin B-12.
 - b. Hydroxocobalamin binds directly to the cyanide ion, forming cyanocobalamin, a natural form of vitamin B-12, a stable, non-toxic compound that is excreted in the urine.
3. INDICATIONS
 - a. If clinical suspicion of cyanide poisoning is high, CYANOKIT® should be administered without delay.
 - b. Cyanide poisoning:
 - i. Hydrogen Cyanide (HCN)
 - ii. Potassium Cyanide (KCN)
4. CONTRAINDICATIONS
 - a. None
5. PRECAUTIONS
 - a. Use caution in the management of patients with known anaphylactic reactions to hydroxocobalamin or cyanocobalamin.
 - b. Allergic reactions may include: anaphylaxis, chest tightness, edema, urticaria, pruritus, dyspnea, and rash
 - c. Substantial increases in blood pressure may occur following Cyanokit therapy.
6. ADVERSE REACTIONS
 - a. Red coloration of the skin, mucous membranes, and urine.
 - b. The most common adverse reactions (>5%) are transient and include chromaturia, erythema, rash (acneiform), increased blood pressure, nausea, headache, decreased lymphocyte percentage, and injection site reactions.
 - c. Usage may interfere with some clinical laboratory evaluations.
 - d. Due to potential photosensitivity patients should avoid direct sun until erythema resolves.
7. Dosage
 - a. Initial dose is 5.0 g (2 vials) IV over 15 minutes **7.5 minutes per vial**
 - b. Depending upon the severity of the poisoning and the clinical response, a second dose of 5.0 g may be administered by IV infusion for a total dose of 10 g.
 - c. The rate of infusion for the second 5.0 g dose may range from 15 minutes (for patients in extremis) to 2 hours based on patient condition.
 - d. Add 100 mL of 0.9% Sodium Chloride Injection to vial using transfer spike. **Fill to line. Vial in upright position.**
 - e. Rock or rotate vial for 30 seconds to mix solution. Do not shake.
 - f. There are a number of drugs and blood products that are incompatible with CYANOKIT®, thus CYANOKIT® requires a separate intravenous line for administration.

Section: Drug Reference
Subject: CYANOKIT®
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8. Informational/Discussion Points

- a. Cyanide poisoning is primarily caused by smoke inhalation during closed-space structural fires.
- b. Additional causes of exposure may include:
 - i. Accidental or intentional ingestion/inhalation
 - ii. Dermal exposure in the industrial setting
 - iii. Dermal/inhalation exposure 2° to terrorist act
- c. CYANOKIT® solutions should be visually inspected for particulate matter and color prior to administration
 - i. Discard solution if particulate matter is present or solution is not dark red

Section: Drug Reference
Subject: DEXTROSE
Section #: 348.08
Issue Date: March 21, 2011
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Dextrose

1. CLASSIFICATION
 - a. Carbohydrate
2. ACTIONS / DESCRIPTIONS
 - a. d-glucose is the principle form of carbohydrate utilized by the body.
3. INDICATIONS
 - a. Hypoglycemia
4. CONTRAINDICATIONS
 - a. Intracranial hemorrhage (relative)
 - b. Increased ICP (relative)
5. ADVERSE REACTIONS
 - a. Necrosis with infiltration
 - b. Thrombophlebitis

Section: Drug Reference
Subject: DIAZEPAM (VALIUM®)
Section #: 348.09
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Diazepam

1. CLASSIFICATION
 - a. Benzodiazepine
 - b. Sedative hypnotic
 - c. Anticonvulsant
2. ACTIONS / DESCRIPTIONS
 - a. Possess anticonvulsant, hypnotic, sedative, skeletal muscle relaxant, and amnesic properties
 - b. Potentiates the effects of inhibitory neurotransmitters
 - c. Raises the seizure threshold in the motor cortex
3. INDICATIONS
 - a. Seizures
4. CONTRAINDICATIONS
 - a. Coma
 - b. Shock
 - c. CNS depression 2° to head trauma
5. PRECAUTIONS
 - a. Use cautiously in elderly, debilitated, and pregnancy
6. ADVERSE REACTIONS
 - a. Use in combination with alcohol may cause a synergistic enhancement of the hypotension properties of both substances
 - b. Respiratory depression
 - c. Tachycardia
 - d. Confusion
 - e. Phlebitis
 - f. Rapid IV administration may be followed by respiratory depression and excessive sedation

Section: Drug Reference
Subject: DILTIAZEM (CARDIZEM®)
Section #: 348.10
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Diltiazem

1. CLASSIFICATION
 - a. Calcium channel blocker
2. ACTIONS / DESCRIPTIONS
 - a. Slows cardiac conduction (negative dromotropic effects)
 - b. Increases refractoriness in the AV node
 - c. Slows AV conduction:
 - i. Repolarization is prolonged, resulting in increased refractory period
 - ii. No effect on fastcalcium channels of the "Bundle of His", atria, ventricles, or accessory pathways
 - d. Causes coronary vasodilation
 - e. Dilation of smooth muscle cells results in decrease vascular resistance and thus lower BP
3. INDICATIONS
 - a. SVT
 - b. Atrial fibrillation and atrial flutter
4. CONTRAINDICATIONS
 - a. CHF
 - b. 2nd and 3rd degree AV blocks
 - c. Severe hypotension or cardiogenic shock
 - d. Atrial fib/flutter associated with WPW
 - e. Concomitant use of IV beta blockers
 - f. VT or Wide Complex Tachycardia
5. PRECAUTIONS
 - a. Increases levels of carbamazepine
 - b. Cimetidine may inhibit diltiazem metabolism
 - c. Diltiazem may increase digoxin levels
6. ADVERSE REACTIONS
 - a. Hypotension
 - b. 1st and 2nd degree AV blocks
 - c. Bradycardia
 - d. Chest pain
 - e. CHF
 - f. Ventricular dysrhythmias
 - g. Syncope
 - h. Asystole
7. INFORMATIONAL/DISCUSSION POINTS
 - a. Blood pressure should be 90 to 100 mmHg
 - b. Slow infusion
 - c. Probably will control rate but not convert atrial fibrillation or flutter

Section: Drug Reference
Subject: DIPHENHYDRAMINE (BENADRYL®)
Section #: 348.11
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Diphenhydramine

1. CLASSIFICATION
 - a. Antihistamine
2. ACTIONS / DESCRIPTIONS
 - a. Prevents the physiologic actions of histamine by preventing histamines from reaching H₁ and H₂ receptors.
 - b. The benefits of antihistamines are only symptomatic relief.
 - c. Has anticholinergic effects as well.
3. INDICATIONS
 - a. Moderate to severe allergic reactions (after epinephrine)
 - b. Acute extrapyramidal effects
4. CONTRAINDICATIONS
 - a. Lower respiratory diseases such as asthma (relative)
 - b. CNS depression
 - c. Narrow angle glaucoma (relative)
5. PRECAUTIONS
 - a. May cause the stopping of lactation in breast feeding patients
 - b. COPD
 - i. Dries mucosal secretions
6. ADVERSE REACTIONS
 - a. Sedation
 - b. Disturbed coordination
 - c. Hypotension
 - d. Palpitations
 - e. Tachycardia or bradycardia
 - f. Thickening of bronchial secretions
 - g. Dry mouth and throat
 - h. Paradoxical excitation
7. DRUG ACTION TIME
 - a. Immediate onset
 - b. Six to eight hour duration
8. INFORMATIONAL/DISCUSSION POINTS
 - a. IV irritation if pushed too fast

Section: Drug Reference
Subject: DOPAMINE (INTROPIN®)
Section #: 348.12
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Dopamine

1. CLASSIFICATION
 - a. Sympathomimetic
2. ACTIONS / DESCRIPTIONS
 - a. Acts primarily on alpha, beta₁, & adrenergic receptors in dose-dependent fashion.
 - b. Low doses (1.0 – 3.0 mcg/kg/min) are considered "renal doses" that cause renal, mesenteric, and cerebral vascular dilation.
 - c. Moderate doses (5.0 – 10 mcg/kg/min) are "cardiac doses"
 - i. Beta₁ effect.
 - ii. Increased in inotropic effect with increase in cardiac output and BP
 - d. High doses (10 – 20 mcg/kg/min) are "vasopressor doses"
 - i. Alpha adrenergic effect
 - ii. Peripheral arterial and venous constriction
3. INDICATIONS
 - a. Hemodynamically significant hypotension in the absence of hypovolemia (post resuscitation hypotension)
 - b. Cardiogenic shock
 - c. Symptomatic bradycardia
 - d. Neurogenic shock
 - e. Septic shock
4. CONTRAINDICATIONS
 - a. Hypovolemia
5. PRECAUTIONS
 - a. Known allergy to drug
6. ADVERSE REACTIONS
 - a. Alpha blockers antagonize dopamine's effects
 - b. Beta blockers antagonize dopamine's effects
7. QA POINTS
 - a. NOT used in trauma
 - b. Pump is required
 - c. Infuse through large, stable vein to avoid the possibility of extravasation injury
 - d. Has all actions at any dose, but is more pronounced at specific dose ranges

Section: **Drug Reference**
Subject: **EPINEPHRINE**
Section #: **348.13**
Issue Date: **March 21, 2011**
Revision Date:
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Epinephrine

- 1. CLASSIFICATION**
 - a. Sympathomimetic
- 2. ACTIONS / DESCRIPTIONS**
 - a. Stimulates alpha, beta₁, and beta₂ receptors
 - b. Produces a rapid increase in blood pressure, ventricular contractility, and heart rate
 - c. Causes vasoconstriction in the arterioles of the skin, mucosa, and splanchnic areas
 - d. Increase conduction through the AV node
- 3. INDICATIONS**
 - a. Anaphylaxis (vasoconstriction and dilation of bronchioles)
 - b. Cardiac arrest (vasoconstriction)
 - c. Reactive airway diseases (dilation of the bronchioles in asthma, COPD, etc.)
 - d. Symptomatic bradycardia/blocks
- 4. CONTRAINDICATIONS**
 - a. Hypovolemic shock
 - b. Coronary insufficiency (relative)
 - c. Chemicals that increase catecholamine sensitivity (inhaling hydrocarbons lowers the threshold for V-Fib) (relative)
- 5. PRECAUTIONS**
 - a. Use with caution in elderly patients
- 6. ADVERSE REACTIONS**
 - a. Nervousness, jittery
 - b. Hypertension
 - c. PVCs
- 7. DRUG ACTION TIME**
 - a. Duration of action is 5 minutes
- 8. INFORMATIONAL/DISCUSSION POINTS**
 - a. IV administration (slow to patients with a pulse, 1 – 2 minutes)
 - b. May increase MvO₂ in older and cardiac patients
 - c. Danger of repeated doses in anaphylaxis
 - d. Not primary treatment of bronchospastic disease
 - e. SQ dosage in anaphylactic shock may not be effective if poor peripheral perfusion

Section: Drug Reference
Subject: ETOMIDATE
Section #: 348.14
Issue Date: March 21, 2011
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Etomidate

1. CLASSIFICATION
 - a. Hypnotic
2. ACTIONS / DESCRIPTIONS
 - a. Etomidate has anesthetic and amnesic properties and is used for sedation
 - b. No analgesic properties
 - c. Has little effect on: cardiac output, PVR, pulmonary circulation
 - d. Moderate decrease in ICP of 20 – 30%
3. INDICATIONS
 - a. Rapid sequence induction
4. CONTRAINDICATIONS
 - a. Known allergy
5. ADVERSE REACTIONS
 - a. Vomiting is common
 - b. Hyper or hypoventilation
 - c. Pain at injection site
 - d. Hyper or hypotension
 - e. Transient skeletal muscle twitching, not fasciculations (32%)
6. DRUG ACTION TIME
 - a. Duration of action is 3 – 5 minutes
 - b. Apnea for 5 – 90 seconds with spontaneous recovery

Section: Drug Reference
Subject: FENTANYL (SUBLIMAZE®)
Section #: 348.15
Issue Date: March 21, 2011
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Fentanyl

1. CLASSIFICATION
 - a. Synthetic narcotic analgesic
2. ACTIONS / DESCRIPTIONS
 - a. Narcotic agonist analgesic with actions similar to morphine, but increased potency and shorter duration of action
 - b. Less cardiovascular depression and emetic effects than morphine
 - c. No histamine release
3. INDICATIONS
 - a. Severe pain
 - b. Analgesia for cardioversion or pacing
4. CONTRAINDICATIONS
 - a. Head trauma
 - b. Undiagnosed abdominal pain unless Medic-1 approval
5. ADVERSE REACTIONS
 - a. Respiratory depression
 - b. Pin point pupils
 - c. Chest wall rigidity when pushed too quickly
 - d. Sedation
6. DRUG ACTION TIME
 - a. 20 – 30 minutes
7. INFORMATIONAL/DISCUSSION POINTS
 - a. Reversed with naloxone
 - i. Adult
 1. 0.5 mg IV, IM, SC or IN
 2. Repeat q2 minutes as needed (titrated to desired effect)
 - ii. Pediatric
 1. Naloxone: 0.10 mg/kg IV, IM, ET or IN
 2. May be repeated twice, if inadequate response and narcotic OD is strongly suspected

Section: Drug Reference
Subject: GLUCAGON
Section #: 348.16
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Glucagon

1. CLASSIFICATION
 - a. Pancreatic hormone
 - b. Insulin antagonist
2. ACTIONS / DESCRIPTIONS
 - a. Protein secreted by the alpha cells of the pancreas.
 - b. Increases blood glucose levels by promoting the breakdown of glycogen and inhibiting the storing of sugar.
 - c. Endogenous catecholamine release.
 - d. Exerts positive inotropic action on the heart and decreased renal vascular resistance.
3. INDICATIONS
 - a. Hypoglycemia when oral glucose or IV dextrose can't be administered
4. CONTRAINDICATIONS - NONE
5. ADVERSE REACTIONS
 - a. Tachycardia
 - b. Hypertension
6. INFORMATIONAL/DISCUSSION POINTS
 - a. Give IM for hypoglycemia
 - b. Degree of success depends on amount of glucose stored
 - c. Should not be considered a first line choice for hypoglycemia

Section: **Drug Reference**
Subject: **IPRATROPIUM BROMIDE**
Section #: **348.17**
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Approved By:

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Ipratropium Bromide

1. CLASSIFICATION
 - a. Parasympatholytic
2. ACTIONS / DESCRIPTIONS
 - a. Bronchodilator
 - b. Local site specific effect, not a systemic one.
 - c. Not readily absorbed systemically from the lung.
 - d. Does not penetrate the blood-brain barrier.
 - e. No effect of pupil size or visual acuity.
 - f. No clinically significant effects HR or BP.
 - g. Does not possess anti-inflammatory properties.
 - h. Often used with albuterol.
3. INDICATIONS
 - a. Bronchial asthma
 - b. Chronic bronchitis/COPD
 - c. Inhalation of hot smoke and gases
4. CONTRAINDICATIONS
 - a. Peanuts or soybean allergies
 - b. Narrow angle glaucoma (relative)
5. ADVERSE REACTIONS
 - a. Angioedema (tongue, lips, and face)
 - b. Bronchospasms
 - c. Caution in narrow angle glaucoma
 - i. Eye pain may result if solution comes in contact with the eyes of the patient
 - ii. Use of tube nebulizer instead of mask will reduce the occurrence
6. DRUG ACTION TIME
 - a. Onset 5 – 15 minutes
 - b. Duration 3 – 6 hours
7. INFORMATIONAL/DISCUSSION POINTS
 - a. Glaucoma
 - b. Use without albuterol
 - c. Systemic effects if they occur
 - d. Use of atropine as bronchodilator
 - e. Combivent
 - f. Immediate hypersensitivity reactions may occur (rare cases of urticaria, Angioedema, pruritis, bronchospasm, anaphylaxis, and oropharyngeal edema)

Section: Drug Reference
Subject: KETAMINE
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Ketamine

1. CLASSIFICATION
 - a. Anesthetic
2. ACTIONS/DESCRIPTIONS
 - a. NMDA and HCN1 receptor antagonist
 - b. Also has incompletely understood effects on cholinergic, aminergic, and opioid receptors
 - c. Produces a state of dissociative anesthesia
 - i. Hypnosis leading to sedation and unconsciousness
 - ii. Intense analgesia
 - iii. Increased sympathetic activity
 - iv. Has little to no effect on laryngeal reflexes, muscle tone or respiratory drive
3. INDICATIONS
 - a. Rapid Sequence Induction in both adults and children
 - b. Behavioral Emergencies in which benzodiazepines have been ineffective or are otherwise not indicated
4. RELATIVE CONTRAINDICATIONS
 - a. Known hypersensitivity
 - b. Should not be used in patients younger than three months of age
 - c. Increased intraocular pressure, so use with caution in patients with glaucoma or acute globe injury.
 - d. Current research suggests ketamine may be helpful and not harmful in head injury situations.
5. SIDE EFFECTS
 - a. Hypertension
 - b. Tachycardia
 - c. Hypersalivation
 - d. Nausea and vomiting (Around 8% of pediatrics, and 4% of adults; responds to ondansetron)
 - e. Apnea or laryngospasm (rarely, but possible; around 0.8% of cases)
6. DURATION OF ACTION
 - a. Onset: Within 30 seconds of IV administration
 - i. 3-4 minutes if given IM
 - b. Duration: 10-15 minutes
 - i. 12-25 minutes if given IM
7. DOSAGE
 - a. 1 – 2 mg/kg IV/IM, depending on protocol
8. SPECIAL CONSIDERATIONS
 - a. Give over 60 seconds to minimize pressor response to IV administration during RSI
 - b. Verbal and tactile stimulation should be kept to a minimum during recovery to reduce emergence reactions

Section: Drug Reference
Subject: LABETALOL
Section #: 348.19
Issue Date: March 21, 2011
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Labetalol

1. CLASSIFICATION
 - a. Non-selective Beta receptor antagonist
 - b. Selective Alpha₁ receptor antagonist
2. ACTIONS/DESCRIPTIONS
 - a. Reduces blood pressure by producing non-selective beta-receptor blockade.
 - b. Selective Alpha₁ blockade prevents reflexive tachycardia to occur in the presence of beta receptor blockade
3. INDICATIONS
 - a. Significant hypertension in the presence of CVA
4. CONTRAINDICATIONS
 - a. Known hypersensitivity
 - b. Asthma, current acute exacerbation
 - c. Decompensated CHF
 - d. High degree AV block
 - e. Cardiogenic shock
 - f. Bradycardia (HR<60 bpm)
 - g. Hypotension (SBP<90 mmHg)
5. SIDE EFFECTS
 - a. Postural hypotension
 - b. Diaphoresis
 - c. Nausea
 - d. Vomiting
6. DURATION OF ACTION
 - a. Onset: Within 5 minutes, with a peak effect at 10-15 minutes
 - b. Duration: 45 minutes
7. DOSAGE
 - a. 10mg IV over 1 - 2 minutes
8. SPECIAL CONSIDERATIONS
 - a. Continuous monitoring of EKG and vitals should be in place
 - b. Observe for signs of CHF, bradycardia, or bronchospasm and treat according to the respective protocols.

Section: Drug Reference
Subject: LIDOCAINE (XYLOCAINE®)
Section #: 348.20
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Lidocaine

1. CLASSIFICATION
 - a. Antidysrhythmic
2. ACTIONS / DESCRIPTIONS
 - a. Alters the sodium influx across the membranes decreasing tissue automaticity and subsequent ventricular depolarization
 - b. Suppresses PVCs and reduces the threshold for V-fib during an MI.
 - c. Decreases transient ICP and risk of laryngospasm during RSI.
 - d. Local anesthetic.
3. INDICATIONS
 - a. V-fib, pVT, Stable VT
 - b. Wide complex tachycardia of unknown etiology
 - c. Significant ventricular ectopy in the setting of myocardial ischemia/infarction
 - d. RSI when the patient has a head injury and etomidate is contraindicated
4. CONTRAINDICATIONS
 - a. 2nd degree type II and 3rd degree AV blocks
 - b. WPW
 - c. Torsades de points
 - d. Known hypersensitivity to the drug
5. PRECAUTIONS
 - a. **Cautious Use:** decrease dose by ½ for patients with known or suspected hepatic disease, CHF, geriatrics, and for patients with a systolic BP < 100 mmHg
6. ADVERSE REACTIONS
 - a. Seizures with high doses
 - b. Lightheadedness, confusion, altered LOC
 - c. Blurred vision
 - d. Bradycardia
 - e. Muscle twitching
 - f. AV blocks
 - g. Hypotension
7. DRUG ACTION TIME
 - a. Onset: < 3 minutes
 - b. Duration: 10 – 20 minutes
8. INFORMATIONAL/DISCUSSION POINTS
 - a. Only works on ventricles
 - b. If bradycardia occurs in conjunction with PVCs, always treat the Bradycardia first
 - c. A 75 – 100 mg bolus will only maintain blood levels for approximately 20 minutes
 - d. Treat PVCs in the presence of cardiac disease if they are impairing perfusion
 - e. "R on T" phenomenon

Section: Drug Reference
Subject: MAGNESIUM SULFATE
Section #: 348.21
Issue Date: March 21, 2011
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Magnesium Sulfate

1. CLASSIFICATION
 - a. Electrolyte
2. ACTIONS / DESCRIPTIONS
 - a. Blocks peripheral neuromuscular transmission by reducing sensitivity of motor end plate to acetylcholine thus:
 - i. Decreases striated muscle contractions.
 - ii. Relaxes smooth muscle
 - iii. Bronchial dilation
 - iv. Uterine dilation
 - v. CNS depressant
3. INDICATIONS
 - a. Asthma
 - b. Seizures of eclampsia (toxemia of pregnancy)
 - c. Torsades de points (form of ventricular multifocal tachycardia) or Vfib resistant to all other treatments.
4. CONTRAINDICATIONS
 - a. Heart block
5. PRECAUTIONS
 - a. Patients with impaired renal function
6. ADVERSE REACTIONS
 - a. Feeling of warmth
 - b. Red flushed skin
 - c. Facial flushing
 - d. AV block
 - e. Bradycardia
 - f. Respiratory depression
 - g. Diaphoresis
 - h. Hypotension
 - i. Depressed reflexes
7. DRUG ACTION TIME
 - a. Onset: 1 – 2 minutes
 - b. Duration: 30 minutes
8. INFORMATIONAL/DISCUSSION POINTS
 - a. Severe side effects rarely happen with pre-hospital doses.
 - b. Heart block contraindications
 - c. When to use with the asthma patient
 - d. Why magnesium sulfate is used in eclamptic seizures over valium

Section: Drug Reference
Subject: METHYLENE BLUE
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Methylene Blue

1. CLASSIFICATION
 - a. Reducing Agent
2. ACTIONS / DESCRIPTIONS
 - a. Methemoglobin is produced when nitrates alter hemoglobin in order to attract cyanide that has been taken into the body.
 - b. Methemoglobin cannot carry oxygen.
 - c. If a large percentage of hemoglobin is converted to methemoglobin, the body may become hypoxic due to the reduced amount of hemoglobin available to carry oxygen.
 - d. Methylene blue chemically changes methemoglobin back to hemoglobin, resulting in more hemoglobin to carry oxygen.
3. INDICATIONS
 - a. Poisoning where nitrates are used to the point where there is greater than 30% of the hemoglobin converted to methemoglobin.
 - b. Methemoglobinemia with signs and symptoms of hypoxia.
4. CONTRAINDICATIONS
 - a. Known allergy to medication
5. PRECAUTIONS
 - a. Patients with kidney disease may require smaller doses.
6. ADVERSE REACTIONS
 - a. Large intravenous doses produce:
 - i. Abnormal and precordial pain
 - ii. Dizziness
 - iii. Profuse sweating
 - iv. Mental confusion
7. DOSAGE
 - a. 1 – 2 mg/kg of a 1% solution given IV slowly over 5 minutes.
8. INFORMATIONAL/DISCUSSION POINTS
 - a. Must be injected slowly
 - b. Tissue infiltration may cause necrotic abscesses
 - c. May stain the skin

Section: Drug Reference
Subject: METHYLPREDNISOLONE (SOLUMEDROL®)
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Methylprednisolone

1. CLASSIFICATION
 - a. Glucocorticoid
2. ACTIONS / DESCRIPTIONS
 - a. Naturally occurring steroid that suppresses acute and chronic inflammation.
 - b. Potentiates vascular smooth muscle relaxation by beta-adrenergic agonists, and may alter airway hyperactivity.
3. INDICATIONS
 - a. Inhalation of hot smoke and gases.
 - b. Anaphylaxis / allergic reactions
 - c. Bronchodilator / unresponsive asthma
 - d. COPD
 - e. Bronchial asthma
 - f. Shock (controversial)
 - g. Acute spinal cord injury (controversial)
4. CONTRAINDICATIONS
 - a. Use with caution in patients with GI bleeding.
5. PRECAUTIONS
 - a. Use with caution in patients with history of GI ulcers, CHF, and seizures.
 - b. Use extreme caution in patients with history of recent MI.
6. ADVERSE REACTIONS
 - a. Few short term
 - b. Headache
 - c. Hypertension
 - d. Sodium and water retention
7. DRUG ACTION TIME
 - a. Onset: rapid
 - b. Duration: seven days
8. INFORMATIONAL/DISCUSSION POINTS
 - a. Pre-hospital use, even with long onset time
 - b. Usage for reduction of post traumatic non-penetrating spinal cord edema within 8 hours of injury.
 - c. Use with extreme caution in patients with history of recent MI due to development of muscle weakening cardiomyopathy.
 - d. Use cautiously in patients with a history of GI ulcers, CHF, and seizures.
 - e. Cardiac arrest has been reported following rapid administration

Section: Drug Reference
Subject: MIDAZOLAM (VERSED®)
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Midazolam

1. CLASSIFICATION
 - a. Benzodiazepine Sedative/Hypnotic
2. ACTIONS / DESCRIPTIONS
 - a. Short acting benzodiazepine
 - b. CNS depressant with sedative, muscle relaxant, anticonvulsant, and amnesiac effects
 - c. Estimated to be 3 – 4 times as potent as diazepam
 - d. Intensifies inhibitory neurotransmitter of the brain. Acts to calm the patient, relaxes skeletal muscle, blocks memory, prevents feeling pain, but enables them to follow commands
3. INDICATIONS
 - a. Cardioversion
 - b. Behavioral emergencies
 - c. Transcutaneous pacing
 - d. RSI
 - e. Seizures
4. CONTRAINDICATIONS
 - a. Acute narrow-angle glaucoma
 - b. Shock
 - c. Coma
 - d. Acute alcohol intoxication
5. PRECAUTIONS
 - a. Should be used with CAUTION in patients with COPD and CHF.
6. ADVERSE REACTIONS
 - a. CNS: amnesia, headache, euphoria, confusion, agitation, anxiety, delirium, muscle tremor, & slurred speech
 - b. Cardiovascular: hypotension, PVCs, tachycardia, & vasovagal episode
 - c. Respiratory: coughing, bronchospasm, laryngospasm, apnea, hypoventilation, respiratory arrest, wheezing, and tachypnea
 - d. Alcohol and Narcotics: CNS and circulatory depressant effects will be potentiated
 - e. Grapefruit juice may prevent metabolism of drug resulting in increased potency
7. DRUG ACTION TIME
 - a. Onset: 1.5 – 5 minutes
 - b. Duration: 2 – 6 hours
8. INFORMATIONAL/DISCUSSION POINTS
 - a. Respiratory arrest with high doses or rapid push
 - b. Effects reversed with flumazenil.

Section: Drug Reference
Subject: MORPHINE SULFATE
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Morphine Sulfate

1. CLASSIFICATION
 - a. Narcotic
2. ACTIONS / DESCRIPTIONS
 - a. Natural opium alkaloid
 - b. Promotes analgesia, euphoria
 - c. Increases peripheral venous capacitance and decreases venous return ("chemical phlebotomy") through the release of histamine
 - d. Depresses responsiveness of alpha adrenergic receptors (producing peripheral vasodilation) and baroreceptor inhibition
 - e. Increases both preload and afterload, thus potential to decrease MvO^2
3. INDICATIONS
 - a. Pain management
4. CONTRAINDICATIONS
 - a. Hypovolemia
 - b. Hypotension
 - c. Head injury
 - d. Abdominal pain
5. PRECAUTIONS
 - a. Use with caution in the elderly, those with asthma, & those susceptible to CNS depression.
 - b. Use with caution in right ventricular MI.
6. ADVERSE REACTIONS
 - a. Respiratory depression
 - b. Hypotension (may be orthostatic)
 - c. Tachycardia, Bradycardia, or palpitations
 - d. Syncope
 - e. Bronchospasm
 - f. Dry mouth
 - g. Pupil constriction
 - h. Seizures
7. DRUG ACTION TIME
 - a. Onset: 5 minutes
 - b. Duration: 4 – 5 hours
8. INFORMATIONAL/DISCUSSION POINTS
 - a. Effects reversed with naloxone

Section: Drug Reference
Subject: NALOXONE (NARCAN®)
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Naloxone (Narcan®)

1. CLASSIFICATION
 - a. Synthetic Narcotic Antagonist.
2. ACTIONS / DESCRIPTIONS
 - a. Competitive narcotic antagonist.
 - b. Used in the management and reversal of overdoses caused by narcotics and synthetic narcotic agents
3. INDICATIONS
 - a. For the complete or partial reversal of CNS and respiratory depression induced by narcotics.
4. PRECAUTIONS
 - a. Use with caution in narcotic-dependent patients who may experience withdraw syndrome (including neonates of narcotic-dependent mothers).
5. ADVERSE REACTIONS
 - a. Adverse reactions are rare
 - b. Tachycardia
 - c. Hypertension
 - d. Dysrhythmias
6. DRUG ACTION TIME
 - a. Onset: 1 – 2 minutes
7. INFORMATIONAL/DISCUSSION POINTS
 - a. Use naloxone before attempting intubation
 - b. May not reverse hypotension
 - c. Complete reversal may cause withdraw symptoms of seizures, hypertension, tachycardia, & violent behavior
 - d. Shorter half life than narcotics. May need to repeat dosing.
 - e. Newborns of addicted mothers and their respiratory depression post delivery
 - f. If no response, but strong possibility of narcotic involvement, then repeat the dose

Section: Drug Reference
Subject: NITROGLYCERIN IV (TRIDIL®)
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Nitroglycerin – Intravenous

1. CLASSIFICATION
 - a. Nitrate
 - b. Vasodilator
2. ACTIONS / DESCRIPTIONS
 - a. Direct vasodilator (no alpha or beta activity)
 - b. Decreases preload primarily with some afterload reduction
 - c. Decreases workload of the heart and decreases M_vO^2 .
3. INDICATIONS
 - a. Chest pain of cardiac origin
 - b. CHF
4. CONTRAINDICATIONS
 - a. Hypotension (systolic BP < 90 mmHg)
 - b. Head injury
 - c. Cerebral hemorrhage
 - d. Erectile dysfunction medication use within last 24 – 48 hours
5. PRECAUTIONS
 - a. SEVERE additive hypotension is possible if used concurrently with antihypertensives, beta and/or calcium channel blockers, or alcohol.
6. ADVERSE REACTIONS
 - a. Hypotension (elderly more susceptible)
 - b. Transient headache
 - c. Syncope (possibly postural)
 - d. Reflex tachycardia
 - e. Diaphoresis
 - f. Vertigo and weakness
7. DRUG ACTION TIME
 - a. Onset: Immediate
 - b. Duration: 3 – 5 minutes
8. INFORMATIONAL/DISCUSSION POINTS
 - a. Goal of cardiac chest pain treatment is pain to a zero
 - b. Increases susceptibility to hypotension in the elderly
 - c. IV pump required for use
 - d. Erectile dysfunction medications
 - e. Right ventricular MI and hypotension
 - f. Treatment of hypotension secondary to IV NTG use
 - g. Chest trauma/cardiac contusion

Section: Drug Reference
Subject: NITROGLYCERIN SL (NITROSTAT®, NITROQUICK®)
Section #: 348.28
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Nitroglycerin – Sublingual

1. CLASSIFICATION
 - a. Nitrate
 - b. Vasodilator
2. ACTIONS / DESCRIPTIONS
 - a. Direct vasodilator (no alpha or beta activity)
 - b. Decreases preload primarily with some afterload reduction
 - c. Decreases workload of the heart and decreases M_vO^2 .
3. INDICATIONS
 - a. Chest pain of cardiac origin
 - b. CHF
4. CONTRAINDICATIONS
 - a. Hypotension (systolic BP < 90 mmHg)
 - b. Head injury
 - c. Cerebral hemorrhage
 - d. Erectile dysfunction medication use within last 24 – 48 hours
5. PRECAUTIONS
 - a. SEVERE additive hypotension is possible if used concurrently with antihypertensives, beta and/or calcium channel blockers, or alcohol.
6. ADVERSE REACTIONS
 - a. Hypotension (elderly more susceptible)
 - b. Transient headache
 - c. Syncope (possibly postural)
 - d. Reflex tachycardia
 - e. Diaphoresis
 - f. Vertigo and weakness
7. DRUG ACTION TIME
 - a. Onset: 1 – 3 minutes
 - b. Duration: 0.5 – 1 hour
8. INFORMATIONAL/DISCUSSION POINTS
 - a. Forms: Pills (Nitrostat®), Spray (Nitroquick®).
 - b. Goal of cardiac chest pain treatment is pain to a zero
 - c. Erectile dysfunction medications
 - d. Right ventricular MI and hypotension
 - e. Treatment of hypotension secondary to IV NTG use

Section: Drug Reference
Subject: NITROGLYCERIN TRANSDERMAL (NITRO-DUR®, NITRODISK®)
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Nitroglycerin – Transdermal

1. CLASSIFICATION
 - a. Nitrate
 - b. Vasodilator
2. ACTIONS / DESCRIPTIONS
 - a. Direct vasodilator (no alpha or beta activity)
 - b. Decreases preload primarily with some afterload reduction
 - c. Decreases workload of the heart and decreases M_vO^2 .
3. INDICATIONS
 - a. Chest pain of cardiac origin
 - b. CHF
 - c. Hypertensive crisis (when metoprolol is contraindicated)
4. CONTRAINDICATIONS
 - a. Hypotension (systolic BP < 90 mmHg)
 - b. Head injury
 - c. Cerebral hemorrhage
 - d. Erectile dysfunction medication use within last 24 – 48 hours
5. PRECAUTIONS
 - a. SEVERE additive hypotension is possible if used concurrently with antihypertensives, beta and/or calcium channel blockers, or alcohol.
6. ADVERSE REACTIONS
 - a. Hypotension (elderly more susceptible)
 - b. Transient headache
 - c. Syncope (possibly postural)
 - d. Reflex tachycardia
 - e. Diaphoresis
 - f. Vertigo and weakness
7. DRUG ACTION TIME
 - a. Onset: 30 minutes
 - b. Duration: 2 – 12 hours
8. INFORMATIONAL/DISCUSSION POINTS
 - a. Forms: Paste (Nitrostat®), Patch (Nitroquick®).
 - b. Goal of cardiac chest pain treatment is pain to a zero
 - c. Erectile dysfunction medications
 - d. Right ventricular MI and hypotension
 - e. Treatment of hypotension secondary to NTG use

Section: Drug Reference
Subject: NITROUS OXIDE (NITRONOX®)
Section #: 348.30
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Nitrous Oxide

1. CLASSIFICATION
 - a. Analgesic
 - b. Anesthetic
2. ACTIONS / DESCRIPTIONS
 - a. Does not have cardiovascular effects or respiratory depression
 - b. Analgesic
 - c. Anesthetic when concentration is above 50%
3. INDICATIONS
 - a. Moderate to severe pain, including chest pain of cardiac origin
 - b. Musculoskeletal injuries
4. CONTRAINDICATIONS
 - a. Impaired LOC
 - b. Head injury
 - c. Chest trauma (pneumothorax)
 - d. Inability to comply with instructions
 - e. Decompression sickness
 - f. COPD
 - g. Marked abdominal distention
 - h. Bowel obstruction
 - i. Hypotension
5. ADVERSE REACTIONS
 - a. Dizziness
 - b. Vertigo
 - c. Loss of control
 - d. Expansion of gas-filled pockets
 - e. Apnea
 - f. Euphoria
6. DRUG ACTION TIME
 - a. Onset: 2 – 5 minutes
 - b. Duration: 2 – 5 minutes
7. INFORMATIONAL/DISCUSSION POINTS
 - a. Duration of action
 - b. Self administered

Section: Drug Reference
Subject: ONDANSETRON HCI (ZOFTRAN®)
Section #: 348.31
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Ondansetron HCI

1. CLASSIFICATION
 - a. Antiemetic
2. ACTIONS / DESCRIPTIONS
 - a. Acts peripherally on vagus nerve and centrally on CTZ (chemoreceptor trigger zone).
3. INDICATIONS
 - a. Nausea and vomiting
4. CONTRAINDICATIONS
 - a. Allergy to medication
5. PRECAUTIONS
 - a. Patients with impaired liver function
6. ADVERSE REACTIONS
 - a. Drowsiness, sedation
 - b. Extrapyramidal reactions
 - c. QT prolongation
 - d. Hypotension

Section: Drug Reference
Subject: PRALIDOXIME (2-PAM®)
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Pralidoxime

1. CLASSIFICATION
 - a. Cholinesterase Reactivator
2. ACTIONS / DESCRIPTIONS
 - a. Reactivates cholinesterase that has been inactivated due to organophosphates or nerve agent poisoning.
 - b. Breaks the phosphorus bond between the organophosphate or nerve agent and cholinesterase thereby regenerating the enzyme.
 - c. Cholinesterase breaks down acetylcholine so that effects of the parasympathetic nervous system (PNS) do not continue
3. INDICATIONS
 - a. Antidote for anticholinesterase inhibitor poisoning.
 - i. Organophosphates or nerve agents after atropine administration
4. CONTRAINDICATIONS
 - a. Known allergy to medication
5. PRECAUTIONS
 - a. Patients with myasthenia gravis
6. ADVERSE REACTIONS
 - a. Dizziness
 - b. Tachycardia, hypertension
 - c. Blurred vision
 - d. Muscle weakness
7. DOSAGE
 - a. 1.0 – 2.0 gm by IV infusion in 100 mL over 15 – 30 minutes (may be repeated if needed)
8. INFORMATIONAL/DISCUSSION POINTS
 - a. NOT USED in carbamate poisoning
 - b. Must be administered prior to the bond between the organophosphate or nerve agent and cholinesterase becoming permanent (aging).

Section: **Drug Reference**
Subject: **ROCURONIUM BROMIDE (ZEMURON®)**
Section #: **348.33**
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Rocuronium Bromide

1. CLASSIFICATION
 - a. Non-Depolarizing Neuromuscular Blocker (Curariform Drug)
2. ACTIONS / DESCRIPTIONS
 - a. Non-Depolarizing paralytic that affects nicotinic acetylcholine muscle receptors.
 - b. Rapid to intermediate onset.
 - c. Intermediate duration
3. INDICATIONS
 - a. To provide prolonged paralysis as part of the RSI process
 - b. To manage post resuscitation hypothermia through the prevention of shivering.
4. CONTRAINDICATIONS
 - a. Known allergy to medication or bromides
5. PRECAUTIONS
 - a. Patients with liver disease may need higher doses to achieve adequate muscle relaxation
6. ADVERSE REACTIONS
 - a. Tachycardia
 - b. EKG changes
 - c. Transient hypotension
 - d. Hypertension
7. DRUG ACTION TIME
 - a. Onset: 1 minute
 - b. Duration: 20 – 60 minutes
8. INFORMATIONAL/DISCUSSION POINTS
 - a. Carbamazepine (Tegretol®) or phenytoin (Dilantin®) may decrease the duration of action.
 - b. Antibiotics may increase duration of action.
 - c. Patients with burns are known to develop resistance to non-depolarizing neuromuscular blocking agents.
 - d. Physically incompatible with diazepam, furosemide, and methylprednisolone.
 - e. Keep refrigerated prior to use (DO NOT freeze).
 - f. If kept at room temperature, it must be used within 60 days.

Section: Drug Reference
Subject: SODIUM BICARBONATE
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Sodium Bicarbonate

1. CLASSIFICATION
 - a. Electrolyte
 - b. Buffer
2. ACTIONS / DESCRIPTIONS
 - a. Reacts with hydrogen ions to form water and carbon dioxide
 - b. Buffers metabolic acidosis
3. INDICATIONS
 - a. Intubated patient with continued long arrest interval
 - b. Tricyclic antidepressant overdose
4. CONTRAINDICATIONS
 - a. Metabolic or respiratory alkalosis
5. PRECAUTIONS
 - a. Patients with heart failure
6. ADVERSE REACTIONS
 - a. Metabolic Alkalosis
 - b. Increases intracellular PCO₂ and increases tissue acidosis.
 - c. Produces CO₂, which crosses cell membranes more rapidly than bicarbonate (potentially worsening intracellular acidosis).
 - d. Electrolyte imbalance
 - e. Tissue sloughing at injection site with extravasation
7. INFORMATIONAL/DISCUSSION POINTS
 - a. Adequate ventilation and CPR are the major "buffer agents" in cardiac arrest
 - b. Blood gas analysis should guide bicarbonate administration (pre-hospital).
 - c. When to use in tricyclic antidepressant overdose

Section: Drug Reference
Subject: SODIUM NITRITE
Section #: 348.35
Issue Date: March 21, 2011
Revision Date:
Approved By:

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Sodium Nitrite

1. CLASSIFICATION
 - a. Naturally occurring chemical compound (NaNO_2)
2. ACTIONS / DESCRIPTIONS
 - a. Induces the formation of methemoglobin by altering the ferrous iron (Fe^{+2}) in the blood to ferric iron (Fe^{+3})
 - b. Methemoglobin combines with cyanide to form the non-toxic cyanmethemoglobin
 - c. Produces vasodilation by relaxing smooth muscles
 - d. In hydrogen sulfide (H_2S) poisoning, the H_2S is similarly drawn to the methemoglobin preventing the bonding of H_2S to the functional iron groups (ferric moiety) in the blood.
3. INDICATIONS
 - a. Cyanide ($\text{C}=\text{N}$) poisoning
 - b. Hydrogen Sulfide (H_2S) poisoning
4. CONTRAINDICATIONS
 - a. Sodium Nitrite should not be administered to asymptomatic patients following exposure to cyanide
5. PRECAUTIONS
 - a. Excessive methemoglobinemia may occur.
6. ADVERSE REACTIONS
 - a. Cyanosis may occur at blood methemoglobin concentrations $\geq 15\%$. Symptoms usually do not appear until concentrations reach 30 – 40%
 - b. Hypotension
 - c. Weakness
 - d. Tachycardia
 - e. Dyspnea
 - f. Dizziness and syncope
7. DOSAGE
 - a. 300 mg IV over 5 minutes
8. DRUG ACTION TIME
 - a. Onset: 2 – 5 minutes
 - b. Duration: Varies

Section: Drug Reference
Subject: SODIUM THIOSULFATE
Section #: 348.36
Issue Date: March 21, 2011
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Sodium Thiosulfate

1. CLASSIFICATION
 - a. Crystalline Compound ($\text{Na}_2\text{S}_2\text{O}_3$)
2. ACTIONS / DESCRIPTIONS
 - a. Converts cyanide to the less toxic thiocyanate (SCN), also known as rhodanide
 - b. The thiocyanate is then excreted in the urine
3. INDICATIONS
 - a. Cyanide poisoning
4. CONTRAINDICATIONS
 - a. None when used in the treatment of cyanide poisoning
5. PRECAUTIONS
 - a. Is most effective as a cyanide antidote when used in conjunction with nitrites
6. ADVERSE REACTIONS
 - a. Nausea
 - b. Vomiting
 - c. Joint aches
7. DOSAGE
 - a. 12.5 gm slow IV
 - b. Maybe repeated at 6.25 gm ($\frac{1}{2}$ dose) slow IV after 30 minutes if signs and symptoms have not improved.
8. DRUG ACTION TIME
 - a. ONSET: 2 – 5 MINUTES
9. INFORMATIONAL/DISCUSSION POINTS
 - a. Do not give if elevated CO level in the blood that has not been corrected.

Section: Drug Reference
Subject: SUCCINYLCHOLINE (ANECTINE®)
Section #: 348.37
Issue Date: March 21, 2011
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Succinylcholine

1. CLASSIFICATION
 - a. Depolarizing Neuromuscular Blocker
2. ACTIONS / DESCRIPTIONS
 - a. Depolarizing paralytic that affects nicotinic acetylcholine muscle receptors
 - b. Causes depolarization of the muscle membrane leading to fasciculations and some muscular contractions.
 - c. Short duration of action
3. INDICATIONS
 - a. To provide short term paralysis as part of the RSI process
4. CONTRAINDICATIONS
 - a. Known allergy to medication
5. ADVERSE REACTIONS
 - a. Hypotension
 - b. Bradycardia and ventricular dysrhythmias
 - c. Hyperkalemia
 - d. Malignant hyperthermia
 - e. May exacerbate hyperkalemia in trauma patients (hours post-trauma)
6. DRUG ACTION TIME
 - a. Onset: less than 1 minute
 - b. Duration: 4 – 10 minutes
7. INFORMATIONAL/DISCUSSION POINTS
 - a. Neuromuscular blocking agents will produce respiratory paralysis (intubation & ventilatory support MUST be accomplished).
 - b. No effect on the consciousness or pain level of the patient (consider the use of analgesics).
 - c. Initial muscle fasciculations.
 - d. Premedication with atropine should be strongly considered in pediatrics and with repeat doses in the adult patient.
 - e. Premedication with lidocaine may blunt any increase in ICP associated with intubation (used when etomidate is contraindicated).
 - f. Children are not as sensitive to succinylcholine on a weight basis and may require higher doses.
 - g. Some antibiotics may enhance blocking action.
 - h. Effects are not reversible (other than by time).
 - i. Some patients may have prolonged paralysis due to low levels of cholinesterase.

Section: Drug Reference
Subject: VECURONIUM BROMIDE (NORCURON®)
Section #: 348.38
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Vecuronium Bromide

1. CLASSIFICATION
 - a. Non-Depolarizing Neuromuscular Blocker (Curaiform Drug)
2. ACTIONS / DESCRIPTIONS
 - a. Non-Depolarizing paralytic that affects nicotinic acetylcholine muscle receptors
 - b. Long duration of action.
3. INDICATIONS
 - a. To provide long term paralysis as part of the RSI process
 - b. To manage post resuscitation hypothermia through the prevention of shivering
4. CONTRAINDICATIONS
 - a. Known allergy to medication
5. ADVERSE REACTIONS
 - a. May be a delay in effect in older patients with coronary artery disease and peripheral edema
 - b. Only use in the pregnant female if clearly needed
 - c. Antibiotics may increase duration of neuromuscular blockade
6. DRUG ACTION TIME
 - a. Onset: approximately 1 minute
 - b. Good intubation conditions: 2.5 – 3 minutes
 - c. Maximum paralytic effect: 3 – 5 minutes
 - d. Duration: 60 – 70 minutes
7. INFORMATIONAL/DISCUSSION POINTS
 - a. Neuromuscular blocking agents will produce respiratory paralysis (intubation & ventilatory support MUST be accomplished).
 - b. Prolonged respiratory apnea.
 - c. No effect on the consciousness or pain level of the patient (consider the use of analgesics).
 - d. Premedication with lidocaine may blunt any increase in ICP associated with head injuries (used when etomidate is contraindicated).

Section: Standards for Medical Documentation
Subject: GENERAL STANDARDS FOR DOCUMENTATION
Section #: 360.01
Issue Date: February 1, 2012
Revision Date: December 1, 2017
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1. It should always be remembered, in a legal sense, "if it was not documented, it was not done".
2. Any response or encounter with a patient, as defined below, shall have an ePCR (electronic patient care record) completed by all units and an Incident Number assigned:
 - a. A "patient" is defined as a person encountered by a member of HCFR who by complaint of injury or illness, observation of the responder, or mechanism of injury may be *expected* to require medical evaluation and/or attention.
 - i. An individual ePCR report is required for each patient.
 - b. A "minor" (for purposes of legal consent) is defined as a person/patient less than 18 years of age who is not emancipated.
 - c. An "emancipated minor" is defined as a person/patient less than 18 years of age who is married, pregnant (for pregnancy related treatment purposes), has a child, or said person/patient has been emancipated by the legal system.
 - i. A minor deemed to be emancipated must have supporting documentation.
3. When an HCFR Rescue Company and Suppression Company arrive on the scene at the same time, it shall be the responsibility of the Rescue Officer to ensure that his/her crew initiates patient contact, care, and documentation of all pertinent data as it relates to the patient encounter and all care rendered.
 - a. Should an HCFR Suppression Company arrive at the patient prior to an HCFR Rescue Company and the Suppression Company completes any part of a patient assessment or performs any intervention/treatment for the patient's medical condition, the Suppression Officer shall ensure that a member of his/her crew completes an ePCR for all observations, evaluation, care, and pertinent events that occurred prior to transfer of care to the Rescue Company.
 - b. When Suppression and Rescue units are on scene together and it is determined the patient will be turned over to a private provider for transport, the suppression unit will customarily complete the transfer of care and required documentation. The Rescue Officer shall be the lead medical authority and ultimately responsible for patient care while he/she is on scene; however, in the event of disagreement between providers as to the level of transport required, Medic 1 should be consulted for guidance if the providers are unable to resolve.
 - i. The unit not completing the transfer of care will complete their ePCR and provide a short narrative description of the patient assessment, care performed by their crew and level of involvement. It is important for procedures and evaluations to be attributed to the personnel who actually performed them.
4. At any time a patient, who is in the care of an HCFR medical provider, is turned over to another outside medical care provider (private or public) for the purpose of transport to a receiving facility, the Officer in Charge of the HCFR unit shall ensure that a MERF containing the patients identification, past medical history, medications, patient assessment to include vital signs and any care provided is completed and a legible copy is provided to the transporting agency.
 - a. A complete ePCR report is also required for these instances.
 - i. The ePCR shall include, but not be limited to, patient demographics, past medical history, medications, mental status, two sets of stable and within normal limit vital signs, scene observations, evaluations performed, any care rendered and other pertinent information.
 - b. When document scanners are available, a copy of the MERF shall be attached to the ePCR.

Section: **Standards for Medical Documentation**
Subject: **GENERAL STANDARDS FOR DOCUMENTATION**
Section #: **360.01**
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5. For patients who allow an examination, but refuse further care or transport to a receiving facility:
 - a. Ensure the patient is competent to make an informed decision:
 - i. 18 year of age or older or an emancipated minor
 - ii. Is awake, alert and fully oriented to person, place and time
 - iii. Has no alteration in vital signs, mental status, level of consciousness or have a chronic illness which may influence the ability to make informed decisions
 - iv. Is not impaired by drugs, alcohol or acute illness which may cause cognitive impairment.
 - b. Completely document all aspects of the patient encounter and exam.
 - c. Make sure that a minimum of two (2) separate and complete sets of vital signs are obtained.
 - d. A thorough evaluation must be documented.
 - e. Make sure that the narrative thoroughly explains all efforts employed to get the patient to seek a higher level of medical attention and everything observed in the physical exam.
 - i. Include in your documentation that after having been informed of the possible side effects or adverse consequences, the patient still refused care.
 - ii. To be legally binding, it must be clear that the patient understands all elements of what he or she is signing. The patient must certify and acknowledge all elements (4) of the patient release statement (ePCR) or checkboxes (MERF) prior to signing the document.
 - iii. Whenever possible, have another member of the patient's family witness and sign the refusal of care.
 - iv. Minors must have the release signed by a parent, guardian (guardian is defined as a legally designated guardian, or any adult relative verified by photo ID) or Hillsborough County School Administrator.
 1. If a parent, guardian or school administrator is not physically present to sign the informed refusal, their arrival on scene will be significantly delayed and they have indicated a refusal for transport verbally when speaking directly with an HCFR representative in a low risk situation contact Medic 1 for guidance.
 2. If authorization is received to grant a verbal refusal of transport from Medic 1, document the parent/guardian/school administrator's name, relationship to the patient, telephone number and other requirements as indicated above to be legally binding.
 3. Under no circumstances shall a minor be left unattended awaiting parental arrival.
 4. Do not delay the transport of a minor patient in emergent situations awaiting parental consent.
6. In the event a patient adamantly refuses examination, document the following information:
 - a. Ensure the patient is competent to make an informed decision:
 - i. 18 year of age or older or an emancipated minor
 - ii. Is awake, alert and fully oriented to person, place and time
 - iii. Has no alteration in vital signs, mental status, level of consciousness or have a chronic illness which may influence the ability to make informed decisions
 - iv. Is not impaired by drugs, alcohol or acute illness which may cause cognitive impairment.

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- b. Try to obtain the patient's name, address, phone number, and date of birth.
 - c. Include in the narrative that the patient adamantly refused all attempts at evaluation and care.
 - d. Attempt to obtain the patient's or legal guardian's signature.
 - e. If the patient refuses to sign the "AMA" release section, have an HCSO Deputy (when on scene) witness the refusal and sign the witness section of the form.
 - f. Document all attempts at patient care and all statements of refusal the patient makes.
7. Minors and patients with any type of altered mental status cannot legally sign a release and thus cannot refuse medical treatment.
8. Citizen assist/Lift assist type incidents shall have an ePCR completed to include patient demographics, mental status, vital signs, evaluation performed to determine no illness/injury is present and a description of the service provided.
9. Family members cannot sign a release for an *adult* patient unless they can produce a legally sufficient *Legal Power of Attorney*.
10. If a patient has a life threatening illness/injury, always err on the side of providing treatment.
 - a. When necessary, ask law enforcement to assist in persuading the patient to allow care and/or transport and have them witness release of liability forms.
11. If you are called to examine or treat a patient in the care of a private BLS provider, document a complete patient evaluation, including vital signs, regardless of who transports.
 - a. Include in the ePCR the reason the BLS provider called you.
12. The Company officer shall ensure all reports for the shift are completed and submitted properly prior to leaving the station.
 - a. EMT personnel assigned to suppression apparatus may author the ePCR for BLS level patients only (no ALS interventions or evaluations by any HCFR member).
 - i. In these instances, the standalone paramedic assigned to the apparatus remains responsible for the medical care, thoroughness and content of the documentation.
13. The "Delete Request" option shall ONLY be considered in the following circumstances:
 - a. Calls replicated in error
 - b. Duplicate calls on the server
 - i. Cancellations, test pages and similar incidents shall have a report completed with pertinent information included in the narrative section when applicable.

**Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL**

Section: Standards for Medical Documentation
 Subject: ACCEPTABLE MEDICAL ABBREVIATIONS
 Section #: 360.02
 Issue Date: February 1, 2012
 Revision Date: December 1, 2017
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1. The following is a list of acceptable medical abbreviations for use on HCFR medical documentation.

Medical Abbreviations				
A+Ox3	alert and oriented to person, place, time		N/A	not applicable
AMI	acute myocardial infarction		NKA	no known allergies
ARDS	acute respiratory distress syndrome		NKDA	no known drug allergies
a.m.a.	against medical advice		NS	normal saline
BSA	body surface area		NTG	nitroglycerin
c/o	complains of		N/V	nausea & vomiting
CC, c/c	chief complaint		O₂	oxygen
CA	cancer		OTC	over-the-counter
CAD	coronary artery disease		PA O₂	partial pressure of oxygen
cath.	Catheter, catheterize		PE	pulmonary embolism
CAO	conscious, alert, oriented		PEEP	positive end-expiratory pressure
CHF	congestive heart failure		PERRL	pupils equal, round, and reactive to light
COPD	chronic obstructive pulmonary disease		PSVT	paroxysmal supra ventricular tachycardia
CP	chest pain		PVC	Premature ventricular contraction
CVA	cerebral vascular accident		pVT	Pulseless ventricular tachycardia
D.I.B.	difficulty in breathing		R/O	Rule out
DNRO	Do Not Resuscitate Order		RBBB	Right bundle branch block
Dx, dx	diagnosis		Rx	Prescription
Fx, fx	fracture		s/s	Signs & symptoms
GYN, Gyn	gynecological		SpO₂	Pulse Oximetry
H/A	headache		SSN	Social security number
H&P	history & physical exam		Sz	Seizure
HTN	hypertension		TB	Tuberculosis
Hx, h/o	history, history of		TIA	Transient ischemic attack
ICP	intracranial pressure		TKO	To keep open
IDDM	insulin dependent diabetes mellitus		Tx	Treatment
JVD	Jugular venous distention		URI	Upper respiratory infection
LBBB	left bundle branch block		UTI	Urinary tract infection
LMP	last menstrual period		VF	ventricular fibrillation
LR	lactated ringers		VS	vital signs
LSB	long spine board		VT	ventricular tachycardia
LZ	landing zone		WNL	within normal limits
MI	Myocardial Infarction		WPW	Wolf-Parkinson-White syndrome
MS	multiple sclerosis		y/o	Year old (## y/o female)

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

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2. In addition to those listed in the table, the following guidelines should be followed:
 - a. If there is any question as to whether or not you will be able to remember what an approved abbreviation stands for when asked in a Court of Law, DON'T USE IT.
 - b. Abbreviations used to name medical procedures or drug classifications are acceptable (MRI, CAT scan, MAO inhibitor, etc.)
 - c. Units of measure may be abbreviated (mL, mmHg, etc.)
 - d. Routes of drug delivery may be abbreviated (IV, IO, etc.)
 - e. Anatomical locations may be abbreviated (AC, LLQ, abd, etc.)

Section: Standards for Medical Documentation
Subject: ELECTRONIC PATIENT CARE REPORT (ePCR) – RESCUE COMPANIES
Section #: 360.03
Issue Date: February 1, 2012
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1. This policy, and the standards for documentation contained within, is an addition to all other HCFR policies governing the proper and timely documentation of encounters between members of HCFR and patients.
 - a. The assigned Rescue Officer or Acting Rescue Officer will ensure that the ePCR will address and fulfill all requirements of the HCFR Standards of Medical Documentation to include patient demographics, past medical history, medications, assessment, vital signs, treatment, procedures and correct dispositions, etc.
 - b. The assigned Rescue Officer or Acting Rescue Officer will review each report's narrative to ensure it portrays an accurate and thorough representation of the incident. A detailed physical exam should also be documented in this section. It is understood and expected that this will repeat some of the information noted in various check box type portions of the report. This is the only written medical record of what the scene was like, what the mechanism of injury might have been, any pertinent negatives etc. It may also be used in court, so be careful to support any comments about apparent intoxication, apparent mechanism of injury and so on. The narrative section should paint a complete picture of the patient encounter for the reader. While not mandatory, the CHART method is recommended.
 - c. The Flow Sheet shall be used as a record of chronological events of the patient's care from the time the first provider makes patient contact, until the patient is transferred to the care of another agency or receiving facility. The Flow Sheet does not replace the requirements of the narrative section. All vital signs, treatments and interventions shall be documented in the flow sheet section.
 - i. Medication doses shall be listed as the actual dosage administered to the patient, not the dosing regimen listed in the protocol.
 - d. It is important for procedures to be attributed to the personnel who actually performed them, and not simply the apparatus to which they are assigned.
 - i. When suppression company personnel perform skills after care has been transferred to the rescue, the crewmember will be added to the "Assist" tab of the rescue ePCR so that all skills performed by that crewmember may be attributed to him/her.
 1. "Engine 1" cannot perform a skill; the skill is to be attributed to the specific crewmember who performed the skill.
 - ii. In the event that a paramedic student performs a skill, attribute the skill to the supervising paramedic and document the performance of the skill by the student in the narrative section.
2. General Requirements for the ePCR:
 - a. Each response for a call, including cancellations, test pages, structure fires etc., by a Rescue Company will be documented using departmental approved ePCR software and hardware.
 - b. At the beginning of each shift, Rescue Officers will ensure that they have a properly functioning tablet computer; with charged batteries, accessories, and an operational printer.
 - i. The oncoming crew shall sign on after the off-going crew logs off.
 - ii. When building a roster in ePCR software, the officer or acting officer will be the first crew member listed.
 - iii. Due care shall be exercised when building a roster to ensure accuracy. Rosters will need to be updated with every change in personnel to accurately reflect members on a call.
 - iv. The IIO systems coordinator will be notified via email and STATS ticket of tablet/OMG problems.

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1. The Quality Management Chief shall be notified via email of on-going tablet/OMG problems not able to be resolved by IIO staff within 3 business days.
- c. The appropriate CAD entry for each response shall be linked to each ePCR.
 - i. In the event of CAD failure, or if the incident's CAD entry is not visible on the list, use the "Add a CAD" feature.
- d. The Rescue Officer will ensure that all reports for the shift are completed and uploaded to the server prior to leaving the station.
 - i. All required fields, as indicated by red font, within each report must be completed
 - ii. The narrative section, as described above, must be completed.
 - iii. The Flow Sheet, when indicated, must be completed.
 - iv. If the CAD or Server is down at the end of shift, preventing the uploading of reports, the Battalion Chief, and Quality Management Chief will be notified by email and the reports will be saved on the computer for submission the next shift.
- e. The signature capture feature will be used for patient responsibility, refusals of care/transportation, etc.
 - i. In the event that a tablet PC or this feature is unavailable, hard copies of the appropriate forms will be signed and forwarded with the shift paperwork. When document scanners are available, the front and back (when applicable) of these form will be scanned and attached to the ePCR.
 - ii. For patient release/refusal the MERF form shall be used as the non-electronic form for signature only when indicated as above.
 1. The MERF shall have date of service, incident number, unit/shift, patient's name and short narrative describing signature (i.e. patient refusal, see ePCR for report) on the front of the form as a minimum data set for record keeping and clarity purposes.
 2. The patient release/refusal will be completed on the back of the form to include appropriate check boxes, crew member names, incident number, time, patient's signature, patient printing of name and witness signatures when indicated.
 - iii. For all transports, patient signature must be obtained at the time of service.
 - iv. If the patient is unable to sign the "Responsibility" form, you must document why the patient is unable to sign and have the following three signatures collected at the time of transfer:
 1. Responsibility Patient Unable to Sign (PUTS)
 - a. Crewmember must sign this, verifying the patient is unable to sign for him/herself.
 2. Receiving Agency Signature
 - a. Hospital representative must sign this form electronically.
 3. Either:
 - a. Responsibility
 - i. Patient representative as defined as: spouse, legally appointed power of attorney or healthcare surrogate, or legal guardian must sign this form, **or**:

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- b. Representative Unable to Sign
 - i. Crewmember must sign this form, attesting to the fact that no patient representative, as defined above, is available.
 - 4. Non-electronic version would be the Ambulance Billing Authorization Form.
 - 5. When completion of the Ambulance Billing Authorization Form is necessary, include the incident number and date of service in the top right corner of the form.
 - 6. When use of the Ambulance Billing Authorization Form is necessary, notation of same and method of submittal will be included in the signature section of the ePCR.
- v. If a family member or patient representative is signing for the patient, you must include their relationship to the patient.
- vi. If a hospital representative is signing for the patient, you must include the name of the facility and their printed name along with signature.
- vii. If the hospital employee refuses to sign this form, notify your Battalion Chief and email the Quality Management Chief for follow-up with hospital administration. Attempt to obtain a hospital face sheet, note the incident number on the top right, and scan into ePCR.
- f. Controlled substance processing will be handled using original hard copy documentation.
- g. The Lifepak® vital signs and ECG file will be uploaded and embedded into each report.
 - i. If you are unable to embed the ECG file into the report electronically, a printed copy of at least a 6-second strip shall be scanned and attached to the ePCR. This is rare, and should only be associated with documented equipment failure.
 - ii. Erroneous vital signs imported from the LifePak® should be manually corrected to reflect the clinical judgement and actual findings of crew members.
- h. A hard copy of the report (abbreviated or completed) will be provided to the ED staff for any patient transported, prior to leaving the ED.
 - i. This hard copy must provide information to the receiving hospital at the time the patient is transferred that contains "all known pertinent incident, patient identification and patient care information" as a requirement of FAC 64J.
 - ii. Copies of all EKG rhythm strips and 12-lead EKGs shall be provided prior to leaving the ED.
 - iii. In the event that an ePCR cannot be completed and printed prior to leaving the hospital, a legible copy of a completed MERF form shall be left in the ER, which must include all observations, care rendered, vital signs, and pertinent information and events that occurred prior to the transfer of care to the receiving facility (patient name, initial v/s, GCS, etc.).
 - iv. The completion of a MERF form does not replace the requirement for an ePCR to be completed nor does it diminish the elements required for satisfactory completion of the ePCR. All information on the MERF should be duplicated in the ePCR.
 - v. The auto-fax feature is used to submit completed reports to the indicated receiving facility.
 - 1. This does not meet the requirement of paperwork transfer at the time of patient transfer to the ED, and should not be relied upon for this purpose.
 - vi. A fax will be sent to the Medical Examiner's Office upon the completion of an ePCR for a deceased person.

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- i. Login PIN numbers shall not be shared.
 - j. Patient information contained within the MERF or ePCR; whether on the tablet computer, station PC, or printed copy shall be considered PHI and maintained as confidential in accordance with the department's HIPAA policy.
 - k. Crew members are to check at each login for messages from the System Administrators and reply as requested.
 - i. These may come from the Quality Management Chief, Medical Director, Quality Assurance Officer, or other Rescue Division member.
 - ii. If you have any reports which you were unable to upload previously, do so upon login.
3. Patient information/guarantor information – Accurate, complete information is important. With incorrect or incomplete information, bills may never be paid, which will eventually decrease the quality of care Fire Rescue is able to provide. It is understood that you may not always be able to get all the information requested, but try and get as much of the below as possible.
- a. Patient name (correct spelling, no nicknames)
 - b. Patient's address
 - c. Date of birth
 - d. Patient's phone number
 - e. Patient/Guarantor's social security number
 - f. Patient's Medicaid number
 - g. Patient's Medicare number
 - h. Guarantor's name
 - i. Worker's Compensation claim information
 - j. Private insurance information (company name, policy number, etc.)
4. An Emergency Room chart/medical record number shall be obtained for all transported patients and the number recorded in all ePCRs for appropriate billing.
- a. Should the ER chart/medical record number not be available prior to the crews departure from the facility:
 - i. The Rescue Officer or Acting Rescue Officer shall call the facility to obtain the ER chart number prior to the end of their shift.
 - ii. Difficulties encountered when contacting facilities for chart/medical record numbers should be documented.
5. When document scanners are available, hard copy documents and forms relating to patient care shall be scanned and attached to the patient's ePCR.
- a. When signatures are captured on MERF or Ambulance Billing Authorization forms, these forms will be scanned and attached to the ePCR.
 - b. All forms referenced in the ePCR, either directly or indirectly, shall be attached to the ePCR prior to completion. Examples are: medication Lists, patient history and physical sheets, DNROs, and other associated pertinent information.
 - c. Face sheets, when obtained, shall be scanned and attached to the ePCR.
 - d. Controlled Substance forms, Stroke Alert forms, STEMI Alert forms, SEPSIS Alert forms and other pertinent departmental forms shall be scanned and attached to the ePCR

Section: Standards for Medical Documentation
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Issue Date: February 1, 2012
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- e. All hard copy documents shall be shredded (cross-cut) in accordance with HIPAA policy **AFTER** you ensure the document has been scanned and attached to the ePCR. Use care to ensure the correct side of the document was scanned prior to shredding the document.
6. National Fire Incident Reporting System (NFIRS) Tab Completion:
- a. NFIRS data must be reported on every call run by HCFR
 - b. One apparatus on each incident is responsible for entering a specific NFIRS Incident type on each call.
 - i. On a medical call, the first suppression unit on scene will **always** complete the NFIRS tab within the medical report, choosing the most appropriate three-digit incident type from the available options.
 1. This is regardless of whether or not the patient is transported.
 - ii. All other apparatus on the call should complete a "Supplemental" NFIRS Incident type to avoid multiple incident types from being reported on the same call.
 - iii. If no suppression unit arrives on scene, or they are cancelled on arrival, the rescue company will complete the NFIRS tab with the appropriate three-digit code.
 1. Suppression companies performing a "Unit Assist" will still complete the NFIRS tab with the appropriate incident type.

Section: Standards for Medical Documentation
Subject: ELECTRONIC PATIENT CARE REPORT (ePCR) – SUPPRESSION COMPANIES
Section #: 360.04
Issue Date: February 1, 2012
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Approved By:

Michael Lozano

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1. This policy, and the standards for documentation contained within, is an addition to all other HCFR policies governing the proper and timely documentation of encounters between members of HCFR and patients.
2. General Requirements for the ePCR:
 - a. Each response for a medical call, including cancellations, test pages, lift/citizen assist etc. by a Suppression Company will be documented using departmental approved ePCR software and hardware.
 - b. When building a roster in ePCR software, the officer or acting officer will be the first crew member listed. The driver engineer or acting driver engineer will be second and so on based on rank.
 - c. Due care shall be exercised when building a roster to ensure accuracy. Rosters will need to be updated with every change in personnel to accurately reflect members on a call.
 - d. The assigned Suppression Officer or Acting Suppression Officer shall ensure that an authorized member of his/her crew completes an ePCR for all observations, patient evaluations, treatment provided and pertinent events that occurred prior to transfer of care or patient refusal of care as well as actions performed while on scene with other companies as outlined in 360.01.
 - e. The standalone paramedic suppression member assigned to complete the medical report shall be responsible for ensuring that the ePCR will address and fulfill all requirements of the HCFR Standards of Medical Documentation as applicable.
 - i. The report's narrative section, when indicated, shall portray an accurate and thorough representation of the incident. A detailed physical exam, or any portion of one performed, should also be documented in this section. It is understood and expected that this will repeat some of the information noted in various check box type portions of the report. This is the only written medical record of what the scene was like, what the mechanism of injury might have been, any pertinent negatives etc. It may also be used in court, so be careful to support any comments about apparent intoxication, apparent mechanism of injury and so on. The narrative section should paint a complete picture of the patient encounter for the reader. While not mandatory, the CHART method is recommended
 - ii. The Flow Sheet shall be used as a record of chronological events of the patient's care from the time the first provider makes patient contact, until the patient is transferred to the care of another agency or receiving facility. The Flow Sheet does not replace the requirements of the narrative section. All vital signs, treatments and interventions shall be documented in the flow sheet section.
 1. Medication doses shall be listed as the actual dosage administered to the patient, not the dosing regimen listed in the protocol.
 2. Intervention attempts (both successful and unsuccessful) shall be listed individually, with results and crewmember performing the attempt included in each Flow Sheet entry.
 - f. It is important for procedures to be attributed to the personnel who actually performed them.
 - g. The Suppression Officer or Acting Suppression Officer will ensure that all reports for the shift are completed and uploaded to the server prior to leaving the station.
 - i. If the CAD or Server is down at the end of shift, preventing the uploading of reports, the Battalion Chief and Quality Management Chief will be notified by email and the reports will be saved on the computer for submission the next shift.

Section: Standards for Medical Documentation
Subject: ELECTRONIC PATIENT CARE REPORT (ePCR) – SUPPRESSION COMPANIES
Section #: 360.04
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- h. The Lifepak® vital signs and ECG file will be uploaded and embedded into each report.
 - i. If you are unable to embed the ECG file into the report electronically, a printed copy of at least a 6-second strip shall be scanned and attached to the ePCR. This is rare, and should only be associated with a documented equipment failure.
 - ii. Erroneous vital signs imported from the LifePak® should be manually corrected to reflect the clinical judgement and actual findings of crew members.
 - i. In the absence of a tablet computer, the MERF form will be used to capture signatures as required.
 - i. The completion of a MERF form does not replace the requirement for an ePCR to be completed nor does it diminish the elements required for satisfactory completion of the ePCR.
 - ii. The MERF shall have date of service, incident number, unit/shift, patient's name and short narrative describing signature (i.e. patient refusal, see ePCR for report) on the front of the form as a minimum data set for record keeping and clarity purposes.
 - iii. The patient release/refusal will be completed on the back of the form to include appropriate check boxes, crew member names, incident number, time, and patient's signature, patient printing of name and witness signatures when indicated.
 - iv. A copy of the properly executed and signed refusal (MERF form) shall be scanned and attached to the ePCR.
 - j. A fax will be sent to the Medical Examiner's Office upon completion of any ePCR for a deceased person.
 - k. Login PIN numbers shall not be shared.
 - l. Patient information contained within the MERF or ePCR; whether on the tablet computer, station PC, or printed copy shall be considered PHI and maintained as confidential in accordance with the department's HIPAA policy.
 - m. Crew members are to check at each login for messages from the System Administrator and reply as requested.
 - i. These may come from the Quality Management Chief, Medical Director, Quality Assurance Officer or other Rescue Division member.
 - ii. If you have any reports which you were unable to upload previously, do so upon login.
3. When document scanners are available, Hard copies of documents and forms relating to patient care shall be scanned and attached to the patient's ePCR.
- a. When signatures are captured on MERF, these forms will be scanned and attached to the ePCR.
 - b. Medication lists, patient history and physical sheets, and other associated pertinent information may be scanned and attached to the ePCR.
 - c. All hard copy documents shall be shredded (cross-cut) in accordance with HIPAA policy **AFTER** you ensure the document has been scanned and attached to the ePCR. Use care to ensure the correct side of the document was scanned prior to shredding the document.
4. National Fire Incident Reporting System (NFIRS) Tab Completion:
- a. NFIRS data must be reported on **every** call run by HCFR
 - b. One apparatus on each incident is responsible for entering a specific NFIRS Incident type on each call.

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: Standards for Medical Documentation
Subject: ELECTRONIC PATIENT CARE REPORT (EPCR) – SUPPRESSION COMPANIES
Section #: 360.04
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- i. On a medical call, the first suppression unit on scene will **always** complete the NFIRS tab within the medical report, choosing the most appropriate three-digit incident type from the available options.
 1. This is regardless of whether or not the patient is transported.
- ii. All other apparatus on the call should complete a "Supplemental" NFIRS Incident type to avoid multiple incident types from being reported on the same call.
 1. If no suppression unit arrives on scene, or they are cancelled on arrival, the rescue company will complete the NFIRS tab with the appropriate three-digit code. Suppression companies performing a "Unit Assist" will still complete the NFIRS tab with the appropriate incident type.

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: **Medical Exposure Control Plan - General**
Subject: **SCHEDULE AND METHOD OF IMPLEMENTATION**
Section #: **380.01**
Issue Date: **March 21, 2011**
Revision Date:
Approved By:

Michael Lozano

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Michael Lozano, Jr., M.D., HCFR Medical Director

1. On 1 October 1992 the former Hillsborough County Fire Department and Hillsborough County Department of Emergency Medical Services enacted the 1st Edition of the Hillsborough County Exposure Control Plan. Through the merging of the two aforementioned agencies forming the current Hillsborough County Fire Rescue in 1996 and with several revisions since, we have arrived at the current Edition of the Hillsborough County Fire Rescue Exposure Control Plan.
2. It is established, as of 1 October 2008, that all portions of the Hillsborough County Fire Rescue Policies and Procedures Manual #3 "Medical Operating Guidelines & Protocols" Section 380, otherwise known as the Medical Exposure Control Plan, will replace and supersede all previously issued Editions and/or documents as they relate to policies and / or procedures for the prevention of exposures to infectious materials and post exposure care for members of Hillsborough County Fire Rescue.
3. All policies and procedures contained in this Medical Exposure Control Plan shall be implemented on 1 October 2008. All members of Hillsborough County Fire Rescue will adhere to all portions of this plan at all times while acting as an agent of Hillsborough County.
4. All portions of the Medical Exposure Control Plan will be reviewed, and revised as necessary, at least annually and whenever else deemed appropriate to reflect new or modified tasks and procedures which affect occupational exposure to blood or other potentially infectious materials and to reflect any new or revised member positions with potential occupational exposure in accordance with 29 CFR 1910.1030.
5. Other Effective Dates associated with this policy:
 - a. Applicable OSHA standards (29 CFR 1910.1030): 6 March 1992.
 - b. Original Exposure Control Plan: 5 May 1992.
 - c. Information, Training, Record Keeping: 4 June 1992.
 - d. Engineering and Work Practice Controls, Hepatitis B vaccinations, post-exposure and follow-up, labels and signs: 6 July 1992.

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: **Medical Exposure Control Plan - General**
Subject: **EXPOSURE DETERMINATION AND DEFINITIONS**
Section #: **380.02**
Issue Date: **March 21, 2011**
Revision Date:
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1. The following is a list of Hillsborough County Fire Rescue positions and job classifications in which persons holding these positions may *routinely* have contact with blood or other potentially infectious materials, without regard to the use of personal protective equipment.
 - a. Battalion Chief
 - b. Fire Company Captain
 - c. Fire Medic III / IV
 - d. Rescue Lieutenant
 - e. Driver Engineer
 - f. Fire Medic I
 - g. Firefighter
 - h. Rescue Paramedic
 - i. Fire Medic Trainee
 - j. Training Officer
 - k. Manager of Vehicle Maintenance & Supply
 - l. Property Control Clerk
 - m. Supply Clerk
 - n. Auto Technician (courier)
 - o. Any volunteer member serving in the Suppression Division
2. The following is a list of Hillsborough County Fire Rescue positions and job classifications in which persons holding these positions may *occasionally* have contact with blood or other potentially infectious materials, without regard to the use of personal protective equipment.
 - a. Fire Chief
 - b. Assistant Fire Chief
 - c. Division Chief
 - d. Section Chief / Manager
 - i. Administrative Staff, Receptionist, Secretaries
 - j. Vehicle Maintenance Personnel
 - k. Groundskeeper
3. The following is a list of task and procedures, or groups of related tasks and procedures, performed by members of Hillsborough County Fire Rescue in which occupational exposure to blood or other potentially infectious material occurs without regard to the use of personal protective equipment.
 - a. Emergency pre-hospital care procedures performed on medical and traumatized patients including the following:
 - i. Patient assessment and examinations.
 - ii. Vascular access, obtaining blood samples, and administration of medications.
 - iii. Airway control, suctioning, chest decompression, and ventilations.
 - iv. Hemorrhage control, bandage, splinting, fracture stabilization, and application of spinal motion restriction precautions.
 - v. Cardiopulmonary resuscitation.
 - vi. Childbirth and neonatal resuscitation.
 - b. Cleaning, general maintenance, and disposal task or procedures include the following:
 - i. Cleaning of equipment, medical supplies, non-disposable equipment, and interior areas of vehicles.
 - ii. Handling and disposal of laundry, sharps containers, and contaminated medical supplies.
 - iii. Handling and decontamination of extrication equipment.
 - iv. Decontamination of uniforms and / or bunker gear.
4. Hillsborough County Fire Rescue recognizes the definition of body fluids as per State of Florida Department of Health F.A.C. 64E-16.002(4):
 - a. Body fluids - Those fluids which have the potential to harbor pathogens, such human immunodeficiency virus and hepatitis B virus and include blood, blood products, lymph, semen, vaginal secretions, cerebrospinal, synovial, pleural, peritoneal, pericardial, and amniotic fluids.
 - b. Body excretions – feces, nasal discharges, saliva, sputum, sweat, tears, urine, and vomitus.

Section: **Medical Exposure Control Plan - General** Page 2 of 3
Subject: **EXPOSURE DETERMINATION AND DEFINITIONS**
Section #: **380.02**
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5. Hillsborough County Fire Rescue recognizes the definition of contaminated sharps as per 29 CFR 1910.1030 (z):
 - a. Contaminated sharps means any contaminated object that can penetrate the skin including, but not limited to needles, scalpels, broken glass, broken capillary tubes, and exposed ends of dental wires.
6. Other terms & definitions that relate to Infection Control:
 - a. *Blood* – human blood, human blood components, and products made from human blood.
 - b. *Bloodborne Pathogens* – pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, HBV and HIV.
 - c. *Contaminated* – the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.
 - d. *Contaminated Laundry* – laundry (sheets, pillowcases, blankets, towels, etc...) which have been soiled with blood or other potentially infectious materials.
 - e. *Contaminated Medical Supplies and Rescue Equipment* – supplies and equipment used to treat patients, which have become soiled with blood or other potentially infectious materials.
 - f. *Contaminated Sharps* – any contaminated object that is capable of penetrating the skin.
 - g. *Decontaminate* – the use of physical or chemical means to remove, inactivate, or destroy bloodborne pathogens or other potentially infectious materials on a surface or item to the point where they are no longer capable of transmitting infectious particles and the surface or item is rendered safe for handling, use, or disposal.
 - h. *Engineering Controls* – are those controls which isolate or remove the bloodborne pathogens hazard from the workplace.
 - i. *Exposure Incident* – a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that results from the performance of a member's duties.
 - j. *HBV* – Hepatitis B virus.
 - k. *HIV* – Human Immunodeficiency virus.
 - l. *Occupational Exposure* – reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of a member's duties.
 - m. *Other Potentially Infectious Materials* – semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids; and any unfixed tissue or organ (other than intact skin) from a human (living or dead).
 - n. *Parenteral* – piercing mucous membranes or the skin barriers through such events as punctures, human bites, lacerations, and abrasions.
 - o. *Personal Protective Equipment* – specialized clothing or equipment worn or used by a member for protection against a hazard.
 - i. Note: General work clothing (i.e. uniforms, pants, shirts, or blouses), not intended to function as protection against a hazard, are not considered to be personal protective equipment.

Section: **Medical Exposure Control Plan - General**
Subject: **EXPOSURE DETERMINATION AND DEFINITIONS**
Section #: **380.02**
Issue Date: **March 21, 2011**
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- p. *Regulated Waste* – liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps; used medical supplies; and wastes containing blood or other potentially infectious materials.
- q. *Source Individual* – any person, living or dead, whose blood or other potentially infectious materials may be a source of occupational exposure to the member.
- r. *Sterilize* – the use of a physical or chemical procedure to destroy all microbial life.
- s. *Universal Precautions* – an approach to infection control in which all human blood and body fluids are treated as if known to be infectious for HBV, HIV, or other bloodborne pathogens.
- t. *Work Practice Controls* – controls that reduce the likelihood of member exposure to blood or other potentially infectious materials by altering the manner in which a task is performed.

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: **Medical Exposure Control Plan - General**
Subject: **RECORD KEEPING**
Section #: **380.03**
Issue Date: **March 21, 2011**
Revision Date:
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1. Accurate medical records will be established and maintained for each member that has an occupational exposure to blood or other potentially infectious material(s).
 - a. These medical records will contain:
 - i. The member's name and social security number.
 - ii. A copy of the member's Hepatitis B vaccination record.
 - iii. A copy of the results of the examination, testing and follow-up procedures.
 - iv. A copy of the health care provider's written report and opinion.
 - v. A copy of the information provided to the evaluating health care professional.
 - b. Member medical records for occupational exposure to blood or other potentially infectious materials will be kept confidential.
 - i. Information contained in the employee's medical record will not be disclosed to any person without the member's written consent, except as provided by law.
 - c. Member medical records will be maintained for the duration of the member's tenure with Hillsborough County Fire Rescue plus thirty (30) years after separation from the organization and will only be accessed with written permission of the member, except as provided by law.
2. Records of training sessions will be kept:
 - a. This information will include:
 - i. Names and job titles of all members attending the training.
 - ii. Dates of the training session.
 - iii. The content or a summary of the training program.
 - iv. Names and qualifications of person(s) conducting the training.
 - b. All training will be recorded in the member's training file and will be maintained for a period of not less than three (3) years from the date of training.
3. Should a member elect to temporarily decline the use of personal protective equipment due to **rare and extraordinary circumstances** when in the member's professional judgment its use will prevent the delivery of pre-hospital emergency care, public safety services, or pose an increased hazard to themselves or a co-worker they will:
 - a. Thoroughly document all circumstances of the event and submit a report up through the chain of command in order to determine whether changes can be instituted to prevent such occurrences in the future.
4. All medical and training records will be made available to the Assistant Secretary of Labor for Occupational Safety and Health, the Director of the National Institute for Occupational Safety and Health, U.S. Department of Health and Human Resources, or their representative(s) upon request as outlined in 29 CFR 1910.1030.
5. Member medical records pertaining to occupational exposure to blood or other potentially infectious materials will be provided upon written request to the member or anyone having their written consent.

Hillsborough County Fire Rescue
STANDING ORDERS AND PROTOCOL

Section: **Medical Exposure Control Plan - General**
Subject: **INFORMATION AND TRAINING**
Section #: **380.04**
Issue Date: **March 21, 2011**
Revision Date:
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Michael Lozano, Jr., M.D., HCFR Medical Director

1. All members of Hillsborough County Fire Rescue with a potential occupational exposure to blood or other potentially infectious materials will participate in an Infection Control Training Program, which will be provided by the organization:
 - a. At the time of initial appointment or assignment to tasks involving occupational exposure to blood or other potentially infectious materials and annually thereafter;
 - b. As well, when task or procedures involving occupational exposure to blood or other potentially infectious materials are added or modified.
2. The Infection Control Training Program for bloodborne pathogens shall include:
 - a. Access to a copy of the OSHA standards and an explanation of their contents.
 - b. An explanation of biohazard waste warning signs, labels, bags, and color coding.
 - c. A general explanation of the epidemiology and symptoms of bloodborne diseases.
 - d. An explanation of the modes of transmission of bloodborne pathogens.
 - e. An explanation of the organization's Medical Exposure Control Plan and availability and access to the Plan.
 - f. An explanation of the appropriate methods for recognizing procedures, tasks, and other activities that may involve exposure to blood or other potentially infectious materials.
 - g. An explanation of the procedures and limitations of methods that will prevent or reduce occupational exposure to blood or other potentially infectious materials, including appropriate engineering controls, work practices, and personal protective equipment.
 - h. Information on the types, proper use, removal, location, handling, storage, transportation, decontamination and disposal of personal protective and clean-up equipment.
 - i. An explanation of the basis for selection of personal protective equipment.
 - j. Information on the Hepatitis B vaccination and hepatitis profile and HIV antibody titer.
 - k. Information on the appropriate procedures to follow in the event of an occupational exposure to blood or other potentially infectious materials including:
 - i. What to do, who to contact, and the method of reporting the incident.
 - ii. Required documentation and report forms.
 - iii. Post-exposure evaluations and follow-up.
 - l. An opportunity for interactive questions and answers with the person conducting the training.
 - i. The trainer will be knowledgeable in the subject matter, job descriptions of members, and the working environment of the members being trained.
3. Records of training sessions will be kept:
 - a. This information will include:
 - i. Names and job titles of all members attending the training along with the date of the training session.
 - ii. The content or a summary of the training program.
 - iii. Names and qualifications of person(s) conducting the training.
 - b. All training will be recorded in the member's training file and will be maintained for a period of not less than three (3) years from the date of training.

Section: Medical Exposure Control Plan – Prevention Procedures
Subject: UNIVERSAL PRECAUTIONS AND PERSONAL PROTECTIVE EQUIPMENT
Section #: 381.01
Issue Date: March 21, 2011
Revision Date:
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Michael Lozano

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1. Universal precautions will be observed by every member of Hillsborough County Fire Rescue with occupational exposure potential to prevent contact with blood or other potentially infectious materials.
 - a. ALL human (living or dead) body fluids shall be considered infectious.
 - b. The following items are items stocked by Hillsborough County Fire Rescue supply in order to assist members in implementing effective universal precautions.
 - i. Disposable (single use) gloves
 - ii. NFPA compliant bunker gear
 - iii. Face mask with eye protection
 - iv. N-95 face mask
 - v. Goggles and glasses with solid side shields
 - vi. Disposable gowns
 - c. These items are available to all members and shall be used as appropriate for any patient contact or situation in which a potential exposure may occur.
2. Products worn by members of Hillsborough County Fire Rescue will only be considered appropriate for use in Body Substance Isolation (BSI) if they prevent the permeation of blood and other potentially infectious materials to the members clothes, undergarments, skin, eyes, mouth, or other mucous membrane areas under normal conditions of use for the duration of time that the product is worn.
 - a. Members shall use appropriate personal protective equipment whenever there is a potential for occupational exposure to blood or other potentially infectious materials.
 - i. Should a member elect to temporarily decline the use of personal protective equipment due to **rare and extraordinary circumstances** when in the member's professional judgment its use will prevent the delivery of pre-hospital emergency care, public safety services, or pose an increased hazard to themselves or a co-worker they will:
 1. Thoroughly document all circumstances of the event and submit a report up through the chain of command in order to determine whether changes can be instituted to prevent such occurrences in the future.
3. If a garment is penetrated by blood or other potentially infectious material, the garment will be removed immediately or as soon as is feasible.
 - a. Upon removal the contaminated garment(s) will be appropriately secured in a designated area and container for storage, proper cleaning / decontamination, or disposal.
 - b. When any equipment is to be decontaminated at the station, universal precautions are to be employed to prevent exposure.
4. Gloves:
 - a. Will be worn by all members when the member has the potential for hand contact with blood or other potentially infectious materials or body secretions.
 - b. Will be worn at all times when cleaning any equipment that may have become contaminated with blood or other potentially infectious materials.
 - c. The disposable (single use) gloves shall be replaced as soon as practical whenever they become contaminated, torn, punctured, or when their ability to function as a barrier is compromised.
 - d. Firefighting gloves may be sent for decontamination provided their overall integrity has not been compromised.
 - e. Hypo-allergenic gloves, latex-free gloves, or glove liners will be available for members with allergies / sensitivity to regular disposable gloves.

Section: **Medical Exposure Control Plan – Prevention Procedures**
Subject: **UNIVERSAL PRECAUTIONS AND PERSONAL PROTECTIVE EQUIPMENT**
Section #: **381.01**
Issue Date: **March 21, 2011**
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5. Face mask and eye protection:
 - a. Face mask will be worn in combination with eye protection devices when performing airway maneuvers such as intubation, surgical airways, suctioning, or any other time that the potential for splashing or atomizing of blood or other potential infectious materials exist.
 - b. Face mask and eye protection shall be used during cleaning and decontamination of blood soiled or contaminated extrication equipment (i.e. long spine boards, KEDs, etc.)
6. Rubber utility boots:
 - a. Should be worn by members during the decontamination of equipment where gross contamination can reasonably be anticipated.
7. Gowns:
 - a. Gowns will be used anytime the potential exists for exposure to blood or blood products to skin or uniform.

Section: **Medical Exposure Control Plan – Prevention Procedures** Page 1 of 2
Subject: **ENGINEERING AND WORK PRACTICE CONTROLS**
Section #: **381.02**
Issue Date: **March 21, 2011**
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1. Engineering and Work Practice Controls will be used to eliminate possible employee exposure to blood and other potentially infectious materials.
 - a. Where occupational exposure remains, after implementation of these controls, *personal protective equipment* (PPE) shall be used (see 381.01, Universal Precautions).
 - b. Engineering and Work Practice Controls shall be examined on a regular basis and maintained or replaced as necessary.
2. Handling of sharps:
 - a. **Recapping of contaminated sharps and the bending or breaking of needles is strictly PROHIBITED.**
 - b. Leak-proof, puncture resistant sharps containers with appropriate labels and of the appropriate color shall be stocked on every HCFR Rescue, Engine, Ladder, & first response vehicle.
 - i. All sharps containers shall be labeled in accordance with 29 CFR 1910.1030 and F.A.C. 64E-16.003.
 - c. A sharps container must be located at *arms length* from any Paramedic or EMT who is performing a procedure involving the use of a sharp device in accordance with 29 CFR 1910.1030 and F.A.C. 64E-16.003.
 - d. Sharps containers shall be stored in an upright position, not overfilled, and closed to prevent spillage when they are moved.
 - e. Filled sharps containers will be replaced prior to becoming overfull.
 - i. Once a sharps container is full it should be snapped closed and taped to prevent accidental or deliberate reopening of the container.
 1. Sharps containers **shall not be reused or emptied** by any member.
 - ii. Once sealed the sharps container will be placed in a secure location for pickup by and return to the supply facility for final disposal.
 - iii. Storage of sharps containers and medical waste shall be out of the general access area of the Fire Station in accordance with 29 CFR 1910.1030.
 - f. **No sharp** will be place into a red bio-bag or any other receptacle other than an approved sharps container.
 - g. Any material that may cause a puncture or laceration (i.e. broken glass vials, blood tubes) that are contaminated with blood shall be secured in a sharps container.
3. Personal Hygiene:
 - a. Hand washing facilities shall be available for members of HCFR at the following locations:
 - i. All HCFR Firehouses and stand-alone Rescue Sub-stations
 - ii. HCFR Fire Headquarters, Fire Marshall's Office, Vehicle Maintenance, and Supply sections
 - iii. All receiving hospitals in Hillsborough County and adjacent counties
 - b. Members shall wash their hands and all other exposed skin surfaces with soap and water immediately, or as soon as feasible, after the removal of protective gloves or other potentially infectious materials.
 - c. Members shall rinse and flush thoroughly any mucous membrane area immediately, or as soon as feasible, following contact of these areas with a contaminated or potentially contaminated substance.

Section: **Medical Exposure Control Plan – Prevention Procedures** Page 2 of 2
Subject: **ENGINEERING AND WORK PRACTICE CONTROLS**
Section #: **381.02**
Issue Date: **March 21, 2011**
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Approved By: **Michael Lozano, Jr., M.D., HCFR Medical Director**

- d. When the use of a hand washing facility is unavailable, members shall use antiseptic or germicidal hand cleaner.
 - i. This will be followed by proper hand washing ASAP.
 - e. Eating, drinking, smoking, applying cosmetics, and/or the handling of contact lenses is strictly prohibited in apparatus or any work area in which there is the potential for exposure to blood or potentially infectious materials.
 - f. If decontaminating equipment or apparatus all appropriate universal precautions shall be used.
 - g. All members **shall** shower (thoroughly washing with soap) and change all clothing (uniforms and undergarments) prior to using any sleeping facility provided at HCFR Firehouses and Rescue Sub-stations.
4. Infectious Materials Handling:
- a. Any potentially infectious material will only be placed in appropriate storage / disposal containers which prevent leaking during collection, handling, processing, storage, transport, and shipping.
 - b. Containers for storage or transport of material that is contaminated with blood or other potentially infectious materials shall be:
 - i. Appropriately labeled and/or color coded – **and** –
 - ii. Closed securely.
 - c. If outside contamination occurs of the primary container occurs it shall be place within a second leak-proof, appropriately labeled and/or colored container.
 - d. Anything placed into a red biohazardous waste bag may not be removed and segregated into regular trash.
5. Equipment Handling:
- a. Equipment which may become contaminated with blood or other potentially infectious materials will be examined prior to service or shipping and shall be decontaminated as necessary.
 - b. Equipment that cannot be decontaminated prior to repair or shipping shall be inspected and the site(s) of contamination identified and clearly marked.
6. Cleaning and Disinfection:
- a. All medical supplies and equipment which become contaminated with blood or other potentially infectious materials shall be cleaned and disinfected, using appropriate disinfecting agents, prior to reuse.
 - i. Contaminated areas of apparatus shall be disinfected in the same manner prior to the crew returning to an "available" status.
 - b. Decontamination procedures shall utilize a 10% chlorine bleach solution.

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Section: **Medical Exposure Control Plan – Prevention Procedures**
Subject: **HOUSEKEEPING AND CLEANING PROCEDURES**
Section #: **381.03**
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1. Firehouses, sub-stations, and work sites shall be maintained in a clean and sanitary condition.
2. The patient compartment of HCFR Rescues shall be cleaned immediately following each transport and decontaminated as necessary following exposure to blood or other potentially infectious materials.
3. Medical supplies and equipment that become contaminated with blood or other potentially infectious material shall be cleaned and decontaminated prior to reuse.
4. The storage of food or drink shall be **prohibited** in places subject to exposure to blood or other potentially infectious material.
5. The storage of medical supplies, equipment, laundry, and other material contaminated with blood or other potentially infectious materials shall be in a designated area located outside the main living quarters.
 - a. The area shall be marked with the appropriate biohazard warning labels and cleaned when necessary using appropriate decontamination procedures.
6. Cleaning of any contaminated equipment shall not be completed in the kitchen or bathrooms of any HCFR facility.
7. Surfaces contaminated shall be decontaminated with a 10% chlorine bleach solution and allowed to sit for five (5) minutes prior to being wiped off.

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Section: **Medical Exposure Control Plan – Prevention Procedures**
Subject: **REGULATED WASTE AND CONTAMINATED MATERIAL**
Section #: **381.04**
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1. Contaminated materials and other regulated wastes (e.g. used needles, bandages, etc.) shall not be left on the highway or other emergency scene locations.
 - a. All such items shall be picked up and placed in appropriate containers for return to Supply and proper disposal.
2. Regulated waste shall be placed in containers, which are constructed to prevent leakage, appropriately labeled, color-coded, and closed before removal.
3. If outside contamination of a regulated waste container occurs, it shall be placed in a second container which is leak-proof, appropriately colored, labeled, and sealed for disposal.
4. Disposal of regulated waste shall be conducted at an off-site location using the services of a biohazardous waste disposal company and will follow federal, state, and local standards.
 - a. The current licensed biomedical waste company that Hillsborough County contracts with is:
BioWaste Industries
P.O. Box 540417
Orlando, FL 32854
(407) 850-1010
5. Any waste not contaminated but placed into a biohazardous waste container shall not be removed.
6. All sharps or potentially sharp objects contaminated with blood or other potentially infectious materials shall be placed into a rigid puncture resistant container.

Section: **Medical Exposure Control Plan – Prevention Procedures**
Subject: **BIOHAZARD WARNING**
Section #: **381.05**
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1. Labels shall contain the word **BIOHAZARD** and the following Biohazard symbol:



BIOHAZARD

2. Biohazard warnings shall be fluorescent orange / orange-red in color with letters and symbols in a contrasting color.
 - a. Shall be either an integral part of the container used for infectious waste or affixed to the container in such a fashion as to prevent their loss or unintentional removal.
3. Labels shall be placed in areas where contaminated materials are stored for repair, cleaning, or disposal.
4. Labels shall be affixed to containers of regulated waste or other potentially infectious material;
 - a. Except that red bags used for infectious material control may be substituted for the labels.
5. In all cases the labeling of hazardous waste shall follow the guidelines set forth in F.A.C. 64E-16.004.

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Section: Medical Exposure Control Plan – Prevention Procedures
Subject: HEPATITIS-B VACCINATION
Section #: 381.06
Issue Date: March 21, 2011
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1. Hepatitis-B vaccine shall be made available to all members within ten (10) days of initial assignment to duties involving occupational exposure to blood or other potential infectious materials unless:
 - a. The employee has previously received the vaccination series – **and** –
 - b. Antibody testing to determine antibody titers (available at the member's option) reveals immunity
– **or** –
 - c. The vaccination is medically contraindicated.
2. The vaccine shall be offered at a reasonable time and place and at no charge to the member.
3. The vaccine shall be administered under the supervision of a physician or other licensed health care provider in accordance with current United States Public Health Service standards and recommendations.
4. Members that have occupational exposure to blood or potentially infectious materials and decline the receipt of the Hepatitis-B vaccination shall be required to sign a declination release statement.
5. Members who initially decline the Hepatitis-B vaccination, and continue to have occupational exposure to blood or other potentially infectious materials may decide at a later date to receive the vaccine.
 - a. Such members may receive the vaccine in a reasonable time and place at no cost to the member upon notification to the organization.
6. Example of declination form:

<p>To: _____, Personnel Chief, Hillsborough County Fire Rescue</p> <p>I, _____, understand that due to my occupational exposure to blood or other potentially infectious materials, I may be at risk of acquiring Hepatitis-B virus (HBV) infection. I have been given the opportunity to be vaccinated with Hepatitis-B vaccine at no charge to me. However, I decline Hepatitis-B vaccination at this time. I understand that by declining this vaccine I continue to be at risk of acquiring Hepatitis-B, a serious disease.</p> <p>If in the future I want to be vaccinated with the Hepatitis-B vaccine, I can receive the vaccination series at no charge to me.</p>	
Member Signature	Date
Witness Signature	Date

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Section: **Medical Exposure Control Plan – Exposure Procedures**
Subject: **POST EXPOSURE MANAGEMENT GUIDELINES**
Section #: **382.01**
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1. The Hillsborough County Fire Rescue Infection Control Officer (ICO) is available 24 hours a day – 7 days a week via pager at **(813) 268-3888**.
2. When a member of Hillsborough County Fire Rescue has a known or suspected exposure to any pathogen (i.e., blood or other potentially infectious material), they shall:
 - a. Notify the ICO immediately via page at (813) 268-3888.
 - i. Enter the telephone number where you can be reached and then **do not use that phone**.
 - ii. The ICO shall return your call in a timely manner.
 - b. The ICO shall document your verbal report and evaluate what engineering and/or work practice controls were in place at the time of exposure (i.e. what personal protective equipment was utilized).
 - i. This is in an effort to determine if an actual exposure occurred.
 - c. If the ICO determines that a blood or other potentially infectious material exposure has occurred, the ICO will immediately remove the member from duty.
 - i. The ICO shall arrange for the member to be seen immediately by the appropriate Workers' Compensation provider.
 - ii. If the exposure is to an airborne pathogen, the ICO shall arrange for the member to be seen as soon as possible, taking into consideration existing variables before removing the member from duty.
 - d. The ICO shall inform the exposed member's Battalion Chief of the exposure, the member's duty status, and to which facility the member is being sent for medical evaluation.
 - i. The department shall notify the Workers' Compensation carrier and the Personnel Chief.
 - e. The ICO shall make contact with the Infection Control or Emergency Room Charge Nurse at the receiving facility of the source patient.
 - i. The source patient shall be identified, informed of the exposure, and permission secured to run baseline screenings.
 - ii. Request for notification, and source patient blood banking shall be done, if necessary.
 - f. A written request of the source patient blood shall be given to the Infection Control Nurse at the receiving facility along with the type of exposure.
 - g. The ICO shall remediate the exposed member as needed and shall be available for counseling.
 - i. A report of the exposure incident, with any recommendations for abatement, shall be made to the Personnel Chief, Operations Chief, and/or Rescue Chief, as appropriate.

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Subject: **POST EXPOSURE EVALUATION AND FOLLOW-UP**
Section #: **382.02**
Issue Date: **March 21, 2011**
Revision Date:
Approved By:  **Michael Lozano, Jr., M.D., HCFR Medical Director**

1. When a member of Hillsborough County Fire Rescue files a workers compensation claim for an exposure or potential exposure to blood or other potentially infectious material a confidential medical evaluation and follow-up will be made available to the member.
 - a. The post exposure evaluation and follow-up shall include:
 - i. Circumstances and routes of exposure.
 - ii. If the source individual's status is unknown or they do not consent to anti-body titer testing, and if feasible, it will be determined when possible collection and testing of their blood may be accomplished to determine a Hepatitis profile and HIV anti-body titer.
2. Collection and testing of an exposed member's blood for HBV and HIV status.
 - a. The exposed member's blood will be collected and tested as soon as feasible after consent is obtained as per [Pub. L. 101-381](#), 104 [Stat.](#) 576, enacted August 18, 1990 (Ryan White Comprehensive AIDS Resources Emergency [CARE] Act - a.k.a. Ryan White Care Act or simply Ryan White Act).
 - b. If the exposed member gives consent for blood collection, but not for HIV testing, the blood sample will be preserved for ninety (90) days, during which time the member can elect to have the sample tested.
3. Follow-up shall include repeat antibody testing, counseling, and such post exposure prophylaxis as may be medically indicated.
4. The evaluating physician or licensed health care provider will have access to the following information:
 - a. A copy of the applicable OSHA regulations.
 - b. A description of the exposed member's duties as related to occupational exposure to blood or other potentially infectious materials.
 - c. Type of exposure and the route(s) the member received the exposure by (i.e., needle stick, mucous membrane contact, etc.).
 - d. The result of the source individual's blood test if or when available.
 - e. The member's treatment record including HBV vaccination status (including the dates of vaccinations and records relating to the member's ability to receive the vaccine).
5. The member shall provide a copy of the evaluating licensed health care provider's written report within fifteen (15) working days following completion of the evaluation.
 - a. This report shall contain:
 - i. Recommendations regarding the indications and receipt of HBV vaccine.
 - ii. A statement that the member has been informed of the results of the evaluation as well as information regarding other medical conditions resulting from the incident which may, in the future, require further evaluation and/or treatment.
 - b. *Any other findings or diagnoses shall remain confidential.*
6. Accurate medical records shall be established and maintained for each member that has an occupational exposure.
 - a. These medical records shall include:
 - i. The member's name and social security number
 - ii. A copy of the member's HBV vaccine record
 - iii. A copy of the results of the examination, testing, and follow-up procedures

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- iv. A copy of the licensed health care providers written report and opinion
- v. A copy of the information provided to the evaluating licensed health care provider
- b. Member medical records for occupational exposure to blood or other potentially infectious materials shall be kept confidential.
 - i. Information contained in the member's medical record shall not be disclosed to any person or entity without the written consent of the member, except as provided for by law.
- c. Member medical records shall be maintained for the duration of their tenure with Hillsborough County Fire Rescue plus thirty (30) years and shall only be accessed with written permission from the member, except as provided for by law.

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Section: **Medical Exposure Control Plan – Exposure Procedures**
Subject: **EXPOSURE INCIDENT EVALUATION PROCEDURES**
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1. Whenever a member of Hillsborough County Fire Rescue files a workers compensation claim for an exposure or potential exposure to blood or other potentially infectious material the circumstances surrounding the exposure will be evaluated, including:
 - a. Engineering controls in place at the time of the exposure.
 - b. Work practice controls in place at the time of the exposure:
 - i. Personal protective equipment and clothing utilized during the time of exposure.
 - ii. Current policies and control failures, if any.
2. The primary goal of this evaluation is to identify and correct problems in order to prevent a recurrence of similar incidents.

Section: **Medical Exposure Control Plan – Information Fact Sheets**
Subject: **EXPOSURE CONTROL FACT SHEETS - ADDENDUM**
Section #: **383.01**
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1. This policy establishes the Medical Exposure Control Plan – Exposure Control Fact Sheets Addendum.
2. This section of the Policy & Procedures Manual #3 is to be used as a reference guide for Hillsborough County Fire Rescue members in familiarizing themselves with the potential hazards faced in providing emergency healthcare to sick or injured persons.
3. For ease of reference the following pages of this manual are not listed by a policy number but rather alphabetically.
4. The current fact sheets available under this policy are:
 - a. AIDS / HIV
 - b. Hantavirus
 - c. Hepatitis-A
 - d. Hepatitis-B
 - e. Hepatitis-C
 - f. Influenza
 - g. Meningococcal Meningitis
 - h. Streptococcus Pneumoniae
 - i. Tuberculosis
5. All members are encouraged to contact the department Infection Control Officer for any questions about information contained in these fact sheets or about any infectious diseases or processes not covered herein.

Section: Medical Exposure Control Plan – Information Fact Sheets
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1. Identification

- a. AIDS is a severe life-threatening clinical condition, first recognized as a distinct syndrome in 1981. The syndrome represents the late clinical stage of infection with human immunodeficiency virus (HIV), which most often results in progressive damage to the immune and other organ systems, including the CNS. Infected individuals may be free of clinical signs or symptoms for months to years before displaying clinical manifestations. Some of the most common findings include lymphadenopathy, anorexia, chronic diarrhea, weight loss, fever, and fatigue. Case definition of AIDS is related to the CD4 cell count < 200 / mL or a CD4 T-lymphocyte percentage of total lymphocytes < 14%. No cases of immunity to HIV are documented.

2. Infectious Agents

- a. Human Immunodeficiency virus (HIV) belongs to the class of retrovirus. Two types have been identified: type 1 (HIV-1) and type 2 (HIV-2).

3. Susceptibility

- a. HIV-1 infections are now distributed worldwide, but are most prevalent in sub-Saharan Africa, the Americas, Western Europe, and Southeast Asia. HIV-2 has been found primarily in West Africa, with some cases in other countries but these have been linked back to West Africa.

4. Mode of Transmission

- a. The routes of disease transmission sexual contact, vaginal secretions, blood-to-blood, infected mother to newborn child, and breast milk. Most common routes of blood exposure include percutaneous and transmucosal. Infants born to HIV infected mothers have seroconversion rates of 15% to 30%. Direct exposure to HIV infected blood through injury with needles and other sharp objects has rate of seroconversion of less than 0.5%.

5. Incubation Period

- a. Viral load and volume of exposure determine the duration of incubation. The most common time frame is 2 weeks but can be up to 6 months.

6. Period of Communicability

- a. The period of communicability is unknown. It may be possibly early after onset of HIV infection and extend throughout life.

7. Isolation

- a. Universal precautions are adequate modes of isolation; gloves, mask, and goggles. Diligent hand washing after contact is prudent. Equipment exposed to blood and blood products needs to be decontaminated with 10% chlorine bleach solution.

8. Exposure Management

- a. Diagnosis of HIV requires antibody screening followed by a confirmatory test.
- b. There are two types of post exposure prophylaxis (PEP) regimens:

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i. Basic regimen:

1. Zidovudine (RETROVIR™; ZDV; AZT) + Lamivudine (EPIVIR™; 3TC); available as COMBIVIR™
 - a. ZDV: 600 mg per day, in two or three divided doses, and 3TC: 150 mg twice daily.
 - b. Advantages
 - i. ZDV is associated with decreased risk of HIV transmission in the CDC case-control study of occupational HIV infection.
 - ii. ZDV has been used more than the other drugs for PEP in HCP.
 - iii. Serious toxicity is rare when used for PEP.
 - iv. Side effects are predictable and manageable with antimotility and antiemetic agents.
 - v. Probably a safe regimen for pregnant HCP.
 - vi. Can be given as a single tablet (COMBIVIR™) twice daily.
 - c. Disadvantages
 - i. Side effects are common and might result in low adherence.
 - ii. Source patient virus might have resistance to this regimen.
 - iii. Potential for delayed toxicity (oncogenic/teratogenic) is unknown.

2. ALTERNATE BASIC REGIMENS

- a. Lamivudine (3TC) + Stavudine (ZERIT™; d4T)
 - i. 3TC: 150 mg twice daily, and d4T: 40 mg (if body weight is <60 kg, 30 mg twice daily) twice daily.
 - ii. Advantages
 1. Well tolerated in patients with HIV infection, resulting in good adherence,
 2. Serious toxicity appears to be rare, and
 3. Twice daily dosing might improve adherence.
 - iii. Disadvantages
 1. Source patient virus might be resistant to this regimen.
 2. Potential for delayed toxicity (oncogenic/teratogenic) is unknown.
- b. Didanosine (VIDEX™, chewable/dispersible buffered tablet; VIDEX™ EC, delayed-release capsule; ddI) + Stavudine (d4T)
 - i. ddI: 400 mg (if body weight is <60 kg, 125 mg twice daily) daily, on an empty stomach.
 - ii. d4T: 40 mg (if body weight is <60 kg, 30 mg twice daily) twice daily.

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iii. Advantages

1. Likely to be effective against HIV strains from source patients who are taking ZDV and 3TC.
2. Disadvantages
 - a. ddl is difficult to administer and unpalatable.
 - b. Chewable/dispersible buffered tablet formulation of ddl interferes with absorption of some drugs (e.g., quinolone antibiotics, and indinavir).
 - c. Serious toxicity (e.g., neuropathy, pancreatitis, or hepatitis) can occur. Fatal and nonfatal pancreatitis has occurred in HIV-positive, treatment-naive patients. Patients taking ddl and d4T should be carefully assessed and closely monitored for pancreatitis, lactic acidosis, and hepatitis.
 - d. Side effects are common; anticipate diarrhea and low adherence.
 - e. Potential for delayed toxicity (oncogenic/teratogenic) is unknown.

ii. Expanded regimen is the basic regimen plus one of the following:

1. Indinavir (CRIXIVAN™; IDV) 800 mg every 8 hours, on an empty stomach.
 - a. Advantages
 - i. Potent HIV inhibitor.
 - b. Disadvantages
 - i. Serious toxicity (e.g., nephrolithiasis) can occur; must take 8 glasses of fluid per day.
 - ii. Hyperbilirubinemia common; must avoid this drug during late pregnancy.
 - iii. Requires acid for absorption and cannot be taken simultaneously with ddl in chewable/dispersible buffered tablet formulation (doses must be separated by at least 1 hour).
 - iv. Concomitant use of astemizole, terfenadine, dihydroergotamine, ergotamine, ergonovine, methylergonovine, rifampin, cisapride, St. John's Wort, lovastatin, simvastatin, pimozide, midazolam, or triazolam is not recommended.
 - v. Potential for delayed toxicity (oncogenic/teratogenic) is unknown.
2. Nelfinavir (VIRACEPT™; NFV) 750 mg three times daily, with meals or snack, or 1250 mg twice daily, with meals or snack.

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- a. Advantages
 - i. potent HIV inhibitor, and
 - ii. twice dosing per day might improve adherence.
 - b. Disadvantages
 - i. Concomitant use of astemizole, terfenadine, dihydroergotamine, ergotamine, ergonovine, methylergonovine, rifampin, cisapride, St. John's Wort, lovastatin, simvastatin, pimozide, midazolam, or triazolam is not recommended.
 - ii. Might accelerate the clearance of certain drugs, including oral contraceptives (requiring alternative or additional contraceptive measures for women taking these drugs).
 - iii. Potential for delayed toxicity (oncogenic/teratogenic) is unknown.
3. Efavirenz (SUSTIVA™; EFV) 600 mg daily, at bedtime.
- a. Advantages
 - i. Does not require phosphorylation before activation and might be active earlier than other antiretroviral agents (note: this might be only a theoretical advantage of no clinical benefit.)
 - ii. One dose daily might improve adherence.
 - b. Disadvantages
 - i. Drug is associated with rash (early onset) that can be severe and might rarely progress to Stevens-Johnson syndrome.
 - ii. Differentiating between early drug-associated rash and acute seroconversion can be difficult and cause extraordinary concern for the exposed person.
 - iii. Nervous system side effects (e.g., dizziness, somnolence, insomnia, and/or abnormal dreaming) are common. Severe psychiatric symptoms are possible (dosing before bedtime might minimize these side effects).
 - iv. Should not be used during pregnancy because of concerns about teratogenicity.
 - v. Concomitant use of astemizole, cisapride, midazolam, triazolam, ergot derivatives, or St. John's Wort is not recommended because inhibition of the metabolism of these drugs could create the potential for serious and/or life-threatening adverse events (e.g., cardiac arrhythmias, prolonged sedation, or respiratory depression).
 - vi. Potential for oncogenic toxicity is unknown.
4. Abacavir (ZIAGEN™; ABC); available as TRIZIVIR™, a combination of ZDV, 3TC, and ABC 300 mg twice daily.

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- a. Advantages
 - i. Potent HIV inhibitor, and
 - ii. Well tolerated in patients with HIV infection.
- b. Disadvantages
 - i. Severe hypersensitivity reactions can occur, usually within the first 6 weeks of treatment.
 - ii. Potential for delayed toxicity (oncogenic/teratogenic) is unknown.
- c. Antiretroviral agents for use as PEP only with expert consultation
 - i. Ritonavir (NORVIR™; RTV)
 - 1. Disadvantages
 - a. difficult to take (requires dose escalation),
 - b. poor tolerability, and
 - c. many drug interactions
 - 2. Saquinavir (FORTOVASE™, soft-gel formulation; SQV)
 - a. Disadvantages
 - i. Bioavailability is relatively poor, even with new formulation
 - 3. Amprenavir (AGENERASE™; AMP)
 - a. Disadvantages
 - i. Dosage consists of eight large pills taken twice daily
 - ii. Many drug interactions
 - 4. Delavirdine (RESCRIPTOR™; DLV)
 - a. Disadvantages
 - i. Drug is associated with rash (early onset) that can be severe and progress to Stevens-Johnson syndrome
 - ii. Many drug interactions
 - 5. Lopinavir/Ritonavir (KALETRA™) 400/100 mg twice daily
 - a. Advantages
 - i. potent HIV inhibitor, and
 - ii. well tolerated in patients with HIV infection
 - b. Disadvantages
 - i. Concomitant use of flecainide, propafenone, astemizole, terfenadine, dihydroergotamine, ergotamine, ergonovine, methylergonovine, rifampin, cisapride, St. John's Wort, lovastatin, simvastatin, pimozide, midazolam, or triazolam is not recommended because inhibition of the metabolism of these drugs could create the potential for serious and/or life-threatening adverse events (e.g., cardiac arrhythmias, prolonged sedation, or respiratory depression)
 - ii. May accelerate the clearance of certain drugs, including oral contraceptives (requiring alternative or additional contraceptive measures for women taking these drugs)
 - iii. Potential for delayed toxicity (oncogenic/teratogenic) is unknown

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- d. Antiretroviral agents generally not recommended for use as PEP
 - i. Nevirapine (VIRAMUNE™; NVP)
 - 200 mg daily for 2 weeks, then 200 mg twice daily.
 - 1. Disadvantages
 - a. Associated with severe hepatotoxicity (including at least one case of liver failure requiring liver transplantation in an exposed person taking PEP),
 - b. Associated with rash (early onset) that can be severe and progress to Stevens-Johnson syndrome,
 - c. Differentiating between early drug-associated rash and acute seroconversion can be difficult and cause extraordinary concern for the exposed person, and
 - d. Concomitant use of St. John's Wort is not recommended because this might result in suboptimal antiretroviral drug concentrations.

9. Vaccination

- a. There is no vaccine available to prevent the seroconversion of HIV.

10. References

- a. Professional Guide to Diseases, Sixth Edition 1998, Springhouse Corp., Springhouse, Penn.
- b. Control of Communicable Diseases Manual, Sixteenth Edition 1995, American Public Health Assoc., Washington, D.C.
- c. Communicable Disease Information, Seattle – King County Department of Public Health web site, www.metrokc.gov/health/prevent/hepa.htm
- d. Infectious Diseases, Armstrong & Cohen, Mosby 1999, Volumes 1 and 2.

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1. Identification

- a. Two specific types of Hantavirus are hemorrhagic and pulmonary. An acute zoonotic viral disease characterized by the abrupt onset of fever, lower back pain, and varying degree of hemorrhagic manifestations and renal involvement. The disease was first recognized in the Spring of 1993.
- b. Signs/Symptoms:
 - i. Abrupt onset of fever
 - ii. Hemorrhagic manifestations
 - iii. Hypotension
 - iv. Oliguric (decreased urine output) renal failure
 - v. Severe abdominal and low back pain
 - vi. Petechiae and shock
 - vii. Five clinical phases (febrile, hypotensive, oliguric, diuretic, and convalescent)

2. Infectious Agents

- a. Hemorrhagic fever with renal syndrome
- b. Bunyaviridae (found in Asia)
- c. Dobrava (found in Belgrade)
- d. Puumala (found worldwide)
- e. Seoul virus (found worldwide)
- f. Hantavirus pulmonary syndrome
- g. Sin Nombre (found in the Americas)
- h. Black Creek Canal Virus (found in Florida)
- i. Prospect Hill (found in the USA)

3. Susceptibility

- a. In both the hemorrhagic fever and pulmonary syndrome, all persons without evidence of past infections appear to be uniformly susceptible.

4. Mode of Transmission

- a. Aerosol transmission from rodent excrement.
- b. Virus is present in urine, feces, and saliva of infected asymptomatic rodents with the highest viral load in the lungs.
- c. Field rodents have been associated with most Hantavirus in Europe.
- d. The Sin Nombre virus is associated with the deer mouse found in the USA.
- e. Transmission occurs by inhalation of contaminated particles.

5. Incubation Period

- a. A few days to 2 months (usually 2 – 4 weeks).

6. Period of Communicability

- a. Not transmitted from person-to-person.

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7. Isolation

- a. Prevent rodent excrement in contact of food stores. No isolation needed to prevent spread from person-to-person.

8. Exposure Management

- a. Spray contaminated areas with a bleach solution.

9. Vaccination

- a. None

10. Definitive Therapy

- a. Includes Ribavirin IV

11. Hantavirus

Characteristics	Hemorrhagic fever with renal syndrome	Hantavirus with pulmonary syndrome
Primary Target Organ	kidney	lung
Acute Phase	febrile	febrile prodrome
Later Phases	shock, hemorrhage	shock, pulmonary edema
Disease Progression	hypotensive, oliguric, diuresis, convalescence	diuresis, convalescence
Other Clinical & Laboratory Features	thrombocytopenia, leukocytosis, proteinuria, hematuria, hemoconcentration, raised transaminases	thrombocytopenia, leukocytosis, hemoconcentration, shortness of breath, abnormal respiratory rate, infiltrates
Mortality	1 – 15%	> 50%

12. References

- a. Professional Guide to Diseases, Sixth Edition 1998, Springhouse Corp., Springhouse, Penn.
- b. Control of Communicable Diseases Manual, Sixteenth Edition 1995, American Public Health Assoc., Washington, D.C.
- c. Communicable Disease Information, Seattle – King County Department of Public Health web site, www.metrokc.gov/health/prevent/hepa.htm
- d. Infectious Diseases, Armstrong & Cohen, Mosby 1999, Volumes 1 and 2.

Section: **Medical Exposure Control Plan – Information Fact Sheets**
Subject: **HEPATITIS-A**
Section #: **383.04**
Issue Date: **March 21, 2011**
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1. Identification

- a. Acute viral hepatitis is a common, worldwide disease that has different causes; each type shares clinical, biochemical, and morphologic features. Liver infections caused by non-hepatitis viruses (e.g., Epstein-Barr virus, yellow fever virus, cytomegalovirus generally are not termed acute viral hepatitis. At least 5 specific viruses appear to be responsible.
- b. It is the most common cause of acute viral hepatitis and is particularly common among children and young adults. In some countries, > 75% of adults have been exposed. HAV spreads primarily by fecal-oral contact and thus may occur in areas of poor hygiene. Waterborne and food-borne epidemics occur, especially in underdeveloped countries

2. Infectious Agents

- a. Hepatitis A virus is a positive-strand RNA virus. It has been classified as Hepatovirus, a member of the family Picornaviridae.

3. Susceptibility

- a. In developing countries adults are usually immune and epidemics of Hepatitis A are uncommon. Where environmental sanitation is poor, infection is common and occurs at an early age. People can spread the virus to others before developing symptoms. Hepatitis A immunity after infection probably lasts for life.

4. Mode of Transmission

- a. Person-to-person via the fecal-oral route (typically an infected person not washing their hands prior to being involved in food preparation).
- b. Infectious agent reaches its peak in feces a week or two prior to symptoms.
- c. Common sources of outbreaks have been related to contaminated water; food from infected food handlers; raw or uncooked mollusks from contaminated waters; and even contaminated produce.
- d. Hepatitis A is not spread from kissing, sneezing, or by saliva; however, vomitus is a mode of transmission.

5. Incubation Period

- a. 15 to 50 days depending on the dose with the average being 28 to 30 days.
- b. This time frame is forgiving with respect to allowing time for Immune Globulin (IG) to be given.

6. Period of Communicability

- a. Studies have indicated that the maximum infectivity in humans is during the last half of the incubation period and continuing for a few days after the onset of jaundice.

7. Isolation

- a. Universal precautions are adequate; gloves, mask, and goggles. Diligent hand washing is prudent.

8. Exposure Management

- a. Diagnosed with a blood test. There is NO medicine or treatment that will make the symptoms go away faster.

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- b. Administration of Immune Globulin (IG) can be of some benefit (see vaccination).
- c. Alcohol should be avoided because it can increase liver damage.
- d. Restrictions on diet or activity, including commonly prescribed bed rest, have no scientific basis.
- e. Most patients may safely return to work after jaundice resolves, even if AST or ALT levels are slightly elevated.

9. Vaccination

- a. Immune Globulin (IG) prevents someone who has been exposed to Hepatitis A from getting the disease if given within 14 days from exposure. IG is effective 80 – 90% of the time and protects against Hepatitis A for about 3 months.
- b. Havrix (Vaqta) is an active immunization against Hepatitis A. It is given via the IM route and a booster shot (6 – 12 months after the first dose) is necessary if prolonged immunity is desired.
- c. Healthcare providers should strongly consider getting vaccinated!

10. References

- a. Professional Guide to Diseases, Sixth Edition 1998, Springhouse Corp., Springhouse, Penn.
- b. Control of Communicable Diseases Manual, Sixteenth Edition 1995, American Public Health Assoc., Washington, D.C.
- c. Communicable Disease Information, Seattle – King County Department of Public Health web site, www.metrokc.gov/health/prevent/hepa.htm
- d. Infectious Diseases, Armstrong & Cohen, Mosby 1999, Volumes 1 & 2.

Section: **Medical Exposure Control Plan – Information Fact Sheets**
Subject: **HEPATITIS-B**
Section #: **383.05**
Issue Date: **March 21, 2011**
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Michael Lozano, Jr., M.D., HCFR Medical Director

1. Identification

- a. Acute viral hepatitis is a common, worldwide disease that has different causes; each type shares clinical, biochemical, and morphologic features. Liver infections caused by non-hepatitis viruses (e.g., Epstein-Barr virus, yellow fever virus, and cytomegalovirus) generally are not termed acute viral hepatitis. At least 5 specific viruses appear to be responsible.
- b. HBV is the second most common cause of acute viral hepatitis. Prior unrecognized infection is common but is much less widespread than with HAV. HBV is often transmitted parenterally, typically by contaminated blood or blood products. Routine screening of donor blood for hepatitis B surface antigen (HBsAg) has nearly eliminated the previously common post transfusion transmission, but transmission through needles shared by drug users remains common. Risk of HBV is increased for patients in renal dialysis and oncology units and for hospital personnel in contact with blood. The virus may be spread through contact with other body fluids (e.g., between sex partners, both heterosexual and homosexual; in closed institutions, such as mental health institutions and prisons), but infectivity is far lower than for HAV, and the means of transmission is often unknown. The role of insect bites in transmission is unclear. Many cases of acute hepatitis B occur sporadically without a known source.
- c. HBV, for unknown reasons, is sometimes associated with several primarily extrahepatic disorders, including polyarteritis nodosa and other connective tissue diseases, membranous glomerulonephritis, and essential mixed cryoglobulinemia. The pathogenic role of HBV in these disorders is unclear, but autoimmune mechanisms are suggested.
- d. Chronic HBV infection is found in 0.5% of adults in North America. HBV may be the cause of 80% of hepatocellular carcinomas worldwide. Diagnosis is confirmed with serologic tests that include:
 - i. Hepatitis surface antigen (HBsAg) and antibody to HBsAg.
 - ii. Hepatitis B core antigen (HBcAg) and antibody to HBcAg.
 - iii. Hepatitis B e antigen (HBeAg) and antibody to HBeAg.
- e. HBsAg can be detected in the serum from several weeks before onset of symptoms, and is present for a variable period after onset. The presence of anti-HBc in the serum indicates HBV infectivity.

2. Infectious Agents

- a. HBV is the most thoroughly characterized and complex hepatitis virus. The infective particle consists of a viral core plus an outer surface coat. The core contains circular double-stranded DNA and DNA polymerase, and it replicates within the nuclei of infected hepatocytes. A surface coat is added in the cytoplasm and, for unknown reasons, is produced in great excess. HBV, a hepadnavirus, is partially double stranded DNA virus. There are currently four (4) different subtypes of HBV. There is no difference in clinical management, vaccine protection, or clinical presentation in the four (4) subtypes.

3. Susceptibility

- a. Susceptibility is general. The disease is usually milder in children and infants than adults. Protective immunity follows infection if antibody to HBsAg develops and HBsAg is negative.

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4. Mode of Transmission

- a. HBsAg has been found in virtually all body secretions and excretions. The only body fluids that have been shown to be infectious are blood, saliva, semen, and vaginal fluids.

5. Incubation Period

- a. Usually 45 to 180 days. The average is 60 to 90 days. The HBsAg can show up as early as two (2) weeks from exposure to as long as 6 to 9 months. The incubation period is related to the mode of exposure and viral load.

6. Period of Communicability

- a. All persons who are HBsAg positive are potentially infectious.

7. Isolation

- a. Universal precautions should be utilized. Prevent exposure to blood and blood product exposure to percutaneous and permucosal routes.

8. Exposure Management

- a. Determination of a blood exposure should be reported. The source patient can be screened for HBV and HIV at the time of blood exposure. The member will then be screened for baseline HBsAg antigens and HBV immunity.

9. Vaccination

- a. HBV vaccine / Engerix - B / Recombivax - HB

10. References

- a. Professional Guide to Diseases, Sixth Edition 1998, Springhouse Corp., Springhouse, Penn.
- b. Control of Communicable Diseases Manual, Sixteenth Edition 1995, American Public Health Assoc., Washington, D.C.
- c. Communicable Disease Information, Seattle – King County Department of Public Health web site, www.metrokc.gov/health/prevent/hepa.htm
- d. Infectious Diseases, Armstrong & Cohen, Mosby 1999, Volumes 1 & 2.

Section: Medical Exposure Control Plan – Information Fact Sheets
Subject: HEPATITIS-C
Section #: 383.06
Issue Date: March 21, 2011
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1. Identification

- a. Acute viral hepatitis is a common, worldwide disease that has different causes; each type shares clinical, biochemical, and morphologic features. Liver infections caused by non-hepatitis viruses (e.g., Epstein-Barr virus, yellow fever virus, cytomegalovirus generally are not termed acute viral hepatitis. At least 5 specific viruses appear to be responsible.
- b. Onset of the disease is slow and gradual, usually not noticed by the patient. Symptoms include anorexia, vague abdominal discomfort, nausea and vomiting, and progressing to jaundice less frequently than HBV. Severity range from unapparent in 75% of infections to rare fulminating fatal cases. Diagnosis currently depends on demonstration of antibody to the Hepatitis C virus (HCV).

2. Infectious Agents

- a. HCV is a single-stranded RNA flavivirus. Six major HCV subtypes exist with varying amino acid sequences (genotypes); these subtypes vary geographically and in virulence and response to therapy. HCV can also alter its amino acid pattern over time in an infected person (producing quasispecies).

3. Susceptibility

- a. Susceptibility is general. The degree of immunity following infection is not known.

4. Mode of Transmission

- a. Transmission of HCV occurs by percutaneous exposure to contaminated blood and blood products. The risk of HCV transmission by household contact and sexual activity has not been defined.

5. Incubation Period

- a. Ranges from 2 weeks to 6 months: most commonly 6 – 9 weeks

6. Period of Communicability

- a. From one (1) or more weeks before the onset of symptoms: may persist indefinitely

7. Isolation

- a. Universal precautions should be utilized. Prevent exposure to blood and blood product exposure to percutaneous and transmucosal routes.

8. Exposure Management

- a. Determination of a blood exposure should be reported
- b. The source patient can be screened for HCV and HIV at the time of blood exposure
- c. Post exposure with Immune Globulin is NOT effective for HCV
- d. Treatment may include alpha interferon and Ribavirin

9. Vaccination

- a. No known vaccination is available

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Subject: **HEPATITIS-C**

Section #: **383.06**

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Michael Lozano

Michael Lozano, Jr., M.D., HCFR Medical Director

10. References

- a. Professional Guide to Diseases, Sixth Edition 1998, Springhouse Corp., Springhouse, Penn.
- b. Control of Communicable Diseases Manual, Sixteenth Edition 1995, American Public Health Assoc., Washington, D.C.
- c. Communicable Disease Information, Seattle – King County Department of Public Health web site, www.metrokc.gov/health/prevent/hepa.htm
- d. Infectious Diseases, Armstrong & Cohen, Mosby 1999, Volumes 1 & 2.

Section: **Medical Exposure Control Plan – Information Fact Sheets**
Subject: **INFLUENZA**
Section #: **383.07**
Issue Date: **March 21, 2011**
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1. Identification

- a. Influenza is an acute viral disease of the respiratory tract characterized by fever, headache, myalgia, prostration, coryza, sore throat, and cough. Cough is often severe and protracted, but other manifestations are usually self-limited with recovery in 2–7 days. Influenza season is normally from November to March in the United States.

2. Infectious Agents

- a. The infection agents are Influenza type A, type B, and type C. These influenza A and B undergo frequent minor antigenic changes necessitating periodic reformulation of influenza vaccine.

3. Susceptibility

- a. All children and adults are equally susceptible, but in a classic epidemic the children will spread the disease to adults. Vaccines produce serologic responses specific for that virus strain and subtype.

4. Mode of Transmission

- a. Airborne spread predominates among crowded populations in enclosed spaces, such as school buses. Transmission may also occur by direct contact since the Influenza virus may persist for hours, particularly in cold and in low humidity.

5. Incubation Period

- a. Usually 1 – 3 days

6. Period of Communicability

- a. Probably 3 – 5 days from clinical onset in adults; up to 7 days in young children

7. Isolation

- a. Universal precautions for airborne pathogens and secretion precautions

8. Exposure Management

- a. Education in basic personal hygiene, especially the danger of unprotected coughs and sneezes, and hand-to-mucous membrane transmission. Immunization should also be considered for those engaged in essential community services and is recommended for medical personnel.

9. Vaccination

- a. Yearly vaccination is recommended for children, the elderly, and health care workers.
- b. Influenza type A and B create subtypes within a 12 month cycle period.

10. References

- a. Professional Guide to Diseases, Sixth Edition 1998, Springhouse Corp., Springhouse, Penn.
- b. Control of Communicable Diseases Manual, Sixteenth Edition 1995, American Public Health Assoc., Washington, D.C.
- c. Communicable Disease Information, Seattle – King County Department of Public Health web site, www.metrokc.gov/health/prevent/hepa.htm
- d. Infectious Diseases, Armstrong & Cohen, Mosby 1999, Volumes 1 & 2.

Section: **Medical Exposure Control Plan – Information Fact Sheets**
Subject: **MENINGOCOCCAL MENINGITIS**
Section #: **383.08**
Issue Date: **March 21, 2011**
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1. Identification

- a. Meningococcal meningitis is an acute bacterial disease characterized by sudden onset of fever, intense headache, nausea and vomiting, stiff neck and frequently a petechial rash. Delirium and coma are often present. Occasionally, fulminating cases exhibit sudden prostration, ecchymosis, and precipitous onset of shock.

2. Infectious Agents

- a. The causative agent is Neisseria meningitidis and its isolation or suspicion in meningitis or bacteremia is immediately reportable to local health authorities.

3. Susceptibility

- a. Cases generally occur singly or in clusters among close contacts. The peak incidence occurs in late winter and early spring. Attack rates are highest in infants less than 1 year of age and lower after 20 years of age. The overall case fatality is 19%.

4. Mode of Transmission

- a. The meningococcus is believed to be spread by droplets from respiratory secretions.

5. Incubation Period

- a. Varies from 2 to 10 days.

6. Period of Communicability

- a. Communicability lasts until the meningococcus is no longer present in nasal and oral secretions. The drug of choice for treatment is penicillin and communicability is significantly reduced by 24 hours after the start of effective therapy.

7. Isolation

- a. Hospitalized patients are placed on "Droplet Precautions" for 24 hours after appropriate antibiotic therapy.

8. Exposure Management

- a. Close home/family members and intimate contacts should be considered for prophylaxis. Health care personnel who have had close contact with oral and nasal secretions (such as when giving mouth to mouth resuscitation) should also be considered for prophylaxis. Rifampin is often used for prophylaxis.

9. Vaccination

- a. Routine vaccination is not recommended for civilians in the USA including health care workers. The overall incidence of the disease is low and no vaccine is available for serogroup B, the major cause of the disease. Much of the disease occurs in children too young to benefit from immunization.

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Subject: **MENINGOCOCCAL MENINGITIS**

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10. References

- a. Professional Guide to Diseases, Sixth Edition 1998, Springhouse Corp., Springhouse, Penn.
- b. Control of Communicable Diseases Manual, Sixteenth Edition 1995, American Public Health Assoc., Washington, D.C.
- c. Communicable Disease Information, Seattle – King County Department of Public Health web site, www.metrokc.gov/health/prevent/hepa.htm
- d. Infectious Diseases, Armstrong & Cohen, Mosby 1999, Volumes 1 & 2.

Section: Medical Exposure Control Plan – Information Fact Sheets
Subject: STREPTOCOCCUS PNEUMONIAE
Section #: 383.09
Issue Date: March 21, 2011
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 Michael Lozano, Jr., M.D., HCFR Medical Director

1. **Identification**
 - a. An acute bacterial infection characterized typically by sudden onset with a shaking chill, fever, pleural pain, dyspnea, tachypnea, a productive cough of "rusty" sputum, and leukocytosis. The onset may be less abrupt in the elderly. In infants and young children fever, vomiting, and convulsions may be the initial manifestations. Pneumococcal pneumonia is an important cause of death in infants and the elderly.
2. **Infectious Agents**
 - a. The causative agent is Streptococcus pneumoniae accounts for approximately 90% of bacteria infections in the U.S.
3. **Susceptibility**
 - a. Is increased by any process affecting the anatomic or physiologic integrity of the lower respiratory tract (e.g. influenza, pulmonary edema, aspiration, chronic lung disease, or exposure to irritants).
4. **Mode of Transmission**
 - a. By droplet, direct oral contact, or indirectly through articles freshly soiled with sputum. Person-to-person transmission is common, but illness among casual contacts and attendants is infrequent.
5. **Incubation Period**
 - a. Not well determined: may be as short as 1 – 3 days.
6. **Period of Communicability**
 - a. Presumably until nasopharyngeal discharges no longer contain virulent pneumococci in significant numbers. Penicillin will render patients with susceptible strains noninfectious within 24 – 48 hours.
7. **Isolation**
 - a. In hospitals, respiratory isolation may be warranted for patients with antibiotic-resistant infection who may be able to transmit it to other patients at high risk of pneumococcal disease.
8. **Exposure Management**
 - a. Droplet isolation and frequent hand washing
9. **Vaccination**
 - a. For most eligible patients, the 23-valent-pneumococcal vaccine need be given only once.
10. **References**
 - a. Benenson, Abram S., ed., Control of Communicable Disease Manual 16th ed. 1995, American Public Health Assoc., Washington D.C.
 - b. Professional Guide to Diseases, Sixth Edition 1998, Springhouse Corp., Springhouse, Penn.
 - c. Control of Communicable Diseases Manual, Sixteenth Edition 1995, American Public Health Assoc., Washington, D.C.
 - d. Communicable Disease Information, Seattle – King County Department of Public Health web site, www.metrokc.gov/health/prevent/hepa.htm
 - e. Infectious Diseases, Armstrong & Cohen, Mosby 1999, Volumes 1 & 2.

Section: **Medical Exposure Control Plan – Information Fact Sheets**
Subject: **TUBERCULOSIS**
Section #: **383.10**
Issue Date: **March 21, 2011**
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1. Identification

- a. A mycobacterial disease that is an important cause of disability and death in many parts of the world. The initial infection usually goes unnoticed. Tuberculin skin test sensitivity appears within a few weeks.

2. Infectious Agents

- a. The Mycobacterium tuberculosis complex includes *M. tuberculosis* and *M. africanum* primarily from humans, and *M. bovis* primarily from cattle. Other mycobacteria occasionally produce disease clinically indistinguishable from tuberculosis; the etiologic agents can be identified only by culture of the organisms.

3. Susceptibility

- a. The risk of infection with the tubercle bacillus is directly related to the degree of exposure and does not appear to be related to genetic or other host factors. The most hazardous period for development of clinical disease is the first 6 – 12 months after infection. The risk of developing disease highest in children under 3 years old, lowest in later childhood, and higher among adolescents, young adults, the very old, and the immunosuppressed. Reactivation of latent infections accounts for a large portion of cases of cases in the elderly. Susceptibility to disease is markedly increased in those with HIV infection and other forms of immunosuppression. It is also increased among the underweight and undernourished; people with debilitating diseases such as chronic renal failure, cancer, silicosis, diabetes, post gastrectomy; and substance abusers.

4. Mode of Transmission

- a. Exposure to airborne droplet nuclei produced by humans with pulmonary or laryngeal tuberculosis during expiratory efforts; such as coughing, singing, or sneezing. Laryngeal tuberculosis is highly contagious. Prolonged close exposure to an infectious case may lead to infection of contacts. Direct invasion through mucous membranes or breaks in the skin may occur but is extremely rare.

5. Incubation Period

- a. From infection to demonstrable primary lesion or significant tuberculin reaction, about 4 – 12 weeks. While the subsequent risk of progressive pulmonary or extra-pulmonary tuberculosis is greatest within the first year or two after infection, latent infection may persist for a lifetime. Of the population that is exposed to tuberculosis, 95% cause a latent infection to occur. The patient's immune system usually controls the tubercle bacillus by destroying it or walling it up in a nodule (tubercle). This bacillus may lie dormant within the tubercle for years and later reactivate and spread. HIV infection appears to greatly increase the risk and shorten the interval for the development of clinical tuberculosis.

6. Period of Communicability

- a. The patient is infectious as long as viable tubercle bacilli are present in the sputum. Some untreated or inadequately treated patients may be sputum-positive intermittently for years. The degree of communicability depends on a number of factors. Effective chemotherapy usually eliminates communicability with a few days to weeks.

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7. Isolation

- a. In hospitals, respiratory isolation is warranted for all patients with positive sputum tubercle bacilli in the sputum. The infectious patient is confined to a well-ventilated room until they are no longer contagious. Respiratory isolation in the pre-hospital setting will include PFR-95 facemask to all providers exposed to the patient. Droplet precautions should also be taken. The patient may have need for a non-rebreather mask that will assist in isolating the secretions from being spread during a cough or sneeze.

8. Exposure Management

- a. Tuberculosis exposure is determined by the PPD skin test. This does not confirm active disease, just exposure that caused an antibody response in the body. Once a response to the PPD is positive, it will remain positive and no further skin testing should be performed. The next step of identification of disease is to have a chest x-ray. A stained smear or sputum for acid-fast bacilli completes the evaluation of active disease. Treatment of active mycobacterium tuberculosis can consist of multiple drug therapies. They may include isoniazid (INH), Rifampin (RIF), pyrazinamide (PZA), and ethambutol (EMB) or streptomycin (SM).

9. Vaccination

- a. The BCG vaccine was developed to assist in high risk areas to prevent tuberculosis spread in communities with poor access to prevention treatment and drug therapy. Because the risk of infection is very low in the USA, the vaccine of BCG is not recommended. Individuals who have received BCG will be PPD positive.

10. References

- a. Professional Guide to Diseases, Sixth Edition 1998, Springhouse Corp., Springhouse, Penn.
- b. Control of Communicable Diseases Manual, Sixteenth Edition 1995, American Public Health Assoc., Washington, D.C.
- c. Communicable Disease Information, Seattle – King County Department of Public Health web site, www.metrokc.gov/health/prevent/hepa.htm
- d. Infectious Diseases, Armstrong & Cohen, Mosby 1999, Volumes 1 & 2.