Wake County EMS System

STANDARDS
and
PRACTICE

The Wake County EMS System Policies, Procedures, Protocols, & associated References

The Wake County EMS System – *Prompt, Compassionate, Clinically Excellent Care*

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NORTH CAROLINA

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Introduction and Foundations of Practice

This document describes the methods by which the Wake EMS System will continue to provide the highest quality pre-hospital patient care. We have incorporated evidence-based guidelines with historically proven practices to produce this document. While it is impossible to address every possible variation of disease or traumatic injury, these policies, procedures, and protocols do provide a foundation for treating the vast majority of patients we encounter. Certainly, our education, experience, and clinical judgment will assist us as we strive to provide the highest quality pre-hospital patient care in the world. As always, on-line medical direction is available for those patient presentations that do not fall within the scope of the document.

Foundations of Practice

Definition of a Patient

A patient is an individual requesting or potentially needing medical evaluation or treatment. The patient-provider relationship is established via telephone, radio, or personal contact. It is the provider's responsibility to ensure all potential patients, regardless of the size of the incident, are offered the opportunity for evaluation, treatment, and/or transport. The guidelines for documenting patient encounters are discussed in the Documentation of the Patient Care Report Procedure.

Rights of a Patient

Once we have begun collecting information regarding a patient encounter, it is important for us to take every precaution to protect patient **confidentiality.** While we certainly have HIPAA issues to consider, we also have ethical obligations to protect a patient's confidential information. This applies not only to the sharing of written information but also requires us to monitor our speech so as not to inadvertently share patient information in conversation.

Patients with mental capacity retain the right to accept or refuse medical care, even if the consequences of the refusal of care may potentially be harmful for the patient. In the event a patient attempts to refuse medical care, it is important to recall that we should:

1. Be courteous
2. Offer transport or treatment without some (or all) of the recommended treatment(s) if that is what the patient will allow (document discussion that lead to the elected course of treatment, obtain refusal documentation including patient signature).
3. Clearly advise the patient of the possible complications of their decision.
4. Advise the patient to call back if they subsequently desire treatment and transport
5. Accurately document all components of the patient encounter.

There are three situations regarding **consent** that deserve special consideration:

1) **Minors:**
   a) In general, patients under the age of 18 may not consent to medical treatment or transport. The following groups may consent for the treatment of a minor:
      i) Mother or Father or a Legal Guardian
      ii) An individual standing in *loco parentis*. A person stands in *loco parentis* when he or she takes on the responsibilities of a parent of the child (e.g., a step-parent)
      iii) The leader of a group of children in possession of written permission from the parent authorizing emergency medical treatment (e.g., a school field trip, a child at school where the parent is not present).
   b) In the following circumstances, no consent is required prior to initiating treatment:
      i) The parent, guardian, or person standing in *loco parentis* cannot be reached and the minor needs to receive medical treatment
      ii) The identity of the child is unknown and a delay in giving treatment would endanger the life of the child
      iii) The effort to contact the child's parents, guardian, or a person standing in *loco parentis* would result in a delay that would seriously worsen the condition of the child
   c) In North Carolina, under the following circumstances, a minor may consent to treatment without the knowledge of the parent:
      i) Pregnancy
      ii) Treatment for sexually transmitted diseases
      iii) Alcohol or drug abuse
      iv) Emotional disturbance

2) **Life-threatening situations without ability to communicate**
   a) A patient of any age who is unable to communicate because of an injury, accident, illness, or unconsciousness – AND- is suffering from what reasonably appears to be a life-threatening injury or illness. This patient is treated on the principle of implied consent.
   b) The principle of implied consent presumes that if the individual with the illness or injury were conscious and able to communicate, he or she would consent to emergency treatment
   c) In these situations, patients may be transported without their consent. Law enforcement, physical restraint, and/or chemical restraint may be required

3) **Potentially life-threatening situations**
   a) Patients in this category generally fall into one of two groups: the alert patient who has a concerning presentation and refuses treatment and/or transport (e.g., the patient with chest pain and EKG changes) or the patient who may be intoxicated but does not have what reasonably appears to be a life-threatening injury (e.g., the patient who has consumed alcohol with a small laceration). In these situations, the following steps should be taken:
      i) Determine orientation to person, place, and time. Document results.
      ii) Determine what factor(s) is/are influencing the patient to refuse medical care. Resolve the ones in your power (e.g., patient does not want an IV – offer transport without an IV).
      iii) Attempt communication with spouse/significant other/other family members if available.

iv) If patient continues to refuse, consider making contact with and Advanced Practice Paramedic, Office of Medical Affairs representative, or on-line medical control as described in the "Atypical Protocol Utilization and Online Medical Direction" policy.
v) If patient continues to refuse, clearly explain risks of refusal and have the patient repeat these concerns back to you. Document your results in the patient care report.
vi) In a courteous manner, assure the patient they can call back for treatment and transport at any time.

Automatic Notification of the Medical Director

As we work together to provide the highest quality patient care, any incident which potentially has an adverse or negative impact on the patient or the System **must be immediately reported to the medical director or, in his absence, his designee** as soon as possible after the completion of the call. Such notification should be made via phone or via Raleigh-Wake Communications Center. Events that require this notification include:

- Cardiac and/or respiratory arrest occurring after administration of midazolam (Versed), morphine, or fentanyl.
- Cardiac arrest after administration of an antiarrhythmic agent in a previously stable patient.
- Any attempt (successful or unsuccessful) at needle and/or surgical airways
- Incorrect medication administration with patient complication (wrong dose, etc.)
- Any cardiac and/or respiratory arrest or patient injury related to the use of physical restraints
- System provider operating outside of scope of practice. The scope of practice is defined not only by State Certification but by the provider's level of approved practice within the System.
- Unrecognized misplaced advanced airway device or other complication related to advanced airway management

Other patient care concerns, potential adverse events, follow-up questions, or clinical issues outside of the above seven urgent issues may be communicated via email or phone call to a member of the Office of Clinical Affairs (MD1, MD2, or MD20) during regular business hours.

Guidelines for the Use of Protocols

In general, the protocols are divided into adult and pediatric sections, as well as medical, trauma, and other special groupings. For pediatric patients, the appropriate pediatric-specific protocol should be utilized if one exists. If there is not a pediatric-specific protocol for a given pediatric patient situation, utilize the adult protocol for care guidance, but always use pediatric weight-based dosing for medications. Never exceed adult doses of medication for a pediatric patient.

You will notice the medical protocols are divided into essentially three sections. The upper sections include **History, Signs and Symptoms, and Differential.** The information in these boxed areas is meant as a guide to assist in obtaining pertinent patient information and to remind each of us to consider multiple potential causes for a patient complaint. From this, providers should choose those elements which are pertinent to their particular patient encounter. It is not expected that every historical element or sign/symptom be recorded for every patient; it is expected that those elements pertinent to your patient will be included in the patient evaluation and documentation.

The center section describes the **Essentials of Patient Care** which are presented in flow chart style. The Protocol Committee, the Wake County EMS System Peer Review Committee, and the North Carolina College of Emergency

Physicians have extensively reviewed the included elements. These represent the **proven practices** which are the foundation of the care we provide. Virtually every patient should receive the care suggested in this section, usually in the order described. Certainly exceptions will exist; the rationale for any deviation from the recommended course should be clearly explained in the narrative of the patient care report. It is anticipated that such exceptions will be rare, and Providers are strongly encouraged to contact the medical director or on-line medical control prior to any deviations (as long as the patient's condition is stable).

You will note that some of the text in this section is in red or orange. Any patient care element that is part of the quality assurance report is presented in red or orange so that we all will know what is being measured.

Finally, the **Pearls** section on the second page or at the bottom of the protocols provides further guidance and adjuncts for patient care based on experience and common medical knowledge. It is impossible to condense emergency medicine to a single page flow chart; the pearls allow for expanded medication advice, dosages, and description of special situations. The Pearls should be studied along with the rest of the protocols and should be followed if applicable. As with the first section, not every patient will require every element under the pearls section. It is anticipated this section will be used as practical guide for the implementation of the **essentials of patient care** section.

Protocol Clarifications for Wake County Practice

As you know, the State of North Carolina has a mandated common protocol set that provides a baseline standard of care across the state. Individual systems may exceed the baseline standard of care, as we have done in multiple Wake County Protocols, but all protocols start with the provided basic flow chart and language common to the State Office of EMS protocol set. Therefore, the protocol format, standard items, and much of the common language reoccurs in many areas throughout the document, especially with regard to contacting medical control. Here is how to interpret those areas for Wake County Practice:

1. In all protocols, the instructions that state "Notify destination or contact medical control" is satisfied in our system by contacting the receiving hospital at the appropriate time. We have no restriction to contract medical control prior to administering any treatments in subsequent boxes. Obviously, if you need to contact medical control at any time for patients with unusual presentations, high risk refusals, or other unusual circumstances, please continue so to do.

2. In all protocols where there is reference to end-tidal CO2, respiratory rates, and O2 saturations, the following applies:

a. If the patient is *in extremis* and there is difficulty in obtaining a pulse oximetry reading due to poor/no perfusion, cool extremities, etc, an end tidal CO2 value greater than 20 with a good waveform is a satisfactory substitute for the SpO2. As soon as possible, an SpO2 value should be obtained, but it is understood that certain patient conditions preclude such a reading.

b. The respiratory rate should be guiding the EtCO2 only when the rate is too low for the patient. In other words, for a patient with pulse and blood pressure with assisted ventilations, the EtCO2 should be greater than 35. If it is not, one consideration is the possibility of hyperventilation. In the prehospital setting, there is no reason to take a respiratory rate above 12 to address an EtCO2 except as directed in the Head Injury protocol for pending herniation.

3. With regard to intravenous access, it is appropriate to continue attempts to obtain access in the patient who is unstable or potentially unstable past 3 attempts without contacting medical control.

4. The EMT-B description for "blind insertion airway device" applies to EMT-Bs who are assigned to transport ambulances and have completed the Office of Professional Development in-service on BIAD use, and EMT-Bs responding

as part of Raleigh Durham International Airport's Crash Fire Rescue service. This does not apply to other first response EMT-Bs.

Summary

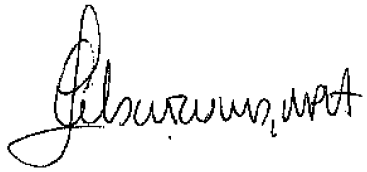
In summary, these protocols describe the proven practices that are the foundation of our care. The additional information coupled with your experience and education will allow us to provide pre-hospital patient care that is second-to-none.

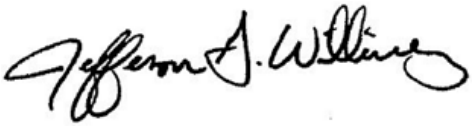
Finally, the manner in which we carry ourselves and the customer service we provide is often as important as the care we provide. For many of our less critically ill or injured patients, the human interaction has more of a healing effect than any of our proven practices. Perhaps our colleague Dr. Ed Racht, the long-time Medical Director for Austin/Travis County in Texas, states this best:

> ***Being a professional has nothing to do with pay or rank or level of certification you hold. It is the goal that every member of our Practice, from basic provider to Medical Director, constantly strives to remain a comprehensive, clinically sophisticated, and compassionate EMS System.***

Our System operates a unique practice of prehospital medicine, and we are proud of our practice. Thank you for continuing to provide prompt, compassionate, clinically excellent care.

Sincerely,





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Air Transport

Indications:

A helicopter may be utilized when **ALL** of the following criteria are present:

1. **Patient meets criteria for trauma center evaluation.**
2. The patient is entrapped and extrication is expected to last greater than 20 minutes.
3. The ground transport time is greater than 15 minutes.
4. The patient is not in traumatic cardiac arrest.

A helicopter may also be utilized when any of the following is present:

- A situation approved by the medical director or medical control physician – or –
- Mass Casualty Incident (MCI).
- The patient meets burn center criteria.

Procedure:

1. The highest certified technician on the crew (usually the EMT-P or EMT-I) will determine that a helicopter may be needed for the patient. An on-scene Fire Department Officer may request a helicopter to expedite its arrival.
2. That technician will request that the 911 center contact a helicopter service for a scene transport. The 911 center will determine which air ambulance is nearest and utilize this resource.
3. A safe landing zone should be established.
4. If the helicopter does not arrive prior to the extrication of the patient, the patient should be immediately placed in the ambulance and transport begun to the nearest trauma center.
5. **Under NO circumstances will transport of a patient be delayed to use a helicopter.**

Atypical Protocol Utilization and Online Medical Direction

Purpose:

The purpose of this policy is to:

- Provide world-class patient care and EMS service to the citizens of Wake County.
- Give direction for providers who encounter complicated, unusual, and atypical patient encounters.
- Establish an orderly method by which clinical issues can be rapidly addressed.
- This policy does not affect administrative issues related to employee/employer relationships (sick outs, injuries, narcotic replacements, etc.)

Policy:

1. Clinical encounters requiring use of this protocol may be divided into two types:
   a. those whose clinical situation is covered by existing protocol but who are presenting an operational/administrative challenge (e.g., patient refusals, non-intubated post-ROSC patients) and require non-medical control guidance, Atypical Protocol Utilization (APU), or
   b. those whose clinical situation is not covered by existing protocol (e.g., modification of drug dosage, termination of resuscitation not covered in current policy) and thus require medical control orders via on-line medical direction (OLM).

2. Patients (b) requiring OLM shall contact medical control via as described in steps 4 and 5 below. The provider requesting OLM must be at the scene with the patient.

3. The first call for (a) operational/administrative issues related to an individual patient or patients should be placed to the Advanced Practice Paramedic (APP) on duty for the region. If possible, the call should be placed directly to the “Medic xx” cell phone. If this is not practical, the APP may be contacted on Dispatch 1 and then move to the appropriate “Admin” talk group.

4. If the request is for OLM or if there are no APPs immediately available for administrative/operational issues, the next call will be placed to a member of the Office of Medical Affairs (MD-1, MD-2, MD-20 (NOTE: MD-20 for administrative/operational calls only)).

5. If neither an APP nor members of OMA are available, request OLM from a physician at the most appropriate receiving hospital via radio. Only physicians may provide medical direction. Other staff, including PAs and nurses, may not provide online medical direction.

6. In the electronic patient care report, the name of the individual (and unit number if applicable) providing OLM and/o APU will be documented in the narrative section. The APP will add a note confirming the advice provided as stated in the “APP Documentation” Policy.

7. Additionally, the APP for the region may take any calls from the Foundations of Practice document in which immediate notification of the Medical Director is required if a member of the OMA cannot be reached.

Child Abuse Recognition and Reporting

Policy:

Child abuse is the physical and mental injury, sexual abuse, negligent treatment, and/or maltreatment of a child under the age of 18 by a person who is responsible for the child's welfare. The recognition of abuse and the proper reporting is a critical step to improving the safety of children and preventing child abuse.

Purpose:

Assessment of a child abuse case is based upon the following principles:

- **Protect** the life of the child from harm, as well as that of the EMS team from liability.
- **Suspect** that the child may be a victim of abuse, especially if the injury/illness is not consistent with the reported history.
- **Respect** the privacy of the child and family.
- **Collect** as much evidence as possible, especially information.

Procedure:

1. With all children, assess for and document psychological characteristics of abuse, including excessive passivity, compliant or fearful behavior, excessive aggression, violent tendencies, excessive crying, fussy behavior, hyperactivity, or other behavioral disorders

2. With all children, assess for and document physical signs of abuse, including and especially any injuries that are inconsistent with the reported mechanism of injury.

3. With all children, assess for and document signs and symptoms of neglect, including inappropriate level of clothing for weather, inadequate hygiene, absence of attentive caregiver(s), or physical signs of malnutrition.

4. Immediately report any suspicious findings to both the receiving hospital (if transported) and to the Department of Social Services social worker on on call by contacting the 911 center. While law enforcement may also be notified, North Carolina law requires the EMS provider to report the suspicion of abuse to DSS. EMS should not accuse or challenge the suspected abuser. This is a legal requirement to report, not an accusation. In the event of a child fatality, law enforcement must also be notified.

*** To report suspected child abuse or neglect, call the Wake County Child Protective Services Intake phone number at 919-212-7990. After hours and on weekends, if this number is not staffed, contact the 911 center (RWCCC) and have them contact the on-call social worker for Child Protective Services, who will then return your phone call and receive your report.***

Child with Special Health Care Needs (NC Kidbase)

Policy:

Medical technology, changes in the healthcare industry, and increased home health capabilities have created a special population of patients that interface with the EMS system. It is important for EMS to understand and provide quality care to children with special health care needs.

Purpose:

The purpose of this policy is to:

- Provide quality patient care and EMS services to children with special health care needs.
- Understand the need to communicate with the parents and caregivers regarding healthcare needs and devices that EMS may not have experience with.
- Promote, request, and use the "Kidbase" form that catalogs the health care problems, needs, and issues of each child with a special healthcare need.

Procedure:

Caregivers who call 911 to report an emergency involving a child with special health care needs may report that the emergency involves a "Kidbase child" (if they are familiar with the NC Kidbase program) or may state that the situation involves a special needs child.

Responding EMS personnel should ask the caregiver of a special needs child for a copy of the "Kidbase Form", which is the North Carolina terminology for the Emergency Information Form (EIF).

EMS personnel may choose to contact the child's primary care physician for assistance with specific conditions or devices or for advice regarding appropriate treatment and/or transport of the child in the specific situation.

Transportation of the child, if necessary, will be made to the hospital appropriate for the specific condition of the child. In some cases this may involve bypassing the closest facility for a more distant yet more medically appropriate destination.

Criteria for Death / Withholding Resuscitation

Policy:

CPR and ALS treatment are to be withheld only if the patient is obviously dead per criteria below or a valid North Carolina ***MOST and/or Do Not Resuscitate*** form (see separate policy) is present.

Indications:

- One or more of the following is present:
- Rigor Mortis and/or dependent lividity.
- Decapitation.
- Incineration.
- If arrest is traumatic in origin, go to Wake County Trauma Arrest protocol.

Procedure:

Do not resuscitate any patient who meets the above criteria. If resuscitation efforts are in progress, consider discontinuing the resuscitation efforts (Paramedic Only).

Notify law enforcement of the patient's death (or a patient's physician if patient is in a medical facility with continual physician or nursing care during its hours of operation; e.g. hospital, nursing home, physician's office).

Note:

- **If you are unsure whether the patient meets the above criteria, begin resuscitation and follow the appropriate protocol(s).**

Deceased Subjects

Policy:

EMS will handle the disposition of deceased subjects in a uniform, professional, and timely manner.

Purpose:

The purpose of this policy is to:

- Organize and provide for a timely disposition of any deceased subject
- Maintain respect for the deceased and family
- Allow EMS to return to service in a timely manner.

Procedure:

1. Follow the Wake County Deceased Persons Protocol

Discontinuation of Prehospital Resuscitation

Policy:

Unsuccessful cardiopulmonary resuscitation (CPR) and other advanced life support (ALS) interventions may be discontinued prior to transport or arrival at the hospital when this procedure is followed.

Purpose:

The purpose of this policy is to:

- Allow for discontinuation of pre-hospital resuscitation after the delivery of adequate and appropriate ALS therapy.

Procedure:

1. Discontinuation of CPR and ALS intervention may be implemented **prior to contact with Medical Control if ALL** of the following criteria have been met:

   - Patient must be 18 years of age or older, or family of a minor is agreeable after consultation with the APP or District Chief.
   - Adequate CPR has been administered.
   - Airway has been successfully managed with verification of device placement. Acceptable management techniques include orotracheal intubation, nasotracheal intubation, Blind Insertion Airway Device (BIAD) placement, or cricothyrotomy.
   - IV or IO access has been achieved.
   - Rhythm appropriate medications and defibrillation have been administered according to protocol.
   - Persistent asystole or agonal rhythm is present and no reversible causes are identified after a minimum of 25 minutes of resuscitation.
   - Failure to establish sustained palpable pulses or persistent/recurring ventricular fibrillation/ tachycardia or lack of any continued neurological activity such as eye opening or motor responses
   - All EMS paramedic personnel involved in the patient's care agree that discontinuation of the resuscitation is appropriate

2. If all of the above criteria are not met and discontinuation of pre-hospital resuscitation is possibly indicated or desired, **contact Medical Control**.

3. The **Deceased Subjects Policy** should be followed.

Document all patient care and interactions with the patient's family, personal physician, medical examiner, law enforcement, and medical control in the EMS patient care report (PCR).

Disposition of Patients and Patient Instructions

- This policy applies to all credential levels, including medical responders and first responders.
- Mentally capable patients maintain the right to refuse care and/or transport. If unsure, contact Medical Control. Medical Control may not order a patient who is capable to be transported but may be able to talk with the patient directly and convince him or her to seek appropriate treatment or transport. Patients who are not capable at the time of the EMS encounter and/or present a danger to themselves or others shall be transported to a local emergency department for mental health evaluation, or to an approved alternative destination. Providers should make every effort to transport patients with their consent, regardless of capacity, however transport of incapacitated individuals may occur without their consent as necessary. Contact Law Enforcement for assistance with transporting patients without their consent. Disagreement with the provider does not itself constitute lack of capacity.
- All patients refusing service shall be informed of the availability of service and:
  - Offered treatment and transport in a non-confrontational, polite manner,
  - Advised to call 911 for emergency service if desired, and
  - Advised that the patient(s) accept full responsibility for their actions
  - Advised to wait on the arrival of a paramedic prior to refusal so that an ALS assessment may be performed and appropriate patient refusal documentation completed. For this reason, in general medical responders and first responders should NOT cancel incoming EMS units when a patient or patients are present on a scene. Refer to the "Foundations of Practice" for the Wake County EMS System "Definition of a Patient." If there is no one on scene who meets the definition of a patient, First Responding units may advise such over the radio and then cancel incoming EMS units at the discretion of the highest ranking officer on scene or the scene or incident commander.
- Patients are considered to be capable of refusing care if they do not endorse suicidal or homicidal ideation, are oriented to person, place and time (or to their baseline mental status in a nursing home), and can express understanding of the risks of refusal.
- The use of alcohol or other drugs should not be used solely as a criterion for rendering a person incapable of making a medical decision. Rather, the circumstances of the event should be taken into account. For example, the patient who has used alcohol or other drugs with a potential for head trauma and altered mental status will require transport based on implied consent whereas the substance-using patient in their home with no evidence of trauma who meets the capacity criteria listed above may be capable of making a medical decision.
- Patients treated for hypoglycemia under the altered mental status protocol or the well person protocol that meet criteria for non-transport do not require a refusal form.
- Documentation:
  - In the PCR narrative, describe the patient encounter, VITAL SIGNS, and advice given. Use the "Refusal of Care" procedure in the call reporting system to document that the patient is alert and oriented to person, place, and time, and that the patient understands given instructions.
  - If possible, have the patient sign the AMA form, have a third party witness the signature, and give a copy to the patient. If not possible, document the reason why this was not accomplished (patient refused to wait on paramedic resource, patient refused to sign, etc.)
  - Complete the "Refusal of Service" Procedure in the electronic call report
  - Patients should receive the appropriate pre-printed "Patient Instructions" form (see appendix)
- EMS personnel shall not discuss cost, system status/unit availability, or any other non-clinical subject in regards to a patient's decision to accept or decline treatment and/or transport.

Standards Policy

Documentation of the Patient Care Report (PCR)

Policy: For every patient contact, the following describes the minimum required documentation.

1. A clear history of the present illness with chief complaint, onset time, associated complaints, pertinent negatives, mechanism of injury, etc. This should be included in the subjective portion of the PCR. The section should be sufficient to refresh the clinical situation after it has faded from memory.
2. An appropriate physical assessment that includes all relevant portions of a head-to-toe physical exam. When appropriate, this information should be included in the procedures section of the PCR.
3. At least two complete sets of vital signs for transported patients and one complete set for non-transported patients (pulse, respirations, auscultated blood pressure, pulse oximetry at minimum). These vital signs should be repeated and documented after drug administration, prior to patient transfer, and as needed during transport. For Children age < 3, blood pressure measurement is not required for all patients, but should be measured if possible, especially in critically ill patients in whom blood pressure measurement may guide treatment decisions.
4. Only approved medical abbreviations may be used- see appendix.
5. The CAD to PCR interface embedded within the PCR system should be used to populate all PCR data fields it supplies. When 911 center times were improperly recorded, these may be properly edited.
6. When the cardiac monitor is applied, data will be transferred to the PCR from the device. If transferred automated vital sign values do not correlate with manually obtained values, or are not consistent with the patient's clinical condition, providers should manually check vitals and record manual results.
7. For drug administrations, dosage, route, administration time, and response shall be documented.
8. A complete list of treatments in chronological order. Response to treatments should also be listed.
9. For patients with extremity injury, neurovascular status must be noted before and after immobilization.
10. For patients with spinal immobilization, document motor function before/after spinal immobilization.
11. For IV administration, the catheter size, site, number of attempts, type of fluid, and flow rate.
12. A lead II strip should be attached for all patients placed on the cardiac monitor. All 12-leads should also be included. Any significant rhythm changes should be documented. For cardiac arrests, the initial strip, ending strip, pre and post defibrillation, pacing attempts, etc. should be attached.
13. Any requested medical control orders, whether approved or denied, should be documented clearly.
14. Any waste of controlled medications should include the quantity wasted, where wasted, and name of the person who witnessed the waste. Hospital personnel should be utilized (if available) to witness.
15. ALL crew members are responsible for, <u>and should review</u>, the content of the PCR for accuracy.
16. Once the call is completed, patient care information may not be modified for any reason. Corrections or additions should be in the form of an addendum to the PCR.
17. For all patients who receive EMS medications or procedures (beyond KVO IV), the PCR shall be completed prior to leaving the hospital. Exceptions must be approved by the receiving facility and the specific individual approving the exception must be documented in the PCR. Completing the record includes marking the record "complete" in the PCR system and uploading the record to the server.
18. When possible, all PCRs should be completed prior to leaving the hospital. All PCRs should be available to the receiving facility within 4 hours. If the PCR cannot be completed and a copy left with a receiving caregiver before departing the hospital, the narrative section of the call report should explain the delay and indicate the means used to deliver the report and confirm that it was received.
19. A printed copy of the PCR (including appropriate cardiac monitor tracings, original DNR or MOST forms and, when applicable, documentation of refusal to accept an appropriate assessment, treatment, or hospital destination from EMS) shall be provided to the receiving hospital.
20. PCRs should be sent to the server before leaving the hospital, or upon completion of non-transports.

Policy

This policy has been altered from the original NCCEP Policy by the Wake County EMS Medical Director

Documentation with Multiple Providers, Includes APP and DC Documentation

Purpose:

The purpose of this policy is to:

- Provide world class patient care and EMS service to the citizens of Wake County.
- Provide a consistent method for documenting patient care encounters that include multiple providers, particularly when an Advanced Practice Paramedic (APP) is involved.

Policy:

1. All providers involved in the patient care activity are responsible for ensuring accurate and complete patient care documentation. The lead provider (listed as “primary attendant”) on the PCR is ultimately responsible for the report, however ALL providers should read the entire report once all documentation is complete to ensure accuracy.

2. In the situation where all providers are present during the completion of the documentation, the care team may coordinate the recording of their participation and care, and a single provider may document the patient care encounter with review by all care providers.

3. In the situation where all providers are not present during the completion of the documentation (for example, an APP or District Chief provided some patient care on-scene but did not accompany the crew to the hospital, or an APP provided on-line advice, etc.), the following shall be accomplished:

    a. The APP or DC will complete a PCR to include patient name and demographics.
    b. The primary transport unit will complete a full PCR to include patient name, demographics, narrative, all procedures and care provided by all providers on the call.
    c. In the case of a patient in whom follow-up is performed by an APP after the call, or specific APP or District Chief assessment is performed, this care shall be documented by the APP or DC in an addendum to the primary PCR completed as per section b above.
    d. If there is any dispute over documentation, the first attempt to reconcile will be accomplished via conversation between the APP and the primary provider. Corrections will be placed in an addendum. If the dispute cannot be resolved in this manner, the office of clinical affairs (MD1, MD2, MD20) shall be contacted for mediation.

DNR, MOST, Advanced Directives

Policy:

Any patient presenting to any component of the EMS system with a completed North Carolina ***Do Not Resuscitate*** (DNR) form (yellow form) shall have the form honored and CPR and ALS therapy withheld in the event of cardiac arrest. The **Medical Orders for Scope of Treatment** (MOST) form shall be honored as directed below.

Purpose:

- To honor the terminal wishes of the patient and to prevent the initiation of unwanted resuscitation.

Procedure:

1. When confronted with a cardiac arrest patient, the following conditions must be present in order to honor the DNR request and withhold CPR and ALS therapy:
   - Original North Carolina DNR form (yellow form - not a copy) – or – DNR box is checked in section A of the MOST form (pink form – not a copy). (NOTE: If in a medical facility, see the "Deceased Persons" procedure for additional guidance regarding other methods of documenting DNR status)
   - Form signed by physician, physician's assistant, or nurse practitioner

2. A DNR request may be overridden by the request of the patient, the patient's guardian, or the patient's on-scene physician.

3. When confronted with a seriously ill patient who is not in cardiac arrest and has a MOST form, the **MOST form Section B** shall be utilized as follows:
   - Full Scope of Treatment box is checked: Use all appropriate measures included in System Protocols to stabilize/resuscitate the patient
   - Limited Scope of Treatment box is checked: The maximum airway intervention is non-rebreather mask and airway suctioning. All appropriate IV medications may be utilized. No electrical therapies are to be provided.
   - Comfort Measures is checked: The maximum airway intervention is non-rebreather mask and airway suctioning. IV pain medications may be administered. Medical control may be contacted reference appropriate treatment.

4. In the case of a peri-arrest patient with a DNR but not a MOST form, make every effort to contact the patient's Healthcare Power of Attorney (HCPOA) if one exists, and/or the patient's family to clarify the patient's wishes regarding resuscitation. In general the "hierarchy" of decision-making for end-of-life issues, per NC Law (NCGS 90-322), is 1) Healthcare power of attorney; 2) Spouse; 3) A majority of reasonably available Adult Children and Parents; 5) Adult Siblings; 6) Adult Grandchildren; 7) Grandparents; 8) Adult who exhibited special care and concern for the patient

5. If family members are present and ask that resuscitative efforts be withheld in the absence of an advanced directive, determine their relationship to the patient and the patient's history. If the patient has an obvious life-limiting illness (terminal cancer, advanced neurological disease, etc.), resuscitative efforts may be withheld. If there is no obvious life-limiting illness, begin resuscitation based on appropriate protocol(s) and contact medical control for further guidance.

6. Living wills or other documents indicating the patients desire to withhold CPR or other medicacare may be honored only in consultation with the patient's family.

EMS Documentation and Data Quality-NCCEP

Policy:

The complete EMS documentation associated with an EMS event's service delivery and patient care shall be electronically recorded into a Patient Care Report (PCR) within 24 hours of the completion of the EMS event with an average EMS Data Score of 5 or less.

Definition:

The EMS documentation of a Patient Care Report (PCR) is based on the appropriate and complete documentation of the EMS data elements as required and defined within the North Carolina College of Emergency Physician's EMS Standards (www.NCCEP.org). Since each EMS event and/or patient scenario is unique, only the data elements relevant to that EMS event and/or patient scenario should be completed.

The EMS Data Score is calculated on each EMS PCR as it is electronically processed into the North Carolina PreHospital Medical Information System (PreMIS). Data Quality Scores are provided within PreMIS and EMS Toolkit Reports. The best possible score is a 0 (zero) and with each data quality error a point is added to the data quality score.

A complete Patient Care Report (PCR) must contain the following information (as it relates to each EMS event and/or patient):

- Service delivery and Crew information regarding the EMS Agency's response
- Dispatch information regarding the dispatch complaint, and EMD card number
- Patient care provided prior to EMS arrival
- Patient Assessment as required by each specific complaint based protocol
- Past medical history, medications, allergies, and DNR/MOST status
- Trauma and Cardiac Arrest information if relevant to the EMS event or patient
- All times related to the event
- All procedures and their associated time
- All medications administered with their associated time
- Disposition and/or transport information
- Communication with medical control
- Appropriate Signatures (written and/or electronic)

Purpose:

The purpose of this policy is to:

- Promote timely and complete EMS documentation.
- Promote quality documentation that can be used to evaluate and improve EMS service delivery, personnel performance, and patient care to the county's citizens.
- Promote quality documentation that will decrease EMS legal and risk management liability.
- Provide a means for continuous evaluation to assure policy compliance.

Documentation of Vital Signs

Policy:

Vital signs are a key component in the evaluation of any patient encounter and a complete set of vital signs shall be documented in the patient care report (PCR) for any patient.

Purpose:

To ensure:

- Objective evaluation of every patient's general clinical status
- Documentation of a complete set of vital signs

Procedure:

1. An **initial** complete set of vital signs includes:
   - Pulse rate and Respiratory rate
   - Systolic **AND** diastolic blood pressure (BP). Cap refill may be substituted in children < 3.
   - Pain / severity (when appropriate to patient complaint), and GCS for Injured Patients

2. When no ALS care is provided, palpated BPs are acceptable for **REPEAT** vital signs.

3. Based on patient condition, complaint, and protocol used, vital signs may also include: Pulse Oximetry, Temperature, End Tidal CO2, Breath Sounds, Level of Response

4. If the patient refuses evaluation, an assessment of capacity and a patient disposition form must also be completed. In addition, providers should record any vital signs that the patient or situation allows (e.g. a respiratory rate may be obtained by observation alone), and include an explanation of the clinical situation and refusal in the PCR narrative.

5. When any components of vital signs were obtained using the cardiac monitor, the data should be exported electronically to the PCR. Where values are inconsistent with manually obtained values, values may be appropriately edited to reflect the manually obtained values.

6. EMT-Basic personnel may attend patients who have the four-lead cardiac monitor attached for the purpose of collecting vital signs. However, cardiac rhythm interpretation is only within scope of practice for EMT-I and above. Patients who require repeat or continuous 12 lead monitoring should be attended by a Paramedic.

6. Document situations that preclude the evaluation of a complete set of vital signs. Generally, children > 3 years of age should have a BP measured, and cap refill measured for < 3 years of age. For young children, the need for BP measurement should be determined on a case-by-case basis considering the provider's rapport with the child and the child's clinical condition. Blood pressure measurement is not required for all patients, but should be measured if possible, especially in critically ill patients in whom blood pressure measurement may guide treatment decisions.

7. Record the time vital signs were obtained; any abnormal vital sign should be repeated and monitored closely.

Domestic Violence (Partner and/or Elder Abuse) Recognition and Reporting

Policy:

Domestic violence is physical, sexual, or psychological abuse and/or intimidation, which attempts to control another person in a current or former family, dating, or household relationship. The recognition, appropriate reporting, and referral of abuse is a critical step to improving patient safety, providing quality health care, and preventing further abuse.

Elder abuse is the physical and/or mental injury, sexual abuse, negligent treatment, or maltreatment of a senior citizen by another person. Abuse may be at the hand of a caregiver, spouse, neighbor, or adult child of the patient. The recognition of abuse and the proper reporting is a critical step to improve the health and wellbeing of senior citizens.

Purpose:

Assessment of an abuse case is based upon the following principles:

- **Protect** the patient from harm, as well as protecting the EMS team from harm and liability.
- **Suspect** that the patient may be a victim of abuse, especially if the injury/illness is not consistent with the reported history.
- **Respect** the privacy of the patient and family.
- **Collect** as much information and evidence as possible and preserve physical evidence.

Procedure:

***Immediately report any suspicious findings of abuse or neglect to the receiving hospital.**

1. Assess the/all patient(s) for any psychological characteristics of abuse, including excessive passivity, compliant or fearful behavior, excessive aggression, violent tendencies, excessive crying, behavioral disorders, substance abuse, medical non-compliance, or repeated EMS requests. This is typically best done in private with the patient.
2. Assess the patient for any physical signs of abuse, especially any injuries that are inconsistent with the reported mechanism of injury. Defensive injuries (e.g. to forearms), and injuries during pregnancy are also suggestive of abuse. Injuries in different stages of healing may indicate repeated episodes of violence.
3. Assess all patients for signs and symptoms of neglect, including inappropriate level of clothing for weather, inadequate hygiene, absence of attentive caregiver(s), or physical signs of malnutrition.
4. For suspected elder abuse or neglect, contact Wake County Human Services' Senior and Adult Services Department at 919-212-7264. After office hours, the adult social services worker on call can be contacted by the 911 communications center.
5. For suspected domestic violence, EMS personnel should attempt in private to provide the patient with the Wake County InterAct crisis hotline, 919-828-3005 for sexual assault, or 919-828-7740 for other domestic violence, or the **National Hotline, 1-800-799-SAFE**.

EMS Back in Service Time

Policy:

All EMS Units transporting a patient to a medical facility shall transfer the care of the patient and complete all required operational tasks to be back in service for the next potential EMS event within 30 minutes of arrival to the medical facility, 90% of the time.

Definition:

The EMS Back in Service Time is defined as the time interval beginning with the time the transporting EMS Unit arrives at the medical facility destination and ending with the time the EMS Unit checks back in service and available for the next EMS event.

Purpose:

The purpose of this policy is to:

- Assure that the care of each EMS patient transported to a medical facility is transferred to the medical facility staff in a timely manner.
- Assure that the EMS unit is cleaned, disinfected, restocked, and available for the next EMS event in a timely manner.
- Assure that the EMS patient care report (PCR) is completed and left with the receiving medical facility (This requirement may be waived under emergency or low system resource conditions when approved by the facility at the request of a System chief officer. Where this occurs it should be documented in the subsequent patient care report).
- Provide quality EMS service and patient care to the county's citizens.
- Provide a means for continuous evaluation to assure policy compliance.

Procedure:

The following procedures shall be implemented to assure policy compliance:

1. The EMS Unit's priority upon arrival at the medical facility will be to transfer the care of the patient to medical facility staff as soon as possible.

2. EMS personnel will provide a verbal patient report on to the receiving medical facility staff.

3. The EMS Unit will be cleaned, disinfected, and restocked (if necessary) during the EMS Back in Service Time interval.

4. Any EMS Back in Service Time delay resulting in a prolonged EMS Back in Service Time will be documented in Patient Care Report (PCR) as an "EMS Turn-Around Delay" as required and defined in the North Carolina College of Emergency Physicians (NCCEP) EMS Dataset Standards Document.

5. All EMS Turn-Around Delays will be reviewed regularly within the EMS System Peer Review Committee.

EMS Dispatch Center Time

Policy:

The EMS Dispatch Center Time will be less than 90 seconds, 90% of the time, for all events identified and classified as an emergent or hot (with lights and siren) response.

Definition:

The EMS Dispatch Center Time is defined as the time interval beginning with the time the initial 911 phone call rings at the 911 Communications Center requesting emergency medical services and ending with the dispatch time of the EMS Unit responding to the event.

Purpose:

The purpose of this policy is to:

- Provide the safest and most appropriate level of response to all EMS events within the EMS System.
- Provide a timely and reliable response for all EMS events within the EMS System.
- Provide quality EMS service and patient care to the county's citizens.

Procedure:

- Any EMS Dispatch Center Time delays resulting in a prolonged EMS Dispatch Center Time for emergent hot (with lights and sirens) events will be documented in Patient Care Report (PCR) as an "EMS Dispatch Delay" as required and defined in the North Carolina College of Emergency Physicians (NCCEP) EMS Dataset Standards Document.

- EMS Dispatch Delays will be reviewed regularly within the EMS System Peer Review Committee.

EMS Wheels Rolling Turn-Out Time

Policy:

The EMS Wheels Rolling (Turn-out) Time will be less than 90 seconds, 90% of the time, for all events identified and classified as an emergent or hot (with lights and siren) response.

Definition:

The EMS Wheels Rolling (Turn-out) Time is defined as the time interval beginning with the time the EMS Dispatch Center notifies an EMS Unit to respond to a specific EMS event and ending with the time the EMS Unit is moving en route to the scene of the event.

Purpose:

The purpose of this policy is to:

- Provide a timely and reliable response for all EMS events within the EMS System.
- Provide quality EMS service and patient care to the county's citizens.
- Provide a means for continuous evaluation to assure policy compliance.

Procedure:

The following procedures shall be implemented to assure policy compliance:

- The EMS Unit Wheels Rolling (Turn-out) time will be less than 90 seconds from time of dispatch, 90% of the time. If a unit fails to check en route within :59 (mm:ss), the next available EMS unit will be dispatched.

- Any EMS Wheels Rolling (Turn-out) Time delay resulting in a prolonged EMS Response Time for emergent hot (with lights and sirens) events will be documented in Patient Care Report (PCR) as an "EMS Response Delay" as required and defined in the North Carolina College of Emergency Physicians (NCCEP) EMS Dataset Standards Document.

- All EMS Response Delays will be reviewed regularly within the EMS System Peer Review Committee.

Emergency Medical Dispatch

Purpose:

The purpose of this policy is to:

- Provide quality patient care and EMS service to the citizens of Wake County.
- Develop a uniform level of response for the EMS System.
- Provide a means for continuous quality improvement feedback.
- Provide for the safest and most appropriate level of response to the patient(s).

Policy:

1. Persons calling for emergency assistance will never be required to speak with more than two persons to request emergency medical assistance.

2. Each EMS unit shall remain in the response zone assigned by CAD. To avoid dispatch errors, movement outside of this area must be directed by or reported to the communications center.

3. Emergency Medical Units will be dispatched by EMD's in accordance to the standards developed by the Medical Director and the Emergency Medical Dispatch Protocols.

4. Emergency Medical Units will initially respond emergency ("hot") to all requests. As more information becomes available, from the telecommunications center or on scene medical responders, the mode of response may downgraded to non-emergency ("cold"). A non-emergency response is appropriate for alpha and omega level responses as soon as this can be established.

Procedures:

Emergency Medical Units dispatched for cold response will not upgrade to a hot response unless:

1. Public Safety personnel on-scene request a hot (10-39) response.
2. Telecommunicators determine that the patient's condition has changed, and requests you to upgrade to a hot (10-39) response.

An ambulance may divert from a cold/non-emergency call to a higher priority call and then:

1. The diverting ambulance must notify the telecommunicator of their diversion to the higher priority call.
2. The diverting ambulance ensures that an ambulance is dispatched to the original call.

An ambulance may divert from one emergency call to another emergency call if:

1. The other call is clearly of higher priority (e.g., Echo vs. Charlie) – or --
2. The EMS unit comes upon what appears to be a higher priority call (e.g., enroute to a Charlie call and comes upon an MVC with high potential for trauma alert/one patients)

An ambulance may by-pass what appears to be a lower priority situation and continue to the originally assigned call. The communications center should be notified so that another EMS resource may be assigned to the lower priority situation.

Equipment Failure

Purpose:

To address and minimize the failure of equipment integral to patient care or mechanical failure of a transport vehicle. Each agency shall provide a daily check sheet in order to test biomedical equipment and vehicles to minimize the risk of such failures.

Procedure:

1. As soon as the failure is recognized, contact the appropriate emergency communications center, advise them of the failure, and have the nearest appropriate EMS resource dispatched. This may be a supervisor, an ambulance, or some other resource, depending upon patient need.

2. Based on the condition of the patient, advise the communications center to send the resource either emergency traffic or non-emergency traffic.

3. Closely monitor and treat the patient to the best of your ability with the remaining functional equipment.

4. Except in unusual circumstances, the original attending provider should continue to provide for the patient until arrival at the hospital, regardless of which unit is actually transporting the patient.

5. While it is appropriate to notify supervisory personnel of the failure at the conclusion of patient care activities, care and transport should not be delayed while awaiting the arrival of a supervisor (unless the supervisor is responding as the nearest unit based on #1 above).

6. All equipment associated with the failure shall be gathered and secured for inspection. This includes all cables, electrodes, tubing, masks, or any other equipment associated with the failure. This equipment shall not be utilized in patient care activity until written clearance to do so is provided by the Office of Medical Affairs. Accessories such as those mentioned above should be left attached to the failed equipment in the manner that they were attached at the time failure was noted.

7. As noted in the patient safety policy, a Wake EMS System Clinical Unusual Event Report shall be completed and forwarded to the Office of Medical Affairs as soon as practical after the failure. In all cases, this form shall be completed prior to the end of the tour of duty of the personnel involved.

Hospital Diversion

This Policy applies to all Levels of Certification

Purpose: To establish a protocol to be utilized in instances when capacity has been exceeded and there is assurance that all reasonable options to safely accommodate patients have been explored.

Policy: When a facility cannot safely provide appropriate care to ambulance patients, the hospital will redirect, to the extent possible, patients to other area hospitals. The following status conditions are established in agreement with all hospitals in Wake County and the Wake County EMS System. A patient who refuses diversion recommendations shall complete the diversion refusal form after risk and benefits of refusal have been explained. In all cases, a hospital shall re-evaluate their diversion status every 2 hours and attempt to cease diverting patients if possible. If 3 hospitals are on diversion, all hospitals will be re-opened for a period of 2 hours.

Procedure:

GREEN Business as usual, normal transport procedures are in effect. All ambulance personnel should assume each hospital is in this condition until notified otherwise.

YELLOW A YELLOW diversion may be initiated by a hospital when the emergency department is unable to adequately care for an additional critical patient. Examples of critical patients include but are not limited to patients with: hemodynamic instability, respiratory distress, active chest pain, IV medication administration, altered mental status, or any patient in which ALS Protocols are being used. Under a YELLOW diversion, only BLS patients will continue to be transported to the hospital by EMS. Exceptions include cardiac/respiratory arrests to the closest hospital, OB patients in active labor to the hospital of their choice and patients who meet trauma criteria to WakeMed.

RED Total diversion may be initiated by the emergency department when the department cannot accept any patients except cardiac/respiratory arrests to the closest hospital, OB patients in active labor to the hospital of their choice, and patients who meet trauma criteria to WakeMed.

BLACK The emergency department may initiate BLACK diversion when the department is unable to accept any patients. This condition assumes an internal disaster status within the facility and may not be used as a result of volume in the emergency department.

Infant Abandonment

Policy:

The North Carolina Infant Homicide Prevention Act provides a mechanism for unwanted infants to be taken under temporary custody by a law enforcement officer, social services worker, healthcare provider, or EMS personnel if an infant is presented by the parent within 7 days of birth. Emergency Medical Services will accept and protect infants who are presented to EMS in this manner, until custody of the child can be released to the Department of Social Services.

> *"A law enforcement officer, a department of social services worker, a health care provider as defined in G.S. 90-21.11 at a hospital or local or district health department, or an* ***emergency medical technician*** *at a fire station shall, without a court order, take into temporary custody an infant under 7 days of age that is voluntarily delivered to the individual by the infant's parent who does not express an intent to return for the infant. An individual who takes an infant into temporary custody under this subsection shall perform any act necessary to protect the physical health and well-being of the infant and shall immediately notify the department of social services. Any individual who takes an infant into temporary custody under this subsection may inquire as to the parents' identities and as to any relevant medical history, but the parent is not required to provide this information."*

Purpose:

To provide:

- Protection to infants that are placed into the custody of EMS under this law
- Protection to EMS systems and personnel when confronted with this issue

Procedure:

1. Initiate the Pediatric Assessment Procedure.
2. Initiate Newly Born Protocol as appropriate.
3. Initiate other treatment protocols as appropriate.
4. Keep infant warm.
5. Call local Department of Social Services or the county equivalent as soon as infant is stabilized.
6. Transport infant to medical facility as per protocol.
7. Assure infant is secured in appropriate child restraint device for transport.
8. Document protocols, procedures, and agency notifications in the PCR.

Interfacility Transfers

Purpose:

To provide guidance regarding transporting a patient from a medical facility to another medical facility that requires Advanced Life Support care during transport and the facility does not send a registered nurse to attend the patient.

Procedure:

*** In general, Wake EMS providers should only perform interfacility transfers for time-critical conditions, including those patients who meet specialty destination center criteria who are not already at an appropriate specialty receiving center: Trauma, Stroke, STEMI, Post-Cardiac Arrest, and Pediatrics. See Triage and Destination Plans for guidance.**

*** Should a Wake EMS crew be contacted regarding an interfacility transfer for a non-time-critical patient, the crew should contact their District Chief for guidance regarding how to proceed.**

1. The transporting paramedic may maintain any infusion approved by the North Carolina Medical Board (NCMB) for interfacility transport by an EMT-Paramedic provided:

   a. The technician is familiar with the medication being infused.
   b. The medication is being regulated by an IV pump while enroute to the new medical facility.
   c. The patient has stable vital signs prior to departure from the facility.

2. If the transporting paramedic is not familiar with a medication being infused and/or not familiar with any medical device or medication pump (or active pump management is required), regardless of the device or medication's formulary approval by the NCMB, then a transferring facility RN who is familiar with the pump(s) and medication(s) and/or device(s) should accompany the crew for the entirety of the interfacility transport during which patient care is being provided. Should a Wake EMS crew encounter any difficulty with these communications, the crew should contact their District Chief for guidance regarding how to proceed.

2. The transporting paramedic should ensure that all appropriate documentation accompanies the patient.

3. While in transit to the new facility, all appropriate standing orders shall remain in place.

4. If the patient deteriorates, the transferring facility should be notified via radio or cellular phone.

5. If additional ALS orders are needed, the receiving facility should be contacted to issue those orders if the receiving hospital is inside of Wake County. If the receiving facility is outside of Wake County, the transferring facility should be contacted for ALS orders.

Non- Paramedic Transport of Patients

Policy:

- A Paramedic resource will be dispatched to every request for EMS service.
- For the purposes of this policy, "Paramedic" refers to a Wake County EMS System credentialed Paramedic with no current restrictions on their clinical practice.
- At least one Paramedic will be on-board the ambulance during transport of all patients unless natural disaster or other exceptions as approved by policy or the Medical Director.
- The provider with the highest level of Wake County EMS System Credential on scene shall conduct a detailed physical assessment and subjective interview with the patient to determine his or her chief complaint and level of distress. If this provider determines that the patient is stable and ALL patient care needs can be managed by a provider with a lower level credential, patient care may be transferred to a technician of lower certification for care while in en-route to the hospital. All personnel are encouraged to participate in patient care while on-scene, regardless of who "attends" with the patient while en-route to the hospital.
- The determination of who attends should be based upon the patient's immediate treatment needs and any reasonably anticipated treatment needs while en-route to the hospital. The highest-credentialed provider on scene retains the right to make the decision to personally attend to any patient transported based on his or her impression of the patient's clinical condition or needs.
- The paramedic performing the paramedic assessment must document the findings of that assessment. Other documentation may be completed by the transporting provider. As with all documentation, both all providers are responsible for the content of the report.

The care of the following patients **cannot** be transferred to a lower level credential (i.e. to an EMT-I or EMT-B from an EMT-P) :

1. Any patient who requires or might reasonably require additional or ongoing medications, procedures and/or monitoring beyond the scope of practice of the lower credentialed provider. This includes any critically ill or unstable patient as advanced airway management may be required in any decompensating patient. EMT-Basic and EMT-Intermediate providers may be credentialed to perform some but not all airway management, and medications associated with airway management are limited to Paramedic scope of practice by the NC Medical Board.

2. Any patient for whom ALL EMS providers on scene do not agree can be safely transported without a Paramedic in attendance in the patient care compartment. As a general rule, if providers are questioning who should attend the patient, the paramedic should attend the patient.

3. Any patient suffering from chest pain of suspected cardiac origin, cardiac arrhythmia, moderate-to-severe respiratory distress, multiple trauma, or imminent childbirth.

4. Post-ictal seizure patients due to the possibility of a re-occurrence of a seizure.

5. Patients who have been medicated on the scene may only be transferred to a technician of lower credential whose formulary includes the medications that were administered, except that a patient who has received a single dose of pain medication (including opioids) and/or a single dose of anti-emetic as the only medication outside of the receiving technician's formulary may be transferred to a technician of lower credential if it is unlikely that repeat doses of medication will be indicated during transport.

Patient Without a Protocol

Policy:

Anyone requesting EMS services will receive a professional evaluation, treatment, and transportation (if needed) in a systematic, orderly fashion regardless of the patient's problem or condition.

Purpose:

- To ensure the provision of appropriate medical care for every patient regardless of the patient's problem or condition.

Procedure:

1. Treatment and medical direction for all patient encounters, which can be triaged into a Wake County EMS System patient care protocol, is to be initiated by protocol.

2. When confronted with an emergency or situation that does not fit into an existing Wake County EMS System patient care protocol, the patient should be treated by the **Universal Patient Care Protocol** and a **Medical Control Physician** should be contacted for further instructions.

Physician on Scene

Policy:

The medical direction of pre-hospital care at the scene of an emergency is the responsibility of those most appropriately trained in providing such care. All care should be provided within the rules and regulations of the state of North Carolina.

Purpose:

- To identify a chain of command to allow field personnel to adequately care for the patient
- To assure the patient receives the maximum benefit from pre-hospital care
- To minimize the liability of the EMS system as well as any on-scene physician

Procedure:

1. When a non medical-control physician offers assistance to EMS or a patient is being attended to by a physician with whom they do not have an ongoing patient relationship, EMS personnel must provide the On-Scene Physician Form to the physician. All requisite documentation must be verified and should the physician wish to continue providing medical assistance to EMS and the patient, the physician must be approved by on-line medical control as soon as possible with consideration of the clinical situation.

2. When a patient is being attended to by a physician with whom they have an ongoing patient-provider relationship, EMS personnel may follow orders given by the physician if the orders conform to current Wake County EMS guidelines, the physician agrees to the requirements presented on the "On-Scene Physician" form, and if the physician signs the Patient Care Report. Notify medical control at the earliest opportunity.

3. EMS personnel may accept orders from a patient's physician over the phone with the approval of medical control. The paramedic should obtain the specific order and the physician's name and phone number for relay to medical control so that medical control can discuss any concerns with the physician directly. For the purposes of this policy, a physician may be considered "on scene" and therefore able to take medico-legal responsibility for the patient (and therefore issue orders) if contact is made with the physician by telephone or other "live" but remote two-way communication method. For the purposes of this policy a physician does not have to be physically present to be considered "on scene."

4. Orders received from an authorized (as determined by this policy) physician may be followed, even if they conflict with existing local protocols, provided the orders encompass skills and/or medications approved by both the Wake County EMS System Medical Director and the State Medical Board for a provider's credential level. Under no circumstances shall EMS personnel perform procedures or give medications that are outside their scope of practice and/or credential as per the Wake County EMS System Standards Document (this document) and the North Carolina Medical Board.

Poison Center

Policy:

The North Carolina State Poison Center may be utilized by the 911 centers and the responding EMS services to obtain assistance with the pre-hospital triage and treatment of patients who have a potential or actual poisoning.

Purpose:

The purpose of this policy is to:

- Improve the care of patients with poisonings, envenomations, and environmental/biochemical terrorism exposures in the pre-hospital setting.
- Provide for the most timely and appropriate level of care to the patient, including the decision to transport or treat on the scene.
- Integrate the State Poison Center into the pre-hospital response for hazardous materials and biochemical terrorism responses

Procedure:

1. The 911 call center will identify and if EMD capable, complete key questions for the Overdose/ Poisoning, Animal Bites/Attacks, or Carbon Monoxide/Inhalation/HazMat emergency medical dispatch complaints and dispatch the appropriate EMS services and/or directly contact the State Poison Center for consultation.
2. If no immediate life threat or need for transport is identified, EMS personnel may conference the patient/caller with the Poison Center Specialist at the **State Poison Center at 800-222-1222**. If possible, dispatch personnel should remain on the line during conference evaluation.
3. The Poison Center Specialist at the State Poison Center will evaluate the exposure and make recommendations regarding the need for on-site treatment and/or hospital transport in a timely manner. If dispatch personnel are not on-line, the Specialist will re-contact the 911 center and communicate these recommendations.
4. If the patient is determined to need EMS transport, the poison center Specialist will contact the receiving hospital and provide information regarding the poisoning, including treatment recommendations. EMS may contact medical control for further instructions or to discuss transport options.
5. If the patient is determined not to require EMS transport, personnel will give the phone number of the patient/caller to the Poison Center Specialist. The Specialist will initiate a minimum of one follow-up call to the patient/caller to determine the status of patient.
6. Minimal information that should be obtained from the patient for the state poison center includes:
   - Name and age of patient
   - Time of exposure
   - Signs and symptoms
   - Substance(s) involved
   - Any treatment given
7. Minimal information which should be provided to the State Poison Center for mass poisonings, including biochemical terrorism and HazMat, includes:
   - Substance(s) involved
   - Signs and symptoms
   - Time of exposure
   - Any treatment given

Practitioner Disciplinary Policy

In Wake County's EMS System, a practitioner's right to practice medicine is based on extension of the Medical Director's license to practice medicine. For the purposes of this procedure, a "practitioner" is any individual practicing in the Wake EMS System at the level of Medical Responder or higher level of certification. If, in the opinion of the Medical Director, an action (or failure to act) on the part of a practitioner is of such a nature that the action or failure to act is inconsistent with, or a violation of, these procedures, or the practice standard generally accepted in the medical community, the actions described below shall occur, pursuant to the provisions of 10 NCAC 03D .2803:

1. The practitioner will be notified in writing of the issues/concerns that merit attention by the Medical Director. Notwithstanding this written-notice provision, the provisions of 2 and 3, below, and based on the severity and nature of the act (or failure to act), the Medical Director or his designee may suspend a practitioner's right to practice upon receipt of information sufficient in the judgment of the Medical or his designee Director to support immediate suspension in the interests of patient safety. If the Medical Director or his designee invokes an immediate suspension, this shall be followed by written notice within three (3) working days of such immediate suspension.

2. A written explanation by the individual explaining the incident shall be presented to the Medical Director within three (3) working days of receipt of the Medical Director's issues/concerns. If no written explanation of the incident is sent to the Medical Director by that deadline, the Medical Director may base his decision upon such information that is available to him/her as of that deadline.

3. The Medical Director or the individual may request a second meeting to further discuss the issues/ concerns. If this option is exercised, the meeting shall occur within five (5) working days of receipt of the request.

4. After reviewing all materials, the Medical Director will issue a disposition of the matter. The Medical Director may exercise one or more of the following options:
   a. No action taken / matter resolved
   b. Remediation training
   c. Warning
   d. Require to precept at the approved level again
   e. Temporary suspension of all practice privileges or suspension of specific practice privileges
   f. Permanent Suspension of practice privileges

Any suspension of practice privileges will extend to all jurisdictions where the practitioner's right to practice relies on the extension of the Wake EMS System Medical Director's license to practice medicine.

5. After the individual is notified in writing of the Medical Director's decision, he/she may appeal to the Patient Safety Subcommittee of the Peer Review Committee (hereinafter, "Patient Safety Subcommittee"). This appeal request must be presented within five (5) working days of the decision of the Medical Director to the Medical Director or his/her designee for referral to the Patient Safety Subcommittee.

Practitioner Disciplinary Policy (continued)

6. The Patient Safety Subcommittee will meet as soon as is practical after the receipt of the written request for appeal. If the practitioner's ability to practice has been suspended for greater than 7 days, this meeting will be held with all deliberate speed and effort will be made to convene the meeting within 10 days. The committee shall consist of the following representatives:
   a. One Physician Member who is not the Medical Director;
   b. In cases involving paramedics, two paramedics each primarily and currently employed by Wake EMS and two paramedics each primarily and currently employed by a different Wake County EMS System agency.
   c. In cases involving practitioners other than paramedics, two paramedics each primarily and currently employed by Wake EMS and two practitioners of standing equivalent to that of the individual filing the appeal.

7. One member of the Patient Safety Subcommittee shall be designated by the Patient Safety Subcommittee as the presiding officer for purposes of hearing an appeal. The Patient Safety Subcommittee may hear witnesses (the participation of which is the responsibility of the party calling the witness) and consider documentary and other evidence. The practitioner exercising the appeal may be accompanied by any individual(s) of their choice. Patient Safety Subcommittee meetings are not adversarial, however, so the only individual who may address the Subcommittee is the practitioner. The decision of the Patient Safety Subcommittee shall be in the form of written findings of fact and imposition of action(s) consistent with those findings of fact.

Readiness for Response

Purpose: To ensure the provision of a safe and well-organized EMS response by:

1. Selection and dispatch of the closest appropriate EMS resource(s)
2. Establishing the minimum amount of rest an EMS provider must have to promote health, safety in vehicle operations, and safety in patient care.

Policy:

1. During the scheduled work shift, all dispatch-eligible EMS system vehicles should remain in service in the CAD system except as detailed below:

a. When a response vehicle is so depleted of medical supplies (as detailed in the Patient Safety Protocol), or is encountering mechanical issues such that it cannot be reasonably expected to respond appropriately, the EMS technician(s) staffing the vehicle should verbalize and seek acknowledgement from the communications center that the vehicle is out of service equipment or out of service vehicle.

b. For transport-capable vehicles, when at least one medically cleared Paramedic whose credential to practice is unrestricted in the Wake County EMS system and one other locally credentialed EMS technician are no longer available to staff and safely affect an emergency response, the EMS technician(s) staffing the vehicle should verbalize and seek acknowledgement from the communications center that the vehicle is out of service calls. This includes the illness/injury of a technician, a technician exceeding 36 hours of emergency services work without 8 hours break from such work (see below), or recognition that the technician is otherwise unfit to effect a safe response. This also applies if necessary to respond to an appropriate order to exit service for a specific administrative task (out of service admin).

c. In the following scenarios, units may mark out-of-service in addition to items mentioned in “b” above:

i. Unit assigned to patient care activity after scheduled shift change or to clear from an assigned coverage within 15 minutes prior to scheduled shift change: At the conclusion of the patient care activity, the unit may mark out of service in order to return to primary station for shift change. This is not permitted during ESTAT periods.

ii. Unit staffed with at least one technician that has completed 36 hours of continuous emergency services work: The unit should check out of service and return to the primary station for shift change. This is permitted during ESTAT periods.

iii. Unit in the primary station at the time of scheduled shift change: If possible, personnel should remain at the primary station and be ready to respond. If personnel cannot remain past the scheduled shift change, this should be communicated with the appropriate supervisor and should verbalize and seek acknowledgement from the communications center that the vehicle is out of service calls. During ESTAT, this will require authorization from the District Chief managing the ESTAT.

d. When the unit is assigned to an incident by the communications center, including any response to which an incident number is assigned, covering the period from notification to the time the ambulance departs the hospital (transports) or leaves the incident scene (non-transports), it is expected that the unit transmit and receive acknowledgement that their unit is in-service, available for dispatch at the time of departure from the hospital or incident scene.

Policy (continued):

e. A single responder using an ambulance may occur as follows. When a single medically cleared technician whose credential to practice is unrestricted in the Wake County EMS system is available at a station with a vehicle that is out of service calls and there is a nearby request for EMS, this single technician may add themselves to all other responding resources and proceed to the scene in the vehicle. This unit should at no time cancel any other dispatched resources prior to arriving and gaining situational awareness of what is needed.

f. Whenever a vehicle reaches ¼ capacity of fuel, the vehicle may mark out of service fuel. The EMS technician(s) staffing the vehicle should verbalize and seek acknowledgement from the communications center that the vehicle is out of service, and transmit and receive acknowledgement that their unit is in-service as soon as fueling is complete. The vehicle should be fueled at the closest appropriate site, without delay.

2. EMS technicians will verify that the mobile data terminal (MDT) in their response vehicle has evidence of connectivity to the automated vehicle location system and is "polling" with each movement of the vehicle that was not dispatched, and on completion of each non-dispatched travel segment.

3. As delineated above, no EMS provider shall work more than 36 consecutive hours. If the provider has worked 36 consecutive hours, there must be a minimum of 8 hours of rest prior to return to work.

a. Work is defined as any activity that is either required by an employer, generates income, or in a predictable manner interferes with an EMS provider's ability to rest.

b. Rest is defined as non-work activity that occurs in a provider's home or other non-work environment that is conducive to sleep. Attending EMS-related activities such as administrative meetings, education sessions, participating in assessment centers, etc, does not count as rest. Additionally, working at another public safety agency or other off-duty work (e.g. other business or employment) does not qualify as rest.

4. If a provider chooses to work on-duty less than 36 consecutive hours but participate in additional work activities without an 8 hour period of rest, there must be 8 consecutive hours of rest in the 48 hour period prior to return to the next scheduled duty shift.

example 1. A provider works a 24 hour shift that ends at 0700. He/She then wishes to work overtime from 0900 to 2100 and then return to the 24 hour shift at 0700 the next day. This would be allowed, as there is more than an 8 hour period of continuous rest from the conclusion of the overtime shift and beginning of the next shift.

example 2. A provider works a 24 hour shift that ends at 0700. He/She then wishes to work overtime from 1300 to 0100, and return to the regular shift at 0700. This would NOT be allowed, as there is no period of continuous 8 hour rest in the 48 hours prior to the latest 0700 shift.

5. In general, variances from this policy will not be approved. In extreme circumstances (such as invocation of the EMS Emergency Rule), specific, time-limited exceptions to this policy may be granted by the Medical Director or designee.

Safe Transport of Pediatric Patients

Policy:

Without special considerations, children are at risk of injury when transported by EMS. EMS must provide appropriate stabilization and protection to pediatric patients during EMS transport.

Purpose:

- To Provide a safe method of transporting pediatric patients within an ambulance.
- Protect the EMS system and personnel from potential harm and liability associated with the transportation of pediatric patients.

Procedure:

1. Drive cautiously at safe speeds observing traffic laws.
2. Tightly secure all monitoring devices and other equipment.
3. Ensure that all pediatric patients less than 40 lbs are restrained with an approved child restraint device secured appropriately to the stretcher or captain's chair.
3. Ensure that all EMS personnel use the available restraint systems during the transport.
4. Transport adults and children who are not patients, properly restrained, in an alternate passenger vehicle, whenever possible.
5. Do not allow parents, caregivers, or other passengers to be unrestrained during transport.
6. NEVER attempt to hold or allow the parents or caregivers to hold the patient during transport.
7. For patients with medical conditions that may be aggravated by stress, make every attempt to optimize safety when comforting the child.
8. Do not transport the pediatric patient who is assessed as meeting trauma center criteria in a child seat that was involved in the collision that produced the child's injury.

Transport and Care Plans

Purpose: To establish a uniform protocol for the transportation of the sick and injured.

Procedure: All sick or injured persons requesting transport shall be transported without delay to an appropriate local emergency department **of the patient's preference. The only exceptions to this rule are found below.**

1. An "appropriate local emergency department" includes **ALL** WAKE COUNTY EMERGENCY DEPARTMENTS (ED), hospitals in contiguous counties, and UNC Hospitals in Chapel Hill. The ability to pay or insurance status if known SHALL NOT BE A FACTOR. If the unit availability status of the System is a concern, contact your supervisor prior to patient-requested out-of-county transport.

2. All sick or injured persons requesting transport **who do not express a preference** will be transported without delay to the closest appropriate local hospital or ED.

3. Patients whose conditions are covered by a formal Destination Plan (Pediatric, Post-Resuscitation, STEMI, Stroke, Trauma, etc) or who meet Alternative Destination Screening Criteria shall be transported in accordance with those specialty algorithms to the appropriate destination. All other patients should be transported per this policy.

4. In unusual circumstances, transport in other vehicles may be appropriate when directed under the authority of the Medical Director or Medical Director's designee.

5. Select patients who may or may not be frequent utilizers of the EMS System may have a designated CARE PLAN as developed with the patient and his or her health care providers, the Wake County EMS System, and one or more local hospitals. If a patient has a formal CARE PLAN approved by the Wake County EMS System, then the patient should be treated and transported in accordance with the CARE PLAN, unless the patient meets criteria to be transported to a specialty receiving center as in #3 above. In many cases, the patient's designated CARE PLAN hospital may also be an appropriate specialty receiving center. Regardless of the existence of a CARE PLAN, patients known to be discharged from an emergency department within the last 48 hours should generally, but not always, be transported back to the same emergency department, unless they meet specialty destination criteria as noted. Many exceptions to this guideline may exist; do not hesitate to seek guidance from a supervisor.

6. Transport decisions should take into strong consideration a patient's pre-existing health care relationships. In general, patients should be taken to the hospital at which they have a pre-existing patient-provider relationship unless the patient expressly requests otherwise. For example, a patient who has had recent surgery who now has a possible surgical complication should return to the hospital at which the surgery was performed. If a patient has a Duke cardiologist, for example, the patient should generally be taken to Duke for possible cardiac problems. These situations are not necessarily inconsistent with time-sensitive conditions and the Triage and Destination Plans. Patients may choose their preferred destination specialty receiving hospital; providers should document discussion of possible risks and benefits associated with possible longer transport times.

Transport and Screening for Mental Health and Substance Abuse Patients

Purpose: To establish criteria for EMS referral to approved Alternative Destinations (i.e. Transport to a location other than the emergency department) in order to facilitate the most appropriate triage and care for persons with acute mental health or substance abuse concerns.

Procedure: Patients with a primary mental health or substance abuse complaint are eligible for consideration for alternative destination if the following criteria are met:

1) Patient has no acute medical or traumatic conditions. Patients with unexplained persistent or recurring changes in mental status should be referred to the emergency department for evaluation. Patients with superficial abrasions may be evaluated at CAS whereas any patient with on-going bleeding or wounds requiring repair should be referred to the emergency department for evaluation.
2) Patient is ambulatory and can take p.o. fluids
3) Pulse is less than 120
4) Patient is either compliant with medications for chronic conditions or knows the name and dosage of medications for his or her chronic condition(s) and is willing to take these medications
5) If a patient has taken medications outside of normal dose, an Advanced Practice Paramedic (APP) will discuss this with the poison center (800-222-1222). When calling, the APP should be prepared with the information outlined in Policy 26.
6) Emergency department evaluation will be initiated if recommended by the poison center. If no emergency department evaluation is recommended and the patient meets all other criteria, the approved alternative destination should be notified of the poison center consultation, guidance received during consultation, and the case/ reference number as available.
6) Isolated hypertension (i.e., HTN with no associated symptoms such as headache, neurologic changes, chest pain, or shortness of breath) in a patient with a history of hypertension will not be a reason to decline the referral to CAS.
7) Patient should be able to perform activities of daily living (ADLs) independently.
8) Patients with a history of diabetes who have no evidence of ketoacidosis and a blood glucose <300 are appropriate for referral to CAS.
9) Blood alcohol concentration (BAC) is a determinant of which alternative destinations are an option for a patient. Patients with a primary substance abuse complaint with a <u>BAC of less than or equal to 0.3</u> may be referred to Crisis and Assessment at Wakebrook, The Healing Place, or Holly Hill Hospital. Patients with a <u>BAC between 0.3 and 0.35</u> may be referred to Crisis and Assessment at Wakebrook or The Healing Place. Patients with a <u>BAC between 0.35 and 0.4</u> may only be referred to The Healing Place. Patients with a <u>BAC greater than 0.4</u> are not eligible for alternative destination and must be referred to the Emergency Department.

In any circumstance, transport crews must communicate directly with the APP either on-scene, on the phone, or by radio to ensure that proper notification of the Alternate Destination can be made by the APP. The APP must approve the patient for potential alternate destination in all cases. If an APP believes a patient to be appropriate for Alternative Destination but the patient does not meet one or more criteria above, then acceptance of a referral on a case-by-case basis may be allowed after approval from clinical personnel at the Alternative Destination.

Venous Access: Blood Draw

I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Collection of a patient's blood for laboratory analysis
- Blood draws may be requested from time to time by law enforcement as per state statute. These requests should be referred to the nearest on-duty APP.
- Patient is an ACUTE STROKE patient and is getting pre-hospital blood draw to facilitate expeditious care at the hospital.

Procedure:

1. Utilize universal precautions as per OSHA.
2. Select vein and prep as usual. Have all supplies ready prior to initiating the IV stick.
3. Select appropriate blood-drawing devices (Vacutainer holder, adapter, lab tubes).
4. Place a venous tourniquet and insert the IV needle-catheter device into the skin. Advance the catheter and leave the tourniquet in place for drawing blood.
5. Attach the vacutainer adapter and device to the catheter hub. Draw blood by pushing the lab tubes onto the needle inside the vacutainer- blood should flow easily into the lab tube. Allow to fill until flow ceases. Repeat as needed; once each tube is filled, rock gently end over end 8-10 times to ensure that the tube additive is well mixed with the blood in the tube.
6. Draw the appropriate type and number of tubes of blood for indicated lab testing (***for stroke patients, blue-top tube first and then the purple-top tube***).
7. Once blood drawing is complete, remove tourniquet, occlude vein, and insert IV tubing or saline lock onto the catheter hub and refer to the venous access procedure.
8. **Assure that the blood samples are labeled with the correct patient information** (if the tubes are not properly labeled, they may not be usable at the hospital!) Label with the patient's name, along with the date and time the sample was collected, and the initials of the EMS provider that collected the blood.
9. Deliver the blood tubes to the appropriate individual at the emergency department.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Venous Access: Central Line Maintenance

Clinical Indications:

P EMT- P P

- Transport of a patient with a central venous line already in place

Procedure:

1. Prior to transportation, ensure the line is secure.
2. Medications and IV fluids may be administered through a central venous pressure line if that line has already been accessed and the patient is currently receiving medications or fluids through the line.
3. Do not manipulate the central venous catheter.
4. If the central venous catheter becomes dysfunctional, does not allow drug administration, or becomes dislodged, contact medical control and do not use the line.
5. Document the time of any pressure measurements, the pressure obtained, and any medication administration in the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Venous Access: External Jugular Access

I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- External jugular vein cannulation is indicated in a critically ill patient ≥ 8 years of age who requires intravenous access for fluid or medication administration and in whom an extremity vein is not obtainable. Consider IO access in addition to or instead of an EJ attempt.
- External jugular cannulation may be attempted initially in life threatening events where no obvious peripheral site is noted.

Procedure:

1. Place the patient in a supine head down position. This helps distend the vein and prevents air embolism.
2. Turn the patient's head toward the opposite side if no risk of cervical injury exists.
3. Prep the site as per peripheral IV site.
4. Align the catheter with the vein and aim toward the same side shoulder.
5. Compressing the vein lightly with one finger above the clavicle, puncture the vein midway between the angle of the jaw and the clavicle and cannulate the vein in the usual method.
6. Attach the IV and secure the catheter avoiding circumferential dressing or taping.
7. Document the procedure, time, and result (success) on/with the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Venous Access: Existing Catheters

Clinical Indications:

P EMT- P P

- Inability to obtain adequate peripheral access.
- Access of an existing venous catheter for medication or fluid administration.
- Central venous access in a patient in cardiac arrest.

Procedure:

1. Clean the port of the catheter with alcohol wipe.
2. Using sterile technique, withdraw 5-10 ml of blood and discard syringe in sharps container.
3. Using 5cc of normal saline, access the port with sterile technique and gently attempt to flush the saline.
4. If there is no resistance, no evidence of infiltration (e.g., no subcutaneous collection of fluid), and no pain experienced by the patient, then proceed to step 4. If there is resistance, evidence of infiltration, pain experienced by the patient, or any concern that the catheter may be clotted or dislodged, do not use the catheter.
5. Begin administration of medications or IV fluids slowly and observe for any signs of infiltration. If difficulties are encountered, stop the infusion and reassess.
6. Record procedure, any complications, and fluids/medications administered in the Patient Care Report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Venous Access: Extremity

I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Any patient where intravenous access is indicated (significant trauma, emergent or potentially emergent medical condition).

Procedure:

1. Saline locks may be used as an alternative to an IV tubing and IV fluid in every protocol at the discretion of the ALS professional.
2. Paramedics can use intraosseous access where threat to life exists as provided for in the Venous Access-Intraosseous procedure.
3. Use the largest catheter bore necessary based upon the patient's condition and size of veins.
4. Fluid and setup choice is preferably:
   - Lactated Ringers with a macro drip (10 gtt/cc) for burns
   - Normal Saline with a macro drip (10 gtt/cc) for medical conditions, trauma or hypotension
   - Normal Saline with a micro drip (60 gtt/cc) for medication infusions
5. Inspect the IV solution for expiration date, cloudiness, discoloration, leaks, or the presence of particles.
6. Connect IV tubing to the solution in a sterile manner. Fill the drip chamber half full and then flush the tubing bleeding all air bubbles from the line.
7. Place a tourniquet around the patient's extremity to restrict venous flow only.
8. Select a vein and an appropriate gauge catheter for the vein and the patient's condition.
9. Prep the skin with an antiseptic solution.
10. Insert the needle with the bevel up into the skin in a steady, deliberate motion until the bloody flashback is visualized in the catheter.
11. Advance the catheter into the vein. **Never** reinsert the needle through the catheter. Dispose of the needle into the proper container without recapping.
12. Draw blood samples when appropriate.
13. Remove the tourniquet and connect the IV tubing or saline lock.
14. Open the IV to assure free flow of the fluid and then adjust the flow rate as per protocol or as clinically indicated.

    Rates are preferably:
    - Adult: KVO: 60 cc/hr (1 gtt/ 6 sec for a macro drip set)
    - Pediatric: KVO: 30 cc/hr (1 gtt/ 12 sec for a macro drip set)

    If shock is present:
    - Adult: 500 cc fluid boluses repeated as long as lungs are dry and BP < 90. Consider a second IV line.
    - Pediatric: 20 cc/kg blouses repeated PRN for poor perfusion.
15. Cover the site with a sterile dressing and secure the IV and tubing.
16. Label the IV with date and time, catheter gauge, and name/ID of the person starting the IV.
17. Document the procedure, time and result (success) on/with the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Venous Access: Intraosseous

P EMT- P P

Clinical Indications:

- Patients where rapid, regular IV access is unavailable with any of the following:
- Cardiac arrest.
- Multisystem trauma with severe hypovolemia and/or a significantly burned patient with no IV access.
- Severe dehydration with vascular collapse and/or loss of consciousness.
- Respiratory failure / Respiratory arrest.
- Any other immediately life-threatening, peri-arrest clinical condition in which IV access is unobtainable. When in doubt, contact a senior medical authority (APP, district chief, medical control) for advice.

Contraindications:

- Fracture proximal to proposed intraosseous site.
- History of Osteogenesis Imperfecta
- Current or prior infection at proposed intraosseous site.
- Previous intraosseous insertion or joint replacement at the selected site.

Procedure:

1. Don personal protective equipment (gloves, eye protection, etc.).
2. Identify anteromedial aspect of the proximal tibia (bony prominence below the knee cap). The insertion location will be 1-2 cm (2 finger widths) below this. If this site is not suitable, and patient >12 years of age, identify the anteriormedial aspect of the distal tibia (2 cm proximal to the medial malleolus). Proximal humerus is also an acceptable insertion site for patients > 40 Kg, lateral aspect of the humerus, 2 cm distal to the greater tuberosity. Distal Femur is also an acceptable insertion site for infants; just proximal (0.5-1cm) to the patella, and approximately 1-2cm medial to midline.
3. Prep the selected site with providone-iodine ointment or solution.
4. For manual pediatric devices, hold the intraosseous needle at a 60 to 90 degree angle, aimed away from the nearby joint and epiphyseal plate, twist the needle handle with a rotating grinding motion applying controlled downward force until a “pop” or “give” is felt indicating loss of resistance. Do not advance the needle any further.
5. For the EZ-IO intraosseous device, hold the intraosseous needle at a 60 to 90 degree angle, aimed away from the nearby joint and epiphyseal plate, power the driver until a “pop” or “give” is felt indicating loss of resistance. Do not advance the needle any further. Utilize the larger needle for the proximal humerus. The smallest needle is only intended for use in neonatal patients.
6. Remove the stylette and place in an approved sharps container.
7. Attach a syringe filled with at least 5 cc NS; aspirate bone marrow for manual devices only, to verify placement; then inject at least 5 cc of NS to clear the lumen of the needle.
8. Attach the IV line and adjust flow rate. A pressure bag may assist with achieving desired flows.
9. Stabilize and secure the needle with dressings and tape.
10. You may administer 10 to 20 mg (0.5 to 1 cc) of 2% Lidocaine in adult patients who are not allergic to lidocaine who experience infusion-related pain. This may be repeated prn to a maximum of 60 mg (3 cc) in adults. See appendix for lidocaine infusion manufacturer’s guidelines, including pediatric dosing.
11. Following the administration of any IO medications, flush the IO line with 10 cc of IV fluid.
12. Document the procedure, time, and result (success) on/with the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System. Assessment should include direct observation at least once per certification cycle.

Airway: Suctioning-Advanced

I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Obstruction of the airway (secondary to secretions, blood, or any other substance) in a patient currently being assisted by an airway adjunct such as a naso-tracheal tube, endotracheal tube, Combitube, tracheostomy tube, or a cricothyrotomy tube.

Procedure:

1. Ensure suction device is in proper working order.
2. Preoxygenate the patient as is possible.
3. Attach suction catheter to suction device, keeping sterile plastic covering over catheter.
4. Using the suprasternal notch and the end of the airway into the catheter will be placed as guides, measure the depth desired for the catheter (judgment must be used regarding the depth of suctioning with cricothyrotomy and tracheostomy tubes).
5. If applicable, remove ventilation devices from the airway.
6. With the thumb port of the catheter uncovered, insert the catheter through the airway device.
7. Once the desired depth (measured in #4 above) has been reached, occlude the thumb port and remove the suction catheter slowly.
8. A small amount of Normal Saline (10 ml) may be used if needed to loosen secretions for suctioning.
9. Reattach ventilation device (e.g., bag-valve mask) and ventilate the patient
10. Document time and result in the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Airway: Suctioning-Basic

B	EMT	B
I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Obstruction of the airway (secondary to secretions, blood, or any other substance) in a patient who cannot maintain or keep the airway clear.

Procedure:

1. Ensure suction device is in proper working order with suction tip in place.
2. Preoxygenate the patient as is possible.
3. Explain the procedure to the patient if they are coherent.
4. Examine the oropharynx and remove any potential foreign bodies or material which may occlude the airway if dislodged by the suction device.
5. If applicable, remove ventilation devices from the airway.
6. Use the suction device to remove any secretions, blood, or other substance.
7. The alert patient may assist with this procedure.
8. Reattach ventilation device (e.g., bag-valve mask) and ventilate or assist the patient
9. Record the time and result of the suctioning in the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Airway: BIAD King

Clinical Indications for Blind Insertion Airway Device (BIAD) Use:

- Inability to adequately ventilate a patient with a Bag Valve Mask or longer EMS transport distances require a more advanced airway.
- Appropriate intubation is impossible due to patient access or difficult airway anatomy.
- Inability to secure an endotracheal tube in a patient who does not have a gag reflex where at least one failed intubation attempt has occurred.
- Patient must be unconscious.
- WARNING: This airway may not prevent aspiration of stomach contents!

Procedure:

B	EMT	B
I	EMT- I	I
P	EMT- P	P

1. Preoxygenate and hyperventilate the patient.
2. Select the appropriate tube size for the patient.
3. Lubricate the tube.
4. Grasp the patient's tongue and jaw with your gloved hand and pull forward.
5. Gently insert the tube rotated laterally 45-90 degrees so that the blue orientation line is touching the corner of the mouth. Once the tip is at the base of the tongue, rotate the tube back to midline. Insert the airway until the base of the connector is in line with the teeth and gums.
6. Inflate the pilot balloon with 45-90 ml of air depending on the size of the device used.
7. **Ventilate the patient while gently withdrawing the airway until the patient is easily ventilated**.
8. Auscultate for breath sounds and sounds over the epigastrium and look for the chest to rise and fall.
9. The large pharyngeal balloon secures the device.
10. **Confirm tube placement using end-tidal CO_2 detector.**
11. **It is required that the airway be monitored continuously through waveform Capnography and Pulse Oximetry.**
12. **Complete the airway audit form at the conclusion of the patient care encounter.**

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System. Assessment should include direct observation at least once per certification cycle.

Capnography- Waveform

B	EMT	B
I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Capnography shall be used when available with the use of all invasive airway procedures including endotracheal, nasotracheal, cricothyrotomy, or Blind Insertion Airway Devices (BIAD).
- Capnography should also be used when possible with CPAP.
- Capnography should also be used on all patients treated with magnesium and/or epinephrine for respiratory distress.

Procedure:

1. Attach capnography sensor to the BIAD, endotracheal tube, or any other oxygen delivery device, including bag-valve mask and nasal cannula.
2. Note CO_2 level and waveform changes. These will be documented on each respiratory failure, cardiac arrest, or respiratory distress patient.
3. The capnometer shall remain in place with the airway and be monitored throughout the prehospital care and transport.
4. Any loss of CO_2 detection or waveform indicates an airway problem and should be documented.
5. The capnogram should be monitored as procedures are performed to verify or correct the airway problem.
6. Document the procedure and results on/with the Patient Care Report (PCR) and the Airway Evaluation Form.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

North Carolina College of Emergency Physicians
Standards Procedure (Skill)
Airway Intubation Confirmation – End-Tidal CO_2 Detector

B	EMT	B
I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- The End-Tidal CO_2 detector shall be used with any Endotracheal Tube or Blind Insertion Airway Device use.

It is strongly recommended that continuous Capnography be used in place of or in addition to the use of an End-Tidal CO_2 detector.

Procedure:

1. Attach End-Tidal CO_2 detector to the Blind Insertion Airway Device or the Endotracheal Tube.
2. Note color change. A color change or CO_2 detection will be documented on each respiratory failure or cardiac arrest patient.
3. The CO_2 detector shall remain in place with the airway and monitored throughout the prehospital care and transport unless continuous Capnography is used. Any loss of CO_2 detection or color change is to be documented and monitored as procedures are done to verify or correct the airway problem.
4. Tube placement should be verified frequently and always with each patient move or loss of color change in the End-Tidal CO_2 detector.
5. Document the procedure and the results on/with the Patient Care Report (PCR) as well as on the Airway Evaluation Form.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Airway: CPAP

I	EMT- I	I
P	EMT- P	P

Clinical Indications for Continuous Positive Airway Pressure (CPAP) Use:

- CPAP is indicated in all patients whom inadequate ventilation is suspected and who have adequate mental status and respiratory drive to allow CPAP to function. This could be as a result of pulmonary edema, pneumonia, asthma, COPD, etc.

Clinical Contraindications for Continuous Positive Airway Pressure (CPAP) Use:

- Decreased Mental Status.
- Facial features or deformities that prevent an adequate mask seal.
- Excessive respiratory secretions.

Procedure:

1. Ensure adequate oxygen supply to ventilation device.
2. Explain the procedure to the patient.
3. Consider placement of a nasopharyngeal airway.
4. Place the delivery mask over the mouth and nose. Oxygen should be flowing through the device at this point.
5. Secure the mask with provided straps starting with the lower straps until minimal air leak occurs.
6. If the Positive End Expiratory Pressure (PEEP) is adjustable on the CPAP device adjust the PEEP beginning at 0 cmH_20 of pressure and slowly titrate to achieve a positive pressure as follows:
   - 5 – 10 cmH_20 for Pulmonary Edema, Near Drowning, possible aspiration or pneumonia
   - 3 – 5 cm H_20 for COPD
7. Evaluate the response of the patient assessing breath sounds, oxygen saturation, and general appearance.
8. Titrate oxygen levels to the patient's response. Many patients respond to low FIO2 (30-50%).
9. Encourage the patient to allow forced ventilation to occur. Observe closely for signs of complications. The patient must be breathing for optimal use of the CPAP device.
10. Document time and response on patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Airway: Endotracheal Tube Introducer (Bougie)

I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Patients meet clinical indications for oral intubation
- Initial intubation attempt(s) unsuccessful
- Predicted difficult intubation

Contraindications:

- Three attempts at orotracheal intubation (utilize failed airway protocol)
- Age less than eight (8) or ETT size less than 6.5 mm

Procedure:

1. Prepare, position and oxygenate the patient with 100% oxygen;
2. Select proper ET tube without stylet, test cuff and prepare suction;
3. Lubricate the distal end and cuff of the endotracheal tube (ETT) and the distal 1/2 of the Endotracheal Tube Introducer (Bougie) (note: Failure to lubricate the Bougie and the ETT may result in being unable to pass the ETT);
4. Using laryngoscopic techniques, visualize the vocal cords if possible using Sellick's/BURP as needed;
5. Introduce the Bougie with curved tip anteriorly and visualize the tip passing the vocal cords or above the arytenoids if the cords cannot be visualized;
6. Once inserted, gently advance the Bougie until you meet resistance or "hold-up" (if you do not meet resistance you have a probable esophageal intubation and insertion should be re-attempted or the failed airway protocol implemented as indicated);
7. Withdraw the Bougie ONLY to a depth sufficient to allow loading of the ETT while maintaining proximal control of the Bougie;
8. Gently advance the Bougie and loaded ET tube until you have hold-up again, thereby assuring tracheal placement and minimizing the risk of accidental displacement of the Bougie;
9. While maintaining a firm grasp on the proximal Bougie, introduce the ET tube over the Bougie passing the tube to its appropriate depth;
10. If you are unable to advance the ETT into the trachea and the Bougie and ETT are adequately lubricated, withdraw the ETT slightly and rotate the ETT 90 degrees COUNTER clockwise to turn the bevel of the ETT posteriorly. If this technique fails to facilitate passing of the ETT you may attempt direct laryngoscopy while advancing the ETT(this will require an assistant to maintain the position of the Bougie and, if so desired, advance the ETT);
11. Once the ETT is correctly placed, hold the ET tube securely and remove the Bougie;
12. Confirm tracheal placement according to the intubation protocol, inflate the cuff with 3 to 10 cc of air, auscultate for equal breath sounds and reposition accordingly;
13. When final position is determined secure the ET tube, reassess breath sounds, apply end tidal CO_2 monitor, and record and monitor readings to assure continued tracheal intubation.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System. Assessment should include direct observation at least once per certification cycle.

Airway: Foreign Body Obstruction

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Sudden onset of respiratory distress often with coughing, wheezing, gagging, or stridor due to a foreign-body obstruction of the upper airway.

Procedure:

1. Assess the degree of foreign body obstruction
   - Do not interfere with a mild obstruction allowing the patient to clear their airway by coughing.
   - In severe foreign-body obstructions, the patient may not be able to make a sound. The victim my clutch his/her neck in the universal choking sign.
2. **For an infant**, deliver 5 back blows (slaps) followed by 5 chest thrusts repeatedly until the object is expelled or the victim becomes unresponsive.
3. **For a child**, perform a subdiaphragmatic abdominal thrust (Heimlich Maneuver) until the object is expelled or the victim becomes unresponsive.
4. **For adults**, a combination of maneuvers may be required.
   - First, subdiaphragmatic abdominal thrusts (Heimlich Maneuver) should be used in rapid sequence until the obstruction is relieved.
   - If abdominal thrusts are ineffective, chest thrusts should be used. Chest thrusts should be used primarily in morbidly obese patients and in the patients who are in the late stages of pregnancy
5. If the victim becomes unresponsive, begin CPR immediately but look in the mouth before administering any ventilations. If a foreign-body is visible, remove it.
6. **Do not perform blind finger sweeps in the mouth and posterior pharynx. This may push the object farther into the airway.**
7. In unresponsive patients, EMT-Intermediate and EMT-Paramedic level professionals should visualize the posterior pharynx with a laryngoscope to potentially identify and remove the foreign-body using Magil forceps.
8. Document the methods used and result of these procedures in the patient care report (PCR).

Certification Requirements:

Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Airway – Nebulizer Inhalation Therapy

Clinical Indications:

B	EMT	B
I	EMT- I	I
P	EMT- P	P

- Patients experiencing bronchospasm.

Procedure:

1. Gather the necessary equipment.
2. Assemble the nebulizer kit.
3. Instill the premixed drug (such as Albuterol or other approved drug) into the reservoir well of the nebulizer.
4. Connect the nebulizer device to oxygen at 4 - 6 liters per minute or adequate flow to produce a steady, visible mist.
5. Instruct the patient to inhale normally through the mouthpiece of the nebulizer. The patient needs to have a good lip seal around the mouthpiece.
6. The treatment should last until the solution is depleted. Tapping the reservoir well near the end of the treatment will assist in utilizing all of the solution.
7. Monitor the patient for medication effects. This should include the patient's assessment of his/her response to the treatment and reassessment of vital signs, ECG, and breath sounds.
8. Assess and document peak flows before and after nebulizer treatments.
9. Document the treatment, dose, and route on/with the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Airway: Intubation Nasotracheal

I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- A spontaneously breathing patient in need of intubation (inadequate respiratory effort, evidence of hypoxia or carbon dioxide retention, or need for airway protection).
- Rigidity or clenched teeth prohibiting other airway procedures.
- Patient must be 12 years of age or older.

Procedure:

1. Premedicate the patient with nasal spray.
2. Select the largest and least obstructed nostril and insert a lubricated nasal airway to help dilate the nasal passage.
3. Preoxygenate the patient. Lubricate the tube. The use of a BAAM device is recommended.
4. Remove the nasal airway and gently insert the tube keeping the bevel of the tube toward the septum.
5. Continue to pass the tube listening for air movement and looking for to and fro vapor condensation in the tube. As the tube approaches the larynx, the air movement gets louder.
6. Gently and evenly advance the tube through the glottic opening on the inspiration. This facilitates passage of the tube and reduces the incidence of trauma to the vocal cords.
7. Upon entering the trachea, the tube may cause the patient to cough, buck, strain, or gag. Do not remove the tube! This is normal, but be prepared to control the cervical spine and the patient, and be alert for vomiting.
8. Auscultate for bilaterally equal breath sounds and absence of sounds of the epigastrium. Observe for symmetrical chest expansion. The 15mm adapter usually rests close to the nostril with proper positioning.
9. Inflate the cuff with 5-10 cc of air.
10. **Confirm tube placement using end-tidal CO_2 monitoring:** Apply waveform capnography monitor. After 3 ventilations, ETCO2 should be >10 or comparable to pre-intubation values. If < 10, check for adequate circulation, equipment, and ventilatory rate. If ETCO2 still < 10 without physiologic explanation, remove the ET Tube and ventilate by BVM.
11. Secure the tube.
12. Reassess airway and breath sounds after transfer to the stretcher and during transport. These tubes are easily dislodged and require close monitoring and frequent reassessment.
13. Document the procedure, time, and result (success) on/with the patient care report (PCR).
14. **It is required that the airway be monitored continuously via Waveform Capnography and Pulse Oximetry.**
15. Complete and submit appropriate airway form.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Airway: Intubation Oral Tracheal

I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Inability to adequately ventilate a patient with a Bag Valve Mask or longer EMS transport distances require a more advanced airway.
- An unconscious patient without a gag reflex who is apneic or is demonstrating inadequate respiratory effort.

Procedure:

1. Prepare, position and oxygenate the patient with 100% Oxygen.
2. Select proper ET tube (and stylette, if used), have suction ready.
3. Using laryngoscope, visualize vocal cords. (Use Sellick maneuver/BURP to assist you).
4. Limit each intubation attempt to 30 seconds with BVM between attempts.
5. Visualize tube passing through vocal cords.
6. **Confirm and document tube placement using an end-tidal CO_2 monitoring or esophageal bulb device.**
7. Inflate the cuff with 3-to10 cc of air; secure the tube to the patient's face.
8. Auscultate for bilaterally equal breath sounds and absence of sounds over the epigastrium. If you are unsure of placement, remove tube and ventilate patient with bag-valve mask.
9. Apply waveform capnography monitor. After 3 ventilations, ETCO2 should be >10 or comparable to pre-intubation values. If < 10, check for adequate circulation, equipment, and ventilatory rate. If ETCO2 still < 10 without physiologic explanation, remove the ET Tube and ventilate by BVM.
10. Consider using a Blind Insertion Airway Device if intubation efforts are unsuccessful.
11. Apply end tidal carbon dioxide monitor (waveform Capnography) and record readings on scene, en route to the hospital, and at the hospital.
12. Document ETT size, time, result (success), and placement location by the centimeter marks either at the patient's teeth or lips on/with the patient care report (PCR). Document all devices used to confirm initial tube placement. Also document positive or negative breath sounds before and after each movement of the patient.
13. Place an NG or OG tube to clear stomach contents after the airway is secured with an ET tube.
14. **It is required that the airway be monitored continuously through Waveform Capnography and Pulse Oximetry.**
15. Submit Airway Form as per instructions.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System. Assessment should include direct observation at least once per certification cycle.

Pulse Oximetry

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Patients with suspected hypoxemia.

Procedure:

1. Apply probe to patient's finger or any other digit as recommended by the device manufacturer.
2. Allow machine to register saturation level.
3. Record time and initial saturation percent on room air if possible on/with the patient care report (PCR).
4. Verify pulse rate on machine with actual pulse of the patient.
5. Monitor critical patients continuously until arrival at the hospital. If recording a one-time reading, monitor patients for a few minutes as oxygen saturation can vary.
6. Document percent of oxygen saturation every time vital signs are recorded and in response to therapy to correct hypoxemia.
7. In general, normal saturation is 97-99%. Below 92-94%, suspect a respiratory compromise, which may or may not be a chronic condition (e.g. COPD).
8. Use the pulse oximetry as an added tool for patient evaluation. Treat the patient, not the data provided by the device.
9. The pulse oximeter reading should never be used to withhold oxygen from a patient in respiratory distress or when it is the standard of care to apply oxygen despite good pulse oximetry readings, such as chest pain. Supplemental oxygen is not required if the oxyhemoglobin saturation is >= 94%. If there are obvious signs of ischemia, heart failure, dyspnea, or hypoxia, goal is to maintain saturation 90-99% depending on patient condition.
10. Factors which may reduce the reliability of the pulse oximetry reading include but are not limited to:
    - Poor peripheral circulation (blood volume, hypotension, hypothermia)
    - Excessive pulse oximeter sensor motion
    - Fingernail polish (may be removed with acetone pad)
    - Carbon monoxide bound to hemoglobin
    - Irregular heart rhythms (atrial fibrillation, SVT, etc.)
    - Jaundice
    - Placement of BP cuff on same extremity as pulse ox probe.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Airway: Respirator Operation

Clinical Indications:

I	EMT- I	I
P	EMT- P	P

- Transport of an intubated patient

Procedure:

1. Confirm the placement of tube as per airway protocol.
2. Ensure adequate oxygen delivery to the respirator device.
3. Preoxygenate the patient as much as possible with bag-valve mask.
4. Remove BVM and attach tube to respiration device.
5. Per instructions of device, set initial respiration values. For example, set an inspiratory:expiratory ratio of 1:4 (for every 1 second of inspiration, allow 4 seconds and expiration) with a rate of 12 to 20.
6. Assess breath sounds. Allow for adequate expiratory time. Adjust respirator setting as clinically indicated.
7. **It is required that patients on a transport ventilator should be monitored continuously through Capnography and Pulse Oximetry. The ventilatory rate should adjusted to maintain a pulse oximetry of 90-99 (or as high as possible up to 99%) while maintaining a pCO2 of 30-35.**
8. If any worsening of patient condition, decrease in oxygen saturation, or any question regarding the function of the respirator, remove the respirator and resume bag-valve mask ventilations.
9. Document time, complications, and patient response on the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Airway: Surgical (Rusch QuickTrach)

Clinical Indications:

P | EMT- P | P

- Surgical Airway as Indicated by the Failed Airway Protocol

Procedure:

1. Pre-oxygenate patient when possible
2. Assemble all available additional personnel
3. Locate cricothyroid membrane at the inferior portion of the thyroid cartilage (with head in neutral position, membrane is approximately 3 finger widths above the sternal notch).
4. Have assistant hold skin taunt over membrane and locate the midline.
5. Prep area with betadine if possible.
6. Hold the needle bevel up at a 90 degree angle, aimed inferiorly as you approach the skin.
7. Puncture the skin with the needle and continue with firm, steady pressure while aspirating for air with the syringe.
8. As soon as air is aspirated freely, stop advancing the needle/airway assembly.
9. Modify the angle to 60 degrees from the head and advance to level of the stopper.
10. Remove the stopper while holding the needle/airway assembly firmly in place. Do not advance the needle further. (NOTE: if the patient is obese and no air can be aspirated with the stopper in place, you may remove the stopper and continue advancing until air is aspirated. Be aware that without the stopper, risk of perforating the posterior aspect of the trachea is greatly increased.)
11. Hold the needle and syringe firmly and slide only the plastic cannula along the needle into the trachea until the flange rests on the neck. Carefully remove the needle and syringe.
12. Secure the cannula with the neck strap.
13. Apply the EtCO2 detector, then the connecting tube to the EtCO2 detector and connect the other end to the BVM.
14. Confirm placement with the use of breath sounds, pulse ox, and EtCO2.
15. Ensure 100% FiO2 to BVM via supplemental O2.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Page 2 Airway: Surgical – Cricothyrotomy

(If Equipment Available and Authorized)

Clinical Indications:

P EMT- P P

- Failed Airway Protocol
- Management of an airway when standard airway procedures cannot be performed or have failed in a patient ≥ 12 years old.

Procedure:

1. Have suction and supplies available and ready.
2. Locate the cricothyroid membrane utilizing anatomical landmarks.
3. Prep the area with an antiseptic swab (Betadine).
4. Attach a 5-cc syringe to an 18G - 1 & 1/2-inch needle.
5. Insert the needle (with syringe attached) perpendicularly through the cricothyroid membrane with the needle directed posteriorly.
6. During needle insertion, gentle aspiration should be applied to the syringe. Rapid aspiration of air into the syringe indicates successful entry into the trachea. Do not advance the needle any further. Attach forceps and remove syringe.
7. With the needle remaining in place, make a 1-inch vertical incision through the skin and subcutaneous tissue above and below the needle using a scalpel. Using blunt dissection technique, expose the cricothyroid membrane. This is a bloody procedure. The needle should act as a guide to the cricothyroid membrane.
8. With the needle still in place, make a horizontal stabbing incision approx. 1/2 inch through the membrane on each side of the needle. Remove the needle.
9. Using (skin hook, tracheal hook, or gloved finger) to maintain surgical opening, insert the cuffed tube into the trachea. (Cric tube from the kit or a #6 endotracheal tube is usually sufficient).
10. Inflate the cuff with 5-10cc of air and ventilate the patient while manually stabilizing the tube.
11. All of the standard assessment techniques for insuring tube placement should be performed (auscultation, chest rise & fall, end-tidal CO_2 detector, etc.) Esophageal bulb devices are not accurate with this procedure.
12. Secure the tube.
13. If Available apply end tidal carbon dioxide monitor (Capnography) and record readings on scene, en route to the hospital, and at the hospital.
14. Document ETT size, time, result (success), and placement location by the centimeter marks either at the patient's teeth or lips on/with the patient care report (PCR). Document all devices used to confirm initial tube placement and after each movement of the patient.
15. Consider placing an NG or OG tube to clear stomach contents after the airway is secured.
16. **It is required that the airway be monitored continuously through waveform Capnography and Pulse Oximetry.**

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Airway: Tracheostomy Tube Change

I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Presence of Tracheostomy site.
- Urgent or emergent indication to change the tube, such as obstruction that will not clear with suction, dislodgement, or inability to oxygenate/ventilate the patient without other obvious explanation.

Procedure:

1. Have all airway equipment prepared for standard airway management, including equipment of orotracheal intubation and failed airway.
2. Have airway device (endotracheal tube or tracheostomy tube) of the same size as the tracheostomy tube currently in place as well as 0.5 size smaller available (e.g., if the patient has a #6.0 Shilley, then have a 6.0 and a 5.5 tube).
3. Lubricate the replacement tube(s) and check the cuff.
4. Remove the tracheostomy tube from mechanical ventilation devices and use a bag-valve apparatus to pre-oxygenate the patient as much as possible.
5. Once all equipment is in place, remove devices securing the tracheostomy tube, including sutures and/or supporting bandages.
6. If applicable, deflate the cuff on the tube. If unable to aspirate air with a syringe, cut the balloon off to allow the cuff to lose pressure.
7. Remove the tracheostomy tube.
8. Insert the replacement tube. Confirm placement via standard measures except for esophageal detection (which is ineffective for surgical airways).
9. If there is any difficultly placing the tube, re-attempt procedure with the smaller tube.
10. If difficulty is still encountered, use standard airway procedures such as oral bag-valve mask or endotracheal intubation (as per protocol). **More difficulty with tube changing can be anticipated for tracheostomy sites that are immature – i.e., less than two weeks old. Great caution should be exercised in attempts to change immature tracheotomy sites.**
11. Document procedure, confirmation, patient response, and any complications in the PCR

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System. Assessment for this skill should include direct observation at least once per certification cycle.

Airway: Ventilator Operation

Clinical Indications:

P | EMT- P | P

- Management of the ventilation of a patient during a prolonged or interfacility transport of an intubated patient.

Procedure:

1. Transporting personnel should review the operation of the ventilator with the treating personnel (physician, nurse, or respiratory therapy) in the referring facility prior to transport if possible.
2. All ventilator settings, including respiratory rate, FiO_2, mode of ventilation, and tidal volumes should be recorded prior to initiating transport. Additionally, the recent trends in oxygen saturation experienced by the patient should be noted.
3. Prior to transport, specific orders regarding any anticipated changes to ventilator settings as well as causes for significant alarm should be reviewed with the referring medical personnel as well as medical control.
4. Once in the transporting unit, confirm adequate oxygen delivery to the ventilator.
5. Frequently assess breath sounds to assess for possible tube dislodgment during transfer.
6. Frequently assess the patient's respiratory status, noting any decreases in oxygen saturation or changes in tidal volumes, peak pressures, etc.
7. Note any changes in ventilator settings or patient condition in the PCR.
8. Consider placing an NG or OG tube to clear stomach contents.
9. **It is required that the airway be monitored continuously through Waveform Capnography and Pulse Oximetry.**
10. If any significant change in patient condition, including vital signs or oxygen saturation or there is a concern regarding ventilator performance/alarms, remove the ventilator from the endotracheal tube and use a bag-valve mask with 100% O_2. Contact medical control immediately.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Assessment: Adult

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Any patient requesting a medical evaluation that is too large to be measured with a Broselow-Luten Resuscitation Tape.

Procedure:

1. Scene size-up, including universal precautions, scene safety, environmental hazards assessment, need for additional resources, by-stander safety, and patient/caregiver interaction
2. Assess need for additional resources.
3. Initial assessment includes a general impression as well as the status of a patient's airway, breathing, and circulation.
4. Assess mental status (e.g., AVPU) and disability (e.g., GCS).
5. Control major hemorrhage and assess overall priority of patient.
6. Perform a focused history and physical based on patient's chief complaint.
7. Assess need for critical interventions.
8. Complete critical interventions and perform a complete secondary exam to include a baseline set of vital signs as directed by protocol.
9. Maintain an on-going assessment throughout transport; to include patient response/possible complications of interventions, need for additional interventions, and assessment of evolving patient complaints/conditions.
10. Document all findings and information associated with the assessment, performed procedures, and any administration of medications on the PCR.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Blood Glucose Analysis

Clinical Indications:

- Patients with suspected hypoglycemia (diabetic emergencies, change in mental status, bizarre behavior, etc.)

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Procedure:

1. Gather and prepare equipment.
2. Blood samples for performing glucose analysis can be obtained through a finger-stick or when possible simultaneously with intravenous access.
3. Place correct amount of blood on reagent strip or site on glucometer per the manufacturer's instructions.
4. Time the analysis as instructed by the manufacturer.
5. Document the glucometer reading and treat the patient as indicated by the analysis and protocol.
6. Repeat glucose analysis as indicated for reassessment after treatment and as per protocol.
7. Perform Quality Assurance on glucometers at least once every 7 days, if any clinically suspicious readings are noted, and/or as recommended by the manufacturer and document in the log.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

12 Lead ECG and CODE STEMI Activation

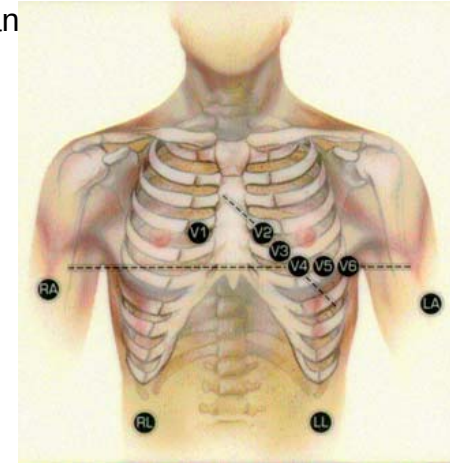
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Clinical Indications for 12 lead ECG:

- Suspected cardiac patient or Suspected Stroke Patient
- Suspected tricyclic overdose
- Electrical injuries
- Syncope
- Any patient age 35 or over with chest pain

Procedure:

1. Assess patient and monitor cardiac status.
2. Administer oxygen as patient condition warrants.
3. If patient is unstable, definitive treatment is the priority. If patient is stable or stabilized after treatment, perform a 12 Lead ECG.
4. Prepare ECG monitor and connect patient cable with electrodes.
5. Enter the required patient information (patient name, etc.) into the 12 lead ECG device.
6. Expose chest and prep as necessary. Modesty of the patient should be respected.
7. Apply chest leads and extremity leads using the following lan
   - RA -Right arm
   - LA -Left arm
   - RL -Right leg
   - LL -Left leg
   - V1 -4th intercostal space at right sternal border
   - V2 -4th intercostal space at left sternal border
   - V3 -Directly between V2 and V4
   - V4 -5th intercostal space at midclavicular line
   - V5 -Level with V4 at left anterior axillary line
   - V6 -Level with V5 at left midaxillary line



8. Instruct patient to remain still.
9. Press the appropriate button to acquire the 12 Lead ECG.
10. If the monitor detects signal noise (such as patient motion or a disconnected electrode), the 12 Lead acquisition will be interrupted until the noise is removed.
11. Once acquired, transmit the ECG data to the appropriate hospital.
12. Contact the receiving hospital to notify them that a 12 Lead ECG has been sent.
13. Monitor the patient while continuing with the treatment protocol.
14. Download data as per guidelines and attach a copy of the 12 lead to the ACR.
15. Document the procedure, time, and results on/with the patient care report (PCR)

16. Go to the next page for procedures regarding suspected STEMI

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

12 Lead ECG page 2
EMS CODE STEMI: Cath Lab Activation

Clinical Indications:

- Suspected ST-Elevation MI (STEMI), based on patient condition and ECG

Procedure:

P | EMT- P | P

1. Enter the first 5 letters of the patient's last name in the "patient last name" field, and transmit diagnostic 12-lead ECG; transmit multiple ECGs as necessary:
   a. Press "Transmit", then "Data", Select "12-lead X" as Report, Select Site of *REX IP or WAKE IP,* and Select "Send"

2. Obtain the following information *before* your radio call in:
   a. Patient age and gender
   b. Patient cardiologist and preferred STEMI hospital (if present)
   c. Clinical presentation, history, symptoms that suggest this is an acute cardiac event
   d. What are the 2 or more anatomically contiguous leads with 1 + mm ST elevation, (SEE CHEST PAIN PROTOCOL for STEMI localization tool)
   e. Is there a **LBBB not known to be old?**
   f. Absence or **presence of LVH**
   g. Absence or **presence of profound tachycardia (heart rate >129)**
   h. Absence or **presence of pacemaker activity**
   i. Was the patient **resuscitated from cardiac arrest but does not have obvious STEMI?**

3. If patient has 1+ mm of ST elevation in two anatomically contiguous leads and none of the characteristics in red above, call a CODE STEMI to the hospital. If any of the characteristics in red are present do NOT call "Code STEMI." Instead, transmit the 12-lead for physician consultation; be sure to communicate the need for physician consult due to concern for possible STEMI.

4. Give your standard radio call-in including the following information:
- This is EMS (unit #) enroute with a CODE STEMI patient, ETA (X) minutes
- The 12-lead (has been/could not be) transmitted.
- Clinical presentation suggesting acute event: Chest Pain, Shortness of Breath, diaphoresis, etc.
- (X) mm of ST segment elevation are present in leads (X,Y…), with reciprocal depression in (X,Y…) (SEE CHEST PAIN PROTOCOL FOR LOCALIZATION TOOL) *OR* patient was resuscitated from V-fib/VTach arrest and now has evidence of STEMI.
- There is no LVH noted.
- The patient has no pacemaker (or no pacer spikes are present).
- (He/She) is a patient of Dr. (X) (or has no cardiologist).
- Provide patient's name and DOB if requested (Not A HIPAA Issue)

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Standards Procedure (Skill)

Carboxy/Methemoglobin Monitoring

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Persons with suspected or known exposure to carbon monoxide or substance likely to produce methemoglobin.

Procedure:

- Apply probe to patient's middle finger or any other digit as recommended by the device manufacturer. If near strobe lights, cover the finger to avoid interference and/or move away from lights if possible. Where the manufacturer provides a light shield it should be used.
- Allow machine to register percent circulating carboxyhemoglobin or methemoglobin values
- Record levels in patient care report or on the scene rehabilitation form.
- Verify pulse rate on machine with actual pulse of the patient.
- Monitor critical patients continuously until arrival at the hospital. If recording a one-time reading, monitor patients for a few minutes as oxygen saturation can vary.
- Document percent of carboxyhemoglobin or methemoglobin values every time vital signs are recorded during therapy for exposed patients.
- Use the pulse oximetry feature of the device as an added tool for patient evaluation. Treat the patient, not the data provided by the device. Utilize the relevant protocol for guidance.
- The pulse oximeter reading should never be used to withhold oxygen from a patient in respiratory distress or when it is the standard of care to apply oxygen despite good pulse oximetry readings, such as chest pain.
- Factors which may reduce the reliability of the reading include:
    1. Poor peripheral circulation (blood volume, hypotension, hypothermia
    2. Excessive external lighting, particularly strobe/flashing lights
    3. Excessive pulse oximeter sensor motion
    4. Fingernail polish (may be removed with acetone pad)
    5. Irregular heart rhythms (atrial fibrillation, SVT, etc.)
    6. Jaundice
    7. Placement of BP cuff on same extremity as pulse ox probe.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Portable Carbon Monoxide Monitoring

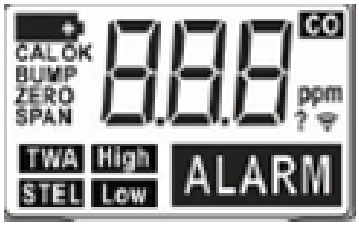
Clinical Indications:

- Providers may unknowingly be exposed to carbon monoxide while on scene of emergency calls. The device will be affixed to the 10 minute bag and will alert the provider any time the CO level rises above 35 ppm.

Procedure:

- If not already accomplished, apply probe to the 10 minute bag on the outside of the bag.
- This device is always in the “on” mode and will monitor continuously. There is never a need for the field provider to utilize any of the “buttons” on the device. If there is a continuous alarm (i.e. greater than 10 minutes for alarms such as STEL, TWA) or confirmed / suspected monitor malfunction contact your supervisor for direction.
- Unit has been preset to alert at a **Low** and **High** level of carbon monoxide.
- Low level alarm is set at 35 ppm, ***see chart below***. If alarm sounds it will cease on its own once a fresh air reading is less than 35ppm.
- High level alarm is set at 200 ppm, ***see chart below***. If alarm sounds it will cease on its own once a fresh air reading less than 35ppm.
- In the event of any alert regardless of **High** or **Low**, consider evacuation to a fresh air environment.
- If not already on-scene, contact the fire department for on-scene monitoring of carbon monoxide.
- Other alarm types are based on time weighted average over 8 hours. ***see chart below.***

STEL: *Short Term Exposure Limit. Based on 15-minute average exposure*
TWA: *Time-Weighted Average. The average reading of gas concentration over 8 hours.*



Screen	Explanation
	High Alarm Buzzer sounds 3 times per second. Vibrates once every other second. “High” and “ALARM” flash once per second.
	Low Alarm Buzzer sounds 2 times per second. Vibrates once every other second. “Low” and “ALARM” flash once per second.
	STEL Alarm Buzzer sounds once per second. Vibrates once every other second. “STEL” and “ALARM” flash once per second.
	TWA Alarm Buzzer sounds once per second. Vibrates once every other second. “TWA” and “ALARM” flash once per second.

TABLE 1
Carbon monoxide concentrations, COHb levels, and associated symptoms

Carbon monoxide concentration	COHb level	Signs and symptoms
35 ppm	<10%	Headache and dizziness within 6 to 8 h of constant exposure
100 ppm	>10%	Slight headache in 2 to 3 h
200 ppm	20%	Slight headache within 2 to 3 h; loss of judgment
400 ppm	25%	Frontal headache within 1 to 2 h
800 ppm	30%	Dizziness, nausea, and convulsions within 45 min; insensible within 2 h
1,600 ppm	40%	Headache, tachycardia, dizziness, and nausea within 20 min; death in less than 2 h
3,200 ppm	50%	Headache, dizziness, and nausea in 5 to 10 min; death within 30 min
6,400 ppm	60%	Headache and dizziness in 1 to 2 min; convulsions, respiratory arrest, and death in less than 20 min
12,800 ppm	>70%	Death in less than 3 min

Orthostatic Blood Pressure Measurement

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Patient situations with suspected blood, fluid loss, or dehydration with no indication for spinal immobilization. Orthostatic vital signs are not routinely recommended.
- Patients ≥ 8 years of age, or patients larger than the Broselow-Luten tape
- Orthostatic Vital Signs are not sensitive nor specific for volume loss / dehydration and may induce syncope in some cases. Assessment of orthostatic vital signs are not routinely recommended. Local Medical Director should indicate and educate on situations where they may be helpful.

Procedure:

1. Gather and prepare standard sphygmomanometer and stethoscope.
2. With the patient supine, obtain pulse and blood pressure.
3. Have the patient sit upright.
4. After 30 seconds, obtain blood pressure and pulse.
5. If the systolic blood pressure falls more than 30 mmHg or the pulse rises more than 20 bpm, the patient is considered to be orthostatic.
6. If a patient experiences dizziness upon sitting or is obviously dehydrated based on history or physical exam, formal orthostatic examination should be omitted and fluid resuscitation initiated.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Pain Assessment and Documentation

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Clinical Indications:

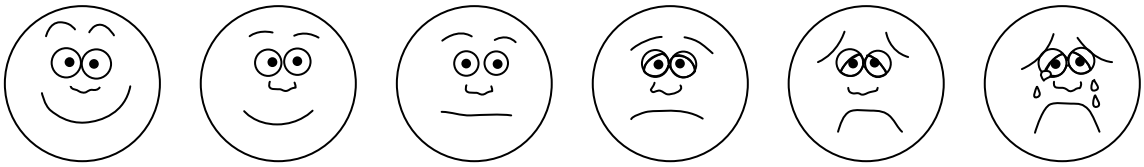
- Any patient with pain.

Definitions:

- Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage.
- Pain is subjective (whatever the patient says it is).

Procedure:

1. Initial and ongoing assessment of pain intensity and character is accomplished through the patient's self report.
2. Pain should be assessed and documented in the PCR during initial assessment, before starting pain control treatment, and with each set of vitals.
3. Pain should be assessed using the appropriate approved scale.
4. Three pain scales are available: the 0 – 10, the Wong - Baker "faces", and the FLACC.
   - 0 – 10 Scale: the most familiar scale used by EMS for rating pain with patients. It is primarily for adults and is based on the patient being able to express their perception of the pain as related to numbers. Avoid coaching the patient; simply ask them to rate their pain on a scale from 0 to 10, where 0 is no pain at all and 10 is the worst pain ever.
   - Wong – Baker "FACES" scale: this scale is primarily for use with pediatrics but may also be used with geriatrics or any patient with a language barrier. The faces correspond to numeric values from 0-10. This scale can be documented with the numeric value.



0	2	4	6	8	10
No hurt	Hurts little bit	Hurts little more	Hurts even more	Hurts whole lot	Hurts worst

From Hockenberry MJ, Wilson D, Winkelstein ML: Wong's Essentials of Pediatric Nursing, ed. 7, St. Louis, 2005, p. 1259. Used with permission. Copyright, Mosby.

   - FLACC scale: this scale has been validated for measuring pain in children with mild to severe cognitive impairment and in pre-verbal children (including infants).

CATEGORIES	SCORING		
	0	1	2
FACE	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested.	Frequent to constant quivering chin, clenched jaw.
LEGS	Normal position or relaxed.	Uneasy, restless, tense.	Kicking, or legs drawn up.
ACTIVITY	Lying quietly, normal position moves easily.	Squirming, shifting back and forth, tense.	Arched, rigid or jerking.
CRY	No cry, (awake or asleep)	Moans or whimpers; occasional complaint	Crying steadily, screams or sobs, frequent complaints.
CONSOLABILITY	Content, relaxed.	Reassured by occasional touching hugging or being talked to, distractable.	Difficulty to console or comfort

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Assessment: Pediatric

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Any child that can be measured with the Broselow-Luten Resuscitation Tape.

Procedure:

1. Scene size-up, including universal precautions, scene safety, environmental hazards assessment, need for additional resources, by-stander safety, and patient/caregiver interaction
2. Assess patient using the pediatric triangle of ABCs:
   - Airway and appearance: speech/cry, muscle tone, inter-activeness, look/gaze, movement of extremities
   - Work of breathing: absent or abnormal airway sounds, use of accessory muscles, nasal flaring, body positioning
   - Circulation to skin: pallor, mottling, cyanosis
3. Establish spinal immobilization if suspicion of spinal injury
4. Establish responsiveness appropriate for age (AVPU, GCS, etc.)
5. Color code using Broselow-Luten tape
6. Assess disability (pulse, motor function, sensory function, pupillary reaction)
7. Perform a focused history and physical exam. Recall that pediatric patients easily experience hypothermia and thus should not be left uncovered any longer than necessary to perform an exam.
8. Record vital signs (Generally, BP > 3 years of age, cap refill < 3 years of age). The need for BP measurement should be determined on a case-by-case basis considering the provider's rapport with the child and the child's clinical condition. Blood pressure measurement is not required for all patients, but should be measured if possible, especially in critically ill patients in whom blood pressure measurement may guide treatment decisions.
9. Include Immunizations, Allergies, Medications, Past Medical History, last meal, and events leading up to injury or illness where appropriate.
10. Treat chief complaint as per protocol

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Spinal Examination

Clinical Indications:

- Suspicion of spinal/neurological injury
- Provider decision to utilize the Spinal immobilization Clearance protocol

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

*****This procedure details the spinal examination process and must be used in conjunction with the Spinal Immobilization Clearance protocol. It is not intended as a replacement for that protocol or procedure.*****

Procedure:

- Explain to the patient the actions that you are going to take. Ask the patient to immediately report any pain, and to answer questions with a “yes” or “no” rather than shaking the head.
- With the patient’s spine supported to limit movement, begin palpation at the base of the skull at the midline of the spine.
- Palpate the vertebrae individually from the base of the skull to the bottom of the sacrum
- On palpation of each vertebral body, look for evidence of pain and ask the patient if they are experiencing pain. If evidence of pain along the spinal column is encountered, the patient should be immobilized.
- If the capable patient is found to be pain free, ask the patient to turn their head first to one side (so that the chin is pointing toward the shoulder on the same side as the head is rotating) then, if pain free, to the other. If there is evidence of pain the patient should be immobilized.
- With the head rotated back to its normal position, ask the patient to flex and extend their neck. If there is evidence of pain the patient should be immobilized.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Stroke Screen: Modified LA Prehospital

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Suspected Stroke Patient

Procedure:

1. Assess and treat suspected stroke patients as per protocol.
2. The Los Angeles Prehospital Stroke Screen (LAPSS) form should be completed for all suspected stroke patients (see appendix). There are six screening criteria items on the LAPSS form- see below for Wake County-specific modifications.
3. Screen the patient for the following criteria:
   - For the utilization of this screen in the Wake County EMS System, there is no age cutoff; consider any age patient as "yes" for possible stroke.
   - For the utilization of this screen in the Wake County EMS System, there must be no history of seizure within the last 24 hours.
   - New onset of neurologic symptoms in last 24 hours
   - For the utilization of this screen in the Wake County EMS System, there is no ambulatory requirement; i.e. patients non-ambulatory at baseline can screen "yes" for possible stroke.
   - Blood glucose between 60-400

4. The final criterion consists of performing a patient exam looking for facial droop, unilateral grip weakness/absence, or unilateral arm weakness. One of these exam components must be positive to answer "yes" on the screening form.

5. If all of the LAPSS screening criteria are met ("yes" to all criteria, including at least one exam component OR if unknown), OR if the patient has slurred speech not related to alcohol or toxic ingestion or cannot talk, follow the EMS System Stroke Plan and alert the receiving hospital of a possible stroke patient as early as possible.

6. All sections of the LAPSS form must be completed.

7. The completed LAPSS form should be attached or documented in the PCR.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Temperature Measurement

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Monitoring body temperature in a patient with: suspected infection, hypothermia, hyperthermia, or to assist in evaluating resuscitation efforts.

Procedure:

1. Multiple methods of temperature management are acceptable; refer to manufacturer's instructions for these devices as necessary:
   a. For adult patients that are conscious, cooperative, and in no respiratory distress, an oral temperature is preferred (step 2 below).
   b. For adult or pediatric patients being evaluated for a suspected infectious disease, utilization of the touchless temporal thermometer is indicated (step 3 below).
   c. Alternative methods: for infants or adults that do not meet the criteria above, a tympanic temperature may be performed (step 4 below). Rectal temperature measurement (step 5) is also acceptable, as is esophageal temperature probe in the setting of induced hypothermia; follow the Gastric Tube Insertion procedure (Paramedic Only) to place the esophageal probe.

2. To obtain an oral temperature, ensure the patient has no significant oral trauma and place the thermometer under the patient's tongue with appropriate covering. Have the patient seal his or her mouth closed around thermometer. Leave the device in place until there is indication an accurate temperature has been recorded (per the "beep" or other indicator specific to the device).

3. To obtain a touchless temporal reading, point the device towards the patient's temple with the device 2-3 inches from skin surface (temporal artery reading) in an enclosed area without wind. Pull the trigger and the unit will beep and give an immediate reading. Additional readings may be obtained after 15 seconds.

4. To obtain a tympanic (ear) temperature, ensure there is no ear trauma, cover the thermometer with an appropriate cover, place the device gently in the external auditory canal, press the button and the unit will beep within seconds and provide a reading.

5. To obtain a rectal temperature, ensure the patient has not suffered any rectal trauma by history and/or brief exam as appropriate for patient's complaint. Cover the thermometer with an appropriate cover, apply lubricant, and insert into rectum no more than 1 to 2 cm beyond the external anal sphincter.

6. Record time, temperature, method (oral, tympanic, temporal, esophageal, rectal), and scale (C° or F°) in Patient Care Report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Cardioversion

P EMT- P P

Clinical Indications:

- Unstable patient with a tachydysrhythmia (rapid atrial fibrillation, supraventricular tachycardia, ventricular tachycardia)
- Patient is not pulseless (the pulseless patient requires unsynchronized cardioversion, i.e., defibrillation)

Procedure:

1. Ensure the patient is attached properly to a monitor/defibrillator capable of synchronized cardioversion.
2. Have all equipment prepared for unsynchronized cardioversion/defibrillation if the patient fails synchronized cardioversion and the condition worsens.
3. Consider the use of pain or sedating medications.
4. Set energy selection to the appropriate setting.
5. Set monitor/defibrillator to SYNCHRONIZED cardioversion mode.
6. Make certain all personnel are clear of patient.
7. Press and hold the shock button to cardiovert. Stay clear of the patient until you are certain the energy has been delivered. NOTE: It may take the monitor/defibrillator several cardiac cycles to “synchronize”, so there may a delay between activating the cardioversion and the actual delivery of energy.
8. Note patient response and perform immediate unsynchronized cardioversion/defibrillation if the patient’s rhythm has deteriorated into pulseless ventricular tachycardia/ventricular fibrillation, following the procedure for Defibrillation-Manual.
9. If the patient’s condition is unchanged, repeat steps 2 to 8 above, using escalating energy settings.
10. Repeat until maximum setting or until efforts succeed. Consider discussion with medical control if cardioversion is unsuccessful after 2 attempts.
11. Note procedure, response, and time in the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the local EMS System. Assessment should include direct observation at least once per certification cycle, or other mechanisms as deemed appropriate by the Wake EMS System.

Cardiopulmonary Resuscitation (CPR)

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Basic life support for the patient in cardiac arrest

Procedure:

1. Within 10 seconds, assess the patient's level of responsiveness, (shake and shout), assess for normal breathing, and check pulse.
2. If the patient is not breathing normally, check for carotid pulse in adults and older children, brachial pulse for infants. If no pulse <u>or if you are unsure if there is a pulse</u>, begin continuous chest compressions based on chart below:

Age	Location	Depth	Rate
Infant	Over sternum, between nipples (inter-mammary line), 2-3 fingers	1.5 inches	Approx 120/minute
Child	Over sternum, just cephalad from xyphoid process, heel of one hand	2 inches	Approx 120/minute
Adult	Over sternum, just cephalad from xyphoid process, hands with interlocked fingers	At least 2 inches	Approx 120/minute

4. If patient is an adult, go to step 5. If no respiratory effort in a pediatric patient, ensure open airway and give two ventilations. If difficulty with ventilations, consider Airway Obstruction Procedure. Minimize interruptions in compressions.
5. Go to Cardiac Arrest Protocol. Continue continuous chest compressions and begin ventilations as directed in the age appropriate Cardiac Arrest Protocol.
6. Provide approximately 8 - 10 breaths per minute with the BVM. Use $EtCO_2$ to guide your ventilations as directed in the Cardiac Arrest Protocol.
7. Chest compressions should be provided in an uninterrupted manner. Only brief interruptions (< 5 seconds) are allowed for rhythm analysis, defibrillation, and procedures
8. Document the time and procedure in the Patient Care Report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Defibrillation: Automated

Clinical Indications:

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

- Patients in cardiac arrest (pulseless, non-breathing).
- Age < 8 years, use Pediatric Pads if available; if unavailable, use adult pads.

Contraindication:

- Pediatric patients who are so small that the pads cannot be placed without touching one another.

Procedure:

1. **If multiple rescuers available, one rescuer should provide uninterrupted chest compressions while the AED is being prepared for use.**
2. Apply defibrillator pads per manufacturer recommendations. Based on guidelines, place pads preferably in AP or AL position when implanted devices (pacemakers, AICDs) occupy preferred pad positions and attempt to avoid placing directly over device.
3. Remove any medication patches on the chest and wipe off any residue.
4. If necessary, connect defibrillator leads: white to the anterior chest pad and the red to the posterior pad.
5. Activate AED for analysis of rhythm.
6. **Stop CPR and clear the patient** for rhythm analysis. Keep interruption in CPR as brief as possible.
7. Defibrillate if appropriate by depressing the “shock” button. **Assertively state “CLEAR” and visualize that no one, including yourself, is in contact with the patient prior to defibrillation.** The sequence of defibrillation charges is preprogrammed for monophasic defibrillators. Biphasic defibrillators will determine the correct joules accordingly.
8. Begin CPR (chest compressions and ventilations) immediately after the delivery of the defibrillation.
9. After 2 minutes of CPR, analyze rhythm and defibrillate if indicated. Repeat this step every 2 minutes.
10. If “no shock advised” appears, perform CPR for two minutes and then reanalyze.
11. Continue treatment as indicated.
12. **Keep interruption of CPR compressions as brief as possible. Adequate CPR is a key to successful resuscitation.**
13. **If pulse returns please use the Post Resuscitation Protocol**

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System. Assessment should include direct observation at least once per certification cycle.

Defibrillation: Manual

P EMT- P P

Clinical Indications:

- Cardiac arrest with ventricular fibrillation or pulseless ventricular tachycardia

Procedure:

1. **Ensure that Chest Compressions are adequate and interrupted only when absolutely necessary.**
2. Clinically confirm the diagnosis of cardiac arrest and identify the need for defibrillation.
3. After application of an appropriate conductive agent if needed, apply defibrillation hands free pads (recommended to allow more continuous CPR) or paddles to the patient's chest in the proper position
   - Paddles: right of sternum at 2nd ICS and anterior axillary line at 5th ICS
   - Pads: anterior-posterior (AP) position is preferred, vs. antero-lateral position if AP cannot be quickly and easily obtained

   For patients with implanted pacers/defibrillators, paddles or pads can be in AP or AL positions. The presence of implanted pacers/defibrillators should not delay defibrillation. Attempt to avoid placing paddles or pads directly above device.
4. Set the appropriate energy level
5. Charge the defibrillator to the selected energy level. **Continue chest compressions while the defibrillator is charging.**
6. If using paddles, assure proper contact by applying 25 pounds of pressure on each paddle.
7. **Hold Compressions, assertively state, "CLEAR" and visualize that no one, including yourself, is in contact with the patient.**
8. Deliver the countershock by depressing the discharge button(s) when using paddles, or depress the **shock button** for hands free operation.
9. Immediately resume chest compressions and ventilations. After 2 minutes of CPR, analyze rhythm and check for pulse only if appropriate for rhythm.
10. Repeat the procedure every two minutes as indicated by patient response and ECG rhythm.
11. Keep interruption of CPR compressions as brief as possible. Adequate CPR is a key to successful resuscitation.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System. Assessment should include direct observation at least once per certification cycle.

Double Sequential External Defibrillation

P EMT- P P

Clinical Indications:

- Any patient who has persisted in ventricular fibrillation/tachycardia, without even transient interruption of fibrillation, as per the persistent VF/VT protocol.
- At least one shock was delivered using different pads applied so as to produce a different current vector than the first set and all other indicated treatment modalities have been implemented.
- A paramedic has verified the persistence of the arrhythmia immediately post-shock

Procedure:

1. Ensure quality of CPR is not compromised during prolonged efforts.
2. Prepare the sites for attachment of an additional set of external defibrillation pads by drying the sites and minimizing interference of hair or other obstacles to good pad adhesion.
3. Apply a new set of external defibrillation pads adjacent to, but not touching the pad set currently in use.
4. Assure that controls for the second cardiac monitor are accessible to the code commander
5. The approved enhanced care provider will verify that the resuscitation checklist has been fully executed
6. On rhythm check, the enhanced care provider will confirm the rhythm.

   a. If a shockable rhythm is detected, CPR will resume immediately. The enhanced care provider will verify that both cardiac monitors/defibrillators are attached to the patient, that all pads are well adhered, and direct the simultaneous charging of both attached cardiac monitors. When both monitors are charged to maximum energy and all persons are clear, the code commander or other paramedic will push both shock buttons as synchronously as possible. A brief rhythm/pulse check will occur and CPR will resume as appropriate.

b. If a non-shockable rhythm is present care will resume according to the appropriate protocol.

Certification Requirements:

Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake County EMS System. Assessment should include direct observation at least once per certification cycle.

Cardiac: External Pacing

P EMT- P P

Clinical Indications:

- Patients with symptomatic bradycardia (less than 60 per minute) with signs and symptoms of inadequate cerebral or cardiac perfusion such as:
  - Chest Pain
  - Hypotension
  - Pulmonary Edema
  - Altered Mental Status, Confusion, etc.
  - Ventricular Ectopy

Procedure:

1. Attach standard four-lead monitor.
2. Apply defibrillation/pacing pads to chest and back:
   - One pad to left mid chest next to sternum
   - One pad to mid left posterior chest next to spine.
3. Select pacing option on monitor unit.
4. Adjust heart rate to 70 BPM for an adult and 100 BPM for a child.
5. Note pacer spikes on EKG screen.
6. Typical mechanical capture thresholds are 50-90mA, but may vary widely. NOTE:
   - For critically ill patients (e.g. hypotension, peri-arrest, unconscious), start pacing attempts at maximum current output. For critically ill patients, the most important step in pacing is to immediately ensure mechanical capture at whatever mA is required. Once mechanical capture is confirmed by a palpable pulse at the rate consistent with “electrical capture” on the monitor, current may be slowly decreased and set at 10-20 mA above mechanical capture threshold.

7. If unable to capture while at maximum current output, stop pacing immediately.
8. If electrical capture is observed on monitor, continuously check for corresponding pulse and assess vital signs (e.g. blood pressure) to ensure ONGOING mechanical capture.
9. Consider the use of sedation or analgesia if patient is uncomfortable.
10. Document the dysrhythmia and the response to external pacing with ECG strips in the PCR.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System. Assessment should include direct observation at least once per certification cycle.

Chest Decompression

Clinical Indications:

P EMT- P P

- Patients who are peri-arrest with hypotension (SBP <85), have clinical signs of shock, and at least one of the following signs:
  - Jugular vein distention.
  - Tracheal deviation away from the side of the injury (often a late sign).
  - Absent or decreased breath sounds on the affected side.
  - Hyper-resonance to percussion on the affected side.
  - Increased resistance when ventilating a patient.

- In patients with penetrating trauma to the chest or upper back, or gunshot wound to the neck or torso, who are in respiratory distress, a weak or absent radial pulse may be substituted for blood pressure measurement as above; signs of tension pneumothorax listed above may also be present.

- Patients in traumatic arrest with chest or abdominal trauma for whom resuscitation is indicated. These patients may require bilateral chest decompression even in the absence of the signs above.

Procedure:

1. Don personal protective equipment (gloves, eye protection, etc.).
2. Administer high flow oxygen.
3. Identify and prep the site:
   - Locate the second intercostal space in the mid-clavicular line on the same side as the pneumothorax.
   - Prepare the site with providone-iodine ointment or solution.
4. Insert the catheter (14 gauge for adults) into the skin over the third rib and direct it just over the top of the rib (superior border) into the interspace.
5. Advance the catheter through the parietal pleura until a “pop” is felt and air or blood exits under pressure through the catheter, then advance catheter only to chest wall.
6. Remove the needle, leaving the plastic catheter in place.
7. Secure the catheter hub to the chest wall with dressings and tape.
8. Consider placing a finger cut from an exam glove over the catheter hub. Cut a small hole in the end of the finger to make a flutter valve. Secure the glove finger with tape or a rubber band. (Note – don’t waste much time preparing the flutter valve; if necessary control the air flow through the catheter hub with your gloved thumb.)

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System. Assessment should include direct observation once per certification cycle.

Childbirth

Clinical Indications:

B	EMT	B
I	EMT- I	I
P	EMT- P	P

- Imminent delivery with crowning

Procedure:

1. Delivery should be controlled so as to allow a slow controlled delivery of the infant. This will prevent injury to the mother and infant.
2. Support the infant's head as needed.
3. Check the umbilical cord surrounding the neck. If it is present, slip it over the head. If unable to free the cord from the neck, double clamp the cord and cut between the clamps.
4. Suction the airway with a bulb syringe.
5. Grasping the head with hands over the ears, gently pull down to allow delivery of the anterior shoulder.
6. Gently pull up on the head to allow delivery of the posterior shoulder.
7. Slowly deliver the remainder of the infant.
8. Clamp the cord 2 inches from the abdomen with 2 clamps and cut the cord between the clamps.
9. Record APGAR scores at 1 and 5 minutes.
10. Follow the **Newly Born Protocol** for further treatment.
11. The placenta will deliver spontaneously, usually within 5 minutes of the infant. Do not force the placenta to deliver.
12. Massaging the uterus may facilitate delivery of the placenta and decrease bleeding by facilitating uterine contractions.
13. Continue rapid transport to the hospital.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Decontamination

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Any patient who may have been exposed to significant hazardous materials, including chemical, biological, or radiological weapons.

Procedure:

1. In coordination with HazMAT and other Emergency Management personnel, establish hot, warm and cold zones of operation.
2. Ensure that personnel assigned to operate within each zone have proper personal protective equipment.
3. In coordination with other public safety personnel, assure each patient from the hot zone undergoes appropriate initial decontamination. This is specific to each incident; such decontamination may include:
   - Removal of patients from Hot Zone
   - Simple removal of clothing
   - Irrigation of eyes
   - Passage through high-volume water bath (e.g., between two fire apparatus) for patients contaminated with liquids or certain solids. Patients exposed to gases, vapors, and powders often will not require this step as it may unnecessarily delay treatment and/or increase dermal absorption of the agent(s).
4. Initial triage of patients should occur after step #3. Immediate life threats should be addressed prior to technical decontamination.
5. Assist patients with technical decontamination (unless contraindicated based on #3 above). This may include removal of all clothing and gentle cleansing with soap and water. All body areas should be thoroughly cleansed, although overly harsh scrubbing which could break the skin should be avoided.
6. Place triage identification on each patient. Match triage information with each patient's personal belongings which were removed during technical decontamination. Preserve these personnel affects for law enforcement.
7. Monitor all patients for environmental illness.
8. Transport patients per local protocol.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Gastric Tube Insertion

Clinical Indications:

P EMT- P P

- Gastric decompression in intubated patients.

Procedure:

1. Estimate insertion length by superimposing the tube over the body from the nose to the stomach.
2. Flex the neck **if not contraindicated** to facilitate esophageal passage.
3. Liberally lubricate the distal end of the tube and pass through the patient's nostril along the floor of the nasal passage. Do not orient the tip upward into the turbinates. This increases the difficulty of the insertion and may cause bleeding.
4. In the setting of an intubated patient or a patient with facial trauma, oral insertion of the tube may be considered or preferred after securing airway.
5. Continue to advance the tube gently until the appropriate distance is reached.
6. Confirm placement by injecting 20cc of air and auscultate for the swish or bubbling of the air over the stomach. Additionally, aspirate gastric contents to confirm proper placement.
7. Secure the tube.
8. Decompress the stomach of air and food either by connecting the tube to suction or manually aspirating with the large catheter tip syringe.
9. Document the procedure, time, and result (success) on/with the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Injections: Subcutaneous and Intramuscular

I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- When medication administration is necessary and the medication must be given via the SQ (not auto-injector) or IM route or as an alternative route in selected medications.

Procedure:

1. Receive and confirm medication order or perform according to standing orders.
2. Prepare equipment and medication expelling air from the syringe.
3. Explain the procedure to the patient and reconfirm patient allergies.
4. The most common site for subcutaneous injection is the arm.
   - Injection volume should not exceed 1 cc.
5. The possible injection sites for intramuscular injections include the arm, buttock and thigh.
   - Injection volume should not exceed 1 cc for the arm
   - Injection volume should not exceed 2 cc in the thigh or buttock.
6. The thigh should be used for injections in pediatric patients and injection volume should not exceed 1 cc.
7. Expose the selected area and cleanse the injection site with alcohol.
8. Insert the needle into the skin with a smooth, steady motion

   SQ: 45-degree angle skin pinched | **IM: 90-degree angle skin flattened**

9. Aspirate for blood
10. Inject the medication.
11. Withdraw the needle quickly and dispose of properly without recapping.
12. Apply pressure to the site.
13. Monitor the patient for the desired therapeutic effects as well as any possible side effects.
14. Document the medication, dose, route, and time on/with the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Restraints: Physical & Chemical

B	EMT	B
I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Any patient who may harm himself, herself, or others may be gently restrained to prevent injury to the patient or crew. This restraint must be in a humane manner and used only as a last resort. Other means to prevent injury to the patient or crew must be attempted first. These efforts could include reality orientation, distraction techniques, or other less restrictive therapeutic means. Physical or chemical restraint should be a last resort technique.

Procedure:

1. Attempt less restrictive means of managing the patient.
2. Request law enforcement assistance.
3. Ensure that there are sufficient personnel available to physically restrain the patient safely.
4. Restrain the patient in a lateral or supine position. No devices such as backboards, splints, or other devices will be on top of the patient. The patient will never be restrained in the prone position.
5. The patient must be under constant observation by the EMS crew at all times. This includes direct visualization of the patient as well as cardiac and pulse oximetry monitoring.
6. The extremities that are restrained will have a circulation check at least every 15 minutes. The first of these checks should occur as soon after placement of the restraints as possible. This MUST be documented on the PCR.
7. Documentation on/with the patient care report (PCR) should include the reason for the use of restraints, the type of restraints used, and the time restraints were placed. Use of the Restraint Checklist is highly recommended.
8. In general, chemical restraints (i.e. medication(s) given under the Behavioral protocol) should be utilized whenever physical restraints are utilized. If the above actions are unsuccessful, or if the patient is resisting restraints, consider further medication per protocol or contact medical control. Chemical restraint should be considered early.
9. If a patient is restrained by law enforcement personnel with handcuffs or other devices EMS personnel can not remove, a law enforcement officer must accompany the patient to the hospital in the transporting EMS vehicle.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Spinal Immobilization

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Need for spinal immobilization as determined by protocol; consider the following guidelines:

1. Long spine boards (LSB) have both risks and benefits for patients and have not been shown to improve outcomes. The best use of the LSB may be for extricating the unconscious patient, or providing a firm surface for compressions. However, several devices may be appropriate for patient extrication and movement, including the scoop stretcher and soft body splints.
2. Utilization of the LSB should occur in consideration of the individual patient's benefit vs. risk.
3. Patients who should be immobilized with a LSB include: blunt trauma and distracting injury, intoxication, altered mental status, or neurologic complaint (e.g. numbness or weakness), and non-ambulatory blunt trauma patients with spinal pain, tenderness, or spinal deformity.
4. Patients with penetrating trauma and no evidence of spinal injury do not require spinal immobilization. Patients who are ambulatory at the scene of blunt trauma in general do not require immobilization via LSB, and may or may not require c-collar and spinal precautions.
5. Whether or not a LSB is utilized, spinal precautions are STILL VERY IMPORTANT in patients at risk for spinal injury. Adequate spinal precautions may be achieved by placement of a hard cervical collar and ensuring that the patient is secured tightly to the stretcher, ensuring minimal movement and patient transfers, and manual in-line stabilization during any transfers.

Procedure:

1. Gather a backboard or other appropriately-sized device and C-collar as indicated.
2. Explain the procedure to the patient; assess and record extremity neuro status & distal pulses.
3. Place the patient in an appropriately sized C-collar while maintaining in-line stabilization of the C-spine by a second provider. Stabilization should not involve traction or tension but rather maintaining the head in a neutral, midline position while the first provider applies the collar.
4. Once the collar is secure, the second rescuer should still maintain position to ensure stabilization (the collar is helpful but will not do the job by itself.)
5. If indicated, place the patient on a long spine board with the log-roll technique if the patient is supine or prone. For the patient in a vehicle or otherwise unable to be placed prone or supine, place him or her on a backboard by the safest method available that allows maintenance of in-line spinal stability.
6. Stabilize the patient with straps and head rolls/tape or other similar device. Once the head is secured to the backboard, the second rescuer may release manual in-line stabilization.
7. NOTE: Spinal precautions may be achieved by many appropriate methods. See above and the Spinal Immobilization protocol. In addition, some patients, due to size or age, will not be able to be immobilized through in-line stabilization with standard devices and C-collars. Never force a patient into a non-neutral position to immobilize him or her. Manual stabilization may be required during transport. Special situations such as athletes in full shoulder pads and helmet may remain immobilized with helmet and pads in place.
8. Assess and record extremity neuro status and distal pulses post-procedure. If worse, remove any immobilization devices and reassess. Document time of the procedure in the PCR.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Splinting

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Immobilization of an extremity for transport, due to suspected fracture, sprain, or injury.
- Immobilization of an extremity for transport to secure medically necessary devices such as intravenous catheters

Procedure:

1. Assess and document pulses, sensation, and motor function prior to placement of the splint. If no pulses are present and a fracture is suspected with significant deformity present, consider reduction any long bone fracture prior to placement of the splint. Generally field reduction should be avoided (except femoral traction splint); simply splinting may restore pulses. Consider contacting medical control for advice if extended scene time is expected and an extremity is pulseless.
2. Remove all clothing from the extremity.
3. Select a site to secure the splint both proximal and distal to the area of suspected injury, or the area where the medical device will be placed.
4. Do not secure the splint directly over the injury or device.
5. Place the splint and secure with Velcro, straps, or bandage material (e.g., kling, kerlex, cloth bandage, etc.) depending on the splint manufacturer and design.
6. Document pulses, sensation, and motor function after placement of the splint. If there has been a deterioration in any of these 3 parameters, remove the splint and reassess
7. If a femur fracture is suspected and there is no evidence of pelvic fracture or instability, the following procedure may be followed for placement of a femoral traction splint:
    - Assess neurovascular function as in #1 above.
    - Place the ankle device over the ankle.
    - Place the proximal end of the traction splint on the posterior side of the affected extremity, being careful to avoid placing too much pressure on genitalia or open wounds. Make certain the splint extends proximal to the suspected fracture. If the splint will not extend in such a manner, reassess possible involvement of the pelvis
    - Extend the distal end of the splint at least 6 inches beyond the foot.
    - Attach the ankle device to the traction crank.
    - Twist until moderate resistance is met.
    - Reassess alignment, pulses, sensation, and motor function. If there has been deterioration in any of these 3 parameters, release traction and reassess.
8. Document the time, type of splint, and the pre and post assessment of pulse, sensation, and motor function in the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Wound Care- General

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Protection and care for open wounds prior to and during transport.

General Wound Care Procedures:

1. Use personal protective equipment, including gloves, gown, and mask as indicated.
2. If active bleeding, elevate the affected area if possible and hold direct pressure. Do not rely on "compression" bandage to control bleeding. Direct manual pressure is much more effective.
3. Consider tourniquet early for extremity bleeding unable to be controlled with direct pressure.
4. Once bleeding is controlled, irrigate contaminated wounds with saline as appropriate (this may have to be avoided due to extreme pain or if bleeding was difficult to control). Consider analgesia per protocol prior to irrigation. SEE IRRIGATION procedure.
5. Cover wounds with sterile gauze/dressings. Check distal pulses, sensation, and motor function to ensure the bandage is not too tight.
6. Monitor wounds and/or dressings throughout transport for bleeding.
7. Document the wound and assessment and care in the patient care report (PCR).

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Wound Care-Hemostatic Dressing

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Serious hemorrhage that can not be controlled by other means.

Contraindications:

- Wounds involving open thoracic or abdominal cavities.

Procedure:

1. Apply approved non-heat-generating hemostatic dressing per manufacturer's instructions.
2. Supplement with direct pressure and standard hemorrhage control techniques, including tourniquet as able.
3. Apply further hemostatic or standard dressings as necessary.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Wound Care- Irrigation

Clinical Indications:

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

- Initial decontamination and irrigation for wounds, burns, and eye injuries prior to and during transport.

Irrigation Guidelines and Procedures:

1. Wound irrigation and decontamination are key to stopping ongoing tissue injury, preventing infection, and promoting wound healing. Irrigation should be started in the field if possible.
2. Refer to the Decontamination Procedure for any patient(s) who may have significant hazardous materials exposure. Follow these irrigation guidelines for isolated injury or exposure (e.g. small burn to the extremity, chemical splash to an eye).
3. Control bleeding and evaluate and treat life threats first. Refer to the Wound Care- General procedure, and appropriate trauma protocols.
4. Irrigate thermal burns, chemical burns, or contaminated wounds with normal saline, Ringer's lactate or sterile water as appropriate. Consider analgesia per protocol prior to irrigation.
5. Sterile solutions are preferred for irrigation, however if not available, do not delay- use tap water. Flush the area as soon as possible with the cleanest readily available water or sterile solution using copious amounts of fluids.
6. For chemical splashes to the eye, emergent irrigation is critical to preventing further tissue damage. If there is no concern for physical trauma to the eye, utilize a Morgan Lens to immediately provide copious irrigation directly to the globe. Have patient remove contact lenses. Follow the "Eye Complaint" Protocol.
7. To utilize the Morgan Lens, follow these steps:
   a. Instill topical ocular anesthetic (e.g. 2 drops tetracaine)
   b. Attach Morgan Lens set to IV tubing to sterile solution (e.g. saline bag); START FLOW.
   c. Have patient look down, retract upper lid, insert Morgan lens under upper lid.
   d. Have patient look up, retract lower lid, then gently drop lens in place.
   e. Release lower lid over lens and ensure steady, copious flow. Secure tubing to prevent accidental lens removal. Absorb outflow with towels. DO NOT RUN DRY.
   f. Irrigate with at least one liter of sterile solution. For lens removal, ENSURE FLOW OF SOLUTION IS CONTINUING, have patient look up, retract lower lid (and upper lid slightly if necessary), slide Morgan Lens out. Stop flow only after removing Lens.
8. Document the procedure, including solution and volume used to irrigate, in the PCR.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Wound Care-Taser® Probe Removal

Clinical Indications:

- Patient with uncomplicated conducted electrical weapon (Taser®) probes embedded subcutaneously in non-sensitive areas of skin.
- Taser probes are barbed metal projectiles that may embed themselves up to 13 mm into the skin.

Contraindications:

- Patients with conducted electrical weapon (Taser®) probe penetration in vulnerable areas of body as mentioned below should be transported for further evaluation and probe removal
  - Probes embedded in skin above level of clavicles, female breasts, or genitalia
- Suspicion that probe might be embedded in bone, blood vessel, or other sensitive structure.

Procedure:

- Ensure wires are disconnected from weapon.
- Stabilize skin around probe using non-dominant hand.
- Grasp probe by metal body with pliers or hemostats to prevent puncture wounds to EMS personnel.
- Remove probe in single quick motion.
- Wipe wound with antiseptic wipe and apply dressing.

Certification Requirements:

- This procedure is limited to Tactical Medics only, as credentialed specifically by the Wake County EMS System.
- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Wound Care-Tourniquet

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

Clinical Indications:

- Life threatening extremity hemorrhage that can not be controlled by other means.
- Serious or life threatening extremity hemorrhage and tactical considerations prevent the use of standard hemorrhage control techniques.

Contraindications:

- Non-extremity hemorrhage
- Proximal extremity location where tourniquet application is not practical

Procedure:

1. Place tourniquet proximal to wound
2. Tighten per manufacturer instructions until hemorrhage stops and/or distal pulses in affected extremity disappear.
3. Secure tourniquet per manufacturer instructions
4. Note time of tourniquet application and communicate this to receiving care providers
5. Dress wounds per standard wound care protocol
6. If delayed or prolonged transport and tourniquet application time > 45 minutes: consider reattempting standard hemorrhage control techniques and removing tourniquet
7. If one tourniquet is not sufficient or not functional to control hemorrhage, consider the application of a second tourniquet more proximal to the first.

Certification Requirements:

- Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Standards Procedure (Skill)

Advanced Practice Paramedic Wellness Check

Indications:
When patient safety needs to be ensured for patients who are evaluated by advanced practice paramedics for presumed non-urgent situations. This includes patients who are referred by other EMS providers, those identified by query of patient records, and those referred by external entities.

A	APP	A

Contraindications:
Any patient for whom an emergency medical condition exists that would normally be treated under another Wake EMS System protocol, policy, and/or procedure.

Procedure:

1) Ensure scene safety and at all times make RESCOM aware of your location. When possible, remain available for dispatch to high acuity calls.
2) Politely introduce yourself to the patient and family.
3) Determine the nature of the visit and record in electronic database (diabetes, CHF, falls prevention, pediatric asthma, high-risk refusal follow-up, or other).
4) For all patients, determine the name of the primary care physician. If one does not exist, utilize APP reference materials and communicate the available primary care physicians to the patient.
5) Assist all patients with medication compliance. If pill minders or refills are needed, note this in the electronic database. It is appropriate to communicate these needs with the primary care physician when possible. APPs may not pick up or in other ways transport prescription medications without specific authorization from medical control.
6) If the patient is diabetic, ensure daily blood glucose logs are being maintained. Asymptomatic patients with more than 2 consecutive blood glucose measurements above 300 should make contact with their primary care physician within 24 hours. A phone follow-up by the APP to ensure glucose is not rising is appropriate. If the blood glucose is rising by more than 50 mg/dL and/or any reading is above 500, transport to the emergency department shall be recommended.
7) If the patient has CHF, ensure the patient has a scale and is performing weight checks. Asymptomatic patients with unexplained weight gain of more than 4 pounds should be referred to their primary care physician within 24 hours.
8) For patients with concern over falls prevention, ensure there are no loose rugs, handrails are present on all steps, and restroom facilities have available hand rails and slip resistant surfaces in showers/bath tubs. If these items are needed, note this in the electronic patient care report.
9) For pediatric asthma patients, assure medications are available. If smoking in the home or potential pet allergens is identified, discuss this with the patient's family and include this in your electronic patient care report.

Certification Requirements:

Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the Wake EMS System.

Standards Procedure (Skill)
Request for Alternative Destination

Purpose:

The purpose of this policy is to:

- Provide world class patient care and EMS service to the citizens of Wake County.
- Give direction for providers who encounter patients with mental health and substance abuse crisis that may be better served by a receiving facility other than an emergency department.
- Establish an orderly method by which clinical issues can be rapidly addressed.

Procedure:

1. If a patient presents with primary substance abuse and/or mental health crisis (e.g., suicidal ideation without actual attempt), they should be evaluated on both the “Behavioral” and the “Well Person” protocols. If the patient is non-combative (and thus does not require medication from the Behavioral protocol) and successfully passes the Well Person screen, an Advanced Practice Paramedic (APP) on duty may be contacted; otherwise, the patient should be transported as per the usual and customary procedures. See the Wake EMS Patient Disposition policy regarding transport of patients who may lack capacity and/or are a danger to themselves or others.

2. After contact with the APP, the originally responding EMS crew will maintain appropriate clinical contact and monitoring of the patient until the APP arrives. If response of the APP is delayed, the EMS crew and APP will communicate via phone or radio and determine the most appropriate treatment plan and destination for the patient.

3. Until an appropriate destination for the patient has been determined, the patient will not be left unattended by EMS personnel.

4. Once the screening exam by the APP is complete, the patient may be referred to Wake County Crisis and Assessment (CAS), Holly Hill Hospital, Healing Transitions of Wake County, or other approved alternative destination facility (provided the patient meets the facility’s screening criteria) via appropriate transportation. If law enforcement or other means of transportation are not available, the patient may be transported as a “request for service” non-billed transport to the alternate destination. Patients transported to Holly Hill and CAS require the APP to complete a APP CIP form.

5. If the patient’s condition is determined not to be appropriate for transport to a destination other than an emergency department, or the patient refuses the recommended alternative destination, transportation to a receiving hospital emergency department by a Wake County EMS System ambulance shall be offered.

6. Where transportation to a non-emergency department destination is deemed to be appropriate and the patient accepts that destination, the APP will be responsible for primary documentation of the patient encounter if the APP physically evaluated the patient on scene. If the APP did not physically evaluate the patient, all providers should document in accordance with the “documentation with multiple providers” policy.

Fire and Technical Rescue Scene Response

EMS responds to structural fire and technical rescue incidents to address three distinct needs in the "Cold" and "Warm" zones:

	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P

1. Treatment of the ill or injured responder
2. Provision of care for victims of the incident
3. Provision of responder rehabilitative/preventive medical assistance during extended incidents

An EMS ambulance shall be dispatched to these scenes to serve as an evaluating (rehab) unit for the fire or rescue agency managing the scene. These responses include, but are not limited to incidents where responders will be:

- Working on the scene for more than an hour.
- In the presence of weather that will exceed 90 degrees F or be below 10 degrees F.
- Expected to use 2 twenty-minute or one 45-minute air bottle before the scene is under control, or are using supplied air respirators for any duration.

The initial response shall be one ALS Ambulance as directed by Emergency Medical Dispatch priority. It is acceptable for the responding EMS Resource(s) to monitor the radio traffic of the first-in Fire/ Rescue Resource and cancel and/or downgrade response as appropriate. If the scene is known or suspected to have incident victims, additional transport ambulance resources should be requested in numbers sufficient to address victim needs and prevent unnecessary delays in addressing rehabilitative/preventive medical needs of responders.

An EMS District Chief is automatically dispatched to declared working fires. For more complex or extended incidents, give consideration to requesting a second District Chief and the Major Operations Support Unit (MOSU). A Medical Director may be requested to respond and assist with rehab assessment if needed.

If any firefighter or other victim requires transport to the hospital, an additional ALS ambulance will be dispatched to assume the rehab duties at the fire scene. Personnel on the scene will determine the level of response for the second ambulance (e.g., lights and siren vs. no lights and siren).

Transport of an injured firefighter or other victim will not be delayed while waiting for a second ambulance to arrive. If there is an urgent need for ALS personnel on the scene, the second ambulance should be dispatched with lights and siren and the injured party transported without delay. In most all circumstances, the EMS Supervisor and/or the Medical Director will be present to render aid while awaiting the second ambulance.

Where specialized care for patients or responders is potentially needed in the "hot zone" of technical rescue incidents, request specialized USAR/HazMat paramedics.

(continued next page)

Routine Working Fires/Technical Rescue Incidents

For a routine working fire or technical rescue incident, an EMS District Chief will be dispatched. The following actions are expected of the first arriving transport unit to these events:

1. Park close to the incident to allow for rapid removal and transportation of injured persons. In choosing a location, do no impair the ability of apparatus to depart or access the scene or fire hydrants. Work to establish clear means of egress even as other units respond.
2. Initial actions:

a. If a victim is known, and has been removed from the hazard zone, initiate care for the victim and request appropriate supplemental resources to respond.
b. If a victim has been removed to a "warm zone," don full turnout gear, initiate care for the victim, and request appropriate supplemental resources to respond.
c. If no victim is known or suspected, and the EMS District Chief is not yet on scene all EMS technicians shall don full turnout gear, load the stretcher with medical equipment (to include cardiac monitor, oxygen, ALS medications, suction, immobilization equipment and burn sheets) and report with equipment to the incident command post.
d. As directed by the incident commander or arriving EMS District Chief, prepare the medical rehab area and screen responders as directed in the incident rehabilitation protocol.

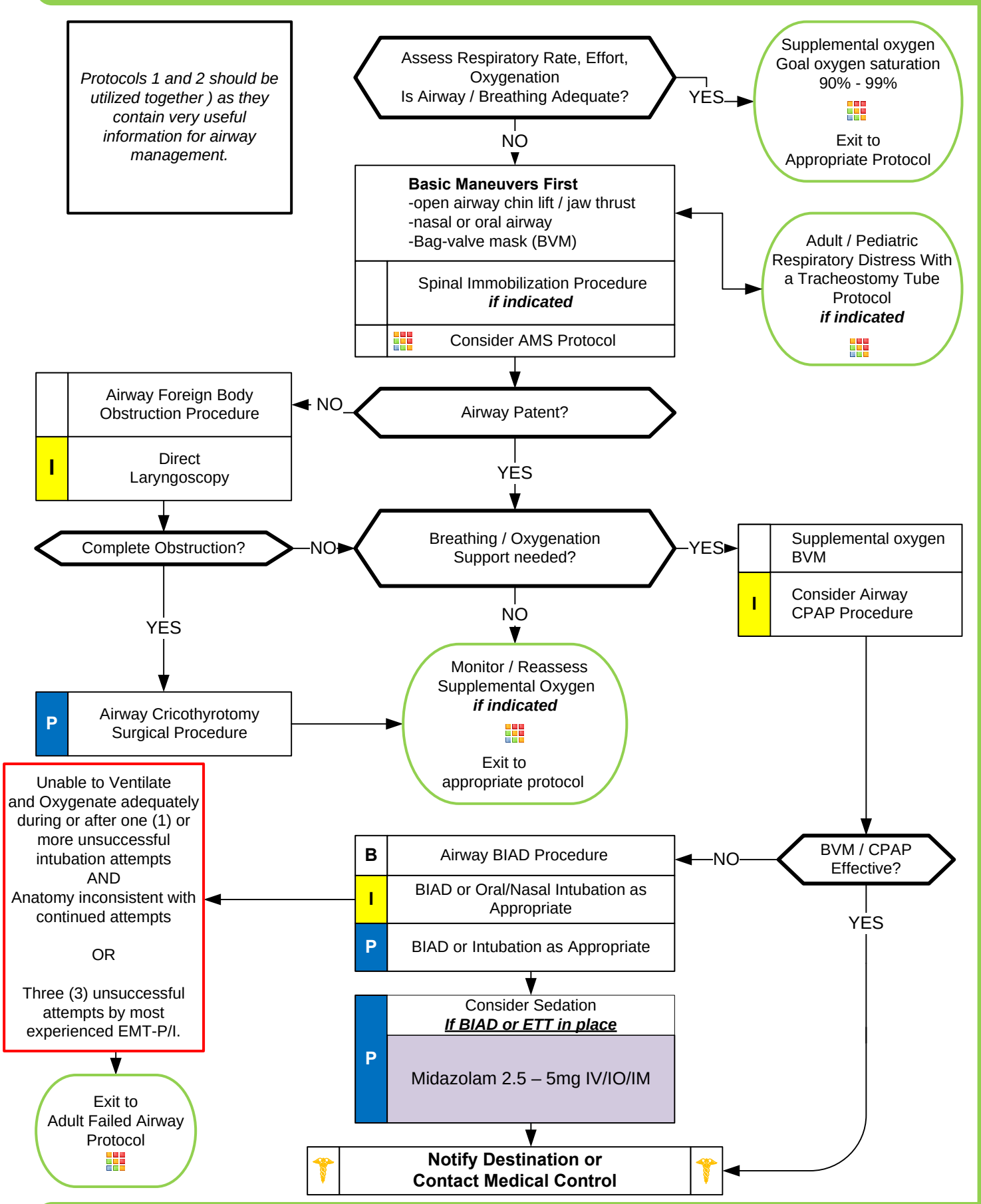
As a matter of practice, at least one crew of EMS responders will remain in turnout gear, conspicuous and in proximity of the command post to provide a rapid medical intervention team whenever fire suppression or technical rescue activities are ongoing. If additional EMS personnel are assigned to a rehab function, they should also remain conspicuous, and in proximity of the rehab area through the duration of the event. It is recognized that a large number of fire service injuries and deaths occur during post-incident activities including salvage, overhaul, and take up. It is expected that EMS technicians will continue to be conspicuous and provide incident support through all phases of response unless directed otherwise by through the incident management system.

Major Working Fires

Upon declaration of a major working fire, ensure additional resources to total three ALS ambulances, two EMS District Chiefs, and the EMS Major Operations Support Unit (MOSU). In addition to the actions identified for the "routine" working incidents above, the following actions are expected:

1. First arriving District Chief reports to the command post as medical branch director (if necessary, take verbal report from previous medical branch director). Dons the MEDICAL vest.
2. Take actions to secure a good parking location for the MOSU.
3. REHAB- at least 2 ALS ambulances and the MOSU. Second arriving District Chief or a Senior Paramedic will assume the Rehab Unit Supervisor role, and will don the REHAB vest.
4. Work to assure clear ingress and egress for responding ambulances.
5. Assure on-going supply of ice, water, and flavorings.
6. Advise the IC with regards to ongoing hydration, nutrition needs, etc.
7. Consider the need for portable toilets early (contact Emergency Management). These requests are often not processed as quickly as the kidneys process fluids.
8. Assign a scribe to MEDICAL when possible.
9. Send an EMS Chief Officer to the RWECC for system status control and consideration of out-of-county mutual aid as necessary, and ensure EMS command staff have been notified.

Adult Airway



General Section Protocols

Protocol 1

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Adult Airway

Always weigh the risks and benefits of endotracheal intubation in the field against transport. All prehospital endotracheal intubations are be considered high risk. If ventilation / oxygenation is adequate, transport may be the best option. The most important airway device and the most difficult to use correctly and effectively is the Bag Valve Mask (not the laryngoscope).

Few prehospital airway emergencies cannot be temporized or managed with proper BVM techniques.

Difficult Airway Assessment

Difficult BVM Ventilation-MOANS: Difficult **M**ask seal due to facial hair, anatomy, blood or secretions / trauma; **O**bese or late pregnancy; **A**ge > 55; **N**o teeth (roll gauze and place between gums and cheeks to improve seal); **S**tiff or increased airway pressures (Asthma, COPD, Obese, Pregnant).

Difficult Laryngoscopy-LEMON: **L**ook externally for anatomical distortions (small mandible, short neck, large tongue); **E**valuate 3-3-2 Rule (Mouth open should accommodate 3 patient fingers, mandible to neck junction should accommodate 3 patient fingers, chin-neck junction to thyroid prominence should accommodate 2 patient fingers); **M**allampati (difficult to assess in the field); **O**bstruction / Obese or late pregnancy; **N**eck mobility.

Difficult BIAD-RODS: **R**estricted mouth opening; **O**bstruction / Obese or late pregnancy; **D**istorted or disrupted airway; **S**tiff or increased airway pressures (Asthma, COPD, Obese, Pregnant);

Difficult Cricothyrotomy / Surgical Airway-SHORT: **S**urgery or distortion of airway; **H**ematoma over lying neck; **O**bese or late pregnant; **R**adiation treatment skin changes; **T**umor overlying neck.

Trauma: *Utilize in-line cervical stabilization during intubation, BIAD or BVM use. During intubation or BIAD the cervical collar front should be open or removed to facilitate translation of the mandible / mouth opening.*

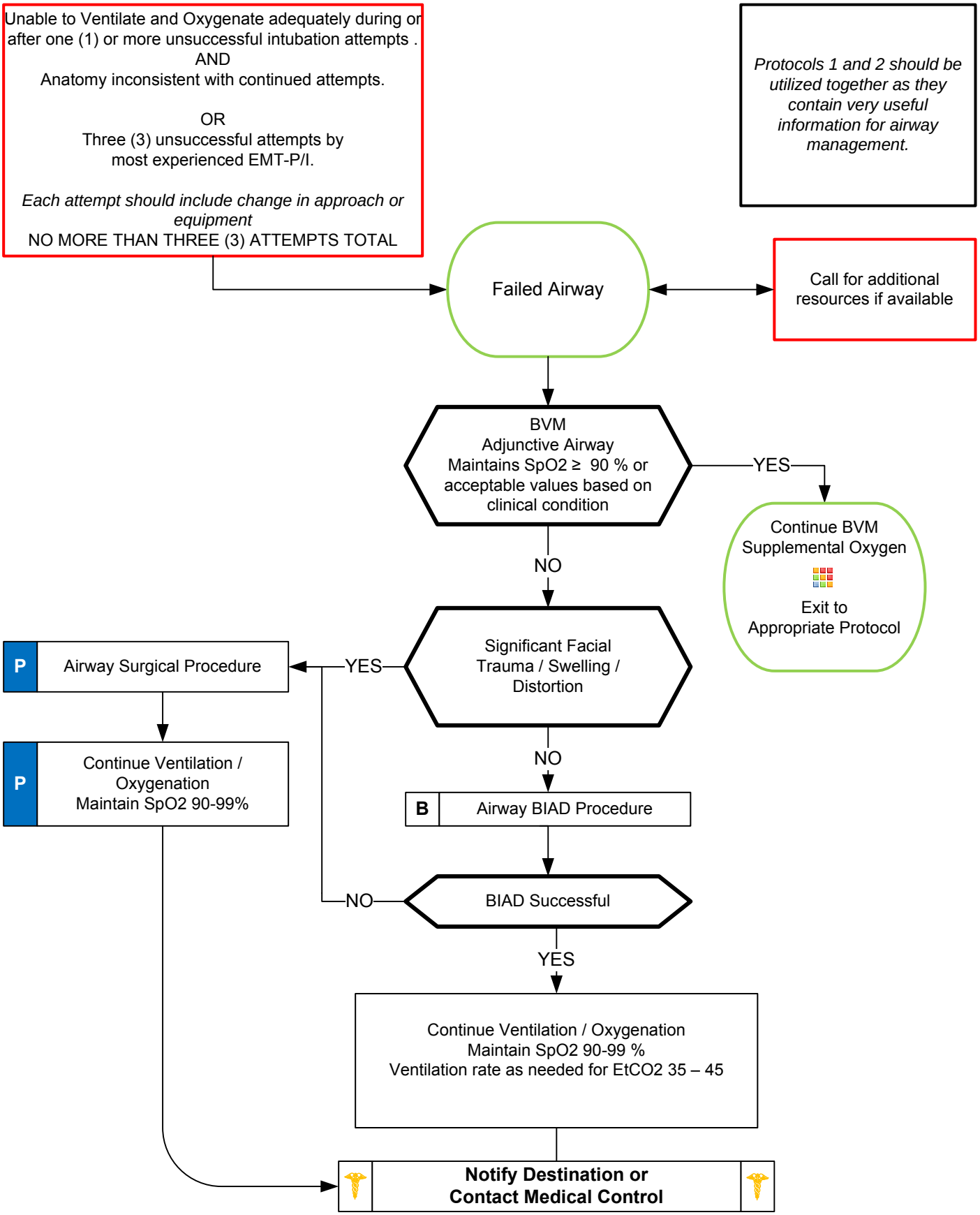
Nasotracheal intubation: *Orotracheal intubation is the preferred choice.* Procedure requires patient have spontaneous breathing. Contraindicated in anatomically disrupted or distorted airways, increased intracranial pressure, severe facial trauma, basal skull fracture, head injury. Not a rapid procedure and exposes patient to risk of desaturation.

General Section Protocols

Pearls

- **This protocol is only for use in patients with an Age ≥ 12 or patients longer than the Broselow-Luten Tape.**
- **Capnometry (Color) or capnography is mandatory with all methods of intubation. Document results.**
- **Continuous capnography (EtCO2) is mandatory for the monitoring of all patients with a BIAD or ET tube.**
- **If an effective airway is being maintained by BVM and/or basic airway adjuncts (e.g. nasopharyngeal airway) with continuous pulse oximetry values of ≥ 90% or values expected based on pathophysiologic condition with otherwise reassuring vital signs (e.g. pulse oximetry of 85% with otherwise normal vitals in a post-drowning patient), it is acceptable to continue with basic airway measures instead of using a BIAD or Intubation. Consider CPAP as indicated by protocol and patient condition.**
- **For the purposes of this protocol a secure airway is achieved when the patient is receiving appropriate oxygenation and ventilation.**
- **An Intubation Attempt is defined as passing the laryngoscope blade or endotracheal tube past the teeth or inserted into the nasal passage.**
- **An appropriate ventilatory rate is one that maintains an EtCO2 of 35-45. Avoid hyperventilation.**
- Intermediates and Paramedics should use a BIAD if oral-tracheal intubation is unsuccessful.
- Maintain C-spine immobilization for patients with suspected spinal injury.
- Do not assume hyperventilation is psychogenic– use oxygen for goal Sp02 of 90-99%, not a paper bag.
- Cricoid pressure and BURP maneuver may assist with difficult intubations. They may worsen view in some cases.
- Hyperventilation in deteriorating head trauma should only be done to maintain a $EtCO_2$ of 30-35.
- Gastric tube placement should be considered in all intubated patients if available or time allows.
- It is important to secure the endotracheal tube well and consider c-collar (in absence of trauma) to better maintain ETT placement. Manual stabilization of endotracheal tube should be used during all patient moves / transfers.

Adult, Failed Airway



General Section Protocols

Protocol 2

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Adult, Failed Airway

A failed airway occurs when a provider begins a course of airway management by endotracheal intubation and identifies that intubation by that method will not succeed.

Conditions which define a Failed Airway:
1. Failure to maintain adequate oxygen saturation after 2 or more failed intubation attempts, OR
2. Three (3) failed attempts at intubation by the most experienced prehospital provider on scene in a patient who requires an advanced airway to prevent death, OR
3. Unable to maintain adequate oxygen saturation with BVM techniques and insufficient time to attempt alternative maneuvers.

It should be noted that a patient with a "failed airway" is one who is near death or dying, not stable or improving. Patients who cannot be intubated or who do not have an Oxygen Saturation greater than 90% do not necessarily have a failed airway. Many patients who cannot be intubated easily may be sustained by basic airway techniques and BVM, with stable if not optimal Oxygen Saturation, i.e. stable (not dropping) SpO2 values as expected based on pathophysiologic condition with otherwise reassuring vital signs (e.g. consistent pulse oximetry of 85% with otherwise normal or near-normal vitals in a post-drowning patient)

The most important way to avoid a failed airway is to identify patients with expected difficult airway, difficult BVM ventilation, difficult BIAD, difficult laryngoscopy and / or difficult cricothyrotomy. Please refer to Protocol 1, Adult Airway page 2 for information in how to identify the patient with potential difficult airway.

Position of patient: In the field, improper position of the patient and rescuer are responsible for many failed and difficult intubations. Often this is dictated by uncontrolled conditions present at the scene and we must adapt. However many times the rescuer does not optimize patient and rescuer position. The sniffing position or the head simply extended upon the neck are probably the best positions. The goal is to align the ear canal with the suprasternal notch in a straight line.

In the **obese or late pregnant patient** elevating the torso by placing blankets, pillows or towels will optimize the position. This can be facilitated by raising the head of the cot.

Use of cot in optimal patient / rescuer position: The cot can be elevated and lowered to facilitate intubation. With the patient on the cot raise until the patients nose is at the level of your umbilicus which will place you at the optimal position.

Trauma: *Utilize in-line cervical stabilization during intubation, BIAD or BVM use. During intubation or BIAD the cervical collar front should be open or removed to facilitate translation of the mandible / mouth opening.*

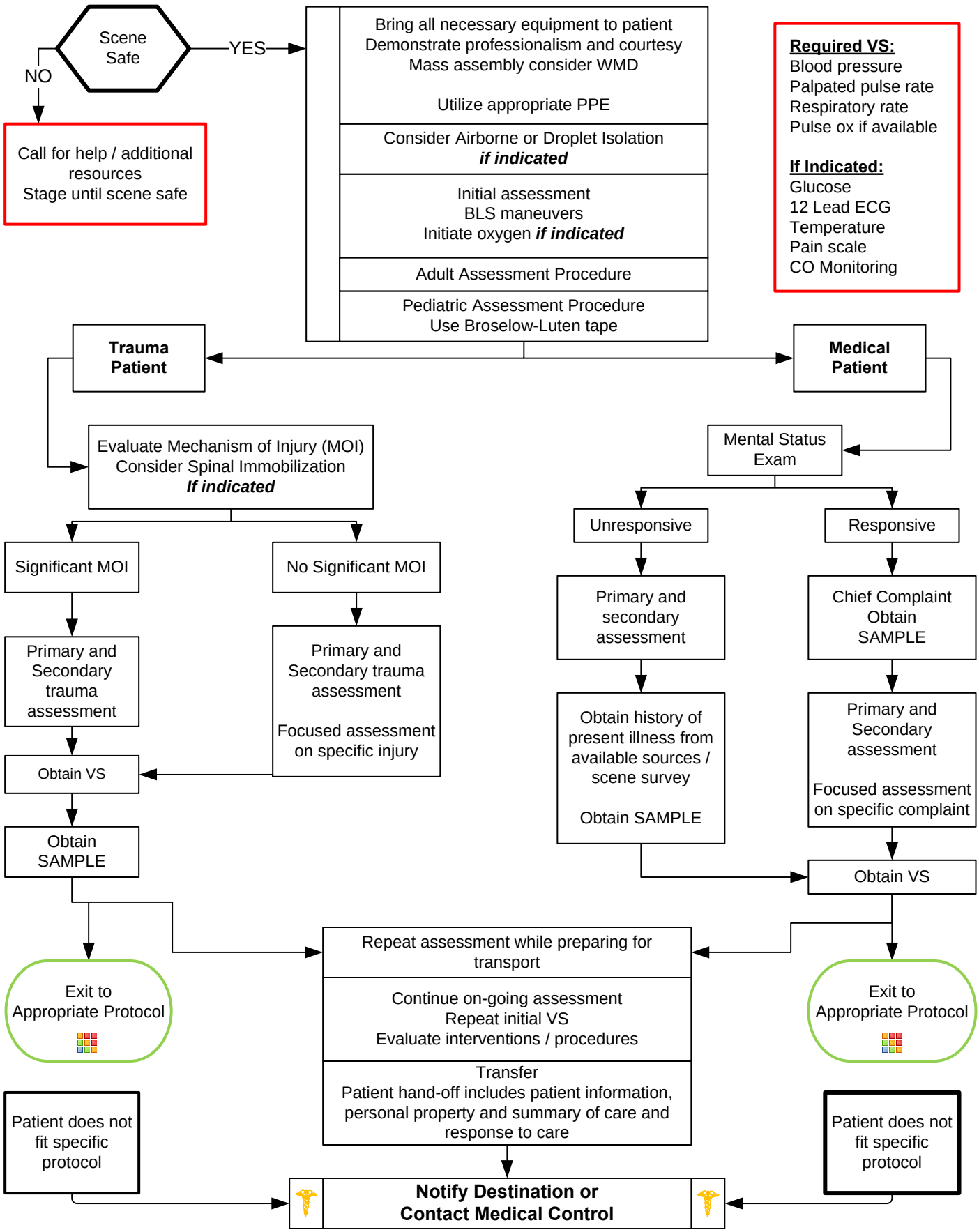
Cricothyrotomy / Surgical Airway Procedure: Use in patients 12 years of age and greater only. Percutaneous transtracheal jet ventilation is used in younger patients if available. Relative contraindications include: Pre-existing laryngeal or tracheal tumors, or infections or abscess overlying the cricoid area or hematoma or anatomical landmark destruction / injury.

General Section Protocols

Pearls

- **If first intubation attempt fails, make an adjustment and then consider:**
  - Different laryngoscope blade / Video or other optical laryngoscopy devices if available
  - Gum Elastic Bougie
  - Different ETT size
  - Change cricoid pressure. Cricoid pressure no longer routinely recommended and may worsen view.
  - Apply BURP maneuver (Push trachea Back [posterior], Up, and to patient's Right)
  - Change head positioning
- Continuous pulse oximetry should be utilized in all patients with an inadequate respiratory function.
- Continuous EtCO2 should be utilized in all patients with respiratory failure and in all patients with advanced airways.
- **Notify Medical Control AS EARLY AS POSSIBLE about the patient's difficult / failed airway.**
- **If an effective airway is being maintained by BVM and/or basic airway adjuncts (e.g. nasopharyngeal airway) with continuous pulse oximetry values of ≥ 90% or stable values as expected based on pathophysiologic condition with otherwise reassuring vital signs (e.g. consistent pulse oximetry of 85% with otherwise normal vitals in a post-drowning patient), it is acceptable to continue with basic airway measures instead of using a BIAD or Intubation or proceeding to Surgical Airway. Consider CPAP as indicated by protocol and patient condition. If scene resources allow, do not hesitate to contact On-Line Medical Control regarding decision-making for patients with a difficult/failed airway.**

Universal Patient Care



General Section Protocols

Protocol 3

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Universal Patient Care

Scene Safety Evaluation: Identify potential hazards to rescuers, patient and public. Identify number of patients and utilize triage protocol if indicated. Observe patient position and surroundings.

General: All patient care must be appropriate to your level of training and documented in the PCR. The PCR / EMR narrative should be considered a story of the circumstances, events and care of the patient and should allow a reader to understand the complaint, the assessment, the treatment, why procedures were performed and why indicated procedures were not performed as well as ongoing assessments and response to treatment and interventions.

Adult Patient: An adult should be suspected of being acutely hypotensive when Systolic Blood Pressure is less than 90 mmHg. Diabetic patients and women may have atypical presentations of cardiac related problems such as MI. General weakness can be the symptom of a very serious underlying process. Beta blockers and other cardiac drugs may prevent a reflexive tachycardia in shock with low to normal pulse rates.

Geriatric Patient: Hip fractures and dislocations have high mortality. Altered mental status is not always dementia. Always check Blood Sugar and assess signs of stroke, trauma, etc. with any alteration in a patient's baseline mental status. Minor or moderate injury in the typical adult may be very serious in the elderly.

Pediatric Patient: Pediatric patient is defined by those which fit on the Broselow-Luten Resuscitation Tape, Age less than 12 and / or weight 49 kg or less. Patients off the Broselow-Luten tape should have weight based medications until age 16 or greater or weight greater than or equal to 50 kg. Special needs children may require continued use of Pediatric based protocols regardless of age and weight. Initial assessment should utilize the Pediatric Assessment Triangle which encompasses Appearance, Work of Breathing and Circulation to skin. The order of assessment may require alteration dependent on the developmental state of the pediatric patient. Generally the child or infant should not be separated from the caregiver unless absolutely necessary during assessment and treatment.

Patient Refusal: Patient refusal is a high risk situation. Encourage patient to accept transport to medical facility. Encourage patient to allow an assessment, including vital signs. Documentation of the event is very important including a mental status assessment describing the patient's capacity to refuse care. Guide to Assessing capacity:
Patient should be able to communicate a clear choice: This should remain stable over time. Inability to communicate a choice or an inability to express the choice consistently demonstrates incapacity.
Relevant information is understood: Patient should be able to display a factual understanding of their illness or situation that requires further medical attention, the options and risks and benefits.
Appreciation of the situation: Ability to communicate an understanding of the facts of the situation. Patient should be able to recognize the significance of the potential outcome from his or her decision.
Manipulation of information in a rational manner: Demonstrate a rational process to come to a decision. Should be able to describe the reasoning they are using to come to the decision, whether or not the EMS provider agrees with decision.

Special note on oxygen administration and utilization: Oxygen is ubiquitous in prehospital patient care and probably over utilized. Oxygen is a pharmaceutical with indications, contraindications as well as untoward side effects. Recent research demonstrates a clear link with increased mortality when given in overdose (hyperoxia / hyperventiation) in cardiac arrest. Utilize oxygen when indicated and not because it is available. A reasonable target oxygen saturation for most patients is 90-99 % regardless of delivery device.

Pearls

- **Recommended Exam: Minimal exam if not noted on the specific protocol is vital signs, mental status with GCS, and location of injury or complaint.**
- **Any patient contact which does not result in an EMS transport must have a completed patient care record with explicit disposition information and patient instructions.**
- **A pediatric patient is defined by fitting on the Broselow-Luten tape or Age < 12 or weight ≤ 49 kg.**
- **Pediatric Airway Protocols are defined by patients < 12 years of age.**
- Timing of transport should be based on patient's clinical condition and the transport policy.
- Never hesitate to contact medical control or the appropriate "high risk refusal" resource for any patient who refuses transport.
- Blood Pressure is defined as a Systolic / Diastolic reading. A palpated Systolic reading may be necessary at times.
- SAMPLE: Signs / Symptoms; Allergies; Medications; PMH; Last oral intake; Events leading to illness / injury

Pain Control: Adult

History
- Age
- Location, Duration
- Severity (1 - 10)
- If child or non-verbal use Wong-Baker faces scale
- Past medical history
- Pregnancy Status
- Drug Allergies and Medications

Signs and Symptoms
- Severity (pain scale)
- Quality (sharp, dull, etc.)
- Radiation
- Relation to movement, respiration
- Increased with palpation of area

Differential
- Per the specific protocol
- Musculoskeletal
- Visceral (abdominal)
- Cardiac
- Pleural / Respiratory
- Neurogenic
- Renal (colic)

Enter from
Protocol based on **Specific Complaint**

Assess Pain Severity
Use combination of Pain Scale, Circumstances, MOI, Injury or Illness severity

Mild Pain
(Scale 0-6)

B	**Ibuprofen 10 mg/kg PO (400 – 800 mg typical adult) Or Acetaminophen 15 mg/kg PO (500 to 1000 mg typical adult) Or Aspirin 324 to 650 mg PO (Adult Only)**
I	Consider IV Procedure
	Monitor and Reassess

Moderate to Severe Pain
(Scale > 6)

I	IV Procedure	P	IV/IO Procedure
	Ketorolac 30 mg IV / IO OR Ketorolac 60 mg IM		
P	**Consider Nitrous Oxide 50/50 Mix If Available**		

P	Assess and Monitor Respiratory Status
	Morphine 0.1 mg/kg IV / IO /IM initial dose **Max initial dose 10mg, give SLOW over 2-3 mins** After 10 minutes, may repeat 2 mg every 5 minutes as needed until improvement. **Maximum total dose 20 mg, *Or*** **Fentanyl 1 mcg/kg IV / IO / IM / IN initial dose** **Max initial dose 100 mcg, give SLOW over 2-3 mins** After 10 minutes, may repeat 25 mcg every 5 minutes as needed until improvement. **Maximum total dose 200 mcg**
	Monitor and Reassess Every 5 minutes following opioid dose
	Consider Cardiac Monitor

Notify Destination or Contact Medical Control

General Section Protocols

Protocol 4

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Pain Control: Adult

Pearls

- **Recommended Exam: Respiratory Status, Mental Status, Area of Pain, Neuro**
- **Pain severity (0-10) is a vital sign to be recorded before and after PO, IV, IO, IM or IN medication delivery and at patient hand off. Monitor BP and respirations closely as sedative and pain control agents may cause hypotension and/or respiratory depression.**
- **Patients may display a wide variation of response to opioid pain medication (Morphine and Fentanyl, aka "narcotics"). Consider the patient's age, weight, clinical condition, other recent drugs or alcohol, and prior exposure to opiates when determining initial opioid dosing. Weight-based dosing may provide a standard means for dose calculation, but does NOT predict patient response. It may be appropriate to start with LESS THAN the weight-based dose. For example, minimal doses of opioids may be effective for pain management and/or cause respiratory depression in the elderly, opiate naïve, and possibly intoxicated patients.**

- **DO NOT administer opioids together with benzodiazepines; this combination results in a deeper level of anesthesia with a significant risk for airway and respiratory compromise.**

- **Both arms of the treatment may be used in concert. For patients in Moderate pain for instance, you may use the combination of an oral medication and parenteral if no contraindications are present.**
- **Vital signs should be obtained before, 10 minutes after, and before patient hand off with all pain medications.**
- All patients who receive IM or IV medications must be observed 15 minutes for drug reaction in the event no transport occurs.
- Do not administer any PO medications for patients who may need surgical intervention such as open fractures or fracture deformities, headaches, or abdominal pain.
- **Ketorolac (Toradol) and Ibuprofen should not be used in patients who are pregnant, or have a renal transplant, in patients who have known drug allergies to NSAID's (non-steroidal anti-inflammatory medications), with active bleeding, when intracranial bleeding is suspected, when GI Bleeding is suspected, or in patients who may need acute surgical intervention such as open fractures or fracture deformities.**
- Do not administer **Acetaminophen** to patients with a history of liver disease or liver transplant.

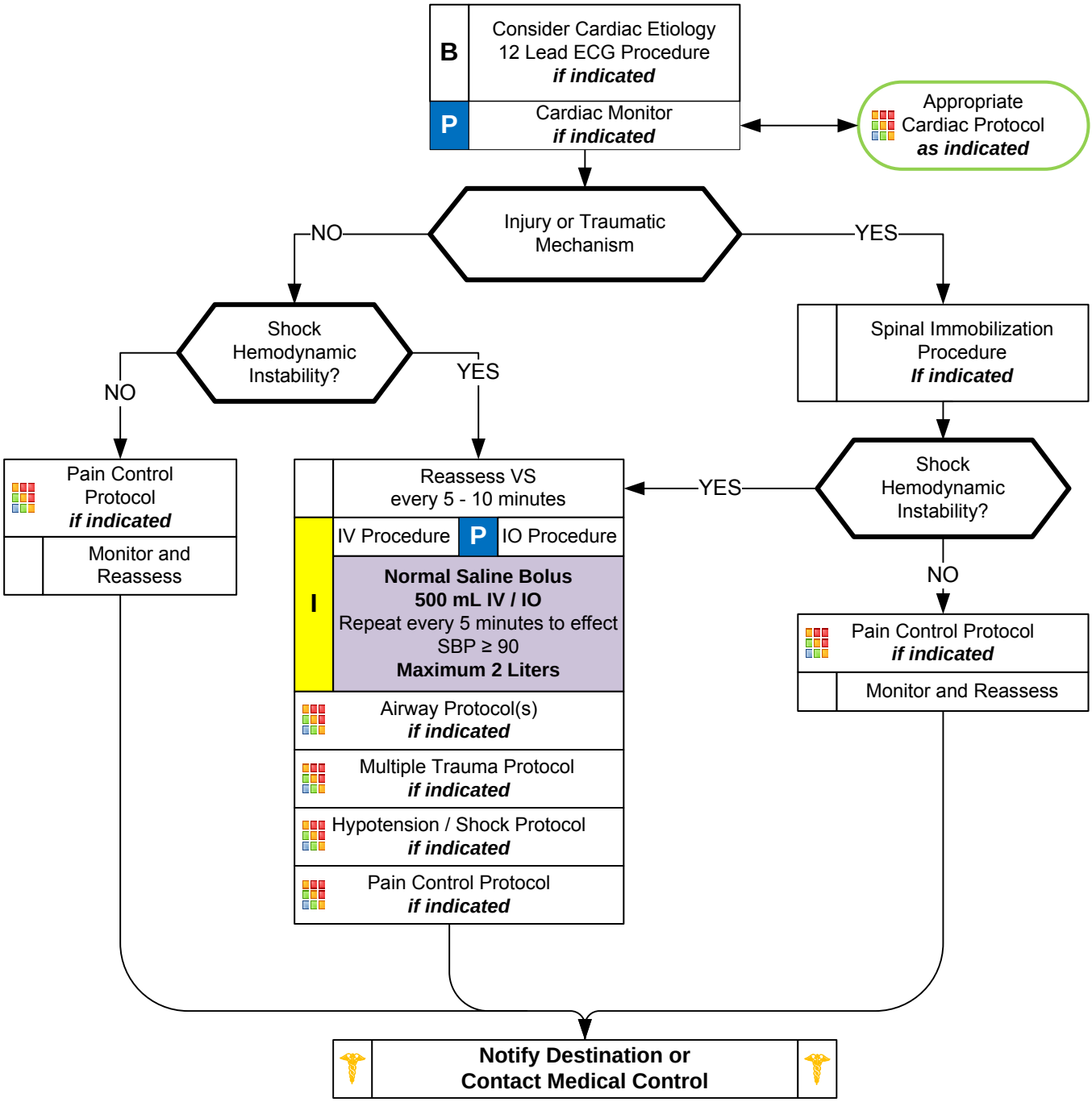
- Burn patients may require higher than usual opioid doses to effect adequate pain control. IF AN ADULT PATIENT HAS SUFFERED BURNS THAT REQUIRE TRANSPORT TO THE BURN CENTER, **THE MAXIMUM TOTAL DOSE OF FENTANYL is 300mcg AND THE MAXIMUM TOTAL DOSE OF MORPHINE IS 50mg**. Do not hesitate to contact medical control regarding the pain management strategy for patients in severe pain despite medications or with significant burns.

Back Pain

History
- Age
- Past medical history
- Past surgical history
- Medications
- Onset of pain / injury
- Previous back injury
- Traumatic mechanism
- Location of pain
- Fever
- Improvement or worsening with activity

Signs and Symptoms
- Pain or Tenderness (paraspinous, spinous process)
- Swelling
- Pain with range of motion
- Extremity weakness
- Extremity numbness
- Shooting pain into an extremity
- Bowel / bladder dysfunction

Differential
- Muscle spasm / strain
- Herniated disc with nerve compression
- Sciatica
- Spine fracture
- Kidney stone
- Pyelonephritis
- Aneurysm
- Pneumonia
- Spinal Epidural Abscess
- Metastatic Cancer
- AAA



General Section Protocols

Protocol 5

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Back Pain

Pearls

- Patients with underlying spinal deformity should be immobilized in their functional position.
- Abdominal Aortic Aneurysms are a concern especially in patients over the age of 50 and / or with vascular or hypertensive disease.
- Kidney stones typically present with an acute onset of flank pain which radiates around to the groin area.
- Patients with midline pain or tenderness over the spinous processes should be spinally immobilized if indicated.
- Any bowel or bladder incontinence is a significant finding which requires immediate medical evaluation
- In a patient with a history of IV drug abuse, fever, or prior spine surgery a spinal epidural abscess should be considered.

Fever / Infection Control

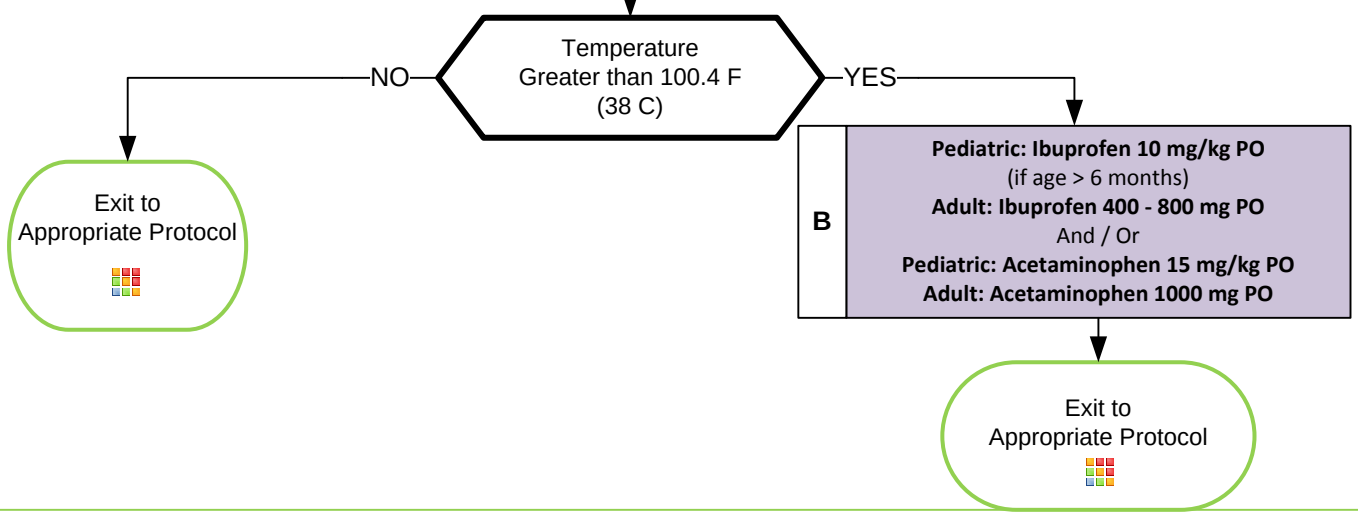
History
- Age
- Duration of fever
- Severity of fever
- Past medical history
- Medications
- Immunocompromised (transplant, HIV, diabetes, cancer)
- Environmental exposure
- Last acetaminophen or ibuprofen

Signs and Symptoms
- Warm
- Flushed
- Sweaty
- Chills/Rigors

Associated Symptoms (Helpful to localize source)
- myalgias, cough, chest pain, headache, dysuria, abdominal pain, mental status changes, rash

Differential
- Infections / Sepsis
- Cancer / Tumors / Lymphomas
- Medication or drug reaction
- Connective tissue disease
  - Arthritis
  - Vasculitis
- Hyperthyroidism
- Heat Stroke
- Meningitis

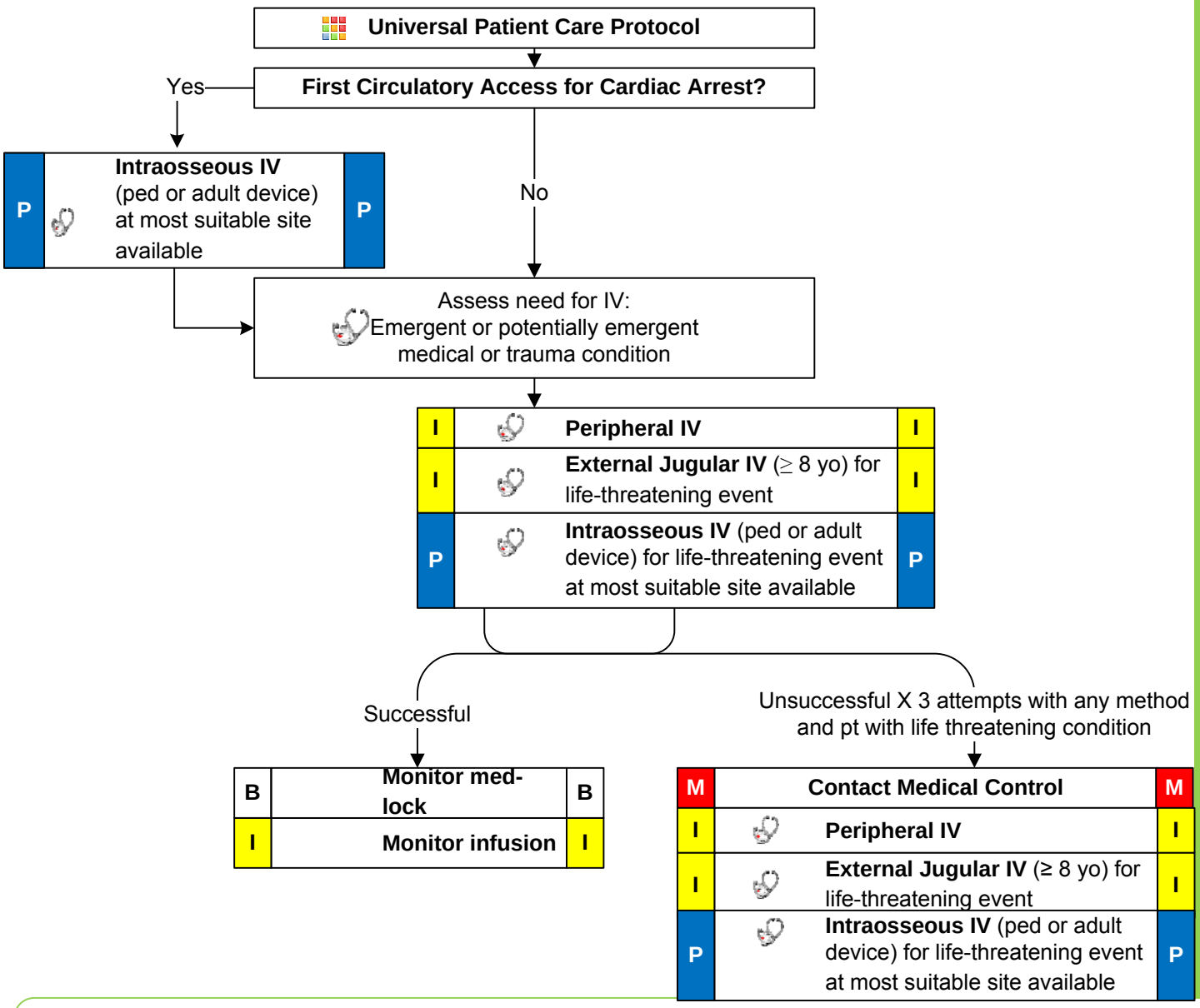
	Universal, Contact, Droplet, and/or Airborne Precautions, ***as indicated***
	Take a thorough and complete history of any recent travel or sick contacts; follow any/all current EMS system guidance based on this history.
B	Temperature Measurement Procedure
I	IV Procedure, ***If indicated*** **P** IO Procedure, ***If indicated***



General Section Protocols

Pearls
- **Recommended Exam: Mental Status, Skin, HEENT, Neck, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- Febrile seizures are more likely in children with a history of febrile seizures and with a rapid elevation in temperature.
- Patients with a history of liver failure should not receive acetaminophen.
- **UTILIZE STANDARD UNIVERSAL PRECAUTIONS FOR ALL PATIENTS WITH SUSPECTED INFECTION**
- **All-hazards precautions** include standard PPE plus airborne precautions plus contact precautions. This level of precaution is utilized during the initial phases of an outbreak when the etiology of the infection is unknown or when the causative agent is found to be highly contagious (e.g. SARS).
- **Droplet precautions** include standard PPE plus a standard surgical mask for providers who accompany patients in the back of the ambulance and a surgical mask or NRB O2 mask for the patient. This level of precaution should be utilized when influenza, meningitis, mumps, streptococcal pharyngitis, and other illnesses spread via large particle droplets are suspected. A patient with a potentially infectious rash should be treated with droplet precautions.
- **Airborne precautions** include standard PPE plus utilization of a gown, change of gloves after every patient contact, and strict hand washing precautions. This level of precaution is utilized when multi-drug resistant organisms (e.g. MRSA), scabies, or zoster (shingles), or other illnesses spread by contact are suspected.
- Rehydration with fluids increases the patient's ability to sweat and improves temperature control.
- All patients should have drug allergies documented prior to administering any medications.
- An Allergy to NSAIDs (non-steroidal anti-inflammatory medications) is a contraindication to Ibuprofen.
- Consider whether elevated temperature is due to "fever" (and suspected infection), or a possible environmental heat emergency. NSAIDs should not be used in the setting of environmental heat emergencies.
- **Do not** give aspirin to a child, or NSAIDs to a pregnant woman.

IV and IO Access



Pearls

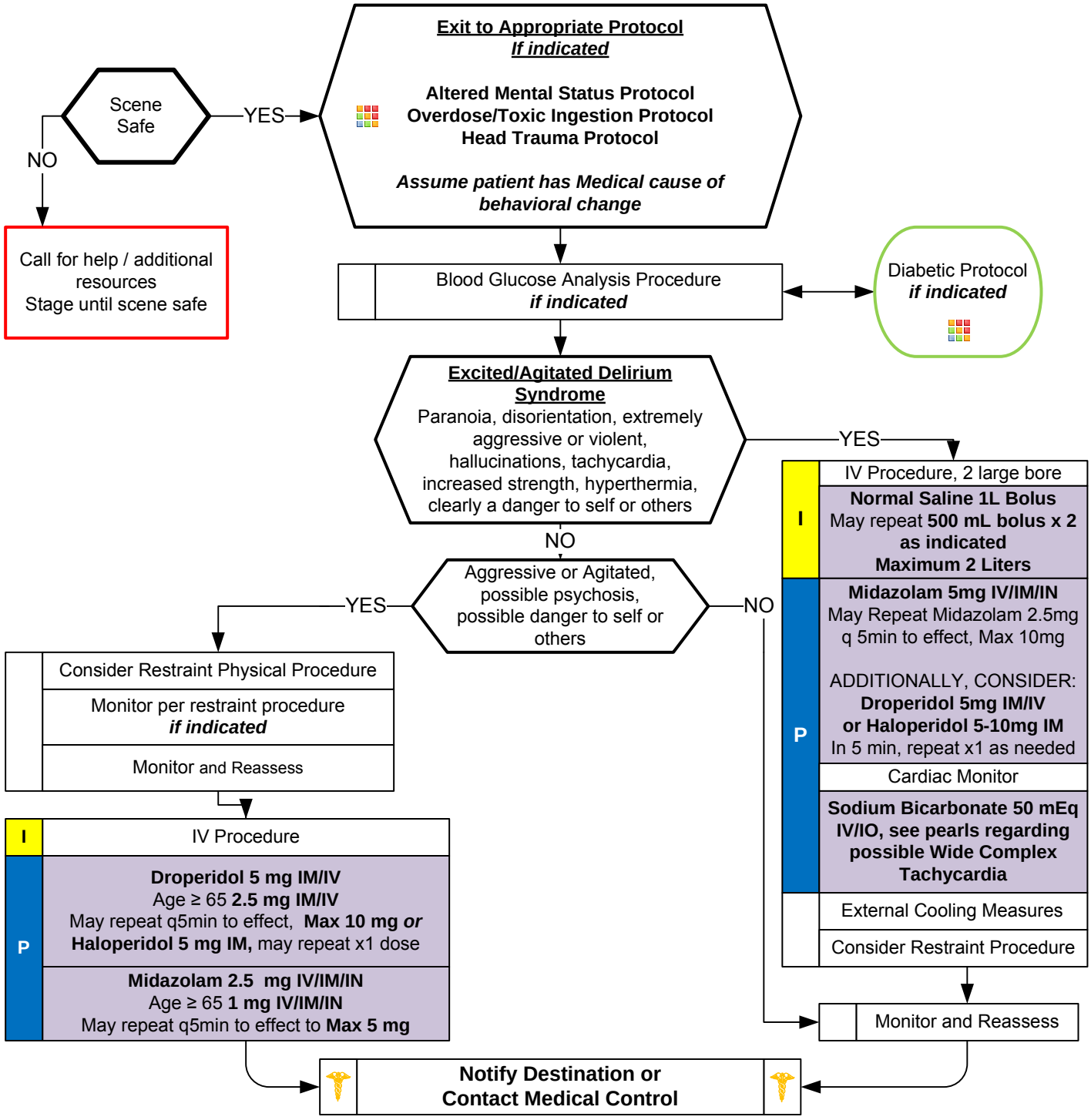
- In the setting of **cardiac arrest**, any preexisting dialysis shunt or external central venous catheter may be used.
- In patients who are hemodynamically unstable or in extremis, contact medical control prior to accessing dialysis shunts or external central venous catheters.
- Any working venous catheter already accessed prior to EMS arrival may be used for EMS IV fluids and medications. Intraosseous access should be obtained only with the appropriate adult or pediatric device (e.g. IO drill). Appropriate IO sites are:
  - Anteromedial aspect of the proximal tibia. Find the bony prominence below the kneecap; insertion location will be 1-2 cm (2 finger widths) below this.
  - The Proximal humerus for patients > 40 Kg, at the lateral aspect of the humerus, 2 cm distal to the greater tuberosity
  - The anteriormedial aspect of the distal tibia for patients > 12 years old (2 cm proximal to the medial malleolus)
  - The Distal Femur is an acceptable insertion site for infants; just proximal (0.5-1cm) to the patella,1-2cm medial to midline.
- Any prehospital fluids or medications approved for IV use may also be given through an intraosseous IV.
- External jugular access is only indicated for patients ≥ 8 years of age.
- All IV rates should be at KVO (minimal rate to keep vein open) unless administering fluid bolus.
- Use micro drip sets for all patients 6 years old or less.
- Upper extremity sites are preferable to lower extremity (LE); LE IVs are discouraged in patients with vascular disease or diabetes.
- In post-mastectomy patients and patients with a dialysis fistula, avoid IV attempts, blood draws, injections, and blood pressure measurements in the upper extremity on the affected side.

Adult Behavioral

History
- Situational crisis
- Psychiatric illness/medications
- Injury to self or threats to others
- Medic alert tag
- Substance abuse / overdose
- Diabetes

Signs and Symptoms
- Anxiety, agitation, confusion
- Affect change, hallucinations
- Delusional thoughts, bizarre behavior
- Combative violent
- Expression of suicidal / homicidal thoughts

Differential
- Altered Mental Status differential
- Alcohol Intoxication
- Toxin / Substance abuse
- Medication effect / overdose
- Withdrawal syndromes
- Depression
- Bipolar (manic-depressive)
- Schizophrenia
- Anxiety disorders



General Section Protocols

Protocol 8

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Adult Behavioral

Pearls

- **Recommended Exam: Mental Status, Skin, Heart, Lungs, Neuro**
- **Crew / responders safety is the main priority. SEE PHYSICAL/CHEMICAL RESTRAINT PROCEDURE**
- **Any patient who is handcuffed or restrained by Law Enforcement and transported by EMS must be accompanied by law enforcement in the ambulance.**

- **Consider antipsychotics (Droperidol, Haloperidol) for patients with history of psychosis or extreme alcohol intoxication, or a benzodiazepine for patients with other presumed substance abuse. While benzodiazepines may be indicated for patients with alcohol intoxication, consider that alcohol and benzodiazepines together may lead to respiratory depression.**
- **All patients who receive either physical or chemical restraint must be continuously observed by ALS personnel.**

- Be sure to consider all possible medical/trauma causes for behavior (hypoglycemia, overdose, substance abuse, hypoxia, head injury, etc.)
- Do not irritate the patient with a prolonged exam.
- Do not overlook the possibility of associated domestic violence or child abuse.
- If patient is suspected of agitated delirium suffers cardiac arrest, consider a fluid bolus and sodium bicarbonate early
- Do not position or transport any restrained patient in a way that negatively affects the patient's respiratory or circulatory status.

- **Excited Delirium Syndrome:**

Medical emergency: Give 50meq Sodium Bicarbonate IV x 1 dose; if patient is in a wide complex tachycardia, repeat sodium bicarb dosing x 2-3 or until QRS narrows, and consider contacting medical control for persistent wide complex tachycardia. Combination of delirium, psychomotor agitation, anxiety, hallucinations, speech disturbances, disorientation, violent / bizarre behavior, insensitivity to pain, hyperthermia and increased strength. Life-threatening and associated with use of physical control measures, including physical restraints and Tasers. Most commonly seen in male subjects with a history of serious mental illness and/or drug abuse, particularly stimulant drugs such as cocaine, crack cocaine, methamphetamine, amphetamines or similar agents. Alcohol withdrawal or head trauma may also contribute to the condition.

- **Extrapyramidal reactions:**

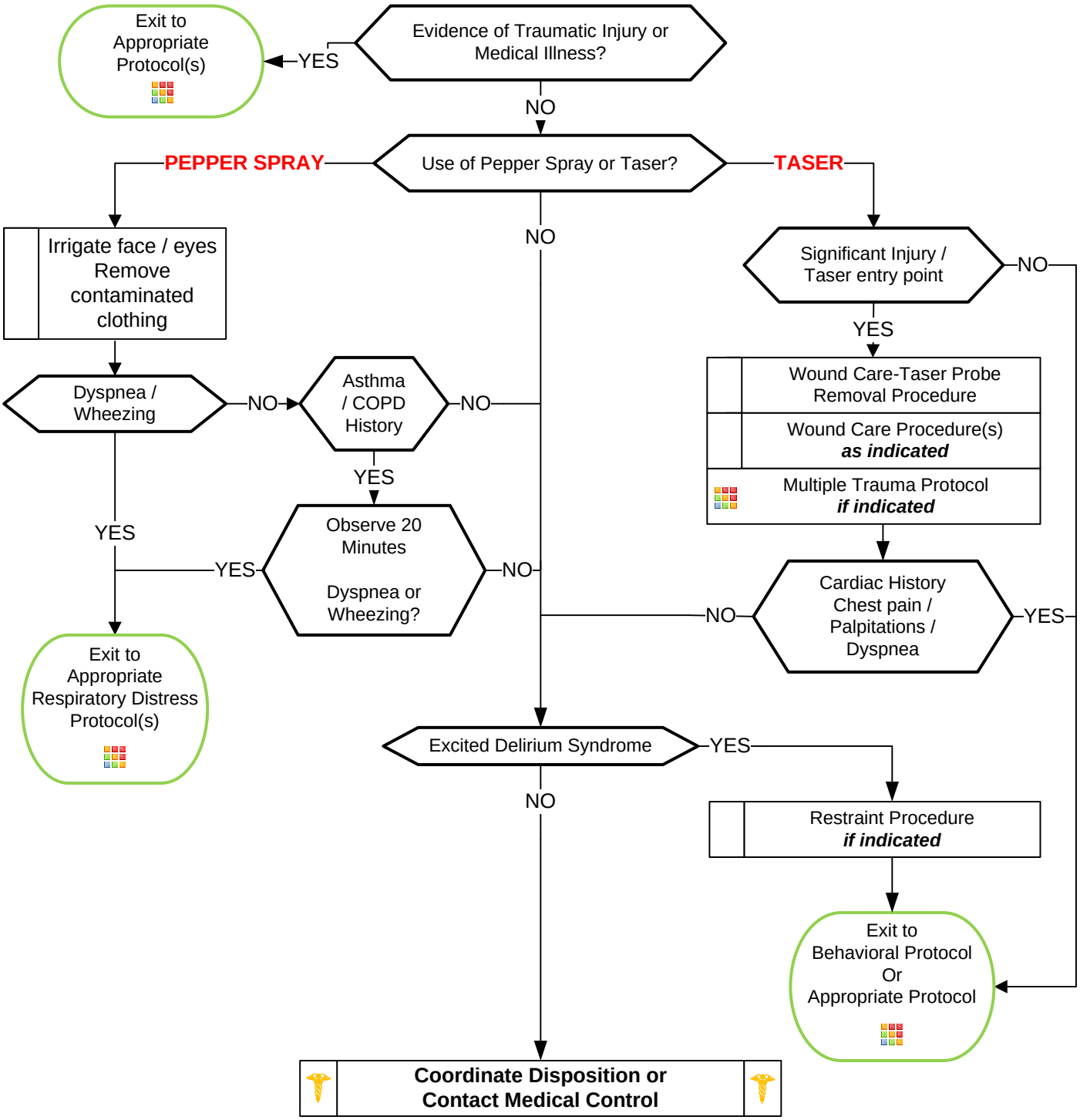
Condition causing involuntary muscle movements or spasms typically of the face, neck and upper extremities. May present with contorted neck and trunk with difficult motor movements. Typically an adverse reaction to antipsychotic drugs like Haloperidol and may occur with your administration. When recognized give **Diphenhydramine 50 mg IV / IO / IM / PO** in adults or **1 mg/kg IV / IO / IM / PO** in pediatrics.

Police Custody

History
- Traumatic Injury
- Drug Abuse
- Cardiac History
- History of Asthma
- Psychiatric History

Signs and Symptoms
- External signs of trauma
- Palpitations
- Shortness of breath
- Wheezing
- Altered Mental Status
- Intoxication/Substance Abuse

Differential
- Agitated Delirium Secondary to Psychiatric Illness
- Agitated Delirium Secondary to Substance Abuse
- Traumatic Injury
- Closed Head Injury
- Asthma Exacerbation
- Cardiac Dysrhythmia



General Section Protocols

Protocol 9

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Police Custody

Pearls

- **Patient does not have to be in police custody or under arrest to utilize this protocol.**

- **Patients restrained by law enforcement devices must be transported accompanied by a law enforcement officer in the patient compartment who is capable of removing the devices. However when rescuers have utilized restraints in accordance with Restraint Procedure, the law enforcement agent may follow behind the ambulance during transport, if there are no safety concerns and the arrangement is agreeable to both EMS and Law Enforcement personnel on scene.**
- The responsibility for patient care rests with the highest authorized medical provider on scene per North Carolina law.
- If an asthmatic patient is exposed to pepper spray and released to law enforcement, all parties should be advised to immediately contact EMS if wheezing/difficulty breathing occurs.
- All patients in police custody retain the right to participate in decision making regarding their medical care and may request medical care of EMS.
- If extremity / chemical / law enforcement restraints are applied, follow Restraint Procedure.
- **Consider utilizing the behavioral protocol as indicated for patients in police custody.**
- **All patients who receive either physical or chemical restraint must be continuously observed by ALS personnel on scene or immediately upon their arrival.**
- **Excited Delirium Syndrome:**

  Medical emergency: Combination of delirium, psychomotor agitation, anxiety, hallucinations, speech disturbances, disorientation, violent / bizarre behavior, insensitivity to pain, hyperthermia and increased strength. Potentially life-threatening and associated with use of physical control measures, including physical restraints and Tasers. Most commonly seen in male subjects with a history of serious mental illness and/or acute or chronic drug abuse, particularly stimulant drugs such as cocaine, crack cocaine, methamphetamine, amphetamines or similar agents. Alcohol withdrawal or head trauma may also contribute to the condition.
- If a patient suspected of excited delirium suffers cardiac arrest, consider a fluid bolus and sodium bicarbonate early.
- Do not position or transport any restrained patient in such a way that could impact the patient's respiratory or circulatory status.

Patient Safety Protocol

Follow the Universal Patient Care Protocol

↓

Utilize the Broselow tape to estimate the weight of pediatric patients. For all patients (adult and pediatric) receiving Weight-Based Drug Administrations, utilize the WCEMS Weight based Drug Dose References supplied with these protocols (NOT the Broselow tape) to verify correct dose prior to administration

↓

Document at least once per shift the presence of all equipment, medications, and supplies listed on the Wake County EMS System Ramp Inspection Form

↓

If supplies fall below required levels, restock at the nearest appropriate location. If dispatched to a call that may require depleted supplies, respond and call for next near unit.

↓

If massive depletion of supplies (e.g, post-cardiac arrest) and/ or contamination, remain out-of-service until resupplied and clean

↓

If there is an equipment failure, utilize the equipment failure procedure and complete the Wake EMS System Clinical Unusual Event Report

↓

If medication error, clinical misadventure, or other adverse patient outcome, contact medical director via policy below.

↓

Appropriate protocol → M Patient doesn't fit a protocol? **Contact Medical Control** M

↓

Transport Patient per Patient Transport Policy

Medical Director Notification Policy:

- Utilize the Automatic Medical Director Notification section of the Foundations of Practice to determine when immediate notification of the Medical Director by phone must occur. If no answer, contact RWCC/Rescom for assistance.
- For other adverse clinical outcomes, notify the Medical Director or Deputy Medical Director as soon as possible via email and/or cell phone. The probability of utilization of the Disciplinary Procedure is greatly diminished if a provider with a misadventure contacts the Medical Director directly.
- If an error occurs without adverse patient outcome and/or a "near miss" occurs, complete the Wake County EMS System Clinical Unusual Event Report, and contact the Deputy Director for Clinical Affairs, Medical Director, or Deputy Medical Director via email or cell phone.

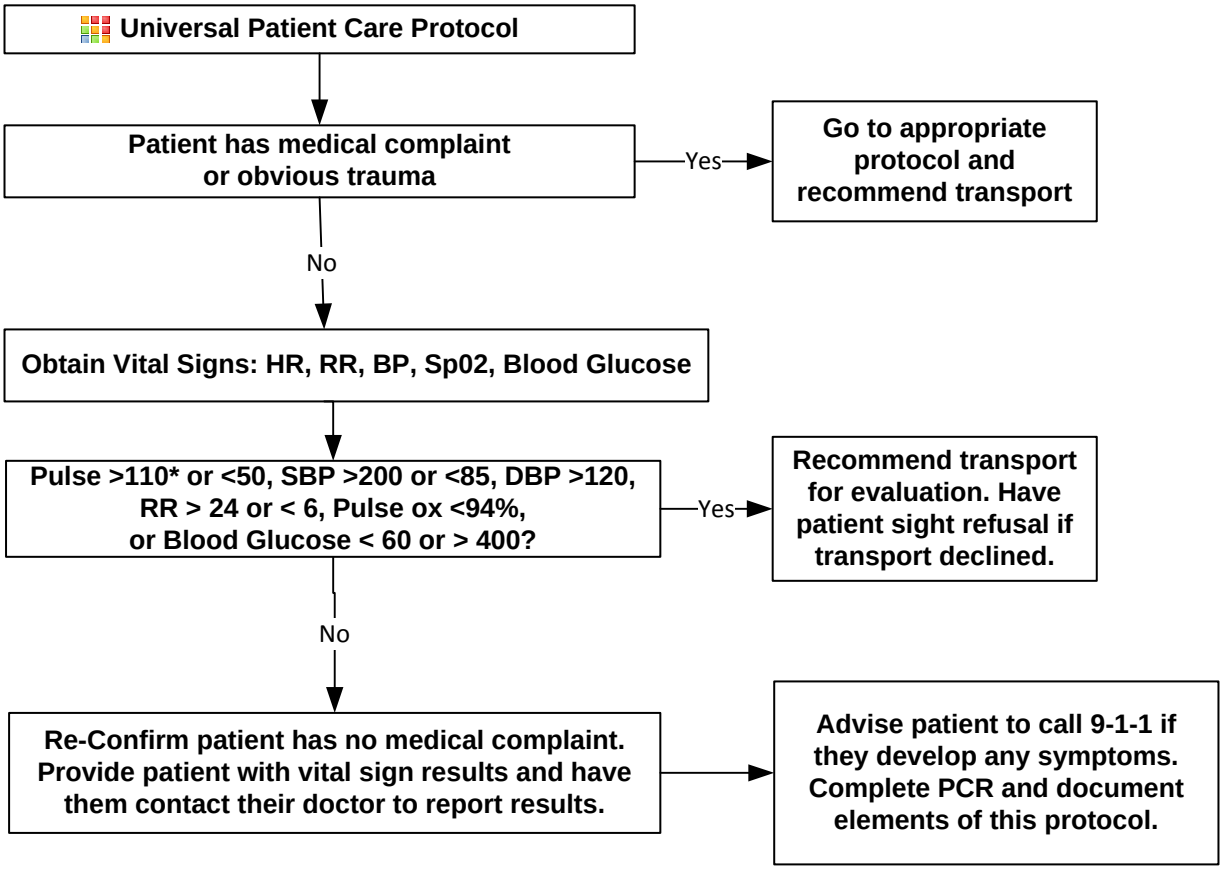
This protocol has been altered from the original 2009 NCCEP Protocol by the Wake EMS Medical Director

Well Person Check

History:
- Patient presents requesting "blood pressure check"
- EMS responds to "assist invalid"
- Someone else called 911; patient did not request
- Other situation in which patient does not have a medical complaint or obvious injury

Signs and Symptoms:
- Assess for medical complaint
- For patients with hypertension, particularly check for chest pain, shortness of breath, and/or neurologic changes
- For assist invalid calls, particularly check for syncope, trauma from fall, or inability to ambulate

Differential:
- Hypertensive urgency
- Hypertensive emergency
- Syncope
- Cardiac ischemia
- Cardiac dysrhythmia
- Fracture
- Head trauma



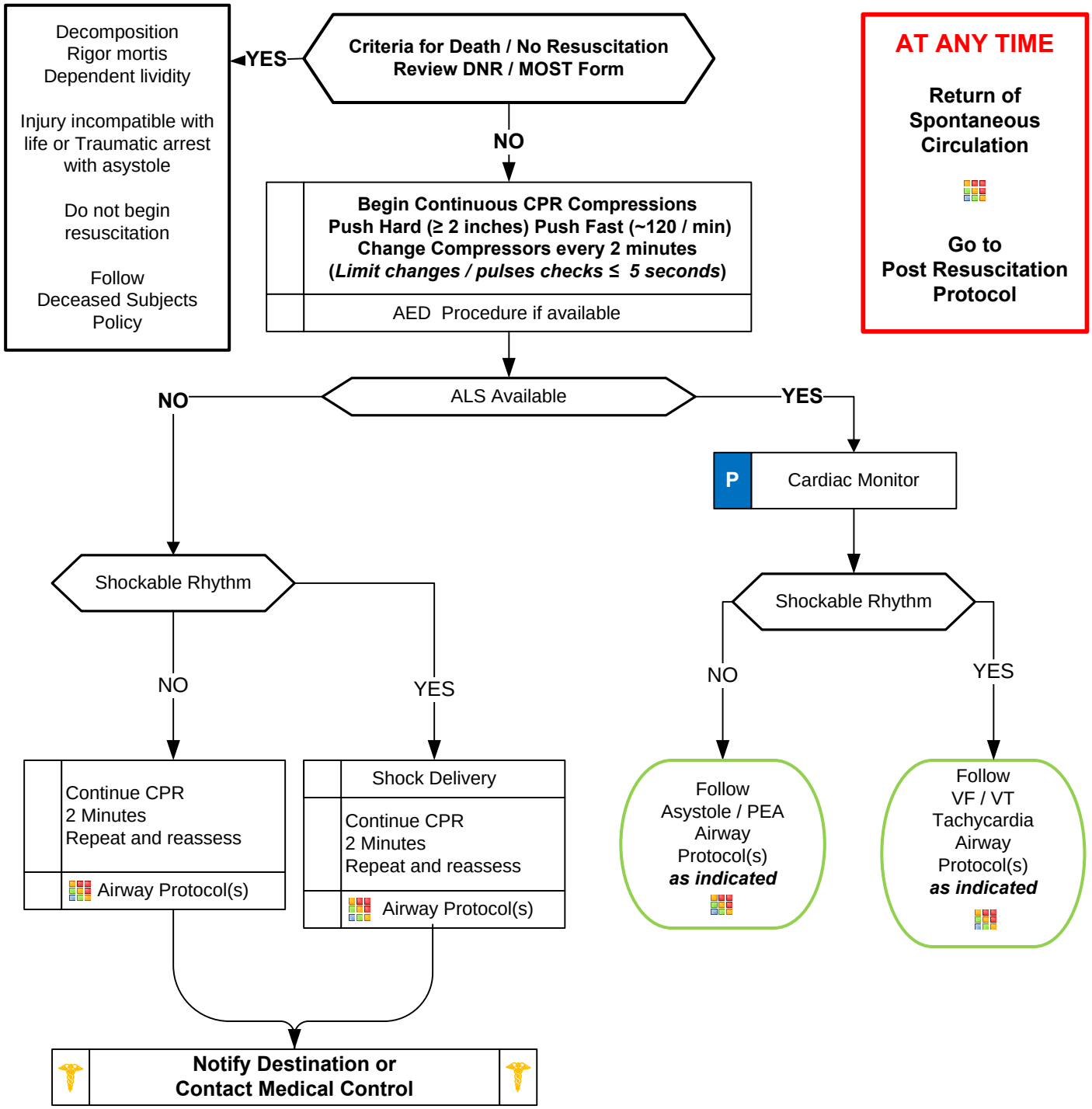
Pearls:
- **This protocol applies to ALL responders**
- *** Patients undergoing evaluation for alternative destination for Mental Health/Substance Abuse may have a pulse up to 120 and still "pass" the well person check.**
- **Patients who are denying more severe symptoms may initially present for a "routine check". Please confirm with the patient at least twice that they have no medical complaints.**
- **All persons who request service are considered patients and shall have a PCR completed.**
- **For these patients, the PCR may be brief but must include vital signs and documentation of the lack of a medical complaint. Additionally, patients with a potential mechanism for trauma should have a trauma exam completed.**
- **Should a patient refuse evaluation and/or decline further evaluation once begun, document as much as you can. Even patients who refuse vital signs can be observed and respirations measured. The PCR narrative is key in these and all cases, and must accurately and thoroughly describe the patient encounter.**

Cardiac Arrest: Adult

History
- Events leading to arrest
- Estimated downtime
- Past medical history
- Medications
- Existence of terminal illness

Signs and Symptoms
- Unresponsive
- Apneic
- Pulseless

Differential
- Medical vs. Trauma
- VF vs. Pulseless VT
- Asystole
- PEA
- Primary Cardiac event vs. Respiratory arrest or Drug Overdose



Adult Medical Section Protocols- Cardiac

Cardiac Arrest: Adult

Pearls

- **Efforts should be directed at high quality and continuous compressions with limited interruptions and early defibrillation when indicated. Consider early IO placement if available and / or difficult IV access anticipated. Consider intra-arrest cooling via IO or IV cold saline as soon as it is available.**
- **DO NOT HYPERVENTILATE: Ventilate 8–10 breaths per minute with continuous, uninterrupted compressions.**

- **Do not interrupt compressions to place endotracheal tube. Consider BIAD first to limit interruptions.**
- **Breathing / Airway management after second shock and / or 2 rounds of compressions (2 minutes each round.)**
- **If a limited number of providers are available, Breathing/BVM utilization is of secondary importance. Passive Oxygenation (i.e. placing the patient on a nonrebreather or nasal cannula) may be utilized until an appropriate provider is available to actively manage the airway. Consider passive oxygenation especially in cases in which the patient was possibly hypoxic prior to arrest.**

- Resuscitation is based on proper planning and organized execution. Procedures require space and patient access. Make room to work. Utilize Team Focused Approach assigning responders to predetermined tasks and use the Cardiac Arrest Checklist and Code Commander when personnel are available to do so.
- Reassess, document endotracheal tube placement and EtCO2 frequently, after every move, and at transfer of care.

- **Maternal Arrest** - Treat mother per appropriate protocol with immediate notification to Medical Control and rapid transport as per Cardiac Arrest Destination Plan. Place mother supine and perform Manual Left Uterine Displacement moving uterus to the patient's left side. IV/IO access preferably above diaphragm. Defibrillation is safe at all energy levels.
- Refer to Dialysis / Renal Failure protocol caveats when faced with dialysis / renal failure patient experiencing cardiac arrest.
- Consider Opioid Overdose: Naloxone 2 mg IM / IV / IO / IN. EMT-B may administer Naloxone via IN route only.

Team-Focused CPR:
A Coordinated Approach to Cardiac Arrest

Criteria for Death / No Resuscitation
Review DNR / MOST Form

YES

Decomposition
Rigor mortis
Dependent lividity

Injury incompatible with life or Traumatic arrest with asystole

Do not begin resuscitation

Follow Deceased Subjects Policy

NO

Begin Continuous CPR Compressions
Push Hard (≥ 2 inches) Push Fast (~ 120 / min)
Change Compressors every 2 minutes
(*Limit changes / pulses checks ≤ 5 seconds*)

First Arriving BLS / ALS Responder
Initiate Compressions Only CPR
Initiate Defibrillation Automated Procedure
if available
Call for additional resources

Second Arriving BLS / ALS Responder
Assume Compressions or
Initiate Defibrillation Automated / Manual Procedure
Consider BIAD
DO NOT Interrupt Compressions
Ventilate at 8-10 breaths per minute

Third Arriving Responder
BLS or ALS

BLS

Establish Team Leader / Code Commander
(Hierarchy)
Fire Department or Squad Officer
EMT-B
First Arriving Responder

Rotate with Compressor
To prevent Fatigue and effect high quality compressions
Take direction from Team Leader

Fourth / Subsequent Arriving Responders
Take direction from Team Leader

Continue Cardiac Arrest Protocol

ALS

I

Establish Team Leader / Code Commander
(Hierarchy)
EMS ALS Personnel
Fire Department or Squad Officer
EMT-B
First Arriving Responder

Initiate Defibrillation Automated Procedure
Establish IV / IO
Administer Appropriate Medications
Establish Airway with BIAD if not in place

P

Initiate Defibrillation Manual Procedure
Continuous Cardiac Monitoring
Establish IV / IO
Administer Appropriate Medications
Establish Airway if not in place

Continue Cardiac Arrest Protocol

Utilize Cardiac Arrest Checklists (next page)

Utilize this Protocol with

Cardiac Arrest Protocol

AT ANY TIME

Return of Spontaneous Circulation

Go to Post Resuscitation Protocol

Team Leader / Code Commander
ALS Personnel
Responsible for patient care
Ensures high-quality compressions
Ensures frequent compressor change
Responsible for briefing / counseling family

Incident Commander
Fire Department / First Responder Officer
Team Leader until ALS arrival
Manages Scene / Bystanders
Responsible for briefing family prior to ALS arrival

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Team Focused CPR:
A Coordinated Approach to Cardiac Arrest

Cardiac Arrest Checklists: To be utilized by the Code Commander/ALS authority on scene:

Pre-ROSC Cardiac Arrest Checklist

- ☐ Code Commander is identified
- ☐ Monitor is visible and a dedicated provider is viewing the rhythm with all leads attached
- ☐ Monitor is in PADS mode
- ☐ Metronome at 115-120 beats per minute
- ☐ Blinking light for ventilation rate is activated (use ITD if if applicable)
- ☐ Identify and shock V-Fib / V-Tach every 2 minutes (limit pre-shock pause)
- ☐ Change compressors every 2 minutes (Ensure a dedicated time keeper)
- ☐ Pause at compressor switch to identify rhythm (no more than 5-8 seconds)
- ☐ O2 cylinder with oxygen in it is attached to BVM
- ☐ Airway is managed using basic to advanced procedures
- ☐ ETCO2 waveform is present and value is being monitored
- ☐ IV or IO access with cold fluids (max 2 liters of cold fluid, 1 liter in shockable rhythm)
- ☐ Underlying cause has been considered and treated early in arrest
- ☐ Place gastric tube to prevent gastric distention
- ☐ Tension PTX has been considered
- ☐ Family is receiving care and is at the patient's side

Post ROSC Cardiac Arrest Checklist

- ☐ Remove ITD (if applicable) ASSESS C02 (should be >20 with good waveform)
- ☐ FINGER on pulse maintain for 10 minutes. DO NOT MOVE
- ☐ Continuous visualization of cardiac monitor rhythm
- ☐ Check O2 supply and pulse Ox to TITRATE to Sa02 94-99%
- ☐ Do not try to obtain a "normal" ETCO2 by increasing respiratory rate
- ☐ Obtain 12 lead EKG
- ☐ Assess for & TREAT bradycardia's < 60 bpm
- ☐ Obtain B/P -- Pressor agent indicated for SBP < 90
- ☐ Pre-mix pressors in preparation for hypotension
- ☐ Evaluate for post-resuscitative airway placement (eg, ETT). Strongly consider bougie use if airway change is indicated.
- ☐ Unless patient is following verbal commands, continue/initiate hypothermia therapy
- ☐ When patient is moved, perform CONTINUOUS PULSE CHECK and continuous monitoring of cardiac rhythm
- ☐ Mask is available for BVM in case advanced airway fails
- ☐ Once in ambulance, confirm pulse, breath sounds, SaO2, EtCO2, and cardiac rhythm
- ☐ Appropriate personnel for transport

Pearls

- **Efforts should be directed at high quality and continuous compressions with limited interruptions and early defibrillation when indicated. Consider early IO placement if available and difficult IV anticipated.**
- **DO NOT HYPERVENTILATE: Ventilate generally 8 – 10 breaths per minute or as guided by EtCO2**
- Do not interrupt compressions to place endotracheal tube. Consider BIAD first to limit interruptions.
- Success is based on proper planning and execution and a team-based approach. Procedures require space and patient access. Make room to work.
- Consider possible CAUSE of arrest early: For example, resuscitated Vfib may be STEMI and more rapid transport is indicated. Consider traditional ACLS "Hs and Ts" for PEA: Hypovolemia, Hypoxia, Hydrogen ions (acidosis), Hyperkalemia, Hypothermia, Hypo/Hyperglycemia, Tablets/Toxins/Tricyclics, Tamponade, Tension pneumothorax, Thrombosis (MI), Thromboembolism (Pulmonary Embolism), Trauma
- When considering CAUSE, consider utilizing relevant protocols in conjunction: airway, all cardiac protocols, allergic reaction, diabetic, dialysis/renal failure, overdose/ingestion, suspected stroke, environmental protocols, etc.

Ventricular Fibrillation
Pulseless Ventricular Tachycardia

History
- Estimated down time
- Past Medical History
- Medications
- Events leading to arrest
- Renal failure / Dialysis
- DNR or MOST form

Signs and Symptoms
- Unresponsive, apneic, pulseless
- Ventricular fibrillation or ventricular tachycardia on EKG

Differential
- Asystole
- Artifact / Device Failure
- Cardiac
- Endocrine / Medicine
- Drugs
- Pulmonary

Cardiac Arrest Protocol

P **Defibrillate 360 Joules**

After Defibrillation resume CPR without pulse check with Continuous CPR Compressions Change Compressors every 2 minutes (*Limit changes / pulses checks ≤ 5 seconds*)

Airway Protocol(s)

IV Procedure | P IO Procedure

I **Epinephrine (1:10,000) 1 mg IV / IO**
Repeat every 3 to 5 minutes

P **Defibrillate 360 Joules**

Dialysis / Renal Failure Protocol ***if indicated***

AT ANY TIME

Return of Spontaneous Circulation

Go to Post Resuscitation Protocol

Resume Continuous CPR Compressions Push Hard (≥ 2 inches) Push Fast (~ 120 / min) Continue CPR up to point where you are ready to defibrillate with device charged.

<u>If Vfib/Pulseless VT Refractory after 2 shocks</u>
1. Continue aggressive CPR and give Medications during compressions.
2. Change Defib Pads and Pads Location.
3. Begin Intra-Arrest Cooling as soon as cold IV fluid is available, unless contraindicated

P Amiodarone 300mg IV / IO
May repeat once at 150 mg IV/IO

Defibrillate 360 J with new pads/location

Torsades de Pointes
Low Magnesium States (Malnourished / alcoholic)
Suspected Digitalis Toxicity

P Defibrillate 360 J

Magnesium Sulfate 2g IV / IO Over 2 minutes

High Quality, Continuous Compressions

P Consider Magnesium Sulfate 2g IV / IO, Consider Sodium Bicarbonate 50 meq IV / IO

Establish Secondary IV / IO access, ensure induced hypothermia is ongoing

P **Exit to Persistent Ventricular Fibrillation/ Pulseless Vtach Protocol**

Return of Spontaneous Circulation

NO → 1. Complete VF/Persistent VT protocol, 2. Consider contacting Medical Control

YES → Exit to Post Resuscitation Protocol

AND / OR

Notify Destination or Contact Medical Control

Adult Medical Section Protocols- Cardiac

Protocol 14

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Ventricular Fibrillation
Pulseless Ventricular Tachycardia

Pearls

- **Recommended Exam: Mental Status**
- **Efforts should be directed at high quality and continuous compressions with limited interruptions and early defibrillation when indicated. Consider early IO placement if available and difficult IV anticipated.**
- **DO NOT HYPERVENTILATE: Ventilate 8 – 10 breaths per minute or as guided by EtCO2, with continuous, uninterrupted compressions.**
- **Do not interrupt compressions to place endotracheal tube. Consider BIAD first to limit interruptions.**
- **Consider Breathing / Airway management after second shock and / or 2 rounds of compressions (2 minutes each round.)**
- **Initiate intra-arrest induced hypothermia as soon as cold fluids are available, unless contraindicated.**
- **Avoid Procainamide in CHF or prolonged QT.**
- Effective CPR and prompt defibrillation are the keys to successful resuscitation.
- If no IV / IO, drugs that can be given down ET tube should have dose doubled and then flushed with 5 ml of Normal Saline followed by 5 quick ventilations. IV / IO is the preferred route when available.
- Reassess, document endotracheal tube placement and EtCO2 frequently, after every move, and at transfer of care.
- Do not stop CPR to check for placement of ET tube or to give medications.
- If BVM is ventilating the patient successfully, intubation should be deferred until rhythm has changed or 4 or 5 defibrillation sequences have been completed.
- Return of spontaneous circulation: Heart rate should be > 60 when initiating anti-arrhythmic infusions.
- Sodium bicarbonate no longer recommended as a standard cardiac arrest medication. Consider in the dialysis / renal patient, extended down-time, known hyperkalemia or suspected overdose at 50 mEq IV / IO.

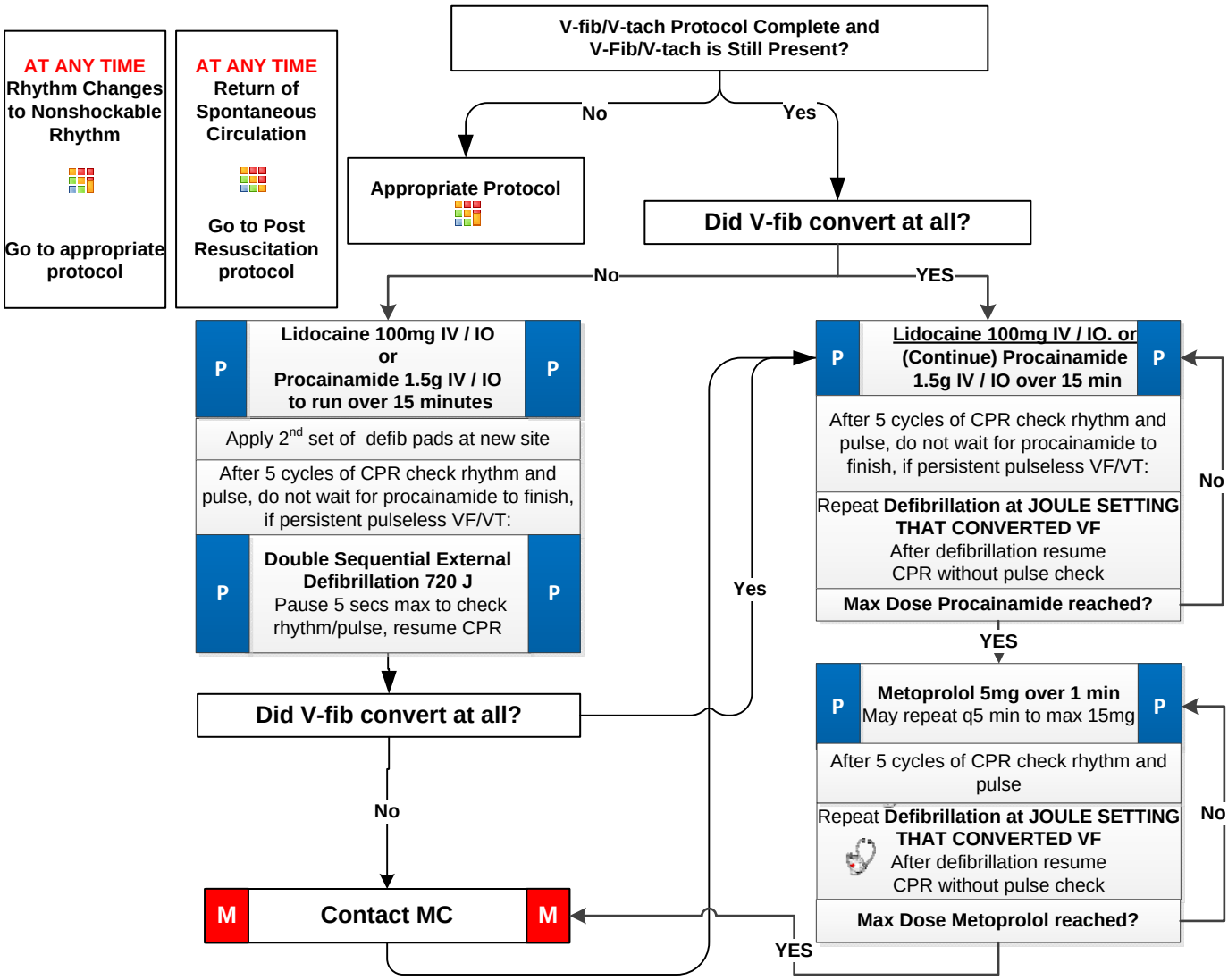
This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Persistent Ventricular Fibrillation/ Pulseless Vent. Tachycardia

History
- Verified execution of resuscitation checklist

Signs and Symptoms
- Unresponsive, pulseless
- Persisted in ventricular fibrillation/tachycardia or returned to this rhythm post-ROSC/ other rhythm change

Differential
Asystole
Artifact / Device failure
Cardiac
Endocrine / Metabolic
Drugs
Pulmonary



Adult Medical Section Protocols- Cardiac

Pearls
- **Recurrent** ventricular fibrillation/tachycardia is defined as SUCCESSFULLY CONVERTED by standard defibrillation techniques (i.e. 360 J), but subsequently returns. It should not be treated by double sequential external defibrillation. It is managed by treatment of correctable causes and use of anti-arrhythmic medications in addition to standard defibrillation.
- **Refractory** ventricular fibrillation/tachycardia is defined as NOT CONVERTED by standard defibrillation. It is initially managed by treating correctable causes and with antiarrhythmic medications. If these methods fail to produce a response, double sequential external defibrillation may be utilized by an approved ALS provider.
- Prior to double sequential defibrillation, providers should verify that pads are well-adhered and not touching; refer to the double sequential external defibrillation procedure for instructions regarding documentation and equipment.
- Prolonged cardiac arrests may lead to tired providers and decreased compression quality. Ensure compressor rotation, summon additional resources as needed, and ensure provider rest and rehab during and post-event.

Adult Asystole / Pulseless Electrical Activity

History
- Past medical history
- Medications
- Events leading to arrest
- End stage renal disease
- Estimated downtime
- Suspected hypothermia
- Suspected overdose
  - Tricyclic
  - Digitalis
  - Beta blockers
  - Calcium channel blockers
- DNR, MOST, or Living Will

Signs and Symptoms
- Pulseless
- Apneic
- No electrical activity on ECG
- No heart tones on auscultation

Differential
- Hypovolemia (Trauma, AAA, other)
- Cardiac tamponade
- Hypothermia
- Drug overdose (Tricyclic, Digitalis, Beta blockers, Calcium channel blockers)
- Massive myocardial infarction
- Hypoxia
- Tension pneumothorax
- Pulmonary embolus
- Acidosis
- Hyperkalemia

Cardiac Arrest Protocol

Criteria for Death / No Resuscitation Review DNR / MOST Form

YES →
Decomposition
Rigor mortis
Dependent lividity

Injury incompatible with life or Traumatic arrest with asystole

Do not begin resuscitation

Follow Deceased Subjects Policy

NO →

Begin Continuous CPR Compressions
Push Hard (≥ 2 inches) Push Fast (~ 120 / min)
Change Compressors every 2 minutes
(Limit changes / pulses checks ≤ 5 seconds)

P — Cardiac Monitor

Shockable Rhythm

YES → Follow Rhythm Appropriate Protocol

NO ↓

Search for Reversible Causes →

IV Procedure | P | IO Procedure

Normal Saline Bolus 1000ml IV / IO

I — **Epinephrine (1:10,000) 1 mg IV / IO**
Repeat every 3 to 5 minutes

P — Consider Chest Decompression Procedure

Dialysis / Renal Failure Protocol ***if indicated***

Criteria for Discontinuation

NO ←

YES → Discontinue Resuscitation

Follow Deceased Subjects Policy

NO ↓

Notify Destination or Contact Medical Control

AT ANY TIME

Return of Spontaneous Circulation

Go to Post Resuscitation Protocol

Reversible Causes

Hypovolemia
Hypoxia
Hydrogen ion (acidosis)
Hypothermia
Hypo / Hyperkalemia
Hypoglycemia

Tension pneumothorax
Tamponade; cardiac
Toxins
Thrombosis; pulmonary (PE)
Thrombosis; coronary (MI)

Consider Early for PEA
1. Repeated Saline Boluses for possible hypovolemia
2. Dextrose IV/IO
3. Naloxone 2mg IV/IO
4. Glucagon 4mg IV/IO/IM for suspected beta blocker or calcium channel blocker overdose.
5. Calcium Chloride 1 g IV/IO for suspected hyperkalemia, hypocalcemia
6. Sodium Bicarbonate 50meq IV/IO for possible overdose, hyperkalemia, renal failure
7. Consider Epinephrine drip
8. Consider Dopamine drip
9. Atropine 1mg IV ONLY for organized PEA with rate < 60.
10. Chest Decompression

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Adult Asystole / Pulseless Electrical Activity

Pearls

- SURVIVAL FROM PEA OR ASYSTOLE is based on identifying and correcting the CAUSE: consider a broad differential diagnosis, with early and aggressive treatment of possible causes.
- **Efforts should be directed at high quality and continuous compressions with limited interruptions and early defibrillation when indicated. Consider early IO placement if available and / or difficult IV access anticipated.**
- **DO NOT HYPERVENTILATE: Ventilate 8 – 10 breaths per minute with continuous, uninterrupted compressions, or as guided by ETCO2.**
- **Do not interrupt compressions to place endotracheal tube. Consider BIAD first to limit interruptions.**
- **Breathing / Airway management after 2 rounds of compressions (2 minutes each round.)**
- Success is based on proper planning and execution. Procedures require space and patient access; make room to work.
- If no IV / IO, drugs that can be given down ET tube should have dose doubled and then flushed with 5 ml of Normal Saline followed by 5 quick ventilations. IV/IO is the preferred route when available.
- Potential association of PEA with hypoxia so placing definitive airway with oxygenation early may provide benefit.
- PEA caused by sepsis or severe volume loss may benefit from higher volume of normal saline administration.
- Return of spontaneous circulation after Asystole / PEA requires continued search for underlying cause of cardiac arrest.
- Treatment of hypoxia and hypotension are important after resuscitation from Asystole / PEA.
- Asystole is commonly an end-stage rhythm following prolonged VF or PEA with a poor prognosis.
- Sodium bicarbonate no longer recommended as a standard cardiac arrest drug. Consider in the dialysis / renal patient, known hyperkalemia or tricyclic overdose at 50 mEq total IV / IO.
- Discussion with Medical Control can be a valuable tool in developing a differential diagnosis and identifying possible treatment options.
- Potential protocols used during resuscitation include Overdose / Toxic Ingestion, Diabetic and Dialysis / Renal Failure.

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Induced Hypothermia- Adult

History
- Non-traumatic cardiac arrests (drownings and hanging / asphyxiation are permissible in this protocol.)
- All presenting rhythms are permissible in this protocol
- All ages of patients are eligible for induced hypothermia

Signs and Symptoms
- Cardiac arrest
- Return of Spontaneous Circulation post-cardiac arrest
- Begin intra-arrest cooling if indicated as soon as cold fluids are available

Differential
- Continue to address specific differentials associated with the arrhythmia

Cardiac Arrest AND/OR Return of Spontaneous Circulation (ROSC)

Criteria for Induced Hypothermia
Initial core temperature
≥ 93.2 F (34C)

NO → Exit to Post Resuscitation Protocol

YES

DOSES LISTED HERE ARE ADULT DOSES

IF A PEDIATRIC PATIENT REQUIRES INDUCED HYPOTHERMIA, REFER TO PEDIATRIC INDUCED HYPOTHERMIA PROTOCOL

B	**Advanced Airway (includes BIAD) in place** with EtCO2 > 20 mmHg
	Perform Neurological Assessment
	Expose and apply ice packs to axilla and groin areas
I	**Cold Normal Saline Infusion: 20 mL/kg IV / IO,** **For Initial Rhythm PEA/Asystole- max 2 Liters** **For Initial Rhythm Vfib/VTach- max 1 ONE LITER**
P	**Norepinephrine 1-10mcg/min IV/IO** *or* **Dopamine 5-20mcg/kg/min IV/IO** *or* **Phenylephrine 100mcg IV/IO every 10min, max total dose 500mcg** *Titrate any pressor drugs to SBP ≥ 90*

NO → Airway Protocol(s) ***as indicated***

Reassess Temperature
Target: 91.4 F (33C)
(Range 89.6 F to 93.3 F)
(Range 32 – 34C)

≤ 91.4 F (33 C) → Stop cooling measures Until temperature increases

Reassess temperature every 10 minutes

Continue Post Resuscitation Care

≥ 92 F (33.3 C) → Continue Cooling

Exit to Post Resuscitation Protocol

Shivering noted

NO → Exit to Post Resuscitation Protocol

YES

P **Etomidate 20mg IV/IO**

Continued Shivering

YES →

P **Midazolam 0.1 – 0.2 mg/kg IV / IO, max dose 2.5mg**
May repeat in 3 -5 minutes as needed- watch for hypotension
or
Fentanyl 1 mcg/kg IV / IO bolus, max initial dose 75mcg
May repeat 1 mcg/kg every 20 minutes as needed
Maximum 200 mcg

NO → P Consider Rocuronium 1 mg/kg to max 70mg

Notify Destination or Contact Medical Control

Adult Medical Section Protocols- Cardiac

Protocol 17

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Adult Induced Hypothermia

Pearls

- **Criteria for Induced Hypothermia:**
  - **Cardiac Arrest or Return of spontaneous circulation not related to blunt / penetrating trauma or hemorrhage, including intracranial hemorrhage.**
  - **Temperature greater than 93 degrees (34 C).**
  - **Advanced airway (including BIAD) in place with no purposeful response to verbal commands.**

- **Hyperventilation is a significant cause of hypotension and recurrence of cardiac arrest in the post resuscitation phase and must be avoided at all costs.**
- **Initial End tidal CO2 may be elevated immediately post-resuscitation but will usually normalize. While goal is 35 – 45 mm Hg avoid hyperventilation.**
- **Utilization of this protocol mandates transport to facility capable of managing the post-arrest patient and continuation of induced hypothermia therapy.**
- If no advanced airway in place obtained, cooling may only be initiated on order from medical control.
- Maintain patient modesty. Undergarments may remain in place during cooling.
- Monitor advance airway frequently, especially after any movement of patient.

Post Resuscitation

History
- Respiratory arrest
- Cardiac arrest

Signs/Symptoms
- Return of pulse

Differential
- Continue to address specific differentials associated with the original dysrhythmia

Repeat Primary Assessment

B

Optimize Ventilation and Oxygenation
- Maintain SpO2 = 90-99%
- Advanced airway ***if indicated***
- Resp Rate 6 – 12 / minute for ETCO2 35-45
- DO NOT HYPERVENTILATE

I	IV Procedure	**P**	IO Procedure
B	12 Lead ECG Procedure		
P	Cardiac Monitor		
	Monitor Vital Signs / Reassess		

Hypotension Systolic BP < 90

YES →

I **Normal Saline Bolus 500 mL IV / IO**
May repeat as needed if lungs clear
Maximum 2 L

P **Norepinephrine 1-10mcg/min IV/IO**
or
Epinephrine 1–10 mcg/min IV/IO
or
Dopamine 5-20mcg/kg/min IV/IO *or*
Phenylephrine 100mcg IV/IO every 10min, max total dose 500mcg *or*
Titrate any pressor drugs to SBP ≥ 90

NO ↓

Follows Commands

NO → Induced Hypothermia Protocol, if not already begun

YES ↓

STEMI / Suspicion of MI

YES → Chest Pain and STEMI Protocol
STEMI EMS Triage and Destination Plan

NO ↓

Symptomatic Bradycardia

YES → Bradycardia; Pulse Present Protocol

NO ↓

ROSC with Antiarrhythmic given

YES → Arrhythmias are common and usually self limiting after ROSC and may not need further meds or drips.

If Arrhythmia Persists follow Rhythm Appropriate Protocol

NO ↓

P

Consider Sedation / Paralysis
Use only with definitive airway in place

Midazolam 2.5mg IV/IO
May repeat in 3-5 minutes as needed-watch for hypotension
or
Fentanyl 50-75mcg IV/IO bolus
May repeat 25 mcg every 20 minutes as needed
Maximum 200 mcg

↔ **P** Consider Rocuronium 1 mg/kg to max 70mg

↓

Notify Destination or Contact Medical Control

Adult Medical Section Protocols- Cardiac

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Post Resuscitation

Post ROSC Cardiac Arrest Checklist

- ☐ Remove ITD (if applicable) ASSESS C02 (should be >20 with good waveform)
- ☐ FINGER on pulse maintain for 10 minutes. DO NOT MOVE
- ☐ Continuous visualization of cardiac monitor rhythm
- ☐ Check O2 supply and pulse Ox to TITRATE to Sa02 94-99%
- ☐ Do not try to obtain a "normal" ETCO2 by increasing respiratory rate
- ☐ Obtain 12 lead EKG
- ☐ Assess for & TREAT bradycardias < 60 bpm
- ☐ Obtain B/P -- Pressor agent indicated for SBP < 90
- ☐ Pre-mix pressors in preparation for hypotension
- ☐ Evaluate for post-resuscitative airway placement (eg, ETT). Strongly consider bougie use if airway change is indicated.
- ☐ Unless patient is following verbal commands, continue/initiate hypothermia therapy
- ☐ When patient is moved, perform CONTINUOUS PULSE CHECK and continuous monitoring of cardiac rhythm
- ☐ Mask is available for BVM in case advanced airway fails
- ☐ Once in ambulance, confirm pulse, breath sounds, SaO2, EtCO2, and cardiac rhythm
- ☐ Appropriate personnel for transport

Pearls

- **Recommended Exam: Mental Status, Neck, Skin, Lungs, Heart, Abdomen, Extremities, Neuro**
- **Continue to search for potential cause of cardiac arrest during post-resuscitation care.**

- **Hyperventilation is a significant cause of hypotension and recurrence of cardiac arrest in the post resuscitation phase and must be avoided at all costs.**
- **Initial End tidal CO2 may be elevated immediately post-resuscitation but will usually normalize. While goal is 35 – 45 mm Hg, avoid hyperventilation.**
- **Transport to facility capable of managing the post-arrest patient including hypothermia therapy, cardiac catheterization and intensive care service: follow the Cardiac Arrest Destination Plan.**
- Most patients immediately post resuscitation will require ventilatory assistance.
- The condition of post-resuscitation patients fluctuates rapidly and continuously, and they require close monitoring. Appropriate post-resuscitation management may require consultation with medical control.
- Common causes of post-resuscitation hypotension include hyperventilation, hypovolemia, pneumothorax, and medication reaction to ALS drugs.
- Titrate Norepinephrine or other vasopressors to maintain SBP ≥ 90. Ensure adequate fluid resuscitation is ongoing.
- Consider utilizing multiple pressors together as necessary to maintain blood pressure and HR. While transcutaneous pacing may otherwise be indicated in the ischemic heart, consider the danger of missed re-arrest while pacing. In general titrate pressors as needed, and only attempt pacing if indicated in the post ROSC patient if mechanical capture can absolutely be verified (i.e. finger on the pulse with good blood pressure) and constantly monitored.

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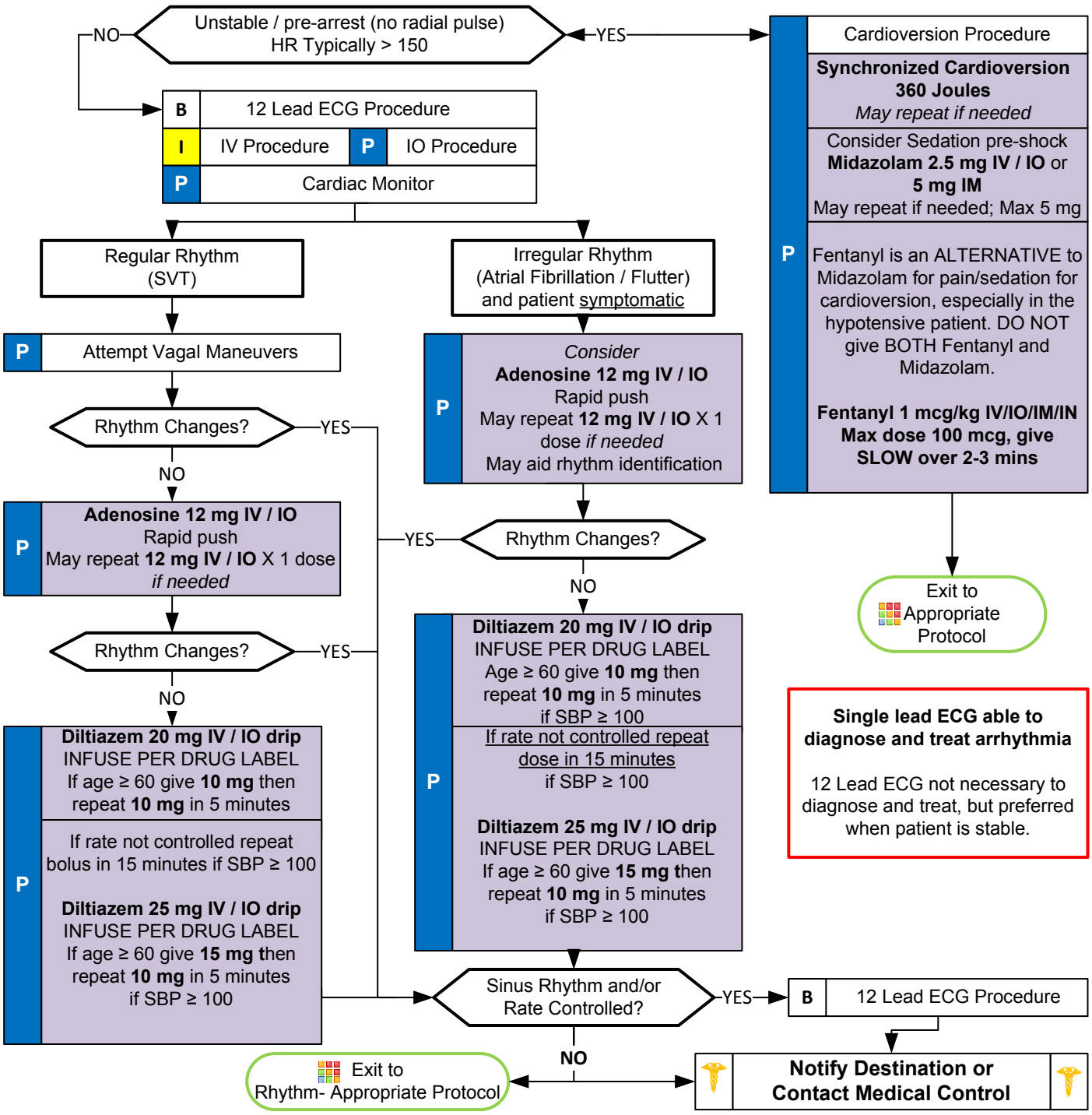
Adult Tachycardia
Narrow Complex (< 0.12 sec)

History
- Medications
  (Aminophylline, Diet pills, Thyroid supplements, Decongestants, Digoxin)
- Diet (caffeine, chocolate)
- Drugs (nicotine, cocaine)
- Past medical history
- History of palpitations / heart racing
- Syncope / near syncope

Signs and Symptoms
- Heart Rate > 150
- Systolic BP < 90
- Dizziness, CP, SOB, AMS, Diaphoresis
- CHF
- Potential presenting rhythm
  - Atrial/Sinus tachycardia
  - Atrial fibrillation / flutter
  - Multifocal atrial tachycardia
  - Ventricular Tachycardia

Differential
- Heart disease (WPW, Valvular)
- Sick sinus syndrome
- Myocardial infarction
- Electrolyte imbalance
- Exertion, Pain, Emotional stress
- Fever
- Hypoxia
- Hypovolemia or Anemia
- Drug effect / Overdose (see HX)
- Hyperthyroidism
- Pulmonary embolus



Adult Medical Section Protocols- Cardiac

Protocol 19

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Adult Tachycardia
Narrow Complex (< 0.12 sec)

Pearls

- **Recommended Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro**
- **Most important goal is to differentiate the type of tachycardia and if STABLE or UNSTABLE.**
- **If at any point patient becomes unstable move to unstable arm in algorithm.**
- **For ASYMPTOMATIC PATIENTS (or those with only minimal symptoms, such as palpitations) and any tachycardia with rate approximately 100-120 and a normal blood pressure, consider CLOSE OBSERVATION and/or fluid bolus rather than immediate treatment with an anti-arrythmic medication. A patient's "usual" atrial fibrillation, for example, may not require emergent treatment.**
- Typical sinus tachycardia is in the range of 100 to (220 - patient's age) beats per minute.

- **Symptomatic tachycardia usually occurs at rates of 120 -150 and typically ≥ 150 beats per minute. Patients symptomatic with heart rates < 150 likely have impaired cardiac function such as CHF.**
- **Serious Signs / Symptoms include: Hypotension. Acutely altered mental status. Signs of shock / poor perfusion. Chest pain with evidence of ischemia (STEMI, T wave inversions or depressions.) Acute CHF.**
- **Search for underlying cause of tachycardia such as fever, sepsis, dyspnea, etc.**

- **If patient has history or 12 Lead ECG reveals Wolfe Parkinson White (WPW), DO NOT administer a Ca Channel Blocker (e.g. Diltiazem) or Beta Blockers. Use caution with Adenosine and give only with defibrillator available.**

- **Regular Narrow-Complex Tachycardias:**
  - Vagal maneuvers and adenosine are preferred. Vagal maneuvers may convert up to 25 % of SVT.
  - Adenosine should be pushed rapidly via proximal IV site followed by 20 mL Normal Saline rapid flush.
- **Irregular Tachycardias:**
  - **First line agents** for rate control are calcium channel blockers. As per protocol, Adenosine may be considered to assist with diagnosis or if patient has history of Adenosine conversion, but Adenosine is NOT mandated.
  - Consider Calcium Chloride 1 gram IV/IO (ensure IV patency; CaCl is caustic) prior to administration of Ca Channel blockers (Diltiazem) for patients with tenuous BP (SBP < 100). Calcium may mitigate hypotensive effects of peripheral vasculature smooth muscle relaxation while not preventing wanted cardiac rate control effects.
  - DO NOT give both calcium channel blockers and beta blockers to a patient sequentially without contacting Medical Control. This may lead to heart block, profound bradycardia, and/or hypotension.
  - Adenosine may not be effective in atrial fibrillation / flutter, yet is not harmful and may help identify rhythm.
- **Synchronized Cardioversion:**
  Recommended to treat UNSTABLE Atrial Fibrillation, Atrial Flutter and Monomorphic-Regular Tachycardia (SVT.)
- **Amiodarone** may also be used to treat narrow complex tachycardias, either regular or irregular, as a second line agent if there is an allergy or contraindication to adenosine or diltiazem or other primary agent. Refer to dosing in the wide complex tachycardia protocol.

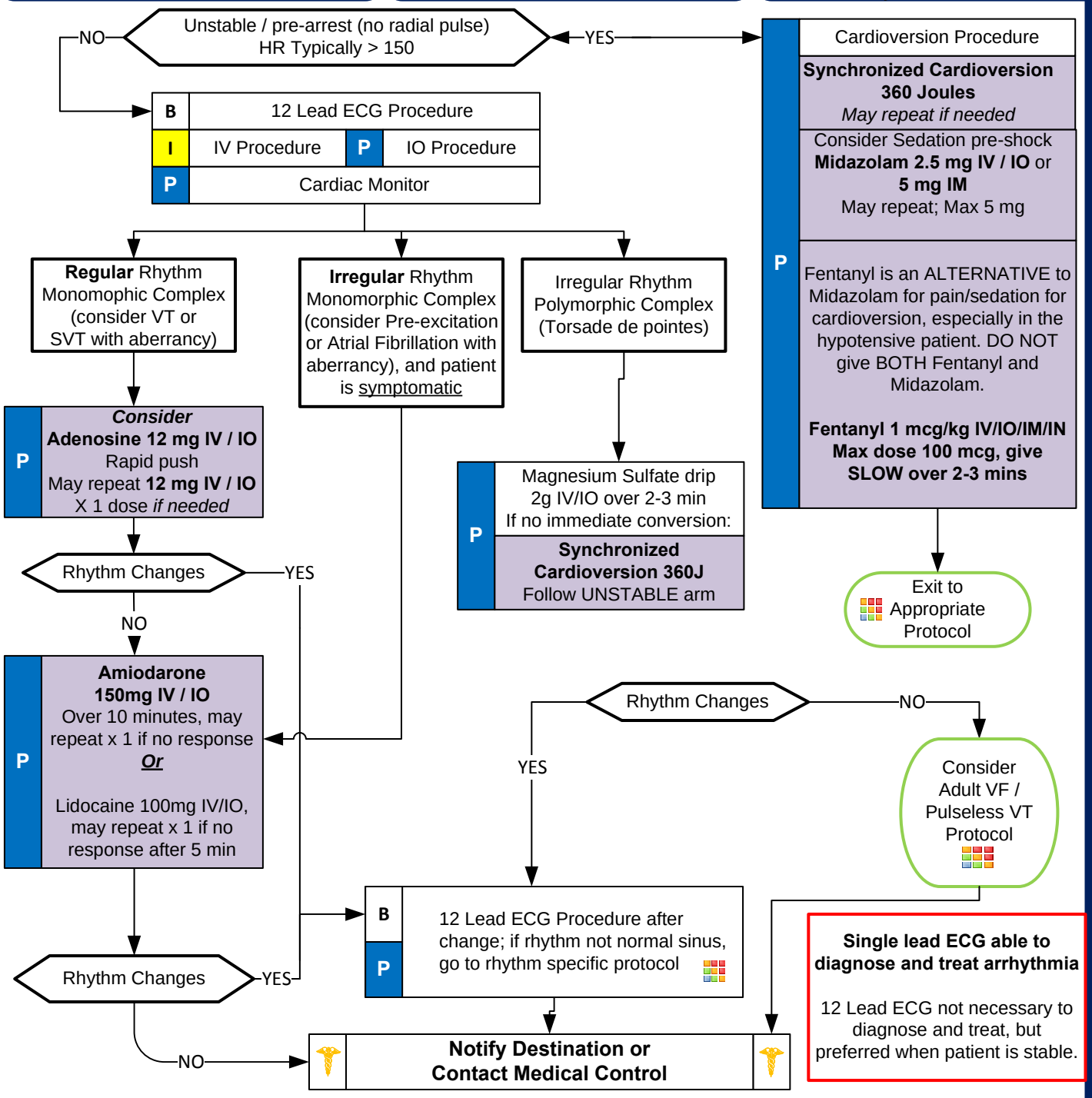
- Monitor for hypotension after administration of Calcium Channel Blockers or Beta Blockers.
- Monitor for respiratory depression and hypotension associated with Midazolam.
- Continuous pulse oximetry is required for all SVT patients.
- Document all rhythm changes with monitor strips and obtain monitor strips with each therapeutic intervention.

Adult Tachycardia
Wide Complex (≥ 0.12 sec)

History
- Medications
  (Aminophylline, Diet pills, Thyroid supplements, Decongestants, Digoxin)
- Diet (caffeine, chocolate)
- Drugs (nicotine, cocaine)
- Past medical history
- History of palpitations / heart racing
- Syncope / near syncope

Signs and Symptoms
- Heart Rate > 150
- Systolic BP <90
- Dizziness, CP, SOB, AMS, Diaphoresis
- CHF
- Potential presenting rhythm
  - Atrial/Sinus tachycardia
  - Atrial fibrillation / flutter
  - Multifocal atrial tachycardia
  - Ventricular Tachycardia

Differential
- Heart disease (WPW, Valvular)
- Sick sinus syndrome
- Myocardial infarction
- Electrolyte imbalance
- Exertion, Pain, Emotional stress
- Fever
- Hypoxia
- Hypovolemia or Anemia
- Drug effect / Overdose (see HX)
- Hyperthyroidism
- Pulmonary embolus



Adult Medical Section Protocols- Cardiac

Protocol 20

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Adult Tachycardia
Wide Complex (≥0.12 sec)

Pearls

- **Recommended Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro**
- **Most important goal is to differentiate the type of tachycardia and if STABLE or UNSTABLE.**
- **If at any point patient becomes unstable move to unstable arm in algorithm.**
- **For ASYMPTOMATIC PATIENTS (or those with only minimal symptoms, such as palpitations) and any tachycardia with rate approximately 100-120 and a normal blood pressure, consider CLOSE OBSERVATION and/or fluid bolus rather than immediate treatment with an anti-arrythmic medication. A patient's "usual" atrial fibrillation with aberrancy, for example, may not require emergent treatment.**

- **Symptomatic tachycardia usually occurs at rates of 120 – 150 and typically ≥ 150 beats per minute. Patients symptomatic with heart rates < 150 likely have impaired cardiac function such as CHF.**
- **Serious Signs / Symptoms:**
  Hypotension. Acutely altered mental status. Signs of shock / poor perfusion. Chest pain with evidence of ischemia (STEMI, T wave inversions or depressions.) Acute congestive heart failure.
- **Search for underlying cause of tachycardia such as fever, sepsis, dyspnea, etc.**
- **DO NOT administer a Calcium Channel Blocker (e.g., Diltiazem, Verapamil) for WCT.**
- Typical sinus tachycardia is in the range of 100 to (220 – patients age) beats per minute.
- **Regular Wide-Complex Tachycardias:**
  Unstable condition:
  - Immediate cardioversion or pre-cordial thump if cardioverter-defibrillator not available.

  Stable condition:
  - Typically VT or SVT with aberrancy. Adenosine may be given if regular and monomorphic and if defibrillator available.
  - Arrhythmias with suspicion of WPW should be treated with Amiodarone or Procainamide.
- **Irregular Tachycardias:**
  - Wide-complex, irregular tachycardia: Do not administer calcium channel or beta blockers or adenosine as this may cause paradoxical increase in ventricular rate. Will usually require cardioversion. Consider medical control.
- **Polymorphic / Irregular Wide- Complex Tachycardia:**
  - This situation is usually unstable and immediate cardioversion or defibrillation is warranted.
  - When associated with prolonged QT this may be Torsades de pointes: Give 2g of Magnesium Sulfate IV/IO over 2-3 minutes via drip infusion or slow push if administration bag/label not available. Without prolonged QT, likely related to ischemia and Magnesium may not be helpful.
- Monitor for respiratory depression and hypotension associated with Midazolam.
- Continuous pulse oximetry is required for all Wide Complex Tachycardia Patients.
- Document all rhythm changes with monitor strips and obtain monitor strips with each therapeutic intervention.

Bradycardia: Pulse Present

History
- Past medical history
- Medications
  - Beta-Blockers
  - Calcium channel blockers
  - Clonidine
  - Digoxin
- Pacemaker

Signs and Symptoms
- HR < 60/min with hypotension, acute altered mental status, chest pain, acute CHF, seizures, syncope, or shock secondary to bradycardia
- Chest pain
- Respiratory distress
- Hypotension or Shock
- Altered mental status
- Syncope

Differential
- Acute myocardial infarction
- Hypoxia
- Pacemaker failure
- Hypothermia
- Sinus bradycardia
- Athletes
- Head injury (elevated ICP) or Stroke
- Spinal cord lesion
- Sick sinus syndrome
- AV blocks (1°, 2°, or 3°)
- Overdose

Heart Rate < 60 / minute and Symptomatic:
Hypotension, Acute AMS, Chest Pain, Acute CHF, Seizures, Syncope, or Shock secondary to bradycardia

NO → Exit to Appropriate Protocol

YES ↓

Dyspnea / Increased Work of Breathing, especially with hypoxia

YES → Also Utilize Airway and / or Appropriate Respiratory Distress Protocol

NO ↓

B	12 Lead ECG Procedure
P	Cardiac Monitor
I	IV Procedure / P IV/IO Procedure

Suspected Beta-Blocker or Calcium Channel Blocker

Follow Overdose / Toxic Ingestion Protocol

P — **Atropine 0.5 mg IV / IO**
Repeat every 3 – 5 minutes
Maximum 3 mg

I — **Normal Saline Bolus 500 mL IV / IO**
May repeat as needed
Maximum 2 Liters

P — *Consider Sedation*
Midazolam
2.5 mg IV/IO/IM

May repeat as needed
Maximum dose 5 mg

P — Transcutaneous Pacing
If not responsive to Atropine or if unavailable. Pacing may be considered first line therapy for severe symptoms.
Consider early in 2nd or 3rd degree AVB)

Also consider:
Epinephrine Infusion 1–10 mcg/min IV / IO
or
Dopamine 5 – 20 mcg/kg/min IV / IO

Notify Destination or Contact Medical Control

Adult Medical Section Protocols-Cardiac

Bradycardia: Pulse Present

Pearls

- **Recommended Exam: Mental Status, Neck, Heart, Lungs, Neuro**
- **Bradycardia causing symptoms is typically < 50/minute. Rhythm should be interpreted in the context of symptoms and pharmacological treatment given only when symptomatic, otherwise monitor and reassess**
- **Identifying signs and symptoms of poor perfusion caused by bradycardia are paramount.**

- **Atropine vs. Pacing: Caution in setting of acute MI. The use of Atropine for PVCs in the presence of a MI may worsen heart damage. Providers should NOT DELAY Transcutaneous Pacing for patients with poor perfusion in the setting of acute MI or second or third degree heart block. Atropine is Ineffective in cardiac transplantation.**

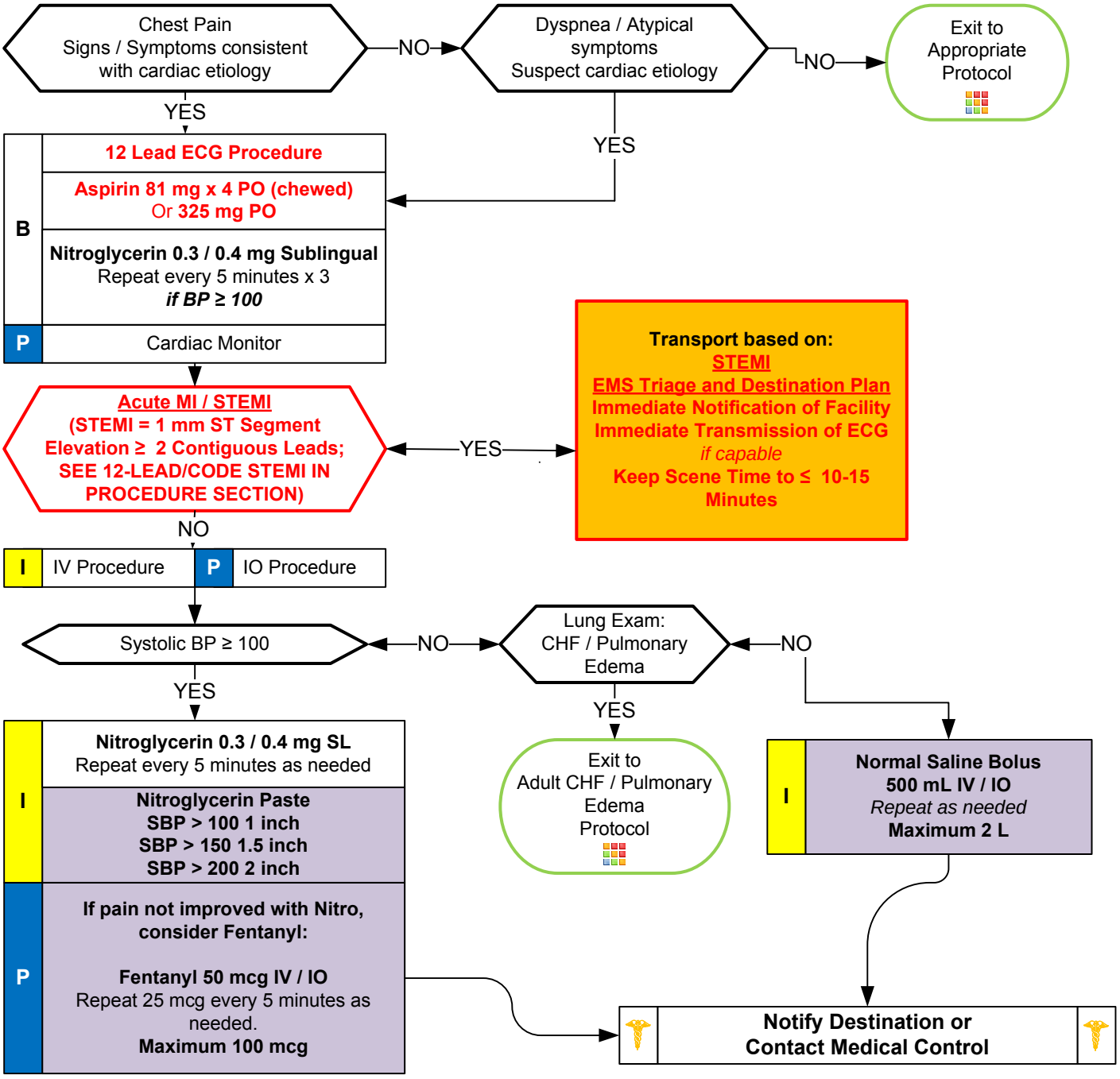
- For patients who are not in second or third degree heart block, either dopamine or pacing or both may be considered for bradycardia not responsive to atropine. Prepare to utilize transcutaneous pacing early if no response to atropine; dopamine may be an effective adjunct for hypotensive patients.
- Wide complex, bizarre appearance of complex with slow rhythm consider hyperkalemia.
- Consider treatable causes for bradycardia (Beta Blocker OD, Calcium Channel Blocker OD, etc.)
- Hypoxemia is a common cause of bradycardia. Be sure to oxygenate the patient and support respiratory effort.

Chest Pain: Cardiac and STEMI

History
- Age
- Medications (Viagra / sildenafil, Levitra / vardenafil, Cialis / tadalafil)
- Past medical history (MI, Angina, Diabetes, post menopausal)
- Allergies
- Recent physical exertion
- **P**alliation / **P**rovocation
- **Q**uality (crampy, constant, sharp, dull, etc.)
- **R**egion / **R**adiation / **R**eferred
- **S**everity (1-10)
- **T**ime (onset /duration / repetition)

Signs and Symptoms
- CP (pain, pressure, aching, vice-like tightness)
- Location (substernal, epigastric, arm, jaw, neck, shoulder)
- Radiation of pain
- Pale, diaphoresis
- Shortness of breath
- Nausea, vomiting, dizziness
- **Time of Onset**

Differential
- Trauma vs. Medical
- Angina vs. Myocardial infarction
- Pericarditis
- Pulmonary embolism
- Asthma / COPD
- Pneumothorax
- Aortic dissection or aneurysm
- GE reflux or Hiatal hernia
- Esophageal spasm
- Chest wall injury or pain
- Pleural pain
- Overdose (Cocaine) or Methamphetamine



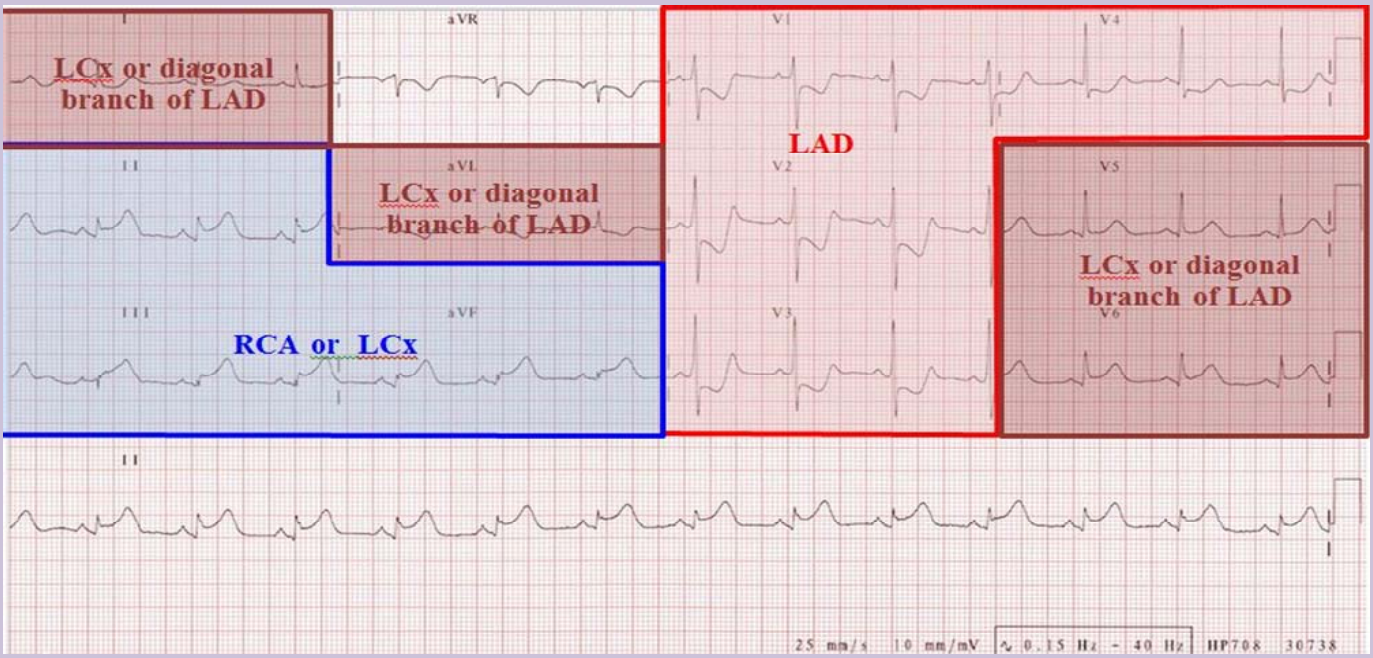
Adult Medical Section Protocols- Cardiac

Protocol 22

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Chest Pain: Cardiac and STEMI

STEMI/Culprit Vessel Localization Aid:



*** SEE 12-LEAD/CODE STEMI CATH LAB ACTIVATION PROCEDURE FOR CRITERIA TO CALL "CODE STEMI" AND ACTIVATE CATH LAB VS. SEND EKG FOR CONSULT.**

ST Elevation in 2 or more leads: II, III, aVF = Inferior wall MI (vessel likely RCA or LCx)
ST Elevation in 2 or more leads: I, aVL, V5, V6 = Lateral wall MI (vessel likely LCx or LAD branch)
ST Elevation in 2 or more leads: V1, V2, V3, V4 = Septal/Anterior wall MI (vessel likely LAD)

**Look for ST DEPRESSION in reciprocal leads (opposite wall) to confirm diagnosis. In this example ekg there is ST Elevation in this INFERIOR wall MI, and ST Depression in the Antero-Septal leads.

** Isolated ST elevation in aVR, with ST depression EVERYWHERE ELSE is concerning for a possible proximal LAD or Left Main lesion. Not STEMI criteria, but EKG should be sent for consult and ED notified early.

Pearls

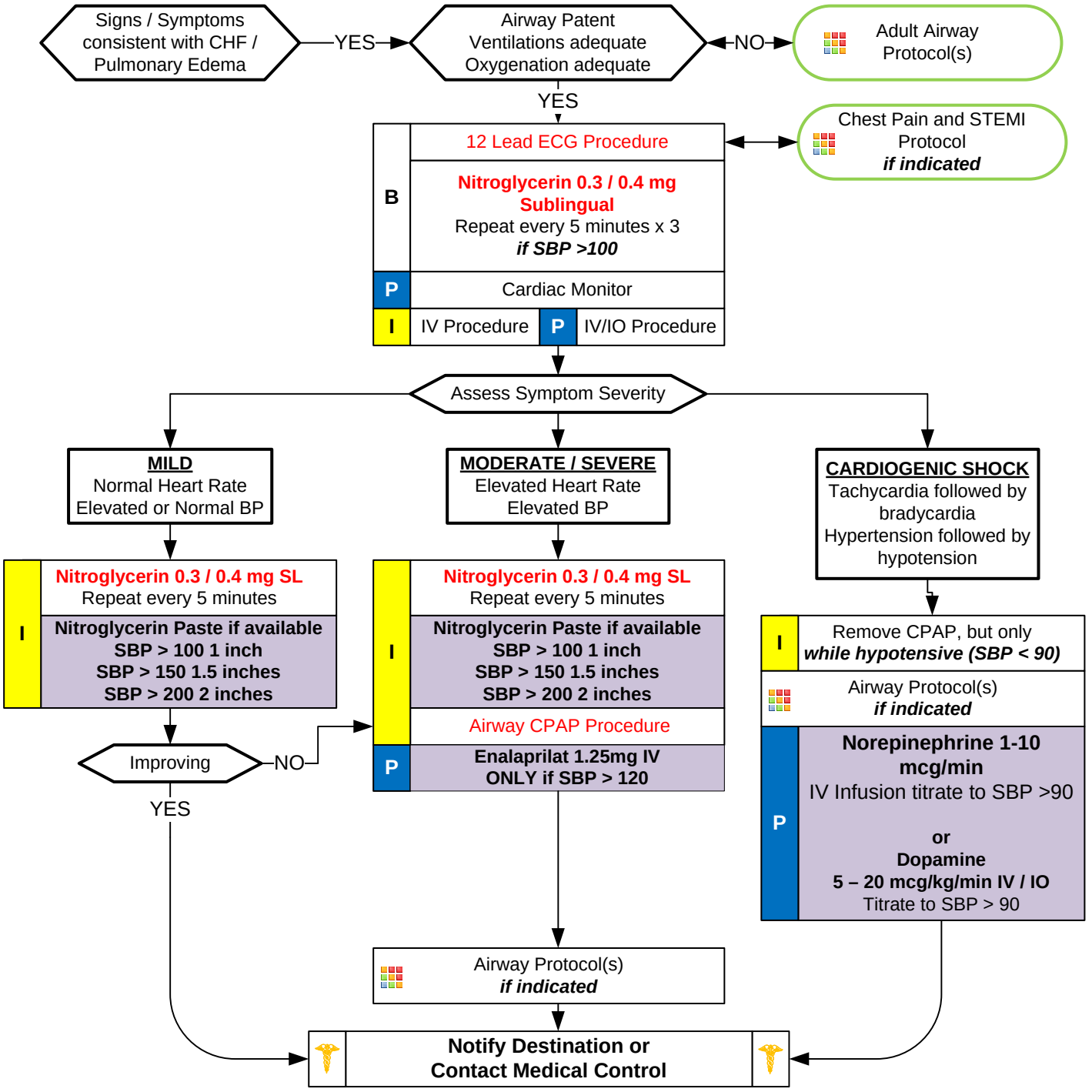
- **Recommended Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro**
- **Items in Red Text are key performance indicators**
- **Avoid Nitroglycerin in any patient who has used Viagra (sildenafil) or Levitra (vardenafil) in the past 24 hours or Cialis (tadalafil) in the past 36 hours due to potential severe hypotension.**
- **Patients with STEMI (ST-Elevation Myocardial Infarction) should be transported to the appropriate facility based on STEMI EMS Triage and Destination Plan.**
- **SEE 12-LEAD/CODE STEMI CATH LAB ACTIVATION PROCEDURE AS NEEDED FOR CODE STEMI CRITERIA**
- **If CHF / Cardiogenic shock resulting from inferior (II, III, aVF) MI, consider right Sided ECG. If ST elevation noted in transposed V3 or V4, Nitroglycerin and / or opioids may cause hypotension requiring fluid boluses.**
- If patient has taken his own nitroglycerin without relief, consider potency of the medication.
- Monitor for hypotension after administration of nitroglycerin and narcotics.
- Nitroglycerin and opioids may be repeated per dosing guidelines.
- Diabetics, geriatric and female patients often have atypical pain, or only generalized complaints. Have a low threshold to perform a 12 lead EKG in these patients.
- Document the time of the 12-Lead ECG in the PCR as a Procedure along with the interpretation (EMT-P.)
- **EMT-B may administer Nitroglycerin to patients already prescribed medication. May give from EMS supply.**

CHF / Pulmonary Edema

History
- Congestive heart failure
- Past medical history
- Medications (digoxin, Lasix, Viagra / sildenafil, Levitra / vardenafil, Cialis / tadalafil)
- Cardiac history --past myocardial infarction

Signs and Symptoms
- Respiratory distress, bilateral rales
- Apprehension, orthopnea
- Jugular vein distention
- Pink, frothy sputum
- Peripheral edema, diaphoresis
- Hypotension, shock
- Chest pain

Differential
- Myocardial infarction
- Congestive heart failure
- Asthma
- Anaphylaxis
- Aspiration
- COPD
- Pleural effusion
- Pneumonia
- Pulmonary embolus
- Pericardial tamponade
- Toxic Exposure



Adult Medical Section Protocols- Cardiac

Protocol 23

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

CHF / Pulmonary Edema

Pearls

- **Recommended Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro**
- **Items in Red Text are key performance measures used to evaluate protocol compliance and care**
- **Furosemide and Opioids have NOT been shown to improve the outcomes of EMS patients with pulmonary edema. Even though this historically has been a mainstay of EMS treatment, it is no longer routinely recommended.**
- **Avoid Nitroglycerin in any patient who has used Viagra (sildenafil) or Levitra (vardenafil) in the past 24 hours or Cialis (tadalafil) in the past 36 hours due to potential severe hypotension.**
- **Carefully monitor the level of consciousness, BP, and respiratory status with the above interventions.**
- **If CHF / Cardiogenic shock resulting from inferior (II, III, aVF) MI, consider Right Sided ECG. If ST elevation is noted in transposed V3 or V4, Nitroglycerin and / or opioids may cause hypotension requiring fluid boluses.**
- If Nitro-paste is used, do not continue to use Nitroglycerin SL.
- If patient has taken his own nitroglycerin without relief, consider potency of the medication.
- Consider myocardial infarction in all of these patients. Diabetics, geriatric and female patients often have atypical pain, or only generalized complaints.
- Allow the patient to be in a position of comfort to maximize their breathing effort.
- Document CPAP application using the CPAP procedure in the PCR. Document 12 Lead ECG using the 12 Lead ECG procedure.
- **EMT-B may administer Nitroglycerin to patients already prescribed medication. May give from EMS supply**.

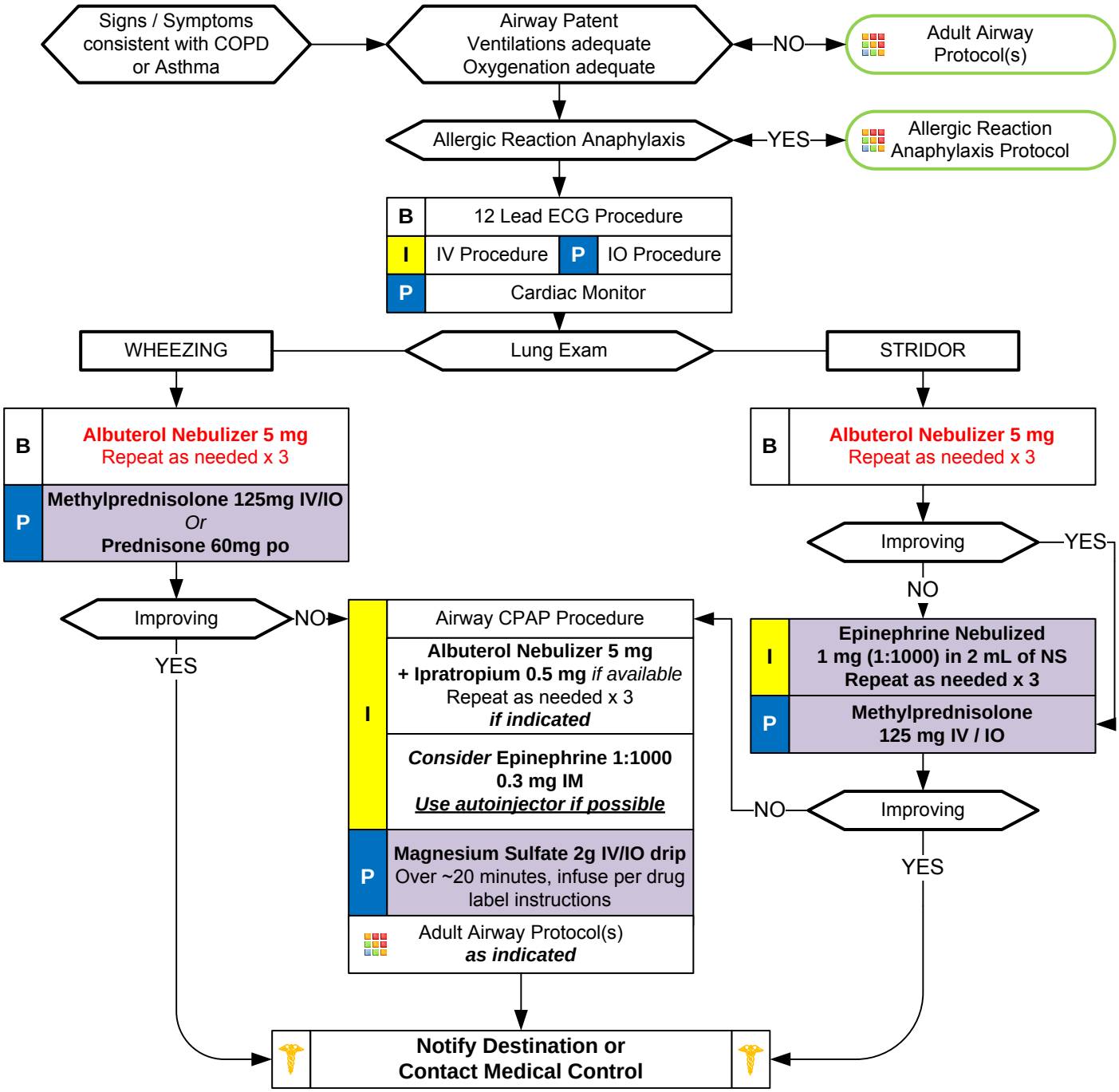
- Consider Midazolam 1-2mg IV to assist with CPAP compliance. Benzodiazepines may precipitate respiratory depression or may actually worsen compliance with CPAP in patients who are already tired, already with altered mental status, or who have recent history of alcohol or drug ingestion. All efforts at verbal coaching should be utilized prior to giving benzodiazepines for patients in respiratory distress.

Adult COPD / Asthma

History
- Asthma; COPD -- chronic bronchitis, emphysema, congestive heart failure
- Home treatment (oxygen, nebulizer)
- Medications (theophylline, steroids, inhalers)
- Toxic exposure, smoke inhalation

Signs and Symptoms
- Shortness of breath
- Pursed lip breathing
- Decreased ability to speak
- Increased respiratory rate and effort
- Wheezing, rhonchi
- Use of accessory muscles
- Fever, cough
- Tachycardia

Differential
- Asthma
- Anaphylaxis
- Aspiration
- COPD (Emphysema, Bronchitis)
- Pleural effusion
- Pneumonia
- Pulmonary embolus
- Pneumothorax
- Cardiac (MI or CHF)
- Pericardial tamponade
- Hyperventilation
- Inhaled toxin (Carbon monoxide, etc.)



Adult Medical Section Protocols

Protocol 24

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Adult COPD / Asthma

Pearls

- **Recommended Exam: Mental Status, HEENT, Skin, Neck, Heart, Lungs, Abdomen, Extremities, Neuro**
- **Items in Red Text are key performance measures used to evaluate protocol compliance and care**

- Epinephrine may precipitate cardiac ischemia. When considering INTRAMUSCULAR administration, the following patients should receive half the dose of epinephrine (0.15 mg of 1:1000) for the initial dose and any repeated doses:
  - Patient has history of coronary artery disease, MI, stents, CHF, cardiac surgery OR
  - Patient takes Beta-Blockers or Digoxin OR
  - A patient 50 years or older has a heart rate ≥ 150

- **Patients receiving nebulized epinephrine do not require a dose adjustment.**
- **These patients should receive a 12 lead ECG at some point in their care, but this should NOT delay administration of epinephrine.**
- **Pulse oximetry and End-Tidal Waveform Capnography should be monitored continuously for patients in persistent distress.**
- ETCO2 should be used when Respiratory Distress is significant and does not respond to initial Beta-Agonist dose.
- A silent chest in respiratory distress is a pre-respiratory arrest sign.
- **EMT-B may administer Albuterol if patient already prescribed and may administer from EMS supply.**

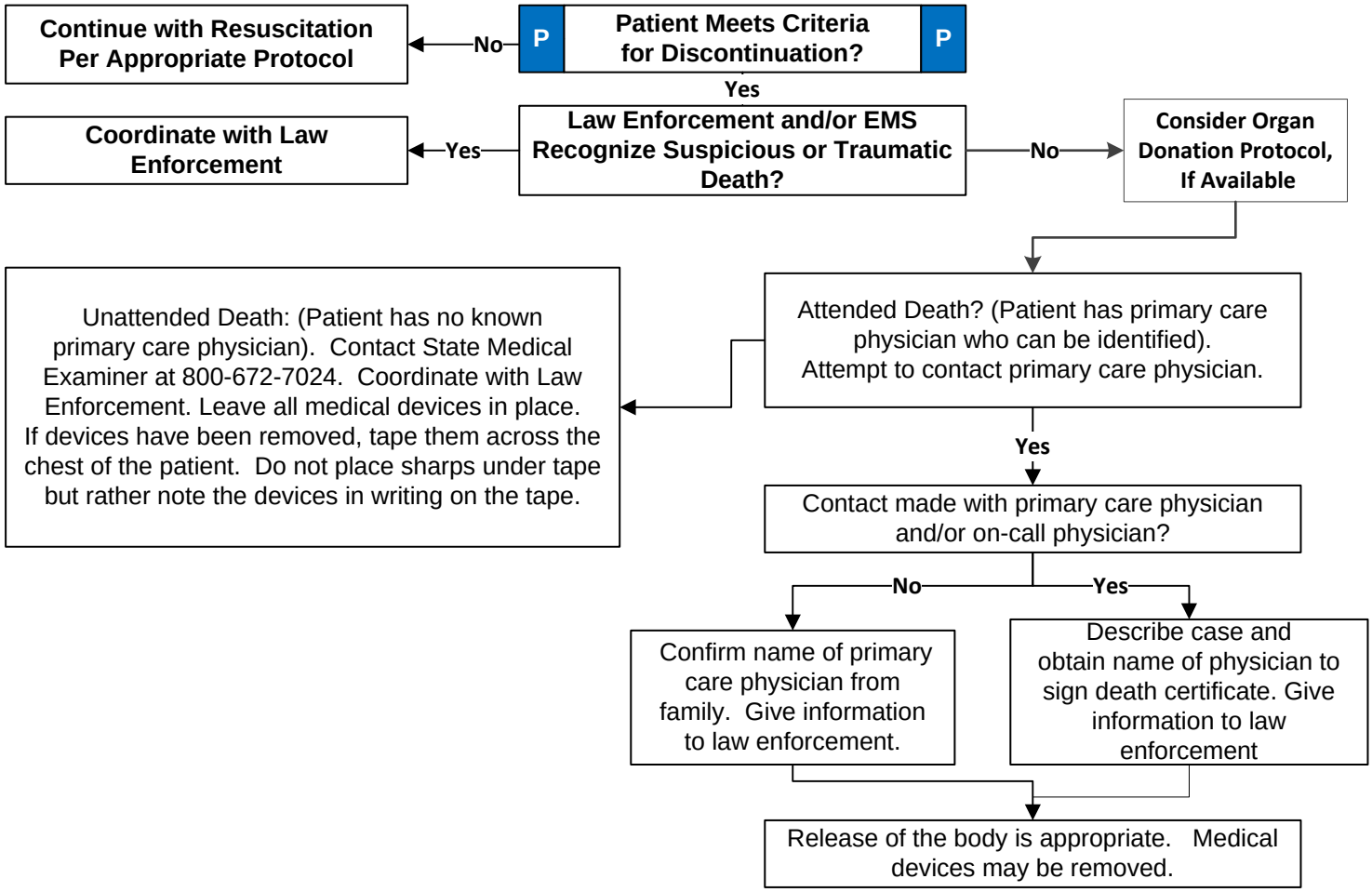
- Consider Midazolam 1-2mg IV to assist with CPAP compliance. Benzodiazepines may precipitate respiratory depression or may actually worsen compliance with CPAP in patients who are already tired, already with altered mental status, or who have recent history of alcohol or drug ingestion. All efforts at verbal coaching should be utilized prior to giving benzodiazepines for patients in respiratory distress.

Deceased Persons

History:
- Person encountered by EMS who meets criteria for obvious death
- Patient with DNR in place who is pulseless and apneic
- Patient with other approved advanced directive requiring no CPR be administered who is pulseless and apneic
- Patient for whom resuscitative efforts are ceased on scene

Key Information:
- Name of primary care physician
- Known medical conditions
- Last time known to be alive

Differential:
- Attended Death (a patient with a primary care physician who apparently died of natural causes (aka "natural death))
- Unattended Death (a patient without a primary care physician who apparently dies of natural causes (aka "natural death))
- Suspicious Death (Law enforcement)



Medical Section Protocols

Pearls:
- **The body of a deceased person may be released to the funeral home if the death is attended (the patient has a primary care physician) and law enforcement confirms the death is non-suspicious. It is preferred (but not mandatory) to communicate directly with the primary care physician prior to releasing the body. All reasonable attempts should be made to contact the primary care physician prior to releasing the body.**
- **All out-of-hospital traumatic deaths, whether recent or remote, must be referred to the medical examiner.**
- **If there is no primary care physician, the State Office of the Chief Medical Examiner must be contacted.**
- **A patient has a primary care physician if there are in-date prescriptions from the physician, the family knows the name of the physician and can verify the patient still is seen by that physician, or other methods as approved by medical control.**

Protocol 25

This protocol is unique to the Wake County EMS System

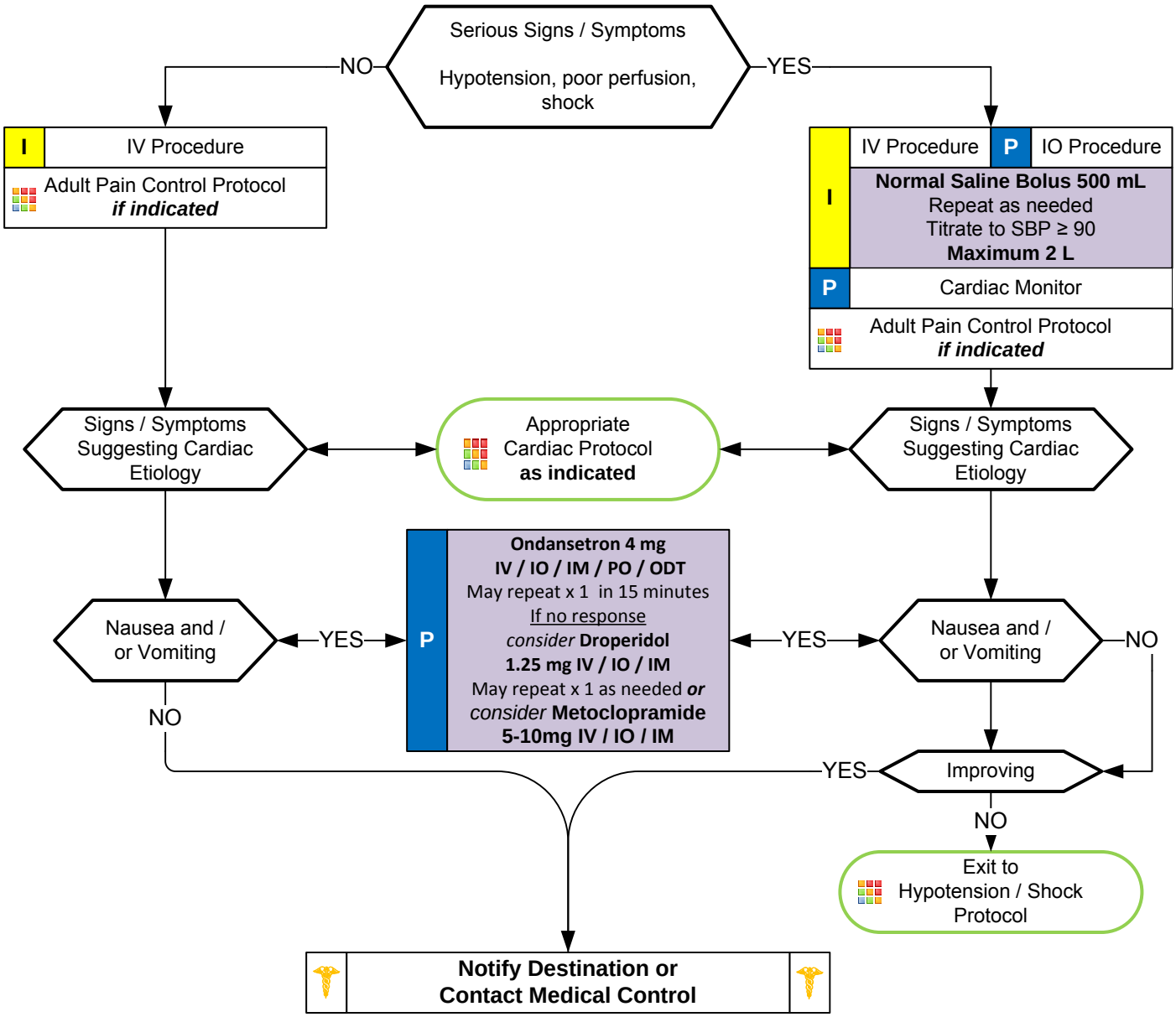
Abdominal Pain- Adult

History
- Age
- Past medical / surgical history
- Medications
- Onset
- Palliation / Provocation
- Quality (crampy, constant, sharp, dull, etc.)
- Region / Radiation / Referred
- Severity (1-10)
- Time (duration / repetition)
- Fever
- Last meal eaten
- Last bowel movement / emesis
- Menstrual history (pregnancy)

Signs and Symptoms
- Pain (location / migration)
- Tenderness
- Nausea
- Vomiting
- Diarrhea
- Dysuria
- Constipation
- Vaginal bleeding / discharge
- Pregnancy

Associated symptoms:
(Helpful to localize source)
Fever, headache, weakness, malaise, myalgias, cough, headache, mental status changes, rash

Differential
- Pneumonia or Pulmonary embolus
- Liver (hepatitis, CHF)
- Peptic ulcer disease / Gastritis
- Gallbladder
- Myocardial infarction
- Pancreatitis
- Kidney stone
- Abdominal aneurysm
- Appendicitis
- Bladder / Prostate disorder
- Pelvic (PID, Ectopic pregnancy, Ovarian cyst)
- Spleen enlargement
- Diverticulitis
- Bowel obstruction
- Gastroenteritis (infectious)
- Ovarian and Testicular Torsion



Adult Medical Section Protocols

Protocol 26

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Abdominal Pain

Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Neck, Heart, Lung, Abdomen, Back, Extremities, Neuro**
- Document the mental status and vital signs prior to administration of anti-emetics
- Abdominal pain in women of childbearing age should be treated as pregnancy related until proven otherwise.
- Antacids should be avoided in patients with renal disease.
- The diagnosis of abdominal aneurysm should be considered with abdominal pain or back pain especially in patients over 50 and / or patients with shock/ poor perfusion.
- Repeat vital signs after each fluid bolus.
- The use of metoclopramide (Reglan) may worsen diarrhea and should be avoided in patients with this symptom.
- Consider cardiac etiology in patients > 50, diabetics and / or women especially with upper abdominal complaints. Have a low threshold to perform a 12-lead EKG on these patients.
- Use caution with administration of Metoclopramide and Droperidol in elderly patients; may cause extra sedation.

Allergic Reaction / Anaphylaxis

History
- Onset and location
- Insect sting or bite
- Food allergy / exposure
- Medication allergy / exposure
- New clothing, soap, detergent
- Past history of reactions
- Past medical history
- Medication history

Signs and Symptoms
- Itching or hives
- Coughing / wheezing or respiratory distress
- Chest or throat constriction
- Difficulty swallowing
- Hypotension or shock
- Edema
- N/V

Differential
- Urticarial (rash only)
- Anaphylaxis (systemic effect)
- Shock (vascular effect)
- Angioedema (drug induced)
- Aspiration / Airway obstruction
- Vasovagal event
- Asthma or COPD
- CHF

Assess Symptom Severity

MILD

B	**Diphenhydramine 50 mg PO**
I	IV Procedure ***if indicated***
	Diphenhydramine 50 mg PO / IV / IM / IO
	Famotidine 20-40mg PO / IV / IO

B	Monitor and Reassess Monitor for Worsening Signs and Symptoms

MODERATE

	Consider **Epinephrine 1:1000 0.3mg Auto-Injector IM (AVOID in age > 50 for only moderate symptoms)**
B	**Diphenhydramine 50 mg PO**
	Albuterol Nebulizer 5 mg Repeat as needed x 3 ***if indicated***

I	**Consider Epinephrine 1:1000 0.3 mg IM** ***Use autoinjector if available*** **(AVOID in age > 50 for only moderate symptoms)**
	IV Procedure
	Diphenhydramine 50 mg PO / IV / IM / IO ***if not already given***
	Albuterol Nebulizer 5 mg +/- Ipratropium 0.5 mg Repeat as needed x 3 ***if indicated***
	Famotidine 20-40mg PO / IV / IO

P	**Methylprednisolone 125 mg IV/IO** ***or*** **Prednisone 60mg po**

SEVERE

	Epinephrine 1:1000 0.3mg Auto-Injector IM
B	**Diphenhydramine 50 mg PO**
	Albuterol 5 mg Nebulizer Repeat as needed x 3 ***if indicated***
	Airway Protocol(s) ***if indicated***

I	**Epinephrine 1:1000 0.3 mg IM (0.15mg IM if age > 50)** ***Use autoinjector if available*** Repeat in 5 minutes if no improvement
	IV Procedure / P / IO Procedure
	Diphenhydramine 50 mg IV / IM / IO if not already given
	Albuterol Nebulizer 5 mg +/- Ipratropium 0.5 mg Repeat as needed x 3 ***if indicated***
	Normal Saline Bolus 500 mL IV / IO Repeat as needed **Maximum 2 Liters**
	Famotidine 20-40mg PO / IV / IO

P	**Methylprednisolone 125mg IV/IO or Prednisone 60mg po**
	For refractory/peri-arrest Anaphylaxis, consider Epinephine 1:10,000 0.1mg IV/IO, may repeat to max 0.3mg

When indicated, Give Epinephrine IM in the Lateral Thigh; this site provides best absorption.

Cardiac Monitoring with pulse oximetry Indicated for Moderate and Severe Reactions

Notify Destination or Contact Medical Control

Adult Medical Section Protocols

Protocol 27

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Allergic Reaction / Anaphylaxis

Pearls

- **Recommended Exam: Mental Status, Skin, Heart, Lungs**
- **Anaphylaxis is an acute and potentially lethal multisystem allergic reaction.**
- **Epinephrine is the drug of choice and the first drug that should be administered in acute anaphylaxis (Moderate / Severe Symptoms.) IM Epinephrine should be administered in priority before or during attempts at IV or IO access.**
- **To improve patient safety, *Use an autoinjector to deliver IM epinephrine any time one is available.***
- **Anaphylaxis unresponsive to repeat doses of IM epinephrine may require IV epinephrine administration by IV push or epinephrine infusion. Contact Medical Control for refractory anaphylaxis.**

- **Symptom Severity Classification:**

  Mild symptoms:

  Flushing, hives, itching, erythema with normal blood pressure and perfusion.

  Moderate symptoms:

  Flushing, hives, itching, erythema plus respiratory (wheezing, dyspnea, hypoxia) or gastrointestinal symptoms (nausea, vomiting, abdominal pain) with normal blood pressure and perfusion.

  Severe symptoms:

  Skin symptoms may or may not be present, depending on perfusion. Possible Itching, erythema plus respiratory (wheezing, dyspnea, hypoxia) or gastrointestinal symptoms (nausea, vomiting, abdominal pain) with hypotension and poor perfusion.

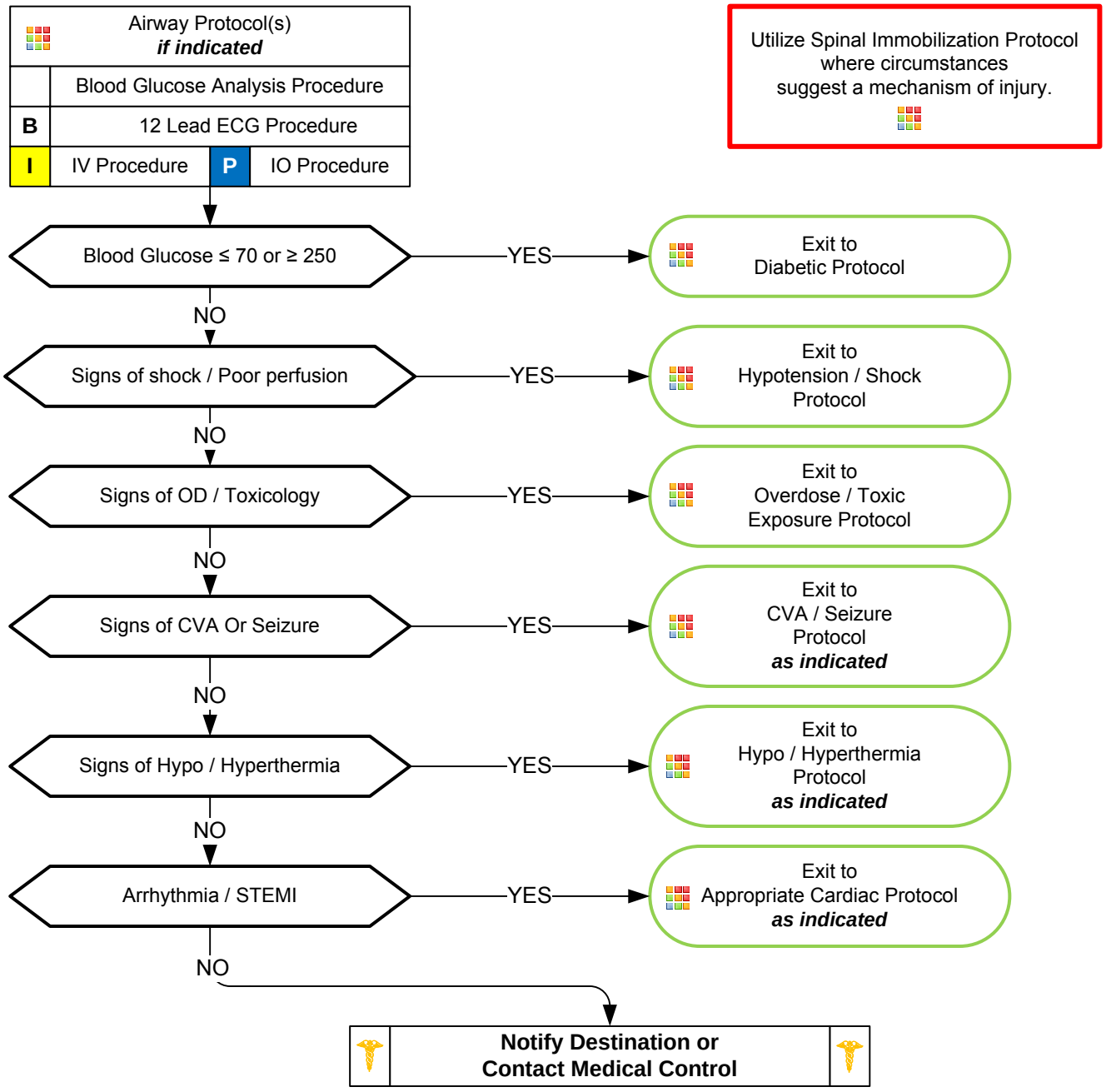
- Allergic reactions may occur with only respiratory and gastrointestinal symptoms and have no rash / skin involvement.
- Angioedema is seen in moderate to severe reactions and is swelling involving the face, lips or airway structures. This can also be seen in patients taking ACE-inhibitor blood pressure medications like Prinivil / Zestril (lisinopril)-typically end in -il.
- Epinephrine may precipitate cardiac ischemia. The following patients should receive half the dose of epinephrine (0.15 mg of 1:1000) for the initial dose and any repeated doses:
  - Patient has history of coronary artery disease, MI, stents, CHF, cardiac surgery OR
  - Patient takes Beta-Blockers or Digoxin OR
  - A patient 50 years or older has a heart rate ≥ 150
- Adult patients who receive epinephrine should receive a 12 lead ECG at some point in their care, but this should NOT delay administration of epinephrine.
- EMT-B may administer diphenhydramine by oral route only and may administer from EMS supply.
- Any patient with respiratory symptoms or extensive reaction should receive IV or IM diphenhydramine.
- The shorter the onset from symptoms to contact, the more severe the reaction.

Altered Mental Status

History
- Known diabetic, medic alert tag
- Drugs, drug paraphernalia
- Report of illicit drug use or toxic ingestion
- Past medical history
- Medications
- History of trauma
- Change in condition
- Changes in feeding or sleep habits

Signs and Symptoms
- Decreased mental status or lethargy
- Change in baseline mental status
- Bizarre behavior
- Hypoglycemia (cool, diaphoretic skin)
- Hyperglycemia (warm, dry skin; fruity breath; Kussmaul respirations; signs of dehydration)
- Irritability

Differential
- Head trauma
- CNS (stroke, tumor, seizure, infection)
- Cardiac (MI, CHF)
- Hypothermia
- Infection (CNS and other)
- Thyroid (hyper / hypo)
- Shock (septic, metabolic, traumatic)
- Diabetes (hyper / hypoglycemia)
- Toxicological or Ingestion
- Acidosis / Alkalosis
- Environmental exposure
- Pulmonary (Hypoxia)
- Electrolyte abnormality
- Psychiatric disorder



This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Altered Mental Status

Pearls

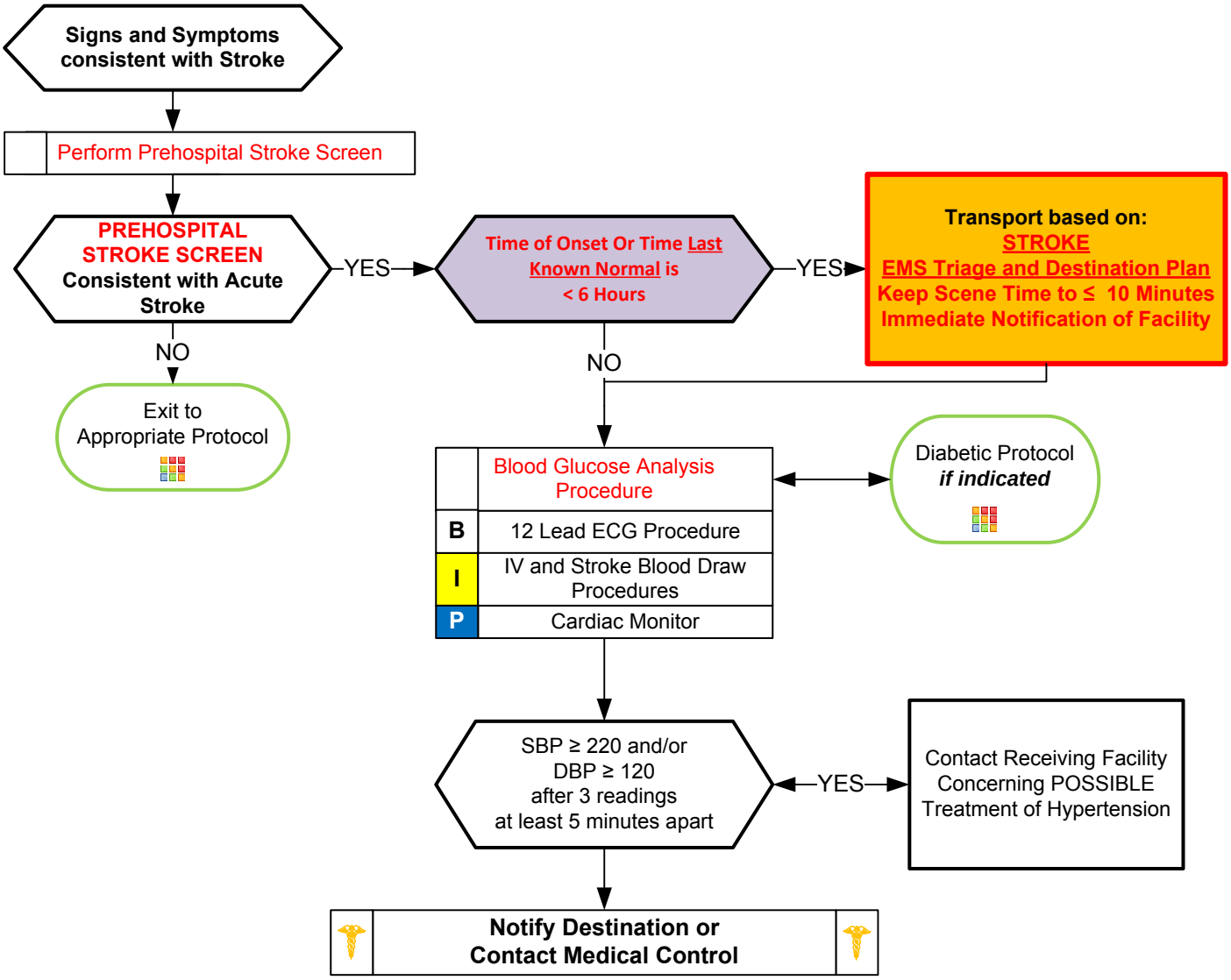
- **Recommended Exam: Mental Status, HEENT, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro.**
- **Pay careful attention to the head exam for signs of bruising or other injury.**
- Be aware of AMS as presenting sign of an environmental toxin or Haz-Mat exposure and protect personal safety and that of other responders who may already be exposed.
- It is safer to assume hypoglycemia than hyperglycemia if doubt exists. Recheck blood glucose after Dextrose or Glucagon.
- Do not let alcohol confuse the clinical picture. Alcoholics frequently develop hypoglycemia and may have unrecognized injuries.
- Consider Restraints if necessary for patient's and/or personnel's protection per the restraint procedure.

Suspected Stroke

History
- Previous CVA, TIA's
- Previous cardiac / vascular surgery
- Associated diseases: diabetes, hypertension, CAD
- Atrial fibrillation
- Medications (blood thinners)
- History of trauma

Signs and Symptoms
- Altered mental status
- Weakness / Paralysis
- Blindness or other sensory loss
- Aphasia / Dysarthria
- Syncope
- Vertigo / Dizziness
- Vomiting
- Headache
- Seizures
- Respiratory pattern change
- Hypertension / hypotension

Differential
- See Altered Mental Status
- TIA (Transient ischemic attack)
- Seizure
- Todd's Paralysis
- Hypoglycemia
- Stroke
  Thrombotic or Embolic (~85%)
  Hemorrhagic (~15%)
- Tumor
- Trauma
- Dialysis / Renal Failure



Suspected Stroke

For further information regarding current recommendations regarding stroke care, including the rationale to treat or not treat hypertension in the setting of possible stroke, see the current version of:

"Guidelines for the Early Management of Patients With Acute Ischemic Stroke: A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association"

Available at: http://stroke.ahajournals.org/content/early/2013/01/31/STR.0b013e318284056a

Pearls

- **Recommended Exam: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremities, Neuro**
- **Items in Red Text are key performance measures used in the EMS Acute Stroke Care Toolkit.**
- **Acute Stroke care is evolving rapidly. Time of onset / last seen normal parameters may be changed at any time depending on the capabilities and resources of your hospital based on Stroke: EMS Triage and Destination Plan.**

- **Time of Onset or Last Known Normal: One of the most important items the pre-hospital provider can obtain, on which all treatment decisions are based. Be very precise in gathering data to establish the time of onset and report as an actual time (i.e. 13:47 NOT "about 45 minutes ago.") Without this information patient may not be able to receive thrombolytics at facility. For patients with "Woke up and noticed stroke," Time starts when patient last awake.**

- **With a duration of symptoms/last known normal of less than SIX (6) HOURS, scene times should be limited to ≤ 10 minutes, early notification of receiving facility should be performed and transport times should be minimized.**

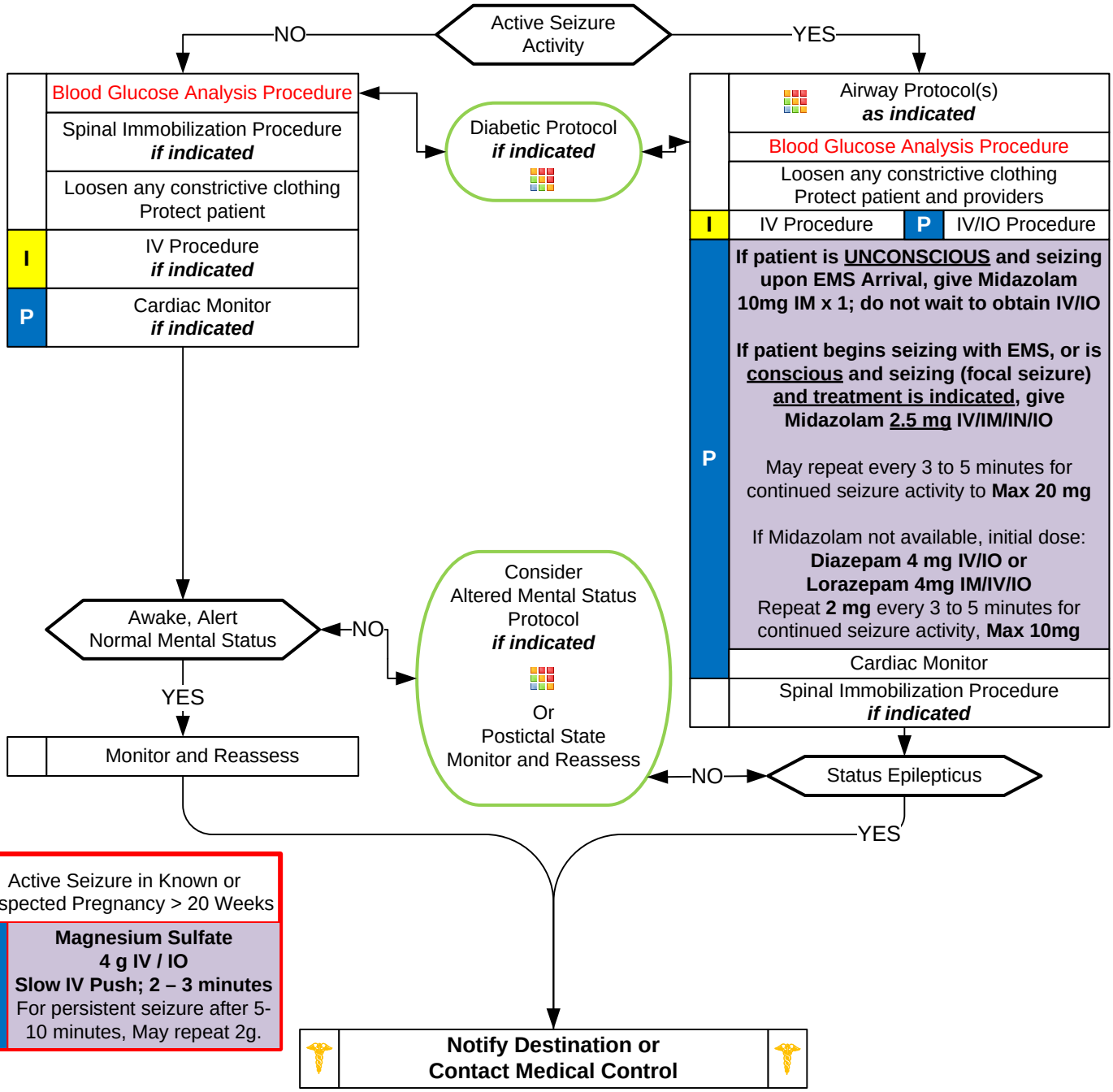
- **Onset of symptoms** is defined as the last witnessed time the patient was symptom free (i.e. awakening with stroke symptoms would be defined as an onset time when the patient went to sleep or last time known to be symptom free.)
- The differential listed on the Altered Mental Status Protocol should also be considered.
- Be alert for airway problems (swallowing difficulty, vomiting/aspiration).
- Hypoglycemia can present as a LOCALIZED neurologic deficit, especially in the elderly.
- Document the Prehospital Stroke Screen results in the PCR.

Seizure- Adult

History
- Reported / witnessed seizure activity
- Previous seizure history
- Medical alert tag information
- Seizure medications
- History of trauma
- History of diabetes
- History of pregnancy
- Time of seizure onset
- Document number of seizures
- Alcohol use, abuse or abrupt cessation
- Fever

Signs and Symptoms
- Decreased mental status
- Sleepiness
- Incontinence
- Observed seizure activity
- Evidence of trauma
- Unconscious

Differential
- CNS (Head) trauma
- Tumor
- Metabolic, Hepatic, or Renal failure
- Hypoxia
- Electrolyte abnormality (Na, Ca, Mg)
- Drugs, Medications, Non-compliance
- Infection / Fever
- Alcohol withdrawal
- Eclampsia
- Stroke
- Hyperthermia
- Hypoglycemia



Adult Medical Section Protocols

Protocol 30

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Seizure- Adult

Pearls

- **Recommended Exam: Mental Status, HEENT, Heart, Lungs, Extremities, Neuro**
- **Items in Red Text are key performance measures used to evaluate protocol compliance and care**

- **Midazolam 5-10 mg IM is usually effective in termination of seizures. Do not delay IM administration to obtain IV or IO access in an actively seizing patient.**
- **For any seizure that begins in the presence of EMS, if the patient was previously conscious, alert, and oriented, take time to assess and protect the patient and providers and CONSIDER THE CAUSE. The seizure may stop, especially in patients who have prior history of self-limiting seizures. However, do not hesitate to treat recurrent or prolonged (> 1 minute) seizure activity.**
- **Status epilepticus** is defined as two or more successive seizures without a period of consciousness or recovery, or one prolonged seizure lasting longer than 5 minutes. This is a true emergency requiring rapid airway control, treatment, and transport.

- **Grand mal seizures (generalized)** are associated with loss of consciousness, incontinence, and tongue trauma.
- **Focal seizures (petit mal)** effect only a part of the body and are not usually associated with a loss of consciousness
- Be prepared for airway problems and continued seizures.
- Assess possibility of occult trauma and substance abuse.
- Be prepared to assist ventilations and/or manage the airway especially if diazepam or midazolam is used.
- For any seizure in a pregnant patient, follow the OB Emergencies Protocol.
- Diazepam (Valium) is not effective when administered IM. Diazepam can be given IV or Rectally, Midazolam and Lorazepam are well absorbed when administered IM.

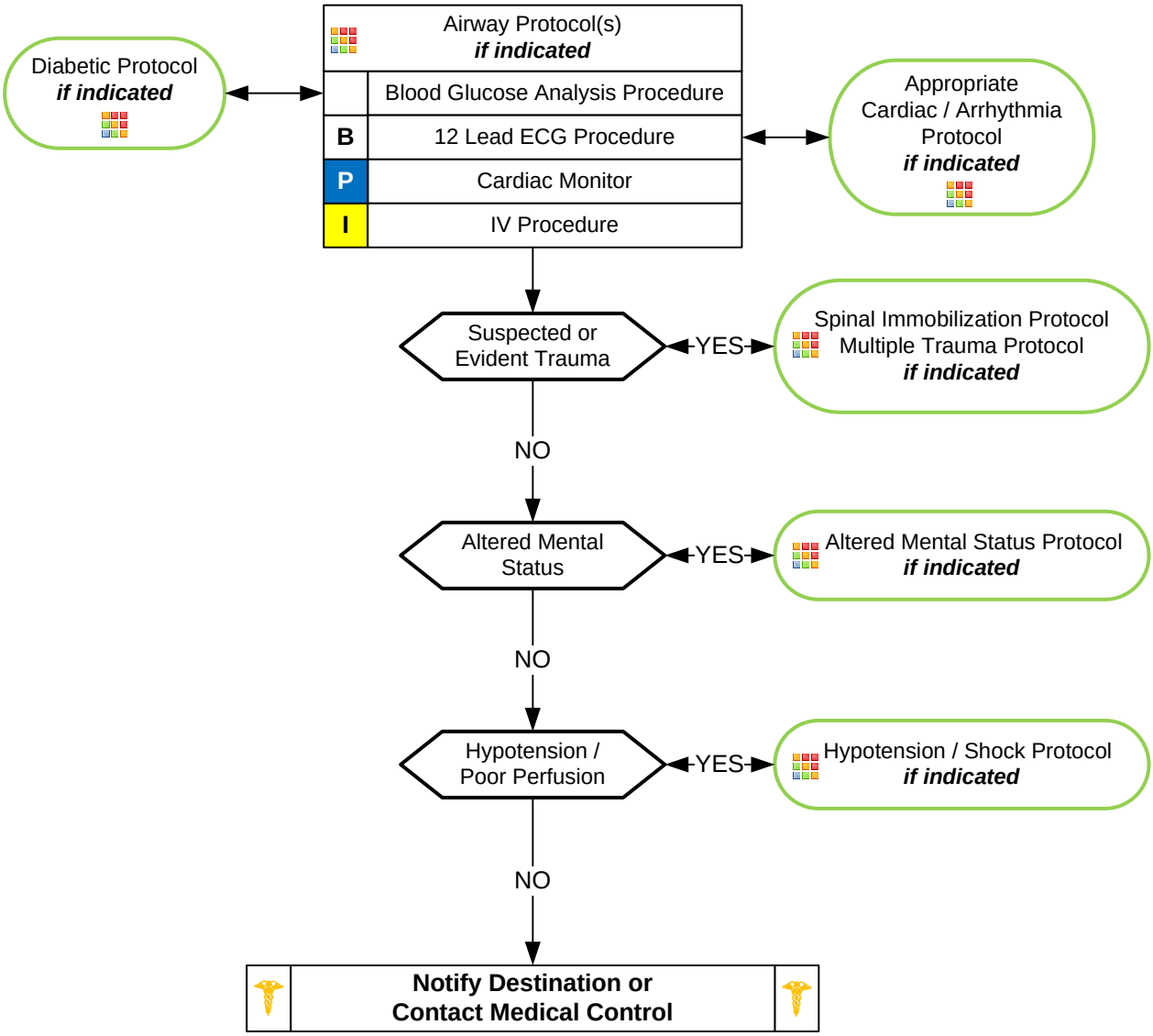
This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Syncope

History
- Cardiac history, stroke, seizure
- Occult blood loss (GI, ectopic)
- Females: LMP, vaginal bleeding
- Fluid loss: nausea, vomiting, diarrhea
- Past medical history
- Medications

Signs and Symptoms
- Loss of consciousness with recovery
- Lightheadedness, dizziness
- Palpitations, slow or rapid pulse
- Pulse irregularity
- Decreased blood pressure

Differential
- Vasovagal
- Orthostatic hypotension
- Cardiac syncope
- Micturition / Defecation syncope
- Psychiatric
- Stroke
- Hypoglycemia
- Seizure
- Shock (see Shock Protocol)
- Toxicological (Alcohol)
- Medication effect (hypertension)
- PE
- AAA



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Syncope

Pearls

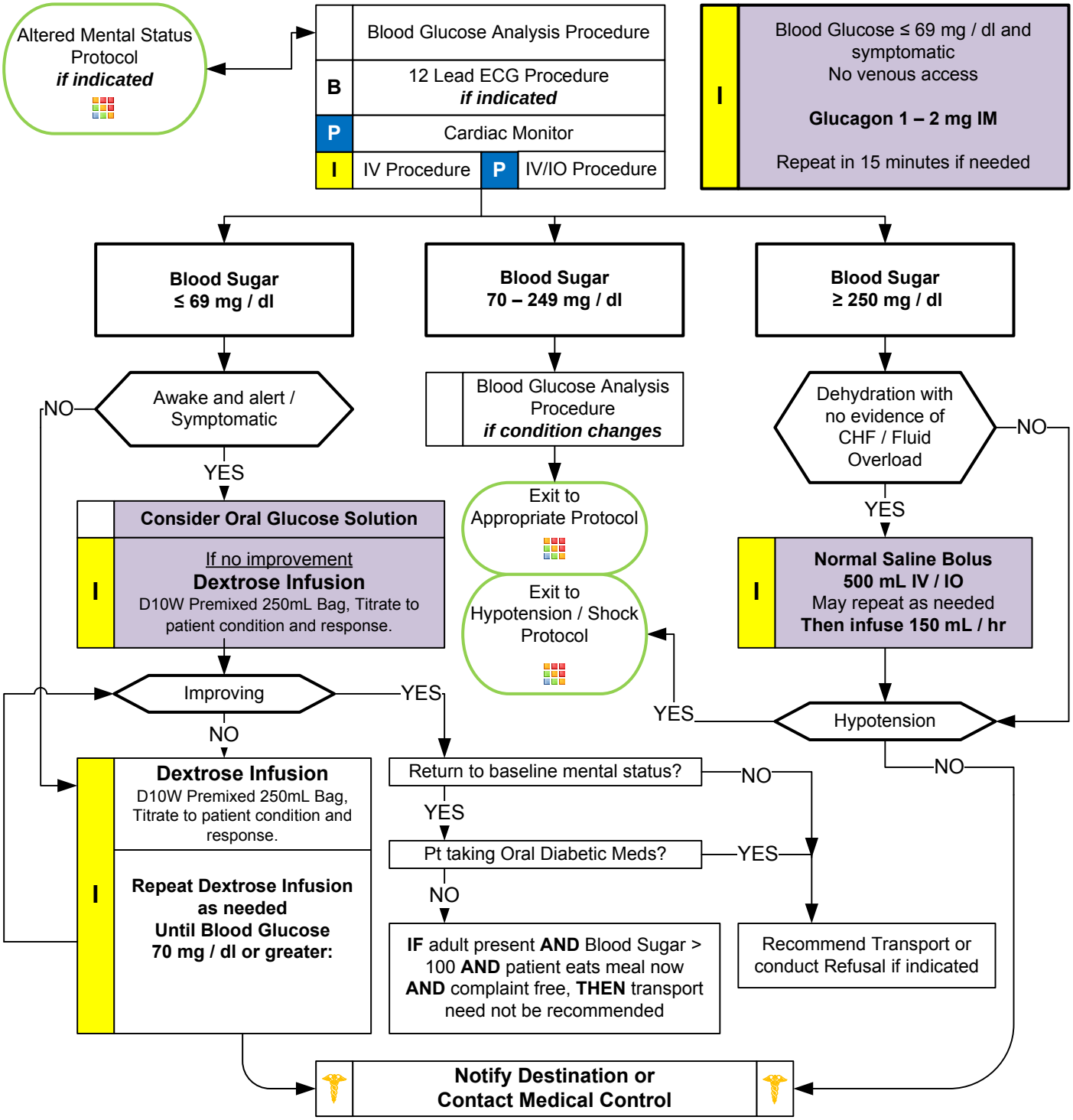
- **Recommended Exam: Mental Status, Skin, HEENT, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- Assess for signs and symptoms of trauma and/or head injury if associated with fall or if it's questionable whether the patient fell due to syncope.
- Consider dysrhythmias, GI bleed, ectopic pregnancy, and seizure as possible causes of syncope.
- Syncope patients should be transported.
- More than 25% of geriatric syncope is cardiac dysrhythmia based.

Diabetic Adult

History
- Past medical history
- Medications
- Recent blood glucose check
- Last meal

Signs and Symptoms
- Altered mental status
- Combative / irritable
- Diaphoresis
- Seizures
- Abdominal pain
- Nausea / vomiting
- Weakness
- Dehydration
- Deep / rapid breathing

Differential
- Alcohol / drug use
- Toxic ingestion
- Trauma; head injury
- Seizure
- CVA
- Altered baseline mental status.



Adult Medical Section Protocols

Protocol 32

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Diabetic Adult

Pearls

- Recommended exam: Mental Status, Skin, Respirations and effort, Neuro.
- Patients with prolonged hypoglycemia my not respond to glucagon.
- Response to Glucagon can take 15-20 minutes. Consider the entire clinical picture when treating hypoglycemia, including a patient's overall clinical condition and other vital signs. It may be safe to wait for some time for Glucagon to work, instead of pursuing the more aggressive course of performing IO access to give faster acting IV/IO Dextrose solution. Diabetics may have poor wound healing, and IO access may present a greater risk for infection or poor wound healing in diabetic patients. On the other hand, consider IO access to give Dextrose early in patients who are critically ill or peri-arrest and hypoglycemic.
- Do not administer oral glucose to patients that are not able to swallow or protect their airway.
- In extreme circumstances with no IV, no IO, and no response to glucagon, Dextrose can be administered rectally. Contact medical control for advice.
- Quality control checks should be maintained per manufacturers recommendation for all glucometers.
- <u>Patients refusing transport to medical facility after treatment of hypoglycemia:</u>
- <u>Oral Agents:</u>

  Patients taking oral diabetic medications should be strongly encouraged to allow transportation to a medical facility. They are at risk of recurrent hypoglycemia that can be delayed for hours and require close monitoring even after normal blood glucose is established. Not all oral agents have prolonged action so Contact Medical Control for advice. Patients who meet criteria to refuse care should be instructed to contact their physician immediately and consume a meal with complex carbohydrates and protein.
- <u>Insulin Agents:</u>

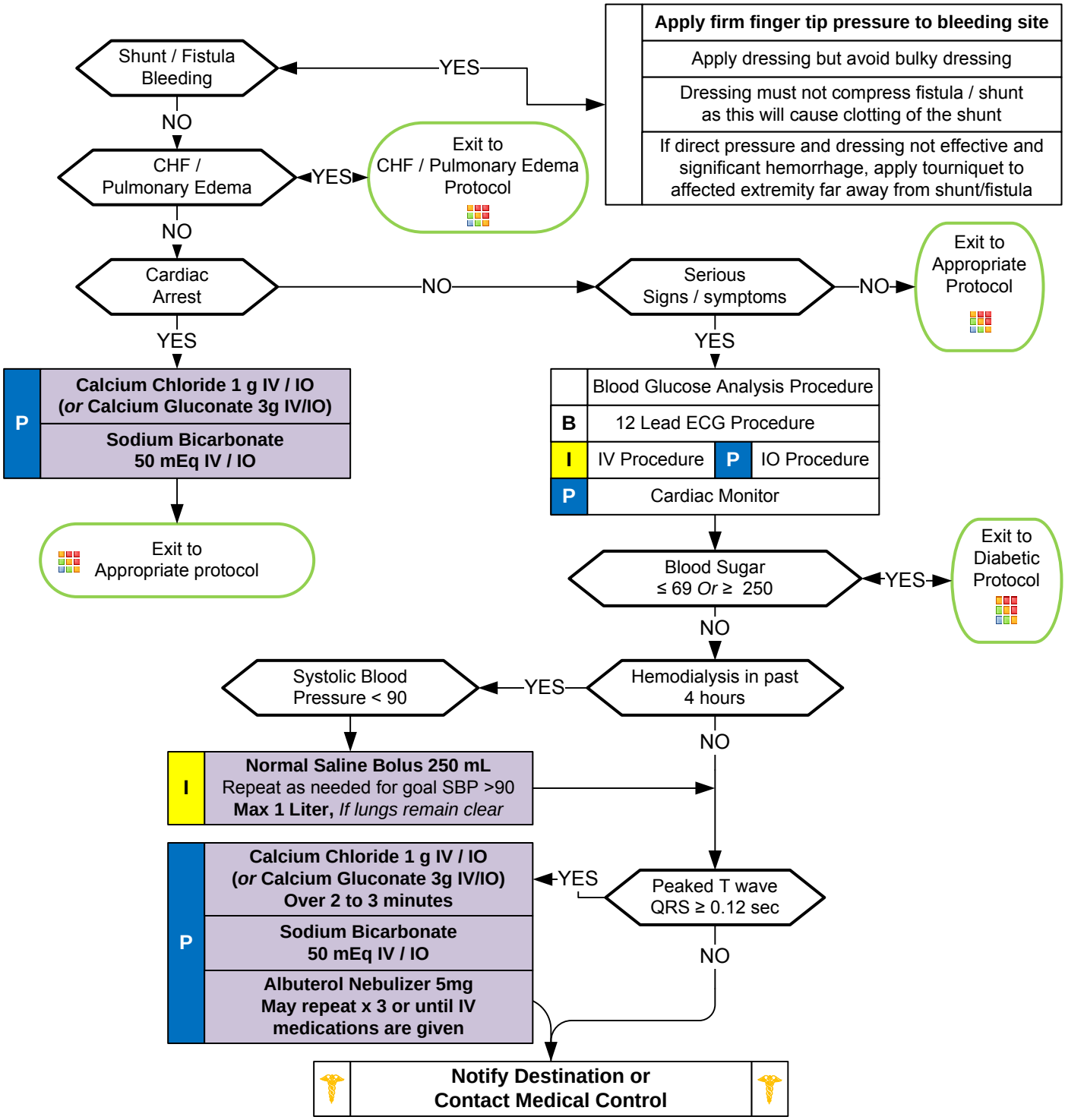
  Many forms of insulin now exist. Longer acting insulin places the patient at risk of recurrent hypoglycemia even after a normal blood glucose is established. Patients who meet criteria to refuse care should be instructed to contact their physician immediately and consume a meal with complex carbohydrates and protein.

Dialysis / Renal Failure

History
- Peritoneal or Hemodialysis
- Anemia
- Catheter access noted
- Shunt access noted
- Hyperkalemia

Signs and Symptoms
- Hypotension
- Bleeding
- Fever
- Electrolyte imbalance
- Nausea and / or vomiting
- Altered Mental Status
- Seizure
- Arrhythmia

Differential
- Congestive heart failure
- Pericarditis
- Diabetic emergency
- Sepsis
- Cardiac tamponade



Adult Medical Section Protocols

Protocol 33

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Dialysis / Renal Failure

Pearls

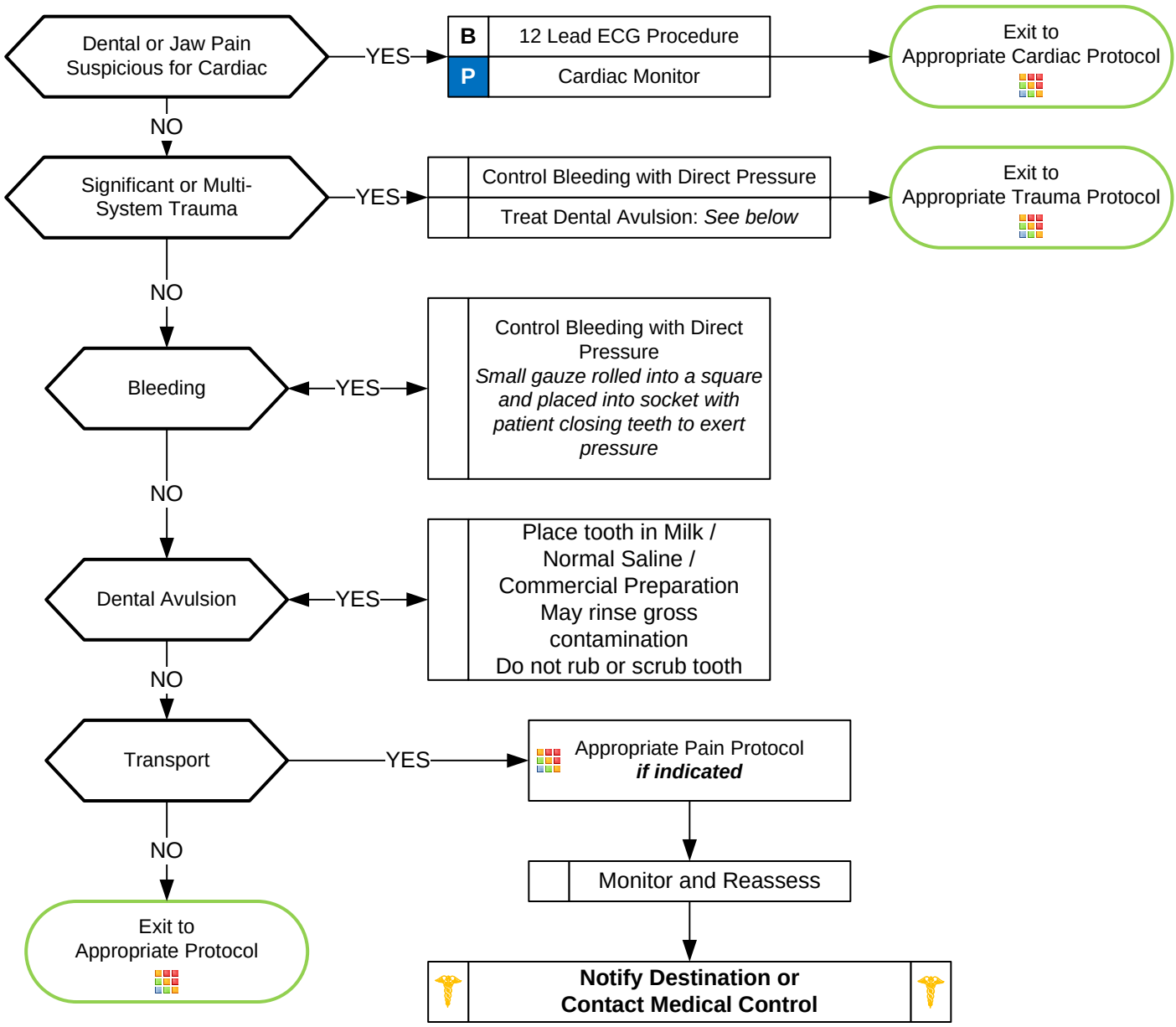
- **Recommended exam: Mental status. Neurological. Lungs. Heart.**
- **Do not take Blood Pressure or start IV in extremity which has a shunt / fistula in place.**
- **Access of shunt or dialysis catheter is indicated in the dead or near-dead patient only with no other available access. Utilize IO if available.**
- **If local pressure does not control significant hemorrhage from dialysis fistula, utilize a tourniquet to stop bleeding. Apply tourniquet as far away from fistula as possible.**
- Always consider Hyperkalemia in all dialysis or renal failure patients.
- Sodium Bicarbonate and Calcium Chloride / Gluconate should not be mixed. Ideally give in separate lines.
- Renal dialysis patients have numerous medical problems typically. Hypertension and cardiac disease are prevalent.

Dental Problems- Adult/Pediatric

History
- Age
- Past medical history
- Medications
- Onset of pain / injury
- Trauma with "knocked out" tooth
- Location of tooth
- Whole vs. partial tooth injury

Signs and Symptoms
- Bleeding
- Pain
- Fever
- Swelling
- Tooth missing or fractured

Differential
- Decay
- Infection
- Fracture
- Avulsion
- Abscess
- Facial cellulitis
- Impacted tooth (wisdom)
- TMJ syndrome
- Myocardial infarction



Adult / Pediatric Medical Section Protocols

Pearls
- **Recommended Exam: Mental Status, HEENT, Neck, Chest, Lungs, Neuro**
- Significant soft tissue swelling to the face or oral cavity can represent a cellulitis or abscess.
- Scene and transport times should be minimized in complete tooth avulsions. Reimplantation is possible within 4 hours if the tooth is properly cared for.
- Occasionally cardiac chest pain can radiate to the jaw.
- All pain associated with teeth should be associated with a tooth which is tender to tapping or touch (or sensitivity to cold or hot).

Protocol 34

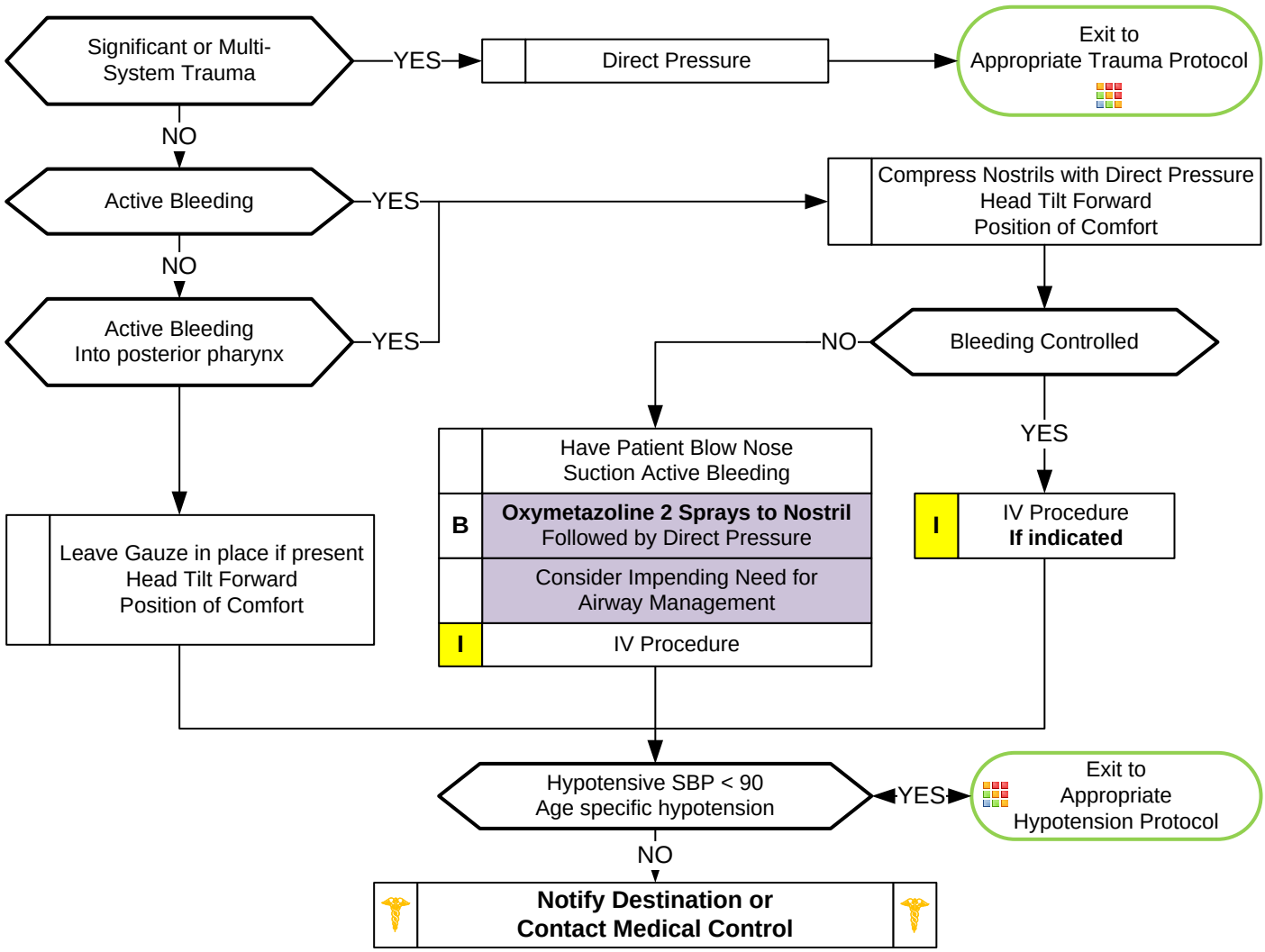
This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Epistaxis- Adult/Pediatric

History
- Age
- Past medical history
- Medications (HTN, anticoagulants, aspirin, NSAIDs)
- Previous episodes of epistaxis
- Trauma
- Duration of bleeding
- Quantity of bleeding

Signs and Symptoms
- Bleeding from nasal passage
- Pain
- Nausea
- Vomiting

Differential
- Trauma
- Infection (viral URI or Sinusitis)
- Allergic rhinitis
- Lesions (polyps, ulcers)
- Hypertension



Adult / Pediatric Medical Section Protocols

Pearls
- **Recommended Exam: Mental Status, HEENT, Heart, Lungs, Neuro**
- **Avoid Oxymetazoline in patients who have a blood pressure of greater than 110 diastolic or known coronary artery disease.**
- Age specific hypotension: 0 – 28 days < 60 mmHg, 1 month – 1 year < 70 mmHg, 1 year – 10 years < 70 + (2 x age)mmHg, 11 years and greater < 90 mmHg.
- It is very difficult to quantify the amount of blood loss with epistaxis.
- Bleeding may also be occurring posteriorly. Evaluate for posterior blood loss by examining the posterior pharnyx.
- Anticoagulants include warfarin (Coumadin), heparin, enoxaparin (Lovenox), dabigatran (Pradaxa), rivaroxaban (Xarelto), and many over the counter headache relief powders.
- Anti-platelet agents like aspirin, clopidogrel (Plavix), aspirin/dipyridamole (Aggrenox), and ticlopidine (Ticlid) can contribute to bleeding.

Protocol 35

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Hypertension

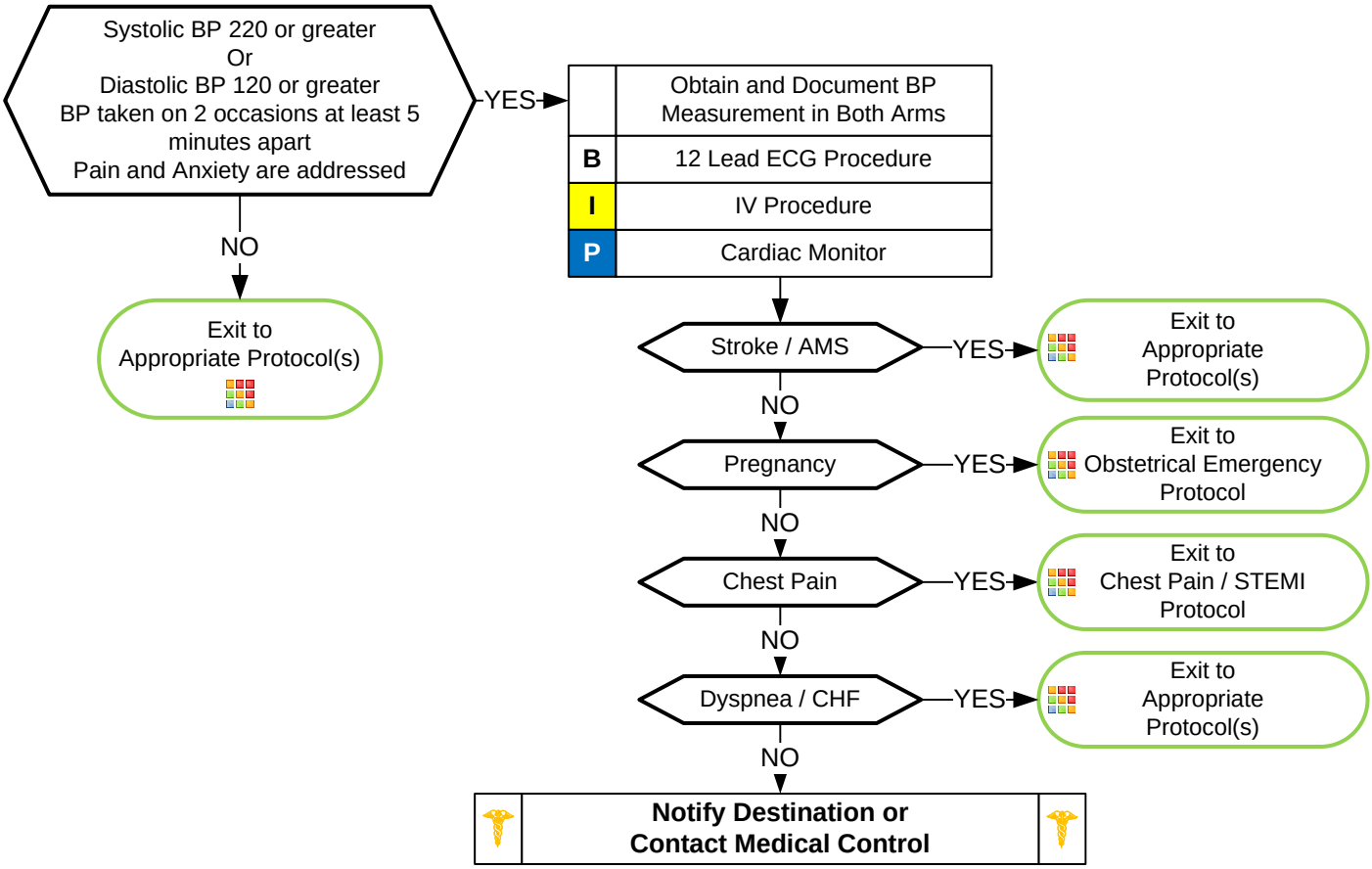
History
- Documented Hypertension
- Related diseases: Diabetes; CVA; Renal Failure; Cardiac Problems
- Medications for Hypertension
- Compliance with Hypertensive Medications
- Erectile Dysfunction medications
- Pregnancy

Signs and Symptoms
One of these
- Systolic BP 220 or greater
- Diastolic BP 120 or greater

AND at least one of these
- Severe Headache
- Chest Pain
- Dyspnea
- Altered Mental Status
- Seizure

Differential
- Hypertensive encephalopathy
- Primary CNS Injury
  - Cushing's Response with Bradycardia and Hypertension
- Myocardial Infarction
- Aortic Dissection / Aneurysm
- Pre-eclampsia / Eclampsia

Hypertension is not uncommon especially in an emergency setting. Hypertension is usually transient and in response to stress and / or pain. A hypertensive emergency is based on blood pressure along with symptoms which suggest an organ is suffering damage such as MI, CVA or renal failure. This is very difficult to determine in the pre-hospital setting in most cases. Aggressive treatment of hypertension can result in harm. Most patients, even with significant elevation in blood pressure, need only supportive care. Specific complaints such as chest pain, dyspnea, pulmonary edema or altered mental status should be treated based on those specific protocols.



Pearls
- **Recommended Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro**
- Elevated blood pressure is based on two to three sets of vital signs, each several minutes apart.
- Symptomatic hypertension is typically revealed through end organ dysfunction to the cardiac, CNS or renal systems.
- All symptomatic patients with hypertension should be transported with their head elevated at 30 degrees.
- Ensure appropriate size blood pressure cuff utilized for body habitus.

Hypotension / Shock - Adult

History
- Blood loss - vaginal or gastrointestinal bleeding, AAA, ectopic
- Fluid loss - vomiting, diarrhea, fever
- Infection
- Cardiac ischemia (MI, CHF)
- Medications
- Allergic reaction
- Pregnancy
- History of poor oral intake

Signs and Symptoms
- Restlessness, confusion
- Weakness, dizziness
- Weak, rapid pulse
- Pale, cool, clammy skin
- Delayed capillary refill
- Hypotension
- Coffee-ground emesis
- Tarry stools

Differential
- Shock
  - Hypovolemic
  - Cardiogenic
  - Septic
  - Neurogenic
  - Anaphylactic
- Ectopic pregnancy
- Dysrhythmias
- Pulmonary embolus
- Tension pneumothorax
- Medication effect / overdose
- Vasovagal
- Physiologic (pregnancy)

Diabetic Protocol *if indicated*

	Blood Glucose Analysis Procedure
B	12 Lead ECG Procedure
I	IV Procedure / P: IO Procedure
P	Cardiac Monitor
	Airway Protocol(s) *if indicated*

Cardiac / Arrhythmia Protocol *if indicated*

History, Exam and Circumstances often suggest **Type of Shock:**
Was trauma involved?

YES

Consider Hypovolemic (bleeding), Neurogenic (spinal injury), Obstructive (Pneumothorax)

	Spinal Immobilization Procedure *if indicated*
	Wound Care, CONTROL HEMORRHAGE *as indicated*
I	**Normal Saline or other Crystalloid Solution Bolus 500 mL IV / IO** Repeat to effect SBP ≥ 90 **Maximum 2 L**
P	Chest Decompression-Needle Procedure *if indicated*
P	**Consider Vasopressors ONLY after 2 Liter Fluid Bolus and patient is peri-arrest, consider Blood Products if Available**

NO

Consider Hypovolemic (ex. Dehydration, GI bleed), Cardiogenic (ex. STEMI, CHF), Distributive (ex. Sepsis, Anaphylaxis), Obstructive (ex. PE, Tamponade)

I	**Normal Saline or other Crystalloid Solution Bolus 500 mL IV / IO** Repeat as needed to SBP ≥ 90 **Maximum 2 L**
P	**Caution with excess fluids in cardiogenic shock; consider the presence of pulmonary edema; utilize pressors early: Norepinephrine 1-10mcg/min IV/IO** *or* **Dopamine 5 – 20 mcg/kg/min IV / IO** To effect SBP ≥ 90
P	**For non-cardiogenic shock, consider pressors after 2 liter fluid bolus: Norepinephrine 1-10mcg/min IV/IO** *or* **Dopamine 5-20mcg/kg/min IV/IO** *or* **Phenylephrine 100mcg IV/IO every 10min, max total dose 500mcg** *Titrate any pressor drugs to SBP ≥ 90*

Exit to Multiple Trauma Protocol

Notify Destination or Contact Medical Control

Adult Medical Section Protocols

Protocol 37

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Hypotension / Shock

Pearls

- **Recommended Exam: Mental Status, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- **Hypotension can be defined as a systolic blood pressure of less than 90. This is not always reliable and should be interpreted in context and patient's typical BP if known. Shock may be present with a normal blood pressure initially.**
- **Shock often is present with normal vital signs and may develop insidiously. Tachycardia may be the only manifestation.**
- **Consider all possible causes of shock and treat per appropriate protocol.**
- **Hypovolemic Shock;**
  Hemorrhage, trauma, GI bleeding, ruptured aortic aneurysm or pregnancy-related bleeding.
- **Cardiogenic Shock:**
  Heart failure: MI, Cardiomyopathy, Myocardial contusion, Ruptured ventrical / septum / valve / toxins.
- **Distributive Shock:**
  Sepsis (systemic infection)
  Anaphylactic
  Neurogenic: Hallmark is warm, dry, pink skin with normal capillary refill time and typically alert.
  Toxins
- **Obstructive Shock:**
  Pericardial tamponade. Pulmonary embolus. Tension pneumothorax.
  Signs may include hypotension with distended neck veins, tachycardia, unilateral decreased breath sounds or muffled heart sounds.
- **Acute Adrenal Insufficiency:** State where body cannot produce enough steroids (glucocorticoids / mineralocorticoids.) May have primary adrenal disease or more commonly have recently stopped a steroid like prednisone. Usually hypotensive with nausea, vomiting, dehydration and / or abdominal pain. **If suspected, EMT-P should give Methylprednisolone 125 mg IV / IO or Dexamethasone 10 mg IV / IO**.
- For non-cardiac hypotension, Pressors should only be started after 2 liters of NS have been given.

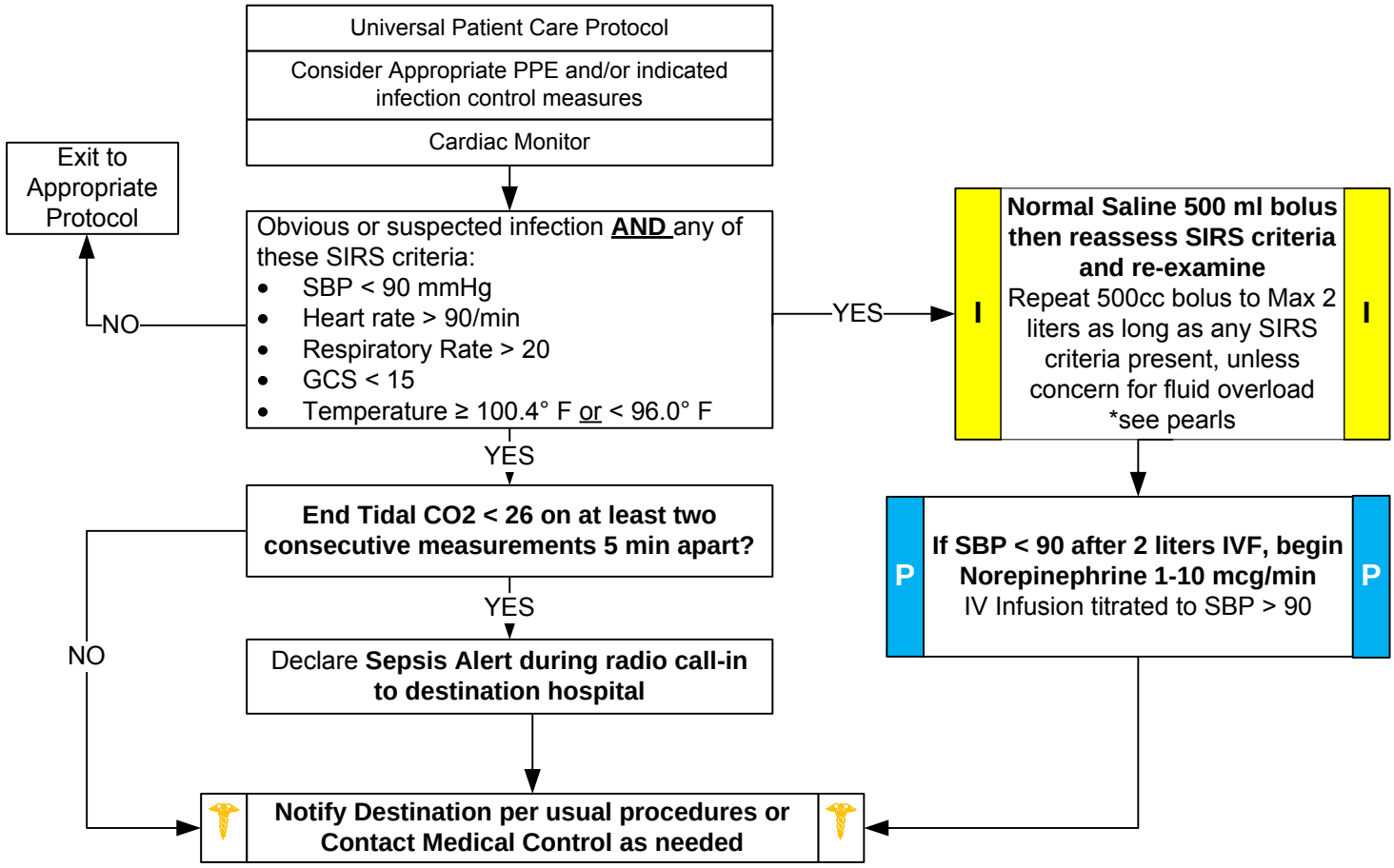
This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Suspected Sepsis/Septic Shock - Adult

History
- Age (common in elderly and very young)
- Presence and duration of fever
- Previously documented infection or illness (UTI, pneumonia, meningitis, encephalitis, cellulitis, abscess etc.)
- Recent surgery or invasive procedure
- Immunocompromised (transplant, HIV, diabetes, cancer)
- Bedridden or immobile patients
- Prosthetic or indwelling devices
- Immunization status

Signs and Symptoms
- Hyper or hypothermia
- Rash and/or excessive bruising
- Chills
- Myalgia (muscle aches)
- Markedly decreased urine output
- Altered mentation
- Delayed capillary refill
- Elevated blood glucose (unless diabetic)

Differential
- Cardiogenic shock
- Hypovolemic shock
- Dehydration
- Hyperthyroidism
- Medication/drug interaction
- Non-septic infection
- Allergic reaction/anaphylaxis
- Toxicological emergency



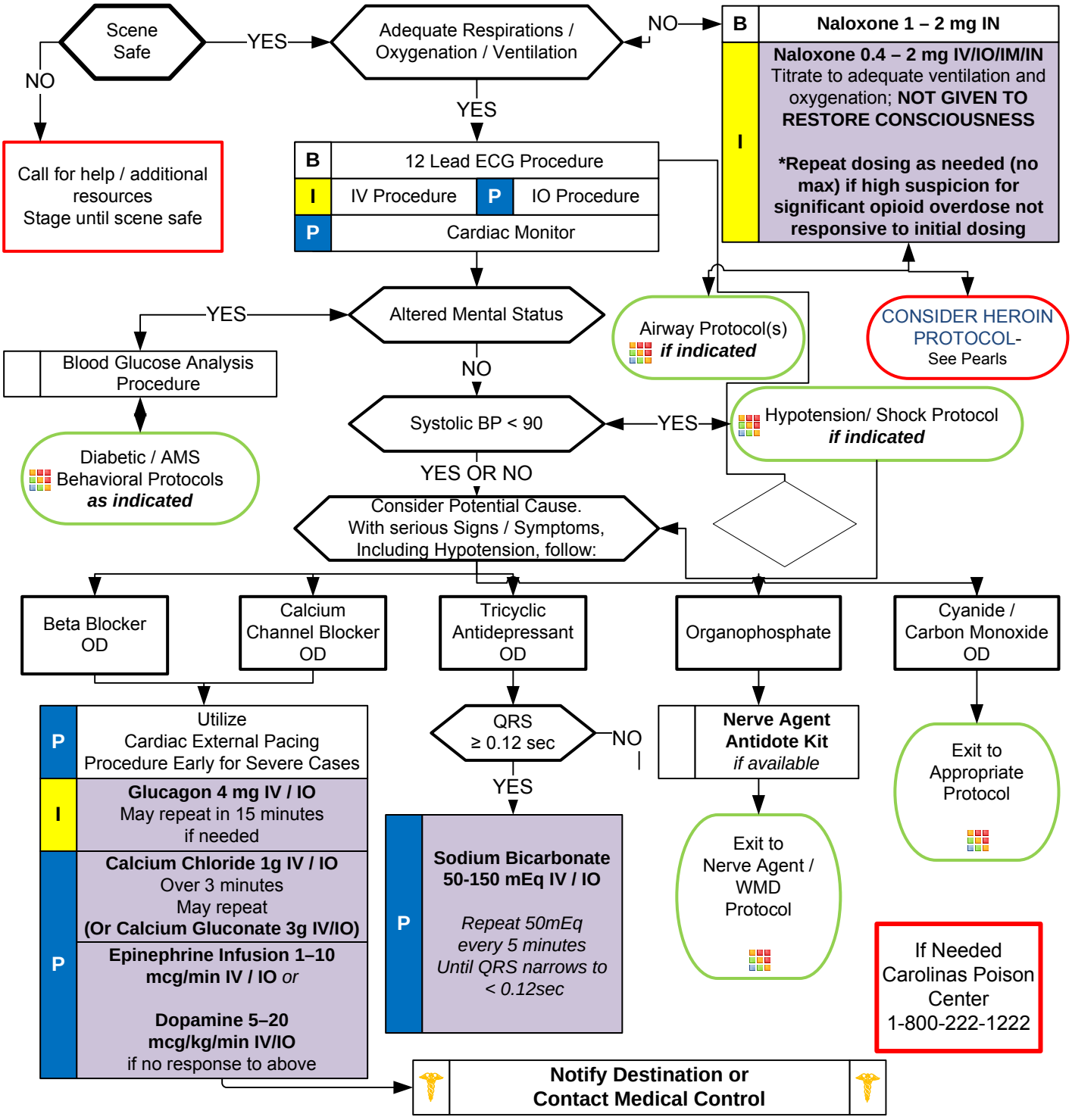
Pearls
- Early recognition of Sepsis allows for attentive care and early administration of antibiotics.
- Aggressive IV fluid therapy is the most important prehospital treatment for sepsis. Suspected septic patients should receive repeated fluid boluses (**to a max total of 2 liters**) while being checked frequently for signs of pulmonary edema, especially patients with known history of CHF or ESRD on dialysis. STOP fluid infusion in the setting of pulmonary edema.
- Septic patients are especially susceptible to traumatic lung injury and ARDS. If artificial ventilation is necessary, avoid ventilating with excessive tidal volumes. **If CPAP is utilized, airway pressure should be limited to 5 cmH2O.**
- Attempt to identify source of infection (skin, respiratory etc.) and relay previous treatments and related history to ED physician.
- Elevated serum lactate levels are a useful marker of hypoperfusion in sepsis and often become elevated prior to the onset of hypotension. End Tidal CO2 levels are correlated with lactate levels.
- Disseminated Intravascular Coagulation (DIC) is an ominous, late stage manifestation of sepsis characterized by frank, extensive bruising, bleeding from multiple sites and finally tissue death.

Overdose / Toxic Ingestion

History
- Ingestion or suspected ingestion of a potentially toxic substance
- Substance ingested, route, quantity
- Time of ingestion
- Reason (suicidal, accidental, criminal)
- Available medications in home
- Past medical history, medications

Signs and Symptoms
- Mental status changes
- Hypotension / hypertension
- Decreased respiratory rate
- Tachycardia, dysrhythmias
- Seizures
- S.L.U.D.G.E.
- D.U.M.B.B.E.L.S

Differential
- Tricyclic antidepressants (TCAs)
- Acetaminophen (Tylenol)
- Aspirin
- Depressants
- Stimulants
- Anticholinergic
- Cardiac medications
- Solvents, Alcohols, Cleaning agents
- Insecticides (organophosphates)



Adult Medical Section Protocols

Protocol 38

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Overdose / Toxic Ingestion

Multiple observational studies have indicated that no short-term deaths were found in subsets of opioid overdose patients who received naloxone treatment in the field. Therefore the following protocol is in effect:

Wake County EMS System Isolated Heroin Overdose Protocol

1. To have the protocol applied, a patient must be age 18 or older and be suffering from an isolated IV opioid overdose, i.e. with depressed mental status or respiratory distress/arrest from opioid overdose. Patients are treated as per page 1 of this protocol: Overdose/Toxic Ingestion.

2. The following conditions must be true:

a. The patient must never have been in cardiac arrest during this incident.

b. The patient must regain a normal mental and respiratory status after naloxone administration of up to 2mg via IM, IV, or IN route.

c. Once "awake" the patient must admit to isolated IV opioid/heroin overdose, and must not also have overdosed on any oral narcotics such as oxycontin, methadone, etc.

d. The patient must consent to, and the paramedic must administer, another 2mg dose of Naloxone by the IntraMuscular route only.

3. If conditions a,b,c, and d are all met, and there is no other acute medical or traumatic condition requiring care, the patient is considered "medically clear" for consideration for alternate destination referral or the patient may refuse further treatment and transport.

4. If the patient was ever in cardiac arrest, does not regain normal mental or respiratory status or requires more than 2mg of Naloxone to do so, does not consent to an additional 2mg of IM Naloxone, or there is evidence of opioid overdose by any other route (oral, transdermal, etc), then the patient should be transported to an appropriate local emergency department. Transport to the Emergency Department should also be provided for patients who request it, and assistance should be provided to those patients who wish to be assessed and treated for substance abuse.

Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Heart, Lungs, Abdomen, Extremities, Neuro**
- Overdose or Toxin patients with significant ingestions/exposures should be monitored very closely and aggressively treated as indicated. Do not hesitate to contact medical control for advice as certain critically ill overdose patients may quickly overwhelm medication supplies. For example, patients with a tricyclic overdose with a wide QRS and altered mental status should receive multiple sodium bicarbonate boluses until QRS narrowing and clinical improvement; patients with organophosphate toxicity with SLUDGE syndrome may require more atropine than is usually carried on the ambulance.
- **Do not rely on patient history of ingestion, especially in suicide attempts. Make sure patient is still not carrying other medications or has any weapons.**
- **Bring pill bottles, contents, emesis to the emergency department.**
- **S.L.U.D.G.E: Salivation, Lacrimation, Urination, Defecation, GI distress, Emesis**
- **D.U.M.B.B.E.L.S: Diarrhea, Urination, Miosis, Bradycardia, Bronchorrhea, Emesis, Lacrimation, Salivation.**
- **Tricyclic:** 4 major areas of toxicity: decreased mental status, dysrhythmias, seizures, hypotension, then coma and death. There may be a rapid progression from alert mental status to death.
- **Acetaminophen:** initially normal or nausea/vomiting. If not detected and treated, causes irreversible liver failure
- **Aspirin**: Early signs consist of abdominal pain and vomiting. Tachypnea and altered mental status may occur later. Renal dysfunction, liver failure, and or cerebral edema among other things can take place later.
- **Depressants:** decreased HR, decreased BP, decreased temperature, decreased respirations, non-specific pupils
- **Stimulants:** increased HR, increased BP, increased temperature, dilated pupils, seizures
- **Anticholinergic:** increased HR, increased temperature, dilated pupils, mental status changes
- **Cardiac Medications:** dysrhythmias and mental status changes
- **Solvents:** nausea, coughing, vomiting, and mental status changes
- **Insecticides:** increased or decreased HR, increased secretions, nausea, vomiting, diarrhea, pinpoint pupils
- Consider restraints if necessary for patient's and/or personnel's protection per the Restraint Procedure.
- **Nerve Agent Antidote kits** contain 2 mg of Atropine and 600 mg of pralidoxime in an autoinjector for self administration or patient care. These kits may be available as part of the domestic preparedness for Weapons of Mass Destruction.
- **EMT-B may administer naloxone by IN route only. May administer from EMS supply.**
- **Consider contacting the North Carolina Poison Center for guidance.**

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Vomiting and Diarrhea- Adult

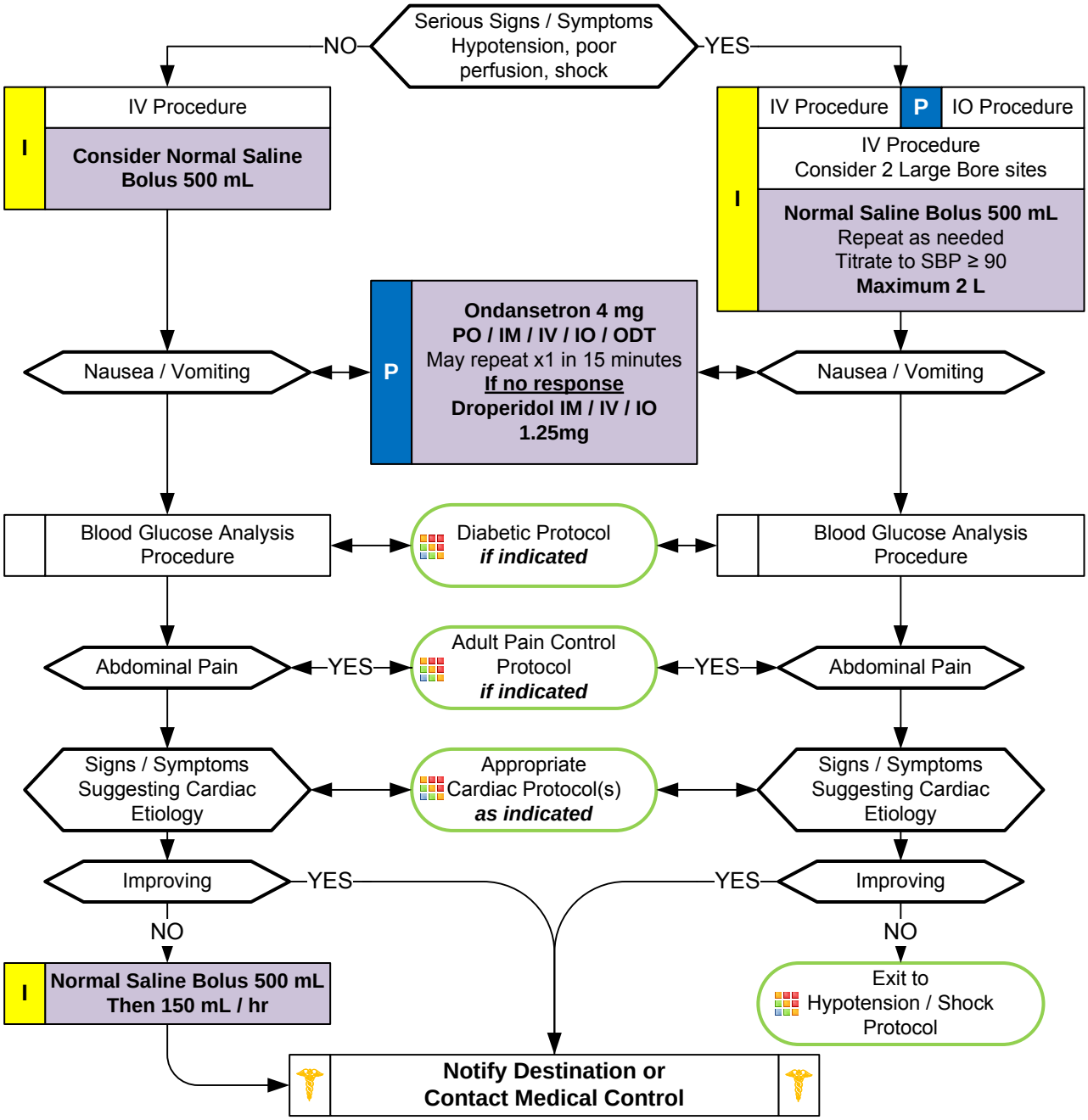
History
- Age
- Time of last meal
- Last bowel movement/emesis
- Improvement or worsening with food or activity
- Duration of problem
- Other sick contacts
- Past medical history
- Past surgical history
- Medications
- Menstrual history (pregnancy)
- Travel history
- Bloody emesis / diarrhea

Signs and Symptoms
- Abdominal Pain?
- Character of pain (constant, intermittent, sharp, dull, etc.)
- Distention
- Constipation
- Diarrhea
- Anorexia
- Radiation

Associated symptoms: (Helpful to localize source)

Fever, headache, blurred vision, weakness, malaise, myalgias, cough, headache, dysuria, mental status changes, rash

Differential
- CNS (increased pressure, headache, stroke, CNS lesions, trauma or hemorrhage, vestibular)
- Myocardial infarction
- Drugs (NSAID's, antibiotics, narcotics, chemotherapy)
- GI or Renal disorders
- Diabetic ketoacidosis
- Gynecologic disease (ovarian cyst, PID)
- Infections (pneumonia, influenza)
- Electrolyte abnormalities
- Food or toxin induced
- Medication or Substance abuse
- Pregnancy
- Psychological



Adult Medical Section Protocols

Protocol 39

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Vomiting and Diarrhea- Adult

Pearls

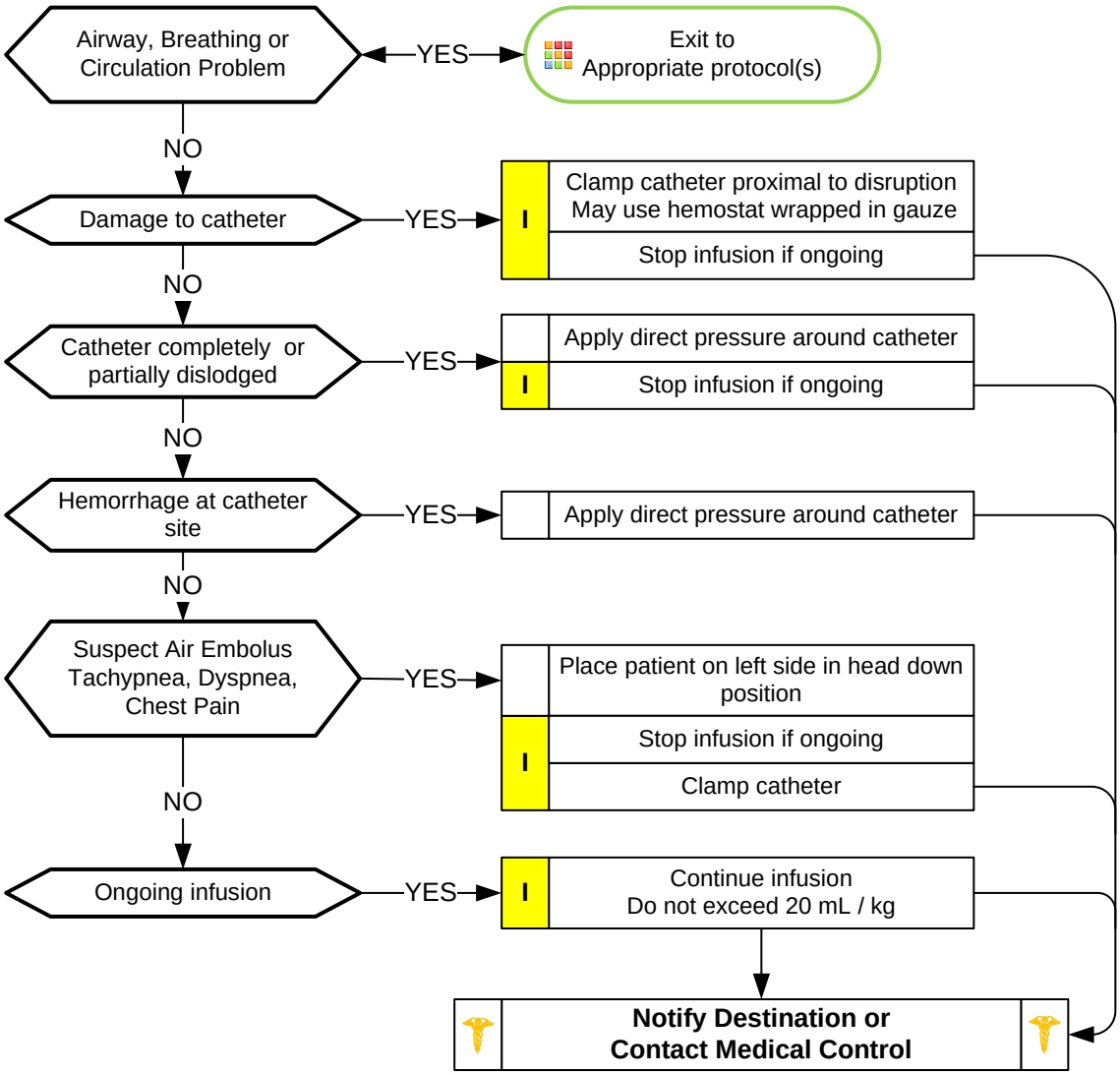
- **Recommended Exam: Mental Status, Skin, HEENT, Neck, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- The use of metoclopramide (Reglan) may worsen diarrhea and should be avoided in patients with this symptom.
- Document mental status and vital signs prior to administration of Droperidol.
- Isolated vomiting may be caused by pyloric stenosis (in pediatrics), bowel obstruction, and CNS processes (bleeding, tumors, or increased CSF pressures).

Emergencies Involving Indwelling Central Lines- Adult/Pediatrics

History
- Central Venous Catheter Type
  - Tunneled Catheter (Broviac / Hickman)
  - PICC (peripherally inserted central catheter
  - Implanted catheter (Mediport / Hickman)
- Occlusion of line
- Complete or partial dislodge
- Complete or partial disruption

Signs and Symptoms
- External catheter dislodgement
- Complete catheter dislodgement
- Damaged catheter
- Bleeding at catheter site
- Internal bleeding
- Blood clot
- Air embolus
- Erythema, warmth or drainage about catheter site indicating infection

Differential
- Fever
- Hemorrhage
- Reactions from home nutrient or medication
- Respiratory distress
- Shock



Pearls
- **Always talk to family / caregivers as they have specific knowledge and skills.**
- Use strict sterile technique when accessing / manipulating an indwelling catheter.
- Do not place a tourniquet or BP cuff on the same side where a PICC line is located.
- Do not attempt to force catheter open if occlusion evident.
- Some infusions may be detrimental to stop. Ask family or caregiver if it is appropriate to stop or change infusion.
- Cardiac arrest: Access central catheter and utilize if functioning properly.
- Hyperalimentation infusions (IV nutrition): If stopped for any reason monitor for hypoglycemia.

Protocol 40

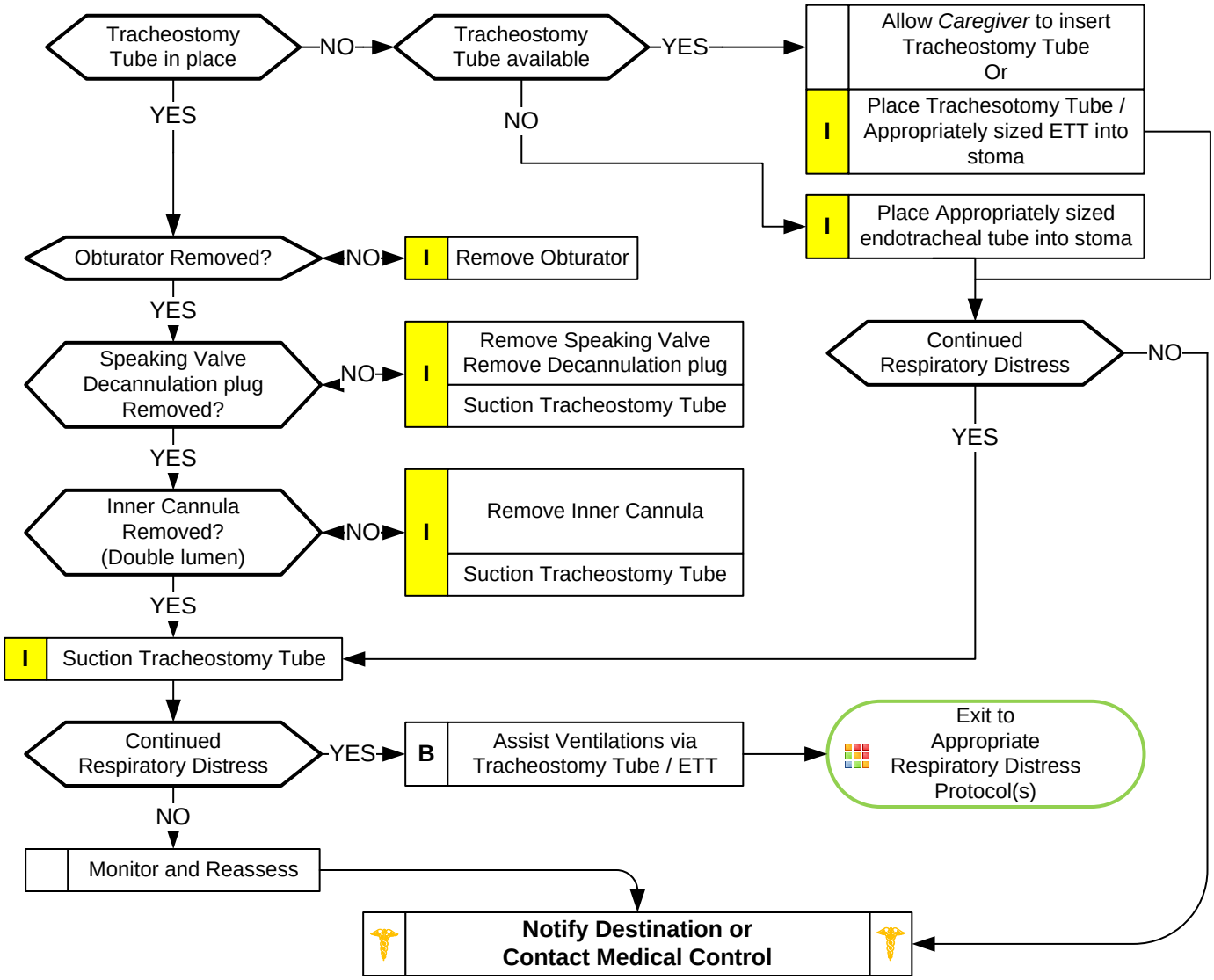
This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Respiratory Distress
With a Tracheostomy Tube- Adult/Pediatrics

History
- Birth defect (tracheal atresia, tracheomalacia, craniofacial abnormalities)
- Surgical complications (accidental damage to phrenic nerve)
- Trauma (post-traumatic brain or spinal cord injury)
- Medical condition (bronchial or pulmonary dysplasia, muscular dystrophy)

Signs and Symptoms
- Nasal flaring
- Chest wall retractions (with or without abnormal breath sounds)
- Attempts to cough
- Copious secretions noted coming out of the tube
- Faint breath sounds on both sides of chest despite significant respiratory effort
- AMS
- Cyanosis

Differential
- Allergic reaction
- Asthma
- Aspiration
- Septicemia
- Foreign body
- Infection
- Congenital heart disease
- Medication or toxin
- Trauma



Adult / Pediatric Medical Section Protocols

Pearls
- **Always talk to family / caregivers as they have specific knowledge and skills.**
- Use patients equipment if available and functioning properly.
- Estimate suction catheter size by doubling the inner tracheostomy tube diameter and rounding down.
- Suction depth: Ask family / caregiver. No more than 3 to 6 cm typically. Instill 2 – 3 mL of NS before suctioning.
- Do not suction more than 10 seconds each attempt and pre-oxygenate before and between attempts.
- DO NOT force suction catheter. If unable to pass, then tracheostomy tube should be changed.
- Always deflate tracheal tube cuff before removal. Continual pulse oximetry and EtCO2 monitoring if available.
- **DOPE: D**isplaced tracheostomy tube / ETT, **O**bstructed tracheostomy tube / ETT, **P**neumothorax and **E**quipment failure.

Protocol 41

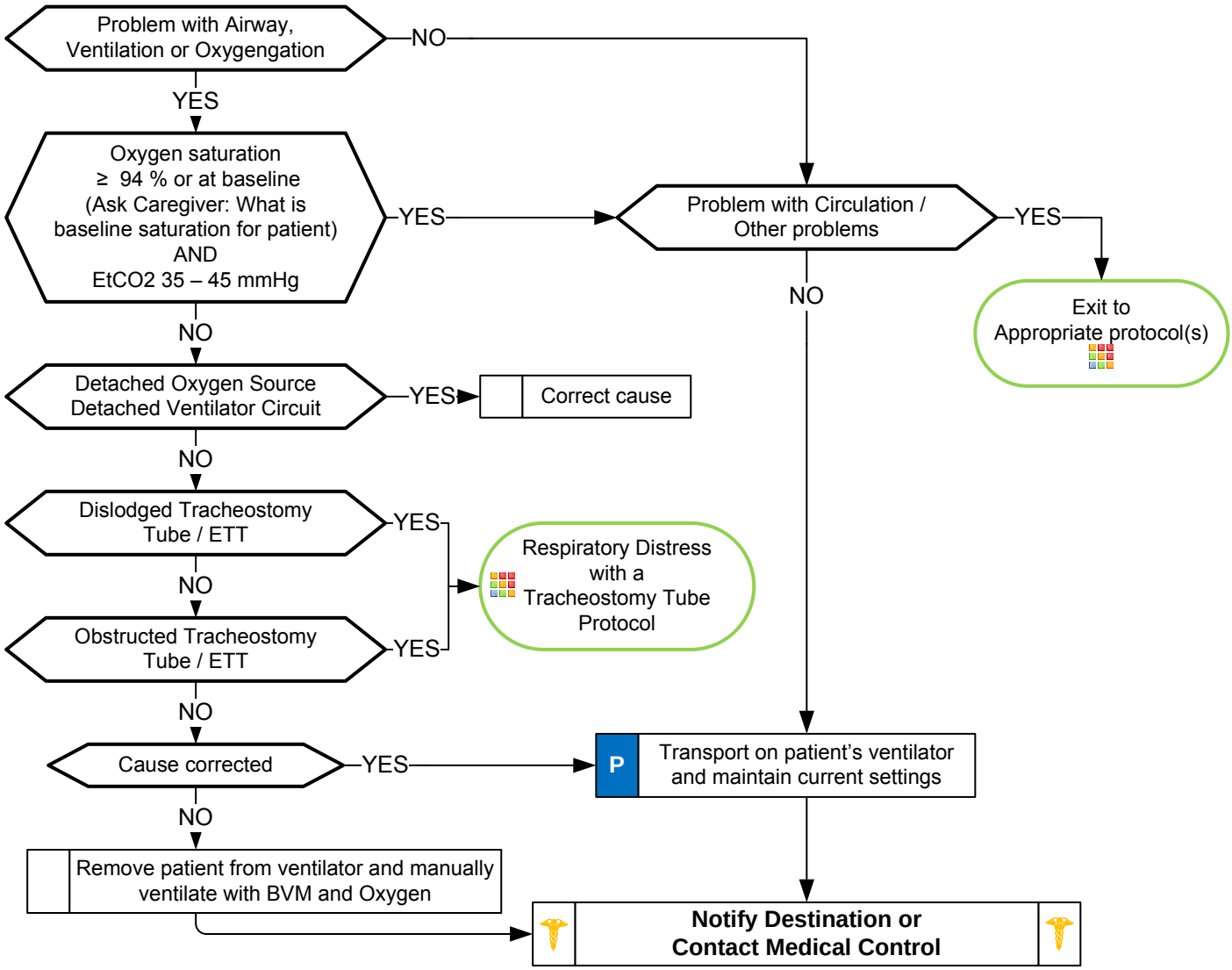
This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Emergencies
Involving Ventilators- Adult/Pediatrics

History
- Birth defect (tracheal atresia, tracheomalacia, craniofacial abnormalities)
- Surgical complications (damage to phrenic nerve)
- Trauma (post-traumatic brain or spinal cord injury)
- Medical condition (bronchopulmonary dysplasia, muscular dystrophy)

Signs and Symptoms
- Transport requiring maintenance of a mechanical ventilator
- Power or equipment failure at residence

Differential
- Disruption of oxygen source
- Dislodged or obstructed tracheostomy tube
- Detached or disrupted ventilator circuit
- Cardiac arrest
- Increased oxygen requirement / demand
- Ventilator failure



Adult / Pediatric Medical Section Protocols

Pearls
- **Always talk to family / caregivers as they have specific knowledge and skills.**
- Always use patient's equipment if available and functioning properly.
- Continuous pulse oximetry and end tidal CO2 monitoring must be utilized during assessment and transport.
- **DOPE: D**isplaced tracheostomy tube / ETT, **O**bstructed tracheostomy tube / ETT, **P**neumothorax and **E**quipment failure.
- Unable to correct ventilator problem: Remove patient from ventilator and manually ventilate using BVM. Take patient's ventilator to hospital even if not functioning properly.
- Typical alarms: Low Pressure / Apnea: Loose or disconnected circuit, leak in circuit or around tracheostomy site.
  Low Power: Internal battery depleted.
  High Pressure: Plugged / obstructed airway or circuit.

Protocol 42

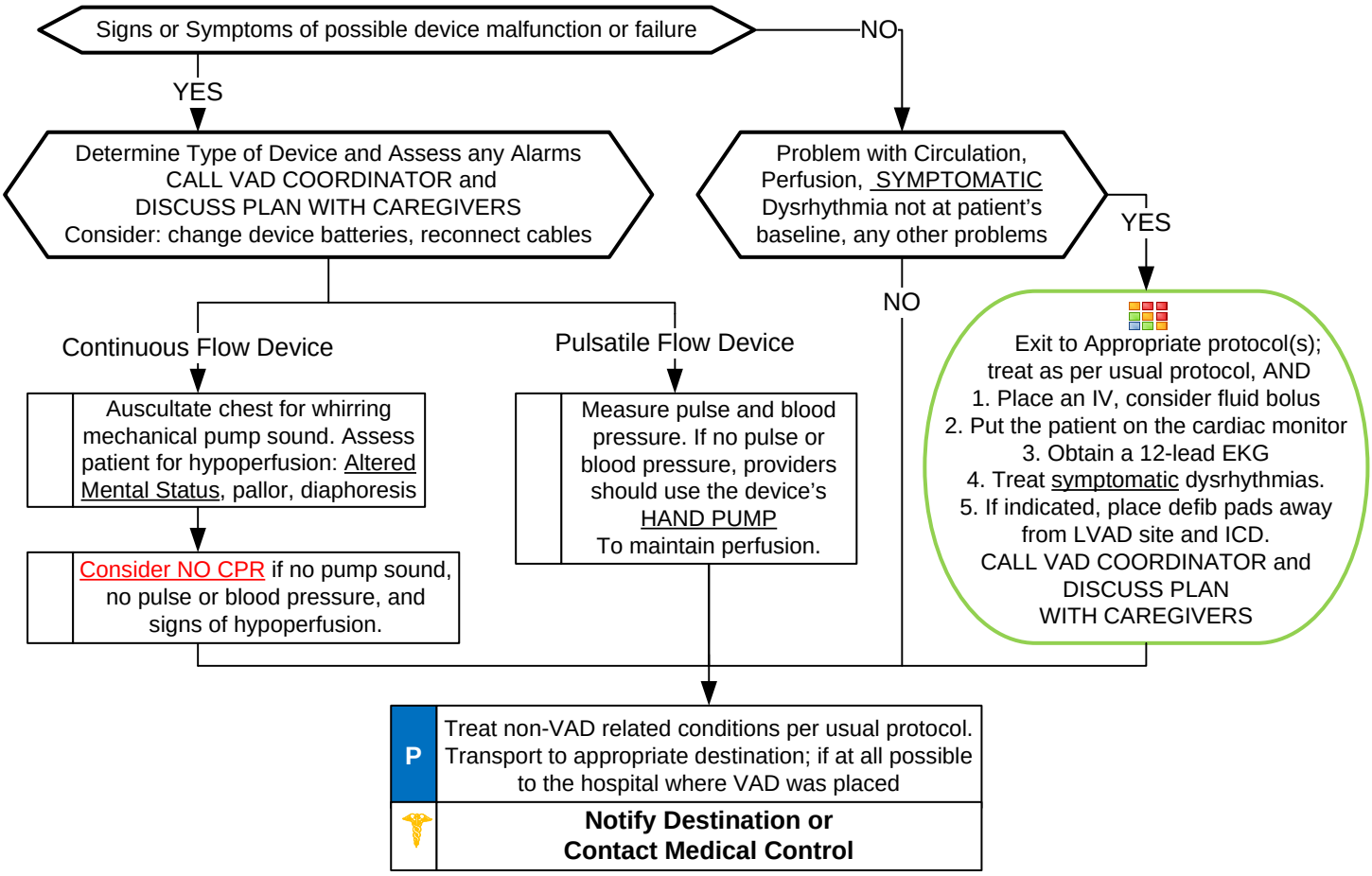
This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Emergencies Involving Ventricular Assist Devices (VAD or LVAD)

History
- End-Stage Heart Failure
- Patient has surgically-implanted pump that assists the action of one or both ventricles.
- Patient may or may not be on a list for cardiac transplantation

Signs and Symptoms
- The flow through many of these devices is not pulsatile, therefore THE PATIENT MAY NOT HAVE A PULSE AT BASELINE. For this reason pulse oximetry readings may also be inaccurate
- Altered Mental Status may be the only indicator of a problem
- Consider both VAD-related and non-VAD-related problems

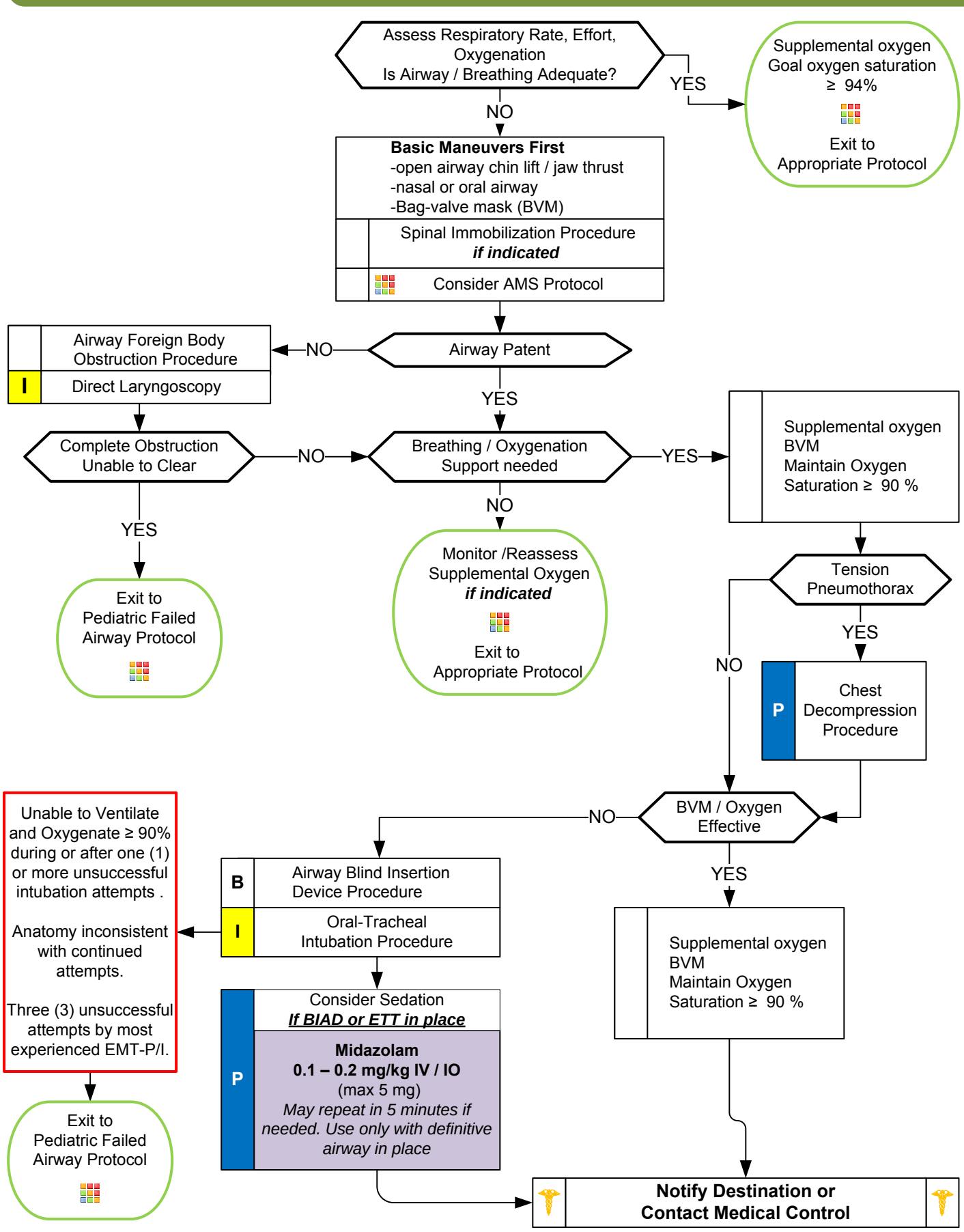
Differential
- Stroke
- Cardiac Arrest
- Dysrhythmia different from patient's baseline
- Infection
- Bleeding (VAD patients are anticoagulated)
- Dehydration
- Cardiac Tamponade
- Device problem such as low battery or disconnected cable



Pearls
- **ALWAYS talk to family / caregivers as they have specific knowledge and skills. CALL THE VAD COORDINATOR EARLY as per patient / family instructions or as listed on the device. They are available 24 / 7 and should be an integral part of the treatment plan.**
- **QUESTIONS TO ASK: DOES THE PATIENT HAVE A DNR? Can the patient be cardioverted or defibrillated if needed? Can CHEST COMPRESSIONS be performed in case of pump failure?**
- **Deciding when to initiate Chest Compressions is very difficult. Consider that chest compressions may cause death by exsanguination if the device becomes dislodged. However, if the pump has stopped the heart will not be able to maintain perfusion and the patient will likely die. Ideally, plan the decision in advance with a responsive patient and the VAD coordinator. If a VAD patient is unresponsive and pulseless with a non-functioning pump and has previously indicated a desire for resuscitative efforts, begin compressions. Contact the VAD coordinator and medical control.**

- Common complications in VAD patients include Stroke and TIA (incidence up to 25%), bleeding, dysrhythmia, and infection.
- The Cardiac Monitor and 12 lead EKG are not affected by the VAD and will provide important information.
- VAD patients are preload dependent. Consider that a FLUID BOLUS can often reverse hypoperfusion.
- Transport patients with ALL device equipment including any instructions, hand pumps, backup batteries, primary and secondary controllers, as well as any knowledgeable family members or caregivers.

Pediatric Airway



Pediatric Section Protocols

Protocol 44

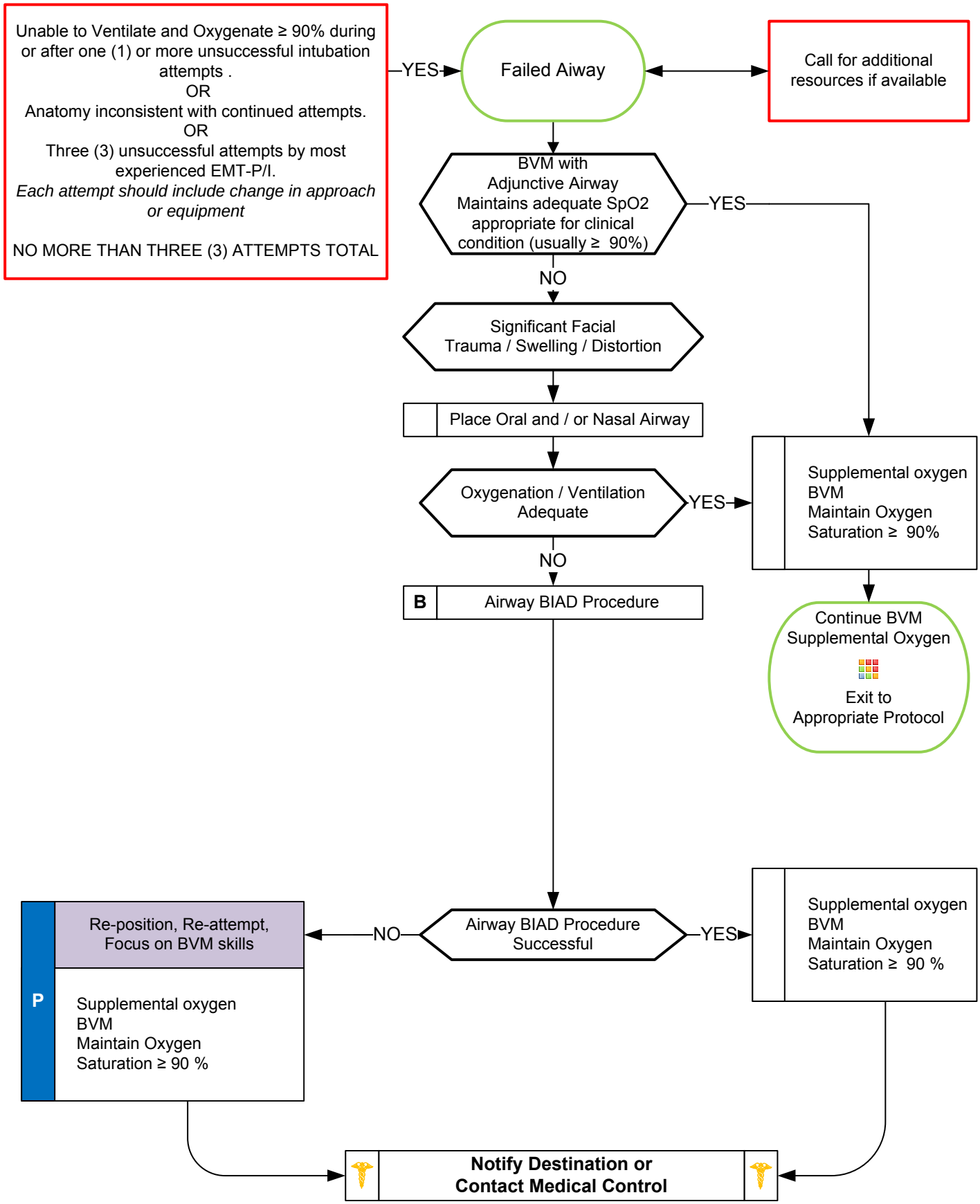
This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Pediatric Airway

Pearls

- **For this protocol, pediatric is defined as < 12 years of age or any patient who can be measured within the Broselow-Luten tape.**
- **Capnometry (color) or capnography is mandatory with all airway management. Document results.**
- **Continuous capnography (EtCO2) is mandatory with BIAD or endotracheal tube use.**
- **If an effective airway is being maintained by BVM with continuous pulse oximetry values of ≥ 90% or stable/improving values consistent with clinical condition (e.g. pulse oximetry in the mid 80s post-drowning), it is acceptable to continue with basic airway measures instead of using a BIAD or Intubation.**
- **For the purposes of this protocol, a secure airway is when the patient is appropriately oxygenated and ventilated.**
- **An intubation attempt is defined as passing the laryngoscope blade or endotracheal tube past the teeth or inserted into the nasal passage.**
- **Ventilatory rate should generally be 30 for Neonates, 25 for Toddlers, 20 for School Age, and for Adolescents the normal Adult rate of 8-12 per minute. Goal rate should maintain EtCO2 between 35 and 45; AVOID HYPERVENTILATION.**
- **Hyperventilation in deteriorating head trauma should only be done to maintain a pCO_2 of 30-35.**
- Do not attempt intubation in patients who maintain a gag reflex.
- Paramedics should consider using a BIAD if oral-tracheal intubation is unsuccessful.
- Cricoid pressure and BURP maneuver may be used to assist with difficult intubations. They may worsen view in some cases.
- Gastric tube placement should be performed in all intubated patients.
- It is important to secure the endotracheal tube well and consider c-collar (even in absence of trauma) to better maintain ETT placement. Manual stabilization of endotracheal tube should be used during all patient moves / transfers.

Pediatric Failed Airway



This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Pediatric Failed Airway

Pearls

- **For this protocol, pediatric is defined as less than 12 years of age or any patient which can be measured within the Broselow-Luten tape.**
- **Capnometry (color) or capnography is mandatory with all airway management. Document results.**
- **Continuous capnography (EtCO2) is mandatory with BIAD or endotracheal tube use.**
- **If an effective airway is being maintained by BVM with continuous pulse oximetry values of ≥ 90% or stable/improving values appropriate to clinical condition (e.g. values in the mid 80s with a post-drowning patient), it is acceptable to continue with basic airway measures instead of using a BIAD or Intubation.**
- **For the purposes of this protocol a secure airway is when the patient is receiving appropriate oxygenation and ventilation.**
- **An intubation attempt is defined as passing the laryngoscope blade or endotracheal tube past the teeth or inserted into the nasal passage.**
- **Ventilatory rate should generally be 30 for Neonates, 25 for Toddlers, 20 for School Age, and for Adolescents the normal Adult rate of 8-12 per minute. The goal rate maintains an EtCO2 between 35 and 45 and avoid hyperventilation.**
- **Hyperventilation in deteriorating head trauma should only be done to maintain a pCO_2 of 30-35.**
- **If first intubation attempt fails, make an adjustment and then try again:** Different laryngoscope blade; Gum Elastic Bougie; Different ETT size; Change cricoid pressure; Apply BURP; Change head positioning
- Paramedics should consider using a BIAD if oral-tracheal intubation is unsuccessful.
- Cricoid pressure and BURP maneuver may be used to assist with difficult intubations. They may worsen view in some cases.
- Gastric tube placement should be considered in all intubated patients.
- It is important to secure the endotracheal tube well and consider c-collar (even in absence of trauma) to better maintain ETT placement. Manual stabilization of endotracheal tube should be used during all patient moves / transfers.

Pediatric Pain Control

History
- Age
- Location
- Duration
- Severity (1 - 10)
- If child use Wong-Baker faces scale
- Past medical history
- Medications
- Drug allergies

Signs and Symptoms
- Severity (pain scale)
- Quality (sharp, dull, etc.)
- Radiation
- Relation to movement, respiration
- Increased with palpation of area

Differential
- Per the specific protocol
- Musculoskeletal
- Visceral (abdominal)
- Cardiac
- Pleural / Respiratory
- Neurogenic
- Renal (colic)

Allow for position of maximum comfort unless contraindicated

Enter from **Protocol** based on **Specific Complaint**

Assess
Pain Severity
Use combination of Pain Scale, Circumstances, MOI, Injury or Illness severity

Mild

B	**Ibuprofen 10 mg/kg PO (if age > 6months)** **Maximum 800 mg** Or **Acetaminophen 15 mg/kg PO** **Maximum 1000 mg**
I	Consider IV Procedure ***if indicated***
	Monitor and Reassess every 5 minutes

Moderate to Severe

I	IV Procedure	P	IO Procedure
I	**Ketorolac 0.5 mg/kg IV / IO / IM** **Maximum 30 mg**		
P	Cardiac Monitor		
P	**Morphine 0.1 mg/kg IV / IO / IM** May repeat every 5 minutes **Maximum initial dose 5 mg** **Maximum total dose 10 mg** Or **Fentanyl 2 mcg/kg IV / IO / IM / IN** May repeat 0.5 mcg/kg every 5 min **Maximum initial dose 75mcg** **Maximum total dose 150 mcg**		
P	Monitor and Reassess Every 5 minutes following opioid; hold further doses for any respiratory depression or AMS		

Notify Destination or Contact Medical Control

Pediatric Section Protocols

Pearls
- **Recommended Exam: Mental Status, Area of Pain, Neuro**
- **USE EXTREME CAUTION in administering opioids to patients less than 10kg**
- **This protocol applies to patients less than 12 years of age or who can be measured on the Broselow-Luten tape. If a patient is larger than the Broselow-Luten tape, you may use the adult pain control protocol, realizing that the adult pain control protocol is also weight-based.**
- **Pain severity (0-10) is a vital sign to be recorded pre and post IV or IM medication delivery and at disposition.**
- **For children use Wong-Baker faces scale or the FLACC score (see Assessment Pain Procedure)**
- **Vital signs should be obtained pre, 5 minutes post, and at disposition with all pain medications.**
- **Contraindications to Opioid use include hypotension, head injury, or respiratory distress.**
- All patients who receive IM or IV medications must be observed 15 minutes for drug reaction.
- **Ibuprofen / Ketorolac** should not be given if there is significant bleeding or suspected fracture.
- Do not administer any PO medications for patients who may need sedation such as open fractures or fracture deformities.
- **Use Numeric (> 9 yrs), Wong-Baker faces (4-16yrs) or FLACC scale (0-7 yrs) as needed to assess pain**

Protocol 46

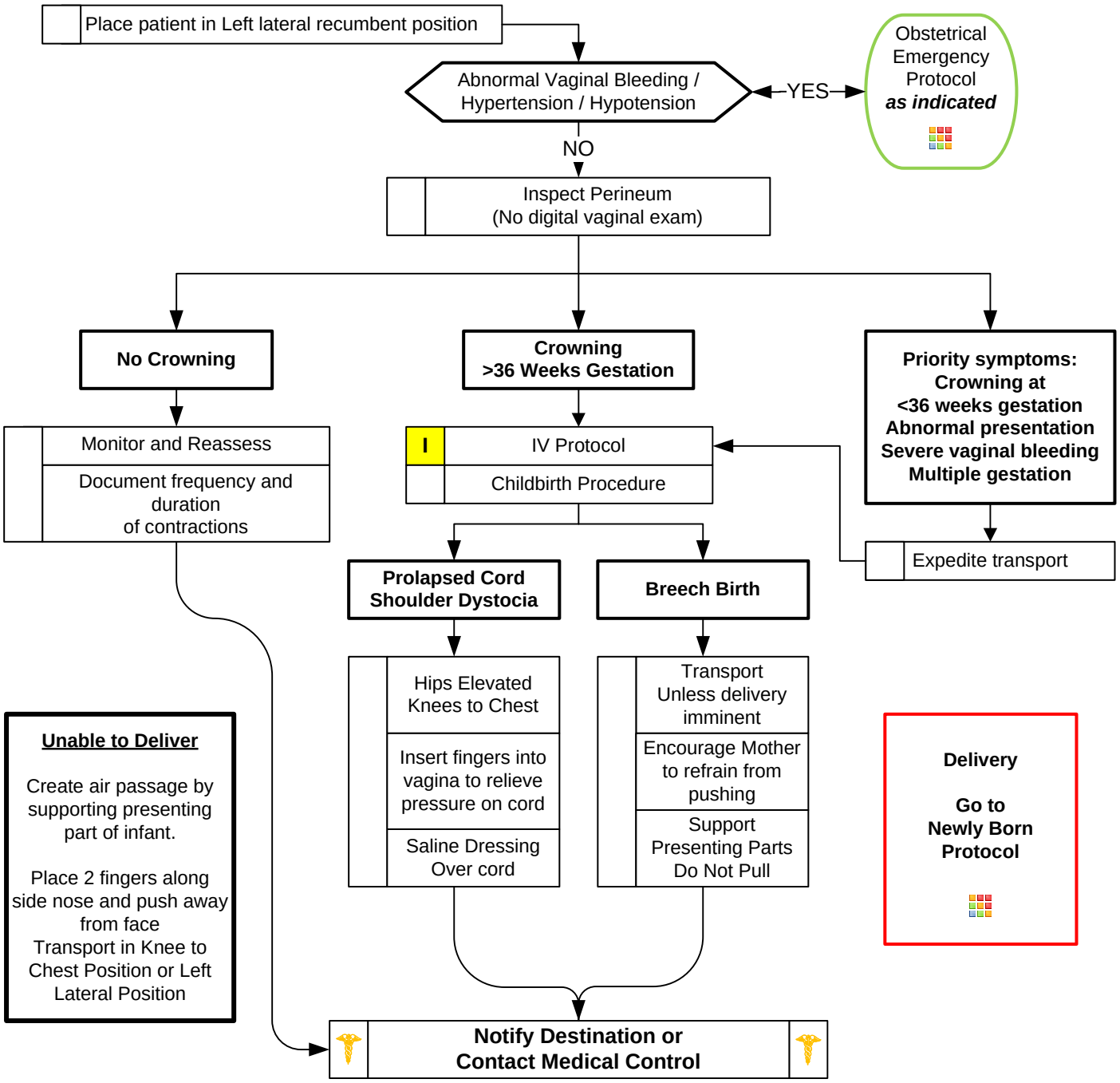
This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Childbirth / Labor

History
- Due date
- Time contractions started / how often
- Rupture of membranes
- Time / amount of any vaginal bleeding
- Sensation of fetal activity
- Past medical and delivery history
- Medications
- Gravida / Para Status
- High Risk pregnancy

Signs and Symptoms
- Spasmodic pain
- Vaginal discharge or bleeding
- Crowning or urge to push
- Meconium

Differential
- Abnormal presentation
  - Buttock
  - Foot
  - Hand
- Prolapsed cord
- Placenta previa
- Abruptio placenta



Obstetrical Section Protocols

Protocol 47

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Childbirth / Labor

Pearls

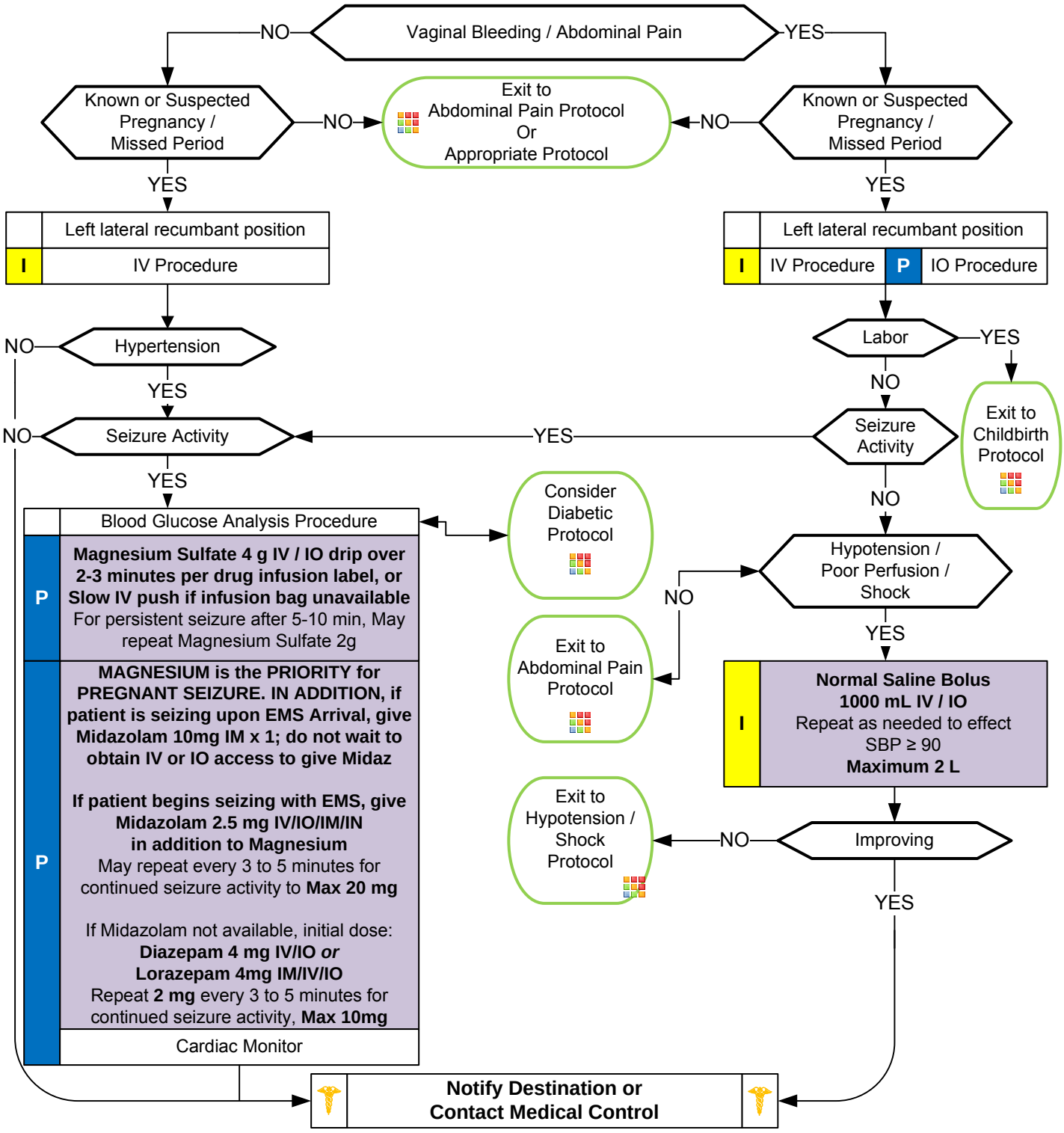
- **Recommended Exam (of Mother): Mental Status, Heart, Lungs, Abdomen, Neuro**
- Document all times (delivery, contraction frequency, and length).
- If maternal seizures occur, refer to the Obstetrical Emergencies Protocol.
- After delivery, massaging the uterus (lower abdomen) will promote uterine contraction and help to control post-partum bleeding.
- Some perineal bleeding is normal with any childbirth. Large quantities of blood or free bleeding are abnormal.
- Record APGAR at 1 minute and 5 minutes after birth.

Obstetrical Emergency

History
- Past medical history
- Hypertension meds
- Prenatal care
- Prior pregnancies / births
- Gravida / Para

Signs and Symptoms
- Vaginal bleeding
- Abdominal pain
- Seizures
- Hypertension
- Severe headache
- Visual changes
- Edema of hands and face

Differential
- Pre-eclampsia / Eclampsia
- Placenta previa
- Placenta abruptio
- Spontaneous abortion



Obstetrical Section Protocols

Protocol 48

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Obstetrical Emergency

Pearls

- **Recommended Exam: Mental Status, Abdomen, Heart, Lungs, Neuro**

- A patient who is pregnant and seizing should be presumed to have eclampsia, a true medical emergency. Magnesium administration should be a priority in these patients. However, IM benzodiazepines may be given first due to rapidity of IM administration. For crews with two ALS providers, one provider should administer IM benzodiazepine while the other provider establishes IV access for Magnesium.

- The preferred route of administration of Magnesium loading dose for eclampsia or pre-eclampsia is via IV (or IO in the case of eclampsia/seizure). However, if an IV cannot be obtained, and a patient is suspected of currently having an eclamptic seizure, Magnesium may be given IM if the appropriate concentration is available (e.g. 5g/10ml): 5g IM via multiple IM injections deep in the upper outer quadrant of the buttock, not to exceed 2.5-3cc per injection

- Severe headache, vision changes, or RUQ pain may indicate preeclampsia. For a pregnant patient with these symptoms, or a known diagnosis of pre-eclampsia and/or current hypertension, consider slow magnesium drip infusion: Magnesium Sulfate 2g IV over 10-20 minutes as per drug label guidelines.

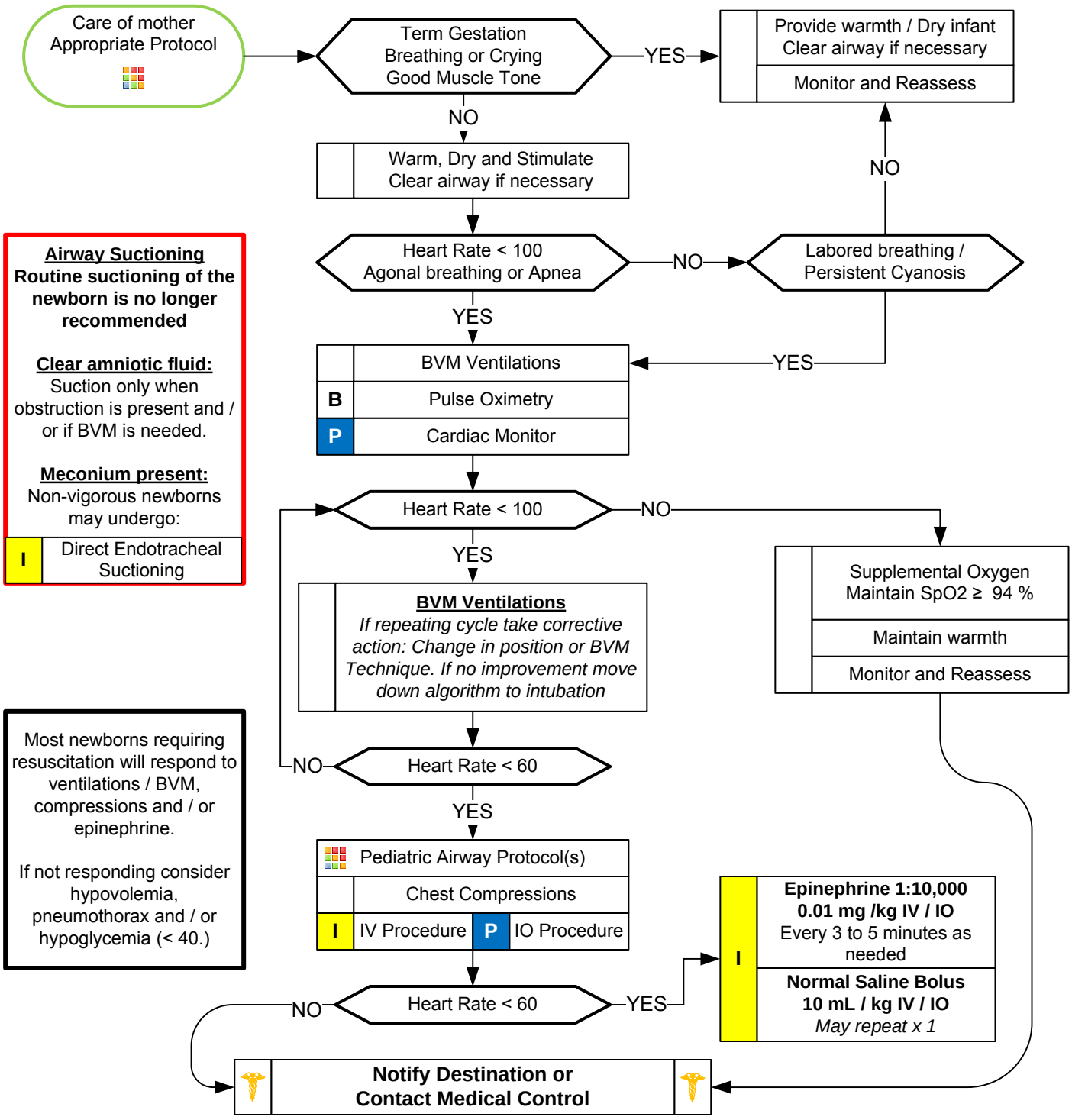
- In the setting of pregnancy, hypertension is defined as a BP greater than 140 systolic or greater than 90 diastolic, or a relative increase of 30 systolic and 20 diastolic from the patient's normal (pre-pregnancy) blood pressure.
- Maintain patient in a left lateral position to minimize risk of supine hypotensive syndrome, which may occur as the fetus gets large enough to compress the vena cava.
- Ask patient to quantify bleeding - number of pads used per hour.
- Any pregnant patient involved in a MVC should be seen immediately by a physician for evaluation. Greater than 20 weeks generally require several hours of fetal monitoring. DO NOT suggest that the patient needs an ultrasound.
- Magnesium may cause hypotension and decreased respiratory drive.
- **Do not delay IM administration of Midazolam with difficult IV or IO access.**

Newly Born

History
- Due date and gestational age
- Multiple gestation (twins etc.)
- Meconium
- Delivery difficulties
- Congenital disease
- Medications (maternal)
- Maternal risk factors
  - substance abuse
  - smoking

Signs and Symptoms
- Respiratory distress
- Peripheral cyanosis or mottling (normal)
- Central cyanosis (abnormal)
- Altered level of responsiveness
- Bradycardia

Differential
- Airway failure
  - Secretions
  - Respiratory drive
- Infection
- Maternal medication effect
- Hypovolemia
- Hypoglycemia
- Congenital heart disease
- Hypothermia



Pediatric/Obstetrical Section Protocols

Protocol 49

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Newly Born

Pearls

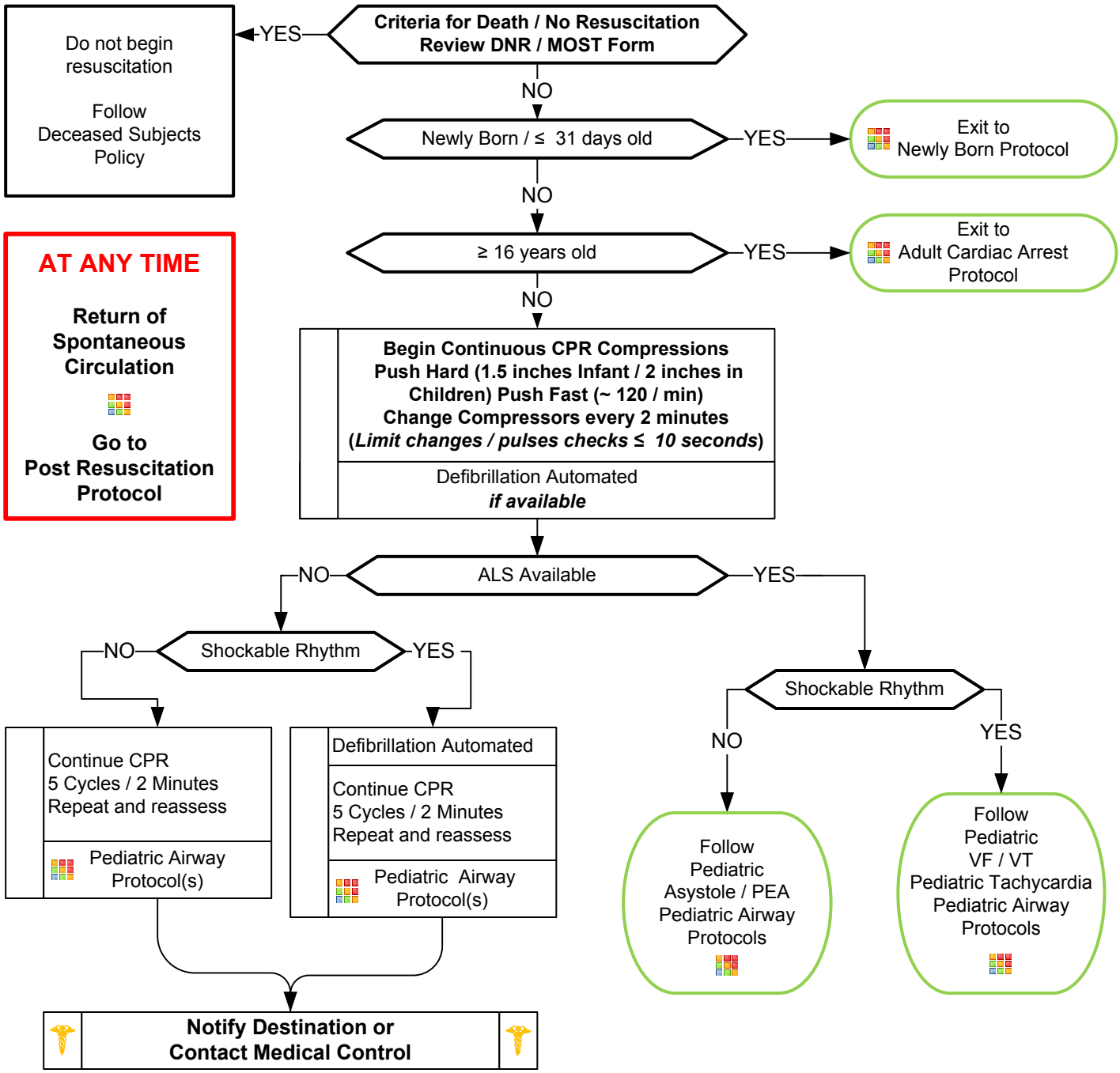
- **Recommended Exam: Mental Status, Skin, HEENT, Neck, Chest, Heart, Abdomen, Extremities, Neuro**
- **Transport mother WITH infant when at all possible.**
- **Term gestation, strong cry / breathing and with good muscle tone generally will need no resuscitation.**
- **Most important vital signs in the newly born are respirations / respiratory effort and heart rate.**
- Heart rate best assessed by auscultation of the precordial pulse followed palpation of the umbilical pulse.
- Pulse oximetry should be applied to the right side of the body.
- **Expected pulse oximetry readings:** Following birth at 1 minute = 60 - 65 %, 2 minutes = 65 – 70%, 3 minutes = 70 – 75 %, 4 minutes = 75 – 80 %, 5 minutes = 80 – 85 % and 10 minutes = 85 – 95%.
- CPR in newborns is 120 compressions/minute with a 3:1 compression to ventilation ratio.
- It is extremely important to keep infant warm
- Maternal sedation or narcotics will sedate infant (Naloxone NO LONGER recommended-supportive care only).
- Consider hypoglycemia in infant.
- D10 = D50 diluted (1 ml of D50 with 4 ml of Normal Saline)
- Document 1 and 5 minute APGARs in PCR

Pediatric Pulseless Arrest

History
- Time of arrest
- Medical history
- Medications
- Possibility of foreign body
- Hypothermia

Signs and Symptoms
- Unresponsive
- Cardiac arrest

Differential
- Respiratory failure
  Foreign body, Secretions, Infection (croup, epiglotitis)
- Hypovolemia (dehydration)
- Congenital heart disease
- Trauma
- Tension pneumothorax, cardiac tamponade, pulmonary embolism
- Hypothermia
- Toxin or medication
- Electrolyte abnormalities (Glucose, Potassium)
- Acidosis



Pediatric Section Protocols- Cardiac

Protocol 50

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Pediatric Pulseless Arrest

Pearls

- **Recommended Exam: Mental Status**
- **Efforts should be directed at high quality and continuous compressions with limited interruptions and early defibrillation when indicated. Compress ≥ 1/3 anterior-posterior diameter of chest, in infants 1.5 inches and in children 2 inches. Consider early IO placement if available and / or difficult IV access anticipated.**
- **DO NOT HYPERVENTILATE: Ventilate 8 – 10 breaths per minute with continuous, uninterrupted compressions.**
- **Do not interrupt compressions to place endotracheal tube. Consider BIAD first to limit interruptions.**
- Airway is a more important intervention in pediatric arrests. This should be accomplished quickly with BVM or BIAD supraglottic device. Patient survival is often dependent on proper ventilation and oxygenation / Airway Interventions.
- Success is based on proper planning and execution. Procedures require space and patient access. Make room to work. Utilize Team Focused "Code Commander" Approach assigning responders to predetermined tasks.
- Team Focused Approach / Pit-Crew Approach.
- Reassess and document ET tube placement and EtCO2 frequently, after every move, and at transfer of care.
- In order to be successful in pediatric arrests, a cause must be identified and corrected.

Pediatric Asystole / PEA

History
- Events leading to arrest
- Estimated downtime
- Past medical history
- Medications
- Existence of terminal illness
- Airway obstruction
- Hypothermia
- Suspected abuse; shaken baby syndrome, pattern of injuries
- SIDS

Signs and Symptoms
- Unresponsive
- Cardiac Arrest
- Signs of lividity or rigor

Differential
- Respiratory failure
- Foreign body
- Hyperkalemia
- Infection (croup, epiglotitis)
- Hypovolemia (dehydration)
- Congenital heart disease
- Trauma
- Tension pneumothorax
- Hypothermia
- Toxin or medication
- Hypoglycemia
- Acidosis

Pediatric Pulseless Arrest Protocol

Criteria for Death / No Resuscitation Review DNR / MOST Form

YES → Do not begin Resuscitation. Follow Deceased Subjects Policy

NO →

Begin Continuous CPR Compressions Push Hard (1.5 inches Infant / 2 inches in Children) Push Fast (~ 120 / min) Change Compressors every 2 minutes (*Limit changes / pulses checks ≤ 10 seconds*)

P: Cardiac Monitor

Shockable Rhythm

YES → Follow Rhythm Appropriate Protocol

NO →

Search for Reversible Causes →

I:
- IV Procedure | P | IO Procedure
- **Epinephrine 1:10,000 0.01 mg/kg IV / IO (max 1mg)** (0.1 mL / kg of 1:10,000) Repeat every 3 – 5 minutes
- **COLD Normal Saline Bolus 20 mL/kg IV / IO** May repeat as needed **Maximum 60 mL/kg**

Blood Glucose Analysis Procedure

Pediatric Diabetic Protocol ***as indicated***

P:
- Consider **Norepinephrine 0.1 – 2 mcg/kg/min IV / IO**
- Consider Chest Decompression-Needle Procedure

Notify Destination or Contact Medical Control

AT ANY TIME

Return of Spontaneous Circulation

Go to Post Resuscitation Protocol

Reversible Causes

Hypovolemia
Hypoxia
Hydrogen ion (acidosis)
Hypothermia
Hypo / Hyperkalemia
Hypoglycemia

Tension pneumothorax
Tamponade; cardiac
Toxins
Thrombosis; pulmonary (PE)
Thrombosis; coronary (MI)

Consider Early for PEA

1. Repeated Saline Boluses for possible hypovolemia
2. Dextrose IV/IO
3. Naloxone IV/IO
4. Glucagon IV/IO/IM, OD protocol for suspected beta blocker or calcium channel blocker overdose.
5. Calcium Chloride IV/IO for suspected hyperkalemia, hypocalcemia
6. Sodium Bicarbonate IV/IO for possible overdose, hyperkalemia, renal failure
7. Consider Epinephrine drip
8. Consider Dopamine drip
9. Atropine IV for organized PEA with rate < 60.
10. Chest Decompression

Pearls
- In order to be successful in pediatric arrests, a cause must be identified and corrected.
- Respiratory arrest is a common cause of cardiac arrest. Unlike adults early airway intervention is critical.
- In most cases pediatric airways can be managed by basic interventions.
- If no IV / IO access may use **Epinephrine 1:1000 0.1 mg/kg (0.1 mL/kg)** via ETT (**Maximum 10 mg**)

Protocol 51

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Pediatric Ventricular Fibrillation
Pulseless Ventricular Tachycardia

History
- Events leading to arrest
- Estimated downtime
- Past medical history
- Medications
- Existence of terminal illness
- Airway obstruction
- Hypothermia

Signs and Symptoms
- Unresponsive
- Cardiac Arrest

Differential
- Respiratory failure / Airway obstruction
- Hyper / hypokalemia
- Hypovolemia
- Hypothermia
- Hypoglycemia
- Acidosis
- Tension pneumothorax
- Tamponade
- Toxin or medication
- Thrombosis: Coronary / Pulmonary Embolism
- Congenital heart disease

Pediatric Pulseless Arrest Protocol

P — **Defibrillation Manual Procedure 2 Joules/kg**

Begin Continuous CPR Compressions
Push Hard (1.5 inches Infant / 2 inches in Children) Push Fast (≥ 100 / min)
Change Compressors every 2 minutes
(*Limit changes / pulses checks ≤ 10 seconds*)

Pediatric Airway Protocol(s)

I — IV Procedure | P — IO Procedure

Epinephrine (1:10,000) 0.01 mg/kg IV / IO
Max 1 mg each dose, Repeat every 3 to 5 min

COLD Normal Saline Bolus 20 mL/kg IV / IO
May repeat as needed **Maximum 40 mL/kg**

P — **Defibrillation Manual Procedure 4 Joules/kg**

Resume Continuous CPR Compressions
Push Hard. Push Fast (~ 120 / min)
Change Compressors every 2 minutes
(*Limit changes / pulses checks ≤ 10 seconds*)

<u>If Rhythm Refractory</u>
Continue CPR and give Anti-arrhythmics / Epinephrine during compressions.
Continue CPR up to point where you are ready to defibrillate with device charged.
Repeat pattern during resuscitation.

P — **Amiodarone 5 mg/kg IV / IO**
Maximum initial dose 300 mg
Repeat every 5 minutes
Maximum repeat dose 150 mg
Maximum total dose 15 mg/kg

Defibrillation Manual Procedure 4 Joules/kg

High Quality, Continuous Compressions

P — **Lidocaine 1 mg/kg IV / IO**
Maximum 100 mg
Repeat 0.5 mg/kg
Maximum 3 mg/kg total

Notify Destination or Contact Medical Control

AT ANY TIME

Return of Spontaneous Circulation

Go to Post Resuscitation Protocol

<u>For Persistent VF / VT</u>

After second defibrillation increase energy to max **10 Joules/kg, not to exceed 360 J Maximum**

Magnesium Sulfate
40 mg/kg IV / IO
May repeat every 5 minutes
Maximum 2 g

<u>Tosades de pointes</u>

P — **Magnesium Sulfate**
40 mg/kg IV / IO
May repeat every 5 minutes
Maximum 2 g

Pediatric Section Protocols- Cardiac

Protocol 52

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Pediatric Ventricular Fibrillation
Pulseless Ventricular Tachycardia

Pearls

- **Efforts should be directed at high quality and continuous compressions with limited interruptions and early defibrillation when indicated. Compress ≥ 1/3 anterior-posterior diameter of chest, in infants 1.5 inches and in children 2 inches. Consider early IO placement if available and / or difficult IV access anticipated.**
- **DO NOT HYPERVENTILATE: Ventilate 8 – 10 breaths per minute with continuous, uninterrupted compressions.**
- **Do not interrupt compressions to place endotracheal tube. Consider BIAD first to limit interruptions.**
- If no IV / IO access may use **Epinephrine 1:1000 0.1 mg/kg (0.1 mL/kg)** via ETT (**Maximum 10 mg**)
- Airway is a more important intervention in pediatric arrests. This should be accomplished quickly with BVM or supraglottic device. Patient survival is often dependent on proper ventilation and oxygenation / Airway Interventions
- In order to be successful in pediatric arrests, a cause must be identified and corrected.
- Respiratory arrest is a common cause of cardiac arrest. Unlike adults early ventilation intervention is critical.
- In most cases pediatric airways can be managed by basic interventions and/or BVM.
- Reassess and document ET tube placement and EtCO2 frequently, after every move, and at transfer of care.
- In order to be successful in pediatric arrests, a cause must be identified and corrected.

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Pediatric Induced Hypothermia

History
- Non-traumatic cardiac arrests (drownings and hanging / asphyxiation are permissible in this protocol.)
- All presenting rhythms are permissible in this protocol
- All ages of patients are eligible for induced hypothermia

Signs and Symptoms
- Cardiac arrest
- Return of Spontaneous Circulation post-cardiac arrest
- Consider intra-arrest cooling if indicated as soon as cold fluids are available

Differential
- Continue to address specific differentials associated with the arrhythmia

Hypotension Age Based

0 – 28 Days
< 60 mmHg

1 Month to 1 Year
< 70 mmHg

1 to 10 Years
< 70 + (2 x age) mmHg

11 Years and older
< 90 + (2 x age) mmHg

Cardiac Arrest AND/OR Return of Spontaneous Circulation ROSC

Criteria for Induced Hypothermia
Initial core temperature
≥ 93.2 F (34C)

NO → Exit to Post Resuscitation Protocol

YES

B	**Advanced Airway (includes BIAD) in place** with EtCO2 > 20 mmHg
	Perform Neurological Assessment
	Expose and apply ice packs to axilla and groin
I	**Cold Normal Saline Infusion:** **For Initial Rhythm PEA/Asystole- 20 mL/kg IV/IO max 2 Liters** **For Initial Rhythm Vfib/VTach- 10 mL/kg IV/IO max 1 ONE LITER**
P	**Epinephrine 0.1 – 1 mcg/kg/min IV/IO** *or* **Norepinephrine 0.1- 2 mcg/kg/min IV/IO** *or* **Dopamine 2-20mcg/kg/min IV/IO** *or* **Phenylephrine 5mcg/kg IV/IO every 10min, max single dose 100mcg, max total dose 500mcg** *Titrate any pressor drugs to age appropriate Blood Pressure*

NO → Airway Protocol(s) ***as indicated***

Reassess Temperature
Target: 91.4 F (33C)
(Range 89.6 F to 93.3 F)
(Range 32 – 34C)

≤ 91.4 F (33 C) → Stop cooling measures Until temperature increases

Reassess temperature every 10 minutes

Continue Post Resuscitation Care

≥ 92 F (33.3 C) → Continue Cooling

Exit to Post Resuscitation Protocol

Shivering noted

NO → Exit to Post Resuscitation Protocol

YES

P — **Etomidate 0.3 mg/kg IV/IO (age ≥ 10 only)**

Continued Shivering

NO → Exit to Post Resuscitation Protocol

YES →

P — **Midazolam 0.1 – 0.2 mg/kg IV / IO, max dose 2.5mg**
May repeat in 3-5 minutes as needed- watch for hypotension
or
Fentanyl 2 mcg/kg IV / IO bolus, max initial dose 75mcg
May repeat 0.5 mcg/kg every 5 minutes as needed for shivering
Maximum 150 mcg

P — Consider Rocuronium 0.5 mg/kg to max 20mg

Notify Destination or Contact Medical Control

Pediatric Section Protocols- Cardiac

Protocol 53

This protocol is unique to the Wake County EMS System

Pediatric Induced Hypothermia

Pearls

- **Criteria for Induced Hypothermia:**
  - **Return of spontaneous circulation not related to blunt / penetrating trauma or hemorrhage.**
  - **Temperature greater than 93 degrees (34 C).**
  - **Advanced airway (including BIAD) in place with no purposeful response to verbal commands.**
- **Hyperventilation is a significant cause of hypotension and recurrence of cardiac arrest in the post resuscitation phase and must be avoided at all costs.**
- **Initial End tidal CO2 may be elevated immediately post-resuscitation but will usually normalize. While goal is 35 – 45 mm Hg avoid hyperventilation.**
- **Utilization of this protocol mandates transport to facility capable of managing the pediatric post-arrest patient and continuation of induced hypothermia therapy.**
- If no advanced airway in place obtained, cooling may only be initiated on order from medical control.
- Maintain patient modesty. Undergarments may remain in place during cooling.
- Monitor advance airway frequently, especially after any movement of patient.

Pediatric Post Resuscitation

History
- Respiratory arrest
- Cardiac arrest

Signs/Symptoms
- Return of pulse

Differential
- Continue to address specific differentials associated with the original dysrhythmia

Arrhythmias are common and usually self limiting after ROSC

If Arrhythmia Persists follow Rhythm Appropriate Protocol

	Repeat Primary Assessment
B	**Optimize Ventilation and Oxygenation** • Advanced airway if indicated • Goal SpO2 ≥ 94%, ETCO2 35 – 45 mm Hg • Respiratory Rate 8 – 10 DO NOT HYPERVENTILATE
	Monitor Vital Signs / Reassess
B	12 Lead ECG Procedure
I	IV Procedure / **P** IO Procedure
P	Cardiac Monitor
P	Induced Hypothermia Protocol, if indicated and not already begun

Hypotension Age Based

0 – 28 Days
< 60 mmHg

1 Month to 1 Year
< 70 mmHg

1 to 10 Years
< 70 + (2 x age) mmHg

11 Years and older
< 90 + (2 x age) mmHg

I
Normal Saline Infusion
20 mL/kg IV / IO
May repeat to **60 mL/kg**
if lungs remain clear

P
Titrate any pressor drugs to age appropriate Blood Pressure

Norepinephrine 0.1- 2 mcg/kg/min IV/IO
Or
Epinephrine 0.1 – 1 mcg/kg/min IV/IO
or
Dopamine 2-20mcg/kg/min IV/IO
or
Phenylephrine 5mcg/kg IV/IO every 10min, max single dose 100mcg, max total dose 500mcg

Hypotension Age based — YES → Normal Saline Infusion / Titrate pressors
NO ↓
Blood Glucose ≤ 69 or ≥ 250 — YES → Pediatric Diabetic Protocol
NO ↓
Symptomatic Bradycardia — YES → Pediatric Bradycardia Protocol
NO ↓
Symptomatic Tachycardia — YES → Pediatric Tachycardia Protocol
NO ↓

P
Consider Sedation / Paralysis
Use only with definitive airway in place

Midazolam 0.1 – 0.2 mg/kg IV / IO (Max 2.5mg)
May repeat x 1 in 3 -5 minutes as needed

Or
Fentanyl 2 mcg/kg IV / IO bolus
May repeat 0.5 mcg/kg every 5 min as needed
Maximum initial dose 75mcg
Maximum total dose 150 mcg

↓

Notify Destination or Contact Medical Control

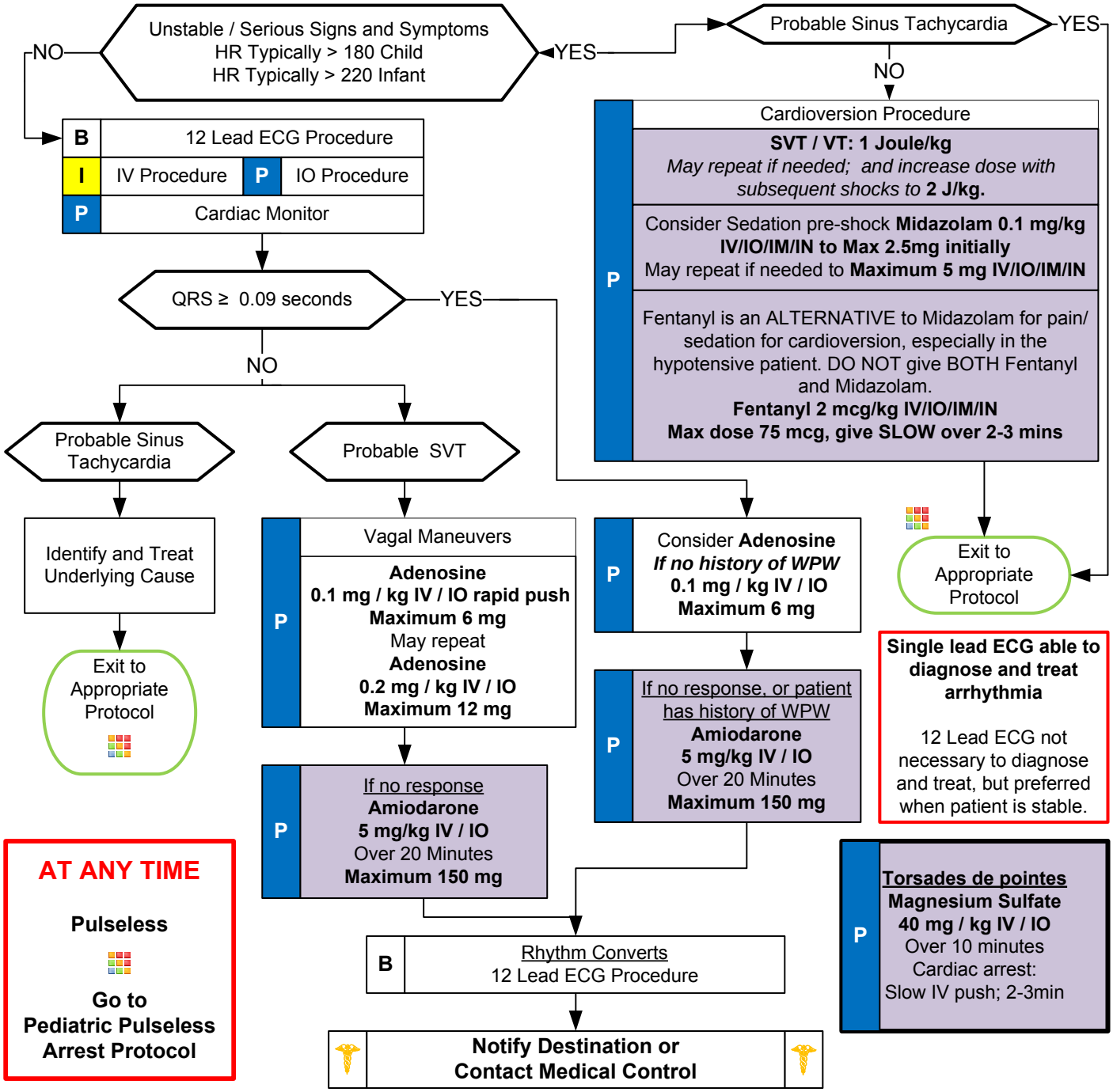
Pearls
- **Recommended Exam: Mental Status, Neck, Skin, Lungs, Heart, Abdomen, Extremities, Neuro**
- Hyperventilation is a significant cause of hypotension / recurrence of cardiac arrest in post resuscitation phase and must be avoided at all costs.

Pediatric Tachycardia

History
- Past medical history
- Medications or Toxic Ingestion (Aminophylline, Diet pills, Thyroid supplements, Decongestants, Digoxin)
- Drugs (nicotine, cocaine)
- Congenital Heart Disease
- Respiratory Distress
- Syncope or Near Syncope

Signs and Symptoms
- Heart Rate: Child > 180/bpm
  Infant > 220/bpm
- Pale or Cyanosis
- Diaphoresis
- Tachypnea
- Vomiting
- Hypotension
- Altered Level of Consciousness
- Pulmonary Congestion
- Syncope

Differential
- Heart disease (Congenital)
- Hypo / Hyperthermia
- Hypovolemia or Anemia
- Electrolyte imbalance
- Anxiety / Pain / Emotional stress
- Fever / Infection / Sepsis
- Hypoxia
- Hypoglycemia
- Medication / Toxin / Drugs (see HX)
- Pulmonary embolus
- Trauma
- Tension Pneumothorax



Pediatric Section Protocols- Cardiac

Protocol 55

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Pediatric Tachycardia

Pearls

- **Recommended Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro**
- **Serious Signs and Symptoms:**
  - **Respiratory distress / failure.**
  - **Signs of shock / poor perfusion with or without hypotension.**
  - **Altered Mental Status**
  - **Sudden collapse with rapid, weak pulse**
- **Narrow Complex Tachycardia (≤ 0.09 seconds):**
  - Sinus tachycardia: P waves present. Variable R-R waves. Infants usually < 220 beats / minute. Children usually < 180 beats / minute.
  - SVT: > 90 % of children with SVT will have a narrow QRS (≤0.09 seconds.) P waves absent or abnormal. R-R waves not variable. Usually abrupt onset. Infants usually > 220 beats / minute. Children usually > 180 beats / minute.
  - Atrial Flutter / Fibrillation
- **Wide Complex Tachycardia (> 0.09 seconds):**
  - SVT with aberrancy.
  - VT: Uncommon in children. Rates may vary from near normal to > 200 / minute. Most children with VT have underlying heart disease / cardiac surgery / long QT syndrome / cardiomyopathy.
- **Torsades de Pointes / Polymorphic (multiple shaped) Tachycardia:**
  - Rate is typically 150 to 250 beats / minute.
  - Associated with long QT syndrome, hypomagnesaemia, hypokalemia, many cardiac drugs.
  - May quickly deteriorate to VT.
- **Vagal Maneuvers:**
  - Breath holding. Blowing a glove into a balloon. Have child blow out “birthday candles” or through an obstructed straw. Infants: May put a bag of ice water over the upper half of the face careful not to occlude the airway.
- Separating the child from the caregiver may worsen the child's clinical condition.
- Pediatric pads should be used in children < 10 kg or Broselow-Luten color Purple if available.
- Monitor for respiratory depression and hypotension associated if Diazepam or Midazolam is used.
- Continuous pulse oximetry is required for all SVT Patients if available.
- Document all rhythm changes with monitor strips and obtain monitor strips with each therapeutic intervention.
- Generally, the maximum sinus tachycardia rate is 220 – the patient’s age in years.

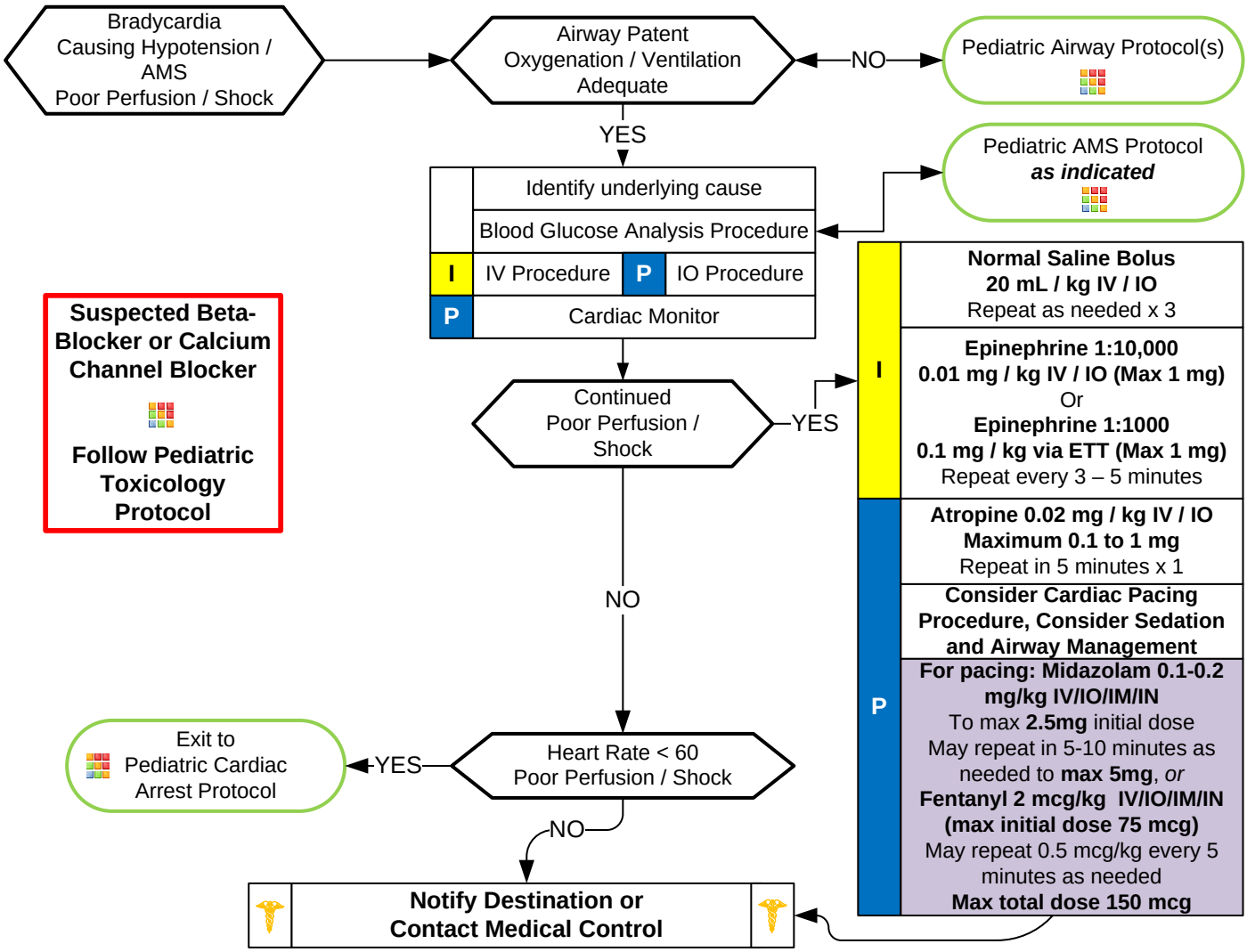
This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Pediatric Bradycardia

History
- Past medical history
- Foreign body exposure
- Respiratory distress or arrest
- Apnea
- Possible toxic or poison exposure
- Congenital disease
- Medication (maternal or infant)

Signs and Symptoms
- Decreased heart rate
- Delayed capillary refill or cyanosis
- Mottled, cool skin
- Hypotension or arrest
- Altered level of consciousness

Differential
- Respiratory failure
  - Foreign body
  - Secretions
  - Infection (croup, epiglotitis)
- Hypovolemia (dehydration)
- Congenital heart disease
- Trauma
- Tension pneumothorax
- Hypothermia
- Toxin or medication
- Hypoglycemia
- Acidosis



Pearls
- **Recommended Exam: Mental Status, HEENT, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- **Use pre-made Drug dosage reference for drug dosages if applicable.**
- The majority of pediatric arrests are due to airway problems.
- Most maternal medications pass through breast milk to the infant.
- Hypoglycemia, severe dehydration and narcotic effects may produce bradycardia.
- Pediatric patients requiring transcutaneous pacing require the use of pads appropriate for pediatric patients when available
- The minimum Atropine dose for any patient is 0.1 mg IV, due to paradoxical effects at extremely low doses.
- Transcutaneous pacing should be considered early in bradycardic patients with shock.

Protocol 56

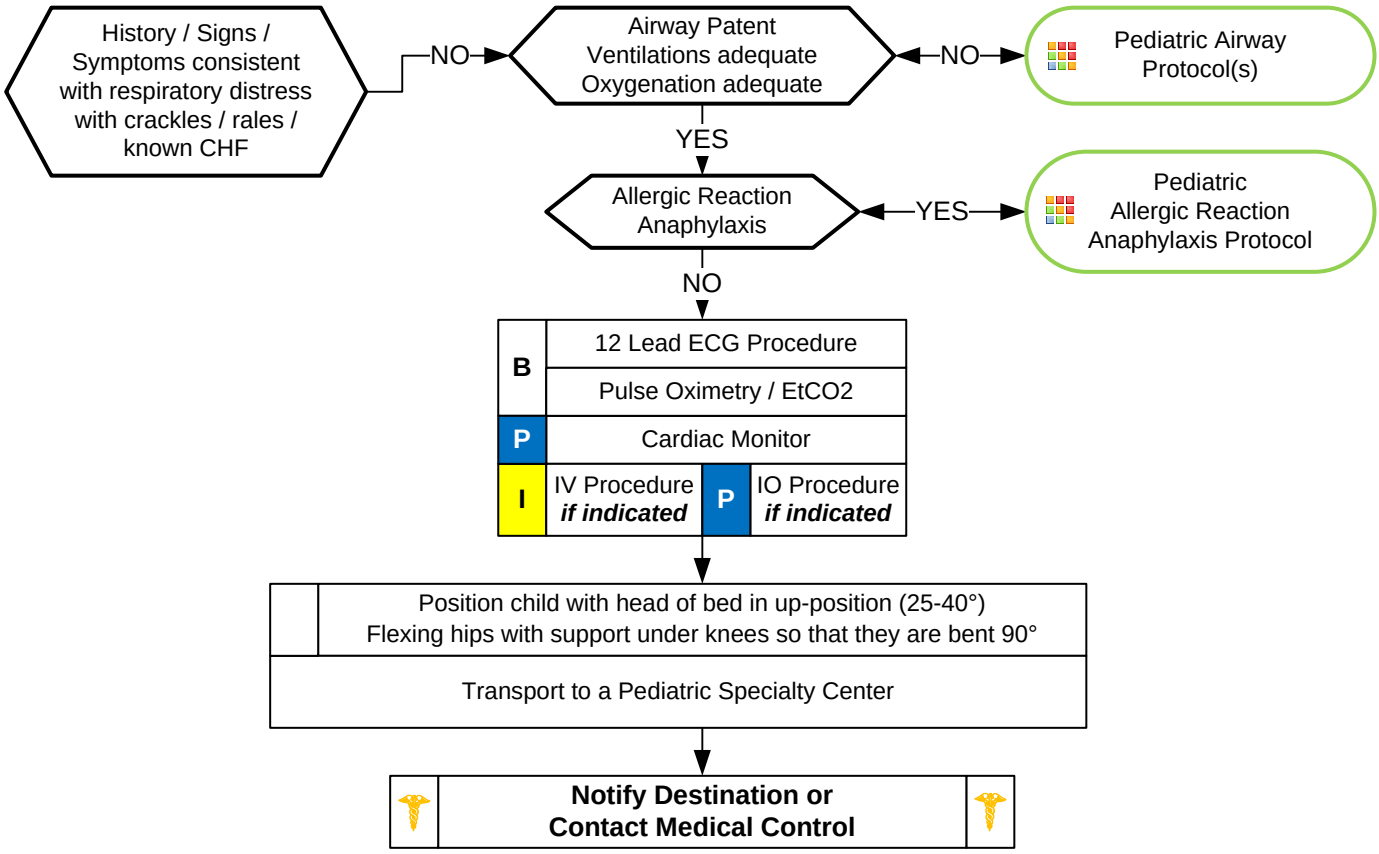
This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Pediatric Pulmonary Edema / CHF

History
- Congenital Heart Disease
- Chronic Lung Disease
- Congestive heart failure
- Past medical history

Signs/Symptoms
- Infant: Respiratory distress, poor feeding, lethargy, weight gain, +/- cyanosis
- Child/Adolescent: Respiratory distress, bilateral rales, apprehension, orthopnea, jugular vein distention (rare), pink, frothy sputum, peripheral edema, diaphoresis, chest pain
- Hypotension, shock

Differential
- Congestive heart failure
- Asthma
- Anaphylaxis
- Aspiration
- Pleural effusion
- Pneumonia
- Pulmonary embolus
- Pericardial tamponade
- Toxic Exposure



Pearls
- **Recommended exam: Mental status, Respiratory, Cardiac, Skin, Neuro**
- **Contact Medical Control as needed early in the care of the pediatric congenital cardiac patient.**
- **Most children with CHF have a congenital heart defect, obtain a precise past medical history.**
- **Congenital heart disease varies by age:**
  - < 1 month: Tetralogy of Fallot, Transposition of the great arteries, Coarctation of the aorta.
  - 2 – 6 months: Ventricular septal defects (VSD), Atrioseptal defects (ASD).
  - Any age: Myocarditis, Pericarditis, SVT, heart blocks.
- **Treatment of Congestive Heart Failure / Pulmonary edema may vary depending on the underlying cause and may include the following with consultation as needed by Medical Control:**
  - **Morphine Sulfate: 0.1 mg/kg IV / IO for patients having a "tet spell." Max single dose 5mg/dose.**
  - **Fentanyl: 1 mcg/kg IV / IO. Max single dose 50 mcg.**
  - **Dopamine 2 – 20 mcg/kg IV / IO. Titrate to age specific systolic blood pressure.**
  - **Norepinephrine 0.1- 2 mcg/kg/min IV/IO**
- Do not assume all wheezing is pulmonary, especially in a cardiac child.

Protocol 57

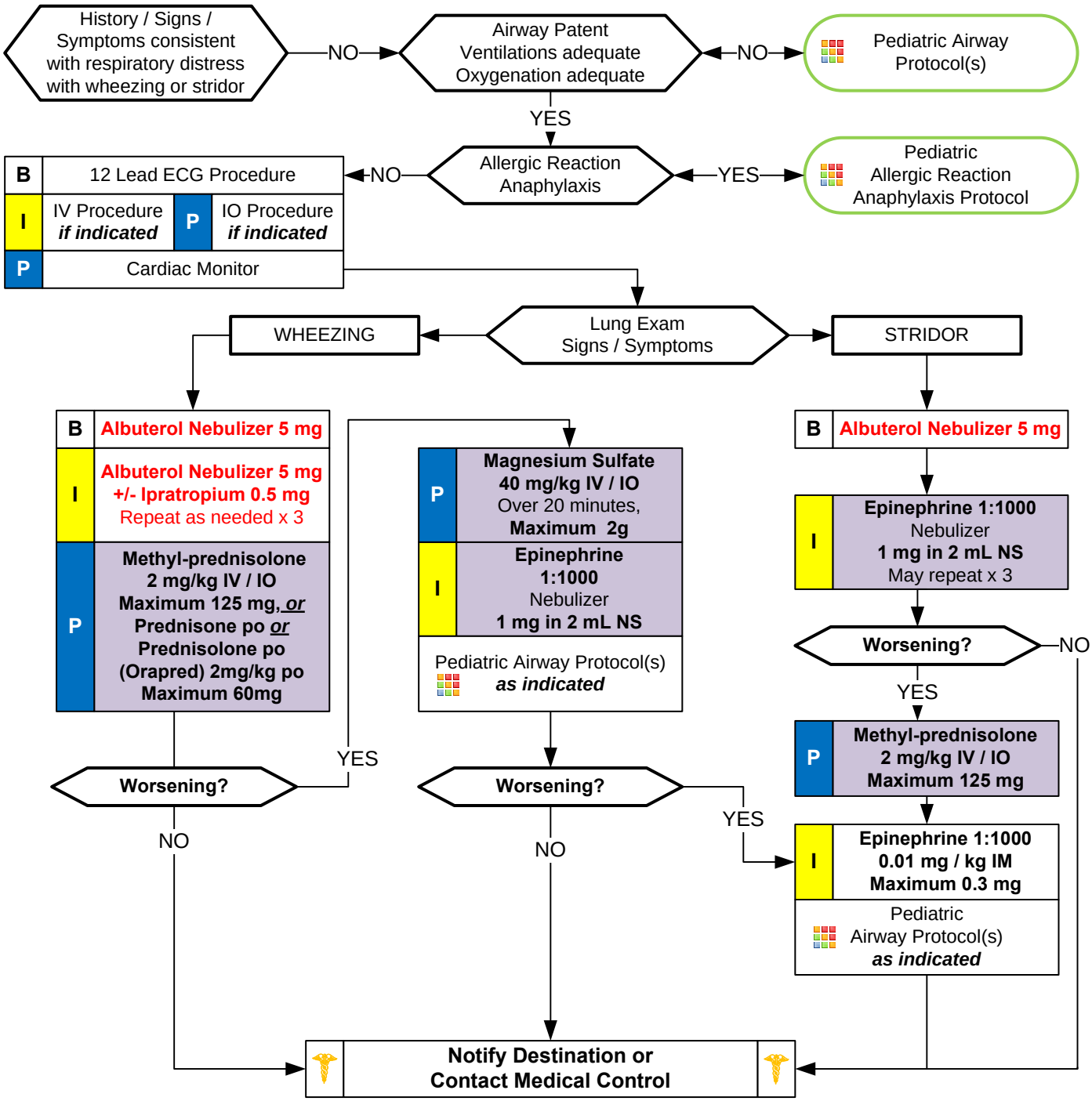
This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Pediatric Respiratory Distress

History
- Time of onset
- Possibility of foreign body
- Past Medical History
- Medications
- Fever / Illness
- Sick Contacts
- History of trauma
- History / possibility of choking
- Ingestion / OD
- Congenital heart disease

Signs and Symptoms
- Wheezing / Stridor / Crackles / Rales
- Nasal Flaring / Retractions / Grunting
- Increased Heart Rate
- AMS
- Anxiety
- Attentiveness / Distractability
- Cyanosis
- Poor feeding
- JVD / Frothy Sputum
- Hypotension

Differential
- Asthma / Reactive Airway Disease
- Aspiration
- Foreign body
- Upper or lower airway infection
- Congenital heart disease
- OD / Toxic ingestion / CHF
- Anaphylaxis
- Trauma



Pediatric Section Protocols

Protocol 58

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Pediatric Respiratory Distress

Pearls

- **Recommended Exam: Mental Status, HEENT, Skin, Neck, Heart, Lungs, Abdomen, Extremities, Neuro**
- **Items in Red Text are key performance measures used to evaluate protocol compliance and care.**
- **Pulse oximetry should be monitored continuously in the patient with respiratory distress.**
- **CONSIDER THE CHILD'S ABILITY TO SWALLOW PILLS WELL, based on age, prior to administering any po medication for respiratory distress.**
- **EMT-B may administer Albuterol if patient already prescribed and may administer from EMS supply.**
- **Consider IV access when Pulse oximetry remains ≤ 92 % after first beta agonist treatment. Also consider saline bolus of 20 mL/kg in pediatric patients in respiratory distress; these patients are often dehydrated.**

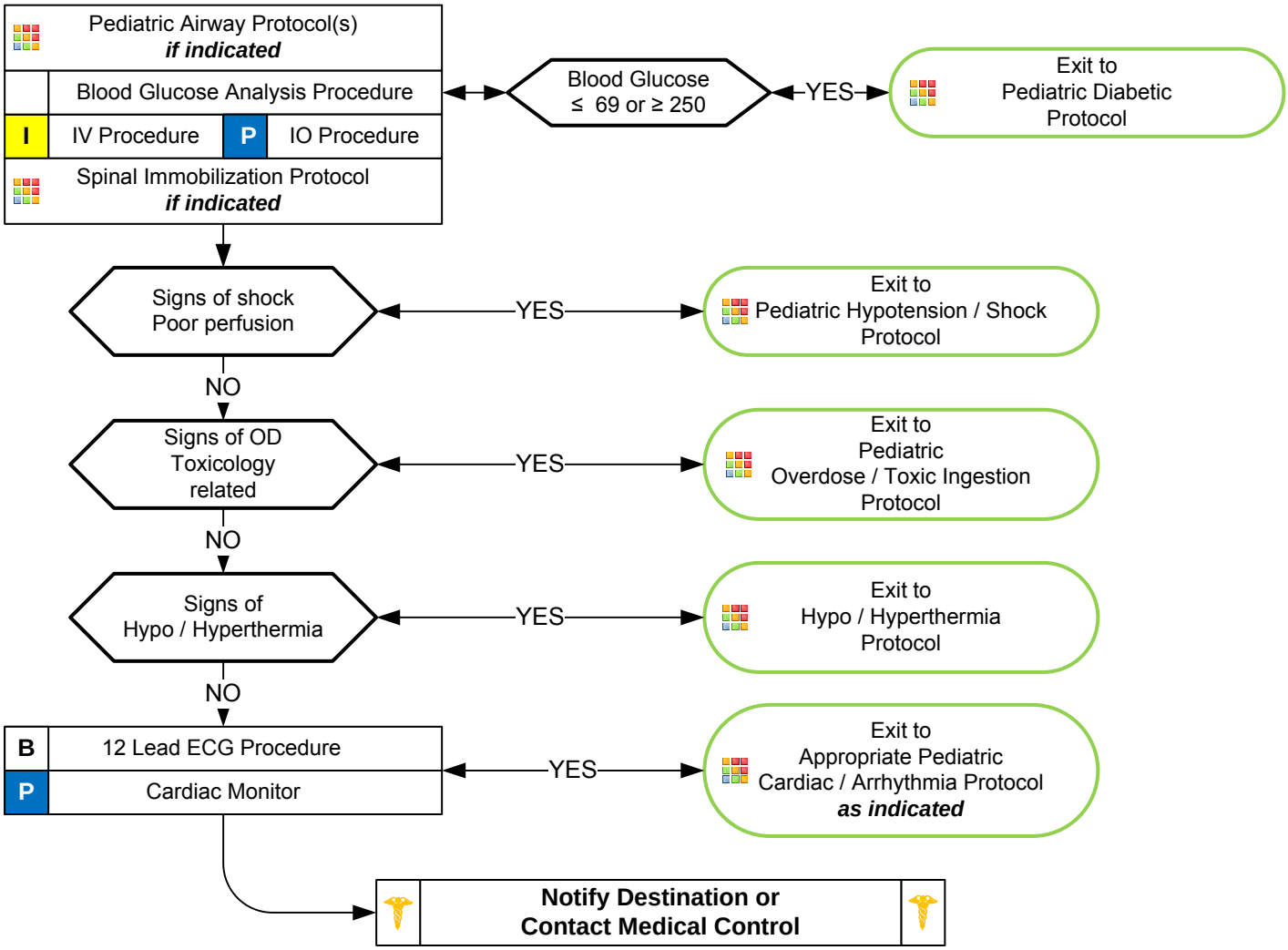
- Do not force a child into a position, allow them to assume position of comfort. They will protect their airway by their body position.
- The most important component of respiratory distress is airway control.
- Bronchiolitis is a viral infection typically affecting infants which results in wheezing which may not respond to beta-agonists. Consider Epinephrine if patient < 18 months and not responding to initial beta-agonist treatment.
- Croup typically affects children < 2 years of age. It is viral, possible fever, gradual onset, no drooling is noted.
- Epiglottitis typically affects children > 2 years of age. It is bacterial, with fever, rapid onset, possible stridor, patient wants to sit up to keep airway open, drooling is common. Airway manipulation may worsen the condition.
- In patients using levalbuterol (Xopenex) you may use substitute the patient's levalbuterol for Albuterol in the protocol.

Pediatric Altered Mental Status

History
- Past medical history
- Medications
- Recent illness
- Irritability
- Lethargy
- Changes in feeding / sleeping
- Diabetes
- Potential ingestion
- Trauma

Signs and Symptoms
- Decrease in mentation
- Change in baseline mentation
- Decrease in Blood sugar
- Cool, diaphoretic skin
- Increase in Blood sugar
- Warm, dry, skin, fruity breath, kussmaul respirations, signs of dehydration

Differential
- Hypoxia
- CNS (trauma, stroke, seizure, infection)
- Thyroid (hyper / hypo)
- Shock (septic-infection, metabolic, traumatic)
- Diabetes (hyper / hypoglycemia)
- Toxicological
- Acidosis / Alkalosis
- Environmental exposure
- Electrolyte abnormatilities
- Psychiatric disorder



Pediatric Section Protocols

Pearls
- **Recommended Exam: Mental Status, HEENT, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- **Pay careful attention to the head exam for signs of bruising or other injury.**
- Be aware of AMS as presenting sign of an environmental toxin or Haz-Mat exposure and protect personal safety.
- It is safer to assume hypoglycemia than hyperglycemia if doubt exists. Recheck blood glucose after Dextrose or Glucagon
- Consider alcohol, prescription drugs, illicit drugs and Over the Counter preparations as a potential etiology.
- Consider Restraints if necessary for patient's and/or personnel's protection per the restraint procedure.

Protocol 59

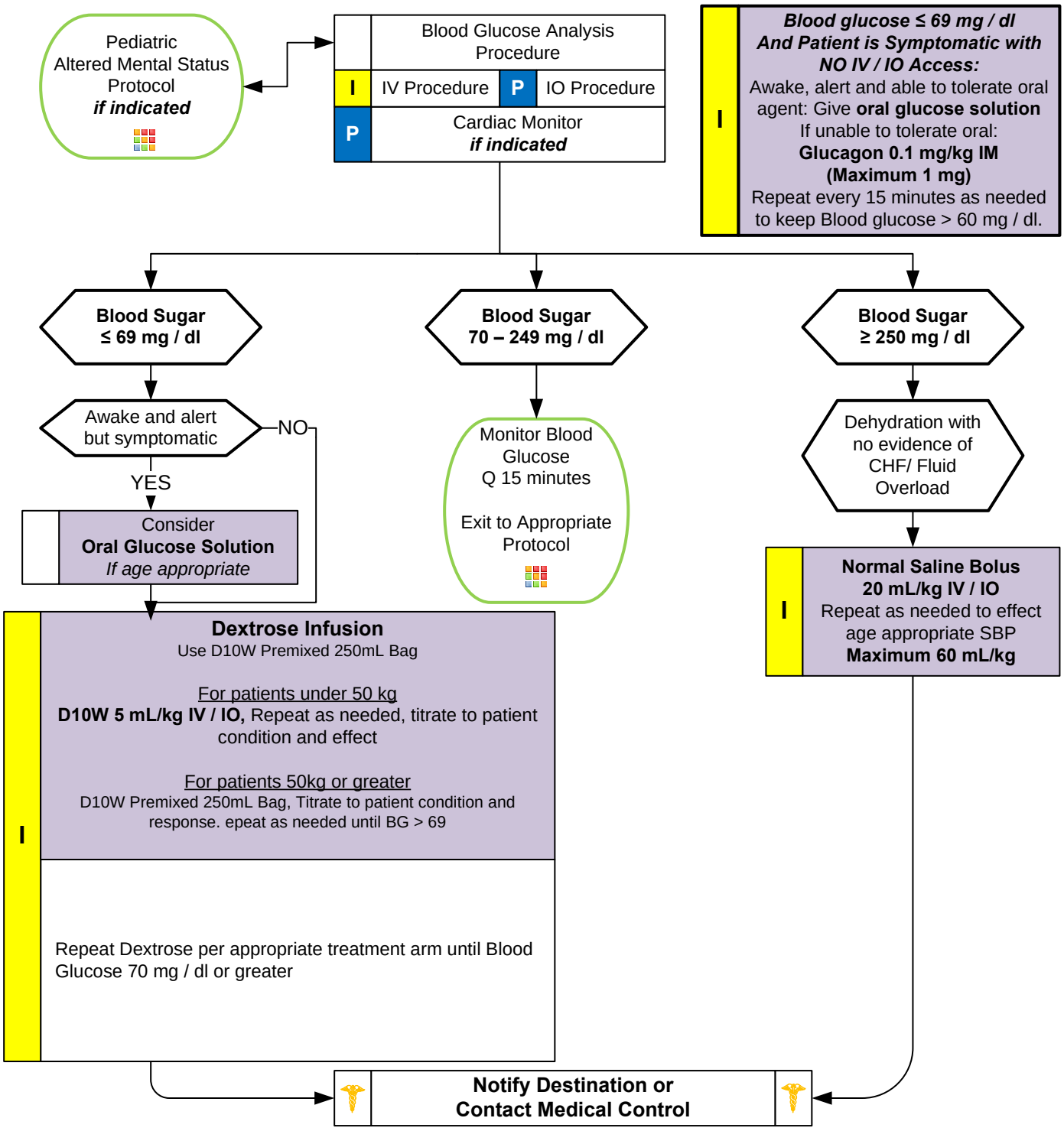
This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Pediatric Diabetic

History
- Past medical history
- Medications
- Recent blood glucose check
- Last meal

Signs and Symptoms
- Altered mental status
- Combative / irritable
- Diaphoresis
- Seizures
- Abdominal pain
- Nausea / vomiting
- Weakness
- Dehydration
- Deep / rapid breathing

Differential
- Alcohol / drug use
- Toxic ingestion
- Trauma; head injury
- Seizure
- CVA
- Altered baseline mental status.



Pediatric Section Protocols

Protocol 60

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Pediatric Diabetic

Pearls

- **Recommended Exam: Mental Status, HEENT, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- Patients with prolonged hypoglycemia my not respond to glucagon.
- Do not administer oral glucose to patients that are not able to swallow or protect their airway.

- **It may be necessary to utilize different concentrations of Dextrose in clinical practice, depending on the concentration available to you:**
  - Make D10 by removing 40 mL of a 50mL amp of D50 and draw back up 40 mL of NS into the same amp- i.e. squirt out dextrose in the D50 syringe until you have 10mL left. Then in the same syringe draw up 40mL of NS. You now have 50mL of D10.

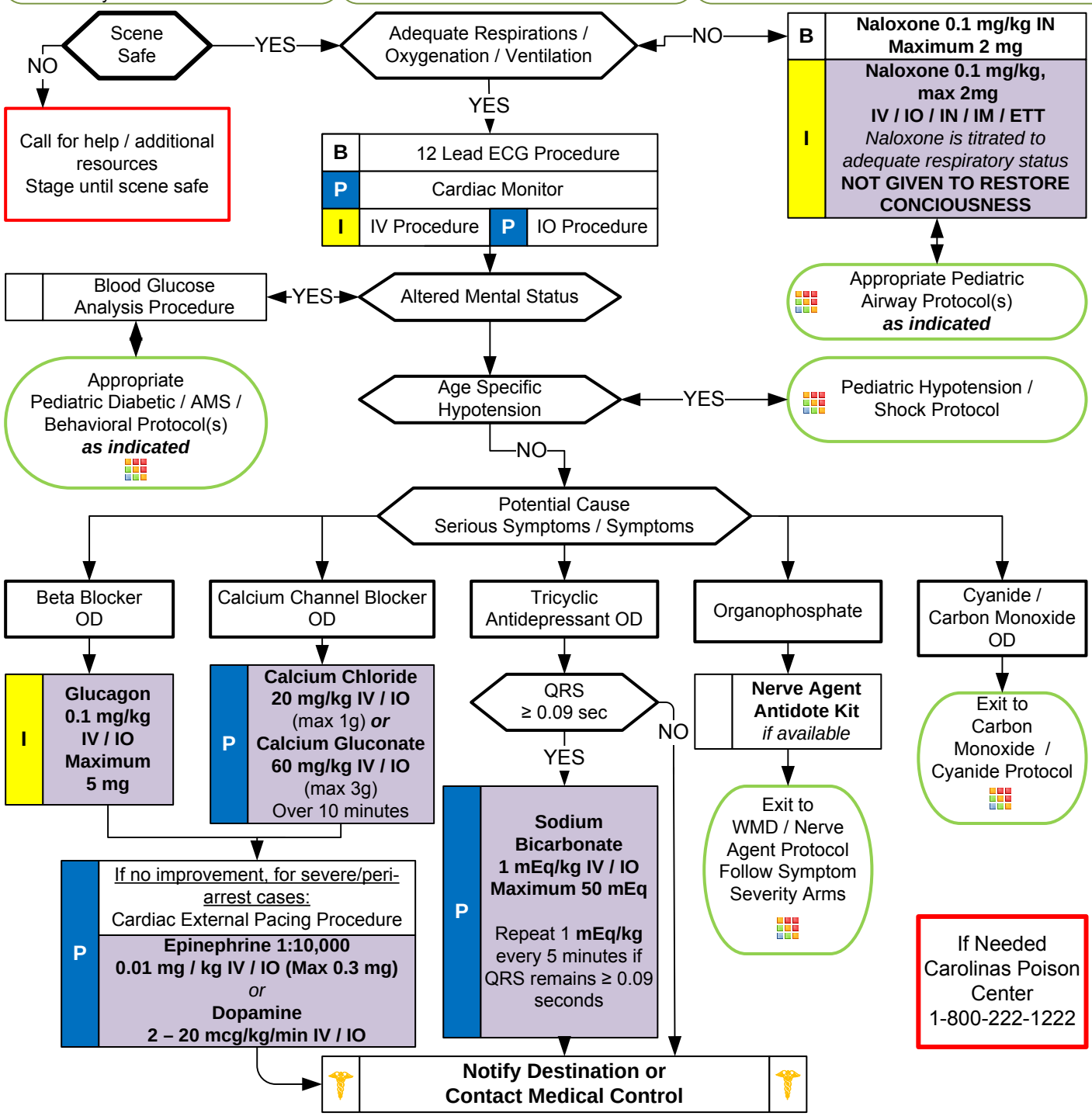
- In extreme circumstances with no IV or IO and no response to glucagon, Dextrose can be administered rectally. Contact medical control for advice.
- Quality control checks should be maintained per manufacturers recommendation for all glucometers.

Pediatric Overdose / Toxic Ingestion

History
- Ingestion or suspected ingestion of potentially toxic substance
- Substance ingested, route, quantity
- Time of Ingestion is important
- Reason (suicidal, accidental, criminal)
- Available medications in home
- Past medical history, medications, past psychiatric history

Signs and Symptoms
- Mental status changes
- Hypotension / hypertension
- Decreased respiratory rate
- Tachycardia, dysrhythmias
- Seizures
- **S**alivation, **L**acrimation, **U**rination; increased, loss of control, **D**efecation / Diarrhea, **G**I Upset; Abdominal pain / cramping, **E**mesis, **M**uscle Twitching

Differential
- Tricyclic antidepressants
- Acetaminophen
- Depressants
- Stimulants
- Anticholinergic
- Cardiac medications
- Solvents, Alcohols, Cleaning agents
- Insecticides (organophosphates)



Pediatric Section Protocols

Protocol 61

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Pediatric Overdose / Toxic Ingestion

Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Heart, Lungs, Abdomen, Extremities, Neuro**
- **Do not rely on patient history of ingestion, especially in suicide attempts. Make sure patient is still not carrying other medications or has any weapons. Bring bottles, contents, emesis to ED.**
- **Age specific blood pressure 0 – 28 days > 60 mmHg, 1 month - 1 year > 70 mmHg, 1 - 10 years > 70 + (2 x age)mmHg and 11 years and older > 90 mmHg.**
- **Tricyclic:** 4 major areas of toxicity: seizures, dysrhythmias, hypotension, decreased mental status or coma; rapid progression from alert mental status to death.
- **Acetaminophen:** initially normal or nausea/vomiting. If not detected and treated, causes irreversible liver failure
- **Aspirin**: Early signs consist of abdominal pain and vomiting. Tachypnea and altered mental status may occur later. Renal dysfunction, liver failure, and or cerebral edema among other things can take place later.
- **Depressants:** decreased HR, decreased BP, decreased temperature, decreased respirations, non-specific pupils
- **Stimulants:** increased HR, increased BP, increased temperature, dilated pupils, seizures
- **Anticholinergic:** increased HR, increased temperature, dilated pupils, mental status changes
- **Cardiac Medications:** dysrhythmias and mental status changes
- **Solvents:** nausea, coughing, vomiting, and mental status changes
- **Insecticides:** increased or decreased HR, increased secretions, nausea, vomiting, diarrhea, pinpoint pupils
- Consider restraints if necessary for patient's and/or personnel's protection per the Restraint Procedure.
- **Nerve Agent Antidote kits** contain 2 mg of Atropine and 600 mg of pralidoxime in an autoinjector for self administration or patient care. These kits may be available as part of the domestic preparedness for Weapons of Mass Destruction.
- Consider contacting the North Carolina Poison Control Center for guidance.

Pediatric Hypotension / Shock

History
- Blood loss
- Fluid loss
- Vomiting
- Diarrhea
- Fever
- Infection

Signs and Symptoms
- Restlessness, confusion, weakness
- Dizziness
- Tachycardia
- Hypotension (Late sign)
- Pale, cool, clammy skin
- Delayed capillary refill
- Dark-tarry stools

Differential
- Shock
  - Hypovolemic
  - Cardiogenic
  - Septic
  - Neurogenic
  - Anaphylactic
- Trauma
- Infection
- Dehydration
- Congenital heart disease
- Medication or Toxin

Hypotension
Age Specific VS
SBP < 70 + (2xAge)
Poor perfusion / Shock

	Blood Glucose Analysis Procedure		
I	IV Procedure	P	IO Procedure
P	Cardiac Monitor		
	Pediatric Airway Protocol(s) ***if indicated***		

Pediatric Diabetic Protocol ***if indicated***

History, Exam and Circumstances often suggest **Type of Shock:**
Was trauma involved?

YES

Consider Hypovolemic (bleeding), Neurogenic (spinal injury), Obstructive (Pneumothorax)

	Spinal Immobilization Procedure ***if indicated***
	Wound Care, CONTROL HEMORRHAGE ***as indicated***
I	**Normal Saline Bolus 20 mL/kg IV / IO** Repeat to effect age appropriate BP: SBP ≥ 70 + 2 x Age, **Maximum 60 mL/kg**
P	Chest Decompression-Needle Procedure ***if indicated***
P	**Consider pressors ONLY after 60 mL/kg Fluid Bolus and patient is peri-arrest, consider Blood Products if Available**

Exit to Pediatric Multiple Trauma Protocol

NO

Consider Hypovolemic (ex. Dehydration, GI bleed), Cardiogenic (ex. STEMI, CHF), Distributive (ex. Sepsis, Anaphylaxis), Obstructive (ex. PE, Tamponade)

Consider Anaphylaxis or other Pediatric Protocol

I	**Normal Saline Bolus 20 mL/kg IV / IO** Repeat to effect age appropriate BP: SBP ≥ 70 + 2 x Age, **Maximum 60 mL/kg**
P	**Caution with excess fluids in cardiogenic shock; consider the presence of pulm edema; utilize pressors early: Norepinephrine 0.1- 2 mcg/kg/min IV/IO** To effect SBP ≥ 90
P	**For non-cardiogenic shock, consider pressors after 60 mL/kg liter fluid bolus:** *Titrate any pressor drugs to age appropriate BP:* **Norepinephrine 0.1- 2 mcg/kg/min IV/IO** *or* **Epinephrine 0.1 – 1 mcg/kg/min IV/IO** *or* **Dopamine 2-20mcg/kg/min IV/IO** *or* **Phenylephrine 5mcg/kg IV/IO every 10min, max single dose 100mcg, max total dose 500mcg**

Notify Destination or Contact Medical Control

Pediatric Section Protocols

Protocol 62

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Pediatric Hypotension / Shock

Pearls

- **Recommended Exam: Mental Status, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- **Lowest normal blood pressure by age: < 31 days: > 60 mmHg. 31 days to 1 year: > 70 mmHg. Greater than 1 year: 70 + 2 x age in years.**
- **Consider all possible causes of shock and treat per appropriate protocol. Majority of decompensation in pediatrics is airway related.**
- **Decreasing heart rate and hypotension occur late in children and are signs of imminent cardiac arrest.**
- **Shock may be present with a normal blood pressure initially.**
- **Shock often is present with normal vital signs and may develop insidiously. Tachycardia may be the only manifestation.**
- **Consider all possible causes of shock and treat per appropriate protocol.**
- **Hypovolemic Shock:**
  Hemorrhage, trauma, GI bleeding, or pregnancy-related bleeding.
- **Cardiogenic Shock:**
  Heart failure: MI, Cardiomyopathy, Myocardial contusion, Ruptured ventrical / septum / valve / toxins.
- **Distributive Shock:**
  Sepsis
  Anaphylactic
  Neurogenic: Hallmark is warm, dry, pink skin with normal capillary refill time and typically alert.
  Toxins
- **Obstructive Shock:**
  Pericardial tamponade. Pulmonary embolus. Tension pneumothorax.
  Signs may include hypotension with distended neck veins, tachycardia, unilateral decreased breath sounds or muffled heart sounds.

- **Acute Adrenal Insufficiency:** State where body cannot produce enough steroids (glucocorticoids / mineralocorticoids.) May have primary adrenal disease or more commonly have stopped a steroid like prednisone. Usually hypotensive with nausea, vomiting, dehydration and / or abdominal pain. If suspected EMT-P should give **Methylprednisolone 2 mg/kg IV / IO (Maximum 125mg)** or **Dexamethasone 0.3 mg/kg (Maximum 10 mg) IV / IO**.

Pediatric Allergic Reaction

History
- Onset and location
- Insect sting or bite
- Food allergy / exposure
- Medication allergy / exposure
- New clothing, soap, detergent
- Past medical history / reactions
- Medication history

Signs and Symptoms
- Itching or hives
- Coughing / wheezing or respiratory distress
- Chest or throat constriction
- Difficulty swallowing
- Hypotension or shock
- Edema

Differential
- Urticaria (rash only)
- Anaphylaxis (systemic effect)
- Shock (vascular effect)
- Angioedema (drug induced)
- Aspiration / Airway obstruction
- Vasovagal event
- Asthma / COPD / CHF

Assess Symptom Severity

MILD

B
- **Diphenhydramine 1 mg/kg PO, max 50mg**

I
- IV Procedure *If indicated*
- **Diphenhydramine 1 mg/kg PO / IV / IM / IO, Max 50mg**
- **Famotidine 1mg/kg IV/IO Maximum 40mg**

B
- Monitor and Reassess Monitor for Worsening Signs and Symptoms

MODERATE

- ***Consider* Epinephrine 1:1000 IM 0.15 or 0.3mg Auto-Injector**

B
- **Diphenhydramine 1 mg / kg PO, max 50mg**
- **Albuterol Nebulizer 5 mg** Repeat as needed x 3 ***if indicated***

I
- **Epinephrine 1:1000 0.01 mg / kg IM Maximum 0.3 mg** ***Use autoinjector if available*** Repeat in 5 min if no improvement
- IV Procedure
- **Diphenhydramine 1 mg/kg PO / IV / IM / IO *if not already given PO,* Max 50mg**
- **Albuterol Nebulizer 5 mg +/- Ipratropium 0.5 mg** Repeat as needed x 3 ***if indicated***
- **Famotidine 1mg/kg IV/IO Maximum 40mg**

P
- **Methyl-prednisolone 2 mg/kg IV / IO Maximum 125 mg, *or* Prednisone po *or* Prednisolone po (Orapred) 2mg/kg po Maximum 60mg**

SEVERE

- **Epinephrine 1:1000 IM 0.15 or 0.3mg Auto-Injector**

B
- **Diphenhydramine 1 mg / kg PO, max 50mg**
- **Albuterol Nebulizer 5 mg** Repeat as needed x 3 ***if indicated***
- Airway Pediatric Protocol(s) ***if indicated***

I
- **Epinephrine 1:1000 0.01 mg / kg IM Maximum 0.3 mg** ***Use autoinjector if available*** Repeat in 5 min if no improvement
- IV Procedure | **P** | IO Procedure
- **Diphenhydramine 1 mg/kg PO/ IV / IM / IO *if not already given PO***
- **Albuterol Nebulizer 5mg +/- Ipratropium 0.5 mg** Repeat as needed x 3 ***if indicated***
- **Normal Saline Bolus 20 mL/kg IV / IO** Repeat as needed to effect age appropriate SBP **Maximum 60 mL/kg**
- **Famotidine 1mg/kg IV/IO Maximum 40mg**

P
- **Methylprednisolone 2 mg/kg IV Maximum dose 125 mg**

Cardiac Monitoring Indicated for Moderate and Severe Reactions

Notify Destination or Contact Medical Control

Pediatric Section Protocols

Protocol 63

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Pediatric Allergic Reaction

Pearls

- **Recommended Exam: Mental Status, Skin, Heart, Lungs**
- **Anaphylaxis is an acute and potentially lethal multisystem allergic reaction.**
- **Epinephrine is the drug of choice and the first drug that should be administered in acute anaphylaxis (Moderate / Severe Symptoms.) IM Epinephrine should be administered in priority before or during attempts at IV or IO access.**
- **To increase patient safety, Use an autoinjector if available to deliver epinephrine. For pediatric patients, either the 0.15mg dose ("epi-pen jr") or 0.3mg dose ("epi-pen") may be used. Either may be repeated for severe symptoms that have not improved or are worsening 5 minutes after the first dose.**
- **Anaphylaxis unresponsive to repeat doses of IM epinephrine may require IV epinephrine administration by IV push or epinephrine infusion.**
- **CONSIDER THE CHILD'S ABILITY TO SWALLOW PILLS WELL, based on age, prior to administering any po medication for respiratory distress.**

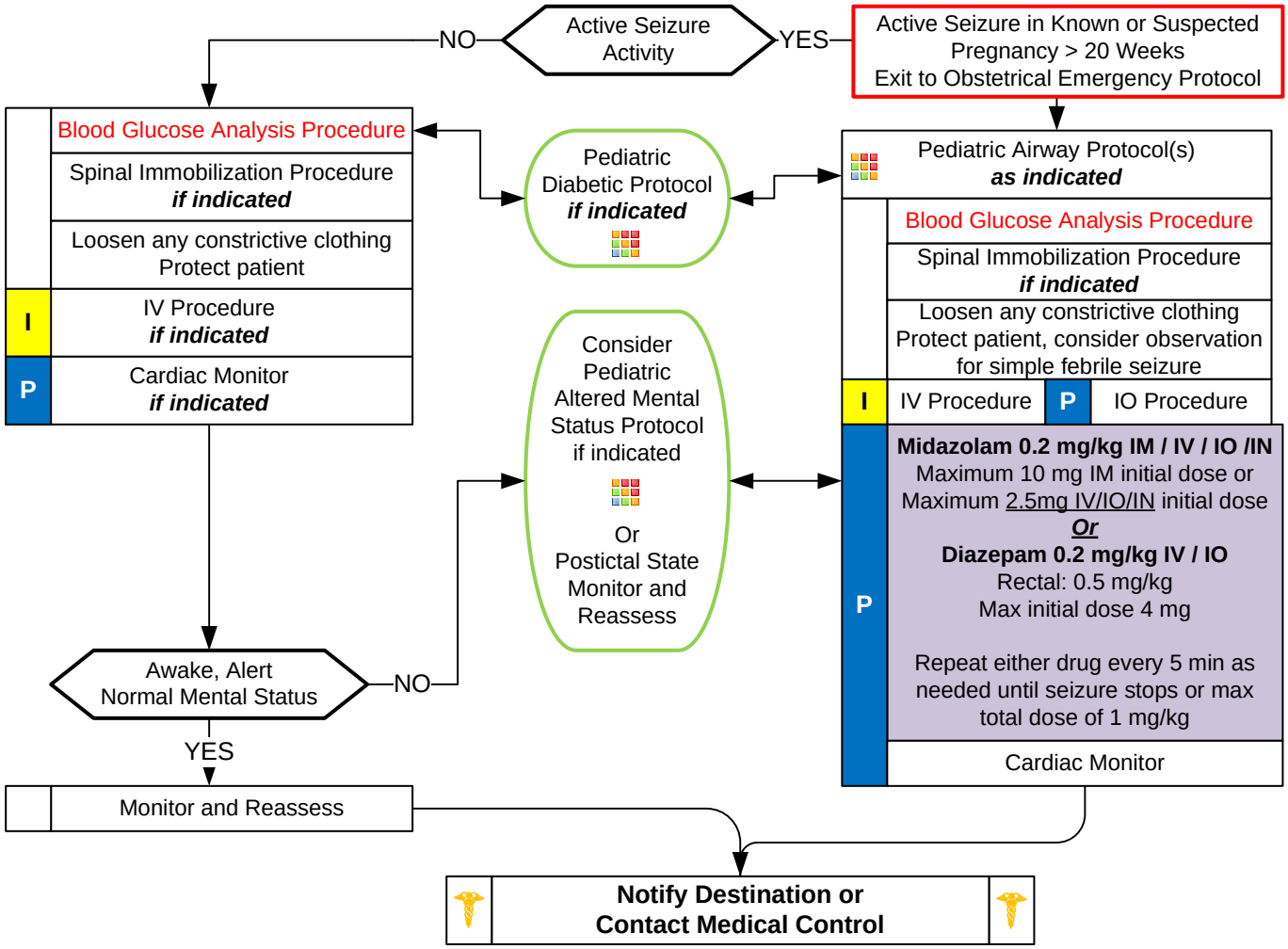
- **Symptom Severity Classification:**
  - **Mild symptoms:**
    - **Flushing, hives, itching, erythema with normal blood pressure and perfusion.**
  - **Moderate symptoms:**
    - **Flushing, hives, itching, erythema plus respiratory (wheezing, dyspnea, hypoxia) or gastrointestinal symptoms (nausea, vomiting, abdominal pain) with normal blood pressure and perfusion.**
  - **Severe symptoms:**
    - **Flushing, hives, itching, erythema plus respiratory (wheezing, dyspnea, hypoxia) or gastrointestinal symptoms (nausea, vomiting, abdominal pain) with hypotension and poor perfusion. Skin symptoms may not be present due to poor perfusion.**
- **Allergic reactions may occur with only respiratory and gastrointestinal symptoms and have no rash / skin involvement.**
- **Angioedema is seen in moderate to severe reactions and is swelling involving the face, lips or airway structures. This can also be seen in patients taking blood pressure medications like Prinivil / Zestril (lisinopril)-typically end in -il.**
- **Fluids and Medication titrated to maintain a SBP >70 + (age in years x 2) mmHg.**
- **EMT-B may administer diphenhydramine by oral route only and may administer from EMS supply.**
- **Patients with moderate and severe reactions should receive a 12 lead ECG and should be continually monitored, but this should NOT delay administration of epinephrine.**
- The shorter the onset from exposure to symptoms the more severe the reaction.

Pediatric Seizure

History
- Fever, Sick contacts
- Prior history of seizures
- Medication compliance
- Recent head trauma
- Whole body vs unilateral seizure activity
- Duration, Single/multiple
- Congenital Abnormality

Signs and Symptoms
- Fever; hot, dry skin
- Seizure activity
- Incontinence
- Tongue trauma
- Rash
- Nuchal rigidity
- Altered mental status

Differential
- Simple Febrile seizure
- Infection
- Head trauma, Medication or Toxin
- Hypoxia or Respiratory failure
- Hypoglycemia
- Metabolic abnormality / acidosis
- Tumor



Pediatric Section Protocols

Pearls
- **Recommended Exam: Mental Status, HEENT, Heart, Lungs, Extremities, Neuro**
- **Items in Red Text are key performance measures used to evaluate protocol compliance and care**

- Simple Febrile Seizures are most common in ages 6mos – 5 years. They are by definition generalized seizures with no seizure history in the setting of any grade of fever, with an otherwise normal neurologic and physical exam and recent history. It may be reasonable to observe these seizures, while treating fever with acetaminophen or ibuprofen and passive cooling measures (i.e. undressing), for up to five minutes. Any seizure confirmed to last for more than five minutes should be treated with medication.

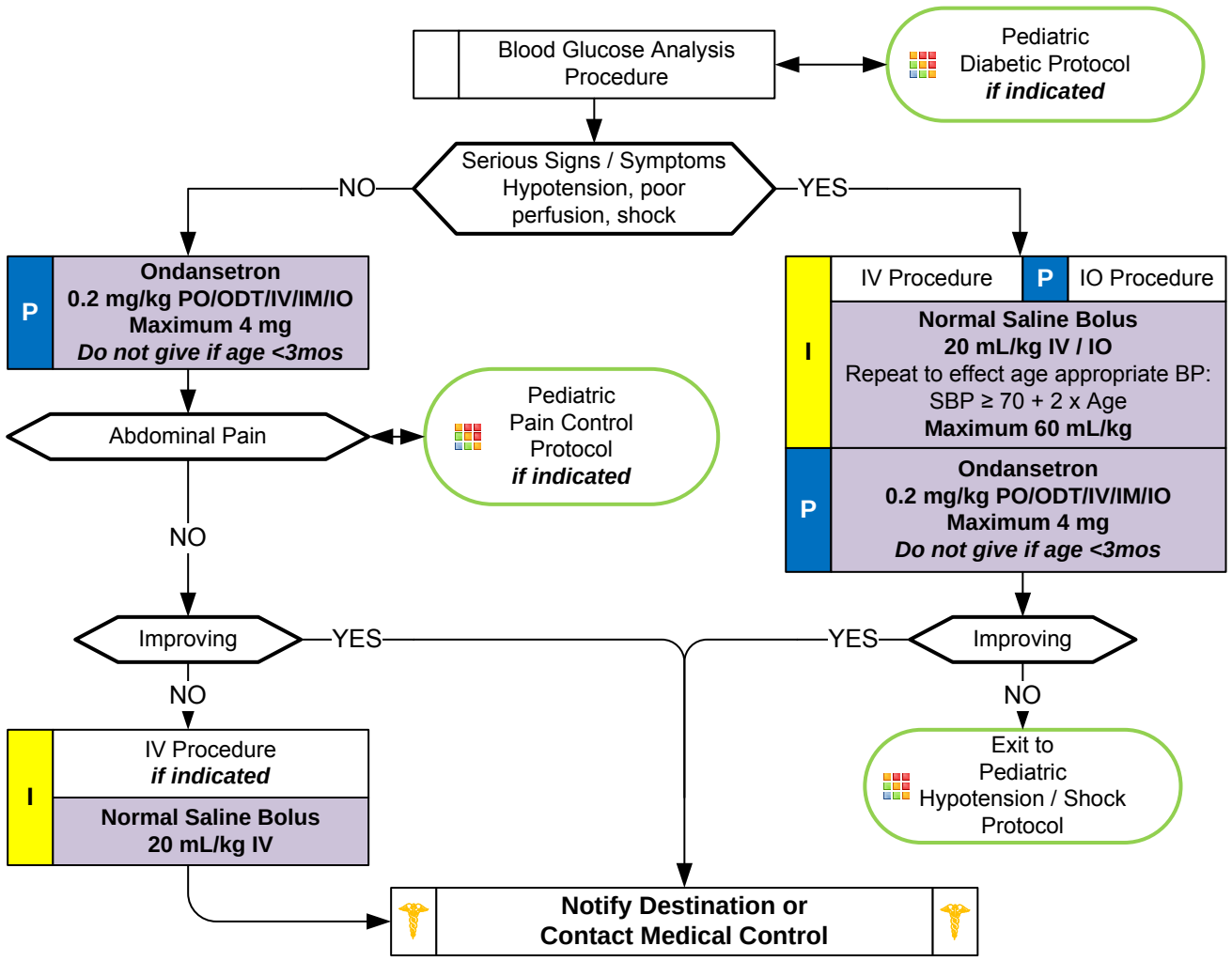
- **Midazolam 0.2 mg/kg (Maximum 10 mg) IM is effective in termination of seizures. Do not delay IM administration with difficult IV or IO access. IM Preferred over IO.**
- Addressing the ABCs and verifying blood glucose is as important as stopping the seizure.
- Be prepared to assist ventilations especially if a benzodiazepine is used. Avoiding hypoxemia is extremely important.
- In an infant, a seizure may be the only evidence of a closed head injury.
- Status epilepticus is defined as two or more successive seizures without a period of consciousness or recovery. This is a true emergency requiring rapid airway control, treatment, and transport.
- Assess for possibility of occult trauma and substance abuse, overdose or ingestion / toxins.

Pediatric Vomiting / Diarrhea

History
- Age
- Time of last meal
- Last bowel movement / emesis
- Improvement or worsening with food or activity
- Other sick contacts
- Past Medical History
- Past Surgical History
- Medications
- Travel history
- Bloody Emesis or diarrhea

Signs and Symptoms
- Pain
- Distension
- Constipation
- Diarrhea
- Anorexia
- Fever
- Cough,
- Dysuria

Differential
- CNS (Increased pressure, headache, tumor, trauma or hemorrhage)
- Drugs
- Appendicitis
- Gastroenteritis
- GI or Renal disorders
- Diabetic Ketoacidosis
- Infections (pneumonia, influenza)
- Electrolyte abnormalities



Pediatric Section Protocols

Pearls
- **Recommended Exam: Mental Status, Skin, HEENT, Neck, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- **Heart Rate: One of the first clinical signs of dehydration is almost always increased heart rate. Tachycardia increases as dehydration becomes more severe, very unlikely to be significantly dehydrated if heart rate is close to normal.**
- **Age specific blood pressure 0 – 28 days > 60 mmHg, 1 month - 1 year > 70 mmHg, 1 - 10 years > 70 + (2 x age) mmHg and 11 years and older > 90 mmHg.**
- Beware of only vomiting (i.e. no diarrhea) in children. Pyloric stenosis, bowel obstruction, and CNS processes (bleeding, tumors, or increased CSF pressures) all often present with isolated vomiting.

Protocol 65

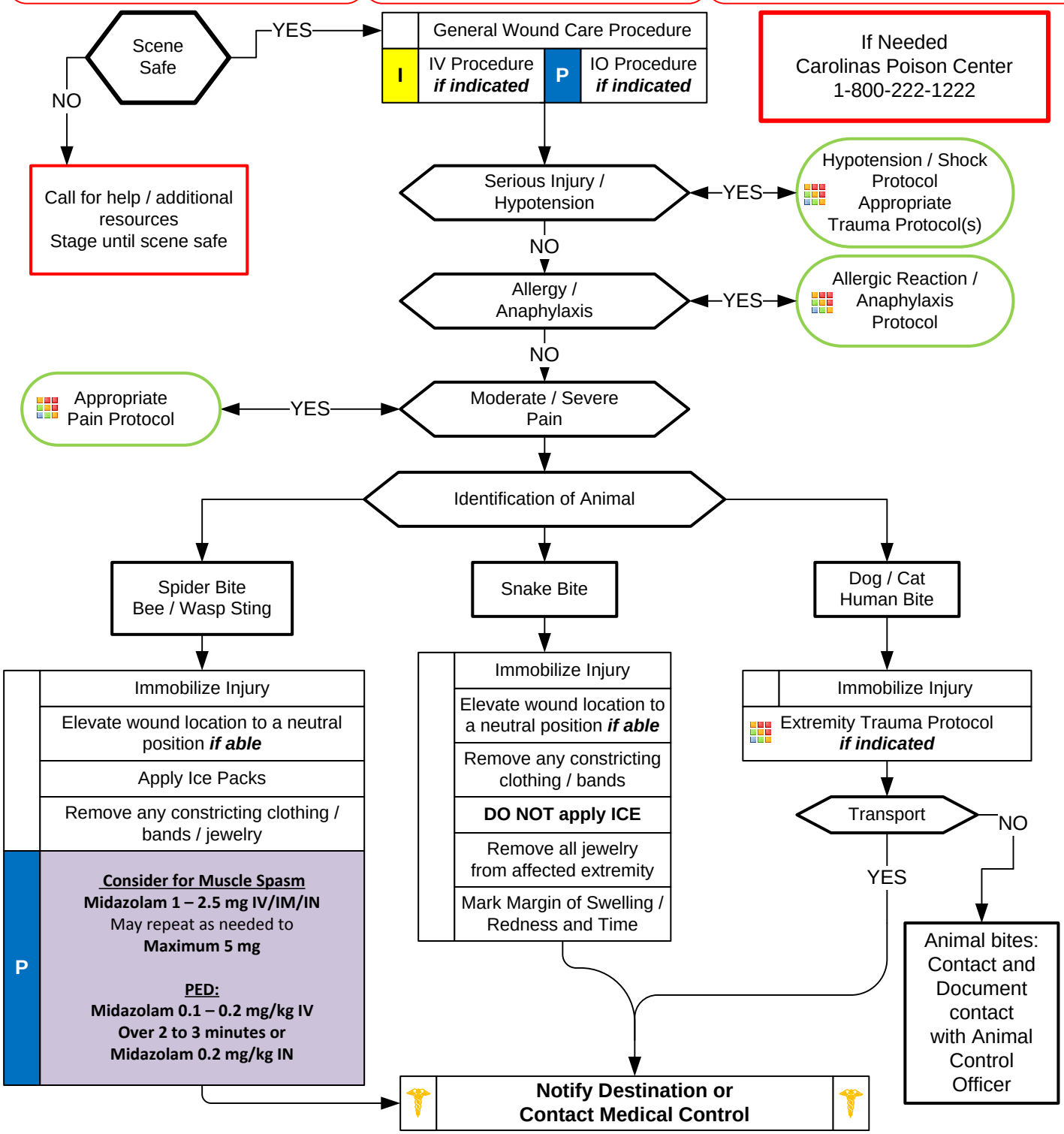
This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Bites and Envenomations

History
- Type of bite / sting
- Description or bring creature / photo with patient for identification
- Time, location, size of bite / sting
- Previous reaction to bite / sting
- Domestic vs. Wild
- Tetanus and Rabies risk
- Immunocompromised patient

Signs and Symptoms
- Rash, skin break, wound
- Pain, soft tissue swelling, redness
- Blood oozing from the bite wound
- Evidence of infection
- Shortness of breath, wheezing
- Allergic reaction, hives, itching
- Hypotension or shock

Differential
- Animal bite
- Human bite
- Snake bite (poisonous)
- Spider bite (poisonous)
- Insect sting / bite (bee, wasp, ant, tick)
- Infection risk
- Rabies risk
- Tetanus risk



Adult / Pediatric Trauma/Environmental Section Protocols

Protocol 66

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Bites and Envenomations

Pearls

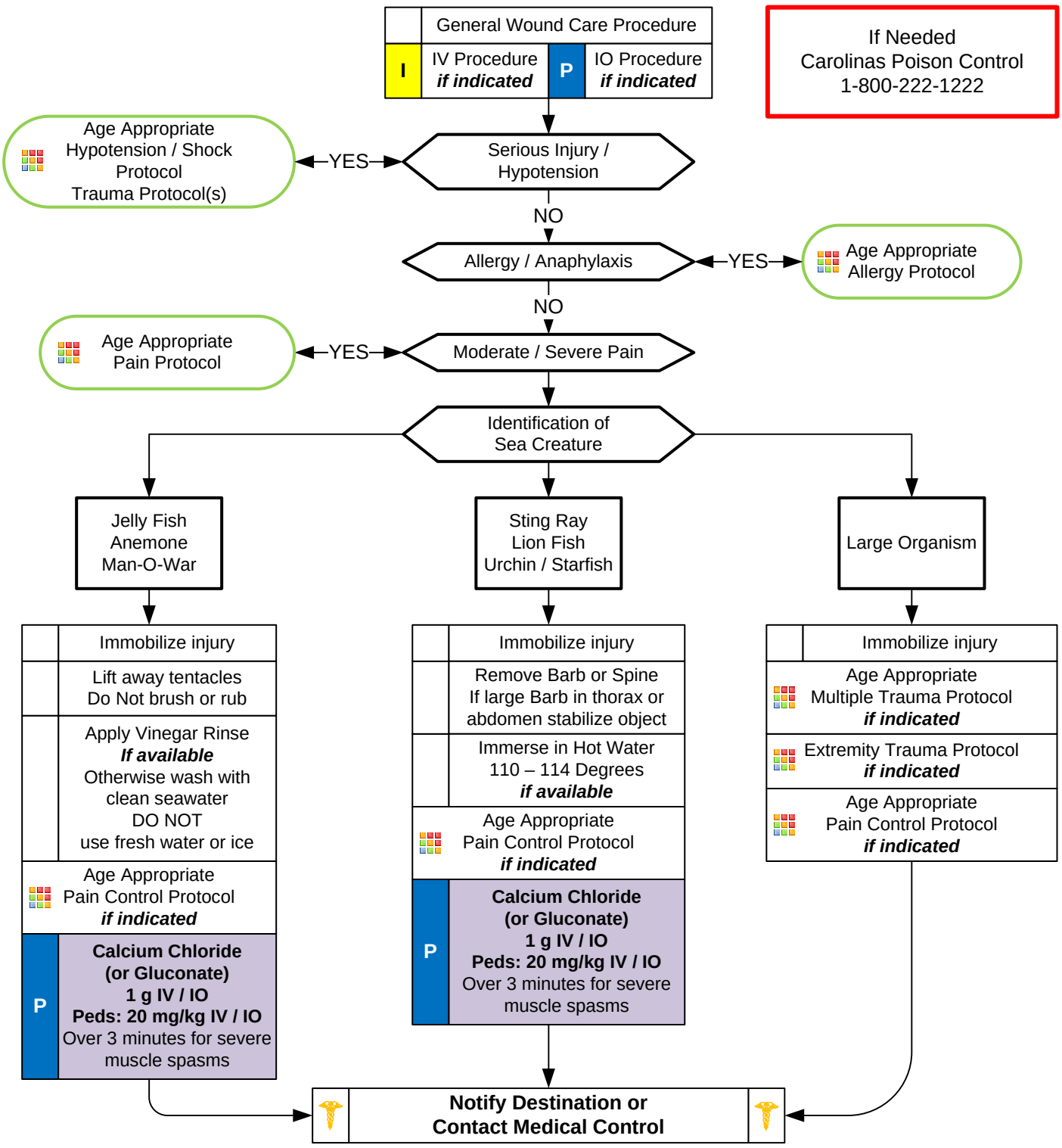
- **Recommended Exam: Mental Status, Skin, Extremities (Location of injury), and a complete Neck, Lung, Heart, Abdomen, Back, and Neuro exam if systemic effects are noted**
- Human bites have higher infection rates than animal bites due to normal mouth bacteria.
- Carnivore bites are much more likely to become infected and all have risk of Rabies exposure.
- Cat bites may progress to infection rapidly due to a specific bacteria (Pasteurella multicoda).
- Poisonous snakes in this area are generally of the pit viper family: rattlesnake and copperhead.
- Coral snake bites are rare: Very little pain but very toxic. "Red on yellow - kill a fellow, red on black - venom lack."
- If no pain or swelling, envenomation is unlikely. About 25 % of snake bites are “dry” bites.
- Black Widow spider bites tend to be minimally painful, but over a few hours, muscular pain and severe abdominal pain may develop (spider is black with red hourglass on belly).
- Brown Recluse spider bites are minimally painful to painless. Little reaction is noted initially but tissue necrosis at the site of the bite develops over the next few days (brown spider with fiddle shape on back).
- Evidence of infection: swelling, redness, drainage, fever, red streaks proximal to wound.
- Immunocompromised patients are at an increased risk for infection: diabetes, chemotherapy, transplant patients.
- Consider contacting the North Carolina Poison Center for guidance (1-800-84-TOXIN).

Marine Envenomations / Injury

History
- Type of bite / sting
- Identification of organism
- Previous reaction to marine organism
- Immunocompromised
- Household pet

Signs and Symptoms
- Intense localized pain
- Increased oral secretions
- Nausea / vomiting
- Abdominal cramping
- Allergic reaction / anaphylaxis

Differential
- Jellyfish sting
- Sea Urchin sting
- Sting ray barb
- Coral sting
- Swimmers itch
- Cone Shell sting
- Fish bite
- Lion Fish sting



Adult / Pediatric Trauma/Environmental Section Protocols

Protocol 67

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Marine Envenomations / Injury

Pearls

- Ensure your safety: Avoid the organism or fragments of the organism as they may impart further sting / injury.
- Patients can suffer cardiovascular collapse from the venom and / or anaphylaxis even in seemingly minor envenomations.
- Sea creature stings and bites impart moderate to severe pain.
- Arrest the envenomation by inactivation of the venom as appropriate.
- Ensure good wound care, immobilization and pain control.

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Blast Injury / Incident

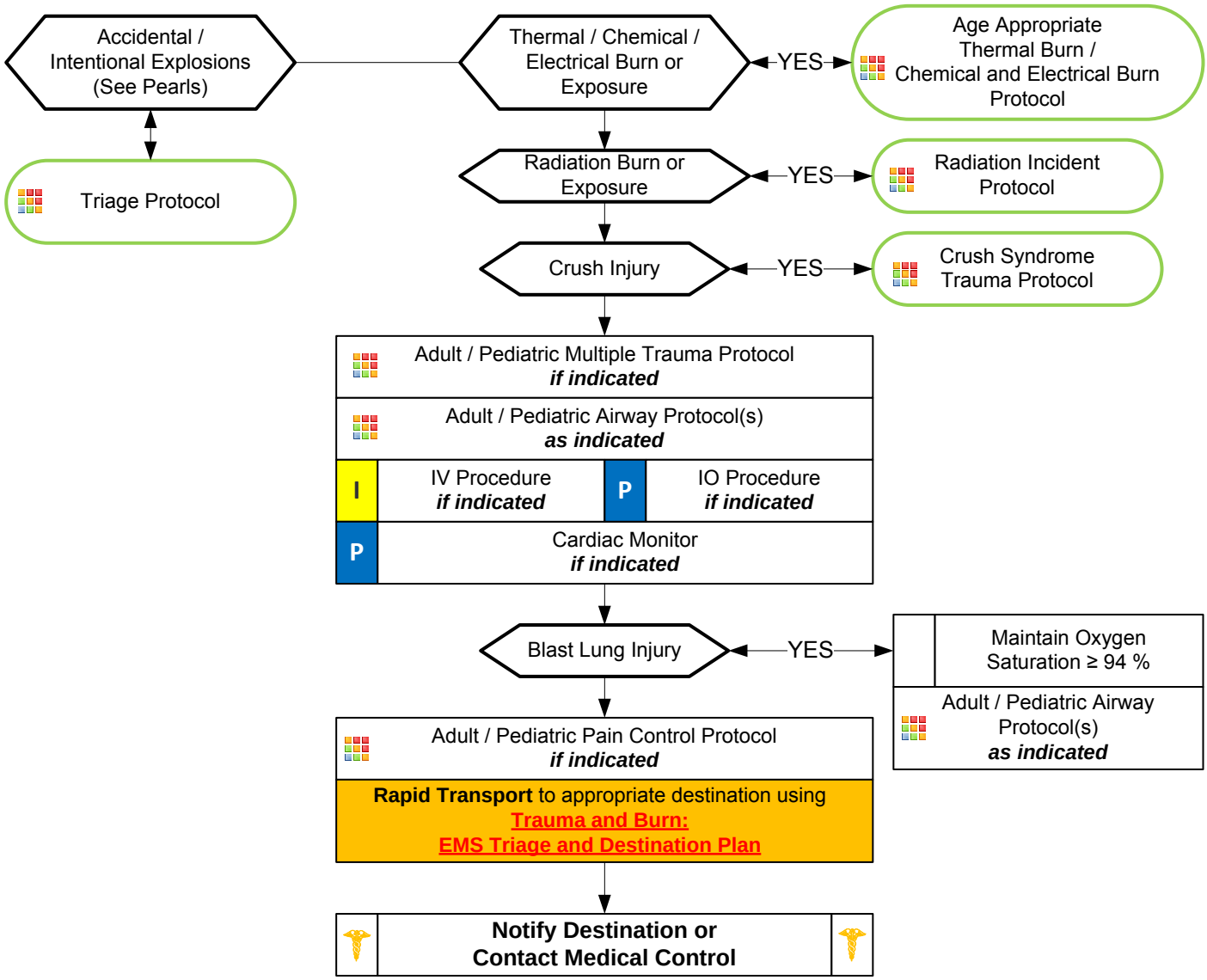
History
- Type of exposure (heat, gas, chemical)
- Inhalation injury
- Time of Injury
- Past medical history / Medications
- Other trauma
- Loss of Consciousness
- Tetanus/Immunization status

Signs and Symptoms
- Burns, pain, swelling
- Dizziness
- Loss of consciousness
- Hypotension/shock
- Airway compromise/distress could be indicated by hoarseness/ wheezing / Hypotension

Differential
- Superficial (1st Degree) red - painful (Don't include in TBSA)
- Partial Thickness (2nd Degree) blistering
- Full Thickness (3rd Degree) painless/charred or leathery skin
- Thermal injury
- Chemical – Electrical injury
- Radiation injury
- Blast injury

Nature of Device: Agent / Amount. Industrial Explosion. Terrorist Incident. Improvised Explosive Device.
Method of Delivery: Incendiary / Explosive
Nature of Environment: Open / Closed.
Distance from Device: Intervening protective barrier. Other environmental hazards,
Evaluate for: Blunt Trauma / Crush Injury / Compartment Syndrome / Traumatic Brain Injury / Concussion / Tympanic Membrane Rupture / Abdominal hemorrhage or Evisceration, Blast Lung Injury and Penetrating Trauma.

Scene Safety / Quantify and Triage Patients / Load and Go with Assessment / Treatment Enroute



Adult / Pediatric Trauma/Environmental Section Protocols

Protocol 68

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Blast Injury / Incident

Pearls

- **Types of Blast Injury:**
  - Primary Blast Injury: From pressure wave.
  - Secondary Blast Injury: Impaled objects. Debris which becomes missiles / shrapnel.
  - Tertiary Blast Injury: Patient falling or being thrown / pinned by debris.
  - Most Common Cause of Death: Secondary Blast Injuries.
- **Triage of Blast Injury patients:**
  - Blast Injury Patients with Burn Injuries Must be Triaged using the Thermal / Chemical / Electrical Burn Destination Guidelines for Critical / Serious / Minor Trauma and Burns
- **Care of Blast Injury Patients:**
  - Blast Injury Patients with Burn Injuries Must be cared for using the Thermal / Chemical / Electrical Burn Protocols.
  - Use Lactated Ringers (if available) for all Critical or Serious Burns.
- **Blast Lung Injury:**
  - Blast Lung Injury is characterized by respiratory difficulty and hypoxia. Can occur (rarely) in patients without external thoracic trauma. More likely in enclosed space or in close proximity to explosion.
  - Symptoms: Dyspnea, hemoptysis cough, chest pain, wheezing and hemodynamic instability.
  - Signs: Apnea, tachypnea, hypopnea, hypoxia, cyanosis and diminished breath sounds.
  - Air embolism should be considered and patient transported prone and in slight left-lateral decubitus position.
  - Blast Lung Injury patients may require early intubation but positive pressure ventilation may exacerbate the injury, avoid hyperventilation.
  - Air transport may worsen lung injury as well and close observation is mandated. Tension pneumothorax may occur requiring chest decompression. Be judicious with fluids as volume overload may worsen lung injury.
- **Accident Explosions:**
  - Attempt to determine source of the blast to include any potential threat for particalization of hazardous materials.·
  - Evaluate scene safety to include the source of the blast that may continue to spill explosive liquids or gases.
  - Consider structural collapse / Environmental hazards / Fire.·
  - Conditions that led to the initial explosion may be returning and lead to a second explosion.
  - Patients who can, typically will attempt to move as far away from the explosive source as they safely can.
- **Intentional Explosions:**
  - Attempt to determine source of the blast to include any potential threat for particalization of hazardous materials.
  - Greatest concern is potential threat for a secondary device.
  - Evaluate surroundings for suspicious items; unattended back packs or packages, or unattended vehicles.
  - **If patient is unconscious or there is(are) fatality(fatalities) and you are evaluating patient(s) for signs of life: Before moving note if there are wires coming from the patient(s), or it appears the patient(s) is(are) lying on a package/pack, or bulky item, do not move the patient(s), quickly back away and immediately notify a law enforcement officer.** If no indications the patient is connected to a triggering mechanism for a secondary device, expeditiously remove the patient(s) from the scene and begin transport to the hospital.
  - Protect the airway and cervical spine, however, beyond the primary survey, care and a more detailed assessment should be deferred until the patient is in the ambulance.
  - If there are signs the patient was carrying the source of the blast, notify law enforcement immediately and most likely, a law enforcement officer will accompany your patient to the hospital.
  - Consider the threat of structural collapse, contaminated particles and / or fire hazards.

Adult Thermal Burn

History
- Type of exposure (heat, gas, chemical)
- Inhalation injury
- Time of Injury
- Past medical history and Medications
- Other trauma
- Loss of Consciousness
- Tetanus/Immunization status

Signs and Symptoms
- Burns, pain, swelling
- Dizziness
- Loss of consciousness
- Hypotension/shock
- Airway compromise/ distress could be indicated by hoarseness/wheezing

Differential
- Superficial (1st Degree) red - painful (Don't include in TBSA)
- Partial Thickness (2nd Degree) blistering
- Full Thickness (3rd Degree) painless/charred or leathery skin
- Thermal injury
- Chemical – Electrical injury
- Radiation injury
- Blast injury

Assess Burn / Concomitant Injury Severity

Minor Burn

< 5% TBSA 2nd/3rd Degree Burn
No inhalation injury, Not Intubated, Normotensive
GCS 14 or Greater

- Remove Rings, Bracelets / Constricting Items
- Dry Clean Sheet or Dressings
- Adult Multiple Trauma Protocol ***if indicated***
- Adult Airway Protocol(s) ***as indicated***
- I: IV Procedure ***if indicated***
- I: **Normal Saline 0.25 mL / kg (x % TBSA) / hr** for up to the first 8 hours. ***(More info below) Lactated Ringers if available***
- Adult Pain Control Protocol ***if indicated***

Carbon Monoxide / Cyanide Exposure

- Transport Facility of Choice; Consider Burn Center for burns on the face, hands, perineum, or feet.

Serious Burn

5-15% TBSA 2nd/3rd Degree Burn
Suspected inhalation injury or requiring intubation for airway stabilization
Hypotension or GCS 13 or Less
(Transport to a Burn Center)

Criticial Burn

>15% TBSA 2nd/3rd Degree Burn
Burns with Multiple Trauma
Burns with definitive airway compromise
(Transport to a Burn Center)

- Remove Rings, Bracelets / Constricting Items
- Dry Clean Sheet or Dressings
- Adult Multiple Trauma Protocol ***if indicated***
- Adult Airway Protocol(s) ***as indicated***
- I: IV Procedure Consider 2 IV sites if greater than 15 % TBSA
- P: IO Procedure ***if indicated***
- I: **Normal Saline 0.25 mL / kg (x % TBSA) / hr** for up to the first 8 hours. ***(More info below) Lactated Ringers if available***
- Adult Pain Control Protocol ***if indicated***

Carbon Monoxide / Cyanide Exposure

- **Rapid Transport** to appropriate destination using **Trauma and Burn: EMS Triage and Destination Plan**

Carbon Monoxide / Cyanide Protocol

Notify Destination or Contact Medical Control

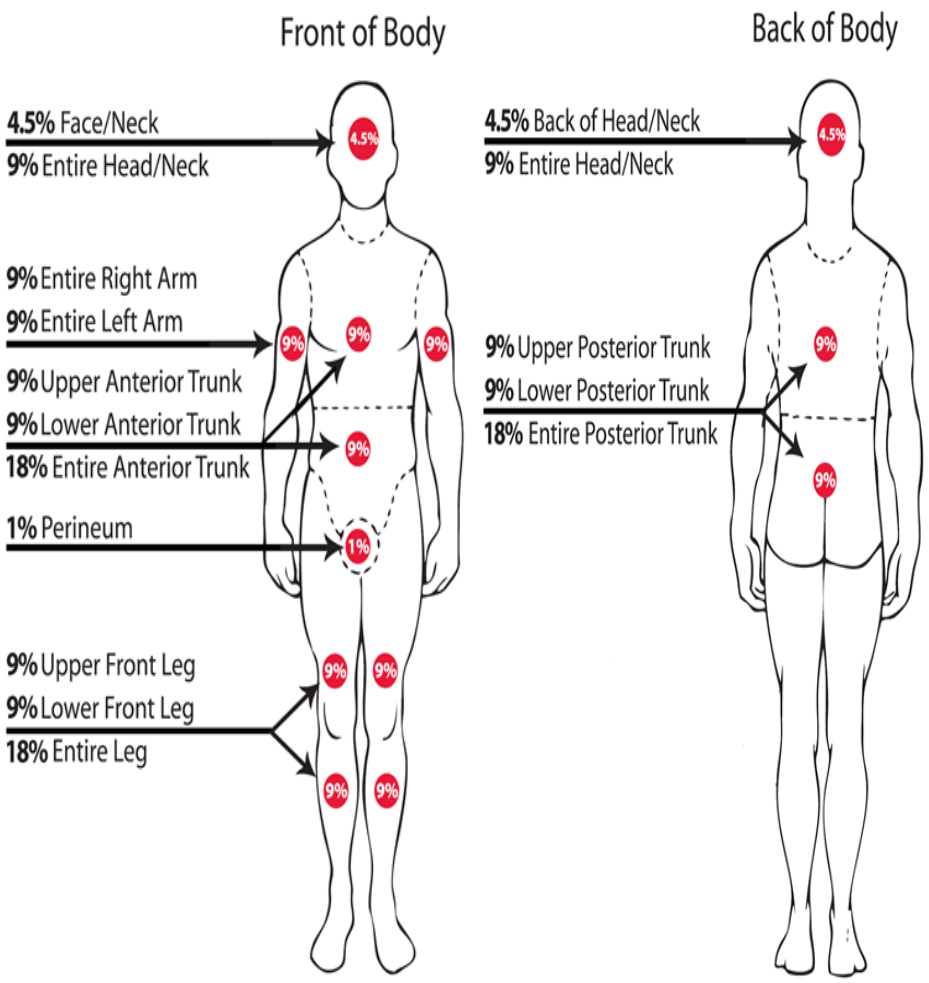
1. Lactated Ringers preferred over Normal Saline. Use if available, if not change over once available.
2. Formula example; an 80 kg (196 lbs.) patient with 50% TBSA will need 1000 cc of fluid per hour.

Trauma/Environmental Section Protocols

Protocol 69

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Adult Thermal Burn



Estimate spotty areas of burn by using the size of the patient's palm as 1 %

Rule of Nines

- Seldom do you find a complete isolated body part that is injured as described in the Rule of Nines.
- More likely, it will be portions of one area, portions of another, and an approximation will be needed.
- For the purpose of determining the extent of serious injury, differentiate the area with minimal or 1st degree burn from those of partial (2nd) or full (3rd) thickness burns.
- For the purpose of determining Total Body Surface Area (TBSA) of burn, include only Partial and Full Thickness burns. Report the observation of other superficial (1st degree) burns but do not include those burns in your TBSA estimate.
- Some texts will refer to 4th 5th and 6th degree burns. There is significant debate regarding the actual value of identifying a burn injury beyond that of the superficial, partial and full thickness burn at least at the level of emergent and primary care. For our work, all are included in Full Thickness burns.
- Other burn classifications in general include:
  - 4th referring to a burn that destroys the dermis and involves muscle tissue.
  - 5th referring to a burn that destroys dermis, penetrates muscle tissue, and involves tissue around the bone.
  - 6th referring to a burn that destroys dermis, destroys muscle tissue, and penetrates or destroys bone tissue.

Pearls

- **Recommended Exam: Mental Status, HEENT, Neck, Heart, Lungs, Abdomen, Extremities, Back, and Neuro**
- **Green, Yellow and Red In burn severity do not apply to the Start / JumpStart Triage System.**
- **Critical or Serious Burns:**

  > 5-15% total body surface area (TBSA) 2nd or 3rd degree burns, or
  3rd degree burns > 5% TBSA for any age group, or
  circumferential burns of extremities, or
  electrical or lightning injuries, or
  suspicion of abuse or neglect, or
  inhalation injury, or
  chemical burns, or
  burns of face, hands, perineum, or feet
- Require direct transport to a Burn Center. Local facility should be utilized only if critical interventions such as airway management are not possible in the field.
- Burn patients are often trauma patients, evaluate for multisystem trauma.
- Assure whatever has caused the burn is no longer contacting the injury. (Stop the burning process!)
- Early intubation is required when the patient experiences significant inhalation injuries. If the patient requires airway management that cannot be achieved in the field, go to the nearest emergency department for stabilization prior to transfer to the Burn Center.
- Circumferential burns to extremities are dangerous due to potential vascular compromise secondary to soft tissue swelling.
- Burn patients are prone to hypothermia - never apply ice or cool the burn, must maintain normal body temperature.
- Evaluate the possibility of child abuse with children and burn injuries.
- Never administer IM pain injections to a burn patient.

Pediatric Thermal Burn

History
- Type of exposure (heat, gas, chemical)
- Inhalation injury
- Time of Injury
- Past medical history and Medications
- Other trauma
- Loss of Consciousness
- Tetanus/Immunization status

Signs and Symptoms
- Burns, pain, swelling
- Dizziness
- Loss of consciousness
- Hypotension/shock
- Airway compromise/distress could be indicated by hoarseness/wheezing

Differential
- Superficial (1st Degree) red - painful (Don't include in TBSA)
- Partial Thickness (2nd Degree) blistering
- Full Thickness (3rd Degree) painless/charred or leathery skin
- Thermal
- Chemical – Electrical

Assess Burn / Concomitant Injury Severity

Minor Burn

< 5% TBSA 2nd/3rd Degree Burn
No inhalation injury, Not Intubated, Normotensive
GCS 14 or Greater

- Remove Rings, Bracelets / Constricting Items
- Dry Clean Sheet or Dressings
- Pediatric Multiple Trauma Protocol ***if indicated***
- Pediatric Airway Protocol(s) ***as indicated***
- I: IV Procedure ***if indicated***
- I: **Normal Saline**
  0.25 mL / kg (x % TBSA) / hr
  for up to the first 8 hours.
  (More info below)
  Lactated Ringers if available
- Pediatric Pain Control Protocol ***if indicated***

Carbon Monoxide / Cyanide Exposure
- YES → Carbon Monoxide / Cyanide Protocol
- NO → Transport Facility of Choice; Consider Burn Center for burns on the face, hands, perineum, or feet.

Serious Burn

5-15% TBSA 2nd/3rd Degree Burn
Suspected inhalation injury or requiring intubation for airway stabilization
Hypotension or GCS 13 or Less
(When reasonably accessible, transport to a Burn Center)

Criticial Burn

>15% TBSA 2nd/3rd Degree Burn
Burns with Multiple Trauma
Burns with definitive airway compromise
(When reasonably accessible, transport to a Burn Center)

- Remove Rings, Bracelets / Constricting Items
- Dry Clean Sheet or Dressings
- Pediatric Multiple Trauma Protocol ***if indicated***
- Pediatric Airway Protocol(s) ***as indicated***
- I: IV Procedure
  Consider 2 IV sites if greater than 15 % TBSA
- I: **Normal Saline**
  0.25 mL / kg (x % TBSA) / hr
  for up to the first 8 hours.
  (More info below)
  Lactated Ringers if available
- P: IO Procedure ***if indicated***
- Pediatric Pain Control Protocol ***if indicated***

Carbon Monoxide / Cyanide Exposure
- YES → Carbon Monoxide / Cyanide Protocol
- NO → **Rapid Transport** to appropriate destination using **Trauma and Burn: EMS Triage and Destination Plan**

Notify Destination or Contact Medical Control

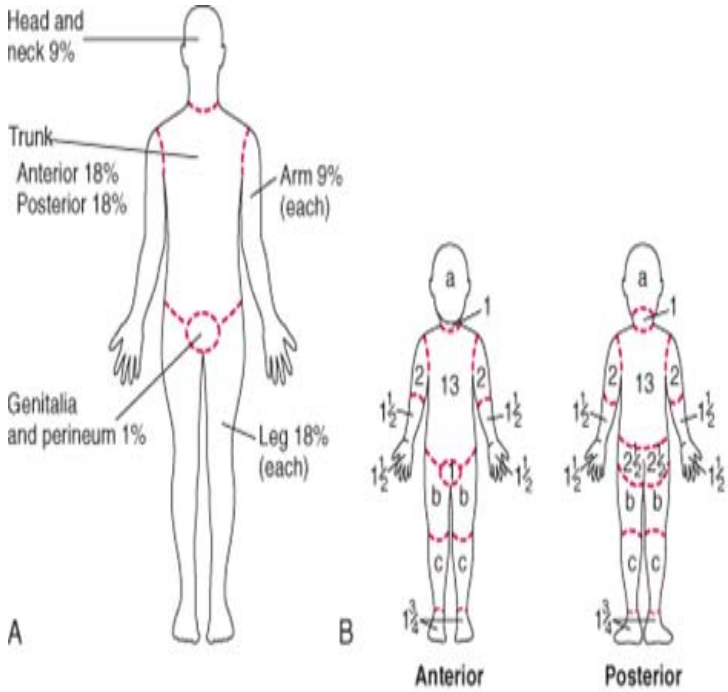
1. Lactated Ringers preferred over Normal Saline. Use if available, if not change over once available.
2. Formula example: an 80 kg (196 lbs.) patient with 50% TBSA will need 1000 cc of fluid per hour.

Trauma/Environmental Section Protocols

Protocol 70

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Pediatric Thermal Burn



Relative percentage of body surface area (% BSA) affected by growth

Body Part	Age 0 yr	1 yr	5 yr	10 yr	15 yr
a = 1/2 of head	9 1/2	8 1/2	6 1/2	5 1/2	4 1/2
b = 1/2 of 1 thigh	2 3/4	3 1/4	4	4 1/4	4 1/2
c = 1/2 of 1 lower leg	2 1/2	2 1/2	2 3/4	3	3 1/4

Rule of Nines

- Seldom do you find a complete isolated body part that is injured as described in the Rule of Nines.
- More likely, it will be portions of one area, portions of another, and an approximation will be needed.
- For the purpose of determining the extent of serious injury, differentiate the area with minimal or 1st degree burn from those of partial (2nd) or full (3rd) thickness burns.
- For the purpose of determining Total Body Surface Area (TBSA) of burn, include only Partial and Full Thickness burns. Report the observation of other superficial (1st degree) burns but do not include those burns in your TBSA estimate.
- Some texts will refer to 4th 5th and 6th degree burns. There is significant debate regarding the actual value of identifying a burn injury beyond that of the superficial, partial and full thickness burn at least at the level of emergent and primary care. For our work, all are included in Full Thickness burns.
- Other burn classifications in general include:
  - 4th referring to a burn that destroys the dermis and involves muscle tissue.
  - 5th referring to a burn that destroys dermis, penetrates muscle tissue, and involves tissue around the bone.
  - 6th referring to a burn that destroys dermis, destroys muscle tissue, and penetrates or destroys bone tissue.

Estimate spotty areas of burn by using the size of the patient's palm as 1 %

Pearls

- **Recommended Exam: Mental Status, HEENT, Neck, Heart, Lungs, Abdomen, Extremities, Back, and Neuro**
- **Green, Yellow and Red In burn severity do not apply to the Triage System.**

Critical or Serious Burns:

- ***> 5-15% total body surface area (TBSA) 2nd or 3rd degree burns, or***
- ***3rd degree burns > 5% TBSA for any age group, or***
- ***circumferential burns of extremities, or***
- ***electrical or lightning injuries, or***
- ***suspicion of abuse or neglect, or***
- ***inhalation injury, or***
- ***chemical burns, or***
- ***burns of face, hands, perineum, or feet, or***
- ***any burn requiring hospitalization.***
- Require direct transport to a Burn Center. Local facility should be utilized only if critical interventions such as airway management are not available in the field.
- Burn patients are trauma patients, evaluate for multisystem trauma.
- Assure whatever has caused the burn is no longer contacting the injury. (Stop the burning process!)
- Early intubation is required when the patient experiences significant inhalation injuries.
- Circumferential burns to extremities are dangerous due to potential vascular compromise secondary to soft tissue swelling.
- Burn patients are prone to hypothermia - never apply ice or cool the burn, must maintain normal body temperature.
- Evaluate the possibility of child abuse with children and burn injuries.
- Never administer IM pain injections to a burn patient.

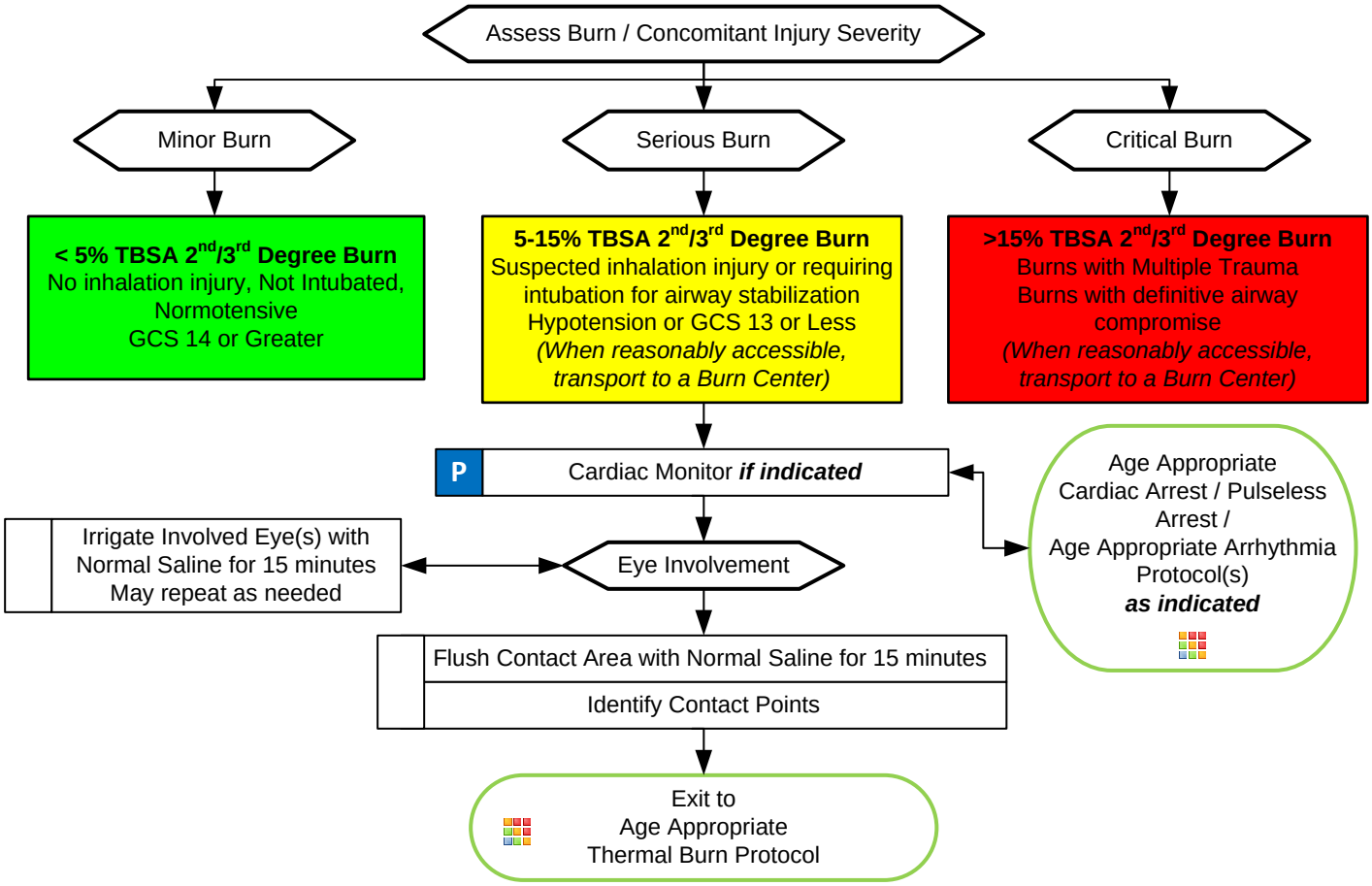
Chemical and Electrical Burn

History
- Type of exposure (heat, gas, chemical)
- Inhalation injury
- Time of Injury
- Past medical history / Medications
- Other trauma
- Loss of Consciousness
- Tetanus/Immunization status

Signs and Symptoms
- Burns, pain, swelling
- Dizziness
- Loss of consciousness
- Hypotension/shock
- Airway compromise/distress could be indicated by hoarseness/ wheezing / Hypotension

Differential
- Superficial (1st Degree) red - painful (Don't include in TBSA)
- Partial Thickness (2nd Degree) blistering
- Full Thickness (3rd Degree) painless/charred or leathery skin
- Thermal injury
- Chemical – Electrical injury
- Radiation injury
- Blast injury

Assure Chemical Source is NOT Hazardous to Responders.
Assure Electrical Source is NO longer in contact with patient before touching patient.



Pearls
- **Recommended Exam: Mental Status, HEENT, Neck, Heart, Lungs, Abdomen, Extremities, Back, and Neuro**
- **Green, Yellow and Red In burn severity do not apply to the Start / JumpStart Triage System.**
- **Refer to Rule of Nines: Remember the extent of the obvious external burn from an electrical source, does not always reflect more extensive internal damage not seen.**
- **Chemical Burns:**
  Refer to Decontamination Procedure.
  Normal Saline or Sterile Water is preferred, however if not available, do not delay irrigation using tap water. Other water sources may be used based on availability. Flush the area as soon as possible with the cleanest readily available water or saline solution using copious amounts of fluids.
- **Electrical Burns:**
  DO NOT contact patient until you are certain the source of the electrical shock is disconnected.
  Attempt to locate contact points (generally there will be two or more.) A point where the patient contacted the source and a point(s) where the patient is grounded. Sites will generally be full thickness. **Do not refer to as entry and exit sites or wounds.**
  Cardiac Monitor: Anticipate ventricular or atrial irregularity including VT, VF, atrial fibrillation and / or heart blocks.
  Attempt to identify then nature of the electrical source (AC / DC,) the amount of voltage and the amperage the patient may have been exposed to during the electrical shock.

Protocol 71

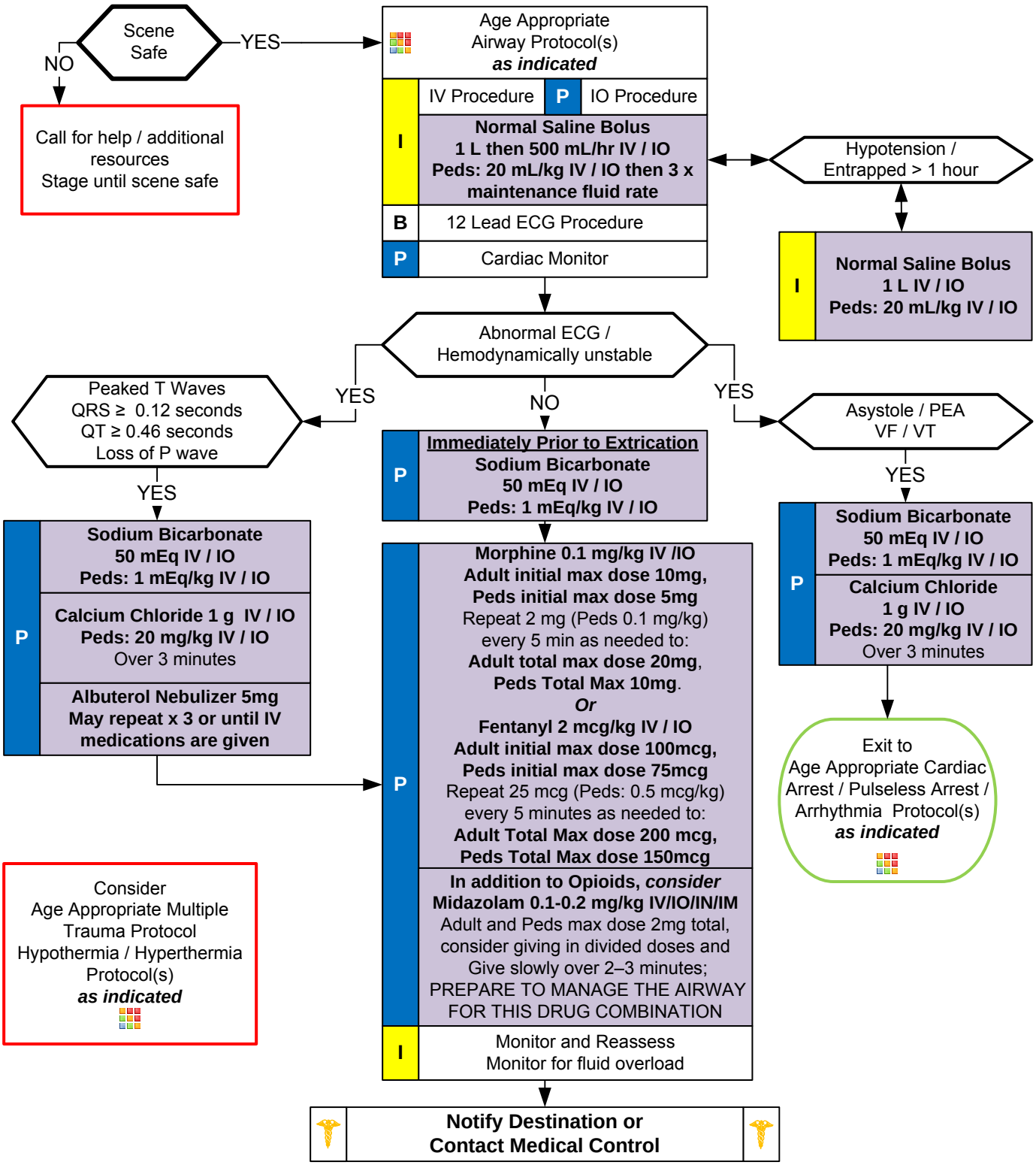
This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Crush Syndrome Trauma

History
- Entrapped and crushed under heavy load > 30 minutes
- Extremity / body crushed
- Building collapse, trench collapse, industrial accident, pinned under heavy equipment

Signs and Symptoms
- Hypotension
- Hypothermia
- Abnormal ECG findings
- Pain
- Anxiety

Differential
- Entrapment without crush syndrome
- Entrapment without significant crush
- Altered mental status



Adult / Pediatric Trauma/Environmental Section Protocols

Protocol 72

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Crush Syndrome Trauma

Pearls

- **Recommended exam: Mental Status, Musculoskeletal, Neuro**
- **Scene safety is of paramount importance as typical scenes pose hazards to rescuers. Call for appropriate resources.**
- Avoid Ringers Lactate IV Solution due to potassium and potential worsening hyperkalemia
- Hyperkalemia from crush syndrome can produce ECG changes described in protocol, but may also cause a bizarre, wide complex rhythm. Wide complex rhythms should also be treated using the VF/Pulseless VT Protocol.
- Patients may become hypothermic even in warm environments.
- Pediatric IV Fluid maintenance rate: 4 mL per first 10 kg of weight + 2 mL per second 10 kg of weight + 1 mL for every additional kg in weight.
- The combination of opioids and benzodiazepines represents an increased level of anesthesia from either medication alone. This is the only protocol in which this combination of medications may be utilized without a direct order from medical control. There is a significant risk of airway compromise with this combination of medications; prepare to manage the airway prior to medication administration, administer supplemental oxygen, and ETCO2 waveform capnography must be in place prior to administration. If the patient is in a position in which you cannot adequately manage the airway, do not give this combination of medications.

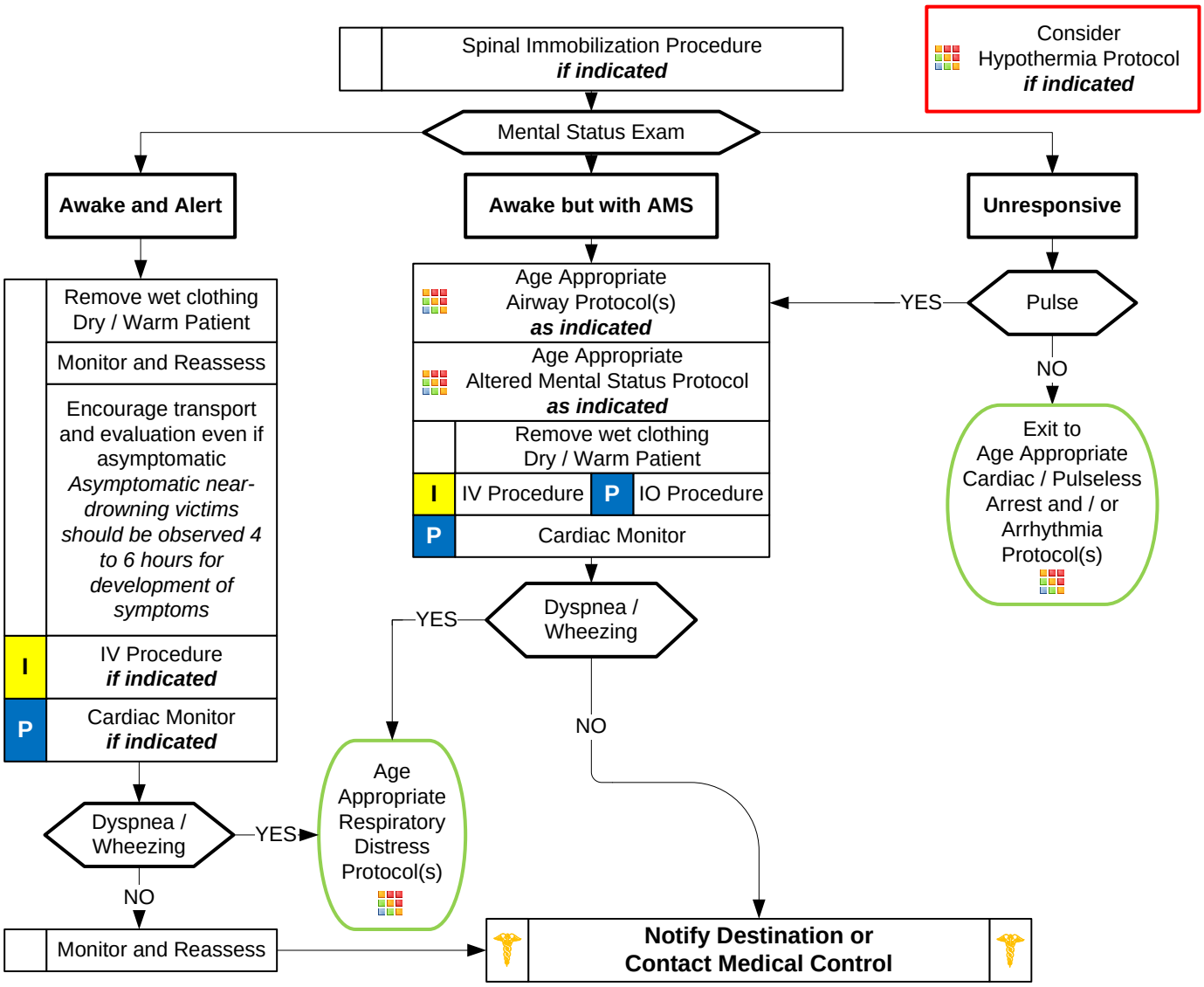
This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Drowning / Submersion Injury

History
- Submersion in water regardless of depth
- Possible history of trauma ie: diving board
- Duration of immersion
- Temperature of water or possibility of hypothermia
- Degree of water contamination

Signs and Symptoms
- Unresponsive
- Mental status changes
- Decreased or absent vital signs
- Vomiting
- Coughing, Wheezing, Rales, Rhonci,Stridor
- Apnea

Differential
- Trauma
- Pre-existing medical problem
- Pressure injury (diving)
- Barotrauma
- Decompression sickness
- Post-immersion syndrome



Adult / Pediatric Trauma/Environmental Section Protocols

Pearls
- **Recommended Exam: Trauma Survey, Head, Neck, Chest, Abdomen, Pelvis, Back, Extremities, Skin, Neuro**
- **Ensure scene safety. Drowning is a leading cause of death among would-be rescuers.**
- **Allow appropriately trained and certified rescuers to remove victims from areas of danger.**
- **With cold water no time limit -- resuscitate all. These patients have an increased chance of survival.**
- Have a high index of suspicion for possible spinal injuries
- Hypothermia is often associated with drowning and submersion injuries.
- All victims should be transported for evaluation due to potential for worsening over the next several hours.
- With pressure injuries (decompression / barotrauma), consider transport to or availability of a hyperbaric chamber.
- Post-drowning patients who are awake and cooperative but with respiratory distress may benefit from CPAP.

Protocol 73

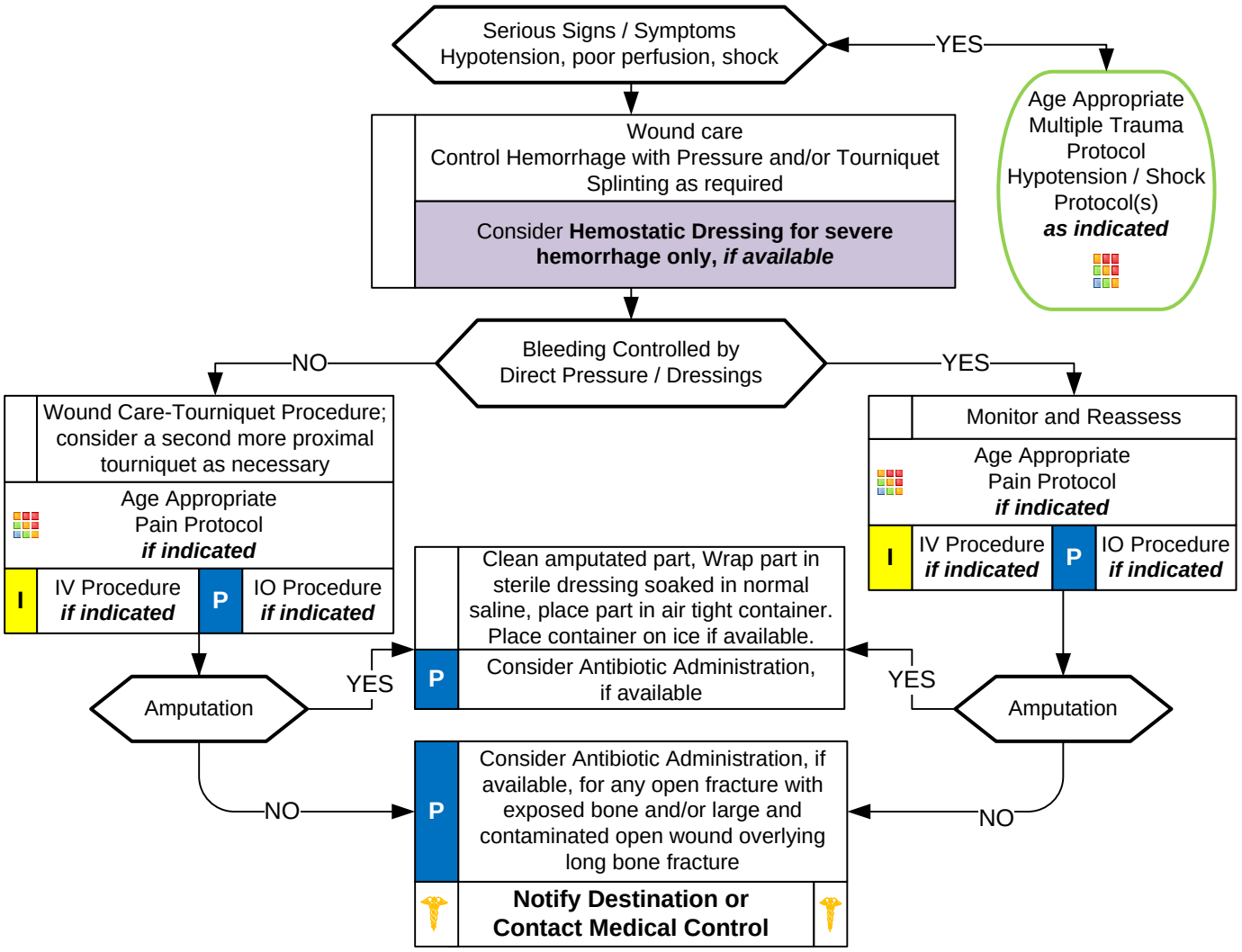
This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Extremity Trauma

History
- Type of injury
- Mechanism: crush / penetrating / amputation
- Time of injury
- Open vs. closed wound / fracture
- Wound contamination
- Medical history
- Medications

Signs and Symptoms
- Pain, swelling
- Deformity
- Altered sensation / motor function
- Diminished pulse / capillary refill
- Decreased extremity temperature

Differential
- Abrasion
- Contusion
- Laceration
- Sprain
- Dislocation
- Fracture
- Amputation



Adult / Pediatric Trauma/Environmental Section Protocols

Pearls
- **Recommended Exam: Mental Status, Extremity, Neuro**
- Peripheral neurovascular status is important and should be examined and recorded.
- Early antibiotic administration is beneficial in open fractures. Consider antibiotics especially in cases in which transport may be delayed (i.e. entrapment, crush, MCI, collapse scenarios), but only after providing other emergency care including hemorrhage control.
- Hip dislocations and knee and elbow fracture / dislocations have a high incidence of vascular compromise.
- Urgently transport any injury with vascular compromise and any amputation; time is especially critical in these cases.
- Blood loss may be concealed or not apparent with extremity injuries.
- Lacerations should be evaluated for repair within 6 hours from the time of injury.
- Multiple casualty incident or obvious life threatening hemorrhage: Consider Tourniquet Procedure FIRST.

Protocol 74

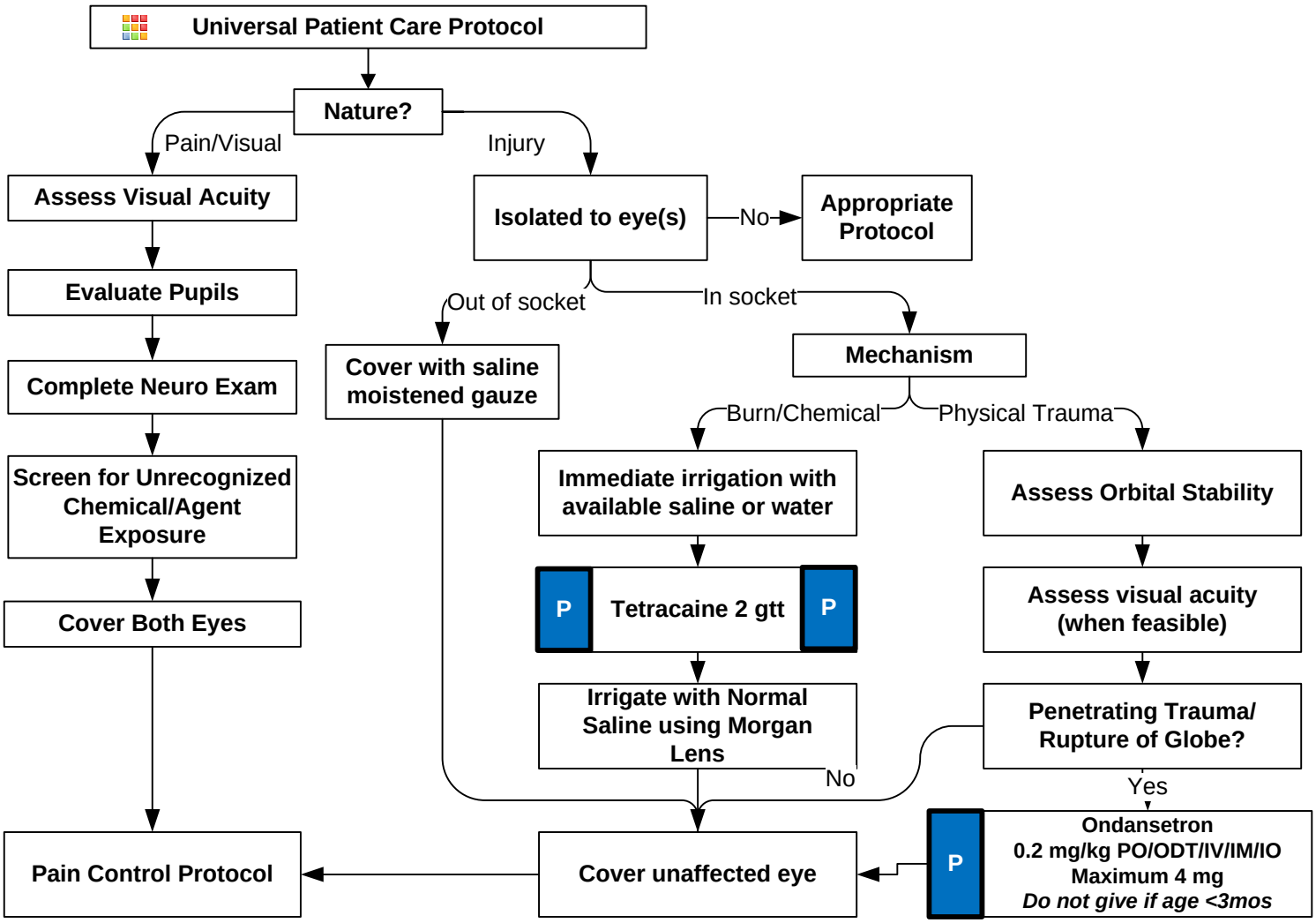
This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Eye Injury / Complaint

History:
- Time of injury/onset
- Blunt/penetrating/chemical
- Open vs. closed injury
- Involved chemicals/MSDS
- Wound Contamination
- Medical History
- Tetanus status
- Normal visual acuity
- Medications

Signs and Symptoms:
- Pain, swelling, blood
- Deformity, contusion
- Visual deficit
- Leaking aqueous/vitreou s humor
- Upwardly fixed eye
- "Shooting" or "streaking" light
- Visible contaminants
- Rust ring
- Lacrimation

Differential:
- Abrasion/Laceration
- Globe rupture
- Retinal nerve damage/detachment
- Chemical/thermal burn/agent of terror
- Orbital fracture
- Orbital compartment symdrome
- Neurological event
- Acute glaucoma
- Retinal artery occlusion



Adult/Pediatric Trauma/Environmental Section Protocols

Pearls:
- **Normal visual acuity can be present even with severe eye injury**
- **Remove contact lens whenever possible.**
- **Any chemical or thermal burn to the face/eyes should raise suspicion of respiratory insult**
- **Orbital fractures raise concern of globe or nerve injury and need repeated assessments o f visual status**
- **Always cover both eyes to prevent further injury.**
- **Use shields, not pads, for physical trauma to eyes. Pads OK for unaffected eye.**
- **Do not remove impaled objects**
- **Suspected globe rupture or compartment syndromes require emergent in-facility intervention.**

Protocol 75

This protocol is unique to the Wake County EMS System

Adult Head Trauma

History
- Time of injury
- Mechanism (blunt vs. penetrating)
- Loss of consciousness
- Bleeding
- Past medical history
- Medications
- Evidence for multi-trauma

Signs and Symptoms
- Pain, swelling, bleeding
- Altered mental status
- Unconscious
- Respiratory distress / failure
- Vomiting
- Major traumatic mechanism of injury
- Seizure

Differential
- Skull fracture
- Brain injury (Concussion, Contusion, Hemorrhage or Laceration)
- Epidural hematoma
- Subdural hematoma
- Subarachnoid hemorrhage
- Spinal injury
- Abuse

DO NOT HYPERVENTILATE

Ventilate 8 – 10 Breaths per minute to maintain EtCO2 35 – 45 mmHg

Spinal Immobilization Protocol ***if indicated***

Adult Multiple Trauma Protocol ***if indicated***

I — IV Procedure | P — IO Procedure

Altered Mental Status Protocol ***if indicated***

Seizure Protocol ***if indicated***

Blood Glucose Analysis Procedure

Brain Herniation
Unilateral or Bilateral Dilation of Pupils / Posturing

Hyperventilate 14 – 16 Breaths per minutes to maintain EtCO2 30 – 35 mmHg

Assess Mental Status
Record GCS

GCS ≤ 8

NO → Monitor and Reassess

YES → Able to Cough

NO → Airway Protocol(s)
B — Maintain EtCO2 35 – 45 mmHg

YES → Supplemental oxygen Maintain SpO2 ≥ 94 %
B — Maintain EtCO2 35 – 45 mmHg
Monitor and Reassess
Airway Protocol(s) ***if indicated***

Notify Destination or Contact Medical Control

Trauma/Environmental Section Protocols

Protocol 76

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Adult Head Trauma

Pearls

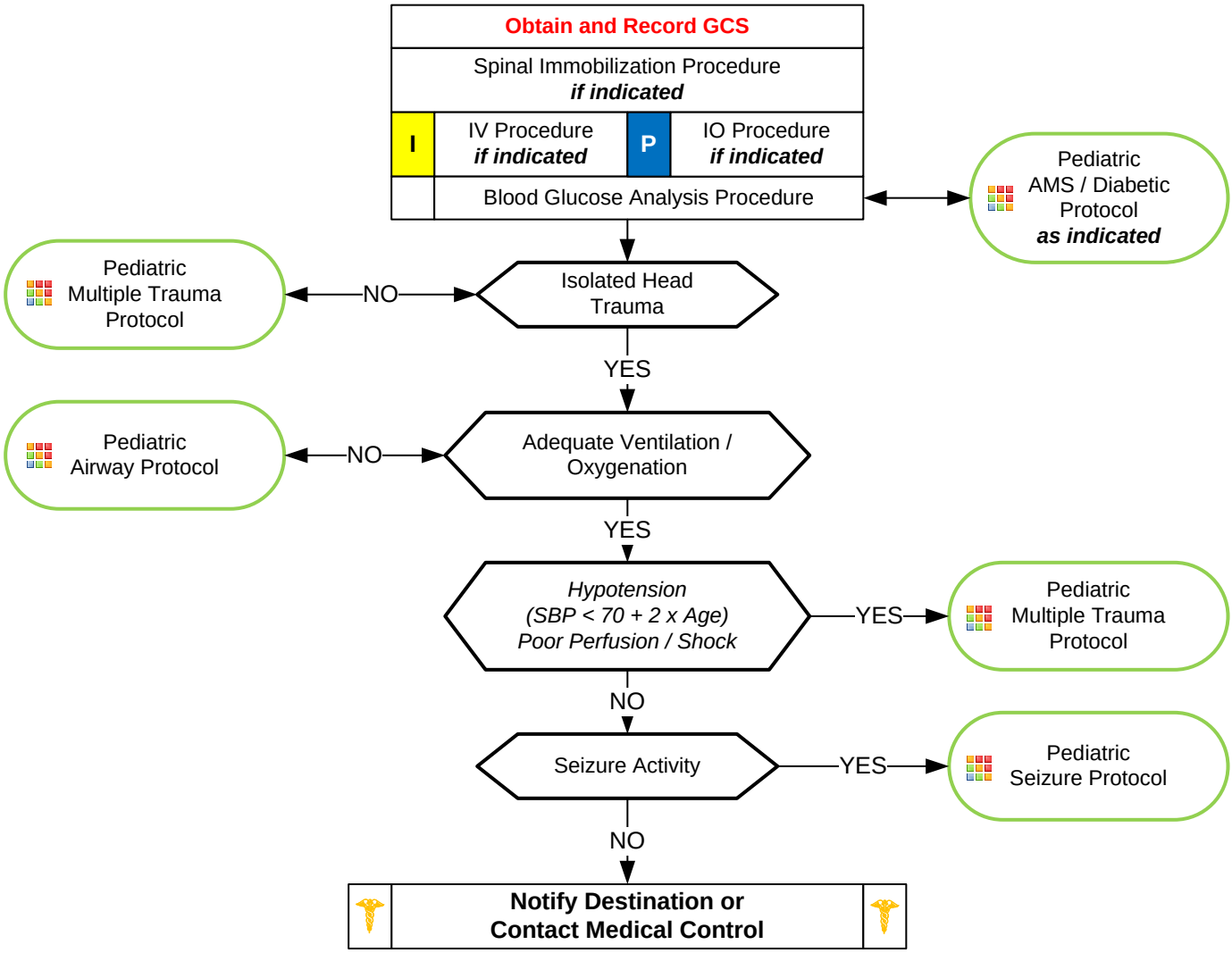
- **Recommended Exam: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremities, Back, Neuro**
- **GCS is a key performance measure used in the EMS Acute Trauma Care Toolkit.**
- **If GCS < 12 consider air / rapid transport as per protocol and policy**
- Increased intracranial pressure (ICP) may cause hypertension and bradycardia (Cushing's Response).
- Hypotension usually indicates injury or shock unrelated to the head injury and should be aggressively treated.
- An important item to monitor and document is a change in the level of consciousness by serial examination.
- Consider Restraints if necessary for patient's and/or personnel's protection per the Restraint Procedure.
- Limit IV fluids unless patient is hypotensive.
- Concussions are traumatic brain injuries involving any of a number of symptoms including confusion, LOC, vomiting, or headache. Any prolonged confusion or mental status abnormality which does not return to normal within 15 minutes or any documented loss of consciousness should be evaluated by a physician ASAP.

Pediatric Head Trauma

History
- Time of injury
- Mechanism (blunt vs. penetrating)
- Loss of consciousness
- Bleeding
- Past medical history
- Medications
- Evidence for multi-trauma

Signs and Symptoms
- Pain, swelling, bleeding
- Altered mental status
- Unconscious
- Respiratory distress / failure
- Vomiting
- Major traumatic mechanism of injury
- Seizure

Differential
- Skull fracture
- Brain injury (Concussion, Contusion, Hemorrhage)
- Epidural hematoma
- Subdural hematoma
- Subarachnoid hemorrhage
- Spinal injury
- Abuse



Trauma/Environmental Section Protocols

Pearls
- **Recommended Exam: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremities, Back, Neuro**
- **GCS is a key performance measure used to evaluate protocol compliance and care**
- **If GCS < 12 consider air / rapid transport and if GCS < 9 intubation should be anticipated.**
- **Hyperventilate the patient only if evidence of herniation (blown pupil, decorticate / decerebrate posturing, bradycardia, decreasing GCS). If hyperventilation is needed (35 / minute for infants <1 year and 25 / minute for children >1 year) EtCO2 should be maintained between 30 - 35 mmHg.**
- Increased intracranial pressure (ICP) may cause hypertension and bradycardia (Cushing's Response).
- Hypotension usually indicates injury or shock unrelated to the head injury and should be treated aggressively.
- An important item to monitor and document is a change in the level of consciousness by serial examination.
- Concussions are traumatic brain injuries involving any of a number of symptoms including confusion, LOC, vomiting, or headache. Any prolonged confusion or mental status abnormality which does not return to normal within 15 minutes or any documented loss of consciousness should be evaluated by a physician ASAP.
- Fluid resuscitation should be titrated to maintain at least a systolic BP of > 70 + 2 x the age in years.

Protocol 77

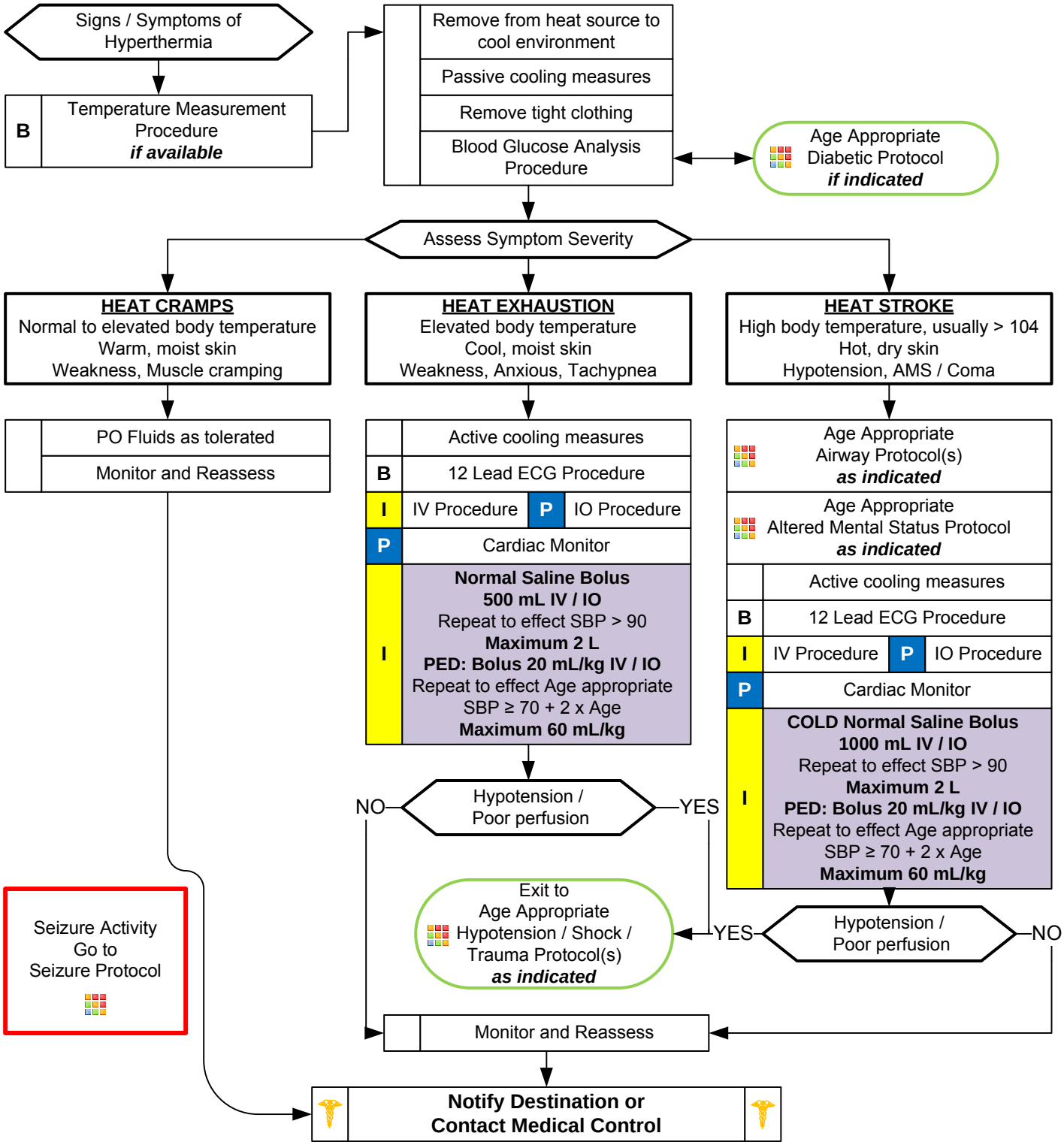
This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Hyperthermia

History
- Age, very young and old
- Exposure to increased temperatures and / or humidity
- Past medical history / Medications
- Time and duration of exposure
- Poor PO intake, extreme exertion
- Fatigue and / or muscle cramping

Signs and Symptoms
- Altered mental status / coma
- Hot, dry or sweaty skin
- Hypotension or shock
- Seizures
- Nausea

Differential
- Fever (Infection)
- Dehydration
- Medications
- Hyperthyroidism (Storm)
- Delirium tremens (DT's)
- Heat cramps, exhaustion, stroke
- CNS lesions or tumors



Adult / Pediatric Trauma/Environmental Section Protocols

Protocol 78

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Hyperthermia

Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Heart, Lungs, Neuro**
- Extremes of age are more prone to heat emergencies (i.e. young and old). Obtain and document patient temperature if able.
- Predisposed by use of: tricyclic antidepressants, phenothiazines, anticholinergic medications, and alcohol.
- Cocaine, Amphetamines, and Salicylates may elevate body temperatures.
- Sweating generally disappears as body temperature rises above 104° F (40° C).
- Intense shivering may occur as patient is cooled.

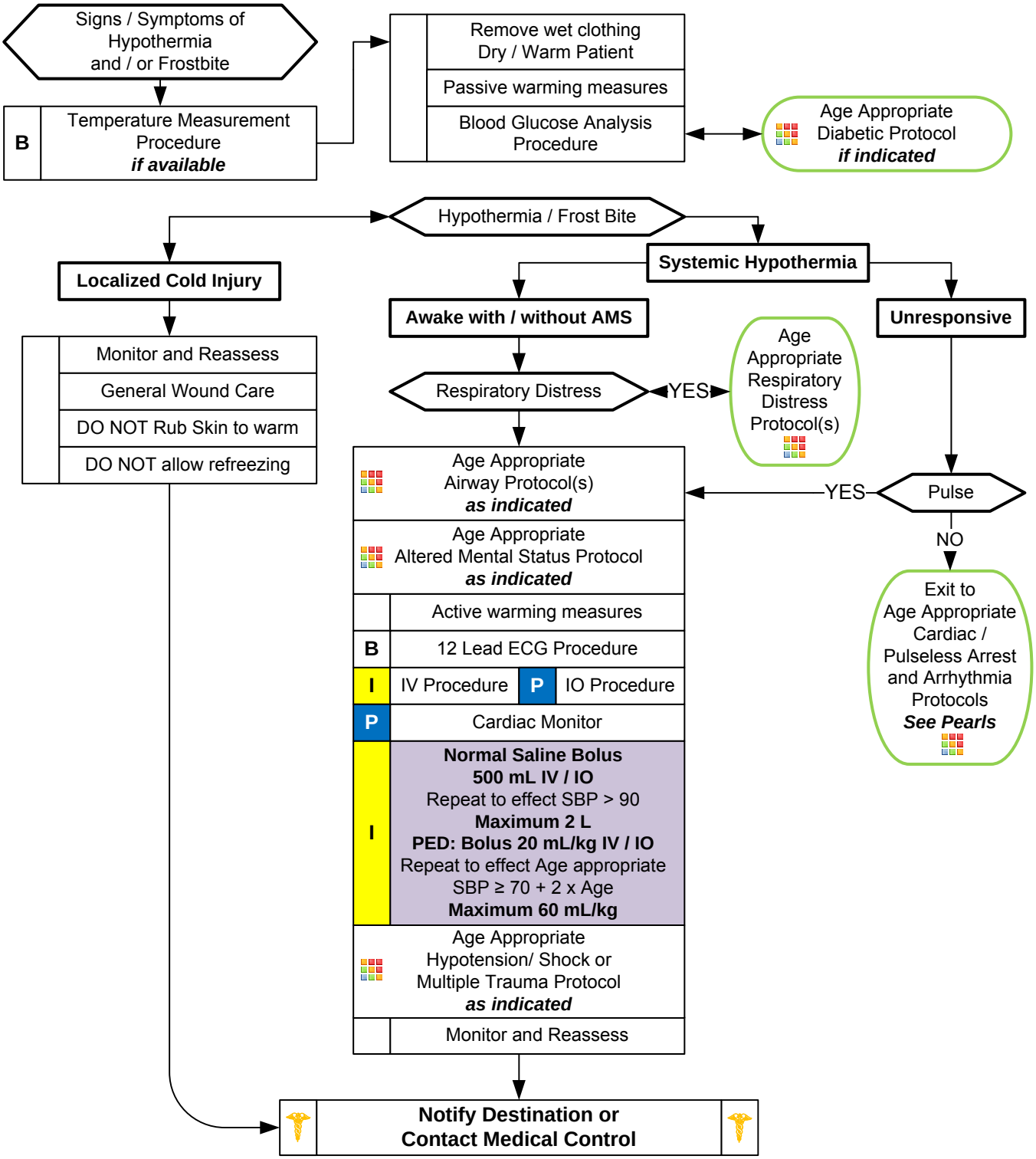
- **Heat Cramps** consists of benign muscle cramping 2° to dehydration and is not associated with an elevated temperature.
- **Heat Exhaustion** consists of dehydration, salt depletion, dizziness, fever, mental status changes, headache, cramping, nausea and vomiting. Vital signs usually consist of tachycardia, hypotension, and an elevated temperature.
- **Heat Stroke** consists of dehydration, tachycardia, hypotension, temperature >104° F (40° C), and an altered mental status.

Hypothermia / Frostbite

History
- Age, very young and old
- Exposure to decreased temperatures but may occur in normal temperatures
- Past medical history / Medications
- Drug use: Alcohol, barbituates
- Infections / Sepsis
- Length of exposure / Wetness / Wind chill

Signs and Symptoms
- Altered mental status / coma
- Cold, clammy
- Shivering
- Extremity pain or sensory abnormality
- Bradycardia
- Hypotension or shock

Differential
- Sepsis
- Environmental exposure
- Hypoglycemia
- CNS dysfunction
  - Stroke
  - Head injury
  - Spinal cord injury



Adult / Pediatric Trauma/Environmental Section Protocols

Protocol 79

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Hypothermia / Frostbite

Pearls

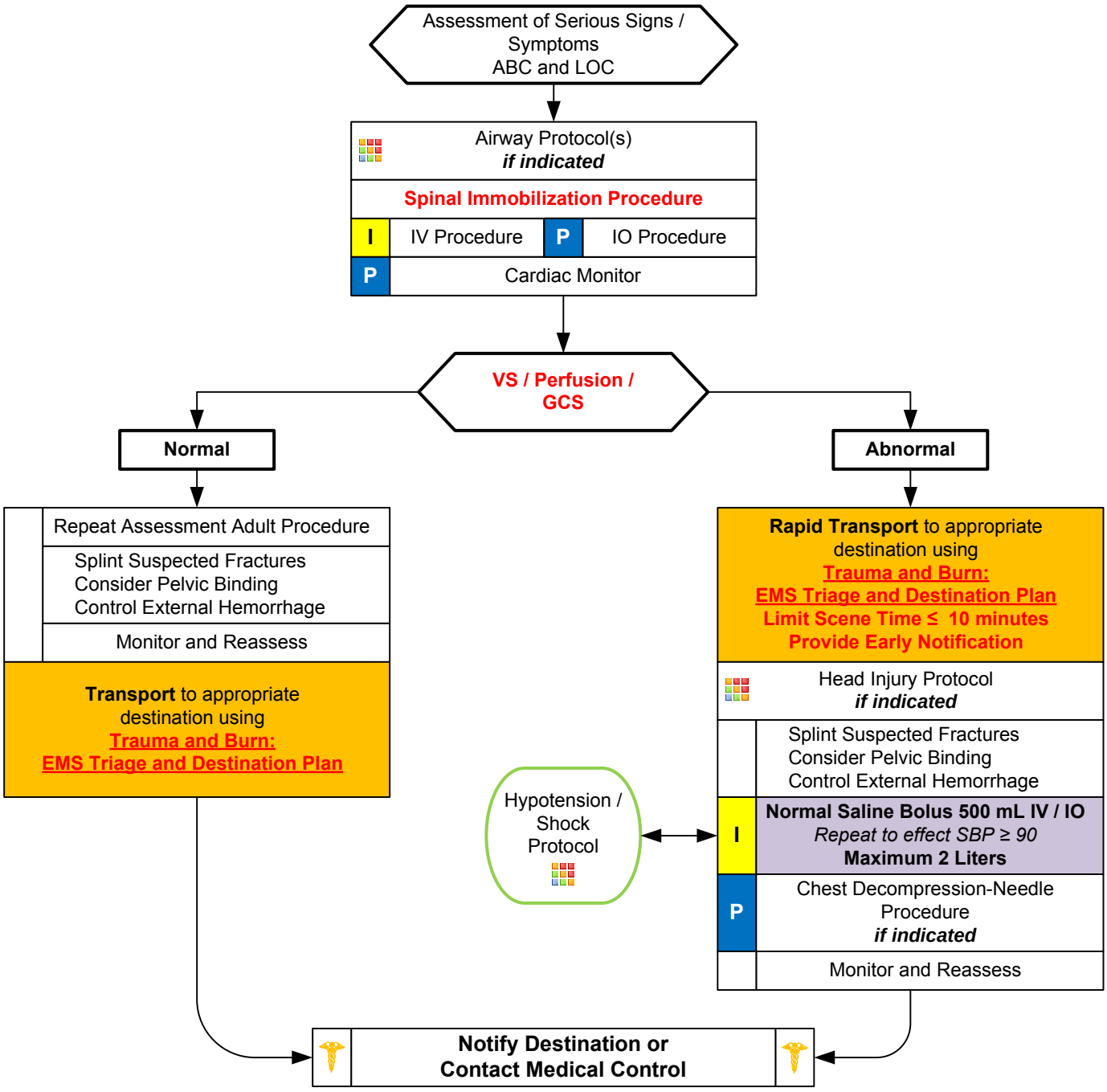
- **Recommended Exam: Mental Status, Heart, Lungs, Abdomen, Extremities, Neuro**
- **Hypothermia categories:**
  - Mild 90 – 95 degrees F (32 – 35 degrees C)
  - Moderate 82 – 90 degrees F (28 – 32 degrees C)
  - Severe < 82 degrees F (< 28 degrees C)
- **Mechanisms of hypothermia:**
  - Radiation: Heat loss to surrounding objects via infrared energy (60 % of most heat loss.)
  - Convection: Direct transfer of heat to the surrounding air.
  - Conduction: Direct transfer of heat to direct contact with cooler objects (important in submersion.)
  - Evaporation: Vaporization of water from sweat or other body water losses.
- Contributing factors of hypothermia: Extremes of age, malnutrition, alcohol or other drug use.
- If the temperature is unable to be measured, treat the patient based on the suspected temperature.
- **CPR:**
  - **Severe hypothermia may cause cardiac instability and rough handling of the patient theoretically can cause ventricular fibrillation. This has not been demonstrated or confirmed by current evidence.**
  - **Intubation and CPR techniques should not be withheld due to this concern.**
  - **Intubation can cause ventricular fibrillation so it should be done gently by most experienced person.**
  - **Below 86 degrees F (30 degrees C) anti-arrythmics may not work and if given should be given at reduced intervals. Contact medical control for direction. Epinephrine / Vasopressin can be administered. Below 86 degress F (30 degrees) pacing should not be done**
  - **Consider withholding CPR if patient has organized rhythm or has other signs of life. Contact Medical Control.**
  - **If the patient is below 86 degrees F (30 degree C) then defibrillate 1 time if defibrillation is required. Deferring further attempts until more warming occurs is controversial. Contact medical control for direction.**
  - **Hypothermia may produce severe bradycardia so take at least 45 second to palpate a pulse.**
- Hot packs can be activated and placed in the armpit and groin area if available. Care should be taken not to place the packs directly against the patient's skin.

Adult Multiple Trauma

History
- Time and mechanism of injury
- Damage to structure or vehicle
- Location in structure or vehicle
- Others injured or dead
- Speed and details of MVC
- Restraints / protective equipment
- Past medical history
- Medications

Signs and Symptoms
- Pain, swelling
- Deformity, lesions, bleeding
- Altered mental status or unconscious
- Hypotension or shock
- Arrest

Differential (Life threatening)
- Chest: Tension pneumothorax, Flail chest, Pericardial tamponade, Open chest wound, Hemothorax
- Intra-abdominal bleeding
- Pelvis / Femur fracture
- Spine fracture / Cord injury
- Head injury (see Head Trauma)
- Extremity fracture / Dislocation
- HEENT (Airway obstruction)
- Hypothermia



This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Adult Multiple Trauma

TRAUMA CENTER CRITERIA: Patients with a traumatic injury who meet the following criteria should be transported to a trauma center, as per the Trauma Triage and Destination plan (WakeMed, WakeMed Peds, Duke Durham, UNC-Chapel Hill):

1. GCS ≤ 13
2. Systolic Blood Pressure < 90 mmHg
3. Respiratory Rate < 10 or > 29 Breaths per minute (<20 in infant < 1 year) or need for ventilatory support

4. All penetrating injuries to the head, neck, torso, and extremities
5. Chest Wall instability or deformity (e.g. flail chest)
6. Two or more proximal long bone fractures
7. Crushed, degloved, mangled, or pulseless extremity
8. Amputation proximal to the wrist or ankle
9. Pelvic Fractures
10. Open or depressed skull fracture
11. Paralysis

12. Falls in adults > 20 feet (one story is equal to 10 feet)
13. Falls in pediatrics > 10 feet or 2-3 times the height of the child
14. High risk auto crash, including:
    - Intrusion, including roof, of > 12 inches at the occupant site or > 18 inches at any site within the passenger compartment of the vehicle.
    - Ejection (partial or complete) from the automobile
    - Death in the same passenger compartment
    - Vehicle telemetry data consistent with a high risk of injury
15. Auto vs. pedestrian or bicyclist thrown, run over, or with significant (> 20mph) impact
16. Motorcycle crash > 20 mph

17. PREGNANCY > 20 weeks with even minor blunt trauma should be transported to a trauma center due to the potential need for trauma evaluation and prolonged fetal monitoring.

Reference for further info: www.cdc.gov/fieldtriage - The 2011 Guidelines for Field Triage of Injured Patients

Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Heart, Lung, Abdomen, Extremities, Back, Neuro**
- **Items in Red Text are key performance measures used in the EMS Acute Trauma Care Toolkit**
- **Transport Destination is chosen based on the EMS System Trauma Plan with EMS pre-arrival notification.**
- **Scene times should not be delayed for procedures. These should be performed en route when possible. Rapid transport of the unstable trauma patient to the appropriate facility IS the goal.**
- **Clear communication between providers and hospitals is important, especially in a multiple-patient incident. If a patient's status changes en-route, treat the patient appropriately, consider mode of transportation (i.e. hot vs. cold) and communicate updated findings to the trauma center.**

- **EMS PROVIDER JUDGMENT ("Box 4" of the CDC field triage criteria) is a key part of "calling a trauma" and transporting to a trauma center when suspicion for serious injury is high even when none of the other above criteria are present. Consider in older adults:**
  - **Older adults risk of injury/death increases after age 55 years**
  - **SBP < 110 may represent shock after age 65**
  - **low impact mechanisms (e.g. ground level falls) may result in severe injury, especially in patients who are taking anticoagulants or those who have bleeding disorders**

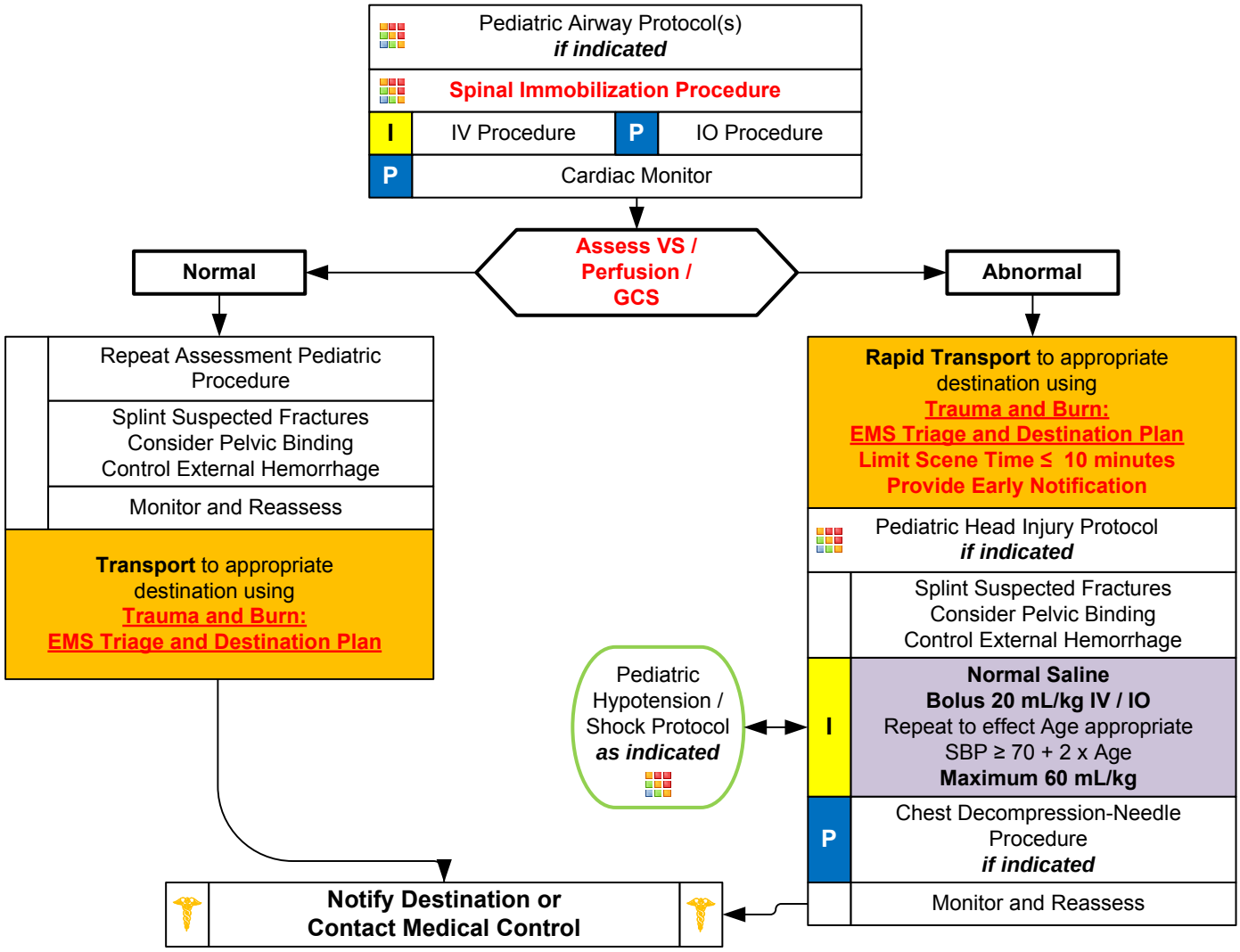
- **Bag valve mask is an acceptable method of managing the airway if pulse oximetry can be maintained ≥ 90%**
- Geriatric patients should be evaluated with a high index of suspicion. Have a low threshold using "provider judgement" to "call a trauma," and transport to a trauma center, Often occult injuries are more difficult to recognize and patients can decompensate unexpectedly with little warning.
- Mechanism is the most reliable indicator of serious injury.
- In prolonged extrications or serious trauma, consider air transportation for transport times and the ability to give blood.
- Do not overlook the possibility of associated domestic violence or abuse.

Pediatric Multiple Trauma

History
- Time and mechanism of injury
- Damage to structure or vehicle
- Location in structure or vehicle
- Others injured or dead
- Speed and details of MVC
- Restraints / protective equipment
- Past medical history
- Medications

Signs and Symptoms
- Pain, swelling
- Deformity, lesions, bleeding
- Altered mental status or unconscious
- Hypotension or shock
- Arrest

Differential
- Chest: Tension pneumothorax, Flail chest, Hemothorax, Pericardial tamponade, Open chest wound
- Intra-abdominal bleeding
- Pelvis / Femur / Spine fracture, cord injury
- Head injury (see Head Trauma)
- Extremity fracture / Dislocation
- HEENT (Airway obstruction)
- Hypothermia



Pediatric Trauma/Environmental Section Protocols

Pearls
- **Items in Red Text are key performance measures used in the EMS Acute Trauma Care Toolkit**
- **Scene times should not be delayed for procedures. These should be performed en route when possible. Rapid transport of the unstable trauma patient to the appropriate facility is the goal.**
- **Bag valve mask is an acceptable method of managing the airway if pulse oximetry can be maintained ≥ 90%**
- Age specific blood pressure 0 – 28 days > 60 mmHg, 1 month - 1 year > 70 mmHg, 1 - 10 years > 70 + (2 x age)mmHg and 11 years and older > 90 mmHg.
- Consider Chest Decompression with signs of shock and injury to torso and evidence of tension pneumothorax.
- See Trauma Triage and Destination plan, or Adult Multiple Trauma Pearls, for Trauma Criteria
- Severe bleeding from an extremity not rapidly controlled with direct pressure may necessitate the application of a tourniquet.
- Do not overlook the possibility of child abuse.

Protocol 81

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

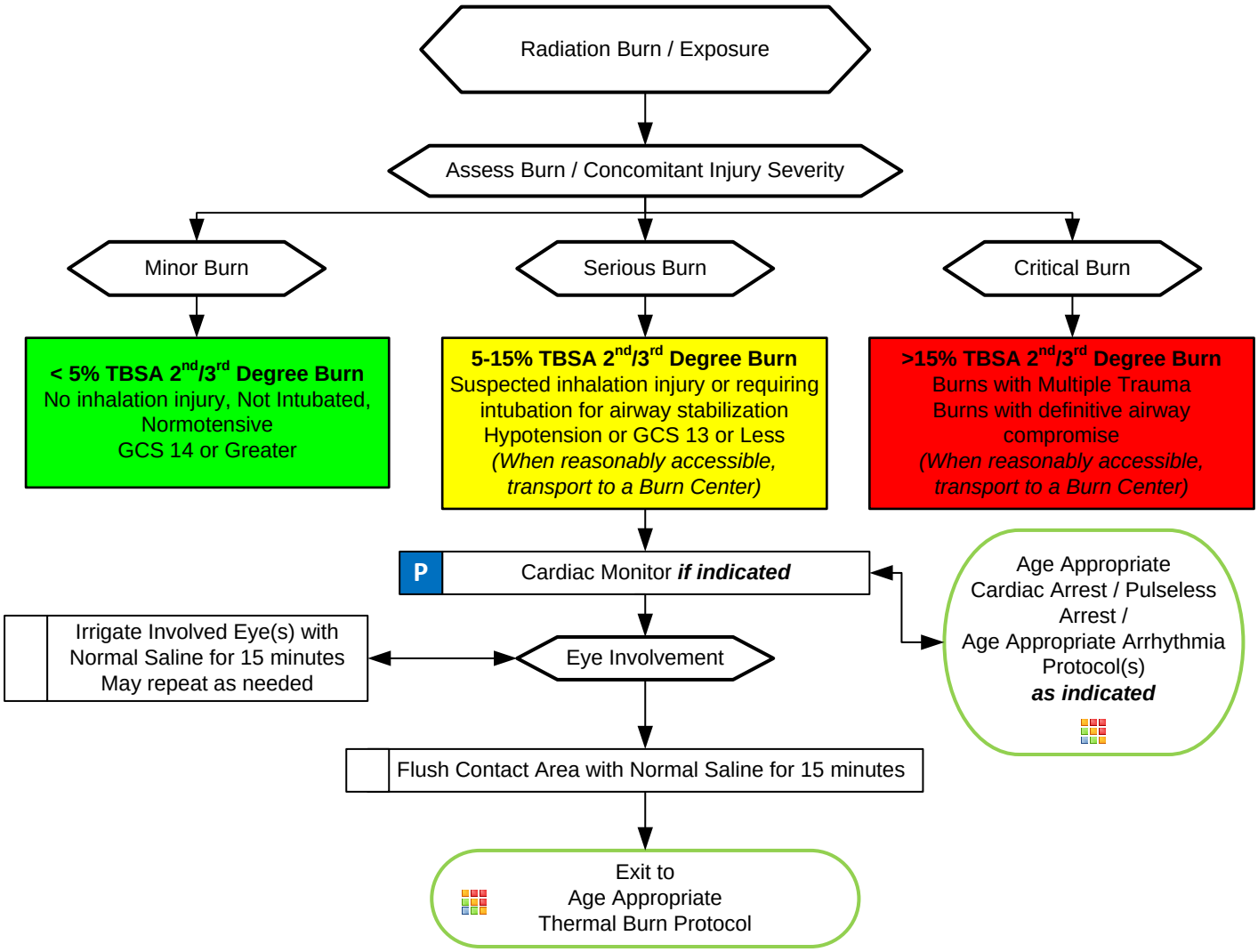
Radiation Incident

History
- Type of exposure (heat, gas, chemical)
- Inhalation injury
- Time of Injury
- Past medical history / Medications
- Other trauma
- Loss of Consciousness
- Tetanus/Immunization status

Signs and Symptoms
- Burns, pain, swelling
- Dizziness
- Loss of consciousness
- Hypotension/shock
- Airway compromise/distress could be indicated by hoarseness/ wheezing / Hypotension

Differential
- Superficial (1st Degree) red - painful (Don't include in TBSA)
- Partial Thickness (2nd Degree) blistering
- Full Thickness (3rd Degree) painless/charred or leathery skin
- Thermal injury
- Chemical – Electrical injury
- Radiation injury
- Blast injury

Scene Safety / Quantify and Triage Patients / Load and Go with Assessment / Treatment Enroute

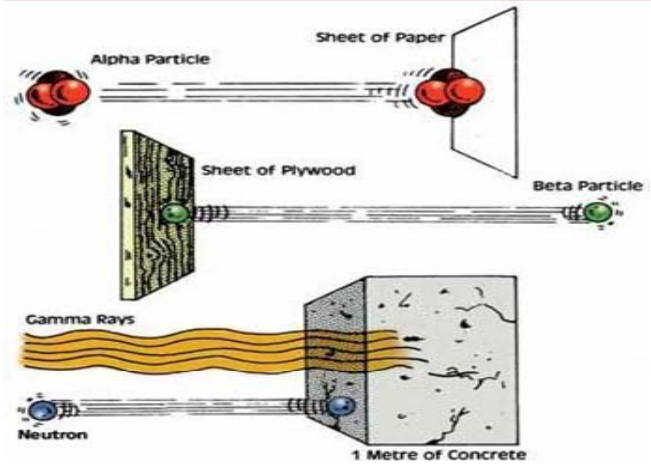


Collateral Injury: Most all injuries immediately seen will be a result of collateral injury, such as heat from the blast, trauma from concussion, treat collateral injury based on typical care for the type of injury displayed.·

Qualify: Determine exposure type; external irradiation, external contamination with radioactive material, internal contamination with radioactive material.·

Quantify: Determine exposure (generally measured in Grays/Gy). *Information may be available from those on site who have monitoring equipment, do not delay transport to acquire this information.*

Radiation Incident



Time Phases of Radiation Injury
(Exposure Dose vs Clinical Outcome)

Exposure Dose (Gy)	Prodrome Severity	Manifest Illness - Symptom Severity			Prognosis
		Hematologic	Gastrointestinal	Neurologic	
0.5 to 1.0	+	+	0	0	Survival almost certain
1.0 to 2.0	+/++	+	0	0	Survival >90 percent
2.0 to 3.5	++	++	0	0	Probable survival
3.5 to 5.5	+++	+++	+	0	Death in 50% at 3.5 to 6 wks
5.5 to 7.5	+++	+++	++	0	Death probable in 2-3 wks
7.5 to 10	+++	+++	+++	0*	Death probable in 1-2.5 wks
10 to 20	+++	+++	+++	+++	Death certain in 5-12 days
> 20	+++	+++	+++	+++**	Death certain in 2-5 days

Abbreviations: Gy: dose in Grey;
0: no effects; +: mild; ++: moderate; +++: severe or marked

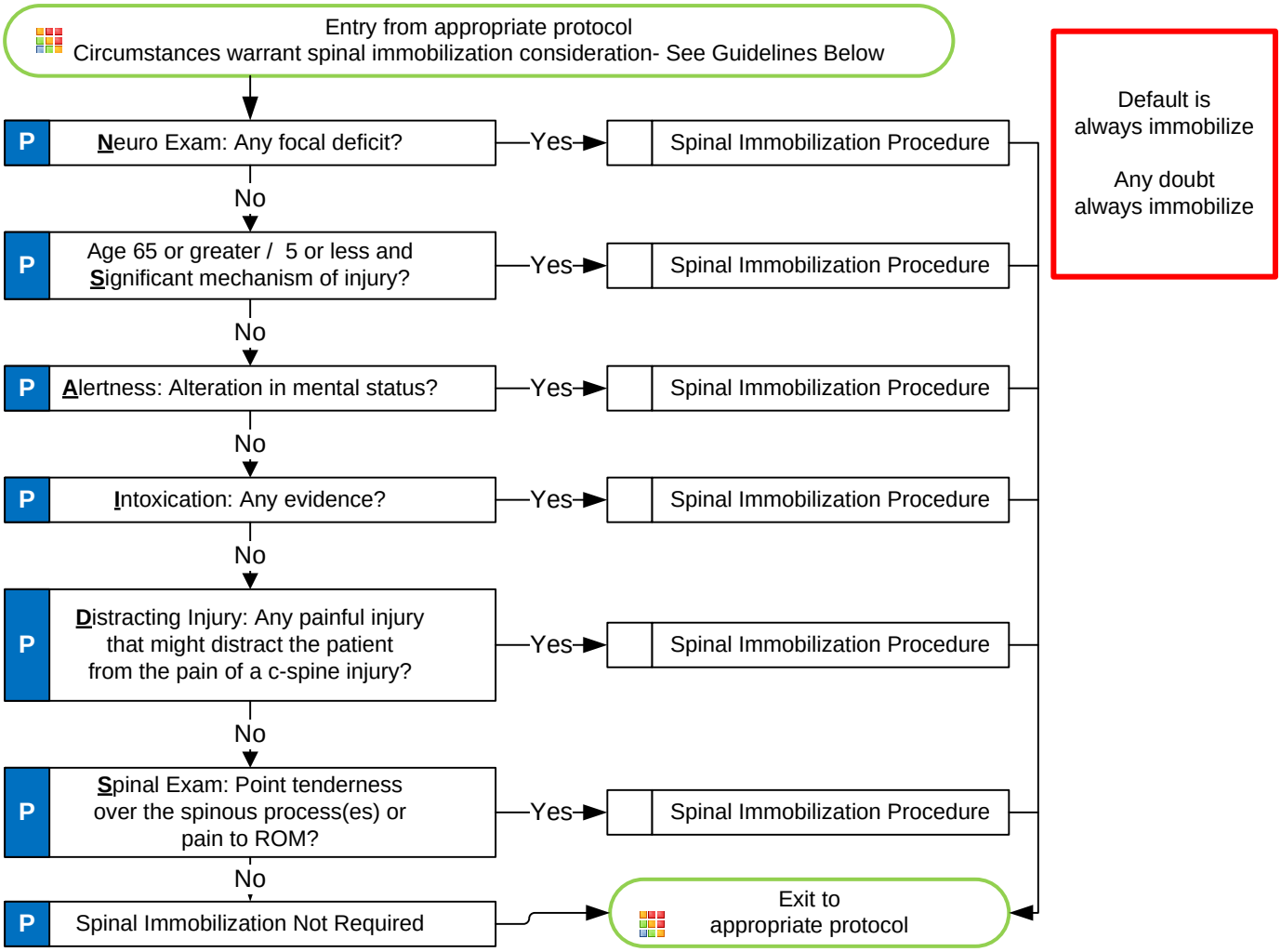
* Hypotension
** Also cardiovascular collapse, fever, shock

Modified from : Waselenko, JK, MacVittie, TJ, Blakely, WF, et al. Medical management of the acute radiation syndrome: Recommendations of the strategic national stockpile radiation working group. Ann Int Med 2004; 140:1039.

Pearls

- Dealing with a patient with a radiation exposure can be a frightening experience. Do not ignore the ABC's, a dead but decontaminated patient is not a good outcome. Refer to the Decontamination Procedure for more information.
- Normal Saline or Sterile Water is preferred, however if not available, do not delay irrigation using tap water. Other water sources may be used based on availability. Flush the area as soon as possible with the cleanest readily available water or saline solution using copious amounts of fluids.
- **Three methods of exposure:**
  - External irradiation
  - External contamination
  - Internal contamination
- **Two classes of radiation:**
  - Ionizing radiation (greater energy) is the most dangerous and is generally in one of three states: Alpha Particles, Beta Particles and Gamma Rays.
  - Non-ionizing (lower energy) examples include microwaves, radios, lasers and visible light.
- Radiation burns with early presentation are unlikely, it is more likely this is a combination event with either thermal or chemical burn being presented as well as a radiation exposure. Where the burn is from a radiation source, it indicates the patient has been exposed to a significant source, (> 250 rem).
- Patients experiencing radiation poisoning are not contagious. Cross contamination is only a threat with external and internal contamination.
- Typical ionizing radiation sources in the civilian setting include soil density probes used with roadway builders and medical uses such as x-ray sources as well as radiation therapy. Sources used in the production of nuclear energy and spent fuel are rarely exposure threats as is military sources used in weaponry. Nevertheless, these sources are generally highly radioactive and in the unlikely event they are the source, consequences could be significant and the patient's outcome could be grave.
- **The three primary methods of protection from radiation sources:**
  - Limiting time of exposure
  - Distance from
  - Shielding from the source
- Dirty bombs ingredients generally include previously used radioactive material and combined with a conventional explosive device to spread and distribute the contaminated material.
- Refer to Decontamination Procedure / WMD / Nerve Agent Protocol for dirty contamination events.
- If there is a time lag between the time of exposure and the encounter with EMS, key clinical symptom evaluation includes: Nausea/ Vomiting, hypothermia/hyperthermia, diarrhea, neurological/cognitive deficits, headache and hypotension.
- This event may require an activation of the National Radiation Injury Treatment Network, RITN. UNC Hospitals, Wake Forest-Baptist and Duke are the NC hospitals, with burns managed at UNC and Wake Forest.

Selective Spinal Immobilization
C-Spine Clearance



Pearls

- **Recommended Exam: Mental Status, Skin, Neck, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- **The acronym "NSAIDS" should be used to remember the steps in this protocol.**
- **Consider immobilization in any patient with arthritis, cancer, dialysis or other underlying spinal or bone disease, including previous spinal surgery or fusion.**
- **In very old and very young, a normal exam may not be sufficient to rule out spinal injury.**
- Significant mechanism includes high-energy events such as ejection, high falls, and abrupt deceleration crashes and may indicate the need for spinal immobilization. Consider also the "change of plane fall" mechanism in which a patient strikes his head while falling, causing sudden deceleration and hyperextension of the cervical spine.
- Range of motion should NOT be assessed if patient has midline spinal tenderness. Patient's range of motion should not be assisted. The patient should touch his chin to his chest, extend his neck (look up), and turn his head from side to side (shoulder to shoulder) without spinal pain.
- **Spinal Immobilization Guidelines**:

1. Long spine boards (LSB) have both risks and benefits for patients and have not been shown to improve outcomes. The best use of the LSB may be for extricating the unconscious patient, or providing a firm surface for compressions. However, several devices may be appropriate for patient extrication and movement, including the scoop stretcher and soft body splints.
2. Utilization of the LSB should occur in consideration of the individual patient's benefit vs. risk.
3. Patients who should be immobilized with a LSB include: Patients with blunt trauma and distracting injury, intoxication, altered mental status, or neurologic complaint (e.g. numbness or weakness), and non-ambulatory blunt trauma patients with spinal pain, tenderness, or spinal deformity.
4. Patients with penetrating trauma and no evidence of spinal injury do not require spinal immobilization. Patients who are ambulatory at the scene of blunt trauma in general do not require immobilization via LSB, but may require cervical collar and spinal precautions.
5. Whether or not a LSB is utilized, spinal precautions are STILL VERY IMPORTANT in patients at risk for spinal injury. Adequate spinal precautions may be achieved by placement of a hard cervical collar and ensuring that the patient is secured tightly to the stretcher, ensuring minimal movement and patient transfers, and manual in-line stabilization during any transfers.

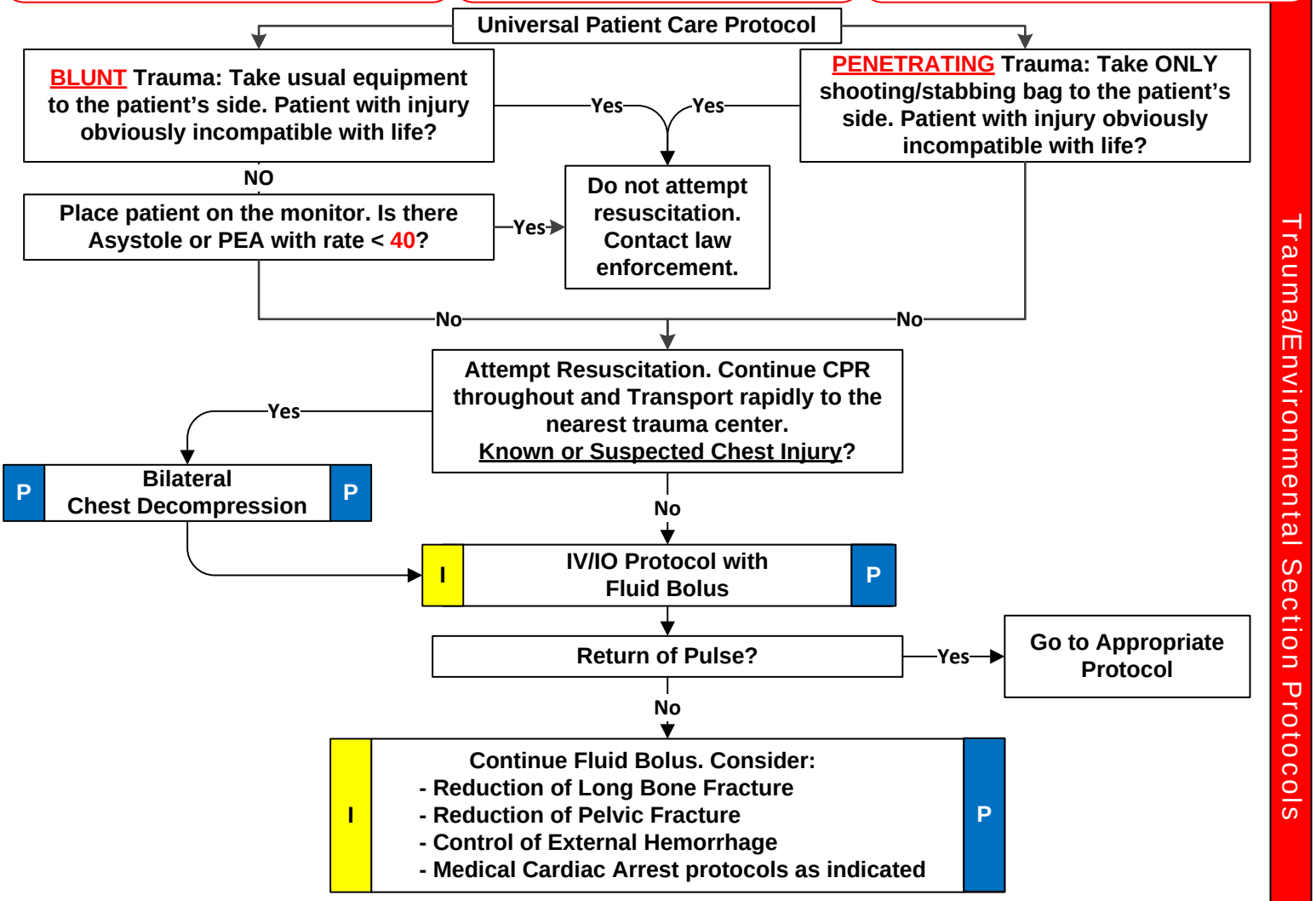
This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Traumatic Cardiac Arrest

History:
- Patient who has suffered traumatic injury and is now pulseless

Signs and Symptoms:
- Evidence of penetrating trauma
- Evidence of blunt trauma

Differential:
- Medical condition preceding traumatic event as cause of arrest.
- Tension Pneumothorax
- Hypovolemic Shock
  - External/internal hemorrhage
  - Unstable pelvic fracture
  - Displaced long bone fractures



Trauma/Environmental Section Protocols

Pearls:
- Injuries obviously incompatible with life include: decapitation, massively deforming head or chest injuries, dependent lividity, rigor mortis, extended downtime with skin cold.
- In general, resuscitation should be attempted for traumatic cardiac arrest patients with "signs of life" for any professional responders, especially in cases with short transport times to the trauma center (< 15 minutes)
- "Signs of Life" include any pulse or blood pressure, any spontaneous respirations or movement, reactive pupils,
- Consider medical cardiac arrest protocols if uncertainty exists regarding medical or traumatic cause of arrest.
- As with all major trauma patients, transport should not be delayed and scene times should be minimal.
- Where the use of spinal immobilization interferes with performance of quality CPR, make reasonable efforts to manually limit patient movement.
- In extenuating circumstances, or if injury incompatible with life is discovered after resuscitation and/or transport is initiated, consider contacting medical control for guidance regarding possible termination of resuscitation vs. continuation of efforts.

Protocol 84

This protocol is unique to the Wake County EMS System

Nerve Agent (includes WMD) Protocol

History

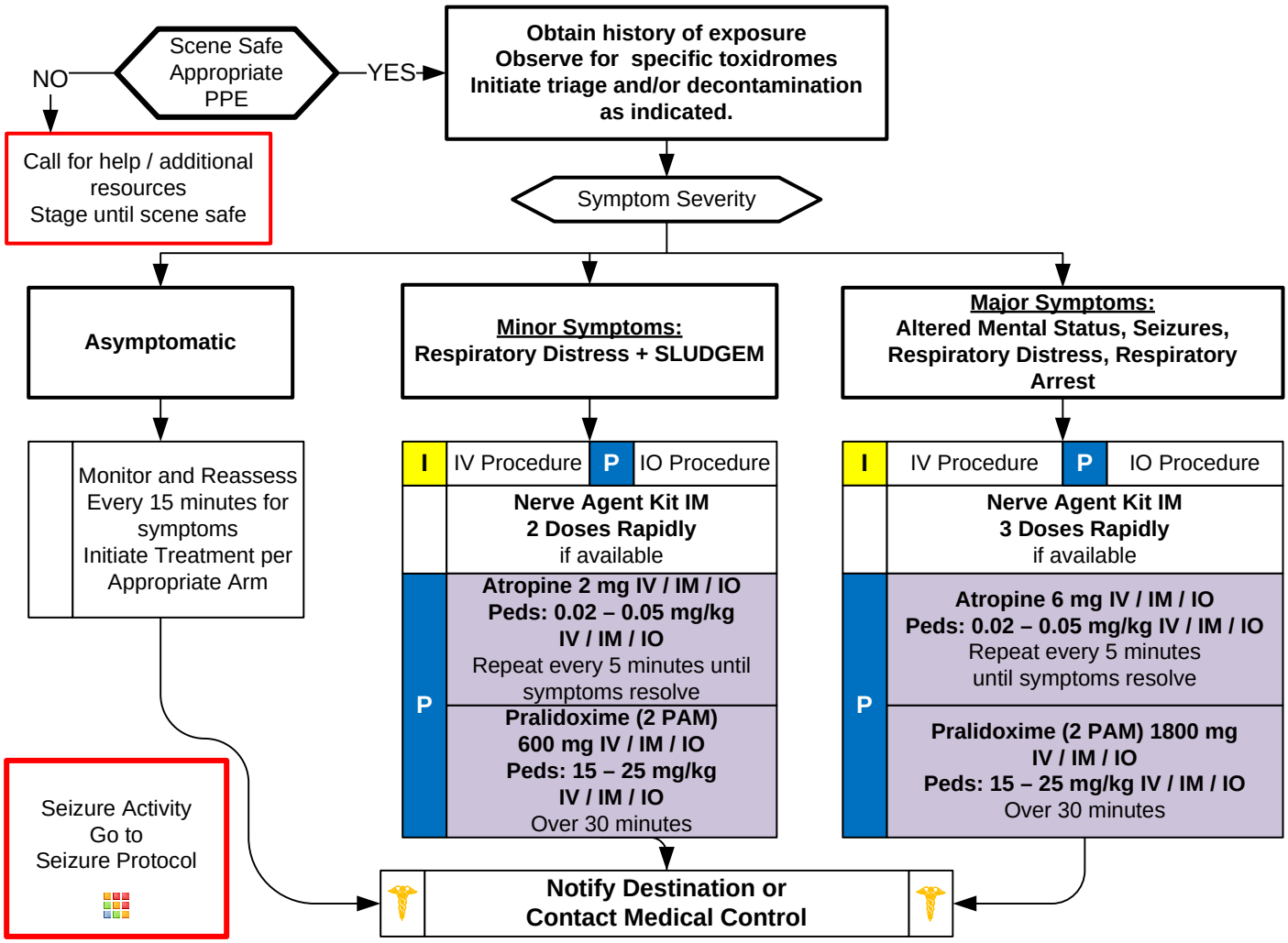
- Exposure to chemical, biologic, radiologic, or nuclear hazard
- Potential exposure to unknown substance/hazard
- **Farmer with exposure to pesticide**

Signs and Symptoms

- **S**alivation
- **L**acrimation
- **U**rination; increased, loss of control
- **D**efecation / Diarrhea
- **G**I Upset; Abdominal pain / cramping
- **E**mesis
- **M**uscle Twitching
- Seizure Activity
- Respiratory Arrest

Differential

- Nerve agent exposure (e.g., VX, Sarin, Soman, etc.)
- **Organophosphate exposure (pesticide)**
- Vesicant exposure (e.g., Mustard Gas, etc.)
- Respiratory Irritant Exposure (e.g., Hydrogen Sulfide, Ammonia, Chlorine, etc.)



Adult / Pediatric Trauma/Environmental Section Protocols

Pearls

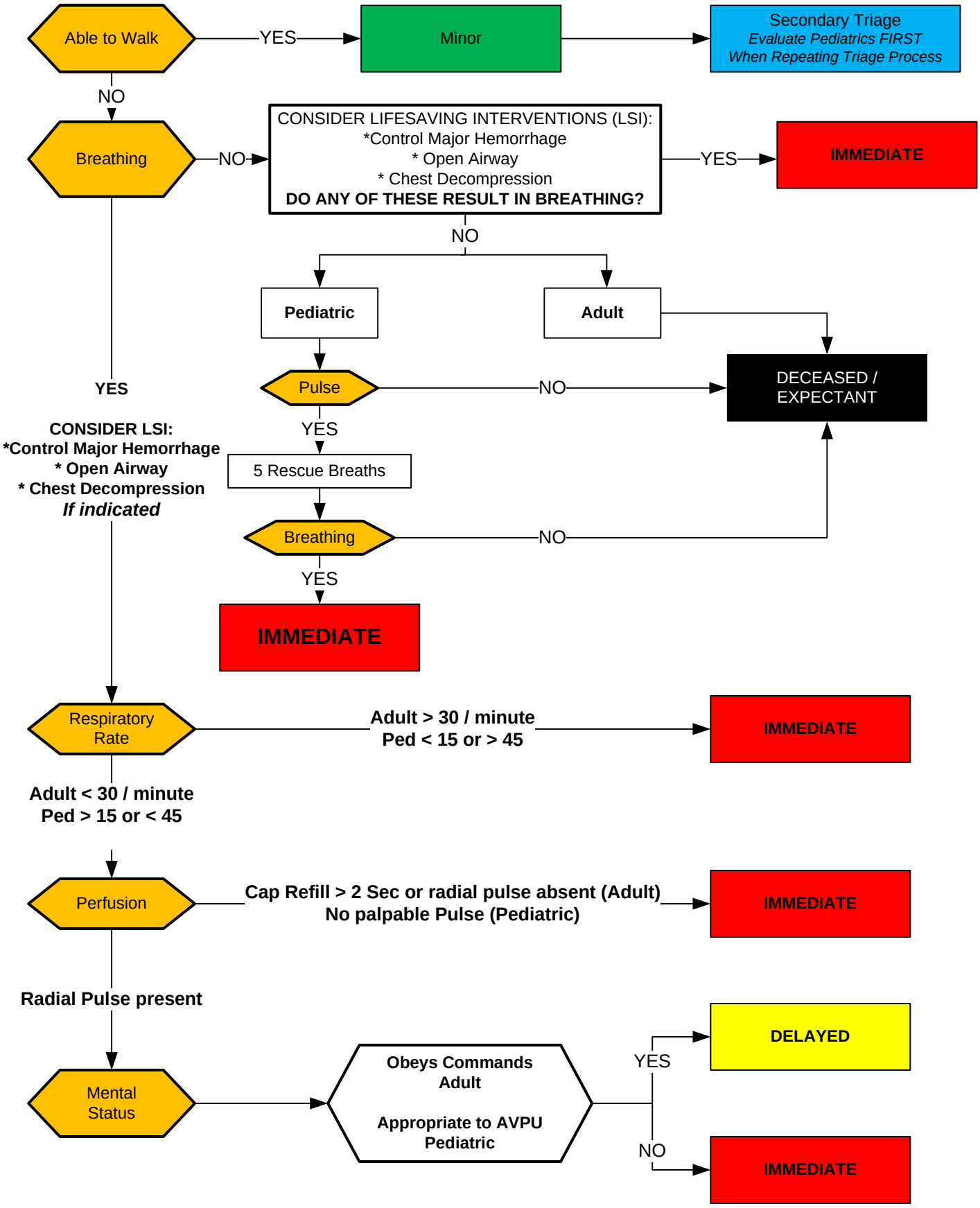
- **Recommended Exam: Mental Status, Skin, HEENT, Heart, Lungs, Gastrointestinal, Neuro**
- **Follow local HAZMAT protocols for decontamination and use of personal protective equipment.**
- **In the face of a bona fide attack, begin with 1 Nerve Agent Kit for patients less than 7 years of age, 2 Nerve Agent Kits from 8 to 14 years of age, and 3 Nerve Agent Kits for patients 15 years of age and over.**
- **If Triage/MCI issues exhaust supply of Nerve Agent Kits, use pediatric atropines (if available). Use the 0.5 mg dose if patient is less than 40 pounds (18 kg), 1 mg dose if patient weighs between 40 to 90 pounds (18 to 40 kg), and 2 mg dose for patients greater than 90 pounds (>40 kg).**
- **Each Nerve Agent Kit contains 600 mg of Pralidoxime (2-PAM) and 2 mg of Atropine.**
- **Seizure Activity: Any benzodiazepine by any route is acceptable.**
- For patients with major symptoms, there is no limit for atropine dosing.
- Carefully evaluate patients to ensure they not from exposure to another agent (e.g., narcotics, vesicants, etc.)
- The main symptom that the atropine addresses is excessive secretions so atropine should be given until salivation improves.
- EMS personnel, public safety officers and Medical Responders / EMT-B may carry, self-administer or administer to a patient atropine / pralidoxime by protocol.

Protocol 85

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Triage- modified START/JUMPSTART

* All infants who are patients in a MCI are automatically triage category "IMMEDIATE" or "red tag"



Special Response Protocols

Scene Rehabilitation: General
May be used for Special Events with Approval

Injury / Illness / Complaint should be treated using appropriate treatment protocol beyond need for oral or IV hydration.

Initial Process

1. Patients logged into General Rehabilitation Documentation
2. VS Assessed / Recorded (If HR > 110 then obtain Temp)
3. Patients assessed for signs / symptoms

Significant Injury
Cardiac Complaint: Signs / Symptoms
Respiratory Complaint: Serious Signs / Symptoms
Respiratory Rate < 8 or > 40
Diastolic Blood Pressure ≤ 80

YES → Exit to Appropriate Protocol

NO ↓

Heat or Cold stress

YES → **HEAT STRESS**

Active Cooling Measures
Forearm immersion, cool shirts, cool mist fans etc. for 10 – 20 Minutes

Rehydration Techniques
12 – 32 oz Oral Fluid over 20 minutes
Oral Rehydration may occur along with Active Cooling Measures

YES → **COLD STRESS**

Active Warming Measures
Dry patient, place in warm area
Hot packs to axilla and / or groin

Rehydration Techniques
12 – 32 oz Oral Fluid over 20 minutes
Oral Rehydration may occur along with Active Warming Measures

NO ↓

Reassess individual after 20 Minutes in General Rehabilitation Section
Reassess VS

HR ≥ 110
- YES → Temp ≥ 100.6
  - YES → Extend Rehabilitation Time Until VS Improve, Consider transport
  - NO ↓
- NO ↓

Temp ≥ 100.6
- YES → HR ≥ 110
  - YES → Extend Rehabilitation Time Until VS Improve, Consider transport
  - NO ↓
- NO ↓

Discharge Individual from General Rehabilitation Section

VITAL SIGN CAVEATS

Blood Pressure:
Prone to inaccuracy on scenes. Must be interpreted in context.

Individuals at special events may have elevated blood pressure due to physical exertion and is not typically pathologic.

Individuals with Systolic BP ≥ 160 or Diastolic BP ≥ 100 may need extended rehabilitation. However this does not necessarily prevent them from returning to the event.

Temperature:
Individuals may have increased temperature during rehabilitation.

Special Response Protocols

Protocol 87

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Scene Rehabilitation: General
May be used for Special Events with Approval

Special Response Protocols

Pearls

- **This protocol should be utilized for evaluating patrons of certain special events that may or may not otherwise meet the definition of a patient.**
- **Paramedic on-scene has full authority in deciding when individuals meet the definition of a patient and/or require further treatment or transport.**

- **Regarding <u>documentation</u> under this protocol, individuals who are evaluated only at the rehabilitation center require a narrative-based patient log entry under one PCR for all of these individuals. However, if a patient receives ALS care more than over-the-counter medications and/or is transported to an emergency department, the patient requires a separate run number and full PCR like any other patient.**

- **People taking anti-histamines, blood pressure medication, diuretics or stimulants are at increased risk for cold and heat stress.**
- **Establish rehab location such that it provides shelter, privacy and freedom from smoke or other hazards.**
- **For approved gatherings, other patient contact requirements may be determined at approval.**

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Scene Rehabilitation: Responder

Remove:
PPE
Body Armor
Chemical Suits
SCBA
Turnout Gear
Other equipment as indicated

Continue:
Heat and Cold Stress treatment techniques from General Rehab Protocol

Injury / Illness / Complaint should be treated using appropriate treatment protocol beyond need for oral or IV hydration.

NFPA Age Predicted 85 % Maximum Heart Rate	
20 - 25	170
26 - 30	165
31 - 35	160
36 - 40	155
41 - 45	152
46 - 50	148
51 -55	140
55 - 60	136
61 - 65	132

Initial Process
1. Personnel logged into Responder Rehabilitation Section
2. VS Assessed and Recorded / Orthostatic Vital Signs
3. Pulse oximetry and SPCO (if available)
4. Personnel assessed for signs / symptoms

May use for responders in conjunction with General Rehabilitation Protocol

20 Minute Rest Period
Firefighters should consume at least 8 ounces of fluid between SCBA change-out

Pulse Rate > 85 % NFPA Age Predicted Maximum — YES → I

NO

Systolic BP ≥ 160 Or Diastolic BP ≥ 100 — YES

NO

Respirations < 8 or > 40 — YES

NO

Pulse oximetry < 90 % SPCO > 10 % — YES

NO

Temperature ≥ 100.6 — YES

NO

Discharge Responder from General Rehabilitation Section

Reports for Reassignment

I: **Normal Saline IV Bolus Up to 2 L**
Until Pulse Rate is 110 or less
And
Systolic BP is 100 or greater

No improvement after 30 minutes of additional rehabilitation; consider Transport

Mandatory Rest Period
Rehydration is Most Important
Re-evaluate in 10 minutes

Notify Destination or Contact Medical Control

Special Response Protocols

Pearls
- **This protocol is to be utilized for public safety responders, usually firefighters, on the scene of an incident.**
- **Rehabilitation officer has full authority in deciding when responders may return to duty.**
- **Utilize this protocol in conjunction with the rehab steps and guidance in the General Rehabilitation Protocol.**
- **May be utilized with adult responders on fire, law enforcement, rescue, EMS and training scenes.**
- **Responders taking anti-histamines, blood pressure medication, diuretics or stimulants are at increased risk for cold and heat stress.**
- Rehabilitation Section is an integral function within the Incident Management System.
- Establish section such that it provides shelter, privacy and freedom from smoke or other hazards.

Protocol 88

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Multiple Person Incident Rapid Evacuation

History:

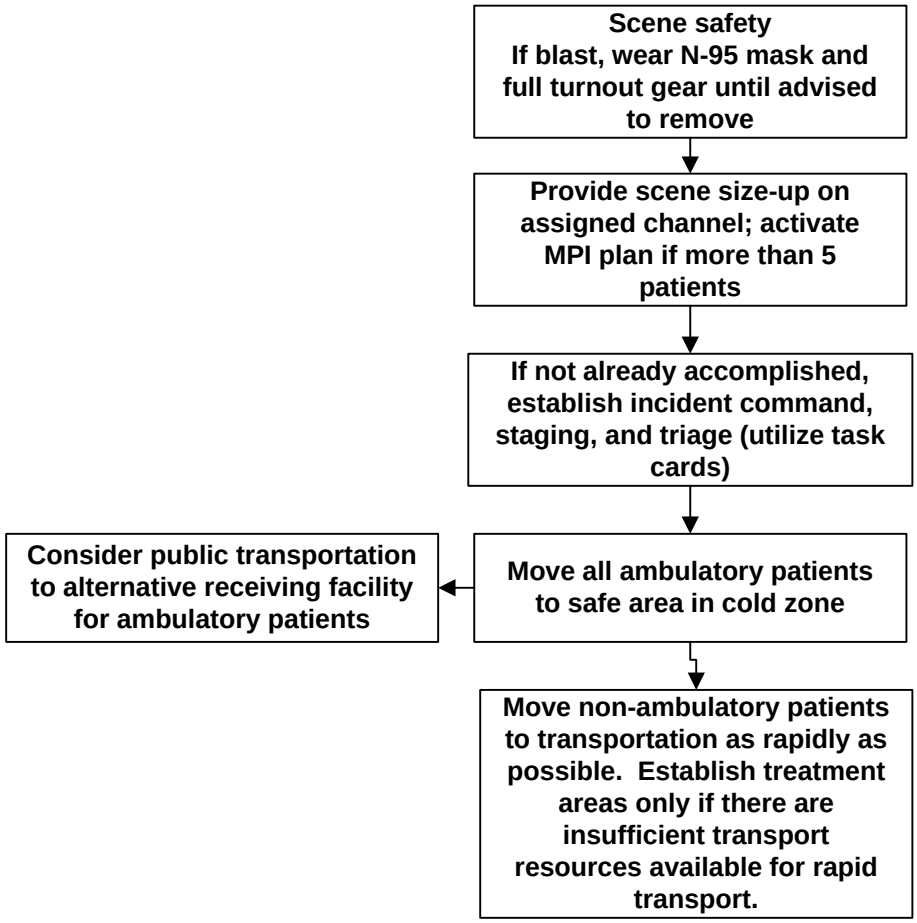
- Number of patients
- Cause of Incident
- Chemical, Biological, or Radiolical contaminanation
- Secondary devices

Signs and Symptoms:

- SLUDGE for chemical exposure
- Respiratory distress for narcotic exposure
- Nausea/vomiting for radiation

Differential:

- Blast response
- MPI penetrating trauma
- MPI blunt trauma/MVC



Special Response Protocols

Pearls:

In the absence of guidance from RESCOM, utilize the following communications assisgnments:

1) Contact Medical Branch on MC-Alpha
2) Transport/Hospital destination on MC-Hotel

Task cards and job vests should be utilized by all personnel involved in an MPI

If blast injury with more than 5 patients, patients with SBP <90 and/or obvious external trauma to 4 or more body surface areas should go to the Level I trauma center. Others may be considered for community hospital transport.

If 800 MHz system failure, then all responding units should utilize VHF channel 155.280 (State Rescue) to regroup.

Multiple patients may be transported in the same EMS unit if needed. When possible, patients of similar acuity should be transported in the same unit to assist with appropriate transport destination.

Protocol 89

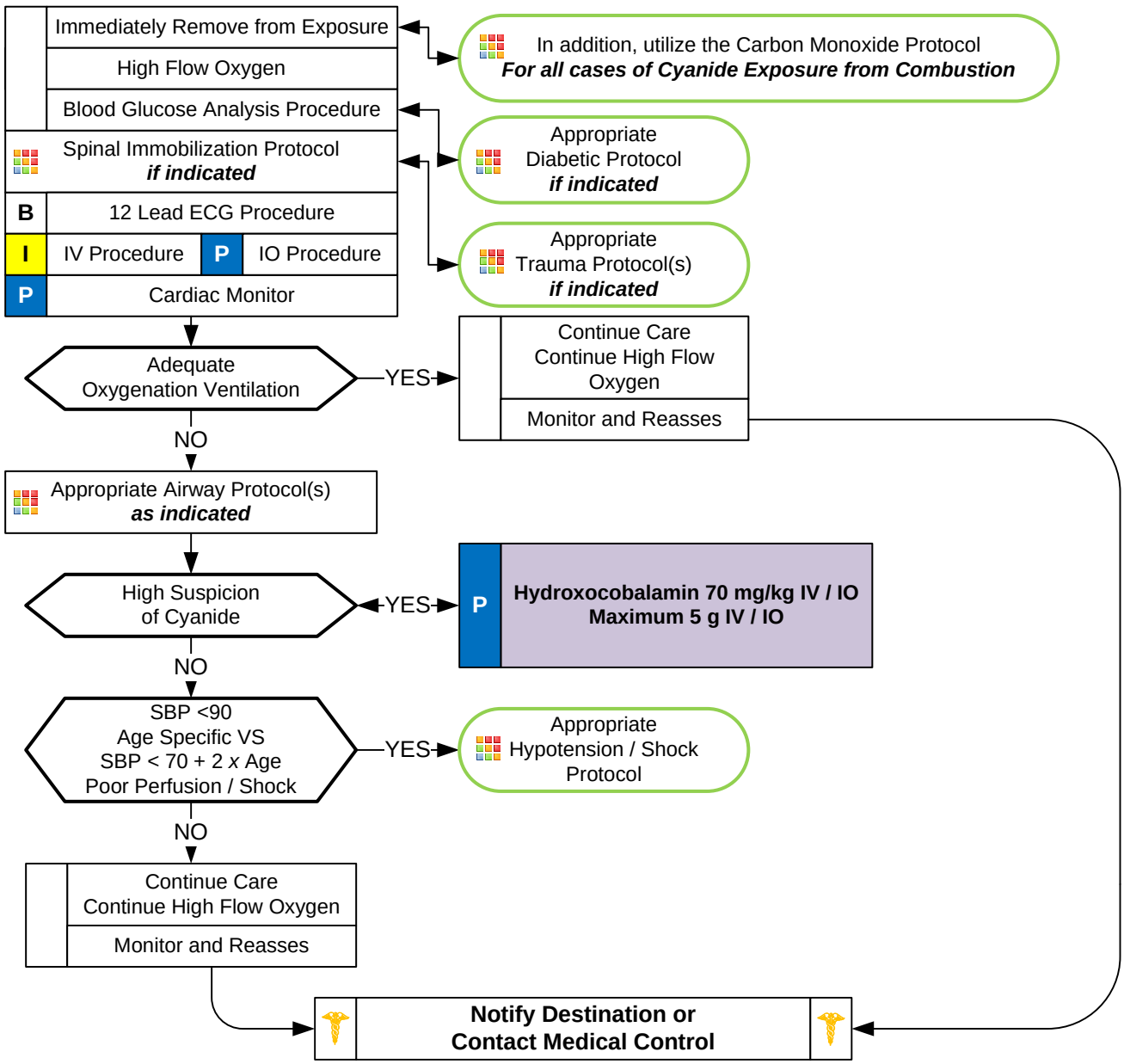
This protocol is unique to the Wake County EMS System

Cyanide Exposure

History
- Smoke inhalation
- Ingestion of cyanide
- Eating large quantity of fruit pits
- Industrial exposure
- Trauma
- Reason: Suicide, criminal, accidental
- Past Medical History
- Time / Duration of exposure

Signs and Symptoms
- AMS
- Malaise, weakness, flu like illness
- Dyspnea
- GI Symptoms; N/V; cramping
- Dizziness
- Seizures
- Syncope
- Reddened skin
- Chest pain

Differential
- Diabetic related
- Infection
- MI
- Anaphylaxis
- Renal failure / dialysis problem
- Head injury / trauma
- Co-ingestant or exposures



Special Response Protocols

Pearls
- **Recommended exam: Neuro, Skin, Heart, Lungs, Abdomen, Extremities**
- **Scene safety is priority.**
- Consider CO and Cyanide with any product of combustion
- Normal environmental CO level does not exclude CO poisoning.
- Symptoms present with lower CO levels in pregnancy, children and the elderly.
- Continue high flow oxygen regardless of pulse ox readings.

Protocol 90

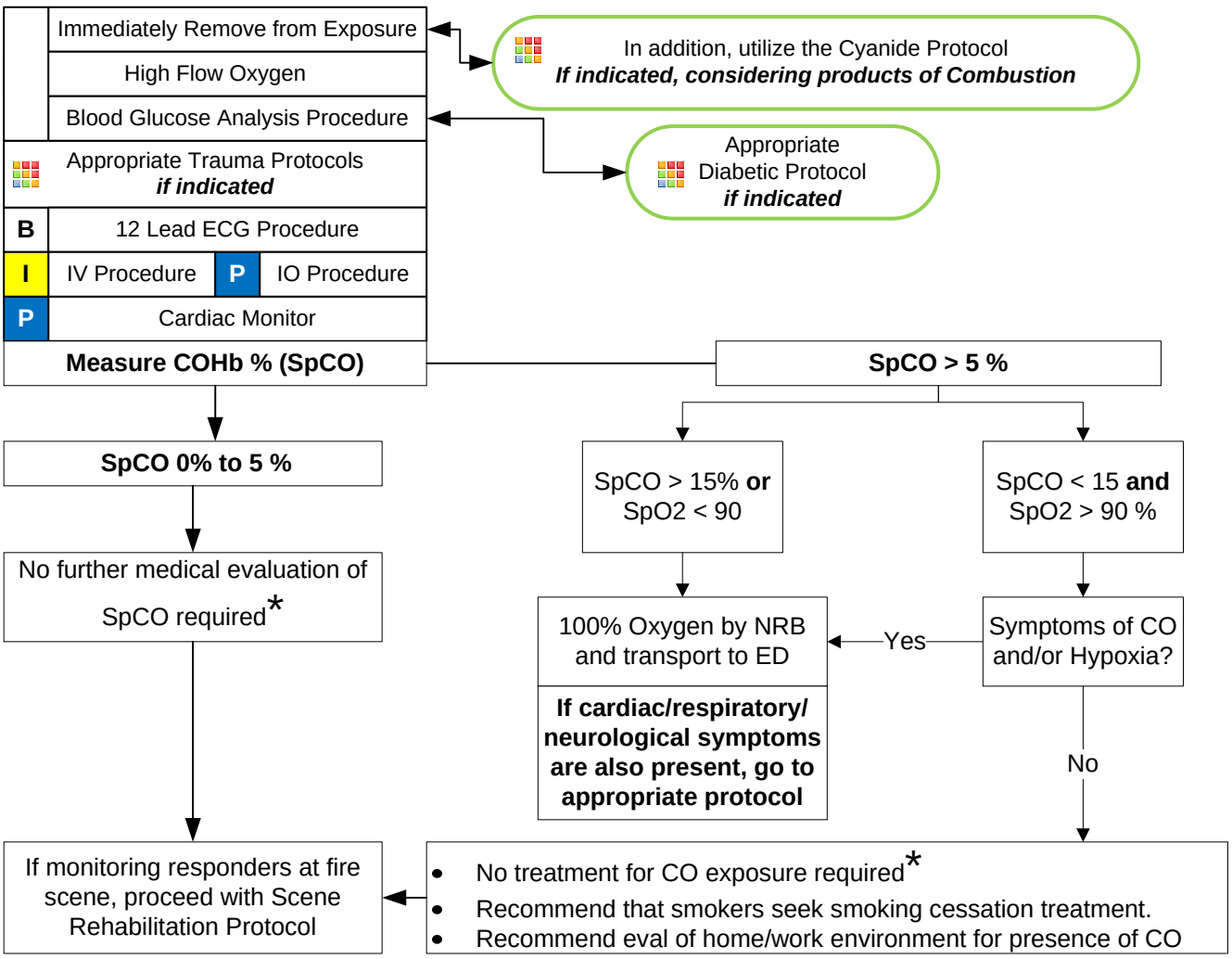
This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Carbon Monoxide Exposure

History
- Firefighter/Structure Fire victim
- Suspected CO exposure
- Suspected source/duration exposure
- Age, possible pregnancy
- Reason (accidental, suicidal)
- Measured atmospheric levels
- Past medical history, meds

Signs and Symptoms
- Altered mental status/dizziness
- Headache, Nausea/Vomiting
- Chest Pain/Respiratory distress
- Neurological impairments
- Vision problems/reddened eyes
- Tachycardia/tachypnea
- Arrhythmias, seizures, coma

Differential
- Effects of other toxic fire byproduct
- Acute cardiac event
- Acute neurological event
- Flu/GI illness
- Acute intoxication
- Diabetic Ketoacidosis
- Headache of non-toxic origin



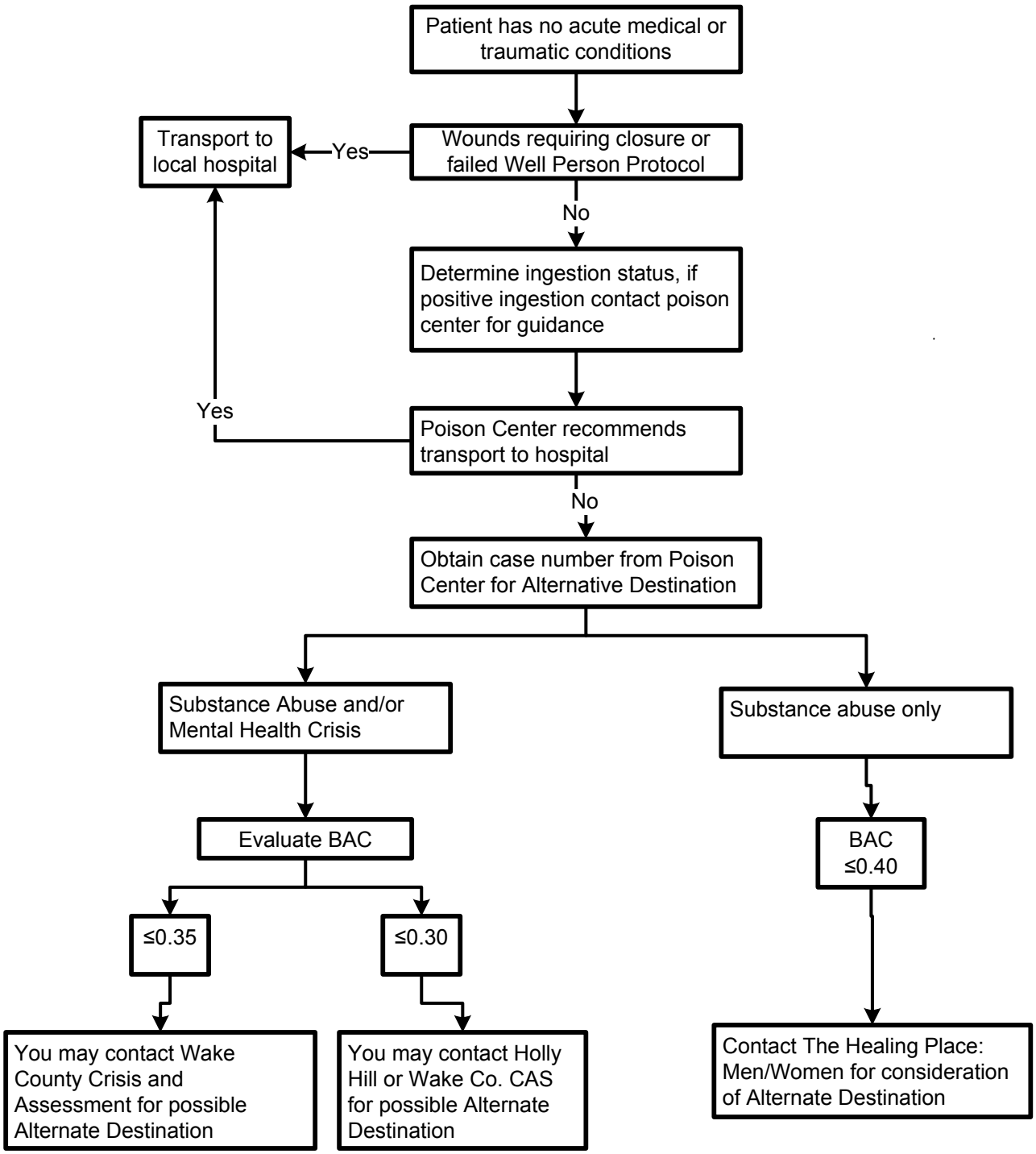
Special Response Protocols

Pearls
- **Recommended exam: Neuro, Skin, Heart, Lungs, Abdomen, Extremities**
- **Scene safety is priority.**
- Consider CO and Cyanide with any product of combustion
- Normal environmental CO level does not exclude CO poisoning.
- **Fetal hemoglobin has a greater attraction for CO than maternal hemoglobin. Females who are known to be or possibly pregnant should be advised that EMS-measured SpCO levels reflect the adult's level, and that fetal COHb levels may be higher. Recommend Hospital eval for any CO exposed pregnant person.**
- The absence (or low detected levels of) of COHb is not a reliable predictor of firefighter or victim exposure to other toxic byproducts of fire
- In obtunded fire victims, consider Cyanide treatment protocol
- The differential list for CO Toxicity is extensive. Attempt to evaluate other correctable causes when possible
- Chronic CO exposure is clinically significant; therefore advice on smoking cessation is important medical instruction

Protocol 91

This protocol has been altered from the original 2012 NCCEP Protocol by the Wake EMS Medical Director

Medical Clearance for Mental Health/ Substance Abuse Patients

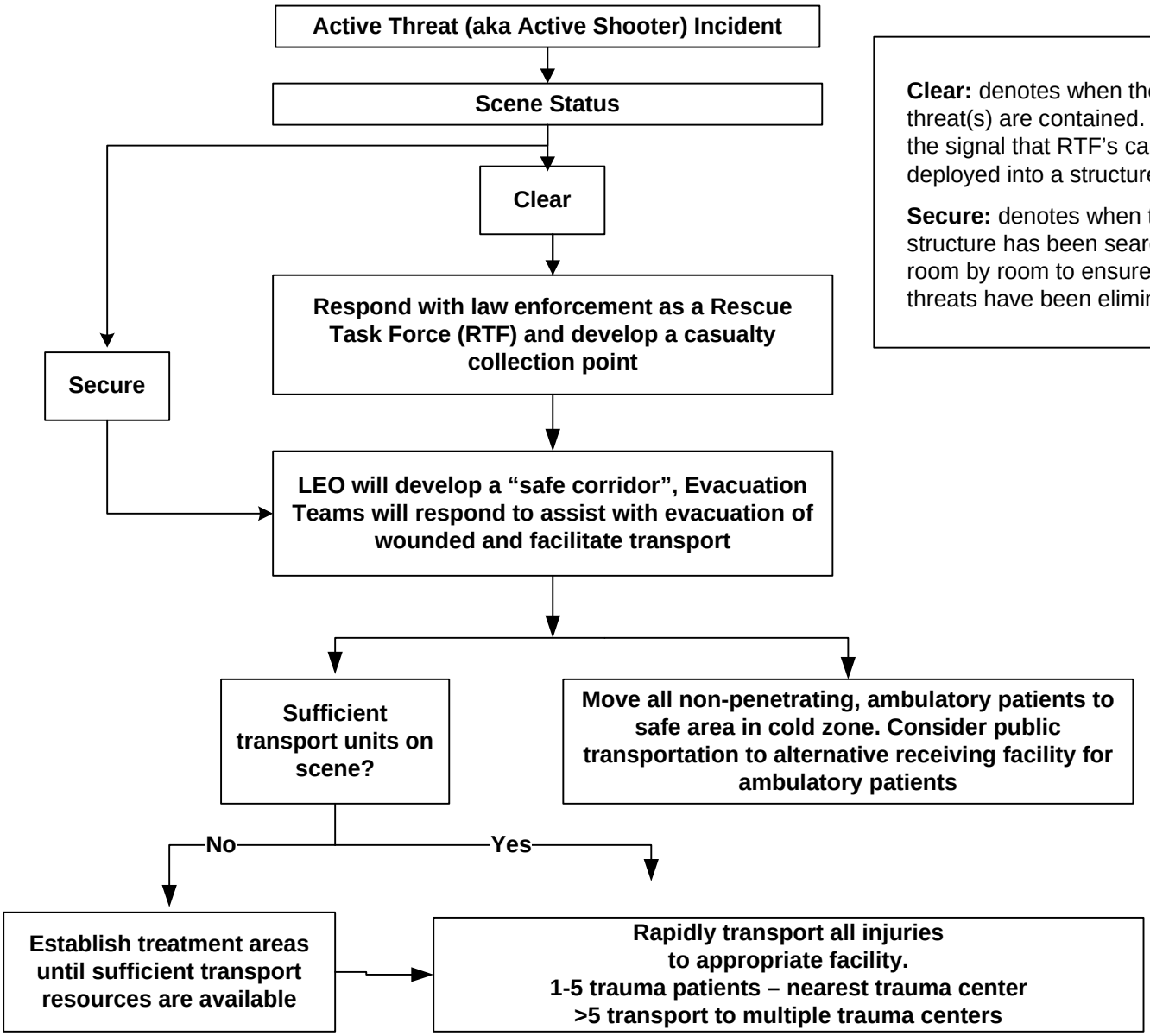


Pearls:

- Patient preference may still be honored if the patient wishes to be taken to the hospital instead of mental health or substance abuse facility.

- Use this protocol in conjunction with the Wake County EMS System Policy "**Transport and Screening for Mental Health and Substance Abuse Patients"**

Active Threat



Clear: denotes when the known threat(s) are contained. This is the signal that RTF's can be deployed into a structure

Secure: denotes when the structure has been searched room by room to ensure all threats have been eliminated

Special Response Protocols

Pearls:

- **Make notification to RESCOM and all local hospitals as soon as possible with the projected number of patients.**
- **Level 1 trauma centers can manage up to 5 penetrating trauma patients per hour**
  If more than 5 penetrating trauma patients, consider multiple trauma centers
- **If more than 30 patients require Level One trauma care, then transport of trauma patients to non-trauma center local hospitals may be required**
- **The penetrating trauma equipment bag or "active shooter bag" is the only equipment initially required.**
  If a casualty collection point is established and additional equipment is required, a cache of needed supplies should be requested.
- **Please refer to the MCI protocol for proper radio communication and channel assignments. Task cards and job vests should be utilized by all personnel involved in an MPI**
- **If blast injury with more than 5 patients, patients with SBP <90 and/or obvious external trauma to 4 or more body surface areas should go to the Level I trauma center. Others may be considered for community hospital transport.**
- **Multiple patients may be transported in the same EMS unit if needed. When possible, patients of similar acuity should be transported in the same unit to assist with appropriate transport destination.**

Pediatric

EMS Triage and Destination Plan

Pediatric Patient

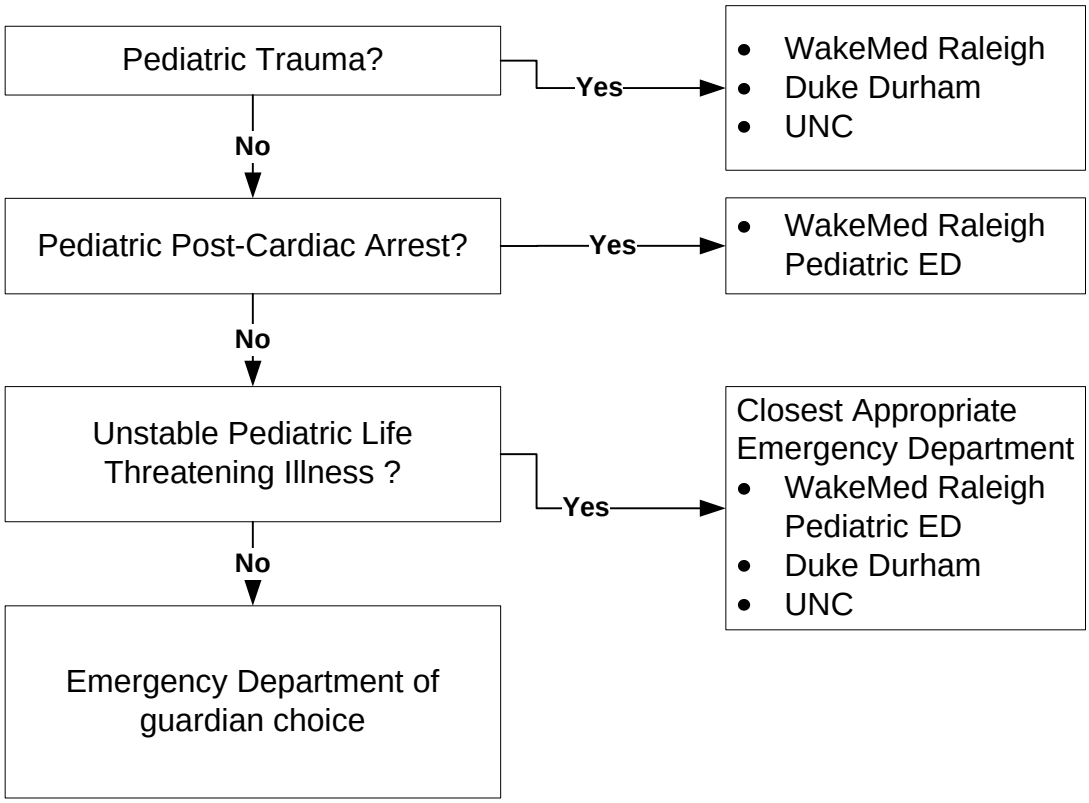
* **Any patient less than 18 years of age with a life-threatening illness**

Life Threatening Illness

* **Decreased Mental Status (GCS<14)**
* **Non-Responsive Respiratory Distress**
* **Intubation**
* **Post Cardiac Arrest**
* **Non-Responsive Hypotension**
* **Severy Hypothermia or Hyperthermia**
* **Status Epilepticus**
* **Potential Dangerous Envenomation**
* **Life Threatening Ingestion/Chemical Exposure**

The Purpose of this plan is to:

* Rapidly identify pediatric patients who call 911 or present to EMS with a life-threatening illness
* Minimize the time from EMS contact to definitive care
* Quickly diagnose patients with pediatric life-threatening illness for EMS treatment and stabilization
* Rapidly identify the best hospital destination based on symptom onset time, vital signs, response to treatment, and predicted transport time
* Early activation/notification to the hospital prior to patient arrival
* Minimize scene time with a “load and go” approach
* Provide quality EMS service and patient care to the EMS community
* Continuously evaluate the EMS System based on North Carolina’s
* EMS performance measures



EMS Triage and Destination Plan

Pearls and Definitions

* **All Pediatric Patients with a life-threatening illness must be triaged and transported using this plan. This plan is in effect 24/7/365**
* **All Patient Care is based on the appropriate Pediatric Protocol**
* **Pediatric Capable Hospital** = a hospital with an emergency and pediatric intensive care capability including but not limited to:
  * Emergency Department staffed 24 hours per day with board certified Emergency Physicians
  * An inpatient Pediatric Intensive Care Unit (with a physician pediatric intensivist)
  * Accepts all EMS patients regardless of bed availability
  * Provides outcome and performance measure feedback to EMS including case review
* **Community Hospital** = a local hospital within the EMS System’s service area which provides emergency care but does not meet the criteria of a Pediatric Capable Hospital
* **Pediatric Specialty Care Transport Program** = an air or ground based specialty care transport program that has specific pediatric training and equipment addressing the needs of a pediatric patient that can assume care of a pediatric patient from EMS or a Community Hospital and transport the patient to a Pediatric Capable Hospital.

TDP-Peds

This document is unique to the Wake County EMS System

Cardiac Arrest

EMS Triage and Destination Plan

Cardiac Arrest Patient

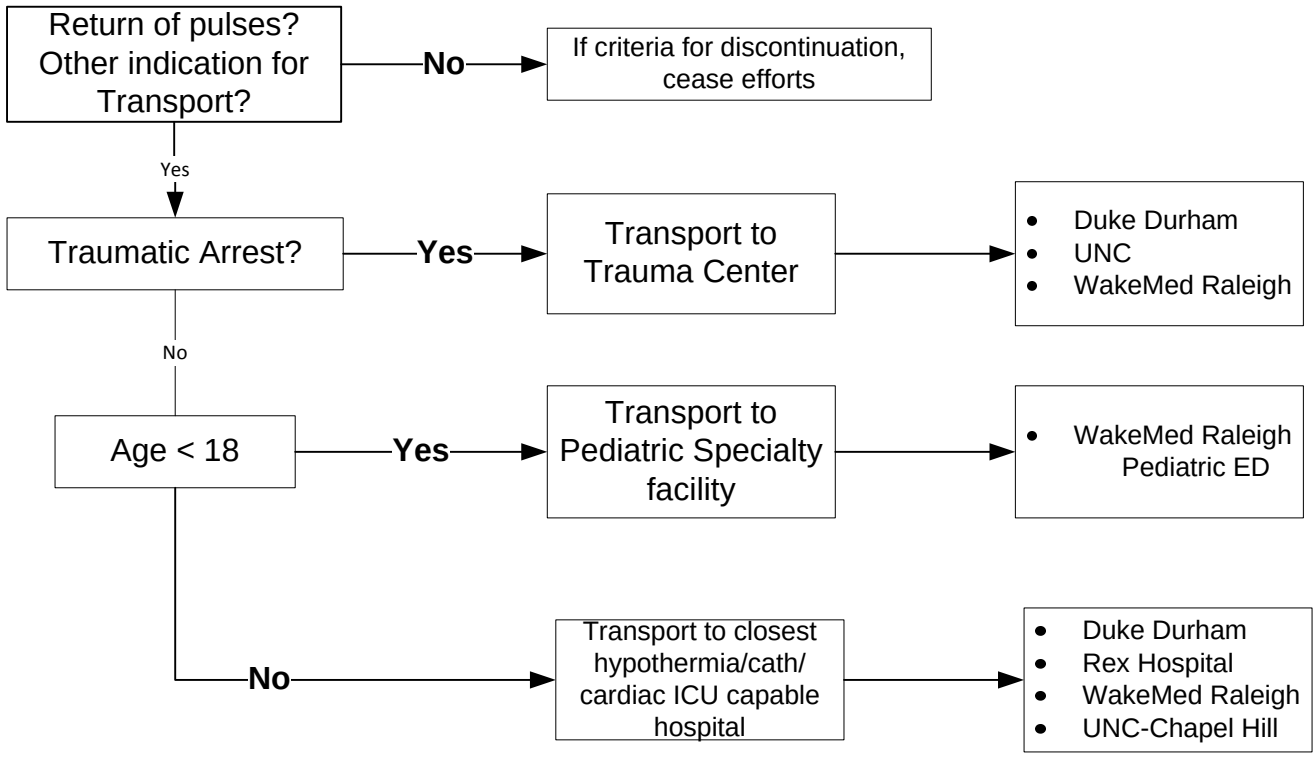
* Resuscitation was attempted by 911 responder

AND/OR

* CPR performed prior to EMS arrival and pulses restored

The Purpose of this plan is to:

* Transport cardiac arrest and post resuscitation patients to the appropriate receiving facility



EMS Triage and Destination Plan

Pearls and Definitions

* **All Cardiac Arrest Patients who are being transported must be triaged and transported using this plan, except under direct order from EMS system medical control. This plan is in effect 24/7/365**
* **All Patient Care is based on the appropriate protocol.**
* **This protocol and the destinations in it have been approved by the Wake County EMS System Peer Review Committee.**

TDP-OHCA

This document is unique to the Wake County EMS System

STEMI

EMS Triage and Destination Plan

STEMI Patient
(ST Elevation Myocardial Infarction)

* **Cardiac symptoms greater than 15 minutes and less than 12 hours**

And

* **12 lead ECG criteria of 1mm ST elevation in 2 or more leads**

(SEE BELOW or CHEST PAIN/STEMI PROTOCOL or CODE STEMI Procedure for CODE STEMI Criteria)

The Purpose of this plan is to:

* Rapidly identify STEMI patients who call 911 or present to EMS
* Minimize the time from onset of STEMI symptoms to coronary reperfusion
* Quickly diagnose a STEMI by 12 lead ECG
* Rapidly identify the best hospital destination based on symptom onset time and predicted transport time
* Early activation/notification to the hospital prior to patient arrival
* Minimize scene time to 15 minutes or less (including a 12 lead ECG)
* Provide quality EMS service and patient care to the EMS System's citizens
* Continuously evaluate the EMS System based on North Carolina's STEMI EMS performance measures

Active Symptoms of Cardiac Chest Pain and
12 Lead ECG Findings = STEMI

↓

Early STEMI Notification/Activation of closest PCI capable Hospital (unless patient expresses preference) with transmission of 12 lead when possible

- Duke Durham
- Rex Hospital
- UNC-Chapel Hill
- WakeMed Raleigh

EMS Triage and Destination Plan

Pearls and Definitions

* **All STEMI Patients must be triaged and transported using this plan. This plan is in effect 24/7/365**
* **All Patient Care is based on the EMS Chest Pain and STEMI Protocol**
* **This protocol and the destinations in it have been approved by the Wake County EMS System Peer Review Committee.**

* Obtain the following information *before* your radio call in: Patient age and gender, Patient cardiologist and preferred STEMI hospital (if present), Clinical presentation, history, symptoms that suggest this is an acute cardiac event, What are the 2 or more anatomically contiguous leads with 1 + mm ST elevation, (SEE CHEST PAIN PROTOCOL for STEMI localization tool), Is there a **LBBB not known to be old?,** Absence or **presence of LVH,** Absence or **presence of profound tachycardia (heart rate >129),** Absence or **presence of pacemaker activity,** Was the patient **resuscitated from cardiac arrest but does not have obvious STEMI?**
* If patient has 1+ mm of ST elevation in two anatomically contiguous leads and none of the characteristics in red above, call a CODE STEMI to the hospital. If any of the characteristics in red above are present do NOT call "Code STEMI." Instead, transmit the 12-lead for physician consultation; be sure to communicate the need for physician consult due to concern for possible STEMI.

TDP-STEMI

This document is unique to the Wake County EMS System

STROKE

EMS Triage and Destination Plan

STROKE Patient

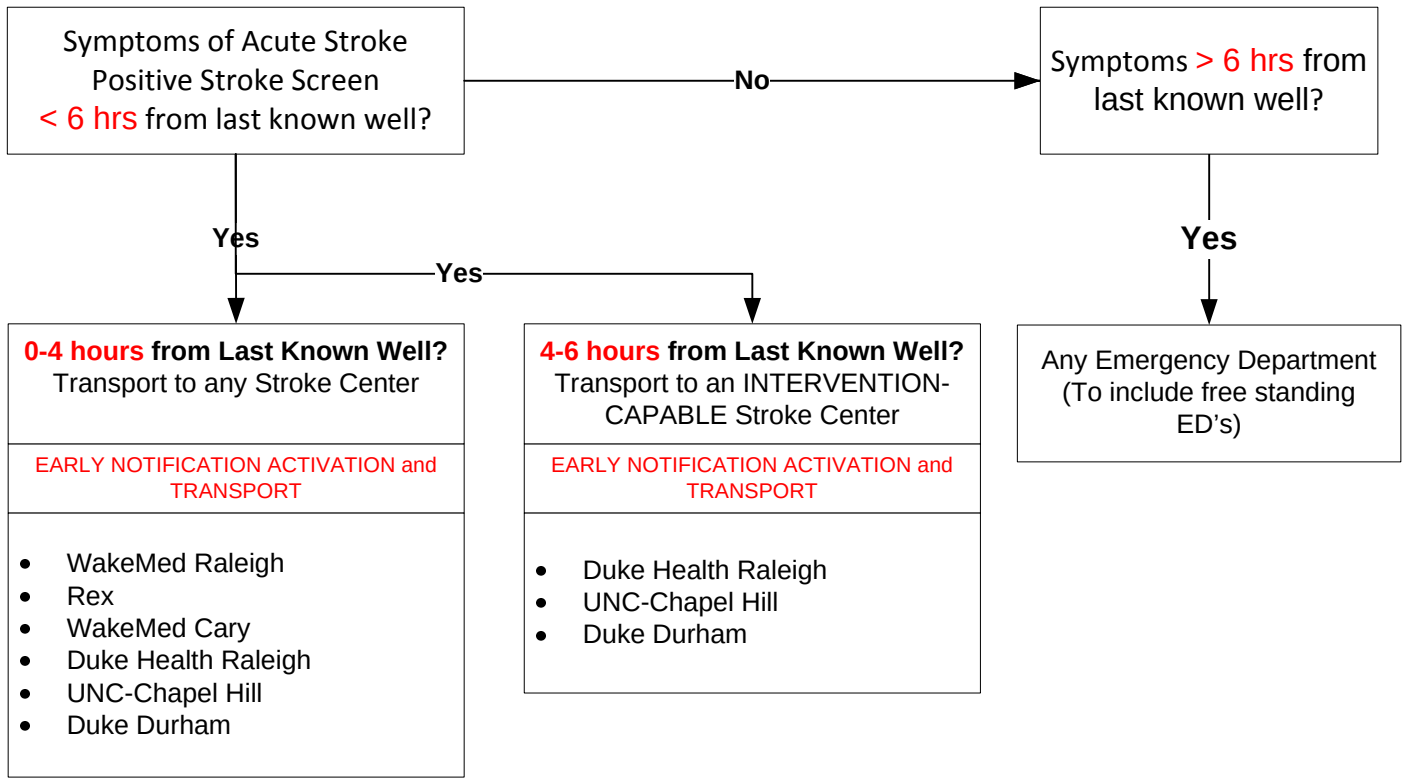
* **A Patient with symptoms of an acute Stroke as identified by the EMS Stroke Screen**
*

Time Of Symptom Onset, aka "LAST KNOWN WELL"

* **Defined as the last witnessed time the patient was symptom free (i.e. awakening with stroke symptoms would be defined as an onset time of the previous night when patient was symptom free)**

The Purpose of this plan is to:

* Rapidly identify acute Stroke patients who call 911 or present to EMS
* Minimize the time from onset of Stroke symptoms to definitive care
* Quickly diagnose a Stroke using validated EMS Stroke Screen
* Rapidly identify the best hospital destination based on symptom onset time, reperfusion checklist, and predicted transport time
* Early activation/notification to the hospital prior to patient arrival
* Minimize scene time to 10 minutes or less
* Provide quality EMS service and patient care to the EMS System's citizens
* Continuously evaluate the EMS System based on North Carolina's Stroke EMS performance measures



EMS Triage and Destination Plan

Pearls and Definitions

* **All Stroke Patients must be triaged and transported using this plan. This plan is in effect 24/7/365**
* **All Patient Care is based on the EMS Suspected Stroke Protocol**
* **This protocol and the destinations in it have been approved by the Wake County EMS System Peer Review Committee.**
* **Stroke Center** = a hospital that is capable for caring for an acute stroke as authorized by the Wake EMS System Peer Review Committee
* **INTERVENTION-CAPABLE Stroke Center** = a hospital that is capable for caring for an acute stroke with an endovascular procedure if indicated, as authorized by the Wake EMS System Peer Review Committee

TDP- Stroke

This document is unique to the Wake County EMS System

Trauma and Burn

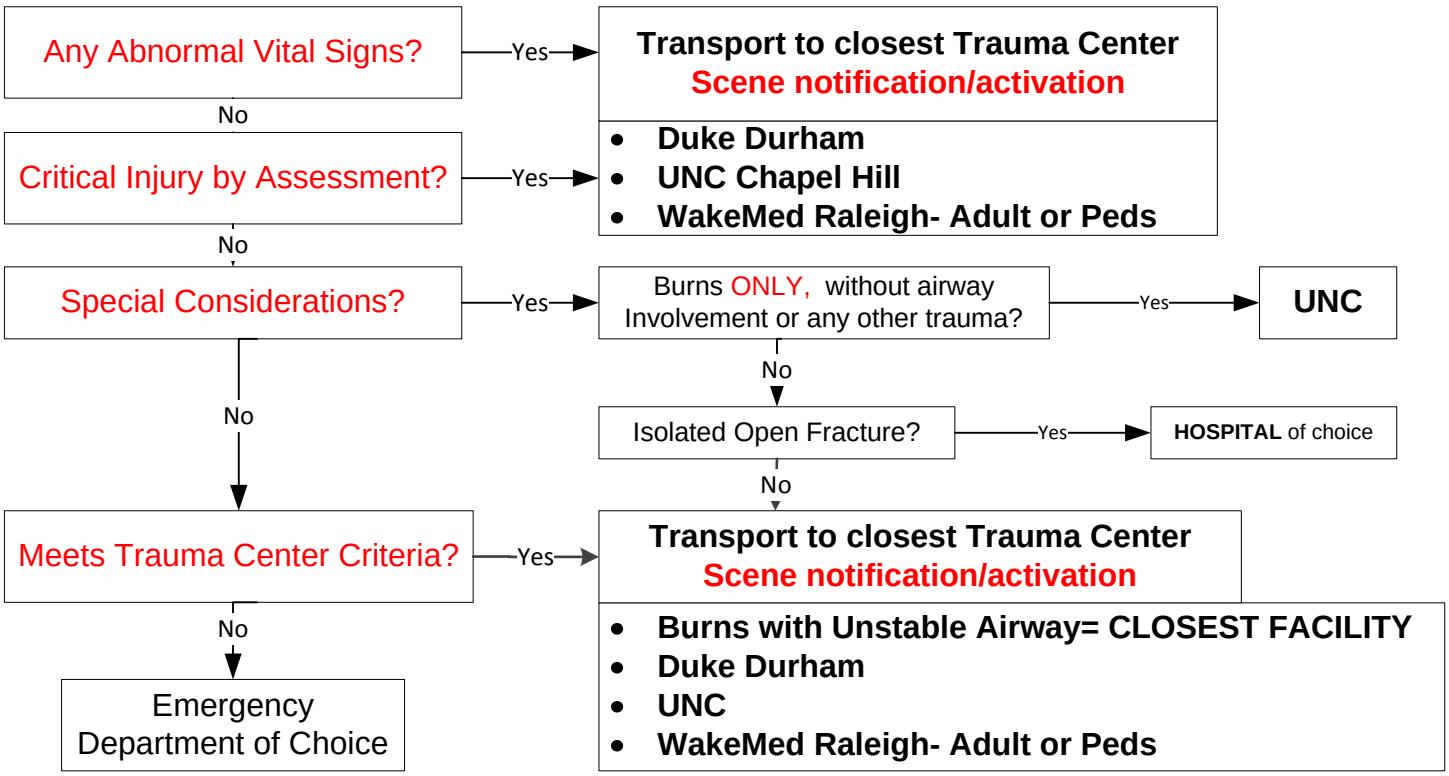
EMS Triage and Destination Plan

Trauma or Burn Patient

* **Any patient (regardless of age) with a significant injury or burn**

The Purpose of this plan is to:

* Rapidly identify injured or burned patients who call 911 or present to EMS
* Minimize the time from injury to definitive care for critical injuries or burns
* Quickly identify life or limb threatening injuries for EMS treatment and stabilization
* Rapidly identify the best hospital destination based on time of injury, severity of injury, and predicted transport time
* Early activation/notification to the hospital of a critically injured or burned patient prior to patient arrival
* Minimize scene time to 10 minutes or less with a "load and go" approach
* Provide quality EMS service and patient care to the EMS System's citizens
* Continuously evaluate the EMS System based on North Carolina's EMS performance measures



EMS Triage and Destination Plan

Pearls and Definitions

* **All Trauma Patients must be triaged and transported using this plan. This plan is in effect 24/7/365**
* **All Patient Care is based on the Trauma Protocols**

* **This protocol and the destinations in it have been approved by the Wake County EMS System Peer Review Committee.**

*** FOR TRAUMA CENTER CRITERIA, SEE PAGE 2 of the MULTIPLE TRAUMA PROTOCOL**

Reference for further info: www.cdc.gov/fieldtriage - The 2011 Guidelines for Field Triage of Injured Patients

TDP-TRM/BRN

This document is unique to the Wake County EMS System

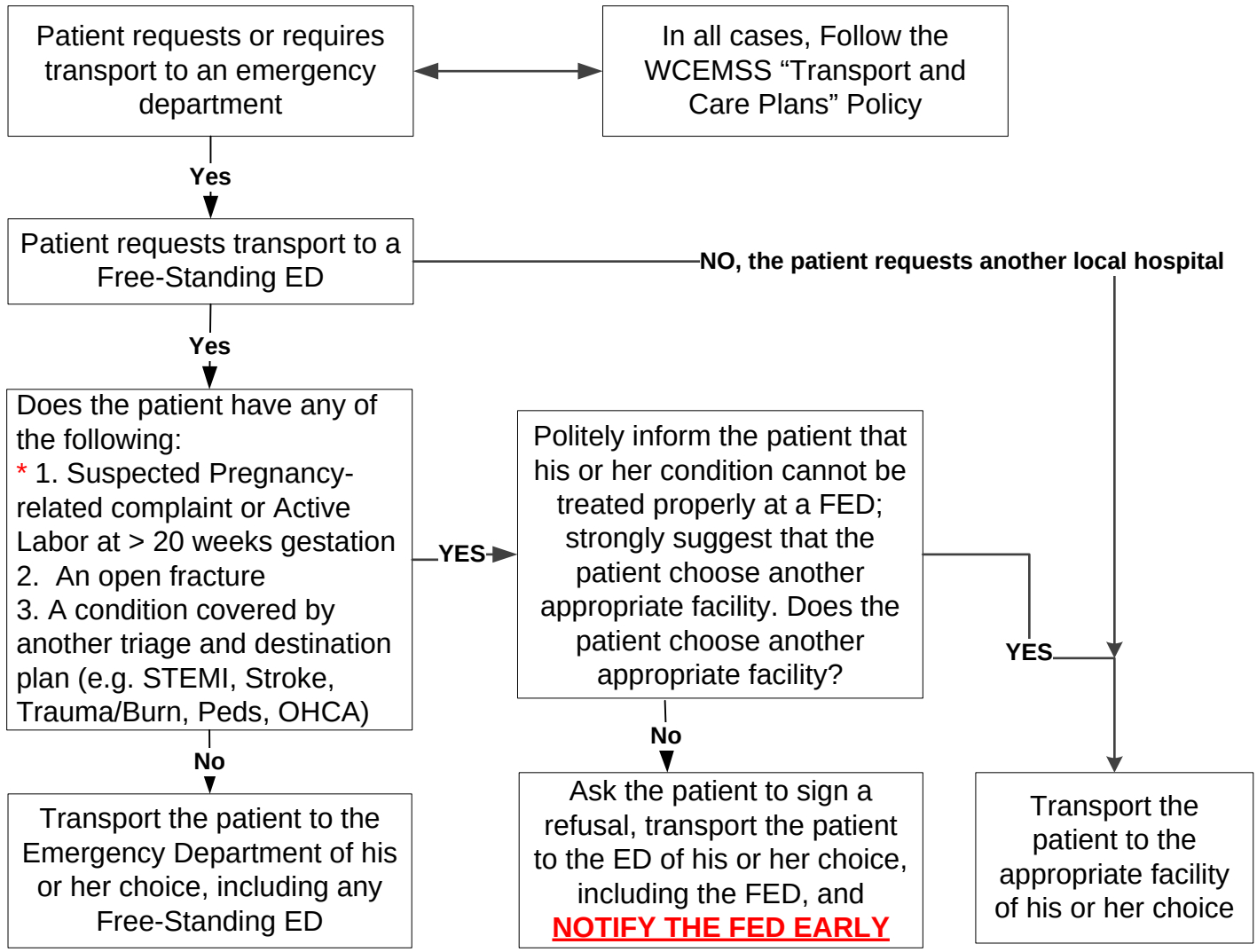
FREE-STANDING EDs

EMS Triage and Destination Plan

Adult and Pediatric Patients may be transported to Free-Standing EDs; exceptions are outlined in this plan

The Purpose of this plan is to:

* Transport patients to the closest appropriate receiving facility of their choice, unless otherwise indicated by their clinical condition



EMS Triage and Destination Plan

Pearls and Definitions

*** Patients with pregnancy-related complaints or Active Labor can be transported to WakeMed North during any trimester of pregnancy, at any gestational age, as WakeMed North now has a Women's Hospital.**

*** A free-standing Emergency Department (FED) is a full-service Emergency Facility that is bound by EMTALA and affiliated with a local hospital system. Patients may be admitted directly to a hospital room from these facilities; the only difference between these facilities and a "regular" ED is that the hospital beds are not necessarily at the same location as the emergency department.**

*** An urgent care center is NOT a FED**

*** This protocol and the destinations in it have been approved by the Wake County EMS System Peer Review Committee.**

TDP- FED

This document is unique to the Wake County EMS System

Approved Medical Abbreviations

The following is a list of approved medical abbreviations. In general, the use of abbreviations should be limited to this list.

A&O x 3	- alert and oriented to person, place and time
A&O x 4	- alert and oriented to person, place, time and event
A-FIB	- atrial fibrillation
AAA	- abdominal aortic aneurysm
ABC	- airway, breathing, circulation
ABD	- abdomen (abdominal)
ACLS	- advanced cardiac life support
AKA	- above the knee amputation
ALS	- advanced life support
AMA	- against medical advice
AMS	- altered mental status
AMT	- amount
APPROX	- approximately
ASA	- aspirin
ASSOC	- associated
BG	- blood glucose
BILAT	- bilateral
BKA	- below the knee amputation
BLS	- basic life support
BM	- bowel movement
BP	- blood pressure
BS	- breath sounds
BVM	- bag-valve-mask
C-SECTION	- caesarean section
C-SPINE	- cervical spine
C/O	- complaint of (complains of)
CA	- cancer
CABG	- coronary artery bypass graft
CAD	- coronary artery disease
CATH	- catheter
CC	- chief complaint
CEPH	- cephalic
CHF	- congestive heart failure
CNS	- central nervous system
COPD	- chronic obstructive pulmonary disease
CP	- chest pain
CPR	- cardiopulmonary resuscitation
CSF	- cerebrospinal fluid
CT	- cat scan
CVA	- cerebrovascular accident (stroke)

D5W	- 5% dextrose in water
DKA	- diabetic ketoacidosis
DNR	- do not resuscitate
DOA	- dead on arrival
DT	- delirium tremens
Dx	- diagnosis
ECG	- electrocardiogram
EEG	- electroencephelogram
ET	- endotracheal
ETOH	- ethanol (alcohol)
ETT	- endotracheal tube
EXT	- external (extension)
FB	- foreign body
FLEX	- flexion
Fx	- fracture
g	- gram(s)
GI	- gastrointestinal
GSW	- gunshot wound
gtts	- drops
GU	- gastrourinary
GYN	- gynecology (gynecological)
H/A	- headache
HEENT	- head, eyes, ears, nose, throat
HR	- heart rate (hour)
HTN	- hypertension
Hx	- history
ICP	- intracranial pressure
ICU	- intensive care unit
IM	- intramuscular
IV	- intravenous
JVD	- jugular vein distension
kg	- kilogram
KVO	- keep vein open

L-SPINE	- lumbar spine
L/S-SPINE	- lumbarsacral spine
L&D	- labor and delivery
LAT	- lateral
lb	- pound
LLQ	- left lower quadrant
LMP	- last mestrual period
LOC	- level of consciousness (loss of consciousness)
LR	- lactated ringers
LUQ	- left upper quadrant
MAST	- military anti-shock trousers
mcg	- microgram(s)
MED	- medicine
mg	- milligram(s)
MI	- myocardial infarction (heart attack)
min	- minimum / minute
MS	- mental status
MS	- mental status change
MSO4	- morphine
MVC	- motor vehicle crash
N/V	- nausea/vomiting
N/V/D	- nausea/vomiting/diarrhea
NAD	- no apparant distress
NC	- nasal cannula
NEB	- nebulizer
NKDA	- no known drug allergies
NRB	- non-rebreather
NS	- normal saline
NSR	- normal sinus rhythm
OB/GYN	- obstetrics/gynecology
PALP	- palpation
PAC	- premature atrial contraction
PE	- pulmonary embolus
PEARL	- pupils equal and reactive to light
PMHx	- past medical history
PO	- orally
PRB	- partial rebreather
PRN	- as needed
PT	- patient
PVC	- premature ventricular contraction

RLQ	- right lower quadrant
RUQ	- right upper quadrant
Rx	- medicine
RXN	- reaction
S/P	- status post
SOB	- shortness of breath
SQ	- subcutaneous
ST	- sinus tachycardia
SVT	- supraventricular tachycardia
Sx	- symptom
SZ	- seizure
T-SPINE	- thoracic spine
T	- temperature
TIA	- transient ischemic attack
TKO	- to keep open (refers to IV's - same as KVO)
Tx	- treatment
UOA	- upon our arrival
URI	- upper respiratory infection
UTI	- urinary tract infection
VF	- ventricular fibrillation
VS	- vital signs
VT	- ventricular tachycardia
WAP	- wandering atrial pacemaker
WNL	- within normal limits
YO (YOA)	- years old (years of age)
M or ♂	- male
F or ♀	- female
+	- positive
-	- negative
?	- questionable
Ψ	- psychiatric
~	- approximately
>	- greater than
<	- less than
=	- equal

↑	- upper (increased)
$\overline{a}$	- before
$\overline{p}$	- after
$\overline{c}$	- with
s	- without
Δ	- change
L	- left
R	- right
↓	- lower (decreased)
1°	- primary
2°	- secondary

Emergency Information Form for Children With Special Needs

American College of Emergency Physicians®

American Academy of Pediatrics

Date form completed	Revised	Initials
By Whom	Revised	Initials

Last name:

Name:	Birth date:	Nickname:
Home Address:	Home/Work Phone:	
Parent/Guardian:	Emergency Contact Names & Relationship:	
Signature/Consent*:		
Primary Language:	Phone Number(s):	

Physicians:

Primary care physician:	Emergency Phone:
	Fax:
Current Specialty physician: Specialty:	Emergency Phone:
	Fax:
Current Specialty physician: Specialty:	Emergency Phone:
	Fax:
Anticipated Primary ED:	Pharmacy:
Anticipated Tertiary Care Center:	

Diagnoses/Past Procedures/Physical Exam:

1 .

2.

3.

4.

Synopsis:

Baseline physical findings:

Baseline vital signs:

Baseline neurological status:

*Consent for release of this form to health care providers

Last name:

Diagnoses/Past Procedures/Physical Exam continued:

Medications:

1.

2.

3.

4.

5.

6.

Significant baseline ancillary findings (lab, x-ray, ECG):

Prostheses/Appliances/Advanced Technology Devices:

Management Data:

Allergies: Medications/Foods to be avoided **and why:**

1.

2.

3.

Procedures to be avoided **and why:**

1.

2.

3.

Immunizations

Dates					
DPT					
OPV					
MMR					
HIB					

Dates					
Hep B					
Varicella					
TB status					
Other					

Antibiotic prophylaxis: Indication: Medication and dose:

Common Presenting Problems/Findings With Specific Suggested Managements

Problem	Suggested Diagnostic Studies	Treatment Considerations

Comments on child, family, or other specific medical issues:

Physician/Provider Signature: **Print Name:**

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Effective Date:_____

Expiration Date, if any_____

☐ Check box if no expiration

DO NOT RESUSCITATE ORDER

Patient's full name _____

In the event of cardiac and/or pulmonary arrest of the patient, efforts at cardiopulmonary resuscitation of the patient SHOULD NOT be initiated. This order does not affect other medically indicated and comfort care.

I have documented the basis for this order and the consent required by the NC General Statute 90-21.17(b) in the patient's records.

_____

Signature of Attending Physician/Physician Assistant/Nurse Practitioner

_____

Printed Name of Attending Physician

_____

Address

_____

City, State, Zip

Telephone Number (office) _____

Telephone Number (emergency) _____

Do Not Copy **Do Not Alter**

SAMPLE

HIPAA PERMITS DISCLOSURE OF MOST TO OTHER HEALTH CARE PROFESSIONALS AS NECESSARY

Medical Orders for Scope of Treatment (MOST)

This is a Physician Order Sheet based on the person's medical condition and wishes. Any section not completed indicates full treatment for that section. **When the need occurs, first follow these orders, then contact physician.**

Patient's Last Name:	Effective Date of Form: _____ *Form must be reviewed at least annually.*
Patient's First Name, Middle Initial:	Patient's Date of Birth:

Section A

Check One Box Only

CARDIOPULMONARY RESUSCITATION (CPR): Person has no pulse and is not breathing.

☐ **Attempt Resuscitation (CPR)** ☐ **Do Not Attempt Resuscitation (DNR/no CPR)**

When not in cardiopulmonary arrest, follow orders in **B, C**, and **D**.

Section B

Check One Box Only

MEDICAL INTERVENTIONS: Person has pulse and/or is breathing.

☐ **Full Scope of Treatment:** Use intubation, advanced airway interventions, mechanical ventilation, cardioversion as indicated, medical treatment, IV fluids, etc.; also provide comfort measures. **Transfer to hospital if indicated.**

☐ **Limited Additional Interventions:** Use medical treatment, IV fluids and cardiac monitoring as indicated. Do not use intubation or mechanical ventilation; also provide comfort measures. **Transfer to hospital if indicated. Avoid intensive care.**

☐ **Comfort Measures:** Keep clean, warm and dry. Use medication by any route, positioning, wound care and other measures to relieve pain and suffering. Use oxygen, suction and manual treatment of airway obstruction as needed for comfort. **Do not transfer to hospital unless comfort needs cannot be met in current location.**

Other Instructions _____

Section C

Check One Box Only

ANTIBIOTICS

☐ **Antibiotics if life can be prolonged.**

☐ **Determine use or limitation of antibiotics when infection occurs.**

☐ **No Antibiotics** (use other measures to relieve symptoms).

Other Instructions _____

Section D

Check One Box Only in Each Column

MEDICALLY ADMINISTERED FLUIDS AND NUTRITION: Offer oral fluids and nutrition if physically feasible.

☐ **IV fluids long-term if indicated**
☐ **IV fluids for a defined trial period**
☐ **No IV fluids** (provide other measures to ensure comfort)

☐ **Feeding tube long-term if indicated**
☐ **Feeding tube for a defined trial period**
☐ **No feeding tube**

Other Instructions _____

Section E

Check The Appropriate Box

DISCUSSED WITH AND AGREED TO BY:

☐ Patient
☐ Parent or guardian if patient is a minor
☐ Health care agent
☐ Legal guardian of the person
☐ Attorney-in-fact with power to make health care decisions
☐ Spouse
☐ Majority of patient's reasonably available parents and adult children
☐ Majority of patient's reasonably available adult siblings
☐ An individual with an established relationship with the patient who is acting in good faith and can reliably convey the wishes of the patient

Basis for order must be documented in medical record.

MD/DO, PA, or NP Name (Print):	**MD/DO, PA, or NP Signature** (Required):	**Phone #:**

Signature of Person, Parent of Minor, Guardian, Health Care Agent, Spouse, or Other Personal Representative
(Signature is required and must either be on this form or on file)

I agree that adequate information has been provided and significant thought has been given to life-prolonging measures. Treatment preferences have been expressed to the physician (MD/DO), physician assistant, or nurse practitioner. This document reflects those treatment preferences and indicates informed consent.

If signed by a patient representative, preferences expressed must reflect patient's wishes as best understood by that representative. Contact information for personal representative should be provided on the back of this form.

You are not required to sign this form to receive treatment.

Patient or Representative Name (print)	Patient or Representative Signature	Relationship (write "self" if patient)

SEND FORM WITH PATIENT/RESIDENT WHEN TRANSFERRED OR DISCHARGED

HIPAA PERMITS DISCLOSURE OF MOST TO OTHER HEALTH CARE PROFESSIONALS AS NECESSARY

Contact Information

Patient Representative:	Relationship:	Phone #: Cell Phone #:	
Health Care Professional Preparing Form:	Preparer Title:	Preferred Phone #:	Date Prepared:

Directions for Completing Form

Completing MOST

- MOST must be reviewed and prepared by a health care professional in consultation with the patient or patient representative.
- MOST is a medical order and must be reviewed and signed by a licensed physician (MD/DO), physician assistant, or nurse practitioner to be valid. **Be sure to document the basis for the order in the progress notes of the medical record.** Mode of communication (e.g., in person, by telephone, etc.) also should be documented.
- The signature of the patient or their representative is required; however, if the patient's representative is not reasonably available to sign the original form, a copy of the completed form with the signature of the patient's representative must be placed in the medical record and "on file" must be written in the appropriate signature field on the front of this form or in the review section below.
- Use of original form is required. **Be sure to send the original form with the patient.**
- MOST is part of advance care planning, which also may include a living will and health care power of attorney (HCPOA). If there is a HCPOA, living will, or other advance directive, a copy should be attached if available. **MOST may suspend any conflicting directions in a patient's previously executed HCPOA, living will, or other advance directive.**
- **There is no requirement that a patient have a MOST.**
- MOST is recognized under N.C. Gen. Stat. 90-21.17.

Reviewing MOST

This MOST must be reviewed at least annually or earlier if:

- The patient is admitted and/or discharged from a health care facility;
- There is a substantial change in the patient's health status; or
- The patient's treatment preferences change.

If MOST is revised or becomes invalid, draw a line through Sections A – E and write "VOID" in large letters.

Revocation of MOST

This MOST may be revoked by the patient or the patient's representative.

Review of MOST

Review Date	Reviewer and Location of Review	MD/DO, PA, or NP Signature (Required)	Signature of Patient or Representative (Required)	Outcome of Review
				☐No Change ☐FORM VOIDED, new form completed ☐FORM VOIDED, **no** new form
				☐No Change ☐FORM VOIDED, new form completed ☐FORM VOIDED, **no** new form
				☐No Change ☐FORM VOIDED, new form completed ☐FORM VOIDED, **no** new form
				☐No Change ☐FORM VOIDED, new form completed ☐FORM VOIDED, **no** new form
				☐No Change ☐FORM VOIDED, new form completed ☐FORM VOIDED, **no** new form

SEND FORM WITH PATIENT/RESIDENT WHEN TRANSFERRED OR DISCHARGED

DO NOT ALTER THIS FORM!

SAMPLE

On-Scene Physician Form

This EMS service would like to thank you for your effort and assistance. Please be advised that the EMS Professionals are operating under strict protocols and guidelines established by their medical director and the State of North Carolina. As a licensed physician, you may assume medical care of the patient. In order to do so, you will need to:

1. Receive approval to assume the patient's medical care from the EMS Agencies Online Medical Control physician.
2. Show proper identification including current North Carolina Medical Board Registration/ Licensure.
3. Accompany the patient to the hospital.
4. Carry out any interventions that do not conform to the EMS Agencies Protocols. EMS personnel cannot perform any interventions or administer medications that are not included in their protocols.
5. Sign all orders on the EMS Patient Care Report.
6. Assume all medico-legal responsibility for all patient care activities until the patient's care is transferred to another physician at the destination hospital.
7. Complete the "Assumption of Medical Care" section of this form below.

Assumption of Medical Care

I, _____, MD; License #: _____,
(Please Print your Name Here)

have assumed authority and responsibility for the medical care and patient management for

_____.
(Insert Patient's Name Here)

I understand that I must accompany the patient to the Emergency Department. I further understand that all EMS personnel must follow North Carolina EMS Rules and Regulations as well as local EMS System protocols.

_____, MD Date: _____/_____/_____Time: _____AM/PM
(Physician Signature Here)

_____, EMS _____ Witness
(EMS Lead Crew Member Signature Here) **(Witness Signature Here)**

North Carolina Medical Board
Approved Medications for Credentialed EMS Personnel

EMS personnel at any level who administer medications must do so within an EMS system that provides medical oversight. Personnel must follow written treatment protocols and must complete appropriate medical education. All EMS System protocols and policies must be reviewed and approved by the Medical Director of the Office of EMS.

Medications	FR	MR	EMT	EMT-I	EMT-P
ACE inhibitors					X
Acetaminophen		X	X	X	X
Adenosine					X
Aminophylline					X
Amiodarone					X
Antibiotics					X
Anti-emetic preparations					X
Aspirin			X	X	X
Atropine		X[4]	X[4]	X[4]	X
Barbituates					X
Benzodiazepine preparations					X
Beta agonist preparations			X[2]	X	X
Beta blockers					X
Bretylium					X
Calcium channel blockers					X
Calcium chloride/gluconate					X
Charcoal			X	X	X
Clonidine					X
Clopidogrel					X
CroFab (Crotalidae Polyvalent Immune Fab)					X[8]
Crystalloid solutions				X	X
Cyanide poisoning antidote kit					X
Digoxin					X
Diphenhydramine			X[3]	X	X
Dobutamine					X
Dopamine					X
Droperidol					X
Epinephrine		X[1]	X[1]	X	X
Etomidate					X
Flumazenil					X
Furosemide					X
Glucagon				X	X
Glucose solutions				X	X
Haloperidol					X
Heparin (unfractionated and low molecular weight)				X	X
Histamine 2 blockers				X	X
Hydroxocobalamin					X
Immunizations				X[6]	X[6]
Insulin					X
Ipratropium				X	X
Isoproterenol					X
Ketamine					X[7]
Lidocaine					X
Magnesium sulfate					X

Last revision: December 1, 2014
Previous revisions 12/2014, 10/2014, 04/2014, 07/2013, 02/2013, 08/2012, 03/2012; 01/2009; 10/2008; 11/2007; 5/2006; 06/2005; 12/2004.

Medications	FR	MR	EMT	EMT-I	EMT-P
Mannitol					X
Methylene blue					X
Milrinone					X
N-acetylcysteine					X
Narcotic analgesics					X
Narcotic antagonists	X[10]	X[9]	X[9]	X	X
Nasal spray decongestant			X	X	X
Nesiritide					X
Nitroglycerin			X[2]	X	X
Nitroprusside sodium					X
Nitrous oxide					X
Non-prescription medications			X	X	X
Non-steroidal anti-inflammatory			X	X	X
Norepinephrine					X
Octreotide					X
Oxygen		X[5]	X[5]	X[5]	X[5]
Oxytocin					X
Paralytic agents					X[7]
Phenothiazine preparations					X
Phenylephrine					X
Phenytoin preparations					X
Plasma protein fraction					X
Platelet g-II/IIIa inhibitors					X
Potassium chloride					X
Pralidoxime		X[4]	X[4]	X[4]	X
Procainamide					X
Procaine					X
Proparacaine					X
Propofol					X[8]
Proton pump inhibitors					X
Sodium bicarbonate					X
Steroid preparations					X
Thiamine				X	X
Thrombolytic agents					X
Topical hemostatic agents	X	X	X	X	X
Total Parenteral Nutrition					X
Tranexamic Acid (TXA)					X[11]
Tuberculosis skin test				X[6]	X[6]
Valprocic acid					X
Vasopressin				X	X
Whole blood and components					X
Ziprasidone					X

[1] MR and EMT use of epinephrine is limited to the treatment anaphylaxis and may be administered only by auto injector, unless approved by EMS System Medical Director and OEMS.
[2] EMT use of beta-agonists and nitroglycerine is limited to patients who currently are prescribed the medication. EMTs may administer these medications from EMS supplies. EMT use of beta-agonists may be through any inhaled method of medication administration.
[3] EMT administration of diphenhydramine is limited to the oral route.
[4] As a component of preparedness for domestic terrorism, EMS personnel, public safety officers, and other first responders recognized by the EMS system, may carry, self-administer, or administer to a patient atropine and/or pralidoxime, based on written protocols and medical direction. All personnel except for EMT-Ps must administer these medications by an auto injector.
[5] Administration of oxygen does not require medical direction.
[6] Administration of immunizations and TB skin tests are not limited to public health initiatives.
[7] Can only be used as induction agent for RSI or for post intubation sedation.

[8] Can only be used for interfacility transport where infusion has already been started at transferring facility. **EMS units cannot carry Propofol or CroFab. This medication must be provided by the transferring hospital.**

[9] MR & EMT's administration of Naloxone is limited to the intra-nasal (IN) route.

[10] First Responder agencies, to include law enforcement are allowed to administer Naloxone with the following requirements:

a. They must administer the Naloxone under the medical oversight of the County EMS Medical Director, and be incorporated into the respective EMS System in which they are administering the Naloxone.
b. They must receive appropriate training and continuing education as approved by the County EMS Medical Director.
c. The Naloxone must be administered as part of a protocol and procedure approved by the County EMS Medical Director, and the NC Office of EMS.
d. All administration of Naloxone must be reviewed by the EMS Peer Review/Quality Management Committee of the EMS System, which functions under the supervision of the local County EMS Medical Director.

[11] For an EMS System to use Tranexamic Acid (TXA), they must submit for approval by the OEMS State Medical Director a signed letter from any Trauma Centers that would be the recipient of the patient that the destination Trauma Center agrees with its use and will give the 2nd required dose of Tranexamic Acid (TXA).

North Carolina Medical Board
Approved Skills for Credentialed EMS Personnel

EMS personnel performing these skills must do so within an EMS system. Personnel must follow written treatment protocols and must complete appropriate medical education. All EMS System protocols and policies must be reviewed and approved by the Medical Director of the Office of EMS.

Skills	LEO	EMD	MR	EMT	EMT-I	EMT-P
12-Lead ECG acquisition & transmission				X	X	X
12-Lead ECG interpretation						X
Airway-Blind Insertion Device				X[2]	X	X
Airway-CPAP					X	X
Airway-Cricothyrotomy-Needle						X
Airway-Cricothyrotomy-Surgical						X
Airway-Intubation					X	X
Airway-Rapid sequence induction						X
Airway-Suction			X	X	X	X
Airway-Tracheostomy tube change					X	X
Arterial Access-Blood Draw						X
Arterial Line maintenance						X
Capnography (waveform)						X
Carbon Monoxide Measurement (non-invasive)			X	X	X	X
Cardiac Pacing						X
Cardiopulmonary Resuscitation	X		X	X	X	X
Cardioversion						X
Carotid Massage						X
Central Venous Pressure line maintenance						X
Chest Compression-External Device					X	X
Chest Decompression-Needle						X
Chest Tube Maintenance						X
Defibrillation-Automated	X		X	X	X	X
Defibrillation-Manual						X
Epidural Catheter maintenance						X
Gastric Intubation						X
Glucose Measurement			X	X	X	X
Intra-Ventricular Catheter maintenance						X
Intubation Confirmation-Capnometry (color)					X	X
Intubation Confirmation-Esophageal Bulb					X	X
Medication Administration	X[3]		X[3]	X[3]	X[3]	X[3]
Orthostatic Blood Pressure			X	X	X	X
Oxygen Administration	X		X	X	X	X
Patient Assessment			X	X	X	X
Pulse Oximetry			X	X	X	X
Reperfusion Checklist			X	X	X	X
Respirator Operation				X	X	X
Restraints			X	X	X	X
Spinal Immobilization			X	X	X	X
Splinting			X	X	X	X
Stroke Screen			X	X	X	X
Swan-Ganz Catheter maintenance						X
Thermometer (oral & rectal with low temperature capability)			X	X	X	X
Urinary Catheterization						X

Skills	LEO	EMD	MR	EMT	EMT-I	EMT-P
Venous Access-Blood Draw					X	X
Venous Access-Existing catheters						X
Venous Access-Femoral Line						X
Venous Access-Intraosseous						X
Venous Access-Peripheral					X	X
Ventilator Operation						X
Wound Care			X	X	X	X
Pre-arrival instructions to callers		X[1]				
Determine and dispatch appropriate EMS system resources		X[1]				

[1] All EMD skills must be performed in EMS systems with medical oversight and written EMD protocols.

[2] EMTs using blind insertion airway devices must be functioning in EMS systems with medical direction and written treatment protocols.

[3] EMS personnel at any level who administer medications must do so within an EMS system that provides medical oversight. Personnel must follow written treatment protocols and must complete appropriate medical education. All EMS System protocols and policies must be reviewed and approved by the Medical Director of the Office of EMS. The approved medication list is found at the beginning of this document. The administration of oxygen does not require medical direction.

Patient Instructions

UNIVERSAL INSTRUCTIONS:

• YOU HAVE NOT RECEIVED A COMPLETE MEDICAL EVALUATION. SEE A PHYSICIAN AS SOON AS POSSIBLE.

• IF AT ANY TIME AFTER YOU HAVE TAKEN ANY MEDICATION, YOU HAVE TROUBLE BREATHING, START WHEEZING, GET HIVES OR A RASH, OR HAVE ANY UNEXPECTED REACTION, CALL 911 IMMEDIATELY.

• IF YOUR SYMPTOMS WORSEN AT ANY TIME, YOU SHOULD SEE YOUR DOCTOR, GO TO THE EMERGENCY DEPARTMENT OR CALL 911.

ABDOMINAL PAIN:

- Abdominal pain is also called belly pain. Many illnesses can cause abdominal pain and it is very difficult for EMS to identify the cause.
- Take your temperature every 4 hours.

Call or see a physician, go to the emergency department, or call 911 immediately if:

- Your pain gets worse or is now only in 1 area
- You vomit (throw up) blood or find blood in your bowel movement
- You become dizzy or faint
- Your abdomen becomes distended or swollen
- You have a temperature over 100° F
- You have trouble passing urine
- You have trouble breathing

BACK PAIN:

- Apply heat to the painful area to help relieve pain. You may use a warm heating pad, whirlpool bath, or warm, moist towels for 10 to 20 minutes every hour.
- Stay in bed as much as possible the first 24 hours.
- Begin normal activities when you can do them without causing pain.
- When picking things up, bend at the hips and knees. Never bend from the waist only.

Call or see a physician, go to the emergency department, or call 911 immediately if:

- You have shooting pains into your buttocks, groin, legs, or arms or the pain increases.
- You have trouble urinating or lose control of your stools or urine.
- You have numbness or weakness in your legs, feet, arms, or hands.

FEVER:

- Always take medications as directed. Tylenol and Ibuprofen can be taken at the same time.
- If you are taking antibiotics, take them until they are gone, not until you are feeling better.
- Drink extra liquids (1 glass of water, soft drink or gatorade per hour of fever for an adult)
- If the temperature is above 103° F, it can be brought down by a sponge bath with room temperature water. Do not use cold water, a fan, or an alcohol bath.
- Temperature should be taken every 4 hours .

Call or see a physician, go to the emergency department, or call 911 immediately if:

- Temperature is greater than 101° F for 24 hours
- A child becomes less active or alert.
- The Temperature does not come down with Acetaminophen (Tylenol) or Ibuprofen with the appropriate dose.

HEAD INJURY:

- Immediately after a blow to the head, nausea, and vomiting may occur.
- Individuals who have sustained a head injury must be checked, and if necessary awakened, every 2 hours for the first 24 hours.
- Ice may be placed on the injured area to decrease pain and swelling.
- Only drink clear liquids such as juices, soft drinks, or water the first 12 hours after injury..
- Acetaminophen (Tylenol) or Ibuprofen only may be used for pain.

Call or see a physician, go to the emergency department, or call 911 immediately if:

- The injured person has persistent vomiting, is not able to be awakened, has trouble walking or using an arm or leg, has a seizure, develops unequal pupils, has a clear or bloody fluid coming from the ears or nose, or has strange behavior.

INSECT BITE/STING:

- A bite or sting typically is a red lump which may have a hole in the center. You may have pain, swelling and a rash. Severe stings may cause a headache and an upset stomach (vomiting).
- Some individuals will have an allergic reaction to a bite or sting. Difficulty breathing or chest pain is an emergency requiring medical care.
- Elevation of the injured area and ice (applied to the area 10 to 20 minutes each hour) will decrease pain and swelling.
- Diphenhydramine (Benadryl) may be used as directed to control itching and hives.

Call or see a physician, go to the emergency department, or call 911 immediately if:

- You develop any chest pain or difficulty breathing.
- The area becomes red, warm, tender, and swollen beyond the area of the bite or sting.
- You develop a temperature above 101° F.

RESPIRATORY DISTRESS:

- Respiratory Distress is also known as shortness of breath or difficulty breathing.
- Causes of Respiratory Distress include reactions to pollen, dust, animals, molds, foods, drugs, infections, smoke, and respiratory conditions such as Asthma and COPD. If possible avoid any causes which produce respiratory distress.
- If you have seen a physician for this problem, take all medication's as directed.

Call or see a physician, go to the emergency department, or call 911 immediately if:

- Temperature is greater than 101° F.
- The cough, wheezing, or breathing difficulty becomes worse or does not improve even when taking medications.
- You have Chest Pain.
- Sputum (spit) changes from clear to yellow, green, grey, or becomes bloody.
- You are not able to perform normal activities.

EXTREMITY INJURY:

- Extremity Injuries may consist of cuts, scrapes, bruises, sprains, or broken bones (fractures).
- Apply ice on the injury for 15 to 20 minutes each hour for the first 1 to 2 days.
- Elevate the extremity above the heart as possible for the first 48 hours to decrease pain and swelling.
- Use the extremity as pain allows.

Call or see a physician, go to the emergency department, or call 911 immediately if:

- Temperature is greater than 101° F.
- The bruising, swelling, or pain gets worse despite the treatment listed above.
- Any problems listed on the **Wound Care instructions** are noted.
- You are unable to move the extremity or if numbness or tingling is noted.
- You are not improved in 24 to 48 hours or you are not normal in 7 to 10 days.

VOMITING/DIARRHEA:

- Vomiting (throwing up) can be caused by many things. It is common in children, but should be watched closely.
- Diarrhea is most often caused by either a food reaction or infection.
- Dehydration is the most serious problem associated with vomiting or diarrhea.
- Drink clear liquids such as water, apple juice, soft drinks, or gatorade for the first 12 hours or until things improve. Adults should drink 8 to 12 glasses of fluids per day with diarrhea. Children should drink 1 cup of fluid for each loose bowel movement.

Call or see a physician, go to the emergency department, or call 911 immediately if:

- Temperature is greater than 101° F.
- Vomiting or Diarrhea lasts longer than 24 hours, gets worse, or blood is noted.
- You cannot keep fluids down or no urination **is** noted in 8 hours.

WOUND CARE:

- Wounds include cuts, scrapes, bites, abrasions, or puncture wounds.
- If the wound begins to bleed, apply pressure over the wound with a clean bandage and elevate the wound above the heart for 5 to 10 minutes.
- Unless instructed otherwise, clean the wound twice daily with soapy water, and keep the wound dry. It is safe to take a shower but do not place the wound in bath or dish water.
- See a physician for a tetanus shot if it has been 10 years or more since your last one.

Call or see a physician, go to the emergency department, or call 911 immediately if:

- See the **Extremity Injury instructions**.
- Temperature is greater than 101° F.
- Bruising, swelling, or pain gets worse or bleeding is not controlled as directed above.
- Any signs of infection, such as redness, drainage of yellow fluid or pus, red streaks extending from the wound, or a bad smell is noted.

Evaluating for the difficult airway

Between 1 – 3% of patients who require endotracheal intubation have airways that make intubation difficult. Recognizing those patients who may have a difficult airway allows the paramedic to proceed with caution and to keep as many options open as possible. It also allows the paramedic to prepare additional equipment (such as a cricothyrotomy kit) that may not ordinarily be part of a standard airway kit. The pneumonic LEMON is useful in evaluating patients for signs that may be consistent with a difficult airway and should raise the paramedic's index of suspicion.

Look externally

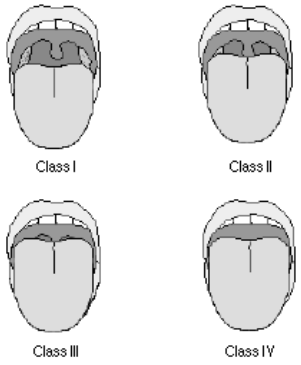
External indicators of either difficult intubation or difficult ventilation include: presence of a beard or moustache, abnormal facial shape, extreme cachexia, edentulous mouth, facial trauma, obesity, large front teeth or "buck teeth", high arching palate, receding mandible, short bull neck.

Evaluate 3-3-2 Rule

3 fingers between the patient's teeth (patient's mouth should open adequately to permit three fingers to be placed between the upper and lower teeth)
3 fingers between the tip of the jaw and the beginning of the neck (under the chin)
2 fingers between the thyroid notch and the floor of the mandible (top of the neck)

Mallampati

This scoring system is based on the work of Mallampati et al published in the Canadian Anaesthesia Society Journal in 1985. The system takes into account the anatomy of the mouth and the view of various anatomical structures when the patient opens his mouth as wide as possible. This test is performed with the patient in the sitting position, the head held in a neutral position, the mouth wide open, and the tongue protruding to the maximum. Inappropriate scoring may occur if the patient is in the supine position (instead of sitting), if the patient phonates or if the patient arches his or her tongue.



Class I (easy) = visualization of the soft palate, fauces, uvula, anterior and posterior pillars.
Class II = visualization of the soft palate, fauces and uvula.
Class III = visualization of the soft palate and the base of the uvula.
Class IV (difficult) = soft palate is not visible at all.

Obstruction?

Besides the obvious difficulty if the airway is obstructed with a foreign body, the paramedic should also consider other obstructers such as tumor, abscess, epiglottis, or expanding hematoma.

Neck Mobility

Ask the patient to place their chin on their chest and to tilt their head backward as far as possible. Obviously, this will not be possible in the immobilized trauma patient.

Burns Resources

Fluid Formula

Formula for Fluid Resuscitation of the Burn Patient (Also known as the Parkland Formula)

Pts Wt kg x %TBSA x 4.0cc LR infused over 24 hours with half given in the first 8 hours.

(For the equation, the abbreviations are: PW x TBSA x 4.0 cc)

EMS focuses on the care given during the 1st hour or several hours following the event. Thus the formula as adapted for EMS and the first 8 hours is:

PW x TBSA x 4.0 cc, divide by 2

to take this to the hourly rate, divide that solution by 8 and the equation becomes:

PW x TBSA x 4.0cc / 2 / 8 = total to be infused for each of the first 8 hours.

Another way to state the equation is to use:
PW x TBSA x 0.25cc = total to be infused for each hour of the first 8 hours.

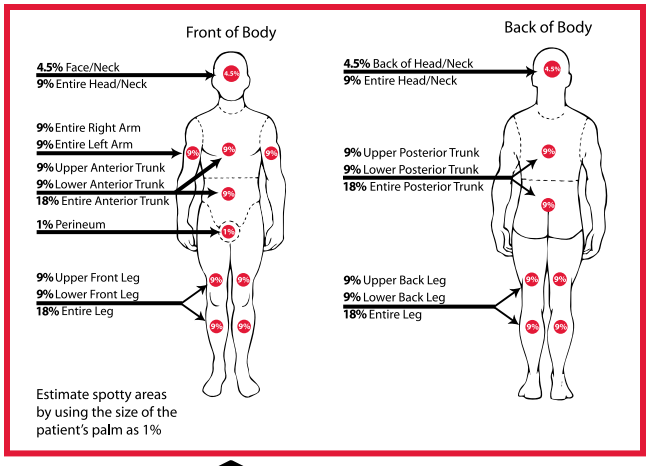
Example, 80 kg patient with 50 %TBSA x 0.25 cc = 1000 cc/hr.

Remember:
Patient's Weight in kg (2.2 lbs = 1.0 kg) example: 220 lbs adult = 100 kg

% TSBA = Rule of Nine Total Body Surface Area

Factor for the 1st hr. and each hr. for the 1st 8 hrs. = 0.25

(Reminder, if two IV's are running, divide total amount to be infused each hr. by 2)



Wt (kg)	% TBSA	Factor	/Hr for 1st 8 Hrs of Care	60 gtt set, gtt/ min	20 gtt set, gtt/ min	15 gtt set, gtt/ min	10 gtt set, gtt/ min
10	10	0.25	25	25	8.3	6.3	4.2
10	20	0.25	50	50	16.7	12.5	8.3
10	30	0.25	75	75	25.0	18.8	12.5
10	40	0.25	100	100	33.3	25.0	16.7
10	50	0.25	125	125	41.7	31.3	20.8
20	10	0.25	50	50	16.7	12.5	8.3
20	20	0.25	100	100	33.3	25.0	16.7
20	30	0.25	150	150	50.0	37.5	25.0
20	40	0.25	200	200	66.7	50.0	33.3
20	50	0.25	250	250	83.3	62.5	41.7
30	10	0.25	75	75	25.0	18.8	12.5
30	20	0.25	150	150	50.0	37.5	25.0
30	30	0.25	225	225	75.0	56.3	37.5
30	40	0.25	300	300	100.0	75.0	50.0
30	50	0.25	375	375	125.0	93.8	62.5
40	10	0.25	100	100	33.3	25.0	16.7
40	20	0.25	200	200	66.7	50.0	33.3
40	30	0.25	300	300	100.0	75.0	50.0
40	40	0.25	400	400	133.3	100.0	66.7
40	50	0.25	500	500	166.7	125.0	83.3
50	10	0.25	125	125	41.7	31.3	20.8
50	20	0.25	250	250	83.3	62.5	41.7
50	30	0.25	375	375	125.0	93.8	62.5
50	40	0.25	500	500	166.7	125.0	83.3
50	50	0.25	625	625	208.3	156.3	104.2
60	10	0.25	150	150	50.0	37.5	25.0
60	20	0.25	300	300	100.0	75.0	50.0
60	30	0.25	450	450	150.0	112.5	75.0
60	40	0.25	600	600	200.0	150.0	100.0
60	50	0.25	750	750	250.0	187.5	125.0
70	10	0.25	175	175	58.3	43.8	29.2
70	20	0.25	350	350	116.7	87.5	58.3
70	30	0.25	525	525	175.0	131.3	87.5
70	40	0.25	700	700	233.3	175.0	116.7
70	50	0.25	875	875	291.7	218.8	145.8
80	10	0.25	200	200	66.7	50.0	33.3
80	20	0.25	400	400	133.3	100.0	66.7
80	30	0.25	600	600	200.0	150.0	100.0
80	40	0.25	800	800	266.7	200.0	133.3
80	50	0.25	1000	1000	333.3	250.0	166.7
90	10	0.25	225	225	75.0	56.3	37.5
90	20	0.25	450	450	150.0	112.5	75.0
90	30	0.25	675	675	225.0	168.8	112.5
90	40	0.25	900	900	300.0	225.0	150.0
90	50	0.25	1125	1125	375.0	281.3	187.5
100	10	0.25	250	250	83.3	62.5	41.7
100	20	0.25	500	500	166.7	125.0	83.3
100	30	0.25	750	750	250.0	187.5	125.0
100	40	0.25	1000	1000	333.3	250.0	166.7
100	50	0.25	1250	1250	416.7	312.5	208.3

Critical (Red)

>15% TBSA 2nd/3rd Degree Burn
Burns with Multiple Trauma
Burns with definitive airway compromise
(When reasonable accessible, transport to a Burn Center)

Serious (Yellow)

5-15% TBSA 2nd/3rd Degree Burn
Suspected Inhalation injury or requiring intubation for airway stabilization
Hypotension
GCS < 14
(When reasonable accessible, transport to either a Level I Burn Center or a Trauma Center)

Minor (Green)

< 5% TBSA 2nd/3rd Degree Burn
No inhalation injury, Not Intubated, Normotensive
GCS>14
(Transport to the Local Hospital)

Los Angeles Prehospital Stroke Screen (LAPSS)

1. Patient Name: _____ (last name) _____ (first name)

2. Information/History from: [ ] Patient [ ] Family Member [ ] Other

_____ (name - if other than patient) _____ (phone)

3. Last known time patient was at baseline or deficit free and awake:

_____ (military time) _____ (date)

SCREENING CRITERIA

	Yes	Unknown	No
4. Age > 45	[ ]	[ ]	[ ]
5. History of seizures or epilepsy absent	[ ]	[ ]	[ ]
6. Symptom duration less than 24 hours	[ ]	[ ]	[ ]
7. At baseline, patient is not wheelchair bound or bedridden	[ ]	[ ]	[ ]
8. Blood glucose between 60 and 400	[ ]	[ ]	[ ]

9. Exam: **LOOK FOR OBVIOUS ASYMMETRY**

	Normal	Right	Left
Facial smile/grimace	[ ]	[ ] Droop	[ ] Droop
Hand grip	[ ]	[ ] Weak	[ ] Weak
		[ ] No grip	[ ] No grip
Arm strength	[ ]	[ ] Drifts dn	[ ] Drifts dn
		[ ] Falls fast	[ ] Falls fast

Based on exam, patient has only unilateral (not bilateral) weakness: [ ] **YES** [ ] **NO**

10. **Items 4, 5, 6, 7, 8, 9 all YES's (or unknown) --- LAPSS screening criteria met**:

[ ] **YES** [ ] **NO**

11. If LAPSS criteria for stroke are met, alert the receiving hospital of a possible stroke patient. If not, then return to the appropriate treatment protocol.

(Note: the patient may be experiencing a stroke even if the LAPSS criteria are not met.)

12. Time LAPSS Exam Performed: Military Time:_____

13. Form Completed by:_____

APPENDIX B.1: WCEMSS PEDIATRIC DRUG VOLUME QUICK CHART- DOSES BY VOLUME PAGE 1

1. Verify dose for appropriate age as per each individual protocol, and verify that the CONCENTRATION listed here is the drug concentration you currently have in service that you are about to administer.

2. Use the Broselow tape to estimate weight, and the WCEMSS Color Coded Drug List (Appendix B) to verify correct volume for weight range.

3. If all verifications are correct, and your partner agrees, administer the appropriate drug volume as per the chart below.

**** In this chart, a "!" indicates a maximum or minimum dosage or volume that may not correlate to weight ****

**** This reference may include minimal "rounding" of doses and/or volumes for weight ranges and drug safety ****

			Volume in ml to Administer by Approx Weight at Given Concentration								
		BROSELOW COLOR	GRAY	PINK	RED	PURPLE	YELLOW	WHITE	BLUE	ORANGE	GREEN
DRUG CONCENTRATION CURRENTLY IN SERVICE If Applicable/Available	DRUG NAME	Usual Dose: CHECK PROTOCOL	4.0 KG	6.5 KG	8.5 KG	10.5 KG	13 KG	17 KG	21 KG	27 KG	36 KG
160mg/5ml (= 32mg/ml)	**Acetaminophen**	15 mg/kg	2	3	4	5	6	8	10	12.5	17
12mg/4ml (= 3mg/ml)	**Adenosine 1st dose**	0.1 mg/kg	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.9	1.2
12mg/4ml (= 3mg/ml)	**Adenosine 2nd dose**	0.2 mg/kg	0.3	0.5	0.6	0.7	0.9	1.2	1.4	1.8	2.4
150mg/3ml (= 50mg/ml)	**Amiodarone**	5 mg/kg			0.85	1	1.3	1.7	2.1	2.7	3.6
0.1mg/ml (= 1mg/10ml)	**Atropine**	0.02 mg/kg	! 1 ml	1.3	1.7	2	2.6	3.4	4.2	5.4	7.2
100mg/ml (= 1g/10ml)	**Calcium Chloride**	20 mg/kg	0.8	1.3	1.7	2	2.6	3.4	4.2	5.4	7.2
*	**Defibrillation**	2-4 J/kg	8-16 J	13-26 J	17-34 J	21-42 J	26-52 J	34-68 J	42-84 J	54-108 J	72-144 J
*	**Dextrose 10%**	5 ml/kg	20	30	40	50	65	85	105	135	180
*	**Diazepam**	0.2 mg/kg									
50mg/ml	**Diphenhydramine**	1 mg/kg			0.17	0.2	0.25	0.35	0.4	0.6	0.7
400mg/250ml (= 1600mcg/ml)	**Dopamine *see drip**	2-20 mcg/kg/min	0.005-0.05	0.008-0.08	0.01-0.1	0.01-0.1	0.015-0.15	0.02-0.2	0.025-0.25	0.03-0.3	0.045-0.45
1mg/ml (30mg vial *CAUTION)	**EPI 1:1,000 IM**	0.01 mg/kg	0.04	0.065	0.085	0.1	0.13	0.17	0.21	0.27	0.36
1mg/10ml (0.1mg/ml)	**EPI 1:10,000 IV**	0.01 mg/kg	0.4	0.65	0.85	1	1.3	1.7	2.1	2.7	3.6
*see drug labels	**pedi Epi drip**	0.1-1 mcg/kg/min									
20mg/50ml (= 0.4mg/ml)	**Famotidine**	1 mg/kg	10	16	20	25	30	40	50	65	90

APPENDIX B.1: WCEMSS PEDIATRIC DRUG VOLUME QUICK CHART- DOSES BY VOLUME PAGE 2

1. Verify dose for appropriate age as per each individual protocol, and verify that the CONCENTRATION listed here is the drug concentration you currently have in service that you are about to administer.

2. Use the Broselow tape to estimate weight, and the WCEMSS Color Coded Drug List (Appendix B) to verify correct volume for weight range.

3. If all verifications are correct, and your partner agrees, administer the appropriate drug volume as per the chart below.

			Volume in ml to Administer by Approx Weight at Given Concentration								
		BROSELOW COLOR	GRAY	PINK	RED	PURPLE	YELLOW	WHITE	BLUE	ORANGE	GREEN
DRUG CONCENTRATION CURRENTLY IN SERVICE If Applicable/Available	DRUG NAME	Usual Dose: CHECK PROTOCOL	4.0 KG	6.5 KG	8.5 KG	10.5 KG	13 KG	17 KG	21 KG	27 KG	36 KG
50mcg/1ml	Fentanyl	2 mcg/kg	0.15	0.25	0.35	0.4	0.5	0.7	0.8	1.1	1.5
1mg/ml	Glucagon	0.1 mg/kg	0.4	0.65	0.85	1	1.3	1.7	2.1	2.7	3.6
100mg/5ml	Ibuprofen	10 mg/kg		3	4	5	6	8	10	13	18
30mg/ml	Ketorolac	0.5 mg/kg	0.05	0.1	0.15	0.17	0.2	0.3	0.35	0.45	0.6
20mg/ml	Lidocaine	1 mg/kg	0.2	0.3	0.4	0.5	0.65	0.85	1	1.35	1.8
5g/10ml (= 500mg/ml)	Magnesium Sulfate	40 mg/kg	0.3	0.5	0.7	0.8	1	1.4	1.7	2	3
4g/100ml (= 40mg/ml)	Magnesium Sulfate	40 mg/kg	4	6.5	8.5	10.5	13	17	21	27	36
125mg/2ml	Methylprednisolone	2 mg/kg	0.1	0.2	0.3	0.35	0.4	0.5	0.7	0.9	1.2
1 mg/ml	Midazolam	0.2 mg/kg	0.8	1.3	1.7	2	2.5	!2.5	!2.5	!2.5	!2.5
10mg/ml	Morphine	0.1 mg/kg	0.04	0.07	0.09	0.1	0.13	0.17	0.21	0.27	0.36
1 mg/ml	Naloxone	0.1 mg/kg	0.4	0.7	0.9	1	1.3	1.7	2.1	2.7	3.6
* see drug labels - 1mg/ml	Norepinephrine	0.1-2 mcg/kg/min									
2mg/ml	Ondansetron	0.2 mg/kg		0.7	0.9	1	1.3	1.7	2.1	2.7	3.6
*	Phenylephrine	5 mcg/kg									
*	Prednisone	2 mg/kg									
10mg/ml	Rocuronium	0.5 mg/kg			0.5	! 0.5	0.65	0.85	1	1.35	1.8
*	Saline Bolus	20 ml/kg	80	130	170	210	260	340	420	540	720
1 mEq/ml	Sodium Bicarbonate	1 mEq/kg	4	6.5	8.5	10.5	13	17	21	27	36

APPENDIX B.2: WCEMSS ADULT DRUG VOLUME QUICK CHART- DOSES BY VOLUME PAGE 3

1. Verify dose for adults as per each individual protocol, and verify that the CONCENTRATION listed here is the drug concentration you currently have in service that you are about to administer.

2. Estimate weight (weight in kg = weight in pounds/2.2), verify correct dose in kilograms for approximate weight.

3. If all verifications are correct, and your partner agrees, administer the appropriate drug volume as per the chart below.

**** In this chart, a "!" indicates a maximum or minimum dosage or volume that may not correlate to weight ****

**** This reference may include minimal "rounding" of doses and/or volumes for weight ranges and drug safety ****

		WEIGHT	Volume in ml to Administer by Approximate Weight at Given Concentration								
DRUG CONCENTRATION CURRENTLY IN SERVICE If Applicable/Available	**DRUG NAME**	**Usual Dose: CHECK PROTOCOL**	**40kg**	**50kg**	**60kg**	**70kg**	**80kg**	**90kg**	**100kg**	**110kg**	**120kg**
400mg/250ml (= 1600mcg/ml)	**Dopamine *see drip**	5-20 mcg/kg/min	**0.1-0.4**	**0.15-0.6**	**0.2-0.8**	**0.2-0.8**	**0.25-1**	**0.25-1**	**0.3-1.2**	**0.35-1.4**	**0.4-1.6**
50mcg/1ml	**Fentanyl**	1 mcg/kg	**0.8**	**1**	**1.2**	**1.4**	**1.6**	**1.8**	**! 2**	**! 2**	**! 2**
10mg/ml	**Morphine**	0.1 mg/kg	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**! 1**	**! 1**	**! 1**
10mg/ml	**Rocuronium**	1 mg/kg	**4**	**5**	**6**	**7**	**! 7**	**! 7**	**! 7**	**! 7**	**! 7**

Epinephrine Infusion

Adult Cardiac Arrest

Epinephrine Infusion

USE 10gtt/mL Macro Drip Set

Adult Cardiac Arrest

Dose	drips/min (Macro Drip)	Approximate Timing
To give 1mg approx every 4 minutes:	60	One Drip Every One second

***** DRIP PREPARATION *****

Mix 12mg (12mL) of Epi 1:1000 solution (high dose vial) in 250mL NS IV Bag
***** AND LABEL *****

Standardized Medication Delivery

Weight Conversion Table

(1 - 250) Pounds to Kilograms (0.5 - 113)

Pound	Kg	Pound	Kg	Pound	Kg	Pound	Kg	Pound	Kg	Pound	Kg	Pound	Kg	Pound	Kg	Pound	Kg	Pound	Kg
1	0.5	26	11.8	51	23.1	76	34.5	101	45.8	126	57.2	151	68.5	176	79.8	201	91.2	226	102.5
2	0.9	27	12.2	52	23.6	77	34.9	102	46.3	127	57.6	152	68.9	177	80.3	202	91.6	227	103.0
3	1.4	28	12.7	53	24.0	78	35.4	103	46.7	128	58.1	153	69.4	178	80.7	203	92.1	228	103.4
4	1.8	29	13.2	54	24.5	79	35.8	104	47.2	129	58.5	154	69.9	179	81.2	204	92.5	229	103.9
5	**2.3**	**30**	**13.6**	**55**	**24.9**	**80**	**36.3**	**105**	**47.6**	**130**	**59.0**	**155**	**70.3**	**180**	**81.6**	**205**	**93.0**	**230**	**104.3**
6	2.7	31	14.1	56	25.4	81	36.7	106	48.1	131	59.4	156	70.8	181	82.1	206	93.4	231	104.8
7	3.2	32	14.5	57	25.9	82	37.2	107	48.5	132	59.9	157	71.2	182	82.6	207	93.9	232	105.2
8	3.6	33	15.0	58	26.3	83	37.6	108	49.0	133	60.3	158	71.7	183	83.0	208	94.3	233	105.7
9	4.1	34	15.4	59	26.8	84	38.1	109	49.4	134	60.8	159	72.1	184	83.5	209	94.8	234	106.1
10	**4.5**	**35**	**15.9**	**60**	**27.2**	**85**	**38.6**	**110**	**49.9**	**135**	**61.2**	**160**	**72.6**	**185**	**83.9**	**210**	**95.3**	**235**	**106.6**
11	5.0	36	16.3	61	27.7	86	39.0	111	50.3	136	61.7	161	73.0	186	84.4	211	95.7	236	107.0
12	5.4	37	16.8	62	28.1	87	39.5	112	50.8	137	62.1	162	73.5	187	84.8	212	96.2	237	107.5
13	5.9	38	17.2	63	28.6	88	39.9	113	51.3	138	62.6	163	73.9	188	85.3	213	96.6	238	108.0
14	6.4	39	17.7	64	29.0	89	40.4	114	51.7	139	63.1	164	74.4	189	85.7	214	97.1	239	108.4
15	**6.8**	**40**	**18.1**	**65**	**29.5**	**90**	**40.8**	**115**	**52.2**	**140**	**63.5**	**165**	**74.8**	**190**	**86.2**	**215**	**97.5**	**240**	**108.9**
16	7.3	41	18.6	66	29.9	91	41.3	116	52.6	141	64.0	166	75.3	191	86.6	216	98.0	241	109.3
17	7.7	42	19.1	67	30.4	92	41.7	117	53.1	142	64.4	167	75.8	192	87.1	217	98.4	242	109.8
18	8.2	43	19.5	68	30.8	93	42.2	118	53.5	143	64.9	168	76.2	193	87.5	218	98.9	243	110.2
19	8.6	44	20.0	69	31.3	94	42.6	119	54.0	144	65.3	169	76.7	194	88.0	219	99.3	244	110.7
20	**9.1**	**45**	**20.4**	**70**	**31.8**	**95**	**43.1**	**120**	**54.4**	**145**	**65.8**	**170**	**77.1**	**195**	**88.5**	**220**	**99.8**	**245**	**111.1**
21	9.5	46	20.9	71	32.2	96	43.5	121	54.9	146	66.2	171	77.6	196	88.9	221	100.2	246	111.6
22	10.0	47	21.3	72	32.7	97	44.0	122	55.3	147	66.7	172	78.0	197	89.4	222	100.7	247	112.0
23	10.4	48	21.8	73	33.1	98	44.5	123	55.8	148	67.1	173	78.5	198	89.8	223	101.2	248	112.5
24	10.9	49	22.2	74	33.6	99	44.9	124	56.2	149	67.6	174	78.9	199	90.3	224	101.6	249	112.9
25	**11.3**	**50**	**22.7**	**75**	**34.0**	**100**	**45.4**	**125**	**56.7**	**150**	**68.0**	**175**	**79.4**	**200**	**90.7**	**225**	**102.1**	**250**	**113.4**

(251 - 375) Pounds to Kilograms (114 - 170)

Pound	Kg	Pound	Kg	Pound	Kg	Pound	Kg	Pound	Kg	Pound	Kg	Pound	Kg	Pound	Kg	Pound	Kg	Pound	Kg
251	113.9	264	119.8	276	125.2	289	131.1	301	136.5	314	142.4	326	147.9	339	153.8	351	159.2	364	165.1
252	114.3	**265**	**120.2**	277	125.6	**290**	**131.5**	302	137.0	**315**	**142.9**	327	148.3	**340**	**154.2**	352	159.7	**365**	**165.6**
253	114.8	266	120.7	278	126.1	291	132.0	303	137.4	316	143.3	328	148.8	341	154.7	353	160.1	366	166.0
254	115.2	267	121.1	279	126.6	292	132.5	304	137.9	317	143.8	329	149.2	342	155.1	354	160.6	367	166.5
255	**115.7**	268	121.6	**280**	**127.0**	293	132.9	**305**	**138.3**	318	144.2	**330**	**149.7**	343	155.6	**355**	**161.0**	368	166.9
256	116.1	269	122.0	281	127.5	294	133.4	306	138.8	319	144.7	331	150.1	344	156.0	356	161.5	369	167.4
257	116.6	**270**	**122.5**	282	127.9	**295**	**133.8**	307	139.3	**320**	**145.2**	332	150.6	**345**	**156.5**	357	161.9	**370**	**167.8**
258	117.0	271	122.9	283	128.4	296	134.3	308	139.7	321	145.6	333	151.0	346	156.9	358	162.4	371	168.3
259	117.5	272	123.4	284	128.8	297	134.7	309	140.2	322	146.1	334	151.5	347	157.4	359	162.8	372	168.7
260	**117.9**	273	123.8	**285**	**129.3**	298	135.2	**310**	**140.6**	323	146.5	**335**	**152.0**	348	157.9	**360**	**163.3**	373	169.2
261	118.4	274	124.3	286	129.7	299	135.6	311	141.1	324	147.0	336	152.4	349	158.3	361	163.7	374	169.6
262	118.8	**275**	**124.7**	287	130.2	**300**	**136.1**	312	141.5	**325**	**147.4**	337	152.9	**350**	**158.8**	362	164.2	**375**	**170.1**
263	119.3			288	130.6			313	142.0			338	153.3			363	164.7		

Drug List

Appendix C: Wake County EMS System Drug List

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Drug	Adult	Pediatric
Acetaminophen (Tylenol) **WCEMS System Protocol:** ✱ Fever/Infection control ✱ Pain Control ✱ Pediatric Seizure **Indications/Contraindications:** • Indicated for pain and fever control • Avoid in patients with severe liver disease	• General dose 500-1000 mg po	• **See Color Coded List** • 15 mg/kg po
Adenosine (Adenocard) **WCEMS System Protocol:** ✱ Tachycardia **Indications/Contraindications:** • For treatment or diagnosis of Supraventricular Tachycardia	• 12 mg IV push over 1-3 seconds. If no effect after 1-2 minutes, • Repeat with 12 mg IV push over 1-3 seconds. • Repeat once if necessary • use stopcock and 10 ml Normal Saline flush with each dose	• 0.1 mg/kg IV (Max 6 mg) push over 1-3 seconds. If no effect after 1-2 minutes, • Repeat with 0.2 mg/kg IV (Max 12 mg) push over 1-3 seconds. • use stopcock and 5 ml Normal Saline flush with each dose
Albuterol Beta-Agonist **WCEMS System Protocol:** ✱ Respiratory Distress **Indications/Contraindications:** • Beta-Agonist nebulized treatment for use in respiratory distress with bronchospasm	• 5 mg (3cc) in nebulizer continuously x 3 doses	• **See Color Coded List** • 5mg (3cc) in nebulizer continuously x 3 doses

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Drug List

Appendix C: Wake County EMS System Drug List

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Drug	Adult	Pediatric
Amiodarone (Cordarone) **WCEMS System Protocol:** ✱ Ventricular Fibrillation/VTach ✱ Wide Complex Tachycardia **Indications/Contraindications:** • Antiarrhythmic used in ventricular Fibrillation. • Avoid in patients with heart block or profound bradycardia.	V-fib / pulseless V-tach • 300 mg IV push • Repeat dose of 150 mg IV push for recurrent episodes V-tach with a pulse • 150 mg in over 10 min	V-fib / pulseless V-tach • 5 mg/kg IV push over 5 minutes for SVT • Use Wake County EMS Standardized Medication Delivery Chart V-tach with a pulse • 5 mg/kg IV push over 5 minutes • Avoid in Length Tape Color Pink
Aspirin **WCEMS System Indication:** ✱ Chest Pain and STEMI **Indications/Contraindications:** • An antiplatelet drug for use in cardiac chest pain	• 81 mg chewable (baby) Aspirin Give 4 tablets to equal usual adult dose.	∅
Atropine **WCEMS System Protocol:** ✱ Bradycardia ✱ WMD Nerve Agent **Indications/Contraindications:** • Anticholinergic drug used in bradycardias. • (For Endotracheal Tube use of this drug, double the dose) • In Organophosphate toxicity, large doses may be required (>10 mg)	Bradycardia • 0.5 - 1.0 mg IV every 3 – 5 minutes up to 3 mg. (If endotracheal -- max 6 mg) Organophosphate • 1-2 mg IM or IV otherwise as per medical control	Bradycardia • **See Color Coded List** Organophosphate • 0.02 mg/kg IV or IO otherwise as per medical control

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Drug	Adult	Pediatric
Atropine and Pralidoxime Auto-Injector **Nerve Agent Kit** **WCEMS System Protocol:** ✱ Nerve Agent-WMD **Indications/Contraindications:** • Antidote for Nerve Agents or Organophosphate Exposure	• One auto-injector then per medical authority on scene	• **See Color Coded List** • One auto-injector then as per medical authority on scene
Calcium Chloride **WCEMS System Protocol:** ✱ Dialysis-Renal Failure ✱ Pulseless Electrical Activity ✱ Overdose ✱ Crush **Indications/Contraindications:** • Indicated for severe hyperkalemia	• One gram IV/IO • Avoid use if pt is taking digoxin	• **See Color Coded List** • 20 mg/kg IV or IO slowly
Dextrose **WCEMS System Protocol:** ✱ Multiple **Indications/Contraindications:** • Use in unconscious or hypoglycemic states	• See protocols for dosing and administration • In general dextrose solutions may be titrated to effect	• **See Color Coded List** • See protocols for dosing • Repeat based on blood glucose results and mental status • Avoid D50 in patients less than 2 years old
Diltiazem (Cardizem) Calcium Channel Blocker **WCEMS System Protocol:** ✱ Narrow Complex Tachycardia **Indications/Contraindications:** • Calcium channel blocker used to treat narrow complex tachycardia	• See protocols for dosing • Contraindicated in Wide Complex Tachycardia Utilize current drug labeling for administration rate.	∅

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Drug List

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Drug	Adult	Pediatric
Diphenhydramine (Benadryl) **WCEMS System Protocol:** ✱ Allergic Reaction **Indications/Contraindications:** • Antihistamine for control of allergic reactions	• 50 mg IV/IO/IM/PO	• **See Color Coded List** • 1 mg/kg IV/IO/IM/PO • Avoid in infants < 3 mo
Dopamine **WCEMS System Protocol:** ✱ Multiple **Indications/Contraindications:** • A vasopressor used in shock or hypotensive states	• 5 - 20 micrograms/kg/min IV/IO titrated to BP systolic of 90 mmHg Utilize current drug labeling for administration rate.	• **See Color Coded List** • 2 - 20 micrograms/kg/min IV or IO, titrated to BP systolic appropriate for age
Droperidol **WCEMS System Protocol:** ✱ Vomiting ✱ Behavioral **Indications/Contraindications:** • Medication to assist with sedation of agitated patients	• 5-10 mg, see protocol for dosing • Also has anti-emetic properties	∅
Enalaprilat (Vasotec) **WCEMS System Protocol:** ✱ CHF/Pulmonary Edema **Indications/Contraindications:** • ACE-Inhibitor used to reduce afterload in patients with pulmonary edema	• 1.25 mg IV – avoid when systolic blood pressure <120 mmHg	∅

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Drug List

Appendix C: Wake County EMS System Drug List

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Drug	Adult	Pediatric
Epinephrine 1:1,000 **WCEMS System Protocol:** ✱ Allergic Reaction ✱ Respiratory Distress **Indications/Contraindications:** • Vasopressor used in allergic reactions or anaphylaxis	• 0.3 mg IM **Nebulized Epinephrine** • 1 mg mixed with 2 ml of Normal Saline	• **See Color Coded List** • 0.01 mg/kg IM • (Max dose 0.3 mg) **Nebulized Epinephrine** 1 mg mixed with 2 ml of Normal Saline
Epinephrine 1:10,000 **WCEMS System Protocol:** ✱ Multiple **Indications/Contraindications:** • Vasopressor used in cardiac arrest and extreme respiratory distress	Cardiac Arrest • 1 mg IV/IO (Pulseless) • 1 mg/3-4 minutes infusion USE Wake County EMS System Standardized Medication Delivery Guide to infuse • Repeat every 3 - 5 minutes until response observed • (May be given by Endotracheal tube in double the IV dose) Allergic Reaction and severe Resp Distress • 0.1 mg IV/IO • Repeat every 3 - 5 minutes until response observed	• **See Color Coded List** • Repeat every 3 - 5 minutes until observe response • (May be given by Endotracheal tube in double the IV dose)
Etomidate (Amidate) **WCEMSS Protocol:** ✱ Induced Hypothermia **Indications/Contraindications:** • Sedative used in shivering patient being resuscitated from cardiac arrest	• Usual adult dose = 20 mg IV/IO	• Use Wake County EMS System Standardized Medication Delivery tables to administer: • 0.3 mg/kg IV/IO up to max dose of 20 mg • Age > 9 years only

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Drug	Adult	Pediatric
Famotidine (Pepcid) Histamine-2 Blocker **WCEMS System Protocol:** ✱ Allergic Reaction **Indications/Contraindications:** • Medication used to control stomach acid and to assist in severe allergic reactions	• 20-40 mg IV or 20-40 mg PO	• See protocols
Fentanyl (Sublimaze) Narcotic Analgesic **WCEMS System Protocol:** ✱ Pain Control ✱ When sedation required **Indications/Contraindications:** • Narcotic pain relief • Sedation	• See protocols for dosing	• **See Color Coded List**
Glucagon **WCEMS System Protocol:** ✱ Multiple **Indications/Contraindications:** • Drug acting to release glucose into blood stream by glycogen breakdown • Use in patients with no IV access • May be useful in Ca-Channel blocker or Beta-blocker Overdose	• 1 - 2 mg IM for hypoglycemia • Follow up blood glucose determination in 15 minutes, if < 60 repeat dose. • See protocols for dosing	• **See Color Coded List** • 0.1 mg/kg IM • Follow up blood glucose determination in 15 minutes

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Drug	Adult	Pediatric
Glucose Oral **Glucose Solutions** **WCEMS System Protocol:** ✱ Multiple **Indications/Contraindications:** • Use in conscious hypoglycemic states	• One tube or packet • Repeat based on blood glucose results	• **See Color Coded List** • One Tube or packet • Repeat based on blood glucose result • Consider patient's age and ability to swallow and follow directions
Haloperidol **(Haldol)** **Phenothiazine** **WCEMS System Protocol:** ✱ Behavioral **Indications/Contraindications:** • Medication to assist with sedation of agitated patients	• See protocol for dosing	Ø
Ipratropium **(Atrovent)** **WCEMS System Protocol:** ✱ Respiratory Distress **Indications/Contraindications:** • Anticholinergic used in addition to albuterol to assist in patients with asthma and COPD	Generally: • 2 puffs per dose of MDI (18 mcg/spray) --- OR --- • 500 mcg per nebulizer treatment • See protocols for WCEMS dosing	• Use in Pediatrics as a combined Therapy with a Beta Agonist such as Albuterol • 2 puffs per dose of MDI (18 mcg/spray) --- OR --- 500 mcg per nebulizer treatment

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Drug	Adult	Pediatric
Ketorolac (Toradol) Non-steroidal Anti-inflammatory Drug **WCEMS System Protocol:** ✱ Pain Control **Indications/Contraindications:** • Avoid NSAIDs in women who are pregnant • Not to be used in patients who may need surgical intervention (i.e. fractures.)	• See protocols for dosing	• See protocols for dosing
Levalbuterol (Xopenex) Beta-Agonist (Only for use if patient is prescribed and patient provides or if patient physician provides this medication, as it is not carried on WCEMS units.) **WCEMS System Protocol:** ✱ Respiratory Distress **Indications/Contraindications:** • Beta-Agonist nebulized treatment for use in respiratory distress with bronchospasm	• 0.63-1.25 mg (3cc) in nebulizer continuously x 3 doses	• **Dose as per patient's prescription**
Lidocaine **WCEMS System Protocol:** ✱ Intraosseous Procedure ✱ Cardiac protocols as substitute for Amiodarone **Indications/Contraindications:** • Injectable anaesthetic used to reduce pain associated with pressure infucion of fluids into marrow space	Intraosseous Anaesthetic: • 5-10 mg slow IO push through IO device, do not flush for at least 30 seconds • See protocols for cardiac dosing	Intraosseous Anaesthetic: • 0.2 mg/kg IO to a maximum of 10 mg through IO device

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Drug	Adult	Pediatric
Magnesium Sulfate **WCEMS System Protocol:** ✱ Respiratory Distress ✱ Obstetrical Emergencies **Indications/Contraindications:** • Elemental electrolyte used to treat eclampsia during the third trimester of pregnancy and perinatal period. • A smooth muscle relaxor used in refractory respiratory distress	See protocols. Generally: • 2 grams for respiratory distress • 4 grams for obstetrical emergencies • See protocols for dosing specifics; see Drug Volume Chart for current concentrations. Utilize current drug labeling for administration rate.	• 40 mg/kg slow IV over 20 minutes (Max 2 gms) • See protocols
Methylprednisolone (Solu-medrol) Steroid Preparation **WCEMS System Protocol:** ✱ Allergic Reaction ✱ Respiratory Distress **Indications/Contraindications:** • Steroid used in respiratory distress to reverse inflammatory and allergic reactions	• 125 mg IV	• **See Color Coded List** • 2 mg/kg IV (Max 125 mg)
Metoclopramide (Reglan) Anti-emetic **WCEMS System Protocol:** ✱ Abdominal Pain ✱ Vomiting and Diarrhea **Indications/Contraindications:** • Anti-Emetic used to control Nausea and/or Vomiting • Reglan may worsen diarrhea and is generally not indicated when diarrhea has occurred	• 5-10 mg IM or IV • (If ≥ 60 yrs. old dose 5 mg IV)	∅

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Drug	Adult	Pediatric
Metoprolol **Beta-Blockers** **WCEMSS Protocol:** ✱ Persistent Ventricular Fibrillation/Pulseless V-tach **Indications/Contraindications:** • Medication used for the control of VF/VT in cardiac arrest patients not responding to electrical therapy or other antiarrhythmics	5 mg IV over 1 minute. Repeat in 5 minutes up to 15 mg	∅
Midazolam **(Versed)** **Benzodiazepine** **WCEMSS Protocol:** ✱ Multiple **Indications/Contraindications:** • Benzodiazepine used to control seizures and for sedation • Quick acting Benzodiazepine • Use with caution if BP < 120	• See protocols for dosing	• See protocols for dosing
Morphine Sulfate **Narcotic Analgesic** **WCEMS System Protocol:** ✱ Pain Control **Indications/Contraindications:** • Opioid pain relief, mild Antianxiety • Avoid use if BP < 110	• See protocols for dosing • If the patient has suffered burns that require transport to the burn center, maximum total dose is 50 mg	• **See Color Coded List** • 0.1 mg/kg IV or IO

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Drug	Adult	Pediatric
Naloxone (Narcan) Narcotic Antagonoist **WCEMS System Protocol:** ✱ Multiple **Indications/Contraindications:** • Narcotic antagonist	• 0.5 - 2 mg IV/IO bolus titrated to patient's respiratory response • May be given IM or IN if unable to establish IV in a known or suspected narcotic overdose • The lowest dose required for patient to protect the airway should be utilized • Dosing may be repeated at 5 minute intervals without maximum as necessary to maintain protection of the airway	• **See Color Coded List** • 0.1 mg/kg IV or IO (Max 2 mg) • May be given IM or IN if unable to establish IV or IO in a known or suspected narcotic overdose • The lowest dose required for patient to protect their airway should be utilized • Dosing may be repeated at 5 minute intervals without maximum as necessary to miaintain protection of the airway
Norepinephrine **WCEMS System Protocol:** ✱ Post resuscitation ✱ Multiple **Indications/Contraindications:** • A vasopressor used in shock or hypotensive states	• 1 - 10 microgram/min IV/IO titrated to BP systolic of 90 mmHg • See protocols for dosing	• **See Color Coded List** • 0.1 - 2 micrograms/kg/min IV or IO, titrated to BP systolic appropriate for age
Normal Saline Crystalloid Solutions **WCEMS Protocol:** ✱ Multiple **Indications/Contraindications:** • The IV fluid of choice for access or volume infusion	• KVO for IV access • Bolus in 250-500 ml for cardiac • Bolus in 500 to 1000 ml amounts for volume depleted states • Bolus in 1000 ml amount for burns or electrical injuries. See Burn Protocol or Reference Materials for IV rates.	• **See Color Coded List** • KVO for IV or IO access • Bolus in 20ml/kg for volume (May be repeated x 3) See Burn Protocol or Reference Materials for IV rates.
Nitroglycerine **WCEMS System Protocol:** ✱ Chest Pain and STEMI **Indications/Contraindications:** • Vasodilator used in anginal syndromes, CHF and Hypertension.	Chest Pain • 1 tablet 0.4 mg SL every 5 minutes until pain free or 3 doses • Avoid if SBP ever < 100, contact medical control before administration • See protocols for dosing	• ∅

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This drug list has been altered from the original 2013 NCCEP Drug List by the Wake County EMS System Medical Director

Drug List

Appendix C: Wake County EMS System Drug List

This document serves as a reference for medications included in the WCEMSS Protocols. Utilize the individual protocols and standardized medication guides for all dosing.

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Drug	Adult	Pediatric
Ondansetron (Zofran) Anti-emetic **WCEMS System Protocol:** ✱ Abdominal Pain ✱ Vomiting and Diarrhea **Indications/Contraindications:** • Anti-Emetic used to control Nausea and/or Vomiting	• See protocols for dosing	• 0.15 mg/kg (Max 4 mg) • for age >3 months
Oxygen **WCEMS System Protocol:** ✱ Multiple **Indications/Contraindications:** • Useful in any condition with cardiac work load, respiratory distress, or illness or injury resulting in altered ventilation and/or perfusion. • Required for pre-oxygenation whenever possible prior to intubation.	• Titrate to pulse ox no more than 99%, do not hyperoxygenate • 1-4 liters/min via nasal cannula • 6-15 liters/min via NRB mask • 10-15 liters via BVM (sufficient to allow resevoir bag to completely refill between ventilations)	• Titrate to pulse ox no more than 99%, do not hyperoxygenate • 1-4 liters/min via nasal cannula • 6-15 liters/min via NRB mask • 10-15 liters via BVM (sufficient to allow resevoir bag to completely refill between ventilations)
Oxymetazoline (Afrin or Otrivin) Nasal Decongestant Spray **WCEMS System Protocol:** ✱ 31-Epistaxis **Indications/Contraindications:** • Vasoconstrictor used with nasal intubation and epistaxis • Relative Contraindication is significant hypertension	2 sprays in affected nostril	• **See Color Coded List** • 1-2 sprays in affected nostril

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Appendix C: Wake County EMS System Drug List

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Drug	Adult	Pediatric
Prednisone **Steroid Preparation** **WCEMS System Protocol:** ✱ Allergic Reaction ✱ Respiratory Distress **Indications/Contraindications:** • Steroid used in respiratory distress to reverse inflammatory and allergic reactions	• 60mg po • Consider ability to swallow	• **See Color Coded List** • 2 mg/kg (max 60 mg) • Consider ability to swallow
Procainamide **(Pronestyl)** **WCEMS System Protocol:** ✱ Persistent Ventricular Fibrillation/Pulseless V-tach **Indications/Contraindications:** • Anti-dysrhythmic medication. Monitor for QRS widening and hypotension	Utilize current drug labeling for administration rate.	∅
Rocuronium **Paralytic Agent** **WCEMS System Protocol:** ✱ Induced Hypothermia ✱ Post Resuscitation **Indications/Contraindications:** • Paralytic • Avoid in patients with chronic neuromuscular disease (e.g., muscular dystrophy).	• 1 mg/kg IV/IO to a max of 70 mg. If inadequate relaxation after 5 minutes, may repeat dose.	• **See protocols-** administer 0.5 mg/kg IV per dosing guide • **Avoid in Broselow Pink** and below

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Appendix C: Wake County EMS System Drug List

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Drug	Adult	Pediatric
Sodium Bicarbonate **WCEMS System Protocol:** ✱ Multiple **Indications/Contraindications:** • A buffer used in acidosis to increase the pH in Cardiac Arrest or Tricyclic Overdose, also provides sodium to combat sodium channel blockade	• See protocol for dosing	• **See Color Coded List** • See protocols for dosing
Tetracaine **Opthalmic Drops** **WCEMS System Protocol:** ✱ Eye Injury / Complaint **Indications/Contraindications:** • Anesthetic • No more than 2 dosings per eye (including prior to EMS)	• 2 drops affected eye(s), see protocol	∅
Vasopressin **(Pitressin)** **WCEMS System Protocol:** ✱ Asystole/PEA ✱ VF/VT **Indications/Contraindications:** • Medication used in addition to epinephrine in the setting of ventricular fibrillation/pulseless ventricular tachycardia	• 40 units IV X 1	∅

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