The primary purpose of this document is to provide a guide to clinical issues that are specific to CARS and would not have been taught in any EMT class. It is not a replacement for TJEMS guidelines or CARS protocols, and contradictions or out-of-date information should be reported to CRAT.

Although there is discussion here of priorities in certain medical emergencies, be aware that EMS calls rarely go according to plan. A provider’s ability to intuit the best way (or at least a passable way) to provide care is irreplaceable.

Topics:
1. ABCs
2. Adding ALS to a call
3. Calling Medical Control
4. Refusals
5. Communicable Diseases
6. Altered Mental Status
7. Special AMS cases
8. Strokes
9. Myocardial Infarction (MI)
10. Pediatric Patients
11. Pregnancy
12. Labor
13. Multi-System Trauma
14. Special Trauma Cases
15. Toxicology
16. Uncomplicated Delivery

Selected TJEMS Guidelines:

17. Universal Patient Care
18. UVA Adult Trauma Alert Criteria
19. Spinal Motion Restrictions
20. Sexual Assault
21. CPR and Manual Defibrillation
22. Emergency Custody Orders

Also, there was no place for this, but don’t take blood pressures on patient’s arms that have functioning dialysis fistulas or are on the same side as where the patient had a mastectomy.
ABCs

Of all possible medical emergencies, ABC issues are the ones that will kill a patient in seconds. Few patients you see will have ABC issues, but failure on your part to recognize and intervene for the ones that do will result in death.

Airway

Airway patency includes having both an unobstructed airway and the ability to protect that airway. Airway is not patent and requires intervention if:

- Patient cannot talk or is unresponsive
- Patient is vomiting without moving
- Patient makes gurgling or snoring noises while breathing

Airway Control:

1. Position patient. Supine is easiest to control. If patient is actively vomiting, consider lateral recumbent or sitting straight up.
2. Suction if there are excessive secretions
3. Manually open airway with head-tilt-chin-lift or jaw-thrust
4. If patient is somewhat responsive, attempt NPA first
   a. If patient is completely unresponsive, attempt OPA first
5. Place patient on end-tidal capnography monitoring
6. Monitor patient constantly to ensure airway patency:
   a. Chest rise and fall
   b. Auscultate lung sounds
   c. End-tidal CO2 shows regular waveform
   d. Pulse-oximetry (1-2 minute delay)
   e. Skin color (3-5 minute delay)
ABCs

**Breathing**
Airway issues and breathing issues are two different things. Difficulty breathing is recognized by:

- Patient breathing too fast (>30) when at rest
- Patient breathing too slow (<10)
- Wheezing, crackling, whistling, or diminished lung sounds
- Patient is hypoxic  
  - O2 Saturation <90%
  - Poor skin color (blue, gray, pale)
- Patient has “increased work of breathing.”  
  - Accessory muscle use
  - Tripod positioning

**Treatment**

- Sit patient upright if comfortable and bag-mask ventilation is not necessary. Most patients breathe easiest this way.
- Oxygen administration. Avoid over-oxygenation. Target is 90-92% O2 saturation (higher on room air is fine). Read TJEMS Guideline Oxygen Administration for details.
- Bag-mask ventilation to maintain adequate respiratory rate. In cases where patient is breathing too fast, this is very difficult and should be handled by more experienced providers.

**Circulation**
“Shock”, hypotension, and hypoperfusion mean roughly the same thing: the patient’s organs aren’t receiving enough blood. Possible signs include:

- Active bleeding
- Poor skin color (pale, gray) and temperature, diaphoresis
- No palpable radial pulses
- Hypotension

**Treatment for shock:**

- Stop bleeding
- High-flow oxygen
- Lie patient supine
- Aggressively warm patient unless febrile
  - One of the trauma service’s most common complaints about EMS is that we bring in patients that are too cold.
  - Raise the ambulance temperature to the max setting and use emergency foil blankets and regular blankets
Adding ALS to a call

The most important thing ALS provides to a call is experience and knowledge. In complex cases where you’re uncertain how to proceed, ALS can be an invaluable resource. However, it is critical to know that, for the vast majority of dangerous medical conditions, there is little that an ALS provider can physically do for a patient that a BLS provider cannot.

For that reason, your goal after adding ALS to a call should always be continuing to move the patient towards the hospital and meeting ALS en route. Add ALS if you think you need them, and add them early so they have time to reach you, but don’t sit and wait for them to arrive.

That being said, here is a selection from the ALS scope of practice so you have a better idea of what precisely an ALS provider can do for your patient:

- Procedures to better manage difficult airways such as intubation, paralytics, and surgical cricothyrotomy
- Procedures to help patients having trouble breathing such as nebulizer treatments, anti-allergic reaction drugs, CPAP, and chest decompression
- Procedures to fix cardiac arrhythmias such as chemical and electric cardioversion and pacing.
- Medications to increase blood pressures such as fluid resuscitation and pressors
- A variety of medications to do things such as raise low blood sugars, counter opioid overdoses, stop seizures, and calm confused combative patients
- Medications to help reduce patient’s pain

Some of the following selected conditions list priorities of care, and “calling ALS” will not be specified. You can, and perhaps should, always add ALS to these calls unless you have a pressing reason not to.
Calling Medical Control

Medical Control = Speaking to a physician. The phrase “UVA MedComm” usually refers to the UVA Medical Communication Center which is whom we call to give prehospital reports, don’t get confused. When calling UVA, you can ask to speak to any physician or an attending (the boss) physician. When calling MJH, there are only attending physicians.

We contact medical control for a variety of reasons:

- Reading 12-lead ECGs (If ***MEETS ST ELEVATION MI CRITERIA*** warning appears on print-out, you must ask for an attending. For all other purposes including non-ST Elevation ECGs, just ask for a physician.)

- Clarification on issues not covered by protocol (such as how much aspirin to give a patient that already took some of their own)

- For advice concerning medical issues (such as patient wants to take their own meds but you’re not sure if they should)

- To help convince sick patients that they need to go to the hospital

- To begin the process for an ECO

- To better explain risks of refusal to patients

The physician you ask to speak to may not know that much about EMS. It is your responsibility to explain to the physician what you want from them. The physician may not know the difference between BLS and ALS, and may order you to do things outside of your scope of practice. Just because a doctor tells you to do a certain procedure or give a certain medication does not mean that you can do it. It is your responsibility to know what is within your scope.

When contacting medical control for any reason, be sure to document it as a Procedure on ImageTrend, and write the physician’s name in the narrative.
**Refusals**

**18 and older:** Patient must be awake and oriented to person, place, and situation. Patient must understand these things:

1. “We’re not doctors”: Impossible to say that patient is “fine” in the field.
2. Risks of not going to the hospital; explain potential specific risks related to complaint: “you could be having a heart attack which could kill you” or “your sugar could plummet again."
3. Patient should seek evaluation from their primary care physician.
4. Refusal now doesn’t mean they can’t call back.

If you’re uncertain of a refusal, or highly concerned about the patient’s condition, have patient speak with a physician to try to convince them to go.

**Special Cases**

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>X &lt; 4</td>
<td>Patient’s parents must speak with a physician to be advised of risks of refusal.</td>
</tr>
<tr>
<td>4 ≤ X &lt; 14</td>
<td>Patient cannot refuse for themselves. “Acting guardians” such as teachers can refuse for them, but attempt should be made to reach parent. If uncertain, contact 107 or battalion chief.</td>
</tr>
<tr>
<td>14 ≤ X &lt; 18</td>
<td>Every attempt should be made to reach parent. If parent cannot be reached, patient can refuse for themselves.</td>
</tr>
<tr>
<td>&lt;18 and pregnant</td>
<td>Patient can refuse for themselves if complaint is pregnancy related.</td>
</tr>
</tbody>
</table>

**Physician Assistance**

If there are any concerns about a patient wanting to refuse, providers can and should ask the patient to speak to a physician at UVA or MJH to help in either convincing the patient to go to the hospital or fully explaining the risks of refusal. This

**Emergency Custody Orders (ECOs)**

An ECO is a method of legally forcing a patient to go to the hospital.

Review the attached ECO guidelines
### Communicable Diseases

Many communicable diseases require special PPE and washing techniques which are laid out here. Remember that any of us getting exposed to these diseases is probably fine, we’re healthy. The concern is passing these diseases on to the next patient.

If you’re exposed to something you don’t know how to handle, contact your captain or duty officer who will contact the Designated Infection Control Officer. To learn more, read the Infection Control Plan on carsrescue.org/downloads.

Many patients will have communicable diseases that you will never know about. As soon as you leave a patient room, remove your gloves and use alcohol gel. Wash your hands and equipment between every patient.

### MRSA and VRE

Methicillin Resistant Staphylococcus Aureus and Vancomycin-resistant Enterococcus. These are common antibiotic resistant bacterial infections. If your patient has these, you need to wear gloves and gowns before touching them. Be sure to report to the hospital that the patient has one of these infections. Clean equipment thoroughly with Sani-Cloth wipes (usually purple or red containers). Wash hands thoroughly with soap and water.

### CDiff

Clostridium Difficile is another common bacteria that causes a miserable GI infection whose primary symptom is 24/7 diarrhea. Wear gloves and gowns, and report known infections to the hospital. Cdiff cannot be killed by alcohol-based cleaners like hand-gel and Sani-cloth wipes. Equipment must be cleaned with bleach wipes and hands must be washed thoroughly with soap and water.

### The Flu, Mono, and Meningitis

If your patient is coughing and snooting everywhere, wear a mask plus gown and gloves. Put a mask on the patient as well if they can tolerate it.

If your patient has horrible neck pain in addition to severe flu-like symptoms, they may have meningitis. Mask, gown, gloves. Nothing else special, just know that meningitis is highly infectious and dangerous.

### Airway Control

Wear a mask with a face shield.
Altered Mental Status

Altered mental status (AMS) is a term used by healthcare providers to indicate that the patient is acting abnormally from the way they normally behave or their “baseline mentation.”

Changing mentation can be a natural process, or the result of a long disease process. However, for EMS providers it is one of the most concerning symptoms a patient can display. Every single emergency medical issue eventually leads to AMS if left untreated, often shortly before death.

AMS also often goes hand in hand with ABC issues since the patient’s brain may be functioning so poorly that it affects systemic function.

AEIOU-TIPS
Common causes of AMS seen in the field:
- Alcohol
- Epilepsy (seizures)
- Insulin (diabetic emergencies)
- Oxygenation (hypoxia)
- Uremia (the buildup of urea, often due to kidney damage)
- Trauma
- Infection
- Pharmacy (Drugs)
- Strokes

Gathering a thorough history to help the hospital with their differential diagnosis is particularly important since the patient may not be able to speak for themselves. In addition to your OPQRST - SAMPLE history, find out the following:

1. The last time the patient was seen behaving normally
2. The patient’s baseline mentation
3. Specific examples of how the patient is behaving differently from their baseline. Avoid writing “patient altered” or “patient behaving strangely”.
4. Contact information for someone familiar with the patient and the current situation (or bring the person with you)
Diabetic Emergencies
Normal blood glucose range is 80-120mg/dL. Any patient with AMS should have their blood glucose checked as hypoglycemia can perfectly mimic other causes of AMS such as strokes and seizures. Untreated hypoglycemia can cause brain damage and death in hours. BLS treatment for hypoglycemia is sugary drinks, snacks, and oral glucose. Make certain that the patient is not too confused to swallow foods.

Hyperglycemia can also cause AMS. Look up “diabetic ketoacidosis (DKA)” if you’d like to know more. Untreated hyperglycemia causes damage to every organ system, and DKA will cause death as well, although this process takes days rather than hours. BLS treatment for hyperglycemia and DKA is transport to the hospital.

Opioid Overdoses
Opioid abuse is common in Charlottesville. Signs of opioid overdose is unresponsiveness, “pinpoint” pupils (small and unresponsive to light), and respiratory arrest, which is ultimately what kills the patient. ALS providers can give Naloxone (Narcan) as a fast-acting antidote to opioid overdoses. BLS providers can also give Naloxone, but only if they have taken the TJEMS medication class. A common mistake for both ALS and BLS providers is to rush to give Naloxone first. Make sure that the patient’s airway is patent and their respirations are being assisted by BVM before giving Naloxone.

Sepsis
Sepsis is a word for multi-system infection. Septic patients represent the most common extremely sick patients often dispatched at the BLS level. Although sepsis is dangerous more over the course of hours than minutes, septic patients become increasingly difficult to treat every minute they don’t receive care. The priorities for suspected septic patients are ABCs then rapid transport to the hospital.

SIRS Sepsis Criteria
Common symptoms of sepsis are AMS and what is known as the Systemic Inflammatory Response Syndrome (SIRS) Sepsis Criteria.

To meet SIRS criteria, patients must have a source of original infection such as pneumonia, a urinary tract infection (UTI), catheter, or infected surgical site as well as 2 of the following 4 things:

1. Tachycardia
2. Hyper- OR hypo- thermia (elderly patients tend to be hypothermic while septic)
3. Tachypnea or etCO2 < 32mmHg
4. High white blood cell count (this can’t be measured in the field)

If the patient meets SIRS criteria and is also hypotensive, this is called septic shock and is a very late stage of sepsis. Transport rapidly.
Special AMS Cases

Seizures
Seizures can display as full-body convulsions, partial-body convulsions, or “absence” seizures where the patient stares blankly and is unresponsive. Although these can be scary for the provider and bystanders to witness, they’re generally not harmful to the patient except in a few cases. Ensure that the patient is in a safe, comfortable location (such as wrapped in a Reeves stretcher on the cot), monitor ABCs, and do not place anything in the patient’s mouth (No oropharyngeal airways! Brief suctioning with either a hard-tip or soft suction catheter is okay).

Seizures After Head Trauma
Seizures after trauma to the head indicate significant brain damage. It’s important to determine if a patient started seizing first, causing trauma, or if the patient was involved in a traumatic incident, then started seizing after. Treat ABC issues and transport rapidly.

Status Epilepticus
Patients having seizures lasting more than 5 minutes or multiple seizures without full recovery in between are said to be “in status epilepticus” or “in status.” These patients will start to experience many issues such as brain damage, toxin buildup, and hypoglycemia. Treat ABC issues and transport rapidly.

“Postictal” Period
After a seizure, patients often experience a gradual return of mentation over 5-20 minutes called the “postictal period.” Other healthcare providers will often ask you if the patient “appeared to be postictal.”
Strokes

A stroke is when a part of your brain doesn’t receive enough oxygen either due to a clot (ischemic stroke) or a bleed (hemorrhagic stroke) resulting in brain tissue death. Strokes are time-sensitive emergencies. On identifying possible stroke, priorities are ABCs, hospital notification, then rapid extrication and transport.

Possible symptoms:
- Sudden onset Altered Mental Status
- Unilateral deficits (one-sided weakness/numbness)
- Aphasia (inability to express or understand speech)
- Neurological symptoms (headache, dizziness, vertigo, vision changes)

Critical Assessment Information
In addition to your OPQRST-SAMPLE history, these are the critical pieces of information that the hospital will want to know during a “stroke alert”:
1. Time last seen normal by another person
2. Blood glucose
3. Is patient on any anticoagulants/blood thinners
4. Cell phone number of person that first identified possible stroke or a family member (Even if they are “following behind you”)

Cincinnati Stroke Scale
This is a test for unilateral deficits. It’s important to note that both UVA and MJH may not know what a Cincinnati Stroke Scale is as they do not use it. Instead of reporting a “Positive Cincinnati,” you should report the patient’s symptoms.
1. Have patient smile showing teeth. Look for facial droop. Ask family if patient’s face looks normal.
3. Have patient close their eyes and hold their arms straight out in front of them, palms up. Have them hold this for 10 seconds. If patient cannot hold up one arm OR can’t keep one palm face up, they are “positive for pronator drift”. If they can’t hold up both arms, this is “inconclusive”.

11
Strokes

Stroke VAN Test
This is a test for the symptoms of a large brain blood vessel occlusion, a devastating but treatable type of stroke. This test is unique to UVA. MJH will not understand a report of “Van Positive.” Report the results of the test instead. You can watch a great video of the test at <strokevan.com>.

1. Do Cincinnati first. If patient displays pronator drift, Stroke VAN is indicated.
2. Vision
   a. Have patient look at your nose. Hold up fingers in front of patient’s face in four visual quadrants: upper left, upper right, lower left, lower right. Ask them if they can name how many fingers you’re holding up.
3. Aphasia
   a. Expressive
      i. Show patient two objects and ask the patient to name them.
   b. Receptive
      i. Can the patient follow commands?
4. Neglect
   a. Primary neglect - touch one arm and ask patient to say which arm it is.
   b. Relative neglect - touch both arms and ask patient if it feels the same on both sides.
5. If patient is unable to perform any of these tasks correctly, report them as “VAN positive.”
Myocardial Infarction (MI)

A myocardial infarction (MI) or “heart attack” is when a clot forms in the coronary arteries causing tissue death. MIs are time-sensitive emergencies. After recognizing a possible MI, priorities are ABCs, aspirin, 12-lead ECG, hospital notification, then rapid transport.

Aspirin Administration:
Early aspirin administration has been shown to drastically improve outcomes in MIs, and is within the BLS scope of practice. Aspirin is generally safe to give to patients as long as they are not allergic to it and are capable of chewing, so be sure to ask.

Many patients have “aspirin intolerance” and not a true allergy. If a patient tells you they’re allergic to aspirin, ask them what happens when they take it. If it gives them stomach pain, but not hives, swelling, or difficulty breathing, tell them that taking aspirin for suspected heart attacks is critical, and ask them to take it anyways.

If you’re uncertain whether or not to give aspirin, or how much aspirin to give (if they took some already), contact medical control

324mg of chewable baby aspirin is indicated ASAP if:
   a. Patient is complaining of chest pain, discomfort, pressure, or tightness
   b. A 12-lead ECG indicates ***MEETS ST ELEVATION MI CRITERIA***

BLS 12-lead ECGs:
A 12-lead ECG is indicated if patient has:
   a. Chest pain, discomfort, pressure, or tightness
   b. “Heartburn”, “acid reflux” or epigastric pain
   c. Complaints of “heart racing”
   d. Complaints of “heart beating too slowly”
   e. Heart rate > 150, <50, or >120 and irregular
   f. Syncopal/Presyncope episode
   g. Weakness/Lightheadedness/Dizziness
   h. New onset stroke symptoms
   i. Difficulty breathing
   j. Recent illicit drug use

In the presence of any of these indications, you must acquire an ECG within 10 minutes of patient contact. Generally, the quickest way to do this is in the house, and you should give aspirin, talk to the patient, and get vitals simultaneously to save time.

If the LifePak monitor detects an MI or STEMI, it will not show any warning on the screen. On the print-out, it will read ***MEETS ST ELEVATION MI CRITERIA***. All 12-leads show **Unconfirmed**
before the interpretation regardless of what the monitor reads and you should ignore that. Any additional interpretation preceded by *** should be transmitted to a physician.

Myocardial Infarction

When to Transmit:
BLS providers cannot interpret ECGs. You must transmit the ECG to the hospital if:

1. The patient “appears sick”, or has severe chest pain, increased work of breathing, abnormal heart rate or rhythm, diaphoresis, or hypotension, regardless of what the monitor says. There are many cardiac issues a physician can read from an ECG other than MIs.
2. The patient doesn’t appear sick, but the monitor shows ***MEETS ST ELEVATION MI CRITERIA***.
3. The patient wants to refuse transport after an ECG is performed AND meets 1 or 2.

Attending Physician Interpretation:
After transmitting an ECG, you must call that facility and ask an attending physician to interpret it. This must be done within 10 minutes of taking the ECG.

If transmitting to UVA, be sure to ask for an attending if it’s a ***MEETS ST ELEVATION MI CRITERIA***. Otherwise, ask for any physician. MJH only has attendings.

Call UVA MedComm or the MJH charge nurse and give your prehospital report, then ask to speak to a physician “for ECG interpretation”. They’ll put you on hold for a minute. When the physician comes on the phone, introduce yourself, give your prehospital report, then tell them you cannot interpret ECGs and ask them to read it. Document the physician’s name.

What to do with the printout:
Whether you transmitted the ECG or not, it’s important for that ECG to become a part of the patient’s chart, even if it’s “normal.”

a. At UVA, take a yellow “ECG form” from the EMS room, tape your printout to it, put a patient’s label on it, and put it in the patient’s chart
b. At MJH, use the copier behind the charge nurse’s desk to make a copy of the ECG, put a patient’s label on it, and put it in the patient’s chart OR upload the ECG from the Lifepak 15 to Imagetrend so it is included in your PPCR
Pediatric Patients

Pediatric patients are harder to assess than adult patients since they can’t tell you what’s wrong. The primary assessment for pediatric patients consists of 3 parts:

1. Appearance
   a. Muscle Tone
   b. Irritability
   c. Consolability
   d. Eye contact
   e. Crying

2. Breathing
   a. Noisy breathing
   b. Sternal retractions
   c. Accessory muscle use
   d. Nasal flaring
   e. “Seesaw” breathing (abdomen and chest alternate rising)

3. Circulation
   a. Pallor
   b. Cyanosis
   c. Mottling

Airway Management
Infants (<1yo) have enormous tongues and tiny airways unsupported by cricoid cartilage. Unlike with adult patients, if you tilt an infant’s head too far back, you’ll crimp off their airway. If you don’t tilt their head back far enough, their airway won’t open. Placing a towel under the infant’s shoulders helps their airway open naturally. The adjustable NPAs in the PALS kit are also helpful. Most importantly, avoid overventilating. Use the smallest BVM (100mL) in the PALS kit and provide tiny puffs of air. If you’re having difficulty getting chest rise, adjust your airway position or fix your seal before squeezing the bag harder.

Also be careful to select a mask size that does not press on the infant’s eyes. Pressing on the infant’s eyes triggers a vagal response causing the infant’s heart rate and blood pressure to drop.

Breathing Assessment
Unlike adults, infants and toddlers having extreme difficulty breathing will not show it in their facial expression. To assess whether the patient is having increased work of breathing, it is critical to remove clothing to look at the patient’s bare chest and abdomen.

Treatment for Shock
Shock treatment for pediatric patients is not drastically different than for adults. However, pediatric patients will maintain normal blood pressures for longer than adults in the case of serious illness or injury, but will then rapidly deteriorate, meaning that even stable pediatric patients should be hurried to the hospital if serious illness or injury is suspected.

Pediatric patients also become cold instantly - they cannot shiver or vasoconstrict like adults to conserve body heat. Aggressive warming of sick pediatric patients is critical, except in cases where they are febrile.
## Pregnancy

Caring for a pregnant patient is not significantly different from caring for any other patient. Be aware that if the patient has a pregnancy-related complaint you may be asked to take the patient straight to the Labor and Delivery floor. If you do not know where that is, ask the charge nurse to send someone with you.

Life-threatening pregnancy issues include severe bleeding and eclampsia. There is little that can be done for these patients in the field. Priorities are ABC’s and rapid transport.

### Positioning the patient

1. Due to the weight of the baby pressing on the aorta, it’s dangerous for the mother to lie flat on her back. The mother should sit up or lie on her side. Avoid backboarding when possible. If necessary, prop up the board enough to shift the mother’s stomach to the side. Monitor for hypotension.
2. If mother is in labor, placing her head towards the foot of the cot will provide more room in the ambulance if baby starts to crown.

### Patient Assessment - Pregnancy

If the patient’s complaint is unrelated to the pregnancy, there’s no need to say anything beyond that the patient is pregnant. For pregnancy-related complaints, here’s what the hospital will want to know:

1. How far along is the pregnancy
2. Patient’s GPA*
3. Has the patient been receiving prenatal care
4. Any complications with this or previous pregnancies

*GPA: Gravida, Para, Abortus

Knowing the patient’s GPA helps the hospital assess how long labor will be and whether or not there will be complications.

1. Gravida: How many times the patient has been pregnant
2. Para: How many pregnancies reached viable gestational age, including stillbirths
3. Abortus: Miscarriages and abortions

Although this is usually stated as “G2P1A0,” it’s fine to just say, “The patient has been pregnant twice and given birth once.” No need to get fancy.
Labor

Water breaking and contractions are signs of labor. If the patient is in labor, check for crowning. If the baby is crowning, delivery is imminent and the baby should be delivered before transporting.

If the baby is premature (<37 weeks), there are known complications, or the patient has been told she must deliver in a hospital for any reason, but delivery is imminent, add ALS as well as the Newborn Emergency Transport Team (NETS).

Any patient with a known complicated delivery in labor should go to UVA since MJH does not have a NICU or pediatric surgeons. If the patient is insistent on going to MJH, call MJH and ask a physician if it’s okay.

Review the attached Uncomplicated Delivery instructions

Patient Assessment - Labor
Here’s what the hospital wants to know:
1. All of the pregnancy assessment questions
2. When did the patient’s water break, and what color is the fluid (should be clear and odorless, if not, it’s a bad sign)
3. How far apart are the contractions from the start of one contraction to the start of the next (close approximation is fine)
4. Is the baby crowning?

Neonatal Resuscitation
Resuscitation of a pulseless newborn is different other patients. Very roughly:
1. If newborn patient’s pulse <60bpm or apneic:
2. For 1st minute: Dry patient briskly with towel. Warm aggressively. If still bradycardic or apneic:
3. For 2nd minute: Assist ventilations with BVM, 1 breath every 3 seconds. If still bradycardic or apneic:
4. Begin CPR. 3 compressions to 1 breath. Each compression AND breath should be ~120bpm.
Multi-System Trauma

Multi-system trauma is when the patient has major external and presumed internal injuries. Priorities are your crew’s safety, the patient’s safety, ABCs, early hospital notification, then immobilization of injuries to prevent further harm.

UVA uses a Trauma Alert system to mobilize additional resources such as trauma surgeons and operating rooms. For a patient meeting trauma alert criteria, this system should be activated by notifying UVA as soon as criteria is noticed, even if things such as vital signs are missing. Remember you can always call again to provide more information.

The UVA trauma alert criteria are attached. You don’t need to memorize the whole thing, nor do you necessarily need to separate Alpha and Beta criteria. However, you should be familiar with the criteria enough to identify common ones, and you must be able to calculate a GCS. GCS and Trauma alert criteria are different for pediatric patients.

UVA vs. MJH
Martha Jefferson hospital is not a trauma center. Any patient with significant injuries after trauma such as an MVC or fall should be taken to UVA. MJH will not take any patient involved in an MVC over 45mph or a fall over 10ft regardless of injuries. If uncertain and patient insists on MJH, contact an MJH physician to see if they’re willing to accept the patient.

Motor Vehicle Accidents
Motor Vehicle Accidents are a common cause of traumatic injury. They are also potentially dangerous scenes for first responders. Driver training provides more information about maintaining scene safety.

Wear high-visibility gear.

This is the information the hospital will want to know in addition to SAMPLE questions:

Assessment of crash:
- Major/moderate/minor damage
- Approximate speed or speed limit
- Which face of the patient’s vehicle was impacted (Front, side, rear, roll-over)
- Which seat the patient was in
- “Intrusion” of damage into the passenger space
- Airbag deployment

Assessment of patient
- Loss of consciousness
- How the patient exited the vehicle (“Self-extricated”, extricated, thrown)
- Was the patient wearing their seatbelt (important for chest/abdomen assessment)
### Special Trauma Cases

<table>
<thead>
<tr>
<th>Terms</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Pressure</td>
<td>“Direct Pressure” does not mean press for a couple minutes. Press down or squeeze directly at site of bleeding using minimal dressing for the duration of transport.</td>
</tr>
<tr>
<td>Occlusive Dressing</td>
<td>We use Vaseline gauze as our occlusive dressing. The vaseline does not prevent the gauze from being taped to skin.</td>
</tr>
<tr>
<td>Hemostatic Gauze</td>
<td>We use Celox brand hemostatic gauze. This works for patients on blood thinners and patients with clotting disorders. It is applied by stuffing each individual square of gauze into the wound, leaving a “tail” sticking out for easy removal. Apply direct pressure on top of the gauze.</td>
</tr>
</tbody>
</table>

### Special Trauma Cases

<table>
<thead>
<tr>
<th>Burns</th>
<th>Cover with dry dressing.</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Sucking” chest wounds</td>
<td>Any puncture or laceration to the chest that is bubbling, or has air bubbles in it. Place 3-sided occlusive dressing</td>
</tr>
<tr>
<td>Neck wounds</td>
<td>Place 4-sided occlusive dressing</td>
</tr>
<tr>
<td>Extremity bleeds</td>
<td>Apply direct pressure. If still uncontrolled, or short on hands, apply tourniquet a few inches proximal to the site and tighten until bleeding stops.</td>
</tr>
<tr>
<td>Junctional and Torso bleeds</td>
<td>Apply direct pressure. If still uncontrolled, apply hemostatic gauze</td>
</tr>
<tr>
<td>Special Trauma Cases</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>------------------------------------------------------------------</td>
</tr>
<tr>
<td>Head lacerations</td>
<td>These can bleed a lot, and may be too shallow for hemostatic gauze to be effective. Expect to hold direct pressure for the duration of transport. “Trauma turbans,” where roller gauze is wrapped around the entirety of the patient’s head, used to be commonly taught in EMS classes. These do not provide enough pressure to stop bleeding and make it difficult for you and the hospital to assess the wound. Remove.</td>
</tr>
<tr>
<td>Impaled objects</td>
<td>Do not remove unless blocking airway. Can stabilize with a bulky dressing if needed. If actively bleeding from site apply pressure on either side of the object.</td>
</tr>
<tr>
<td>Evisceration</td>
<td>Cover with moist sterile dressing, then cover with plastic (use trauma dressing package) sealed on 4 sides. Do not push organs back into abdominal cavity.</td>
</tr>
<tr>
<td>Amputated body parts</td>
<td>Place part in damp gauze, then in a plastic bag. If available, place bag in another bag of ice/water mix.</td>
</tr>
</tbody>
</table>
**Toxicology**

Patients have a habit of getting strange chemicals into their body in all sorts of ways whether intentionally or unintentionally. This includes things like deliberate ingestion of household chemicals, splashed chemical in eyes, drug/medication abuse, and bites and stings from venomous animals.

You can be exposed to hazardous chemicals such as industrial fertilizers, cleaning agents, and contents of tanker trucks, and even the gases from some chemicals can harm or kill you. If you are suspicious of unexplained brightly colored liquids on scene or on the patient, or you encounter an NFPA Diamond (Google it if you don’t know what it is) with high numbers, consider adding the Haz-mat truck to the call and evacuate the scene.

**Blue Ridge Poison Center**

It’s impossible to memorize the effects of every chemical that exists. Fortunately, the Blue Ridge Poison Center (at UVA) is a phenomenal resource. In cases where you suspect toxin exposure, the Poison Center can tell you symptoms to look out for, worst case scenarios, and how to treat the patient. They will provide information on the toxin to both the UVA and MJH ED prior to your arrival. At UVA, they will also send a toxicologist to the ED if necessary. Their number is **434-924-0347** which can be called 24/7.

**Snake Bites**

Copperhead snakes are endemic to this area and can be found even in well-populated areas. A UVA student was bitten by a copperhead by the dumpster next to Kellogg dorm in 2016.

No wound sucking or tourniquets. EMS treatment of venomous bites is to keep the patient calm, supine, and warm to decrease distribution. Do not bring the snake to the ED. Take a picture.

Patients bitten by snakes may go to either hospital.

**CO Poisoning**

Carbon Monoxide is an odorless tasteless gas that is given off by burning fuels. Be wary of calls in older homes with gas heaters involving multiple patients complaining of dizziness, weakness, nausea, and confusion. Many homes in the area of CO detectors, but not all.

Treatment for suspected CO poisoning is high-flow oxygen. The pulse-oximeter will give a high O2 saturation for these patients. This is misleading since CO binds competitively to hemoglobin and the pulse-ox isn’t capable of telling the difference between CO and O2.

CARS has the only patient CO detector in the city, kept in the DO car. Every ACFR unit has one. If you’d like to see how it works, ask an ALS provider to show you.

**Cocaine Abuse**

Look up the symptoms if you’re interested. What’s important for EMS providers to know is that cocaine use causes rapid vasoconstriction of the coronary arteries leading to a heart attack even in healthy young patients. Do a 12-lead ECG.
Uncomplicated Delivery

Supplies: In classroom storage closet, there’s a big black case with a somewhat anatomically correct model for practicing baby births, complete with baby and placenta that looks like a delicious pizza. You will note that someone in the past actually cut the umbilical cord. DO NOT DO THIS. Use the cut that’s already there.

Once baby is crowning, it’s too late for transport. Make sure you have both OB kits and the Peds ALS kit nearby. Use stuff from OB kits plus many towels to make area somewhat clean. Baby will come out facing downwards, then will naturally rotate to the side. *If baby is not in this position, then you need to transport! Rearranging baby is difficult and dangerous in a prehospital setting.*

1. Wear sterile gloves
2. Tell patient to push only when contractions come and tell her to relax between contractions
3. Use towel to pinch very bottom of vagina shut to prevent the perineum from tearing
4. Use palm of other hand to apply gentle downward pressure on baby’s head to prevent explosive delivery
5. When a lot of baby’s head is clear (up to ear-ish, whenever you have some wiggle room) use two fingers to feel around baby’s neck to see if the umbilical cord is wrapped around. If it is, pull it over baby’s head. If it is difficult, then leave it and unwrap it after delivery.
6. When baby’s head is clear and shoulders are not visible (Don’t suction until after delivery). Baby’s head will rotate and should face sideways at this point.
7. Put palms on either side of baby’s head (over the ears) and put a little bit downward pressure in order to deliver the anterior shoulder, then as baby starts to come out, gently pull up to deliver posterior shoulder. Baby should rapidly deliver at this point. Do not drop the baby, it will be slippery.
8. Once baby is out, use suction bulb to suction first mouth, then nose.
9. Rub baby’s chest and back vigorously between your hands in a towel (like starting a fire)
10. Assess ABCs and initiate resuscitation if needed (be ready for this eventuality)
11. Place baby skin to skin on mom and continue to dry (must keep warm)
   a. Use the baby hat in PALS kit
12. Use both clamps to clamp the umbilical cord about a foot away from the baby (there is no immediate rush, it often takes 1-3 minutes for cord to stop pulsing)
13. Cut cord with scissors in OB kit
14. Don’t worry about placenta unless it delivers spontaneously or there is heavy vaginal bleeding.
   a. **HEAVY BLEEDING DDx/Rx**
      i. Vulvar/Vaginal laceration
         1. Apply pressure
      ii. Uterine bleeding
         1. Massage fundus vigorously (will be painful for mother)
            a. Best way to deal with atonic uterus with significant bleeding while rapidly transporting
         2. Deliver placenta (should massage fundus and then apply pressure above the pubic symphysis while pulling on cord to prevent uterine inversion)
         3. Can attempt to put baby to breast
15. **ONLY IF YOU CANNOT DO SKIN TO SKIN**
   a. Swaddle baby
      i. Put baby on square towel in diamond shape (Baby’s vertical axis along diagonal)
      ii. Fold one side over and tuck under baby VERY SNUGGLY. “A hair more snug than you’re comfortable with”. Baby just came from a very tight and enclosed space and will be happier when tightly enclosed
      iii. Fold bottom corner up, pushing baby’s legs into fetal position
      iv. Wrap other side around like a burrito

Written by Schuyler Wong. Reviewed/edited by Dr. Denise Young, Dr. Robert Rose, and Meghan Mavredes.
**General:**
Universal Patient Care/Initial Patient Care

<table>
<thead>
<tr>
<th>Guideline</th>
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</thead>
<tbody>
<tr>
<td>Reviewed: 2017</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>History</th>
<th>Physical</th>
<th>Differential Diagnoses</th>
</tr>
</thead>
</table>

**PEARL/S:**
- Complete vital signs should be taken every five (5) minutes for critical patients and every 15 minutes for non-critical patients.
- Complete vital signs include a minimum of heart/pulse rate, respiratory rate and blood pressure.
- In most cases on-scene times should be limited to ten (10) minutes.
- All patients that refuse transport must have documented vital signs and the refusal must be signed.

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Scene safety/personal protective equipment
Primary Assessment with initial interventions as needed
Supplemental O2 (see “Oxygen Administration Guideline”); capnography as indicated

**Obtain and document:**
- Vital signs
- SAMPLE history
- Pain assessment
- OPQRST (medical)
- DCAP-BTLS (trauma)
- Consider glucometry if indicated

Cardiac monitor/12-lead ECG as indicated
Appropriate guidelines/consider differential diagnoses. If no guidelines apply or condition is unknown consult medical command

Transport per guidelines
**UVA EMS Adult Trauma Alert Criteria**

Reference  
Reviewed: 2017  
Updated: 2017

<table>
<thead>
<tr>
<th><strong>Alpha Alerts ≥ 16 yrs</strong></th>
<th><strong>Beta Alerts ≥ 16 yrs</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>All pts intubated in the field</td>
<td>Intubated trauma transfers from OSH without ongoing respiratory distress</td>
</tr>
</tbody>
</table>
| All pts with ongoing respiratory compromise, even intubated trauma transfers from OSH. Any pt with need for emergent airway. For example:  
  - Sats < 90%  
  - ETCO2: >50  
  - Massive maxillofacial trauma  
  - Airway trauma / hemorrhage  
  - Stridor | Facial burns or singed facial hair w/ altered phonation |
| **Circulation:**  
  - Confirmed BP < 90  
  - Trauma transfers requiring blood to maintain VS | **Circulation:**  
  - Relative hypotension BP >90 but < 100  
  - BP <110 in ages > 65 y/o |
| **Disability:**  
  - GCS < 9 with trauma mechanism | **Disability:**  
  - GCS < 15 in pts w/ severe headache, N/V, or if pts taking oral anticoagulants, or Plavix  
  - GCS 9 – 13 or GCS 1 point below baseline (including GLF)  
  - New tetraplegia, hemiplegia, or persistent neurologic deficit  
  - Open or depressed skull fracture, GCS ≥ 9  
  - Known fracture to a vertebral body from outside imaging |
| **Mechanism:**  
  - GSW or stab wound to neck, chest or ABD  
  - GSW to extremities proximal to elbow or knee  
  - EM or Trauma Service MD discretion | **MOI**  
  - Stable, severe system injury (e.g. known SDH / EDH, severe pelvic fx, etc.)  
  - ≥ 2 proximal long bong fx  
  - Amputation proximal to wrist or ankle, or crushed / degloved, mangled extremity  
  - Advanced pregnancy; fundus above umbilicus with abd trauma  
  - Concomitant thermal / multisystem injury  
  - TBSA ≥ 40%  
  - EM MD discretion |
| If any of the above criteria are met **ALPHA Alert should be activated!** | |

*Other important information: IS PT ON ANTI-COAGULANTS?*
### Spinal Motion Restrictions

**Guideline**

Reviewed: 2017  
Updated: 2017

**Patient ≥ 16 years old**

<table>
<thead>
<tr>
<th>Full Motion Restrictions</th>
<th>Modified Motion Restrictions</th>
<th>Motion Restrictions NOT required</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-collar, spider straps, head blocks on a back board</td>
<td>C-collar only, transport in supine position, unless not tolerated, then position of comfort</td>
<td>Transport in position of comfort</td>
</tr>
<tr>
<td>Multi-system blunt trauma (meets CDC triage level 1 or UVA Alpha or Beta alert criteria)</td>
<td>MVC, awake and alert, neck pain only, no neurologic symptoms – allow opportunity to self-extricate with C-collar only</td>
<td>Ambulatory at scene after fall/MVC without acute neurologic symptoms – direct patient to stretcher</td>
</tr>
<tr>
<td>Acutely abnormal mental status due to trauma</td>
<td>Facial or head trauma – not meeting alpha or beta criteria</td>
<td>Ground level falls with hip/lower extremity injury, NO acute neurologic symptoms or acute spine pain</td>
</tr>
<tr>
<td>Acute neurologic symptoms due to blunt and penetrating trauma, including weakness, numbness, tingling</td>
<td></td>
<td>Seizure and ground level fall – not meeting other criteria</td>
</tr>
<tr>
<td>Tenderness on palpation</td>
<td></td>
<td>Awake and alert after MVC, in the vehicle, with NO neurologic symptoms, should be allowed the opportunity to self-extricate. Stop if patient complains of pain that limits motion or develops neurologic symptoms</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NO “standing take down” of ambulatory patients</td>
</tr>
</tbody>
</table>

**Other considerations:**

- Patients should not be forced or “wrestled” into motion restrictions, transport in position of comfort acceptable to patient. Make the motion restrictions conform to the patient, not the patient to the motion restrictions.
- If motion restriction procedures/devices worsen or cause symptoms, including pain, neurologic symptoms including numbness, weakness, tingling, or respiratory distress then discontinue procedure/device that aggravated the symptoms.
- Penetrating trauma to head, neck, torso without neurologic deficits should not be placed in motion restrictions
  - Manage acute life threats and emphasize prompt transport
- Consider removing spider straps, blocks/rolls, and long back board after patient has been transferred to ED stretcher in non-priority trauma patients.
Sexual Assault

### Injury:
**Sexual Assault**

<table>
<thead>
<tr>
<th>History</th>
<th>Physical</th>
<th>Differential Diagnoses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Witness or alleged sexual assault</td>
<td>Vaginal bleeding</td>
<td>Non-traumatic vaginal bleeding</td>
</tr>
<tr>
<td></td>
<td>Emotionally upset</td>
<td>Criminal abortion</td>
</tr>
<tr>
<td></td>
<td>Signs of trauma</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Abdominal cramping</td>
<td></td>
</tr>
</tbody>
</table>

**PEARLS:**
- Obtain only pertinent facts related to the trauma.
- Do not question about prior events or information not directly related to care (assailant description, etc.).
- Transport with provider of same gender if possible.

<table>
<thead>
<tr>
<th>EMT</th>
<th>Universal Care Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Confirm scene safety</td>
</tr>
<tr>
<td></td>
<td>Do not examine genitalia unless a hemorrhage requires bleeding control</td>
</tr>
<tr>
<td></td>
<td>Save any clothing and place in a paper bag</td>
</tr>
<tr>
<td></td>
<td>Advise patient not to urinate, defecate, douche or wash before</td>
</tr>
<tr>
<td></td>
<td>Emergency Department evaluation</td>
</tr>
<tr>
<td></td>
<td>Transport to facility with sexual assault examiner capabilities (UVA)</td>
</tr>
</tbody>
</table>
CPR and Manual Defibrillation

Cardiopulmonary Resuscitation (CPR) and Manual Defibrillation
Procedure Guideline

Reviewed: 2017  Updated: 2017

Indications:
- Cardiac arrest with ventricular fibrillation or pulseless ventricular tachycardia

Procedure:

Adults
- Continuous chest compressions only with passive ventilations (room air or NRB mask)
  - Rate of 100 to 120 beats/minute
  - Adequate depth of compression
    - Adults, minimum 2”, but no more than 2.4”
    - Adequate chest recoil
  - If staffing allows:
    - Continuous compressions w/1 breath every 6 seconds (basic maneuver and/or airway adjunct)
- Advanced airway (supraglottic or ET) placement if and/or when ROSC (return of spontaneous circulation)

Infants and Children
- Ratio of 30:2 for infants and children (single rescuer)
  - 15:2 for two (2) rescuer
  - Prioritize ventilation
- Basic airway maneuver and/or adjuncts

- Defibrillation should occur as soon as an AED or monitor is available.
- Apply defibrillation pads.
- Set the appropriate energy setting per manufacturer recommendation. If appropriate energy setting is unknown, use 200j for biphasic devices.
- Charge the defibrillator while continuing chest compressions.
- Stop compressions and “clear” the patient visually and verbally ensuring no person is in contact with the patient and the oxygen source has been adequately removed.
- Press the shock button to deliver the shock.
- Immediately resume compressions.
- After two (2) minutes of CPR, assess rhythm and check pulse if appropriate for rhythm.
- Repeat procedure every two (2) minutes with energy setting per manufacturer recommendation. If appropriate energy setting is unknown, use 200j for biphasic devices.
- Limit interruptions of CPR and limit pulse checks to every two (2) minutes. Any interruption in CPR ideally should be less than 10 seconds.
Emergency Custody Orders

Emergency Custody Order
Operations Guideline

Reviewed: 2017          Updated: December 2015

Order of substitute decision makers for incompetent patient (Virginia Code § 54.1-2986)

1. “A guardian for the patient. This subdivision shall not be construed to require such appointment in order that a health care decision can be made under this section”; or
2. “The patient’s spouse except where a divorce action has been filed and the divorce is not final”; or
3. “An adult child of the patient”; or
4. “A parent of the patient”; or
5. “An adult brother or sister of the patient”; or
6. “Any other relative of the patient in the descending order of blood relationship”

Note: Girl/Boyfriends, neighbors or others with no blood relationship DO NOT qualify as legal substitute decision makers.

Criteria for any ECO: a condition that is an immediate or imminent life threat with

- A patient who “because of mental illness ... or any other mental or physical disorder which precludes communication or impairs judgment, is incapable of making an informed decision about providing, withholding or withdrawing a specific medical treatment...”
- Note religious caveat (i.e. Jehovah Witness) that “no person shall authorize treatment... that such person knows is contrary to the religious beliefs of the patient unable to make a decision, whether expressed orally or in writing.”
- Virginia Code § 16.1-336 Definitions:
  - “Consent” means the voluntary, express and informed agreement to treatment in a mental health facility by a minor fourteen years of age or older and by a parent or a legally authorized custodian.
  - “Incapped of making an informed decision” means unable to understand the nature, extent or probable consequences of a proposed treatment or unable to make a rational evaluation of the risks and benefits of the proposed treatment as compared with the risk and benefits of alternatives to the treatment. Persons with dysphasia or other communication disorders who are mentally competent and able to communicate shall not be considered incapable of giving informed consent.

Psych ECO (Virginia Code § 37.2-808)
Does NOT require a physician assessment to get from magistrate – family or witness to suicidal thoughts/actions/evidence of significant risk of self-harm can call magistrate and request if there exists “probable cause to believe that any person (i) has a mental illness and that there exists a substantial likelihood that, as a result of mental illness, the person will, in the near future, (a) cause serious physical harm to himself or others as evidenced by recent behavior causing, attempting, or threatening harm and other relevant information, if any, or (b) suffer serious harm due to his lack of capacity to protect himself from harm or to provide for his basic human needs, (ii) is in need of hospitalization or treatment, and (iii) is unwilling to volunteer or incapable of volunteering for hospitalization or treatment.”
Medical ECO (Virginia Code § 37.1-134.21, § 37.2-1103)

Emergency custody orders for adult persons who are incapable of making an informed decision as a result of physical injury or illness.

Requires:

Application by a licensed physician verifying that the “adult patient is incapable of making an informed decision as a result of physical injury or illness AND that the medical standard of care indicates that testing, observation and treatment are necessary to prevent imminent and irreversible harm.”

The physician’s opinion of incapacity shall only be rendered after:

- Either personal evaluation or electronic communication with EMS personnel on-scene regarding their evaluation
- An attempt to communicate directly (or electronically) with the adult person to corroborate the EMS assessment of incapacity
- An attempt has been made to obtain consent from the adult person
- The adult person has failed to consent
- The magistrate shall ascertain that the adult person:
  - Has no legally authorized person to give consent AND
  - Is incapable of making an informed decision regarding necessary treatment AND
  - Has refused transport AND
  - Has indicated intention to resist transportation AND
  - Is unlikely to become capable of making an informed decision within the time required.

Should the patient's condition change and the patient becomes capable of making an informed decision (i.e. hypoglycemia resolved), the physician must be contacted and the patient’s wishes respected.

Information needed from you for magistrate to issue medical ECO (“adult person” = patient):

- Name and permanent address of “adult person” if known,
- Name of law enforcement agency on-scene (+ officer, badge # if possible)
- Name, hospital affiliation and contact number of licensed physician requesting ECO
- Present location of “adult person”
- Name and address of hospital that “adult person” is to be transported to (UVA Hospital, 1215 Lee Street, Charlottesville, VA 22908).

You may also be asked what evaluation you plan to undertake. Since you haven’t seen the patient yet, but you can’t legally do anything that isn’t on the order unless the patient consents, you may want to be fairly broad here. Some options may be: physical exam, radiologic studies (potentially including CT scan and MRI), intravenous access, medication therapy, possible mechanical ventilation, hospital admission, laceration repair, fracture management, etc.