For CE this month we are going to focus on Excited Delirium (ExDS). Many of us have heard this term before, but may not have experienced a patient that is going through this. It is defined as: Excited delirium, also known as agitated delirium, is a condition that presents with psychomotor agitation, delirium, and sweating. It may include attempts at violence, unexpected strength, and very high body temperature. Complications may include rhabdomyolysis or high blood potassium.¹

It also can be thought of as a mental state characterized by an acute onset of disorientation, disorganized thought process, speech abnormalities and violent behavior.² Often times as EMS providers we think of these patients as just being difficult, when they truly can be in a life threatening medical condition.

We have to remember that the patient and the situation is NOT a crime. A very good way to remember this when dealing with excited delirium is the crime acronym.

C- Patient is confused regarding time, place, purpose and perception.
R- Patient is resistant and won’t follow command to desist.
I – Patient’s speech is incoherent, often with loud shouting and bizarre content.
M – Patient exhibits mental health conditions or makes you feel uncomfortable.
E – EMS should request early backup and rapid transport to the ED.

Your patient will present with a variety of things some of which could be seen as:
- Aggressive or violent behavior sometimes even taunting
- Super human strength
- Continue to fight even after restraint
- Bizarre thoughts and behavior and actions
- Extreme agitation even against inanimate objects
- Hallucinations and paranoia
- Incoherent speech and even grunting
- Confusion
- Disorientation
- Hyperthermia (sweating or disrobing)

Some of the images that we have of these patients, we have seen before, but do help to remind us what we may encounter and why we think right away that it could be something else.
Medical conditions that can sometimes mimic ExDS are caused by a central nervous system (CNS) dysfunction of dopamine signaling with aberrant dopamine processing blamed for their clinical presentation. Some of the mimics of ExDS are:

- Hypoglycemia – ruled out by obtaining blood sugar
- Heat stroke
- Serotonin syndrome and neuroleptic malignant syndrome- but no aggressive behavior
- Psychiatric issues

Serotonin is a chemical in the body that allows brain and other nervous system cells to communicate with each other. Serotonin syndrome – event where medications are taken that cause high levels of serotonin to accumulate in the body causing excessive nerve cell activity. Neuroleptic malignant syndrome is a life threatening neurological disorder often caused by adverse reaction to neuroleptic or antipsychotic medications.³

There are several Youtube video’s that show what EMS and Police agencies see when encountering these types of patients. The physical components that they will demonstrate could be any of these components:

- Incredible strength
- Unrelenting endurance
- Not fazed by Tasers from Police Officers
- Hyperthermia (104-113 degrees)
- Profuse sweating (even in cold temperatures)
- Respiratory distress
- Dilated pupils from the sympathetic discharge
- Diminished sense of pain
The pathophysiology behind excited delirium is that there is a response to the sympathetic nervous system or the flight or fight system. This will cause the hyperthermia and extreme elevation in the body temperature and because of the confusion; they will tend to look their clothes in an attempt to cool off. Often times they end up in a metabolic acidosis state and this can be potentially life threatening because of the massive hyperactivity that the patient will be experiencing.

Often times there can be an addition of a stimulant of some kind with the patient such as cocaine, PCP, methamphetamines etc. They also could have stopped taking their psychiatric medications or meds to control their bipolar disorder which has caused more psychosis. Alcohol withdrawal can be another contributing factor that can cause a variety of metabolic and psychotic behavior as the patient goes through withdrawals.

We know through history with these types of patients that law enforcement tend to be one of the first on the scene and may have attempted to calm the patient down through verbal response, but may have to relate to physical restraint. In an attempt to subdue the patient, they may be forced to use their Tasers for their own safety. There are several documented cases where this is an acceptable non-lethal method to subdue the patient.

The concern with Taser barbs are:
- May produce minor wounds to the skin if it was penetrated
- No significant risk to lung, heart or bowel
- Theoretical risk to superficial neck vessels and genitalia
- Minor puncture burns are possible from electrical arcing near probe location
Remember that we are not to remove the Taser barbs from the patient. If the barbs do come dislodged from the patient, ask law enforcement if they need to secure them for evidence. Otherwise they may be disposed of as any other sharp and placed into your sharps container.

Rare instances of Taser related injuries have occurred. These could be caused by muscle contractions as well as injuries from when the patient fell to the ground. There could be some minor burns noted on the skin from the arcing as well as the potential for penetrating eye injuries.

One of the biggest concerns with excited delirium is the fact there have been what is called In Custody Deaths due to the complications that these patients have while being detained. These several times are related to the metabolic acidosis, hyperthermia, positional asphyxia, the use of stimulant drugs or the use of lethal force when other options have been exhausted.

Many believe that there seems to be a relationship between the physical restraint of a patient experiencing excited delirium and the potential for sudden death. Positional asphyxia deaths have occurred while subjects have been restrained in a prone position. Adverse effects on the patients breathing can occur when pressure is applied to the patients back either while handcuffed or hog tied. Patients should always be transported face up or on their side.

While you are assessing the situation and determining your plan of care, you must take into account other possible causes of the Altered Mental Status. Could the patient have:

- CVA
- Epilepsy or be post ictal
- Hypoxia
- Hypoglycemia
- Dementia or Alzheimer’s Disease
- Head injured

Attempt to calm the patient down verbally and de-escalate the situation. Backup should be called to assist you on the scene whether that is an engine company, law enforcement etc. You need to keep your distance from the patient until the backup arrives and you can then consider chemical restraints. Often times you will be required to restrain to start an IV to give your chemical restraints.
Here is an example of the training at one facility showing the responders with one on each extremity while one is available to administer the IV and chemical restraints.

Once the patient has calmed down, you can then apply physical restraints and secure to your cot as needed. You should always have police with you if they are handcuffed to your cot and someone should be positioned at the head of the cot to monitor the patient’s respiratory status. Cold packs can be applied to try and cool the patient down if they are hyper thermic and always try to transport with the patient on their back.

Our current protocol for severe anxiety is: if SBP > 90 (MAP > 65) Midazolam 2 mg increments slow IVP q. 2 min (0.2mg/kg IN up to 10 mg titrated to response. If IV unable/IN contraindicated: IM 5-10 mg (0.1-0.2 mg/kg) max 10 mg single dose. All routes may repeat to a total of 20 mg prn if SBP > 90 (MAP >65) unless contraindicated. If hypovolemic, elderly, debilitated, chronic dx (HF/COPD) and/or on opiates or CNS depressants, decrease total dose to 0.1 mg/kg. 4

With the current additions taking place to the medications that the system will have, we will most likely be adding Ketamine to our protocol for the excited delirium patient as well. Ketamine is a dissociative anesthetic that produces a cataleptic-like state (patient’s consciousness is dissociated from their nervous system) and profound analgesia. This medication will be used in Drug Assisted Intubations, but also for sedation of agitated or violent behavior patients.
For excited delirium, the administration of Ketamine will be 2mg/kg slow IVP (over 1 min) or 4 mg/kg IN/IM. You may repeat at ½ dose after 10 min up to a max dose of 4 mg/kg (500 mg). Do not give to patients with schizophrenia, psychosis, or bipolar mania.

Remember the safety of you and your crew is the most important thing. You never want to place an agitated or combative patient into your ambulance without physical restraints in place. There are several organizations that do not recognize excited delirium as a medical condition. These include the AMA and the American Psychologic Association. Civil liberties groups have argued that in-custody deaths were the result of excessive force by police officers and not excited delirium. Excited delirium is recognized by the American College of Emergency Physicians, as well as the National Association of Medical Examiners. The DOT has included excited delirium to its curriculum for Emergency Medical Technicians as well.²

We must always remember that excited delirium is an imminently life threatening medical emergency and not a crime in progress. In custody patient deaths are likely related to excited delirium. ALS providers can provide chemical restraints to patients and you most likely will have to provide aggressive medical stabilization for your patients.

References:
Wikipedia¹
Excited Delirium- Montgomery County EMS-Montgomery Maryland.²
Region X presentation on AMS 2014³
MWLCEMS System Protocol-2016⁴
1) What does the acronym CRIME stand for?
   a. C__________________________
   b. R__________________________
   c. I__________________________
   d. M__________________________
   e. E__________________________

2) Serotonin syndrome is described as?

3) The pathophysiology behind excited delirium is that there is a response to the ___________________________ or the fight or flight system.

4) What medical conditions can sometimes mimic ExDS?
   a. __________________________
   b. __________________________
   c. __________________________
   d. __________________________

5) Police may be the first on the scene and attempt to calm the patient down through verbal response, but may be forced to use this device?

6) Give 4 of the physical components that ExDS patients may demonstrate.
1) Concern for Taser barbs include.
   a. __________________________________
   b. __________________________________
   c. __________________________________
   d. __________________________________

2) Deaths have occurred in patients that have been restrained in the prone position.  
   This is called__________________________________________.

3) While treating your patient, you must take into account other possible causes for the  
   Altered Mental Status. These may include.
   a. ____________________________
   b. ____________________________
   c. ____________________________
   d. ____________________________
   e. ____________________________
   f. ____________________________

4) You have encountered a patient that you feel is experiencing ExDS with severe anxiety.  
   What medications would you be administering to calm your patient down and include the  
   dose and route for each.

IF YOU ARE NOT A MEMBER OF THE MCHENRY WESTERN LAKE COUNTY EMS  
SYSTEM, PLEASE INCLUDE YOUR ADDRESS ON EACH OPTIONAL QUIZ TURNED INTO  
OUR OFFICE. OUR ADDRESS IS: CENTEGRA MCHENRY EMS, 4201 MEDICAL CENTER  
DRIVE, MCHENRY, IL 60050. WE WILL FORWARD TO YOUR HOME ADDRESS  
VERIFICATION OF YOUR CONTINUING EDUCATION HOURS.

IF YOU ARE A MEMBER OF OUR EMS SYSTEM, YOUR CREDIT WILL BE ADDED TO  
YOUR IMAGE TREND RECORD. PLEASE REFER TO IMAGE TREND TO SEE YOUR LIST  
OF CONTINUING EDUCATION CREDITS. ANY QUESTIONS REGARDING THIS CAN BE  
ADDRESSED TO CINDY TABERT AT 224-654-0160. PLEASE FAX YOUR QUIZ TO CINDY  
TABERT AT 224-654-0165.