**Procedural sedation** - sedation, analgesia, and/or amnesia to accomplish procedures in the ED (fracture reductions, I and D, chest tubes, etc.)

**History and Physical and NPO status**

**Medical history** - heart disease, afib, hypertension, sleep apnea, medication allergies, reactions to anesthesia in the past or known difficult airway

**NPO status** - last food or drink
- Standard OR practice - NPO after midnight - not practical
- Institutional practices vary - follow guidelines
- No great evidence for 2 hours vs. 4 hours vs. 6 hours
- Reasonable approach - large meal prior to ED stay - 2 hours, liquids only 1-2 hours

**Physical exam** - focus on airway exam - any predictors of difficult airway? Restricted mouth opening, short neck, etc.

**Final decision** - take all of the above into account and make a decision as to whether ED procedural sedation is appropriate vs. the OR

**PEARL** - some institutions limit ED procedural sedation to certain ASA classes - follow your institutional guidelines with all of this

**Example** - Athletic 17 year old male with shoulder dislocation (good) 85 year old obese male with afib, hypertension, sleep apnea with hip dislocation (bad - multiple co-morbidities and need for deeper sedation)

**Depth of sedation** - not important to memorize levels but can help you decide on which medication to use

**Minimal sedation (anxiolysis)** - Patient is drowsy but maintains cardiovascular and respiratory status
Example - Laceration repair on an anxious patient with a few milligrams of midazolam (Versed), Abscess packing change in groin with fentanyl

**Moderate Sedation** - The level of sedation we usually aim for - depressed level of consciousness but responds to verbal or light tactile stimulation. Cardiovascular and respiratory status maintained

**Example** - Shoulder reduction using etomidate

**Deep sedation** - Depressed level of sedation but can’t be easily aroused but can respond purposefully after repeated rounds of painful stimulation

**PEARL** - Deep sedation is a dirty word in the ED at some institutions, just about any procedural sedation medication can achieve deep sedation but it is needed sometimes to get the procedure done

**Example** - Hip reduction using propofol (Diprivan)

**General anesthesia** - only time we do this in the ED is RSI

**Dissociative sedation** - a trance-like state of profound amnesia and analgesia with maintenance of airway reflexes and spontaneous respirations - unique to the drug ketamine

**Preparation for procedural sedation**

**Consent for procedure** - consent for the sedation and/or the procedure (if a consultant is doing the procedure). Consent usually not necessary for minimal sedation but for moderate sedation it is REQUIRED
Sample script reviewing sedation, risk, benefits, and alternatives:

We would like to give you sedation to do this procedure. We will give you a medication so that you shouldn’t remember what is going on. Its possible that you may wake up a little bit during the procedure and be aware of what is going on but you won’t really care. During this time you will still be breathing on your own and we will watch you very closely. The benefit to this sedation is that you will be nice and relaxed for the procedure and you probably won’t remember most of what happens. This is something that we do a lot in the ER and we are very comfortable doing it. However, as with any sedation, there are risks but they are small. The main risk is that you could stop breathing to the point where we have to breathe for you or put a tube down your throat or that something else unexpected will happen. There are also risks of aspiration where you breathe your stomach contents into your lungs but that is rare as well. Much more common is being nauseous or drowsy when you wake up from the sedation. The alternative to this sedation is that we only use local anesthesia or no sedation at all. Do you have any questions?”
PEARL- If using ketamine on a child- warn the parents regarding nystagmus and the possibility of emergence reaction (“David after Dentist” on youtube- that is a mild but hilarious emergence reaction) . Describe it as a bad dream. Can be treated with small doses of versed.

Equipment preparation- most important step- probably only need pulse ox for minimal sedation but all of this is REQUIRED for moderate sedation and above

Don’t leave anything to chance!
Pneumonic- ABCDE PO
  Airway
  Breathing
  Cardiac Monitor
  Drugs
  End-tidal CO2
  Paralytics
  Oxygen

Airway- Airway cart to the bedside, all equipment pulled out and measured- correct handle and blade, correct tube size, stylets, etc.

Breathing- Correct sized bag valve mask with right sized face mask hooked up to oxygen, suction available and working

Cardiac- Full cardiac monitor hooked up to patient to include continuous EKG, pulse ox, and blood pressure monitoring

Drugs- Procedural sedation meds drawn up, double and triple check the dose, make sure weight is accurate and in kilograms

End-tidal CO2- Place an end-tidal CO2 monitor on the patient and make sure you have a good waveform on the monitor

Paralytics- Have the RSI kit with paralytic meds at the bedside and calculate dose ahead of time (have it ready, don’t have to draw it up), always have to be ready for RSI with procedural sedation

Oxygen- Place the patient on high flow oxygen a few minutes before you do the procedure and keep it on during the procedure

PEARL- High flow does NOT interfere with end-tidal CO2 monitoring

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