## P.R.E.P.A.R.E. for AIRWAY

**P repare TEAM:** call for help, assign roles, PPE
**P repare PATIENT:** code status? position, pre-oxygenate
**R esuscitate:** optimize O2 + BP, avoid apnea if acidotic
**E quipment**: shadow boxes, ER Med Order Form
**P lan:** review Plan A + B + C out loud, invite team input
**A ssess:** someone to call out **SBP <90**, **O2 < 95%**
**R emain/Review:** stay in room, review case with team
**E xit:** handover (S.B.A.R.S.), transfer planning, debrief

**HYPOXIC PATIENT**
NP @15 LPM
+ NRM @15 LPM
**OR**
NP @15 LPM *plus*
BVM + PEEP 10 @ 15 LPM
Combative? Try DSI
KETAMINE 1mg/Kg slow IVP

**HYPOTENSIVE PATIENT**
Give NS +/- Blood
Push-dose pressor on hand
NOREPI drip (+/- IO/Central line)

**CHF/COPD/ASTHMA**
IDEALLY, DO NOT INTUBATE!
Try **Non-Invasive Ventilation** first
(+/- ketamine sedation)

**METABOLIC ACIDOSIS**
AVOID APNEA!!!
Awake Intubation
**OR**
Continue to ventilate during induction/paralysis (RR 12)
Once intubated, RR up to 30

**ELEVATED ICP**
*MUST AVOID:*
SBP < 90, Sat < 90%
Hypercapnia (aim for pCO2 35-40)
Hypoglycemia
Hyperthermia

**Ramped position** if needed:
Ear to sternal notch
Face parallel to ceiling

## EQUIPMENT for AIRWAY

### VENTILATION RESCUE TRAY

- SGA of choice (sized iGel, King, LMA)
- NPA x2 (nare to auditory meatus)
- OPA x1 (corner of mouth to jaw angle)
- KY lube

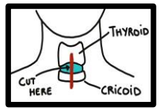
### INTUBATION TRAY

- Laryngoscope + Mac 3 or 4 Blade
- ET Tubes: 7.5 and 8.0, test + lube cuffs
- Bougie
- Stylet for ET Tube
- KY lube
- 10mL Syringe
- Magill Forceps
- ET-CO2 detector
- ET Tube securing device
- Video Laryngoscope

**Pediatric Case :**
Broselow Tape
or App of choice

### SURGICAL AIRWAY TRAY

- Chlorhexidine swab
- #10 Scalpel
- Bougie
- 6.0 ETT (or Cric kit tube)
- 10mL Syringe
- Tape




1. Make generous VERTICAL cut, as depicted
2. Feel for cricothyroid membrane
3. Make HORIZONTAL cut through the membrane
4. Feel for tracheal lumen, insert Bougie
5. Insert 6-0 cuffed ET tube over Bougie
6. Remove Bougie
7. Bag to confirm position, secure ET tube

## MEDICATIONS for AIRWAY

| INTUBATION | | | 70kg |
|---|---|---|---|
| INDUCTION | **Ketamine** 10mg/mL | 0.5-2mg/Kg | 30-140mg |
| | **Propofol** 10mg/mL | 1-2mg/Kg (less if shocky) | 70-140mg |
| PARALYSIS | **Rocuronium** 10mg/mL | 1.2-2mg/Kg (more if shocky) | 80-140mg |

### POST-INTUBATION

| | | |
|---|---|---|
| **Fentanyl** 10mcg/mL | **Bolus:** 1mcg/Kg<br>**Infusion:** start 0.5-1mcg/Kg/hr |
| **Ketamine** 10mg/mL | **Bolus:** 0.5-1mg/Kg<br>**Infusion:** start 0.1-0.5mg/Kg/hr |
| **Propofol** 10mg/mL | **Bolus**: 0.5-1mg/Kg<br>**Infusion:** start 20 mcg/Kg/min (5-100mcg/Kg/min range) |

### PRESSORS - Keep MAP > 65

| | |
|---|---|
| **Push-Dose Epinephrine** 1:10,000 | 1mL of 1:10,000 epi + 9mL NS<br>Push 5-10mcg (0.5-1mL) q2-5min |
| **Push-Dose Phenylephrine** 500mcg in 10mL | Premixed 50mcg/mL<br>Push 50-100mcg (1-2 mL) q2-5 min |
| **Norepinephrine infusion** Mix 8mg in 500ml D5W = 16mcg/mL | start 5 mcg/min<br>+/- 1 mcg/min q5min |
| **Epinephrine infusion** 1mg in 1L NS = 1 mcg/mL | start 5 mcg/min<br>+/- 1 mcg/min q5min |

## INTUBATION SEQUENCE

1. Patient in **ideal position**?
2. O2 and BP **optimized** and VS cycling q5min?
3. **IV access** x 2 secured?
4. **Meds** drawn for induction, paralysis, push-dose pressor, post-intubation sedation?
1. **Plan A+B+C** verbalized; input invited?
2. **Equipment** ready?

### INDUCTION

**KETAMINE** 0.5-2mg/Kg *OR* **PROPOFOL** 1-2mg/Kg

if BP is LOW — if BP is HIGH

### PARALYSIS

**ROCURONIUM** 1.2-2mg/Kg (give more if BP is low)

### INTUBATION

Secure ETT, bolus sedative + start infusion

**Can't Intubate? Re-Oxygenate!**
- OPA +/- 1-2 NPAs, then BMV over NP
- Assistant bags gently (1 breath/6 sec)
- If O2 not rising, try Supra-Glottic device

**Can't Intubate OR Oxygenate?**
**SURGICAL AIRWAY**

### INITIAL VENTILATOR SETTINGS

| | Most Cases | Asthma/COPD | Met. acidosis |
|---|---|---|---|
| **MODE** | Assist-Control | | |
| **Vt** | Start **6mL/Kg IBW** and adjust from there | | |
| **I:E ratio** | **1:3** | **1:4/1:5** | **1:1/1:2** |
| **RR** | **15-20** | **12** | **25-30** |
| **PEEP** | Start at **5**, then adjust | | |
| **FiO2** | Start at **100%**, then adjust | | |
| **PPlat.** | Keep **< 30** | | |

## POST-INTUBATION CHECKLIST

| | |
|---|---|
| **ETT depth** | **21 cm** for women, **23 cm** for men<br>3 x ET tube size in kids |
| **ETT cuff pressure** | Should be easy to squeeze and barely recover (ideally use manometer) |
| **Elevate head** | Elevate patient's head **30 degrees** to reduce aspiration and facilitate ventilation |
| **Restraints** | Consider wrist restraints to prevent unwanted self-extubation |
| **CXR** | To confirm ETT position (2 - 3cm above carina) and look for complications |
| **ABG (or VBG, with sat 90-95%)** | **30 min.** after intubation or any change in ventilator settings |
| **NG or OG Tube** | To decompress stomach, prevent aspiration, ease ventilation |
| **Nebs** | Continue nebs for asthma/COPD patients |
| **Mouth wash** | Chlorhexidine mouthwash decontamination may help reduce risk of aspiration pneumonia |
| **DVT Prevention** | LMWH, Ted Stockings |
| **Ulcer Prevention** | Adjust position **q2h**, low pressure mattress |
| **Rescue equip.** | BVM + PEEP valve at bedside, ready for use if ventilator malfunctions |
| **Ventilator Alarms** | **"DOPE": D**isplacement, **O**bstruction, **P**neumothorax, **E**quipment failure<br>LOW PRESSURE = leak, disconnected<br>HIGH PRESSURE = tube kinked/bitten, mucous plug, coughing, tension pneumothorax, ARDS |

# Rural ER Pocketbook


**HOSPITAL MAIN**
**XRAY**
**LAB**

**AMBULANCE**
**POLICE**
**FIRE**

**POISON CONTROL**



***last updated on June 17, 2025***

## ANAPHYLAXIS

Acute onset (< 1hr)
Two systems involved (rarely isolated low BP)

- Skin +/- mucosa (absent in 20%)
- Respiratory
- Cardiovascular (shock)
- Persistent GI Sx

**Epinephrine! Epinephrine! Epinephrine!**

Lateral thigh **"don't be shy, go for the thigh!"**
0.01mg/Kg - max 0.5mg/dose (> 50Kg )
Epi pen dose = only 0.3mg (repeat q5min PRN)

**REFRACTORY CASES** (Sx ongoing despite 3x IM Epi)

**EPINEPHRINE IV:** Mix 1 amp of cardiac Epi (1mg) into 1L NS = 1mcg/mL, push 5-10mL q2-5min ***OR*** 1 to 20mL/min
**GLUCAGON** 3.5 – 5mg IV if on BBlocker
**VASOPRESSIN:** 1-5mg IV bolus, then 1 to 5mg/hr infusion

**ADJUVANT RX**

**Diphenhydramine** 50mg IV/IM q6h
**Ranitidine** 150mg IV
**Steroids (if Epi given)** - Dexamethasone (lasts longer)

## ALTERED LOC

- **AVPU or GCS < 8 +/- vomiting** -> consider securing airway
- **Optimize** VS, glucose
- **Pupils** -> Naloxone if pinpoint, Benzos if dilated
- **Labs** -> lytes, Ca++, Mg++, renal/liver panels, ASA/acetamin level, UDS, UPT, CBC, blood/urine cultures +/- LP
- **CNS Imaging?** If sudden onset, pupils sluggish/unequal, neurofocal signs

## TRAUMA

**P * R * E * P * A * R * E**

**THE TEAM**
What do we know?
What do we expect?
Assign roles, don PPE
Call for extra help, Xray, Lab

**THE GEAR**

**Airway:**
- PreOX (N/P 15L/min, NRM 15L/min)
- Ventilation Tray: *see reverse*
- Intubation Tray: *see reverse*
- Surgical Tray: *see reverse*

**Breathing:**
- 14G angiocath or Turkel for needle thoracotomy
- #10 scalpel and Kelly for finger thoracotomy
- Chest Tube Tray (20-22F tube), Pleur-Evac

**Circulation:**
- IO kit handy
- Pelvic binder (already on stretcher)
- POCUS at bedside
- Call for un-Xmatched blood

**THE SELF**
Breathe, focus, positive self-talk
Use bathroom!

## TRAUMA

**The first 15 min**
- "We are going to take good care of you"
- Control any obvious external hemorrhage
- Bind the pelvis (at the greater trochanteric level, tape legs together)
- Stabilize airway: O2, NPA/OPA, suction, jaw thrust
- Chest decompression (needle or finger thoracotomy)
- Consider TXA* if bleeding, and injury < 3hrs old

**Need for immediate definitive airway?**
- Dangerous hypoxia
- Dynamic airway injury (burn, penetrating neck injury)

**-> Proceed with intubation/surgical airway ASAP!**

**Diagnose and manage shock**
- Hemorrhagic: blood, TXA if onset < 3hrs, bind pelvis
- Obstructive: chest/pericardium decompression
- Neurogenic: vasopressor

**Beware of occult shock!**
- SBP < 110 (isolated/persistent)
- Transient response to 250mL IV bolus
- Shock Index (SI) >1.0 or delta SI >= 0.1
- +FAST with a flat IVC
- lactate > 4, base def >6
- Reduced cap refill, loss of central pulses
- Altered LOC with no obvious head injury

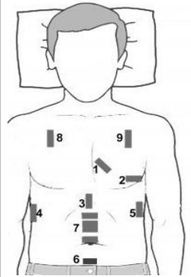
**Beware of "normal" VS!**
- B-blockers
- Athlete
- Undertreated HTN

Trauma Pts at high risk for peri-intubation hypotension; use lower induction dose, full paralytic dose

## UNDIFFERENTIATED HYPOTENTION

### The First10EM Approach

1. Treat obvious causes of **bleeding**
2. **Airway** control
3. **Resuscitate** before you intubate, have push pressor ready
4. Is this primarily a **dysrhythmia**?
   - too fast (> 150-170)? Cardiovert!
   - too slow? pace
5. **IV fluids** (try for IV x2, then go IO)
6. Could this be **anaphylaxis??** Look for wheezing, hives, medic alert bracelet
7. Is this a **cardiogenic shock** from an occlusion MI? ECG, pressors, thrombolytics
8. **Rapid focused history**: hypovolemia, hemorrhage, cardiac disease, trauma, sepsis, obstructive shock (PE, pneumo)
9. **POCUS**: RUSH exam (HIMAP)
10. **Metabolic?** Ca++, acidosis, adrenal or thyroid insufficiency
11. **Toxicologic?** BB, CCB, TCA; call Poison Control
12. **Occult bleed?** GI, retroperitoneal
13. **Reconsider anaphylaxis!** Low BP may be only Sx




### RUSH Exam Sequencing

1. Parasternal Long Cardiac View
2. Apical Four-Chamber Cardiac View
3. Inferior Vena Cava View
4. Morison's with Hemothorax View
5. Splenorenal with Hemothorax View
6. Bladder View
7. Aortic Slide Views
8. Pneumothorax View
9. Pneumothorax View

Use Curvilinear Array for 1-7
Use High-Frequency Array for 8 & 9

**H – I – M – A – P**

- **H**eart (PLAX, A4C views): tamponade? RV failure (possible PE)? LV function good or bad?
- **I**VC collapsing or not?
- **M**orison's pouch (and LUQ and pelvic views)- Free fluid?
- **A**orta: Is a ruptured AAA the culprit?
- **P**neumothorax: Is there a tension pneumo?

**Heart hyperdynamic, IVC collapsing, fluids helping?**
- DDx: sepsis, hypovolemia, blood loss
- Rx: IVF or blood, +/- pressor, +/- empiric antibiotics

**Heart hypodynamic, IVC large + no collapse, fluids not helping?**
- DDx: cardiogenic or obstructive? (tamponade and pneumothorax already ruled out by RUSH exam)
- Rx: Thrombolytics, pressors

## STATUS EPILEPTICUS

- Check/correct **glucose** and low **Na+** (can use Bicarb x 2 amps)
- **Midazolam** 0.2mg/Kg IM/IV (5-10mg)
  or **Lorazepam** 0.1mg/Kg IV (4-8mg)
- NP x2 + NRM @ 15 LPM, prepare for possible intubation
- **Eclampsia??** (3rd trim to 8 wks PP) -> **Mg++** 4g IV
- **If Sz persists > 15 min, intubate:** propofol 1.5mg/Kg + ketamine 2mg/Kg + paralytic; if BP low, can use midaz 0.2mg/Kg bolus instead of propofol; get push dose Epi and NE drip ready
- Start propofol infusion (3-5mg/kg/hr) or Midaz infusion (0.1mg/kg/hr) if BP low; may need NE drip to maintain BP
- Start anti-epileptic of choice:
  Levetiracetam > V. acid > phenytoin

## STATUS ASTHMATICUS

1. Continuous salbutamol nebs with O2 (can switch to MDI when improved; 1 neb = 4-10 puffs)
2. Ipratropium bromide 500mcg q20min x3, then q1h
3. Dex 20mg IM/IV or Methylpred 2mg/Kg IV
4. Mg++ 2g IV (50mg/kg, max 2g) over 20 min.
5. IV Bolus NS 20-30ml/kg

1. Epi 1:1000 x 5mL, nebulized
2. Epi 0.5mg IM q10min or IV drip: Mix 1 amp of cardiac Epi (1mg) into 1L NS = 1mcg/mL, push 5-10mL q2-5min ***OR*** 1 to 20mL/min
3. CXR, CBC, lytes, VBG, +/- ECG
4. NIV: IPAP 10 & PEEP 5
5. Ketamine 0.5mg/kg IV over 30 sec, then 0.5 – 1 mg/Kg/hr

**INTUBATE IF:** resp failure, dropping LOC, cardiac arrest
-> Large ETT, induce upright, do not bag aggressively
-> ACV, RR 8, 7ml/kg IBW, PEEP 2, I:E = 1:5, FiO2 100%, keep plateau pressure < 30; continue nebs!