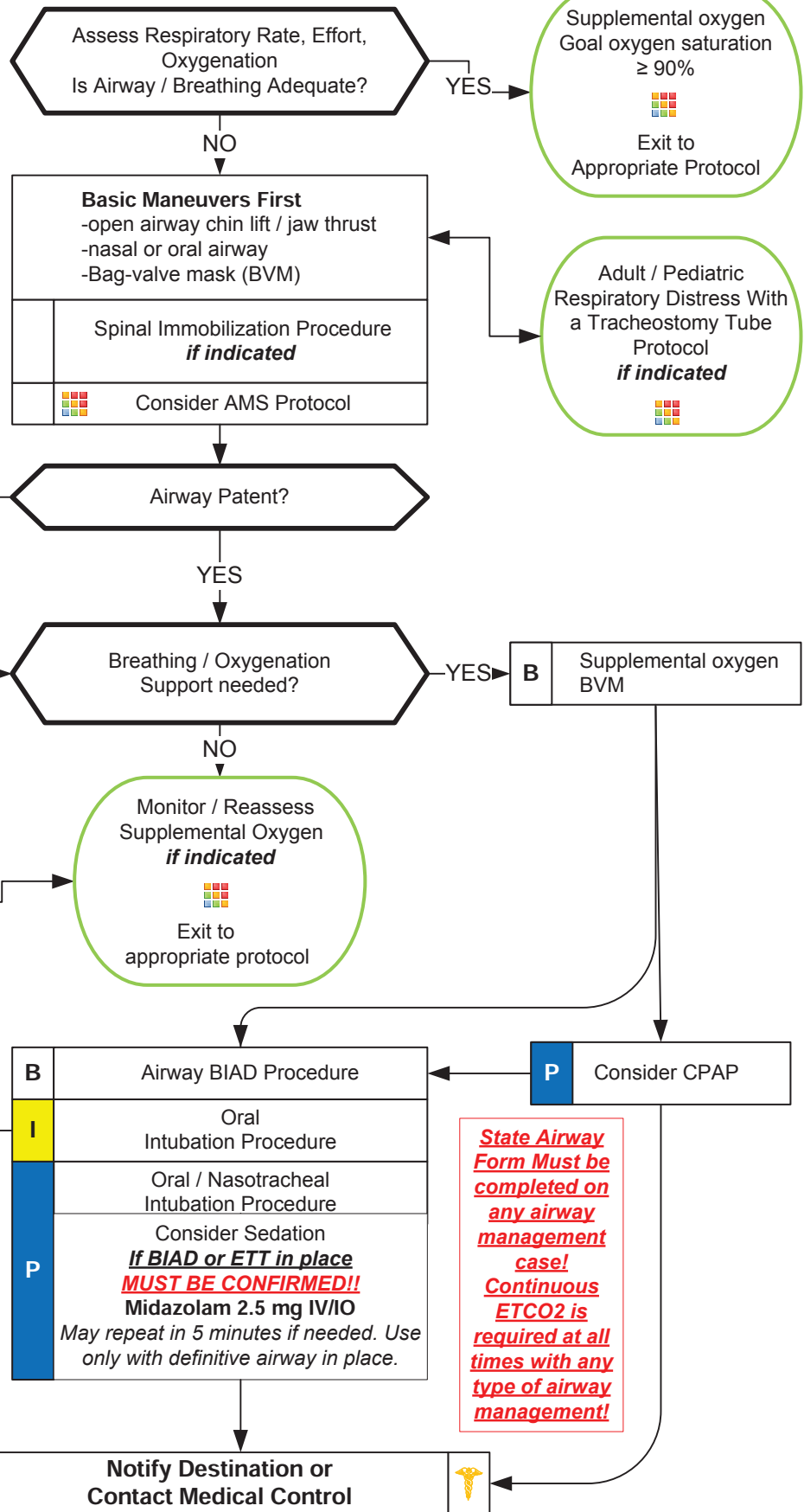


# Adult Airway

Protocols 1, 2 and 3 should be utilized together (even if agency is not using RSI) as they contain very useful information for airway management.



## Protocol 2 (Robeson)

# 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 rapid 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.

*Please refer to Protocols 2 and 3 for additional information.*

## Difficult Airway Assessment

### Difficult BVM Ventilation:

**MOANS:** Difficult Mask seal due to facial hair, anatomy, blood or secretions / trauma; Obese or late pregnancy; Age > 55; No teeth (roll gauze and place between gums and cheeks to improve seal); Stiff or increased airway pressures (Asthma, COPD, Obese, Pregnant).

### Difficult Laryngoscopy:

**LEMON:** Look externally for anatomical distortions (small mandible, short neck, large tongue); Evaluate 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); Mallampati (difficult to assess in the field); Obstruction / Obese or late pregnancy; Neck mobility.

### Difficult BIAD:

**RODS:** Restricted mouth opening; Obstruction / Obese or late pregnancy; Distorted or disrupted airway; Stiff or increased airway pressures (Asthma, COPD, Obese, Pregnant);

### Difficult Cricothyrotomy / Surgical Airway:

**SHORT:** Surgery or distortion of airway; Hematoma over lying neck; Obese or late pregnant; Radiation treatment skin changes; Tumor 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 combative patients, 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.

## Pearls

- This protocol is only for use in patients with an Age  $\geq 12$  or patients longer than the Broselow-Luten Tape.
- Capnometry (Color) or capnography is mandatory with all methods of intubation. Document results.
- Continuous capnography (EtCO<sub>2</sub>) is strongly recommended for the monitoring of all patients with a BIAD or endotracheal tube.
- If an effective airway is being maintained by BVM with continuous pulse oximetry values of  $\geq 90\%$ , 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 be 8-10 per minute to maintain a EtCO<sub>2</sub> of 35-45. Avoid hyperventilation.
- It is strongly encouraged to complete an Airway Evaluation Form with any BIAD or Intubation procedure.
- 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, not a paper bag.
- Cricoid pressure and BURP maneuver may be used to assist with difficult intubations. They may worsen view in some cases.
- Hyperventilation in deteriorating head trauma should only be done to maintain a EtCO<sub>2</sub> 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

Unable to Ventilate and Oxygenate  $\geq 90\%$  during or after one (1) or more unsuccessful intubation attempts.

Anatomy inconsistent with continued attempts.

Three (3) unsuccessful attempts by most experienced EMT-P/I.

*Each attempt should include change in approach or equipment*

**NO MORE THAN THREE (3) ATTEMPTS TOTAL**

Protocols 1, 2 and 3 should be utilized together (even if agency is not using RSI) as they contain very useful information for airway management.

Call for additional resources if available

Failed Airway

BVM  
Adjunctive Airway  
Maintains SpO<sub>2</sub>  $\geq 90\%$

YES

Continue BVM  
Supplemental Oxygen

Exit to  
Appropriate Protocol

NO

Significant Facial  
Trauma / Swelling /  
Distortion

YES

**P** Airway Cricothyrotomy  
Surgical Procedure

**P** Continue Ventilation /  
Oxygenation  
Maintain SpO<sub>2</sub>  $\geq 90\%$

NO



**B** Airway BIAD Procedure

BIAD Successful

NO

YES

Continue Ventilation / Oxygenation  
Maintain SpO<sub>2</sub>  $\geq 90\%$   
EtCO<sub>2</sub> 35 – 45  
Ventilate 8 – 10 breaths / minute

 **Notify Destination or  
Contact Medical Control** 

# 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 means will not succeed.

## Conditions which define a Failed Airway:

1. Failure to maintain adequate oxygen saturation 90 % or greater after 2 or more failed intubation attempts.
2. Three (3) failed at intubation by the most experienced prehospital provider on scene even when adequate oxygen saturation 90 % or greater can be maintained.
3. Unable to maintain adequate oxygen saturation 90 % or greater with BVM techniques and insufficient time to attempt alternative maneuvers. A patient near death or dying.

**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 setting 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.

## Relative contraindications include:

Pre-existing laryngeal or tracheal tumors, infections or abscess overlying the cricoid area.  
Hematoma or anatomical landmark destruction / injury.

## Pearls

- **If first intubation attempt fails, make an adjustment and then consider:**
  - Different laryngoscope blade / Video or other optical laryngoscopy devices
  - 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 EtCO<sub>2</sub> should be applied to all patients with respiratory failure or to all patients with advanced airways.
- **Notify Medical Control AS EARLY AS POSSIBLE about the patient's difficult / failed airway.**

# Back Pain

## History

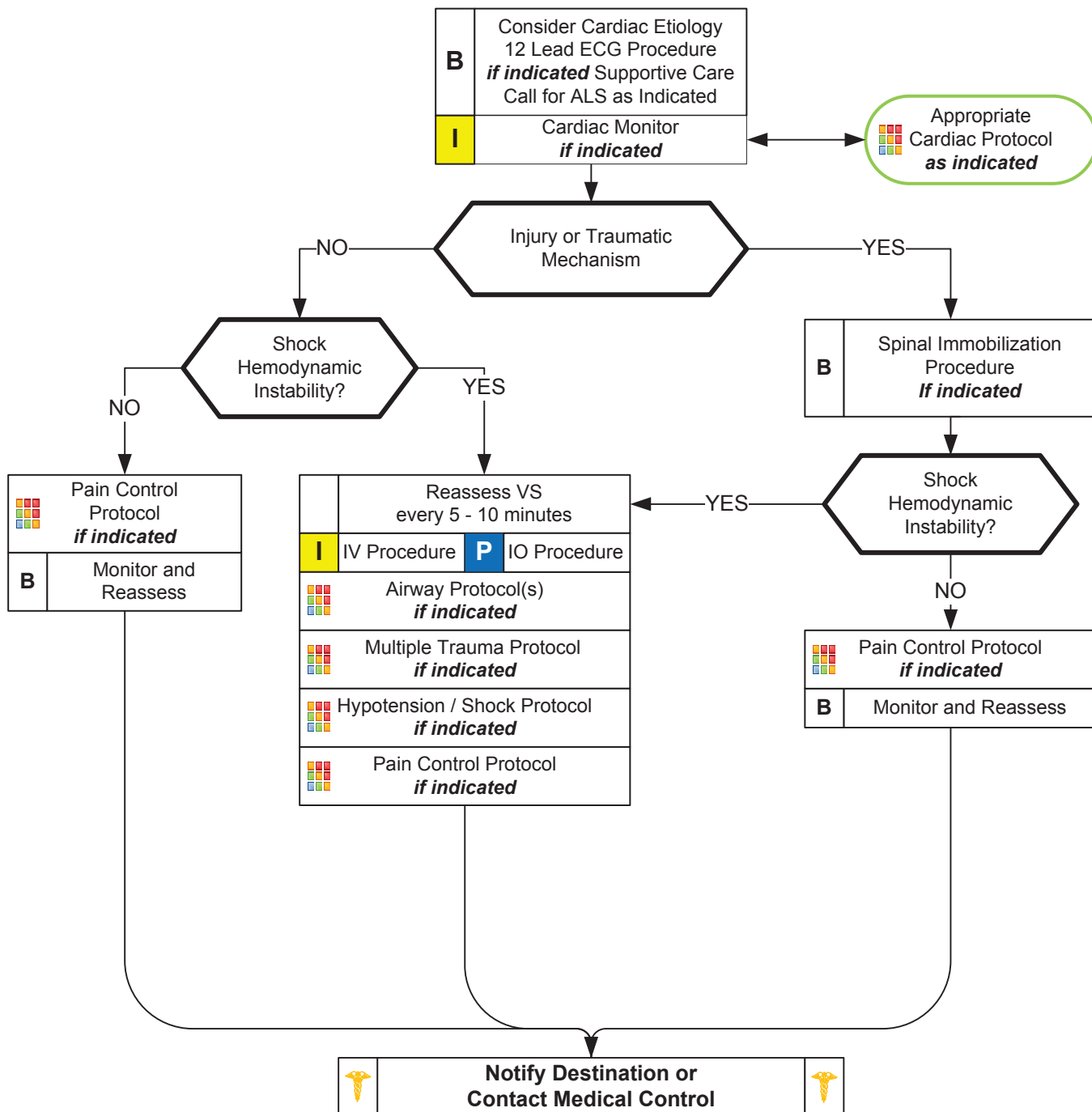
- Age
- Past medical history
- Past surgical history
- Medications
- Onset of pain / injury
- Previous back injury
- Traumatic mechanism
- Location of pain
- Fever
- Improvement or worsening with activity

## Signs and Symptoms

- Pain (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



# Back Pain

## Pearls

- Patients with underlying spinal deformity should be immobilized in their functional position.
- Abdominal 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 over the spinous processes should be spinally immobilized.
- Any bowel or bladder incontinence is a significant finding which requires immediate medical evaluation
- In patient with history of IV drug abuse a spinal epidural abscess should be considered.

# Behavioral

## History

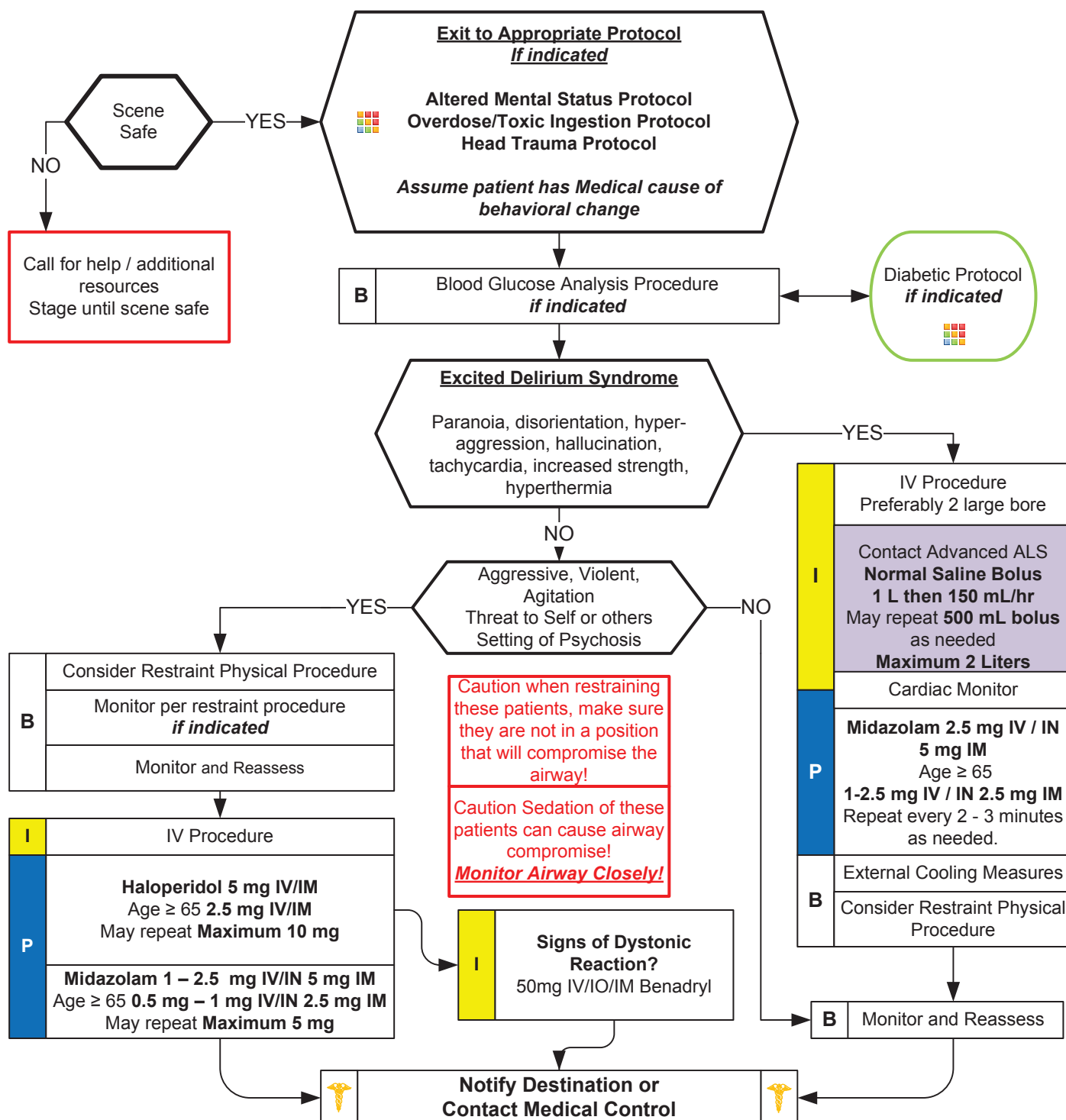
- Situational crisis
- Psychiatric illness/medications
- Injury to self or threats to others
- Medic alert tag
- Substance abuse / overdose
- Diabetes

## 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



## Pearls

- **Recommended Exam: Mental Status, Skin, Heart, Lungs, Neuro**
- **Crew / responders safety is the main priority.**
- **Any patient who is handcuffed or restrained by Law Enforcement and transported by EMS must be accompanied by law enforcement in the ambulance.**
- **Consider Haldol or Ziprasidone for patients with history of psychosis or a benzodiazepine for patients with presumed substance abuse.**
- **All patients who receive either physical or chemical restraint must be continuously observed by ALS personnel on scene or immediately upon their arrival.**
- 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 such a way that could impact the patient's respiratory or circulatory status.
- **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.
- **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.



# Pain Control: Adult

## 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)

Enter from  
Protocol based on **Specific Complaint**



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

Mild

Moderate to Severe

I	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)
	Consider IV Procedure
	Monitor and Reassess

	IV Procedure	P	IO Procedure
I	Ketorolac 30 mg IV / IO 60 mg IM		
	Cardiac Monitor		
P	Morphine 4 mg (0.1 mg/kg) IV / IO Repeat 2 mg every 5 minutes as needed. Maximum 10 mg		
	Monitor and Reassess Every 10 minutes following sedative		
B	Monitor and Reassess		



Notify Destination or  
Contact Medical Control



# Pain Control: Adult

## Pearls

- **Recommended Exam: Mental Status, Area of Pain, Neuro**
- **Pain severity (0-10) is a vital sign to be recorded before and after PO, IV, IO or IM medication delivery and at patient hand off. Monitor BP closely as sedative and pain control agents may cause hypotension.**
- **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 at 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 with known renal disease or renal transplant, in patients who have known drug allergies to NSAID's (non-steroidal anti-inflammatory medications), with active bleeding, headaches, abdominal pain, stomach ulcers or in patients who may need surgical intervention such as open fractures or fracture deformities.**
- Do not administer **Acetaminophen** to patients with a history of liver disease.
- Burn patients may required higher than usual opioid doses to effect adequate pain control

# Scene Rehabilitation: General

Injury / Illness / Complaint should be treated using appropriate treatment protocol beyond need for oral or IV hydration.



## Initial Process

1. Personnel logged into General Rehabilitation Section
2. VS Assessed / Recorded (If HR > 110 then obtain Temp)
3. Personnel assessed for signs / symptoms
4. Remove PPE, Body Armor, Haz-Mat Suits, Turnout Gear, Other equipment as indicated

Significant Injury  
Cardiac Complaint: Signs / Symptoms  
Respiratory Complaint: Serious Signs / Symptoms  
Respiratory Rate < 8 or > 40  
Diastolic Blood Pressure ≤ 80

Exit to  
Scene Rehabilitation  
Responder  
Protocol



NO

Heat  
or  
Cold stress

## HEAT STRESS

### Active Cooling Measures

Forearm immersion, cool shirts, cool mist fans etc.  
10 – 20 Minutes

### Rehydration Techniques

12 – 32 oz Oral Fluid over 20 minutes  
*Oral Rehydration may occur along with Active Cooling Measures*  
*Firefighters should consume 8 ounces of fluid between SCBA change-out*

## COLD STRESS

### Active Warming Measures

Dry responder, 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*  
*Firefighters should consume 8 ounces of fluid between SCBA change-out*

Reassess responder after 20 Minutes in  
General Rehabilitation Section  
Reassess VS

HR  
≥ 110

NO

Temp  
≥ 100.6

NO

Temp  
≥ 100.6

NO

HR  
≥ 110

NO

Responder  
Cannot Wear  
Protective Gear

Extend  
Rehabilitation  
Time Until VS  
Improve

Extend  
Rehabilitation  
Time Until VS  
Improve

Discharge Responder from  
General Rehabilitation Section

Reports for Reassignment

## VITAL SIGN CAVEATS

### Blood Pressure:

Prone to inaccuracy on scenes. Must be interpreted in context.

Firefighters have elevated blood pressure due to physical exertion and is not typically pathologic.

Firefighters with Systolic BP ≥ 160 or Diastolic BP ≥ 100 may need extended rehabilitation. However this does not necessarily prevent them from returning to duty.

### Temperature:

Firefighters may have increased temperature during rehabilitation.

# Scene Rehabilitation: General

## Pearls

- 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.

# Scene Rehabilitation: Responder

## Remove:

PPE  
Body Armor  
Chemical Suits  
SCBA  
Turnout Gear  
Other equipment as indicated

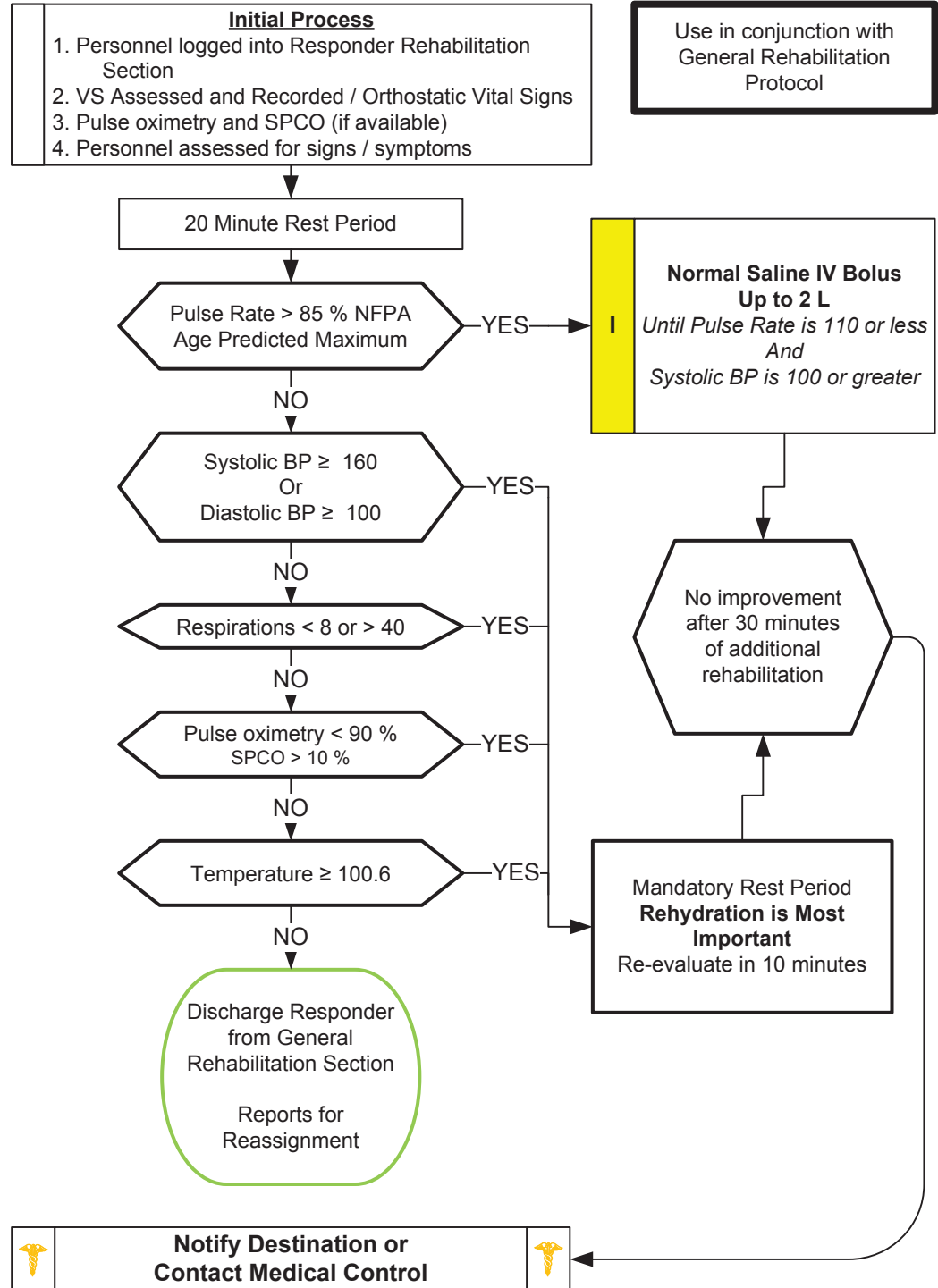
## Continue:

Heat and Cold Stress treatment techniques from General Rehab Section

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



Adult General Section Protocols

## Pearls

- Utilized when responder is not appropriate for 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.