Adult Airway

Important skills to master for the adult airway are:

- Best method for airway management
- Managing the airway relevant to patients condition
- Rapid assessment for intubation
- Realizing when planned interventions have failed and the need for an alternative technique is required

Breath Sounds: Listen for absent, diminished, unequal, wheezing, Rhonchi, Crackles, Stridor.

Assess ABC's, respiratory rate, effort, adequacy

Inadequate

Adequate

Pulse Oximetry & **Capnography**

Pulse Oximetry

Oxygen

If necessary **Suction**

Supplemental Oxygen

Basic airway maneuvers:
Manual, nasal or oral airway.
Consider **Spinal Injury Assessment** if necessary.
Ventilate with bag mask device

Obstruction

Supraglottic Airway
(Pulseless & Apneic)

Pulseless & Apneic

Foreign Body Obstruction

Nasal Intubation

Intubation-Oral

Direct laryngoscopy and remove using Magill forceps if possible.

Apneic

Intubation-Oral

Establish airway and re attempt to ventilate.

Unsuccessful

Failed Airway Protocol

Cricothyrotomy-Surgical

Objective criteria for evaluation of the Respiratory Distress patient includes:

- Accessory muscle use / retractions
- O2 saturation < 94%
- Respiratory rate > 24
- Unable to speak full sentences
- Abdominal / paradoxic breathing
- Altered mentation (GCS 11-14)

General

EMT

AEMT

Paramedic

Failed Airway

Difficult Airway: something one anticipates.

Failed Airway: Something one experiences.

Walls, 2002

Unsuccessful attempts at intubation by most proficient technician on scene

Assistive techniques that are also of great value are the Sellick's maneuver. It is important to remember: As unsuccessful attempts at intubation increase, the likelihood of tracheal swelling, soft tissue trauma, and aspiration can occur.

SPO_2 > 94% with BVM ventilation & 100% O_2

Yes → **Continue BVM w/100% O_2**
Consider securing airway, despite SPO_2 reading if airway needs controlled

No

Supraglottic Airway
(Pulseless & Apneic)

Unable to establish airway → BVM w/100% O_2 → **SPO_2 > 94%?** → **Continue ventilation with BVM**

Supraglottic Airway
(Apneic)

Unsuccessful, or

Facial Trauma or swelling?
(Avoid cricothyrotomy if possible, with most medical patients)

Yes

Cricothyrotomy-Surgical
(Adult only)

General
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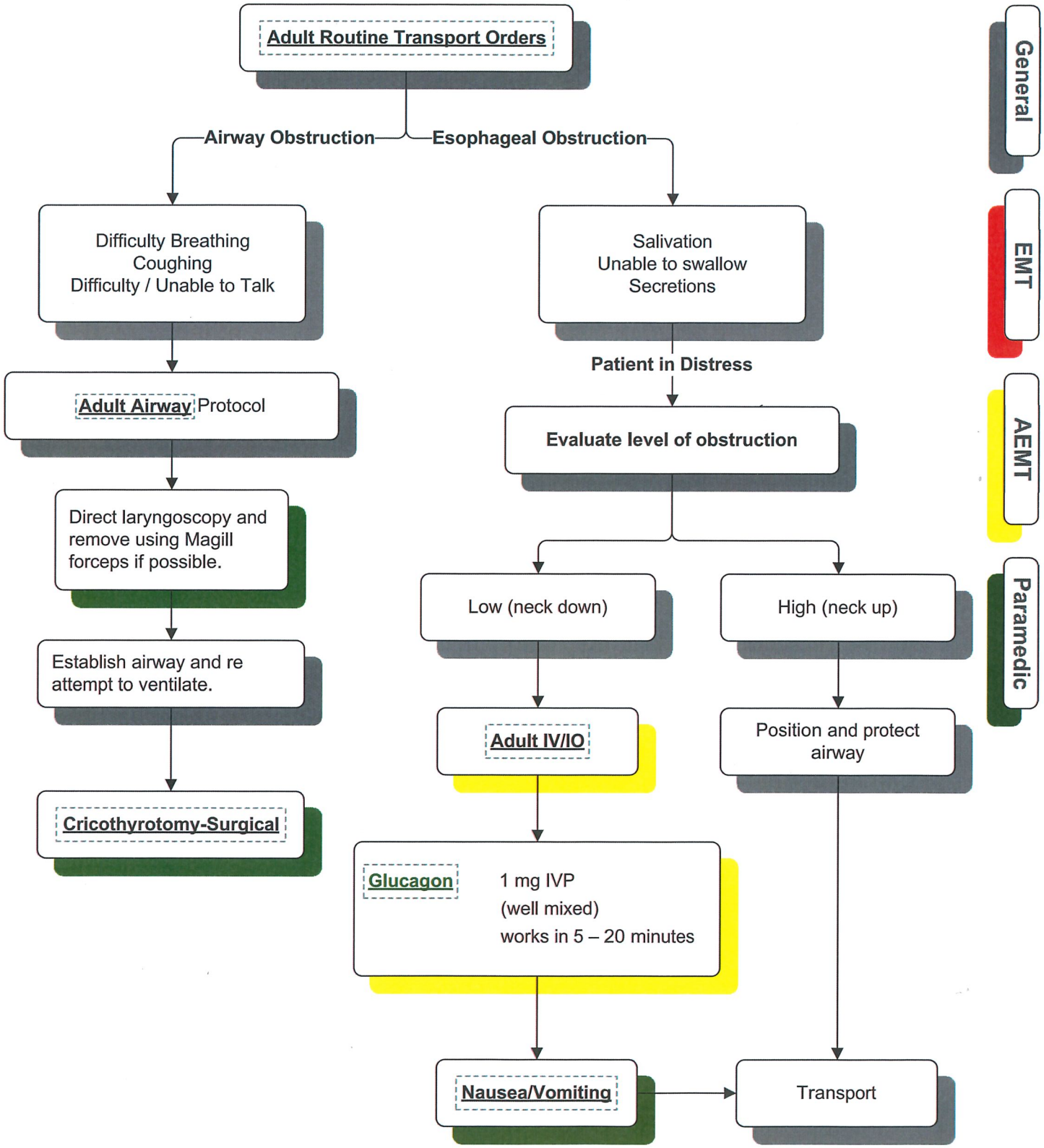
Foreign Body Obstruction



Respiratory Distress

Some causes of respiratory distress include: Pulmonary Edema, COPD, Asthma, Emphysema, Anaphylaxis, Pulmonary Embolism, Pneumothorax, Pneumonia, Bronchitis, or Cardiac related problem.
Patients may present with complaint of shortness of breath, pursed lip breathing, Tripod position, accessory muscle use and inability to complete sentences.

Many specific disorders are responsible for respiratory distress. Included area; Chronic bronchitis & emphysema-COPD, asthma, pneumonia, and lung cancer.

General

Adult Routine Transport Orders

Oxygen

Cardiac Monitor

Adult IV/IO

EMT

Crackles / Signs of CHF

Pulmonary Edema/CHF Protocol

Wheezing / Rhonchi

AEMT

Albuterol (Proventil) 2.5 mg/ 3 ml saline **and**
Ipratropium (Atrovent) 0.5 mg/ 2.5 ml saline
Mixed together (May repeat x 2)

Dexamethasone (Decadron) 10 mg IVP, IO, IM, PO

Continued Distress

Paramedic

Refractory to above treatments

Magnesium Sulfate

2 grams / 100 ml NS Infuse over 20 minutes. IV Infusion

NOTE: Use EPINEPHRINE with caution in any patient who has used an aerosol bronchodilator within the past 4 hours.
NOTE: Consider other causes of wheezing in the patient with presumed asthma
Discontinue treatment if significant PVC's appear.

Epinephrine 1:1,000 0.3 – 0.5 ml IM
May be given concurrent with above in severe cases or anaphalyxis.
May repeat in 20 minutes if needed

Transport in a position of comfort
Patients over 50 years of age who receive EPINEPHRINE or ALBUTEROL/IPRATROPIUM should be placed on a monitor and transported.

If patient continues to deteriorate and
Pulse oximetry < 94% consider **CPAP** or **Intubation**
See **Rapid Sequence Intubation (RSI)** Procedure

Allergic Reaction/Anaphylactic Shock

Signs & Symptoms:
Rash, itching, hives, difficulty swallowing, swelling of local area or face, eyes and tongue, abdominal cramping, chest pain, anxiety, nausea & vomiting, difficulty breathing, wheezing, unconsciousness, respiratory arrest.

Adult Routine Transport Orders

Adult IV/IO

Cardiac Monitor

An allergic reaction may include one or several symptoms. Most allergic reactions occur within minutes of the exposure, but some reactions may occur several hours later.

General

Assist with Patient's prescribed **Epinephrine Auto-Injector**

EMT

Epinephrine 1:1,000 0.3 - 0.5 mg IM
May repeat every 20 minutes If wheezing

AEMT

Albuterol (Proventil) / **Ipratropium (Atrovent)**
2.5 mg & 0.5 mg / 5.5 ml saline Nebulized
If evidence of bronchospasm, the aerosol should be discontinued if significant PVC's appear.

Diphenhydramine (Benadryl) 50 mg IVP, IO, IM, PO
Over 1 – 2 minutes, watch for hypotension

Dexamethasone (Decadron) 10 mg IVP, IO, PO

Paramedic

Shock or Circulatory Collapse

NS Fluid Bolus **20 ml/kg** to maintain
BP ≥ 90 mmHg systolic
Place patient in shock position, if tolerated.

Epinephrine 1:10,000
0.5 mg (5 ml) IVP, IO

Consider
Epinephrine Drip
2 - 10 mcg/min

If none of the above are present, then treat symptomatically. In asymptomatic patients with known history of anaphylactic reaction (as opposed to local reaction), administer
Epinephrine 1:1,000 0.3 ml IM

Extrapyramidal Symptoms (EPS)
is not an allergic reaction, but Benadryl can also be used for EPS.
Common symptoms:
Pseudoparkinsonism-tremor, masklike facies, drooling, rigidity
Akathisia-motor restlessness, aniexty to inability to lie or sit quietly
Dystonias- involuntary, irregular, clonic contortions of the muscles of the trunk and limbs
Tardive-Having symptoms that develop slowly or that appear long after inception.
Dyskinesia- impairment in the ability to control movements, characterized by spasmodic or repetitive motions or lack of coordination.

Pulmonary Edema/CHF

Pulmonary Edema Signs and Symptoms:
Difficulty breathing, anxiety & restlessness, coughing that produces pink frothy sputum, pale, cool and clammy, chest pain, wheezing, course crackles, tachycardia, ankle edema, JVD, hypertension.

Adult Routine Transport Orders

Oxygen
NRB Mask 12 – 15 LPM

or

If patient in acute respiratory distress
CPAP

Adult IV/IO

Cardiac Monitor

Nitroglycerin
0.4 mg SL
May repeat x 2 if BP > 90 systolic and IV established(3 doses total)

If sedation is needed, use
Midazolam (Versed)
1 mg IVP, IO, IN

BP < 90 mmHg systolic

Epinephrine Drip 2 - 10 mcg/min.

Transport with head elevated if there is no hypotension.
Treat any dysrhythmia as per the protocol.

Intubate if patient shows signs of increasing respiratory distress, lethargy, unconsciousness or diminished respiratory effort.

See
Rapid Sequence Intubation (RSI)
Procedure

General
EMT
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Paramedic

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Toxicology

Toxicology

Carbon Monoxide Poisoning

Toxicology

Crews are to assure that ALL firefighters are assessed for elevated levels of CO after structural firefighting activities.

Adult Routine Transport Orders

Remove from exposure environment and remove contaminated clothing

Adult Airway Protocol

Determine CO using **Carboxyhemoglobin Monitor**

Patients suffering from exposure to byproducts of combustion should, when feasible, have a carboxyhemoglobin recorded . These situations include fire victims of smoke inhalation, exposure to CO, firefighters during rehab activities, patients or families with complaints of general illness or headaches.

General

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Adult IV/IO

If necessary **NS Fluid Bolus 20 ml/kg**

Cardiac Monitor

For patients with significant smoke inhalation or who display signs of altered mental status following exposure.

(See **Toxic Exposure** Cyanide Poisoning)

Remember that pulse oximetry should not be used as a determination of oxygenation in the patient with elevated carboxyhemoglobin. Symptomatic patients should be treated accordingly.
Smokers may have baseline CO levels as high as 9%

Transportation to OSU-Main for Hyperbaric Oxygen Therapy if Carboxyhemoglobin 20% or higher.

Carboxyhemoglobin Reference

COHb Level %	Signs & Symptoms	Treatment
0 – 4%	None - Normal	None Necessary (smoker 3-5% higher)
5 – 9%	Minor Headache	100% O2 via NRB Mask Reassess after 10-15 min.
10 – 19%	Headache / SOB	100% O^2 via NRB Mask And transport to closest hospital
20 – 29%	Headache, Nausea, Dizziness, Fatigue	**ABC's, 100% Oxygen, Transport HBO**
30 – 39%	**Severe Headache, Vomiting, Vertigo, ALOC**	**ABC's, 100% Oxygen, Transport HBO**
40 – 49%	**Confusion, Syncope, Tachycardia**	**ABC's, 100% Oxygen, Transport HBO**
50 – 59%	**Seizures, Shock, Apnea**	**ABC's, 100% Oxygen, Transport HBO**
60% - up	**Cardiac Arrhythmias, Coma, Death**	**ABC's, 100% Oxygen, Transport HBO**

HBO: Hyperbaric Oxygenation

Overdose

Toxicology

Obtain History
a) Medications - type, dose, bring bottles with patient.
b) Time and duration of exposure and via what route.
c) Notify receiving facility as soon as possible.

Poison Control
1-800-222-1222

Adult Routine Transport Orders

Adult IV/IO

Cardiac Monitor

Consider physical or chemical restraint for uncontrollable patients

Contact Poison Control

1-800-222-1222

If necessary
Spinal Injury Assessment

Lethargic or unconscious ?

Yes

Naloxone (Narcan)
0.4 - 2 mg IVP, IO, IN
May repeat every 5 minutes as needed
Administer in lowest dose as needed to maintain adequate respirations
EMT may administer via IN only

Adult Airway Protocol

Specific ingestions

Aspirin Overdose

NS Fluid Bolus 250 ml/hr

Seizures?
Seizures Protocol

Blood Glucose

< 60 mg/dl

Diabetic Emergencies

Tricyclic ingestion?

Sodium Bicarbonate 8.4%
1 mEq/kg IVP, IO

Hypotension

NS Fluid Bolus 300 - 500 ml
May repeat bolus if no response.

Ventricular Dysrhythmia

Amiodarone (Cordarone)
Mix 150 mg in 100 ml of 0.9 NS over 10 minutes, 15 mg/min.

Tricyclic Antidepressants:
Elavil, Sinequan, Vivactyl, Endep, Norpramin, Pamelor, Surmontil, Tofranil, Amitriptyline, Doxepin, Imipramine, Nortriptyline, Desipramine

General
EMT
AEMT
Paramedic

Toxic Exposure

Toxicology

The amount and route of exposure to the nerve agent or OP pesticide, the type of nerve agent or pesticide, and the premorbid condition of the person exposed person will contribute to the time of onset and the severity of illness.

Adult Routine Transport Orders

Adult IV/IO → **Cardiac Monitor**

Contact Chemtrec
1-800-424-9300
Poison Control
1-800-222-1222

Skin Exposure

1. Remove clothing and wash skin with copious amounts of water (brush off dry chemicals but don't delay applying water).
2. Wear gloves and masks **(appropriate mask for contaminant)** while handling the patient
3. Cover the patient with sheet (cloth or plastic) to prevent the spread of the contaminant.

Respiratory Exposure → **Adult Airway** Protocol

Organophosphate Exposure

Development of coma, ataxia, psychosis, dyspnea, convulsions, bradycardia, or cyanosis.

Atropine 2 - 5 mg IVP, IO, IM
May be repeated every 15 minutes until signs of flushing, dry mouth, and dilated pupils appear.

Smoke Inhalation / CO Poisoning

Adult Airway Protocol monitor for carboxyhemoglobin

2 Indications:
1. Firefighter down at fire scene & in cardiac arrest, or
2. Victim (FF or civilian) meeting all 3 criteria

Confined space smoke exposure
Altered Level of Consciousness
Nasal/Oral Soot or burns

Wheezing

Albuterol (Proventil) 2.5 mg/ 3 ml saline
Mixed together
Ipratropium (Atrovent) 0.5 mg/ 2.5 ml saline (May repeat)

Suspected Cyanide Poisoning

All Yes → Transport to a facility with hyperbaric capabilities should be considered. If significant burns are involved, transport should be to a trauma center.

General

EMT

AEMT

Paramedic