

Routine Medical Care

Presented by MercyHealth EMS System

Objectives

- Understand the Routine Medical Care protocol and its components
- Understand how to perform the required medical skills

Routine, So What??

Data	Blood Glucose, SpO ₂ , EtCO ₂
Goals of Therapy	Restore normal mental status
Monitoring	

EMERGENCY MEDICAL RESPONDER

EMERGENCY MEDICAL RESPONDER

	early identification fibrinolytic therapy
Monitoring	Cardiac monitoring

EMERGENCY MEDICAL RESPONDER

EMERGENCY MEDICAL RESPONDER

EMERGENCY MEDICAL RESPONDER/EMT

EMERGENCY MEDICAL RESPONDER/EMT

Routine medical care

- Oxygen @ 2-4 LPM per nasal cannula to keep SpO₂ ≥ 94%. Increase if needed.
- If the patient is unconscious, place him/her in the recovery position

EMERGENCY MEDICAL RESPONDER

- Routine Medical Care or Routine Trauma Care
- Allow/assist the patient to assume a position of comfort
- Oxygen: Per nasal cannula at 2-6 LPM or per non-rebreather

EMERGENCY MEDICAL RESPONDER

- Routine Medical Care
- Administer Oxygen 2-4 LPM per nasal cannula. Increase if needed.
- If the patient is having difficulty breathing allow them to sit upright, see R

EMERGENCY MEDICAL RESPONDER

- Routine Medical Care
- Administer Oxygen 2-4 LPM per nasal cannula. Increase if needed.
- For difficulty breathing allow patient to sit upright, see R

EMERGENCY MEDICAL RESPONDER/EMT

Goals of Therapy	Treat symptomatic bradycardia/hypotension
Monitoring	Cardiac Rhythm monitoring Heart rate and blood pressure

EMERGENCY MEDICAL RESPONDER

- Routine Medical Care
- Gently lower the patient to a supine position or Trendelenburg
- Oxygen 2-4 LPM via nasal cannula; Maintain SpO₂ ≥ 94%
- Check blood sugar if less than 70 treat per hypoglycemia protocol



Mercyhealth



“Routine” Medical Care is the basis for
good medical care, regardless of the
complaint or disease process
Always remember strong basics before
getting fancy

Routine Medical Care

- If a specific complaint is given, refer to the appropriate protocol
- For Assessment, remember OPQRST
- SAMPLE History
- Remember Scene Size-up and BSI
- ABCs provide foundation

ABC



As alternative to OPQRST, Onset,
Duration, Progression, Severity
Scene Size-up: Not just what the
scene looks like. Assess for what you
may need for resources: ALS? MD1?
Mass casualty?

BSI: Good time to discuss COVID
precautions: N95 mask and eye
protection at a minimum, with full face
shield recommended if aerosolizing
procedure, along with gowns. Refer to
each department's PPE policy as well.

Airway Management

- Head-tilt Chin-lift
- Oropharyngeal or nasopharyngeal airway
- Blind insertion advanced airway device (i-gel)
- RSA: See Respiratory Distress Guidelines





Discussion for indications for airway interventions

Scenario

You arrive to the scene of an unknown medical problem, and find a woman laying on the floor, unresponsive. There are no obvious signs of trauma. Her GCS is 6 (she withdraws from pain). What is the next step in her management?





There is no perfect answer to this question. This should spark a discussion about airway, particularly as it pertains to the GCS. The phrase “GCS less than 8, intubate” was created for trauma. Unfortunately, many providers have generalized it to all patients when it is not always appropriate. A perfect example of when this rule would not apply is a highly intoxicated patient.

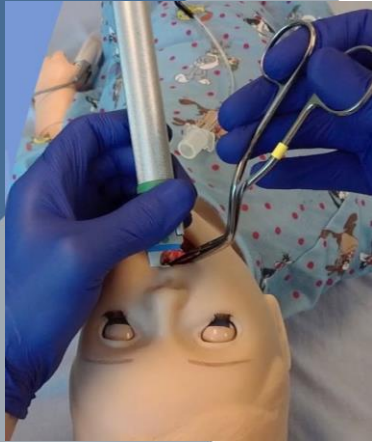
We've all seen patients so drunk they had GCS 3-8, but we don't typically intubate them unless there is another indication for compromised airway. In this case, we should discuss how to determine if the airway is patent (controlling secretions, normal breathing, gag reflex). I have intentionally left this vague with little extra information. Realistically, intubation of this patient could be justified.

But assessing the patient further, including checking pulse oximetry and capnography would also be warranted. If in the discussion they ask for SpO2 and EtCO2, give normal numbers. This should prompt them to move on to less invasive measures. This patient could be placed in the recovery position without any airway adjuncts potentially, and the providers could move on to further assessment to try to determine the cause of the altered mental status. That is not the point of this question, and you can move on to the next slide.



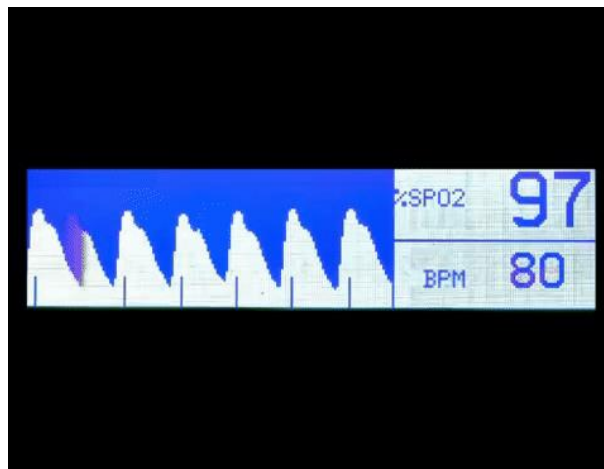
Airway Obstruction

- May be solid foreign body or liquid (like blood or vomit)
- Suction, AHA guidelines for airway obstruction
- Use appropriate size laryngoscope and Magill forceps to remove upper airway foreign body (WI EMT and above, IL Paramedic)
- Consider cricothyroidotomy if an upper airway obstruction cannot be relieved by non-invasive means



Breathing Management

- Check pulse oximetry
- Administer oxygen to maintain $\text{SpO}_2 > 94\%$
- Ventilate/Assist ventilations with BVM on high-flow oxygen as indicated
- Albuterol and Atrovent
- Needle Decompression for tension pneumothorax



EMR: May administer albuterol per
Asthma/COPD and
Allergy/Anaphylaxis guidelines
EMT/AEMT: May assist patient with
prescribed albuterol/atrovent: See
Asthma/COPD and Allergy &
Anaphylaxis guidelines, or administer
Albuterol/Atrovent nebulized, also
Asthma/COPD or Allergy and
anaphylaxis guidelines



Discuss indications of Tension pneumothorax: Physical exam findings of absent or decreased breath sounds, deviated trachea away from affected side, hypotension. Would be good opportunity to discuss physiology for tension causing hypotension by increased intrathoracic pressure causing collapse of vena cava, leading to no preload

Scenario

You are requested for a male subject having difficulty breathing. On arrival, he is speaking in 2-3 word sentences and is in obvious distress. Lung sounds reveal rhonchi in the bases bilaterally. How would you proceed?





Again, I intentionally leave some information out here. This should paint the picture of pulmonary edema/CHF with the rhonchi, but there is still a lot of unknown information. Discussion should include further evaluation to include SpO2 and EtCO2, as well as BP, HR, and past medical history, though treatment shouldn't be delayed to obtain this information.



CPAP is the most likely appropriate treatment in this case, but discuss how a low blood pressure may alter this decision: increased preload causing worsening hypotension. Also should discuss other possibilities on the differential diagnosis besides CHF/Pulmonary Edema: Pneumonia, COPD, PE, COVID

Circulation Management

- Control external hemorrhage
 - Direct pressure, tourniquet, bandages, hemostatic gauze
- CPR, Defibrillation
- Trendelenburg position
- Insert IV or IO
 - If hypotensive, 500mL NS bolus, repeat for SBP <90





Controlling external hemorrhage heads a little more into the routine trauma care, but this is a good discussion that while you may initially think you have a medical complaint, you should also consider trauma, particularly for a vague complaint or unknown problem. CPR and defibrillation per cardiac arrest guideline

Trendelenburg position: see
hypovolemia/shock guidelines
IO for AEMT: Proximal tibia, for
paramedic: prox tib, distal tib, prox
humerus
If present, Paramedics can access
central lines if other access is
unavailable

Scenario

You are called to a nursing facility for an elderly female with change in mental status. You arrive to find the patient laying in bed, confused but awake. Nursing is unsure of her baseline. She is talking and in no respiratory distress. Vital signs show heart rate of 140 and blood pressure of 87/43. She feels cool to the touch. What is your differential diagnosis, and how will you treat?





This scenario is meant to paint the picture of sepsis leading to distributive shock. Tachycardia, hypotension, and hypothermia (cool to touch) are all potential indications of septic shock. They may also indicate other causes of shock, including hypovolemic from volume depletion, so this should also be considered on the differential.

Given the scenario of a confused lady in a nursing home, sepsis is the more likely cause. Treatment should begin with large bore IV placement, IV fluids, and consideration for push dose epinephrine. Ultimately, appropriate transport to a facility for IV antibiotics is the best thing for this patient.

Hemorrhagic Shock

- Tranexamic Acid (TXA)
 - 1g IV/IO over 10 min >12 yrs old
 - 15mg/kg IV/IO over 10 min <12 yrs old
- Hang blood tubing
- For prolonged scene and transport time, Lactated Ringer is the preferred fluid for hemorrhagic shock resuscitation
 - Not compatible with blood transfusion





Again, here, we diverge a little from medical into trauma, but this is listed under the routine medical guideline protocol

Indications of hemorrhagic shock should be considered: Use of tourniquet, sustained tachycardia despite pain control/sedation, clinical signs/symptoms of shock such as altered mental status, pale skin, or suspected internal bleeding

Use of tourniquet alone does not indicate hemorrhagic shock.

We've all seen cases where the tourniquet was placed by a bystander with good intentions, when it wasn't necessary

TXA indicated for hemorrhagic shock with SBP <90 mmHg or HR >110 BPM in adults, or unstable age based vitals (SBP <80 mmHg age less than 5, <90 mmHg age > 5)

If LR initiated, either blood tubing would have to be flushed with NS prior to blood transfusion, or other tubing in a secondary IV site should be used

After the ABCs....

- Assess for other life threats
- Check blood glucose
 - Treat according to Diabetic Emergencies Guideline
- Obtain vital signs if not already done
- Epinephrine auto-injector for anaphylaxis
- Synchronized cardioversion for appropriate unstable rhythms
- Transcutaneous pacing for unstable bradycardia





AKA Throw the kitchen sink at them.
This section is so broad. Essentially,
it's going to be follow the appropriate
guideline for whatever you've found. If
you have Altered LOC, follow altered
LOC guideline. Next slide will go
slightly more into that, and
hypoglycemia.

Epi for anaphylaxis is specifically
mentioned in routine medical care, but
obviously specific details will be in the
allergy and anaphylaxis guideline



Synchronized cardioversion is also specifically mentioned here, but is covered in much greater detail in the Wide Complex Tachycardia Guideline and the Narrow Complex Tachycardia Guideline

Again, Pacing is mentioned here but covered more specifically in Bradycardia Guidelines and Cardiac Arrest Guidelines

Altered Level of Consciousness

- Check Blood Glucose Level!
- Hypoglycemia is the great masquerader
- Treat according to specific guidelines
 - Which starts with Routine Medical Care!





Altered level of consciousness has its own guideline, so we won't go into great detail here

Hypoglycemia is the great masquerader: presentation can vary widely from total unconsciousness to palpitation and diaphoresis to combative/agitation. Don't mistake hypoglycemia for alcohol intoxication or psychiatric problem.



Discuss other possible causes of altered level of consciousness, and how you could determine their presence: hyperglycemia, anaphylaxis, overdose, seizure/postictal, sepsis

Medical Skills

- Medication Administration
- CPAP
- EtCO₂
- 12-Lead EKG



Medication Administration

4.

4.0 APPROVED MEDICATION LIST

EMR	EMT	A	P	Medication
		✓	✓	Adenosine (Adenocard) 12mg/4ml pre-loaded syringe
✓	✓	✓	✓	Albuterol Sulfate 0.83% 2.5mg/3ml unit dose
		✓	✓	Amiodarone Hydrochloride (Cordarone) 150mg/10ml pre-load syringe
✓	✓	✓	✓	Aspirin bottle, chewable baby, 81mg tablets
		✓	✓	Atropine Sulfate 1mg/10ml preloaded syringe
		✓	✓	Calcium Chloride 10% solution, 1gram/10ml pre-loaded syringe
		✓	✓	Cyano-Kit
		✓	✓	Dextrose 10%
		✓	✓	Diltiazem (Cardizem) 5mg/ml 5ml vial (refrigerated)
		✓	✓	Diphenhydramine Hydrochloride (Benadryl) 50mg/1ml vial
		✓	✓	Diphenhydramine Hydrochloride (Benadryl) 12.5mg tablets or 12.5mg/5ml liquid
		✓	✓	Epinephrine 1:10,000 solution, 1mg/10ml preloaded syringe
		✓	✓	Epinephrine 1:1000 solution, 1mg/1ml ampule
✓	✓	✓	✓	Epinephrine (adult and pediatric) pre-loaded auto injector
		✓	✓	Etomidate 40mg/20ml vial
		✓	✓	Fentanyl Citrate (Sublimaze) 100mcg/2ml vial
	✓	✓	✓	Glucagon (Glucagen) 1mg/1ml reconstituted vials
✓	✓	✓	✓	Glucose Oral Gel 15-25g/tube or Tablets g/tab
		✓	✓	Hydromorphone 1mg/1ml
	✓	✓	✓	Ipratropium Bromide (Atrovent) 0.5mg/2ml unit dose
		✓	✓	IV fluids (Normal Saline, Lactated Ringers, D5W)
		✓	✓	Ketamine 500mg/5ml
		✓	✓	Labetalol 100mg/20ml
		✓	✓	Lidocaine Hydrochloride 2% 100mg/5ml preloaded syringe
		✓	✓	Magnesium Sulfate 50% 5gram/10ml pre-loaded syringe
✓	✓	✓	✓	Mark I Kit (Atropine & Pam2chloride) pre-loaded auto injector
		✓	✓	Methylprednisolone (Solu-Medro) 125mg/2ml Act-O-Vial
		✓	✓	Metoprolol tartrate (Lopressor) 5mg/5ml vial (If labetalol unavailable)
		✓	✓	Midazolam Hydrochloride (Versed) 10mg/2ml vial
✓	✓	✓	✓	Naloxone Hydrochloride (Narcan) 2mg/2ml pre-loaded syringe
		✓	✓	Nitroglycerin 0.4mg/tab or metered spray
		✓	✓	Nitroglycerin Paste packet
		✓	✓	Ondansetron Hydrochloride (Zofran) 4mg/2ml vial
		✓	✓	Ondansetron ODT 4mg Oral Dissolving Tablet
		✓	✓	Rocuronium Bromide (Zemuron) 50mg or 100mg vial (If vecuronium unavailable)
		✓	✓	Sodium Bicarbonate 8.4% 50mEq/50ml, preload syringe
		✓	✓	Succinylcholine Chloride (Anectine) 200mg/10ml vial
		✓	✓	Tetracaine 0.5%
		✓	✓	Tranexamic Acid (TXA) 1G vial
		✓	✓	Vecuronium Bromide (Norcuron)10mg vial-powder

Concentrations above are preferred but may require substitution based on availability.

This page updated 6/8/18

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CPAP: Indications

USE A VIRAL
FILTER!

- Use 5cm H₂O of PEEP, titrate to effect up to 15cm H₂O
- Any patient complaining of shortness of breath for reasons other than pneumothorax AND:
 - Awake and oriented
 - Over 12 years old, fit the mask
 - Can maintain open airway (GCS >10)
 - Respiratory rate $\geq$ 25 breaths per minute
 - Systolic blood pressure above 90mmHg
 - Using accessory muscles with SpO₂ <94%
 - Signs/Symptoms consistent with asthma, COPD, pulmonary edema, CHF, or pneumothorax



Why not use this in a pneumothorax?
Explain the pathophysiology of a pneumothorax. Positive pressure ventilation via CPAP will increase air leak, which could convert a simple pneumothorax into a tension pneumothorax. Air can go through the puncture in the lung parenchyma into the pleural space, where it becomes trapped. This will continue to expand with positive pressure until tension develops.



Why does the pt have to be awake/oriented and able to maintain open airway? If pt vomits and is not coherent/awake, he/she will likely aspirate.

Why do we need a systolic blood pressure above 90mmHg? CPAP again provides positive intrathoracic pressure. As intrathoracic pressure increases, venous return via the vena cava to the right side of the heart decreases, which decreases preload, and decreases blood pressure.

CPAP: Contraindications

- Respiratory arrest
- SBP < 90 mmHg
- Heavy oral secretions or vomiting
- Suspected pneumothorax
- Tracheotomy
- Major trauma





Respiratory arrest: CPAP provides oxygenation and PEEP, but the pt must be able to exhale in order to complete the oxygenation/ventilation cycle. Blowing oxygen into the lungs at high pressure does nothing for the release of CO₂, so CPAP will be ineffective.

SBP <90, as discussed on previous slide, CPAP provides increased intrathoracic pressure, decreased preload, and therefore decreased BP.

Heavy oral secretions/vomiting: Major aspiration risk



Suspected pneumothorax: as discussed on previous slide. Discuss findings suspicious for pneumothorax: absent lung sounds on one side.

Tracheal deviation and hypotension for tension pneumothorax

Tracheotomy: Opening in the circuit, where the CPAP will simply blow air out, ineffective seal

Major trauma: Risk of pneumothorax, risk of neck/facial injuries which could be worsened, risk of aspiration associated with bleeding



CPAP: Precautions



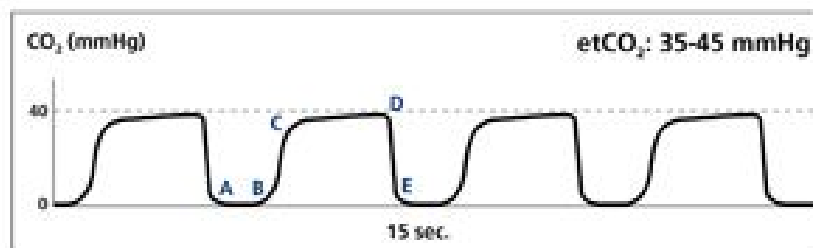
- Impaired mental status and unable to cooperate with procedure
- Failed prior attempts
- Active upper GI bleeding or history of recent gastric surgery
- Complaint of nausea
- Inadequate respiratory effort
- Excessive secretions
- Facial deformity that prevents the use of CPAP



Precautions are just that: Precautions.
In these scenarios, use common
sense and clinical judgement. These
patients may still be amenable to
CPAP, but will require close
monitoring.

End-Tidal CO₂ Uses

- Intubated Patients
 - BLS with CPR
 - Bag Valve Ventilation Effectiveness
 - ET Placement
- Non-Intubated Patients
 - Seizures
 - Lung Disease
 - Asthma or COPD
 - Intoxication or Overdose
 - Pain Management





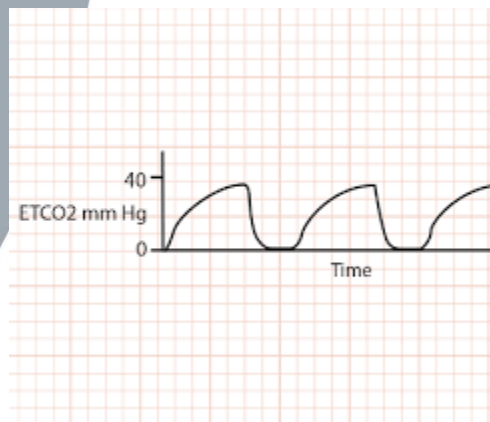
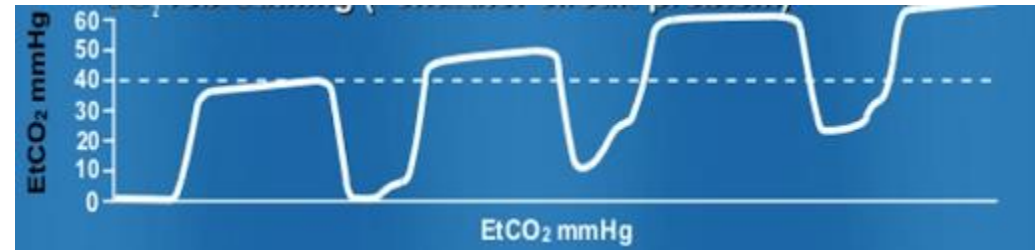
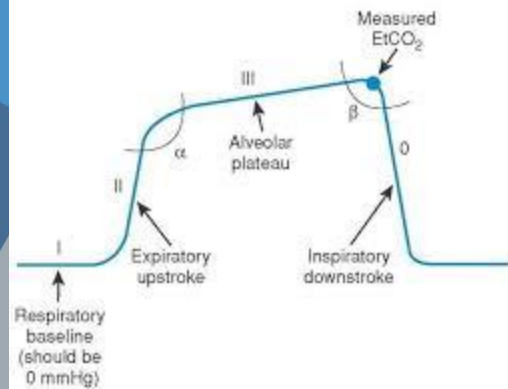
ETCO₂ is a good indicator of quality of CPR as well as a good indication of ROSC (with sudden increase in ETCO₂ during CPR).

May help indicate hypo or hyperventilation with the Bag-Valve ETT Ventilation

Excellent resource for confirming ET Placement, AND very importantly, proving continued appropriate placement.

In Non-intubated patients, provides good measurement of respiratory status. Good way to track effectiveness of treatment, to detect hypoventilation or apnea, and to detect the need for more aggressive intervention. Seizures, Intoxication/OD, and Pain management (us providing opiates or ketamine) may cause respiratory depression. Asthma/COPD may cause hypercapnea.

End-Tidal CO₂ Practice





Discuss what the waveform actually means: Upstroke is the sudden increase as exhalation begins. The plateau occurs when the force of exhalation plateaus: have participants exhale and pay attention to how the force is high initially and then plateaus. The peak of the exhalation phase is the end-tidal CO₂, the number we all talk about. It's called end-tidal, because it's at the very end of exhalation, and it's the peak CO₂ to be exhaled.



Bottom left image shows expiratory obstruction as in asthma. The upslope merges with the plateau to form more of a steady exhalation phase: this is because with obstructive lung disease, patients cannot exhale with the force those without disease can. This re-enforces what obstructive lung disease means.

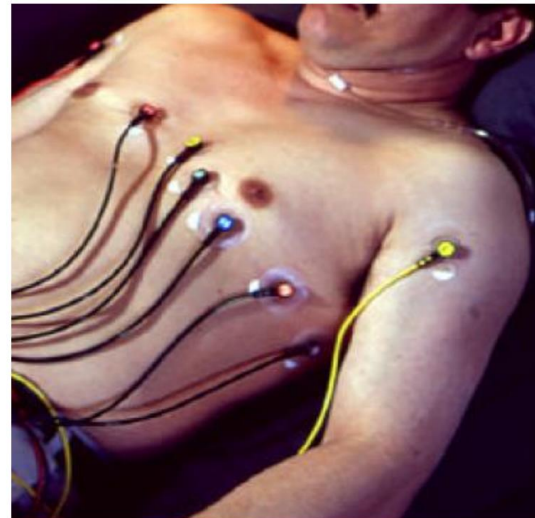
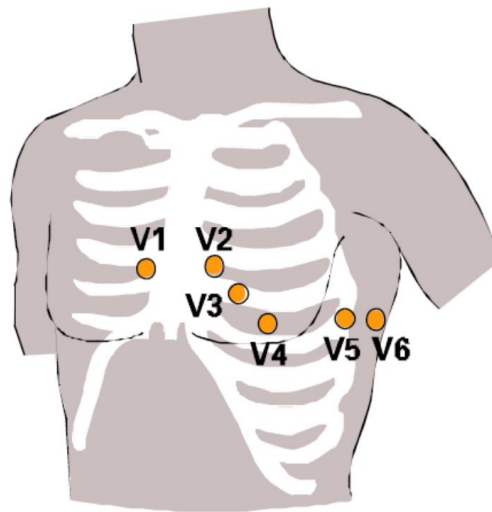


The upper right image is meant to show hypoventilation. You could see longer and more spread out breaths than this image depicts, but the main point here is the climbing EtCO₂ measurements as hypoventilation causes CO₂ retention.

The bottom right is intended to depict a sudden increase in EtCO₂ as in ROSC during CPR.

12-Lead EKG

- Chest pain, palpitations
- Breathing difficulty
- Syncope
- Falls
- Weakness
- Stroke symptoms



Questions?

