Are You Prepared for LIFE?

What's your Emergency Plan?

Is saying, “We have no medical emergency plan” another way of saying “Negligent”?

The Six Links of Survival
“Any Link Broken or Missing Decreases the Survival of the Patient”

- Doctor Training
- Staff Training
- Medical Emergency Plan
- Emergency Drug Kit
- Proper Equipment
- Mock Drills

EMS Statistics

- Almost all cardiac arrest victims shocked within 6 minutes lived whereas those after 6 minutes almost all died
- Average arrival time for 911/EMS was 9 minutes urban, 15 minutes rural
- 1 person has a heart attack every 2 minutes (1000/day)
- 350,000-450,000 will die in US from sudden cardiac arrest
Unresponsive Patient!

Airway Management and Emergency Considerations

Functional Residual Capacity

- 2400 ml: differs according to age, size, and medical status of the patient
- Normal adult / well oxygenated (nasal canula -4 L/Min): 8-9 minutes (PaO2)
- Obese and Children: 3-4 minutes (PaO2)
- ****Assumes pre oxygenated patient; good reason to carry patient on nasal O2 during sedation
O2 Supersaturation of FRC

Ventilation Management

• Open Airway with head lift and chin lift
• Insert oral airway
• Mask Ventilation- preferable two person
• Ventilation at one breath every six seconds
• Verify chest rise with each breath

Ventilation Management

• Poor chest rise? Or oxygen saturation <94 consider LMA/ supraglottic airway
• Verify chest rise with positive pressure ventilation
• If no rise > evaluate for laryngospasm, foreign body, or bronchospasm

Level 1 Airway Devices
Airway Level 2

Laryngeal Mask Airway

Oxygen Delivery

iGel

O2 connect fits Safe Sedate male

Demand Valve
Oxygen

- Plentiful supply including back up
- Alarm/ Automatic switch over regulators.
- One person assigned to check levels and record every day
- Portable supply
- Adaptor for nitrous hose for full face mask (Porter N2O Systems)
- Bag- Valve- Mask with reservoir for oxygen best

Up to 95% O2 delivery at 10 - 15 L/min
- Nasal Canula- 36% O2 at 4L/min- adequate in most cases (room air 20%)

Doctor

Confirm emergency 911 call was placed
Place supplemental oxygen
Confirm Open Airway
Assess breathing
Check pulse, blood pressure and respirations
Administer medications if indicated
Initiate basic life support if indicated
Provide pertinent information to paramedics

Doctor RN

Confirm emergency 911 call was placed
Place supplemental oxygen
Confirm Open Airway
Assess breathing
Check pulse, blood pressure and respirations
Administer medications if indicated
Initiate basic life support if indicated
Provide pertinent information to paramedics

Doctor RN

Recognize

Checklist:

Emergency

Assess ABCs

Blood pressure

Respirations

Pulse

Temperatures

Body

Injury

Health

Symptoms

Respirations

Children

Adults

Infants

Call 911

Observe person

Contact primary physician for treatment and discharge status

NOTE: Limited number of personnel are available, combine responsibilities and adapt plans for your facility
Monitoring in a Medically Complex Culture

**Place patient on their right side**

**Syncpe (Fainting)**

**Checklist:**
- Tense all movement or activity
- Place in reclined position, legs above heart
- Attempt to comfort person
- Cool towel or cold compress to forehead
- Monitor vital signs

**Checklist:**
- Tense all movement or activity
- Place in reclined position, legs above heart
- Yes
- CALL 911
- Assess ABC (Airway, Breathing, Circulation)
- Initiate your Medical Emergency Plan
- Initiate Basic Life Support as indicated
- Consider other causes of symptoms
- Prepare to transport to Emergency Dept.

**Hyperventilation (Rapid Breathing)**

**Checklist:**
- Tense all movement or activity
- Place in reclined position, legs above heart
- Attempt to comfort person
- Do not give oxygen
- Have person breathe IN and OUT of paper bag

**Checklist:**
- Tense all movement or activity
- Place on right side to horizontal position
- suction and aspirate (mouth) and phone (back of throat)
- Assess for Signs & Symptoms of Aspiration
- COUGHING
- Labored respirations (Vocal Cord Spasm)
- Severe wheezing
- Elevated respiratory rate
- Tachypnea (Elevated Heart Rate)
- Cyanosis (Bluish Color of Skin)

**Checklist:**
- Tense all movement or activity
- Place on right side to horizontal position
- suction and aspirate (mouth) and phone (back of throat)
- Assess for Signs & Symptoms of Aspiration
- Monitor vital signs
- Observe for 1 hour prior to discharge
- Call 911
- Assess ABCs (Airway, Breathing, Circulation)
- Initiate your Medical Emergency Plan
- Initiate Basic Life Support as indicated
- Monitor vital signs
- Prepare to transport to Emergency Dept.
Back Up Suction Device

Foreign Body - McGill's Forceps
Reposition Airway First-Unresponsive Patient

- Apply forces to bone - not soft tissue
- Head Tilt
- Chin Lift
- Jaw protrusion
- Turn head ~30 degrees to either side
Automated External Defibrillator

This is now becoming the standard of care and greatly enhances chances of successful outcome

Make sure all team members cleared during analysis stage

Regular testing and maintenance

CPR

Rate 100 compressions/minute

30 compressions to 2 ventilations

5 cycles or 2 minutes

Check carotid pulse/ AED analyze
Anoxia

Anoxia not only stops the machine, it wrecks the machinery!

*pulse oximeter- 70

Firm Back Support for Compressions

Allergic Reaction

- Diphenhydramine – Histamine H2 blocker
- 50 mg/ml Dosage
- IV 25mg (0.5 ml) q 3-5 min IV, 50 mg IM
- Be ready with epi pen if severe
Bronchospasm

Insulin Management

- Patient’s most recent HbA1c?
- Length of Procedure
- Did patient take insulin on schedule before visit
- Did patient eat? What?
- What is patient’s blood sugar?
- Test in office?
Blood Glucose Levels

- **Diabetic**: Pre prandial 70-130 mg/dl
- Post Prandial - <180 mg/dl
- **Normal Healthy Adult**: 70 - 100 mg/dl

Local Anesthetic Reference

**Quick Reference for Local Anesthetics**

<table>
<thead>
<tr>
<th>Preparation</th>
<th>Maximum Volume in mL/14 ga (1 cc)</th>
<th>Maximum Adult Volume in mL</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.4% Procaine HCl, 2% (procaine HCl: 1:20,000 local anesthetic or 1:30,000 procaine)</td>
<td>0.27 (0.15)</td>
<td>—</td>
</tr>
<tr>
<td>2% Lidocaine HCl, 1:100,000 or 1:50,000 epinephrine</td>
<td>0.22 (0.12)</td>
<td>15.0 (8.5)</td>
</tr>
<tr>
<td>2% Mepivacaine HCl</td>
<td>0.35 (0.19)</td>
<td>25.0 (13.0)</td>
</tr>
<tr>
<td>2% Mepivacaine HCl, 1:20,000 local anesthetic</td>
<td>0.32 (0.18)</td>
<td>20.0 (12.0)</td>
</tr>
<tr>
<td>4% Lidocaine HCl</td>
<td>0.33 (0.18)</td>
<td>15.0 (8.5)</td>
</tr>
<tr>
<td>4% Mepivacaine HCl, 1:200,000 epinephrine</td>
<td>0.30 (0.17)</td>
<td>18.0 (12.0)</td>
</tr>
<tr>
<td>1.5% Etidocaine HCl, 1:200,000 epinephrine</td>
<td>0.33 (0.19)</td>
<td>10.0 (6.0)</td>
</tr>
<tr>
<td>4% Articaine HCl, 1:200,000 epinephrine</td>
<td>0.57 (0.33)</td>
<td>20.6 (14.7)</td>
</tr>
<tr>
<td>4% Articaine HCl, 1:200,000 epinephrine</td>
<td>0.57 (0.33)</td>
<td>20.6 (14.7)</td>
</tr>
</tbody>
</table>

*Maximum volumes are calculated from the maximum recommended doses listed in Table 6.3. Except for articaine, the cartridge volume is 2.5 mL. All anesthetic nurses are reset for the possibility of exceeding maximum recommended doses. The above listing is not intended to exhaust all the available anesthetics.

Systemic Side Effects of Components

**Anesthetic Component**
- CNS excitation: seizures, depression
- Cardiovascular: Arrhythmias

**Epinephrine**
- Increased Pulse
- Increased BP

Local Anesthetic Toxicity

- **REMAIN CALM**
- **Recognition**
- **Management**

Severe

1. **CALL 911**
2. Place in supine position; legs above heart
3. If seizure occurs, protect from injury
   - Assess ABCs
   - Activate EMS
   - Initiate your Medical Emergency Plan
   - Monitor vital signs
   - Administer oxygen
   - Start IV
   - Administer Diazepam 5-10mg titrate slowly IV or Midazolam 2-5mg titrate slowly IV
   - Initiate Basic Life Support as indicated
   - Prepare for transport to Emergency Department

Any of the above plus:
- Seizure
- Cardiac dysrhythmias
- Cardiac arrest
- Loss of consciousness
- Apnea
Respiratory Depression

- Naloxone - Opioid Antagonist
  - Dosage: 0.4 mg/ml - IV 0.2 mg (0.5ml) q-2-3 minutes/ IM- 0.4 mg

- Flumazinil - Benzodiazepine antagonist
  - Dosage: 0.1 mg/ml IM 0.5 mg, IV 0.2 mg/min

Naloxone

- Specific reversal at Mu and kappa receptors
  - IM- 0.4 mg to 2.0 mg (0.4 mg/cc dose form)
  - IV- 0.1- 0.4 mg q 3-5- minutes
  - Duration of action – 30- 35 minutes

Flumazenil

- Benzodiazepine receptor antagonist
  - IM (both deltoids or sublingual) 0.6- 1.0 mg
  - IV- 0.2 mg- 1.0 mg q 2-3 minutes
  - Duration of action 20- 30 minutes
  - Re sedation can occur where > 20 mg Versed or Lorazepam used

Emergency Drug Route if No IV access

Inject here
Intravenous Access

IM Access - Deltoid
Basic Emergency Kit for OCS
Minimal Sedation

- Nitroglycerine
- Epinephrine
- Ammonia
- Flumazenil
- Syringes
- Diphenhydramine
- Midazolam
- 5% Dextrose
- Cake Icing
- Albuterol

Organized Quick Reference

- Fiumazonil (Romazicon)
- Epinephrine
- Dextrose
- Albuterol
Office Preparation

- Physical Preparation- drug kit, O2 supply, airway devices, daily, weekly, monthly checks, etc.
- Staff Preparation- role play responsibilities often. Written protocol. Airway management stressed
- Management of the emergency- protocol
- Keep the patient safe until additional help arrives

Practice

- It is essential that the team have regularly scheduled practice drills to ensure their preparedness.
- Team members should practice preparing equipment and drugs for administration

Get everyone involved
Team Assignments- Emergencies

- Member 1- Maintenance of airway and ventilation of lungs (Preferably the doctor)
- Member 2- Compression of the heart or assist doctor
- Member 3- Drug administration and maintain record of events
- Outside of room- administrative member to make phone calls for 911 and direct emergency personnel

As the old saying goes “Luck favors the prepared”

Recognition and Management of Complications during Minimal and Moderate Sedation

- ADA- Offered in Chicago every Fall in October
- Will be at ADA
- Simulator task training on emergencies
- Part 1 didactic online at ADA.org - prerequisite for Simulator part 2
- Call ADA or go to ADA.org to register

Thank You