MEDICATIONS USED IN ADULT CODE BLUE EMERGENCIES

**ET Administration**

### Atropine

<table>
<thead>
<tr>
<th>Use:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>o First drug for symptomatic sinus bradycardia</td>
<td></td>
</tr>
<tr>
<td>o May be beneficial in presence of AV block at the nodal level or ventricular asystole; will not be effective when infranodal block is suspected</td>
<td></td>
</tr>
<tr>
<td>o Second drug (after epinephrine or vasopressin) for asystole or bradycardic pulseless electrical activity</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pharmacology:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>o Parasympathetic agent</td>
<td></td>
</tr>
<tr>
<td>o Enhances both sinus node automaticity and AV conduction by direct vagolytic action</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Precautions:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>o Use with caution in presence of myocardial ischemia and hypoxia; increases myocardial oxygen demand</td>
<td></td>
</tr>
<tr>
<td>o Avoid in hypothermic bradycardia</td>
<td></td>
</tr>
<tr>
<td>o Not effective for infranodal AV block and new third-degree block with wide QRS complexes</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dose:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asystole or pulseless electrical activity</strong></td>
<td></td>
</tr>
<tr>
<td>o 1mg IVP</td>
<td></td>
</tr>
<tr>
<td>o Repeat every 3-5 minutes as needed to a maximum dose of 0.03-0.04mg/kg</td>
<td></td>
</tr>
<tr>
<td><strong>Bradyccardia</strong></td>
<td></td>
</tr>
<tr>
<td>o 0.5-1mg IV every 3-5 minutes as needed; not to exceed total dose of 0.04mg/kg</td>
<td></td>
</tr>
<tr>
<td>o Use shorter dosing interval (3 minutes) and higher doses (0.04mg/kg) in severe clinical conditions</td>
<td></td>
</tr>
<tr>
<td><strong>Tracheal administration</strong></td>
<td></td>
</tr>
<tr>
<td>o 2-3mg diluted in 10ml NS</td>
<td></td>
</tr>
</tbody>
</table>
Epinephrine

| Use: | ∙ Cardiac arrest: VF, pulseless, VT, asystole, PEA  
|      | ∙ Symptomatic bradycardia after atropine, dopamine, and transcutaneous pacing  
|      | ∙ Severe hypotension  
|      | ∙ Anaphylaxis or severe allergic reactions in combination with large fluid volumes, corticosteroids, antihistamines |
| Pharmacology: | ∙ Natural catecholamine with α- and β-adrenergic agonist activity which results in (a) increased blood flow to heart and brain, (b) increased SVR, SBP, DBP, and (c) increased myocardial oxygen requirements. Its primary benefit is α-vasoconstriction |
| Precautions: | ∙ Myocardial ischemia, angina, and increased myocardial oxygen demand may result from raising blood pressure and increasing heart rate  
|            | ∙ High doses may contribute to postresuscitation myocardial dysfunction  
|            | ∙ Higher doses may be required to treat poison/drug-induced shock |
| Dose: | **Cardiac arrest**  
|       | ∙ IV dose: 1mg (10ml of 1:10,000 solution) every 3-5 minutes during resuscitation with each dose followed by 20ml IV flush  
|       | ∙ Higher dose: Up to 0.2mg/kg may be use if 1mg dose fails  
|       | ∙ Continuous infusion: Add 30mg epinephrine (30ml of 1:1000 solution) to 250ml NS or D5W to run at 100ml/hr and titrate to response  
|       | ∙ Tracheal Route: 2-2.5mg diluted in 10ml NS  
| **Profound bradycardia or hypotension** | 2-10 mcg/min infusion; add 1mg of 1:1000 to 500ml NS and infuse at 1-5ml/min |
### Lidocaine

<table>
<thead>
<tr>
<th>Use:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>o Cardiac arrest from VF/VT</td>
<td></td>
</tr>
<tr>
<td>o Stable VT, wide-complex tachycardias of uncertain type, wide complex PSVT</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pharmacology:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>o Affects fast sodium channels, shortens refractory periods, and suppresses spontaneous depolarization</td>
<td></td>
</tr>
<tr>
<td>o Local anesthetic which increases the fibrillation threshold.</td>
<td></td>
</tr>
<tr>
<td>o Causes suppression of ventricular ectopy post MI.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Precautions:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>o Not recommended for prophylactic use in AMI</td>
<td></td>
</tr>
<tr>
<td>o Reduce maintenance dose but not loading dose in presence of impaired liver function or left ventricular dysfunction</td>
<td></td>
</tr>
<tr>
<td>o If signs of toxicity develop, discontinue infusion immediately</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dose:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cardiac arrest from VF/VT</strong></td>
<td></td>
</tr>
<tr>
<td>o Initial dose of 1-1.5mg/kg IV</td>
<td></td>
</tr>
<tr>
<td>o For refractory VF may give additional 0.5-0.75mg/kg IVP; can repeat in 5-10 minutes for a maximum total dose of 3mg/kg</td>
<td></td>
</tr>
<tr>
<td>o A single dose of 1.5mg/kg IV in cardiac arrest is acceptable</td>
<td></td>
</tr>
<tr>
<td>o Tracheal administration: 2-4mg/kg</td>
<td></td>
</tr>
<tr>
<td><strong>Perfusing arrhythmia: stable VT, wide complex tachycardia of uncertain type, significant ectopy</strong></td>
<td></td>
</tr>
<tr>
<td>o 1-1.5mg/kg IVP</td>
<td></td>
</tr>
<tr>
<td>o Repeat 0.5-0.75mg/kg every 5-10 minutes for a maximum total dose of 3mg/kg</td>
<td></td>
</tr>
<tr>
<td><strong>Maintenance infusion</strong></td>
<td></td>
</tr>
<tr>
<td>o Use premixed bag of 2grams/250ml D;W</td>
<td></td>
</tr>
<tr>
<td>o 1-4mg/minute (30-50 mcg/kg/minute).</td>
<td></td>
</tr>
</tbody>
</table>
# Naloxone

<table>
<thead>
<tr>
<th><strong>Use:</strong></th>
<th>o Respiratory and neurologic depression due to opiate intoxication unresponsive to oxygen and hyperventilation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pharmacology:</strong></td>
<td>o Competes with and replaces narcotic agonists at the narcotic receptor sites</td>
</tr>
</tbody>
</table>
| **Precautions:** | o May cause opiate withdrawal  
  o May need to repeat dose(s) as effects may not outlast effects of narcotics; monitor for recurrent respiratory depression  
  o Rare anaphylactic reactions have been reported |
| **Dose:** | o 0.4-2mg every 2 minutes  
  o Higher doses used for complete narcotic reversal  
  o Can administer up to 10mg over < 10 minutes  
  o In suspected opiate-addicted patients, titrate until ventilations adequate with 0.2mg every 2 minutes X3 doses, then 1.4mg IVP  
  o Endotracheal dose: 0.8-1.6mg |
### IVPB Administration

**Amiodarone**

| **Use:** | - A wide variety of atrial and ventricular tachyarrhythmias  
- For rate control of rapid atrial arrhythmias in patients with impaired LV function when digoxin ineffective |
| **Pharmacology:** | - Class III antiarrhythmic agent which inhibits adrenergic stimulation and prolongs the action potential and refractory period in myocardial tissue  
- Decreases AV conduction and sinus node function |
| **Precautions:** | - May produce vasodilation and hypotension  
- May have negative inotropic effects  
- May prolong QT interval |
| **Dose:** | **Cardiac arrest**  
- 300mg IVP diluted in 20-30ml D5W  
- Consider additional 150mg IVP in 3-5 minutes  
- Maximum cumulative dose 2.2gm/24 hours IV  
**Wide-complex tachycardia (stable)**  
- Rapid infusion: 150mg IV over first 10 minutes (15mg/min); may repeat rapid infusion (150mg IV) every 10 minutes as needed  
- Slow infusion: 360mg IV over 6 hours (1mg/min)  
- Maintenance infusion: 540mg IV over 18 hours (0.5mg/min)  
- Preparation: 150mg amiodarone in 150ml D5W; expires 2 hours from time of preparation  
- Maximum cumulative dose 2.2gm/24 hours IV |
### Dopamine

| Use:          | o Second drug for symptomatic bradycardia (after atropine)  
|              | o Hypotension (SBP ≤ 70-100 mmHg) with signs and symptoms of shock |
| Pharmacology: | o Norepinephrine precursor that stimulates dopamine, β-, and α-adrenergic receptors (dose dependent) |
| Precautions:  | o Use in patients with hypovolemia only after volume replacement  
|              | o Caution in cardiogenic shock with accompanying congestive heart failure  
|              | o May cause tachyarrhythmias, excessive vasoconstriction  
|              | o Taper slowly  
|              | o Do not mix with sodium bicarbonate |
| Dose:        | o Use as a premixed bag of 400mg/250ml D5W or put 400mg in 250ml NS; titrate to patient response  
| Low dose     | o 1-5 mcg/kg/min continuous infusion  
| Moderate dose| o 5-10 mcg/kg/min continuous infusion  
| High dose    | o 10-20 mcg/kg/min |
## Epinephrine

### Use:
- Cardiac arrest: VF, pulseless, VT, asystole, PEA
- Symptomatic bradycardia after atropine, dopamine, and transcutaneous pacing
- Severe hypotension
- Anaphylaxis or severe allergic reactions in combination with large fluid volumes, corticosteroids, antihistamines

### Pharmacology:
Natural catecholamine with $\alpha$- and $\beta$-adrenergic agonist activity which results in (a) increased blood flow to heart and brain, (b) increased SVR, SBP, DBP, and (c) increased myocardial oxygen requirements.
- Primary benefit is $\alpha$-vasoconstriction

### Precautions:
- Myocardial ischemia, angina, and increased myocardial oxygen demand may result from raising blood pressure and increasing heart rate
- High doses may contribute to postresuscitation myocardial dysfunction
- Higher doses may be required to treat poison/drug-induced shock

### Dose:
**Cardiac arrest**
- IV dose: 1mg (10ml of 1:10,000 solution) every 3-5 minutes during resuscitation with each dose followed by 20ml IV flush
- Higher dose: Up to 0.2mg/kg may be use if 1mg dose fails
- Continuous infusion: Add 30mg epinephrine (30ml of 1:1000 solution) to 250ml NS or D5W to run at 100ml/hr and titrate to response
- Tracheal Route: 2-2.5mg diluted in 10ml NS

**Profound bradycardia or hypotension**
- 2-10 mcg/min infusion; add 1mg of 1:1000 to 500ml NS and infuse at 1-5ml/min
### Isoproterenol

| Use: | - Use with caution as temporizing measure if external pacer is not available for treatment of symptomatic bradycardia  
- Refractory torsades de pointes unresponsive to magnesium sulfate  
- Temporary control of bradycardia in heart transplant patients when denervated heart unresponsive to atropine  
- Poisoning from beta-adrenergic blockers |
| Pharmacology: | - Synthetic sympathomimetic amine with pure β-adrenergic activity plus inotropic and chronotropic activity which can (a) increase HR/CO, contractility and (b) decrease MAP secondary to vasodilation |
| Precautions: | - Do not use for treatment of cardiac arrest  
- Can increase myocardial oxygen requirements which may increase myocardial ischemia  
- Do not give with epinephrine (can cause VF/VT)  
- Do not administer to patents with poison/drug induced shock except for beta-adrenergic blocker poisoning |
| Dose: | - Mix 1mg in 250ml NS, LR, or D₅W  
- Infuse at 2-10 mcg/min  
- Titrate to adequate heart rate  
- In torsades de pointes, titrate to increase heart rate until VT is suppressed |
**Lidocaine**

| Use: | Cardiac arrest from VF/VT  
|      | Stable VT, wide-complex tachycardias of uncertain type, wide complex PSVT |
| Pharmacology: | Affects fast sodium channels, shortens refractory periods, and suppresses spontaneous depolarization  
|      | Local anesthetic which increases the fibrillation threshold  
|      | Causes suppression of ventricular ectopy post MI |
| Precautions: | Not recommended for prophylactic use in AMI  
|      | Reduce maintenance dose but not loading dose in presence of impaired liver function or left ventricular dysfunction  
|      | If signs of toxicity develop, discontinue infusion immediately |
| Dose: | **Cardiac arrest from VF/VT**  
|      | Initial dose of 1-1.5mg/kg IV  
|      | For refractory VF may give additional 0.5-0.75mg/kg IVP; can repeat in 5-10 minutes for a maximum total dose of 3mg/kg  
|      | A single dose of 1.5mg/kg IV in cardiac arrest is acceptable  
|      | Tracheal administration: 2-4mg/kg  
| Perfusing arrhythmia: stable VT, wide complex tachycardia of uncertain type, significant ectopy |  
|      | 1-1.5mg/kg IVP  
|      | Repeat 0.5-0.75mg/kg every 5-10 minutes for a maximum total dose of 3mg/kg  
| Maintenance infusion |  
|      | Use premixed bag of 2grams/250ml D5W  
|      | 1-4mg/minute (30-50 mcg/kg/minute)  

**Norepinephrine**

**Use:**
- Severe cardiogenic shock and hemodynamically significant hypotension (SBP <70 mmHg) with low total peripheral resistance
- Agent of last resort for management of ischemic heart disease and shock

**Pharmacology:**
- Causes α- and β-adrenergic stimulation to increase contractility, HR, and vasoconstriction which improves coronary blood flow

**Precautions:**
- Increases myocardial oxygen requirements because it raises blood pressure and heart rate
- Use with caution in patients with acute ischemia as may induce arrhythmias; monitor cardiac output
- Extravasation causes tissue necrosis
- If extravasation occurs, administer phentolamine 5-10mg in 10-15ml saline solution and infiltrate into area

**Dose:**
- Dilute 4mg in 250ml D5W or D5NS; avoid dilution in NS alone
- 0.5-1 mcg/minute titrated up to a maximum dose of 30 mcg/min to improve blood pressure
- Do not administer in same IV line as alkaline solutions
- Poison/drug induced hypotension may require higher doses to achieve adequate perfusion
### Procainamide

#### Use:
- PSVT uncontrolled by adenosine and vagal maneuvers as long as blood pressure stable
- Stable wide-complex tachycardia of unknown origin
- AF with rapid rate in Wolff-Parkinson-White syndrome

#### Pharmacology:
- Decreases myocardial excitability and conduction velocity
- May depress myocardial contractility by increasing the electrical stimulation threshold of ventricle, HIS-Purkinje system, and through direct cardiac effects

#### Precautions:
- Reduce maximum total dose to 12mg/kg and maintenance infusion to 1-2mg/min if cardiac or renal dysfunction
- Proarrhythmic especially if AMI, hypokalemia, or hypomagnesemia
- If impaired LV function, may induce hypotension
- Use with caution with other drugs that prolong QT interval such as amiodarone or sotalol

#### Dose:
**Recurrent VF/VT**
- 20mg/min IV infusion; maximum total dose 17mg/kg
- Up to 50mg/min may be administered to total dose of 17mg/kg in urgent situations

**Other indications**
- 20mg/min IV infusion until one of the following occur: arrhythmia suppression, hypotension, QRS widens by >50%, or total dose of 17mg/kg is given

**Maintenance Infusion**
- Make infusion as 1 gram in 250ml D5W for concentration of 4mg/ml
- 1-4mg/min
### IVP Administration

**Adenosine**

| Use: | o Drug of first choice for most forms of narrow-complex PSVT  
o Effective in terminating arrhythmias due to reentry involving the AV node or sinus node  
o Does not convert AF, AFL, or VT |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacology:</td>
<td>o Slows AV conduction and can interrupt AV nodal reentry pathways</td>
</tr>
</tbody>
</table>
| Precautions: | o Side effects including flushing, CP or tightness, brief periods of asystole or bradycardia, or ventricular ectopy usually transient  
o Transient periods of sinus bradycardia and ventricular ectopy are common after termination of SVT  
o Avoid in patients receiving dipyridamole  
o Less effective in patients taking theophylline  
o Contraindicated in poison/drug-induced tachycardia |
| Dose: | o Initial bolus of 6mg IVP over 1-3 seconds, followed immediately with 20ml NS flush, then elevate the extremity  
o If needed, repeat with dose of 12mg after 1-2 minutes  
o If needed, a third dose of 12mg may be given after 1-2 minutes. |
### Amiodarone

**Use:**
- A wide variety of atrial and ventricular tachyarrhythmias
- For rate control of rapid atrial arrhythmias in patients with impaired LV function when digoxin ineffective

**Pharmacology:**
- Class III antiarrhythmic agent which inhibits adrenergic stimulation and prolongs the action potential and refractory period in myocardial tissue
- Decreases AV conduction and sinus node function

**Precautions:**
- May produce vasodilation and hypotension
- May have negative inotropic effects
- May prolong QT interval

**Dose:**
- **Cardiac arrest**
  - 300mg IVP diluted in 20-30ml D5W
  - Consider additional 150mg IVP in 3-5 minutes
  - Maximum cumulative dose 2.2gm/24 hours IV
- **Wide-complex tachycardia (stable)**
  - Rapid infusion: 150mg IV over first 10 minutes (15mg/min); may repeat rapid infusion (150mg IV) every 10 minutes as needed
  - Slow infusion: 360mg IV over 6 hours (1mg/min)
  - Maintenance infusion: 540mg IV over 18 hours (0.5mg/min)
  - Preparation: 150mg amiodarone in 150ml D5W; expires 2 hours from time of preparation
  - Maximum cumulative dose 2.2gm/24 hours IV
### Atropine

**Use:**
- First drug for symptomatic sinus bradycardia
- May be beneficial in presence of AV block at the nodal level or ventricular asystole; will not be effective when infranodal block is suspected
- Second drug (after epinephrine or vasopressin) for asystole or bradycardic pulseless electrical activity

**Pharmacology:**
- Parasympathetic agent
- Enhances both sinus node automaticity and AV conduction by direct vagolytic action

**Precautions:**
- Use with caution in presence of myocardial ischemia and hypoxia; increases myocardial oxygen demand
- Avoid in hypothermic bradycardia
- Not effective for infranodal AV block and new third-degree block with wide QRS complexes

**Dose:**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Dosing Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asystole or pulseless electrical activity</strong></td>
<td>1mg IVP&lt;br&gt;Repeat every 3-5 minutes as needed to a maximum dose of 0.03-0.04mg/kg</td>
</tr>
<tr>
<td><strong>Bradycardia</strong></td>
<td>0.5-1mg IV every 3-5 minutes as needed; not to exceed total dose of 0.04mg/kg&lt;br&gt;Use shorter dosing interval (3 minutes) and higher doses (0.04mg/kg) in severe clinical conditions</td>
</tr>
<tr>
<td><strong>Tracheal administration</strong></td>
<td>2-3mg diluted in 10ml NS</td>
</tr>
</tbody>
</table>
## Calcium Chloride

### Use:
- Know or suspected hyperkalemia
- Hypocalcemia
- Antidote for toxic effects (hypotension and arrhythmias) from calcium channel blocker overdose of beta-adrenergic blocker overdose
- Prophylactically before IV calcium channel blockers to prevent hypotension

### Pharmacology:
- Moderates nerve and muscle performance via action potential excitation threshold regulation

### Precautions:
- Do not use routinely in cardiac arrest
- Do not mix with sodium bicarbonate.

### Dose:
- **Hyperkalemia and calcium channel blocker overdose**
  - 8-16mg/kg (usually 5-10ml) slow IVP
  - May be repeated as needed
- **Prophylaxis before IV calcium channel blockers**
  - 2-4mg/kg (usually 2ml) slow IVP
<table>
<thead>
<tr>
<th><strong>Dextrose</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Use:</strong></td>
</tr>
<tr>
<td><strong>Pharmacology:</strong></td>
</tr>
<tr>
<td><strong>Precautions:</strong></td>
</tr>
<tr>
<td><strong>Dose:</strong></td>
</tr>
</tbody>
</table>
### Epinephrine

**Use:**
- Cardiac arrest: VF, pulseless, VT, asystole, PEA
- Symptomatic bradycardia after atropine, dopamine, and transcutaneous pacing
- Severe hypotension
- Anaphylaxis or severe allergic reactions in combination with large fluid volumes, corticosteroids, antihistamines

**Pharmacology:**
- Natural catecholamine with α- and β-adrenergic agonist activity which results in (a) increased blood flow to heart and brain, (b) increased SVR, SBP, DBP, and (c) increased myocardial oxygen requirements. Its primary benefit is α-vasoconstriction

**Precautions:**
- Myocardial ischemia, angina, and increased myocardial oxygen demand may result from raising blood pressure and increasing heart rate
- High doses may contribute to postresuscitation myocardial dysfunction
- Higher doses may be required to treat poison/drug-induced shock

**Dose:**

**Cardiac arrest**
- IV dose: 1mg (10ml of 1:10,000 solution) every 3-5 minutes during resuscitation with each dose followed by 20ml IV flush
- Higher dose: Up to 0.2mg/kg may be used if 1mg dose fails
- Continuous infusion: Add 30mg epinephrine (30ml of 1:10,000 solution) to 250ml NS or D5W to run at 100ml/hr and titrate to response
- Tracheal Route: 2-2.5mg diluted in 10ml NS

**Profound bradycardia or hypotension**
- 2-10 mcg/min infusion; add 1mg of 1:1000 to 400ml NS and infuse at 1-5ml/min
# Lidocaine

| **Use:** | • Cardiac arrest from VF/VT  
• Stable VT, wide-complex tachycardias of uncertain type, wide complex PSVT |
| **Pharmacology:** | • Affects fast sodium channels, shortens refractory periods, and suppresses spontaneous depolarization  
• A local anesthetic which increases the fibrillation threshold  
• Causes suppression of ventricular ectopy post MI |
| **Precautions:** | • Not recommended for prophylactic use in AMI  
• Reduce maintenance dose but not loading dose in presence of impaired liver function or left ventricular dysfunction  
• If signs of toxicity develop, discontinue infusion immediately |
| **Dose:** |  
**Cardiac arrest from VF/VT**  
• Initial dose of 1-1.5mg/kg IV  
• For refractory VF may give additional 0.5-0.75mg/kg IVP; can repeat in 5-10 minutes for a maximum total dose of 3mg/kg  
• A single dose of 1.5mg/kg IV in cardiac arrest is acceptable  
• Tracheal administration: 2-4mg/kg  
**Perfusing arrhythmia: stable VT, wide complex tachycardia of uncertain type, significant ectopy**  
• 1-1.5mg/kg IVP  
• Repeat 0.5-0.75mg/kg every 5-10 minutes for a maximum total dose of 3mg/kg  
**Maintenance infusion**  
• Use premixed bag of 2g/250ml D5W  
• 1-4mg/minute (30-50 mcg/kg/minute) |
## Magnesium Sulfate

| **Use:** | o Cardiac arrest only if torsades de pointes or suspected hypomagnesemia  
|          | o Refractory VF after lidocaine  
|          | o Torsades de pointes with a pulse  
|          | o Life-threatening ventricular arrhythmias due to digitalis toxicity  
|          | o Not recommended for prophylactic administration in hospitalized patients with AMI. |
| **Pharmacology:** | o Magnesium deficiency causes arrhythmias  
|              | o Magnesium facilitates repolarization by enhancing the intracellular potassium influx and dilating coronary arteries |
| **Precautions:** | o Rapid administration may cause a fall in blood pressure  
|                  | o Use with caution if renal failure is present |
| **Dose:** | **Cardiac arrest for hypomagnesemia or torsades de pointes**  
|          | o 1-2 grams (2-4ml of a 50% solution) diluted in 10ml of D5W IVP  
|          | **Torsades de pointes when not in cardiac arrest**  
|          | o Loading dose of 1-2 grams mixed in 50-100ml of D5W over 5-60 minutes IV  
|          | o Follow with 0.5-1 gm/hour IV titrating to control the torsades  
|          | **Acute myocardial infarction**  
|          | o Loading dose of 1-2 grams mixed in 50-100ml D5W over 5-60 minutes IV  
|          | o Follow with 0.5-1 gm/hr IV for up to 24 hours |
**Naloxone**

<table>
<thead>
<tr>
<th><strong>Use:</strong></th>
<th>o Respiratory and neurologic depression due to opiate intoxication unresponsive to oxygen and hyperventilation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pharmacology:</strong></td>
<td>o Competes with and replaces narcotic agonists at the narcotic receptor sites</td>
</tr>
</tbody>
</table>
| **Precautions:** | o May cause opiate withdrawal  
| | o May need to repeat dose(s) as effects may not outlast effects of narcotics; monitor for recurrent respiratory depression  
| | o Rare anaphylactic reactions have been reported |
| **Dose:** | o 0.4-2mg every 2 minutes  
| | o Higher doses used for complete narcotic reversal  
| | o Can administer up to 10mg over < 10 minutes  
| | o In suspected opiate-addicted patients, titrate until ventilations adequate with 0.2mg every 2 minutes X3 doses, then 1.4mg IVP  
| | o Endotracheal dose: 0.8-1.6mg |
## Sodium Bicarbonate

### Use:
- Known preexisting hyperkalemia
- If known preexisting bicarbonate-responsive acidosis such as diabetic ketoacidosis
- To alkalize urine in case of aspirin, tricyclic antidepressant, cocaine, or diphenhydramine overdose
- If prolonged resuscitation with effective ventilation or upon return of spontaneous circulation after long arrest interval

### Pharmacology:
- Enhances a sodium shift intracellularly, buffers acidosis, decreases toxicity of tricyclic antidepressants, increases the clearance of acidic drugs

### Precautions:
- Adequate ventilation and CPR, not bicarbonate, are the major “buffer agents” in cardiac arrest
- Not recommended for routine use in cardiac arrest patients

### Dose:
- 1mEq/kg IV bolus
- Repeat half this dose every 10 minutes
- Use arterial blood gas analysis to guide bicarbonate therapy; an acute change in PaCO₂ of 1 mmHg is associated with an increase of decrease in pH of 0.008 U
**Vasopressin**

| Use: | o Alternative pressor to epinephrine in the treatment of adult shock-refractory VF  
<table>
<thead>
<tr>
<th></th>
<th>o May be useful for hemodynamic support in septic shock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacology:</td>
<td>o Natural antidiuretic hormone which is a potent vasoconstrictor resulting in (a) increased BP and SVR and (b) decreased CO, HR, myocardial oxygen consumption and contractility</td>
</tr>
</tbody>
</table>
| Precautions: | o Increased peripheral vascular resistance may provoke cardiac ischemia and angina  
|      | o Not recommended for responsive patients with coronary artery disease |
| Dose: | 40 units IVP X1. |
| Use: | o Alternative drug, after adenosine, used to terminate PSVT with narrow QRS complex and adequate blood pressure and preserved LV function
 o May control ventricular response in patients with AF, AFL, or multifocal atrial tachycardia. |
| --- | --- |
| Pharmacology: | o Blocks the flow of calcium and sodium and slows conduction
 o Terminates reentrant arrhythmias
 o Controls the ventricular response in AF/AFL; causes coronary vasodilation. |
| Precautions: | o Give only to patients with narrow-complex PSVT or arrhythmias known to be of supraventricular origin
 o Avoid in patients with WPW and AF, SSS, or second- or third-degree AV block without pacemaker
 o May decrease myocardial contractility and may exacerbate CHF in patients with LV dysfunction
 o Use with extreme caution in patients receiving oral beta-blockers |
| Dose: | o 2.5-5mg IVP over 2 minutes
 o Second dose: 5-10mg, if needed, in 15-30 minutes for maximum dose of 20mg
 o Alternative: 5mg IVP every 15 minutes to total dose of 30mg
 o Administer over 3 minutes in older patients |