Emergency Cardiac Situations & Drugs

Presented by Sarah Newlen, CPhT
October 9, 2015
I, Sarah Newlen, have no financial relationships to disclose.
Objectives:

For the Technician:
1. Define what is classified as an emergency situation
2. Increase your knowledge of emergency medications
3. List the indications for emergency drugs
Objectives:

For the Pharmacist:
1. Describe how to fully utilize the Technician in the management crash carts
2. Identify State Board of Pharmacy regulations impacting crash carts
3. Describe collaboration between Pharmacist and Technician
ACLS

Advanced Cardiovascular Life Support

➢ Cardiac arrest
➢ Pulmonary arrest
➢ Other life threatening situations
Required Skills for ACLS

- Manage patient airway
- Initiate IV access
- Maintain blood circulation
- Read and interpret electrocardiograms
- Understand emergency pharmacology
What is emergency therapy?
An Emergency Situation

- Poses an immediate threat to health or life
- High probability of escalating to cause immediate danger to health or life
- Has caused health detriments or loss of life
Common Emergency Conditions

- Ventricular Fibrillation - V-Fib
- Torsades de Pointes
- Asystole
- Pulseless Electrical Activity-PEA
- Bradycardia
- Tachycardia
Who has seen a normal heart rhythm on an ECG?
Normal heart rhythm as displayed on an ECG
Ventricular Fibrillation
V-Fib

Fibrillation - uncontrolled twitching or quivering. Symptoms *may* include:

- Dizziness
- Nausea
- Pain in the chest
- Tachycardia
V-Fib

- Circulation
- Airway support
- Breathing
- ECG Monitor
DRUGS USED IN V-Fib

- Epinephrine
- Amiodarone
- Lidocaine
- Sodium Bicarbonate
Epinephrine

- Concentrates the blood around the vital organs by vasoconstriction
- Strengthens cardiac contractions
- Stimulates cardiac muscle
Amiodarone

- Treats specific cardiac arrhythmias
- Slows time for ventricular filling
- Blocks the hormone that speeds up heart rate
- Mixed in D5W non PVC bag
Lidocaine

- Treats specific cardiac arrhythmias
- Reduces electrical activity of cardiac tissue
- Decreases the sensitivity of the heart muscle
- Helps restore a regular heart rhythm
- Only used in ventricular arrhythmias
Sodium Bicarbonate

- Corrects the pH imbalance in the body
- Neutralizes acid
Which best describes the drug epinephrine?

A. It is a vasoconstrictor
B. It stimulates the cardiac muscle
C. It increases blood circulation
D. All of the above
ALL OF THE ABOVE
Torsades de Pointes
(torsadz-de-pwants)

➢ A French word translated as “twisting of points”
➢ Produces a rapid heart rate
➢ A specific type of abnormal heart rhythm
DRUGS USED IN TORSADES de POINTES

- Magnesium Sulfate
- Cardiac Pacing - pacemaker
Magnesium Sulfate

- Electrolyte
- Antiarrhythmic
- Contracts muscular tissue
- Decreases heart rhythm
Cardiac pacing

- Pacemaker
- Electrical therapy
Which best described Torsades de Pointes?

A. It is a ventricular tachycardia
B. It is a French word meaning “twisting of points”
C. It can lead to cardiac death
D. All of the above
ALL OF THE ABOVE
Asystole

- Cardiac rhythm with no electrical activity
- Referred to as “flat-line”
DRUGS USED IN ASYSTOLE

- Epinephrine
- Vasopressin
Vasopressin

- Increases vasoconstriction
- Increases arterial blood pressure
- Constricts blood vessels
PEA - Pulseless Electrical Activity

- Unresponsiveness
- Loss of consciousness
- No palpable pulse
DRUGS USED IN PEA

- Epinephrine
- Amiodarone
- Vasopressin
- Calcium Chloride
Calcium Chloride

- Stabilizes the contraction of cardiac tissue
What is Asystole sometimes referred to as?

A. A heart rate more than 50 BPM
B. A heart rate less than 60 BPM
C. A “flat-line”
D. All of the above
A “flat-line”
Bradycardia

A heart rhythm that's too slow (less than 50 BPM)

- Fatigue
- Dizziness
- Lightheadedness
- Fainting or near-fainting spells
- Chest pain/heart pounding or fluttering
- In extreme cases, cardiac arrest may occur
Drugs used in Bradycardia

- Epinephrine
- Atropine
- Dopamine
Atropine

- Blocks the effect of the Vagus Nerve
- Accelerates the heart rate
Dopamine

- Increases cardiac stimulation
Quick Q & A

What is the first drug given in most cardiac arrest?

A. Calcium Chloride
B. Amiodarone
C. Epinephrine
D. Oxygen
EPINEPHRINE
Tachycardia
heart rate more than 100 BPM

Common causes:
- dehydration
- hypoxia
- fever
- sepsis
- blood loss

Symptoms:
- dizziness
- Shortness of breath
- Lightheadedness
- Rapid pulse rate
- Heart palpitations
- Chest pain
- Fainting
Drugs used in Tachycardia

- Amiodarone
- Adenosine
- Diltiazem
- Digoxin
- Verapamil
Adenosine

- Slows cardiac conduction
- Absorbed by red blood cells
- Metabolizes very quickly throughout the body
Diltiazem

- Relaxes the smooth muscles
- Opens the arteries
- Lowers blood pressure
Digoxin

- Slows heart rate
- Strengthens heart contractions
Verapamil

- A vasodilator
- Used for arrhythmias
- Elevated heart rate
- Elevated blood pressure
Quick Q & A

Which best describes Tachycardia?

A. A heart rate less than 50 BPM
B. A heart rate more than 100 BPM
C. The main pumping chambers of the heart
D. A very slow heart rate
A heart rate of more than 100 BPM
Quick Q & A

Which drug can be used for symptomatic Tachycardia?

A. Epinephrine
B. Diltiazem
C. Atropine
Diltiazem
Example Patient Case

- 58 year old male
- V-Fib
- Bradycardia
- Asystole
BAPTIST HEALTH MEDICAL CENTER
North Little Rock

- 248 bed facility
  - average census 150-200
- Services:
  - General Medicine
  - Surgery
    - General & Cardiac
    - Inpatient & Outpatient
  - OB/GYN
- 24 hour pharmacy
CRASH CART
# Crash Cart Tray 1

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<tr>
<th>Charge Code</th>
<th>Checked By:</th>
<th>Expired Date:</th>
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<tbody>
<tr>
<td>2848</td>
<td>Epinephrine (Adrenalin) 1mg/10mL</td>
<td>5</td>
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<tr>
<td>730</td>
<td>Atropine 1mg/10mL Syringe</td>
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<tr>
<td>8975</td>
<td>Adenosine (Adenocard) 6mg/2mL</td>
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<tr>
<td>200000</td>
<td>Amiodarone (Cordarone) 150mg/3mL</td>
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<tr>
<td>1306</td>
<td>Calcium Chloride 1 Gram</td>
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<tr>
<td>2508</td>
<td>Diphenhydramine (Benadryl) 50mg/mL</td>
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<tr>
<td>2850</td>
<td>Epinephrine 1mg/mL (30 mL vial)</td>
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<td>10055</td>
<td>Flumazenil (Romazicon) 0.5mg/5mL</td>
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<td>14672</td>
<td>Glucagon 1mg</td>
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<td>Methylprednisolone (Solu-Medrol) 125mg/2mL</td>
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<td>5374</td>
<td>Naloxone (Narcan 2mg/2mL)</td>
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<tr>
<td>10734</td>
<td>Norepinephrine (Levophed) 4mg/4mL</td>
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<td>6242</td>
<td>Phenylephrine 10mg/mL</td>
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<td>Lidocaine 2 grams in D5W 500 mL (4mg/mL)</td>
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# RX Inspection

## Pending Inspections: BHMC-NLR

- View All Currently Due
- View All Inspections

### Primary Assignments:

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<td>9/30/2015</td>
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<tr>
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# Crash Cart Inspection

## PHARMACY CRASH CART CHECK LOG

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<tr>
<th>DATE CHECKED</th>
<th>LOCK NUMBER/EXP DRAWER 1</th>
<th>LOCK NUMBER/EXP DRAWER 2</th>
<th>LOCK NUMBER/EXP DRAWER 3</th>
<th>PHARMACIST INITIALS (two people sign)</th>
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Emergency Situation
● sudden, unexpected or impending situation that may cause injury or loss of life

Common Conditions
● V-Fib
● Torsades
● Asystole and PEA
● Bradycardia and Tachycardia
Urgent Drugs

- Epinephrine
- Amiodarone
- Lidocaine
- Sodium Bicarbonate
- Magnesium Sulfate
- Vasopressin
- Calcium Chloride

- Atropine
- Dopamine
- Adenosine
- Diltiazem
- Digoxin
- Verapamil
Wikipedia online
Harrison's Principles of Internal Medicine, 17th Edition
Dorlands Medical Dictionary: acute coronary syndrome.
Baptist Health Medical Center, Crash-Cart Guidelines, Policies and Procedures