ACLS
STUDY GUIDE

Hancock Medical Training
BLS-CPR ACLS PALS

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ACLS Hancock Medical Training
WHAT YOU NEED TO KNOW ......
MEDICAL EMERGENCY AND RAPID RESPONSE TEAMS

• Purpose
  – Improve patient outcomes by identifying and treating early clinical deterioration

• Team
  – The team is composed of specialized and highly trained professional personnel covering medical and respiratory disciplines
BLS AND ACLS SURVEYS

• IF THE PATIENT IS UNCONSCIOUS USE THE BLS SURVEY
  – CABD sequence
    • Responsiveness, pulse, breathing, call 911
    • C- Compressions
    • A – Airway
    • B – Breathing
    • D- Defibrillation

• IF THE PATIENT IS CONSCIOUS USE THE ACLS SURVEY
  – ABCD sequence
    • A – Advanced airway
    • B – Oxygen and ventilation, SPO2, CO2,
    • C – IV/IO, 12 lead ECG, cardioversion, pacing, fluids and meds
    • D- Differential diagnosis
WAVEFORM CAPNOGRAPHY

• HOW WE WILL USE WAVEFORM CAPNOGRAPHY

  – Evaluate the effectiveness of CPR (> 10mmHg)

  – Indicate ROSC

  – Indicate a dislodged tube

  – Indicate a missed intubation
PHARMACOLOGY

- **Epinephrine** - cardiac arrest - 1mg every 3-5 minutes
  - bradycardia - 2-10 mg /min  
  - hypotension - 2-10 mg / min

- **Amiodarone** - cardiac arrest - 300 mg first dose 150 mg second  
  Drip 1 mg/min 6 hrs then 0.5 mg/min 18 hrs

- **Lidocaine** - cardiac arrest - 1.5 mg/kg first dose 1.5 mg second  
  Drip 1-4 mg/min

- **Atropine** - bradycardia - 0.5 mg to a maximum of 3 mg

- **Adenosine** - SVT - 6mg first dose 12 mg second dose

- **Cardizem** - SVT AFIB - .25mg/kg then .35 mg/kg

- **Dopamine** - bradycardia - 2- 20 mcg /kg/min  
  - hypotension - 2- 20 mcg /kg /min
PHARMOCOLOGY

- Nitroglycerine – Angina MI CHF - SL tablet 1/150 ,nitro paste, infusion
- Morphine - analgesic MI - 2-4 mg in 2 mg increments
- Aspirin - antiplatelet MI - 162-325 mg
- Oxygen - all hypoxia - SPO2 < 94%
- Magnesium - Torsades - 1-2 gms
STROKE

• Initial assessment (Cincinnati scale)
  – Always check BGL.
    – Hypoglycemia can mimic a stroke
  – Facial droop-non symmetrical smile
  – Arm drift- affected arm drifts downward
  – Speech-(you cant teach an old dog new tricks)
    • Slurred or inappropriate words, inability to speak
  – Time - (The time the stroke actually occurred)
STROKE

• Early identification of stroke

• EMS alert hospital

• Non contrast CT of the head within 25 minutes
  – To determine whether ischemic or hemorrhagic

• No contraindications to TPA
STROKE ALGORITHM

ONSET TIME – O2 IF REQUIRED

BP – EKG – SPO2

HISTORY – PHYSICAL EXAM

IV – BGL – LABS

ISCHEMIC

NON CONTRAST CT

HEMORRHAGIC

FIBRINOLYTICS IF LESS THAN 3 HOURS FROM ONSET

SYMPTOMS IMPROVING (TIA)

FREQUENT NEURO EVALUATIONS

FREQUENT NEURO EVALUATIONS

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ACS ALGORITHM

VITALS BP EKG SPO2 HX EXAM

IV 12 LEAD O2 IF REQUIRED

STEMI

ST ELEVATION 2 LEADS NEWLEFT BBB

IV NITROGLYCERINE HEPARIN INTEGRILIN

CATH, PCI, STENT CABG

OXYGEN NITROGLYCERINE ASA MORPHINE IF REQUIRED

NON STEM HIGH RISK

ST DEPRESSION T WAVE INVERSION UNSTABLE ANGINA

IV NITRO HEPARIN INTEGRILIN

CATH PCI STENT CABG

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SYMPTOMATIC BRADYCARDIAS

- SINUS BRADYCARDIA
- JUNCTIONAL BRADYCARDIA
- FIRST DEGREE HB
SYMPTOMATIC BRADYCARDIAS

- MOBITZ 1 (WENCHEBACH)

- MOBITZ 2 (2\textsuperscript{nd} DEGREE)

- 3\textsuperscript{rd} DEGREE (COMPLETE HB)
SYMPTOMATIC BRADYCARDIA

EVALUATE RHYTHM
LOC, EKG, VS, IV, LABS, CXR, CARDIAC MARKERS

- Wide complex 2\textsuperscript{nd} or 3\textsuperscript{rd} degree HB
  - MAY TRY ATROPINE
    - TCP @ 60-70 BPM
      - Dopamine 2-20 mcg/kg/min
        - Epinephrine 2-10 mcg/min
          - Infusion HR>60
            - Prepare for TVP
    - NO
      - ATROPINE 0.5 mg 3mg max
        - TCP @ 60-70 BPM
          - Dopamine 2-20 mcg/kg/min
            - Epinephrine 2-10 mcg/min
              - Infusion HR>60
                - Prepare for TVP
REVIEW EXTERNAL PACING

1. SEDATE IF CONSCIOUS
2. APPLY PADS / SET IN PACING MODE
3. SET HR AT 60-70 BPM
4. ADJUST CURRENT FOR BOTH ELECTRICAL AND MECHANICAL CAPTURE
5. MECHANICAL CAPTURE OCCURS WHEN A CAROTID PULSE IS FOUND
TACHYCARDIAS

- SINUS TACH
- SVT
- ATRIAL FIBRILLATION
- ATRIAL FLUTTER
- VTACH WITH A PULSE
SINUS TACHYCARDIA

• Treat the cause – treat the rhythm

• Examples
  • Fever
  • Anxiety
  • Hypovolemia / shock
  • Overexertion
  • Dehydration
SUPRAVENTRICULAR TACHYCARDIA

STABLE SVT (RATE < 180 BPM) with out CP, AMS or hypotension

UNSTABLE SVT (RATE > 190 BPM) or any SVT with CP, AMS or hypotension
TREATMENT ALGORITHM SVT

LOC, EKG, VS, HX, EXAM, IV ACCESS, LABS, CXR, CARDIAC MARKERS

STABLE

VAGAL MANEUVERS

ADENOSINE 6 mg / 12 mg

CARDIZEM 0.25mg/kg /0.35 mg/kg

METOPROLOL 5mg X 2 (5MIN.)
ATENOLOL 5 mg X 2

CARDIOVERT 50-100 J
INCREASE IN INCREMENTS

UNSTABLE

SEDATION IF CONSCIOUS

CARDIOVERT 50-100 J
INCREASE IN INCREMENTS

COMBINE CARDIOVERSION AND PHARMACOLOGY

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ATRIAL FIBRILLATION / FLUTTER

- ATRIAL FLUTTER

- ATRIAL FIBRILLATION
ATRIAL FIBRILLATION / FLUTTER

**STABLE RVR < 48 HRS**
- CONTROL RATE
- CARDIZEM BETA BLOCKERS
- CARDIOVERT 50-100 J BIPHASIC

**STABLE RVR > 48 HRS**
- DELAY CARDIOVERSION UNLESS UNSTABLE
- CONTROL RATE CARDIZEM BETA BLOCKERS
- ANTICOAGULANT THERAPY

**UNSTABLE**
- CARDIOVERT 120-200 AFIB 50-100 A FLUTTER
VENTRICULAR TACHYCARDIA
PULSED / PULSLESS
STABLE / UNSTABLE VTACH WITH A PULSE

LOC, EKG, VS, SPO2, EXAM AND HX, IV, LABS, CXR, CARDIAC MARKERS

STABLE

ANTI-ARRHYTHMIC
Amiodarone – 150 mg over 10 min.
Repeat 150 mg in 10 min.
Lidocaine 0.5-1.5 mg/kg to 3 mg/kg
Procainamide – 20-50 mg/min.
Magnesium – 1-2 gm /sotalol 100 mg

CARdioversion
100 J MONOPHASIC OR BIPHASIC
INCREASE IN INCREMENTS

Pharmacology

UNSTABLE

SEDATION IF RESPONSIVE

CARdioversion
100 J MONOPHASIC OR BIPHASIC
INCREASE IN INCREMENTS

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SUMMARY CARDIOVERSION DOSES

• Biphasic doses

• VTACH WITH A PULSE
  – Monomorphic VTACH – 100 J monophasic or biphasic increase in increments

• SVT
  – Regular narrow complex SVT – 50-100 J
  – Irregular narrow complex SVT – 120 – 200 J

• AFIB / A FLUTTER
  – Atrial flutter – 50-100 J
  – Atrial fibrillation – 120-200 J
NON SHOCKABLE PULSELESS RHYTHMS

- PEA
- ASYSTOLE
- TORSADES
PULSELESS ELECTRICAL ACTIVITY AND ASYSTOLE

BEGIN CPR

EPINEPHERINE 1mg 3-5 min.

INTUBATE

LOOK FOR REVERSIBLE CAUSES 5H’S AND T’S

5H

HYPOXIA
HYPOVOLEMIA
HYDROGEN ION (ACIDOSIS)
HYPERKALEMIA
HYPOKALEMIA
HYPOTHERMIA

5T

TOXINS
THROMBUS
PULMONARY
THROMBUS CORONARY
THROMBUS CARDIAC TENSION
PNEUMOTHORAX TAMPOANADE

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SHOCKABLE PULSELESS RHYTHMS

- VENTRICULAR TACHYCARDIA
- VENTRICULAR FIBRILATION
VENTRICULAR FIBRILLATION PULSELESS V TACH

Begin CPR and secure airway

Shock max joules 200/360

Shock max joules 200/360

Shock max joules 200/360

Shock max joules 200/360

CPR

CPR

CPR

CPR

Epinephrine 1 mg (3-5 min)

Amiodarone 300 mg
Lidocaine 1.5 mg/kg

Amiodarone 150 mg
Lidocaine 1.5 mg/kg

Intubate and look for reversible causes

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POST ARREST ALGORITHM

- OPTIMIZE VENTILATION AND OXYGENATION
  - INTUBATE
    - RATE 10-12 BPM
    - OXYGEN SAT 94-99
    - CO2 35-40 mmHg

- OPTIMIZE CARDIAC FUNCTION 12 LEAD
  - RATE > 60
    - RHYTHM – INFUSION
    - BLOOD PRESSURE
    - FLUIDS
    - VASOPRESSORS
    - ANTIARRHYTHMIC DRIP

- ADVANCED CRITICAL CARE
  - 12 LEAD PCI
  - INAPPROPRIATE NEUROLOGICAL TARGETED TEMPERATURE

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TARGETED TEMPERATURE

- TARGET TEMPERATURE 32-36 DEG C
- TIME AT LEAST 24 HOURS
- 1-2 L FLUID REPLACEMENT
- GLYCEMIC CONTROL 144-180
- PRE HOSPITAL COOLING IV FLUIDS NOT RECOMMENDED
ADULT CPR

- Check responsiveness, breathing and pulse
  - agonal gasps = no breathing

- Time for checking pulse - 5-10 seconds

- Change compressors every 2 minutes

- Depth of compressions – 2 inches minimum

- Rate – 100-120 compressions/minute

- Rescue breathing 1 breath every 5-6 seconds

- Begin CPR immediately after each defibrillation

- Efficiency CPR – Do CPR while defibrillator is charging

- Excessive ventilation = decreased cardiac output