The following slides have been created from the 2010 American Heart Association (AHA) Advanced Cardiac Life Support (ACLS) standards.

The slides present only the most essential information - designed to aid students in learning and retaining the CORE MATERIAL from each algorithm.

We suggest that Instructors engage students in discussion about each algorithm, and present all pertinent details and background information as each slide is presented.

The last two slides present a comprehensive approach to Acute Coronary Syndrome patient management, as presented in the textbook: "12 Lead ECG Interpretation in Acute Coronary Syndrome with Case Studies from the Cardiac Catheterization Lab."

Wayne Ruppert
Program Director
ECGTraining.org

email address for correspondence: wayne@ECGtraining.org
# Electrical Therapy

## Synchronized Cardioversion:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Biphasic</th>
<th>Monophasic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Narrow SVT / Regular Rhythm</td>
<td>50 - 100j</td>
<td>200j</td>
</tr>
<tr>
<td>Narrow QRS, Irregular Rhythm</td>
<td>120 - 200j</td>
<td>200j</td>
</tr>
<tr>
<td>Wide QRS / Monophasic / Regular</td>
<td>100j</td>
<td></td>
</tr>
</tbody>
</table>

## Defib (Unsynchronized):

<table>
<thead>
<tr>
<th>Condition</th>
<th>Biphasic</th>
<th>Monophasic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wide QRS, Irregular:</td>
<td>DEFB</td>
<td>360j</td>
</tr>
<tr>
<td>(Torsades / Polymorphic VT)</td>
<td>120 - 200j</td>
<td></td>
</tr>
<tr>
<td>V-Fib / Pulseless VT:</td>
<td>120 - 200j</td>
<td>360j</td>
</tr>
<tr>
<td></td>
<td>subsequent doses may be equivalent or escalated&gt;</td>
<td></td>
</tr>
</tbody>
</table>
SYMPTOMATIC BRADYCARDIA

- ABCs + GENERAL SUPPORTIVE CARE

- ATROPINE 0.5 mg. IV
  - MAY REPEAT 0.5 mg. DOSES IF NEEDED
  - MAXIMUM 3.0 mg.

- TRANSCUTANEOUS PACEMAKER
  - PREFERRED PRIMARY Tx FOR HIGH GRADE A-V BLOCK
SYMPTOMATIC BRADYCARDIA

- **DOPAMINE gtt.**
  2 - 10 mcg / kg. / min. INFUSION RATE
  IF PACING NOT AVAILABLE or EFFECTIVE

- **EPINEPHRINE gtt.**
  2 - 10 mcg / min INFUSION RATE
  IF PACING NOT AVAILABLE or EFFECTIVE

- **TRANSVENOUS PACEMAKER**
SVT - STABLE PATIENT (NARROW QRS)

ABCs + GENERAL SUPPORTIVE CARE

REGULAR RHYTHM
- VAGAL MANEUVERS
- ADENOSINE 6 mg / 12 mg / 12 mg

IRREGULAR RHYTHM
- POSSIBLE ATRIAL FIB or MULTIFOCAL ATRIAL TACH

- BETA BLOCKERS
- CALCIUM CHANNEL BLOCKER
- TREAT UNDERLYING CAUSE (THE Hs and Ts)
- "EXPERT CONSULTATION"
SVT - UNSTABLE PATIENT (NARROW QRS)

ABCs + GENERAL SUPPORTIVE CARE
(OXYGEN, ECG / VS / SAO2 MONITORING, IV ACCESS)

IMMEDIATE SYNCHRONIZED CARDIOVERSION

- CONSIDER SEDATION
  - ADENOSINE - IF IT DOES NOT DELAY CARDIOVERSION!

- SYNCHRONIZED CARDIOVERSION

  REGULAR RHYTHM: 50 - 100 j biphasic
  IRREGULAR RHYTHM: 100 - 200 j biphasic
  ------ monophasic = 200 j -------
ATRIAL FIBRILLATION

CRITICAL CONSIDERATION . . .

COULD PATIENT HAVE BEEN IN A-FIB FOR AT LEAST 48 HOURS? ☑ YES

IS PATIENT ON ANTICOAGULANTS? ☑ NO

THEN RULE OUT EMBOLI IN ATRIUM WITH EITHER A STAT ECHO or T.E.E. BEFORE CONVERTING TO SINUS RHYTHM!
Wide Complex Tachycardia (QRS > 120 ms)

MONOPHASIC

NO PULSE
GO TO V- FIB ALGORITHM!

PULSE - UNSTABLE
- IMMEDIATE SYNC.
  CARDIOVERSION:
  - 100 j biphasic
  - consider sedation
- INCREASE joules
- MEDS:
  - PROCAINAMIDE
  - AMIODARONE

PULSE - STABLE
- O2, IV-IO, EKG
- MEDS:
  - ADENOSINE 6-12-12
    (only if REGULAR)
  - PROCAINAMIDE
    (20-50mg/min)
  - AMIODARONE
    (150 over 10min + 1mg/ min INFUSION)
Wide Complex Tachycardia
Torsades de Pointes
(QRS > 120 ms)

Poly morphic

ABC's

No Pulse

Go to V-Fib Algorithm!

Pulse - Unstable

Immediate Defibrillation
Consider Sedation

Pulse - Stable

O2 / IV / EKG
Magnesium
1 - 2 gm OVER
5 - 60 min, THEN
Infusion

Do not give Q-T Prolonging Drugs such as Amiodarone, Procainamide or Sotalol to patients in Torsades!!!
V-FIB & PULSELESS VT

ABCs (CAB)

CPR --
- SEND FOR MONITOR/DEFIB or AED
- CALL CODE or 911 (DELEGATE!)

ASSESS ECG
SHOCK x 1
120 - 200 j BiPHASIC
360 j MONOPHASIC

CPR - 2 min
- START IV/IO
- EPI 1 mg every 5 min
- ADVANCED AIRWAY

MAY USE
VASOPRESSIN 40u
SUBSTITUTE FOR
ONE EPI DOSE

ASSESS ECG
SHOCK x 1
120 - 200 j BiPHASIC
360 j MONOPHASIC

CPR - 2 min
- AMIODARONE (1st DOSE - 300 mg)
(2nd DOSE - 150 mg)

AFTER AMIODARONE - CONSIDER MAGNESIUM SULFATE
1 - 2 gm AND / OR LIDOCAINE 1.5 mg/kg

"12 Lead ECG Interpretation in Acute Coronary Syndrome with Case Studies from the Cardiac Catheterization Lab"
**ASYSTOLE - P.E.A.**

- **ABCs (CAB)**
  - CPR
    - SEND FOR MONITOR/DEFIB or AED
    - CALL CODE or 911 (DELEGATE!)
  - START IV/IO
  - EPI 1 mg every 5 min
  - ADVANCED AIRWAY

**CONSIDER H's & T's:**

- HYPOXIA
- HYPOVOLEMIA
- HYPO / HYPERGLYCEMIA
- HYPOTHERMIA
- HYDROGEN ION (PH)
- HYPER / HYPOKALEMIA

- TOXINS
- TAMPONADE (CARDIAC)
- TENSION PNEUMOTHORAX
- THROMBUS (PE vs AMI)
- TRAUMA

**MAY USE**

- VASOPRESSIN 40u
- SUBSTITUTE FOR ONE EPI DOSE

*“12 Lead ECG Interpretation in Acute Coronary Syndrome with Case Studies from the Cardiac Catheterization Lab”*
**Patient Management** is the act of coordinating and overseeing all aspects of *patient evaluation, diagnosis,* and *treatment*. In the “big picture” of patient management, the 12 LEAD ECG often provides a *key piece of the diagnostic puzzle*, aiding us in rapidly diagnosing potentially life-threatening disorders.

The main focus of this book is teaching clinicians to assimilate the data obtained from the 12 LEAD ECG with *other pertinent assessment information* in order to intelligently determine the next appropriate step(s) to be taken in the continuum of providing patient care.

There are three major objectives we must meet in order to accomplish this. We must educate medical professionals to routinely:

1. **Collect and analyze data from multiple sources to maximize accuracy in diagnosing potentially life-threatening cardiac disorders.** Due to problems with *sensitivity* and *specificity*, the ECG frequently provides misleading diagnostic information. Therefore we can not rely solely on the ECG to make accurate diagnostic decisions. We must assimilate data from the patient’s *verbal history, physical exam, lab tests,* and *risk factor profile* – in conjunction with the ECG – in order to provide a maximum level of diagnostic accuracy.

2. **Recognize abnormal ECG patterns which are consistent with specific cardiac disorders.** Through the use of actual case studies, we review pertinent ECG abnormalities and pathophysiologies which are associated with Acute Coronary Syndrome. Every case study is followed through the Cardiac Catheterization and/or Electrophysiology (EP) Labs, where the true diagnosis is obtained. With this information, we *validate or re-qualify traditional ECG diagnoses,* provide case summaries and highlight key teaching points.

3. **Use an Algorithmic approach to patient evaluation.** Algorithms facilitate *accuracy, speed,* and *consistency* in the assessment and treatment of abnormal medical conditions. They provide *structure and organization to complex, dynamic scenarios,* keep our minds focused on appropriate priorities, and channel our actions to be consistent with accepted diagnostic and therapeutic practices.

A medical team leader’s *patient management skills* are of equal importance to patient outcome as are the skills of *patient assessment and treatment*. Patient management is the “putting it all together” aspect of patient care. Requisites for successful patient management include:

- Knowledge of which diagnostic modalities and therapeutic interventions are necessary,
- The ability to prioritize the appropriate order of events
- The ability to accept input from other team members and integrate appropriate suggestions into the care plan
- The ability to effectively coordinate the actions of team members
- The ability to rapidly make changes “mid-stream,” when the patient’s condition changes.

The Primary Patient Management Algorithm shown on the next page serves as the “central nervous system” for coordinating all patient care activities described in this book, in chronological order, which include:

- *patient evaluation,*
- *clinical decision making*
- *implementation of therapeutic interventions*

We suggest you become familiar with this algorithm, as it serves as the “main blueprint” for this curriculum, as well as Book 2 and Book 3 of this series (listed at bottom of algorithm, next page).