	COUNTY OF SACRAMENTO EMERGENCY MEDICAL SERVICES AGENCY	Document #	8024.31
	PROGRAM DOCUMENT: Cardiac Dysrhythmias	Initial Date:	10/26/94
		Last Approval Date:	11/01/16
		Effective Date:	11/01/18
		Next Review Date:	05/01/20

EMS Medical Director

EMS Administrator

Purpose:

To serve as the treatment standard for Bradycardic Dysrhythmias, Supraventricular Tachycardia's, and Ventricular Tachycardia's with pulses for patients who are either stable or unstable.

Authority:

- A. California Health and Safety Code, Division 2.5
- B. California Code of Regulations, Title 22, Division 9

Protocol:

Symptomatic Brady and Tachy Dysrhythmias frequently have an underlying cause which should be recognized and treated in addition to any treatment directed at the dysrhythmia itself it is critically important to determine the cause of the patient's instability in order to properly direct treatment.

Search for and treat possible contributing factors:

1. Hypovolemia
2. Hypoxia
3. Hydrogen Ion (acidosis)
4. Hypo-/hyperkalemia
5. Hypoglycemia
6. Hypothermia
7. Tamponade (Cardiac)
8. Thrombosis (coronary or pulmonary)
9. Tension Pneumothorax
10. Trauma (hypovolemia, increased ICP)
11. Toxins

ADULT BRADYCARDIA

Protocol applies to adults who are symptomatically bradycardic with a heart rate of less than 50 bpm documented by monitor, a systolic blood pressure (SBP) less than 90 mmHg, -AND- other signs or symptoms of hypoperfusion that may include decreased sensorium, diaphoresis, chest pain, capillary refill greater than two seconds, cool extremities, or cyanosis.

Supplemental O2 as necessary to maintain SpO2 ≥ 94%. Use the lowest concentration and flow rate of O2 as possible. Profound bradycardia may require Cardiopulmonary Resuscitation (CPR)

Electrocardiogram Monitoring; 12 Lead ECG, if possible.
 Establish Intravenous (IV) or Intraosseous (IO) access with Normal Saline at to keep open rate; titrate to SBP ≥ 90-100 mmHg.
 Advanced airway adjuncts as needed.

Symptomatic Type II 2nd degree blocks and 3rd degree blocks shall have pacing implemented without delay

Atropine*:
 0.5 mg IV/IO push.

Persistent Symptomatic Bradycardia

NO

Transport

YES

Transcutaneous Cardiac Pacing

NOT Available

Available

Atropine*:
 0.5 mg – 1.0 mg IV/IO push every 3-5 minutes until 3.0 mg total given.

Transport

Midazolam
 if needed for sedation:
 IV/IO/IN/IM –4 mg.
 May give an additional 2mg dose
 IV/IO preferred route
 Titrate to patient comfort
 Max dose of 6 mg.

***Atropine should be avoided in patients with acute MI in 12-Lead setting as defined in PD# 8827**

Base Hospital Order Only Dopamine:
 Begin with an infusion of 10 mcg/kg/min if bradycardia persists and if SBP < 90 mmHg

Institute transcutaneous cardiac pacing at 80 bpm, adjust mA to mechanical capture.

SEE BELOW for NEW VERSION

ADULT BRADYCARDIA

Protocol applies to adults who are symptomatically bradycardic with a heart rate of less than 50 bpm documented by monitor, a systolic blood pressure (SBP) less than 90 mmHg, -AND- other signs or symptoms of hypoperfusion that may include decreased sensorium, diaphoresis, chest pain, capillary refill greater than two seconds, cool extremities, or cyanosis.

Supplemental O2 as necessary to maintain SpO2 ≥ 94%. Use the lowest concentration and flow rate of O2 as possible. Profound bradycardia may require Cardiopulmonary Resuscitation (CPR)

Electrocardiogram Monitoring; 12-Lead; 12-Lead ECG if possible. Establish Intravenous (IV) or Intraosseous (IO) access with Normal Saline at to keep open rate; titrate to SBP ≥ 90-100 mmHg. Advanced airway adjuncts as needed.

Symptomatic Type II 2nd degree blocks and 3rd degree blocks shall have pacing implemented without delay

Atropine*:
0.5 mg IV/IO push.

Persistent Symptomatic Bradycardia

Transport

YES

Transcutaneous Cardiac Pacing

← NOT Available

→ Available

Atropine*:
0.5 mg – 1.0 mg IV/IO push every 3-5 minutes until 3.0 mg total given.

Midazolam
if needed for sedation:
IV/IO/IN/IM –4 mg.
May give an additional 2mg dose
IV/IO preferred route
Titrate to patient comfort
Max dose of 6 mg.

Institute transcutaneous cardiac pacing at 80 bpm, adjust mA to capture.

Base Hospital Order Only
Dopamine:
Begin with an infusion of 10 mcg/kg/min if bradycardia persists and if SBP < 90 mmHg

Transport

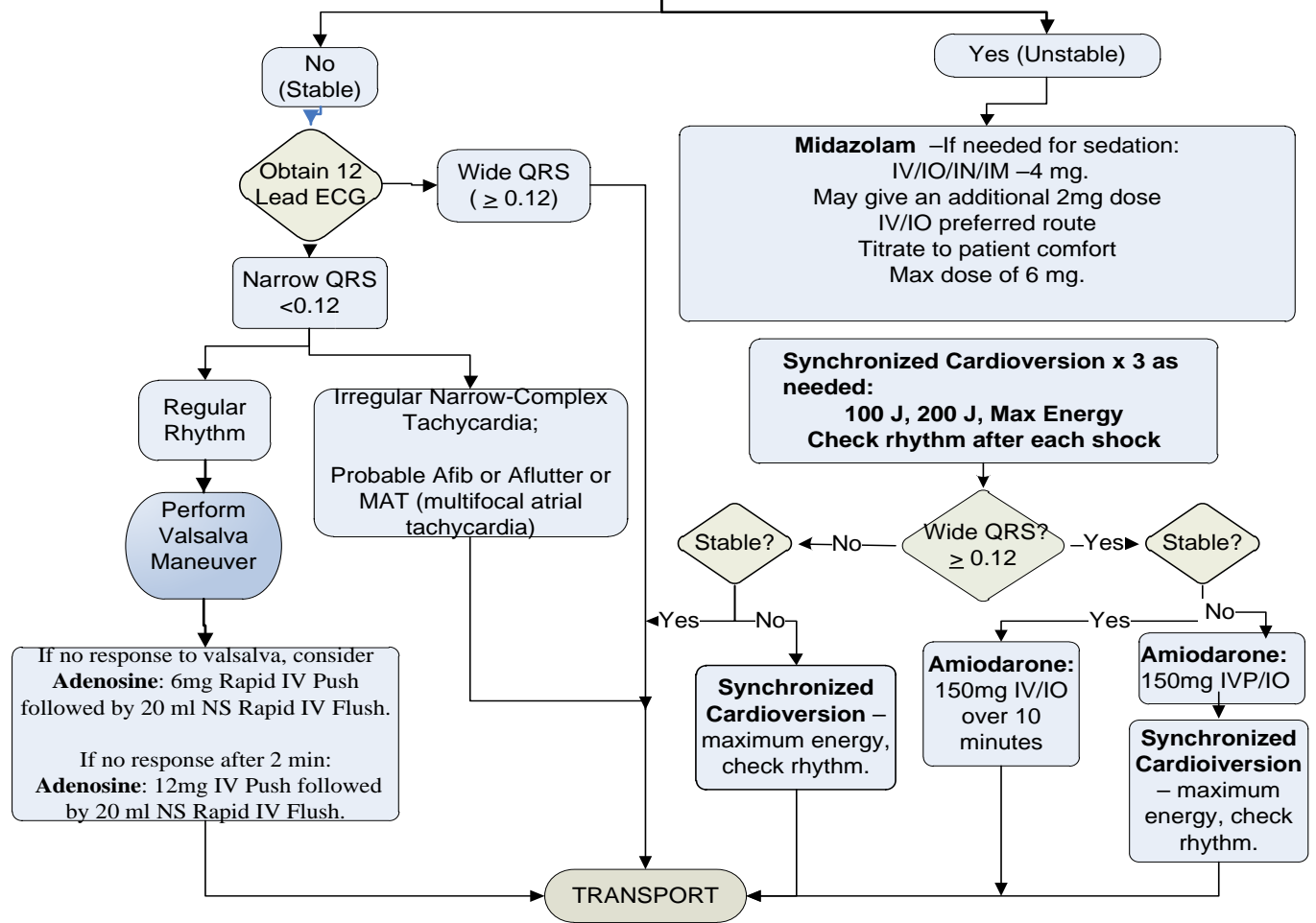
*Atropine should be avoided in patients with acute MI in 12-Lead setting as defined in PD# 8827

OLD VERSION

ADULT TACHYCARDIA WITH PULSES
(Narrow QRS HR > 150; Wide QRS HR > 120)
 Supplemental O2 as necessary to maintain SpO2 > 94%. Use the lowest concentration and flow rate of O2 as possible.

Electrocardiogram Monitoring.
 Establish Intravenous (IV) or Intraosseous (IO) access with Normal Saline at to keep open rate;
 titrate to systolic blood pressure (SBP) ≥ 90-100 mmHg.
 Monitor pulse oximetry, with advanced airway adjuncts as needed.

UNSTABLE?
 SBP < 90 mmHg **-AND-** Hypoperfusion,
 decreased sensorium, diaphoresis, chest pain,
 capillary refill greater than 2 seconds, cool
 extremities, or cyanosis.



NOTE: If unstable tachycardia returns after transiently converting (rather than persists without ever converting) repeat energy level that was previously successful for cardioversion.

See below for new version

Adult Tachycardia with Pulses
Narrow QRS HR > 150; Wide QRS HR > 120

Supplemental O2 as necessary to maintain
 Electrocardiogram Monitoring.
 Establish Intravenous (IV) or Intraosseous (IO) access with Normal
 Saline at to keep open rate; titrate to systolic blood pressure (SBP) ≥
 90-100 mmHg.
 Monitor pulse oximetry, with advanced airway adjuncts as needed.

Cardioversion Information:

- If rhythm is wide irregular or monitor will not synchronize, and the patient is critical, treat as VF with unsynchronized defibrillation.
- Initial synchronized cardioversion doses:
 - Narrow regular: 50-100J
 - Narrow irregular: 120- 200J
 - Wide regular: 100J

If no response to the initial shock, increase dose in a stepwise fashion for subsequent cardioversions to a **maximum of 3 attempts**"

Persistent Tachycardia Causing:

- Hypotension
- Acutely altered mental status
- Signs of shock
- Ischemic chest discomfort
- Acute heart failure

Cardioversion

- Pre-cardioversion sedation if needed whenever possible:

Midazolam IV/IO/IN/IM- 4mg
 May give additional 2 mg dose. IV/IO preferred route.
 Titrate to patient comfort.
 Max dose of 6 mg.

NO

Wide QRS
 ≥ 0.12 sec.

YES

Amiodarone:
 150 mg IV/IO
 Over 10 minutes

YES

NO

A-Fib
 A-Flutter,
 or
 S-Tach

YES

Transport
 Monitor and reassess.
 Contact Base Hospital
 for consultation if
 necessary.

SVT?

Valsalva Maneuver

If no response to Valsalva, consider:
Adenosine: 6 mg rapid IV/IO followed
 by 20 ml NS rapid flush.

If no response after 2 minutes:
Adenosine: 12mg IV/IO push followed
 by 20 ml NS rapid flush.

Note:
 Any patient with a symptomatic dysrhythmia should be treated by protocol before 12-lead ECG is considered. 12-lead ECGs for dysrhythmias in the pre-hospital setting are optional, and should only be considered when there is suspicion for cardiac ischemia.

Cross Reference: Transcutaneous Cardiac Pacing, PD# 8810