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Ventricular Fibrillation / Pulseless Ventricular Tachycardia

TREATMENT GUIDELINES 9101

9101.1 TREATMENT (Refer to Cardiocerebral Resuscitation (CCR) Guideline # 7014).

A. Minimize interruptions in CPR:

1. If witnessed arrest monitored / witnessed by paramedic, provide immediate CPR until defibrillator is available. Initiate chest compressions per AHA recommendations BEFORE ventilations (CAB not ABC). Refer to Cardiopulmonary Resuscitation (CPR) Guideline # 7014.
2. Utilize mechanical CPR device if available.
3. If un-witnessed arrest or witnessed arrest with five (5) minutes or more time elapsed without CPR prior to first responder arrival, provide two (2) minutes or five (5) cycles of CPR.
4. Do not interrupt CPR for advanced airway management prior to CPR or first shock.
5. Defibrillate – 360 J; (or manufacturer's highest recommended setting); resume CPR immediately; administer CPR for five (5) cycles or two (2) minutes.
6. After initial compressions use BVM until advanced airway is used.
7. During two (2) minutes of CPR:
 - a. Implement waveform capnography.
 - b. Provide appropriate airway management. Initially use BVM, then if clinically indicated, intubate or use King Tube. Use waveform capnography in every cardiac arrest from beginning of resuscitation to transfer at hospital. Refer to King Tube Intubation Guideline 9804, Advanced Airway Management Guideline 9801, and Waveform Capnography Monitoring Guideline 9814.
 - c. Establish IV/IO NS TKO.
8. After two (2) minutes of CPR perform rhythm / pulse check.
9. If V-fib persists, defibrillate - Biphasic 360 J (or manufacturer's highest recommended settings).
10. Administer epinephrine 1mg (1:10,000) IV/IO; resume CPR five (5) cycles or two (2) minutes.
 - a. Repeat every three to five (3-5) minutes.
 - b. Administer of epinephrine IV/IO (ET administration is prohibited).
11. Perform rhythm / pulse check; if V-fib persists, defibrillate. Immediately resume CPR and administer amiodarone 300mg IV/IO (flush tubing with 20ml NS); administer CPR for five (5) cycles or two (2) minutes.
12. Perform rhythm / pulse check – allowing for minimal chest compression interruptions; if V-fib persists, Double Sequential External (DSED) per Policy 9821, resume CPR immediately, after five (5) cycles or two (2) minutes. May repeat amiodarone 150mg IVP/IO (flush tubing with 20ml NS) five (5) minutes after initial dose for persistent V-fib.

B. Contact base hospital for any questions or if additional therapy is required.

9101.2 SPECIAL CONSIDERATIONS

- A. Placement of IV/IO, airway and medication administration should occur during five (5) cycles or two (2) minutes of CPR and should not interrupt the CPR cycles.
- B. Defibrillator settings and energy delivered vary by device make and model. Paramedics must be familiar with the specific operation of the device utilized in defibrillation including the manufacturer's pre-set energy settings.

- C. EMS personnel shall initiate rapid transport and continue resuscitation when the following factors are present:
 - 1. Return of spontaneous circulation (ROSC) following cardiac arrest.
 - 2. Near drowning.
 - 3. Hypothermia.
 - 4. Extreme, unusual or dangerous social or scene situations.
 - 5. Patient age less than <16.
- D. Patients in recurrent V-Fib may benefit from transport to hospital for additional antiarrhythmic therapy.
- E. Patients in resistant V-Fib are to be treated according to Treatment Guideline 9821
 - 1. If V-Fib persists after second double sequential external defibrillation, transport to closest STEMI facility for further treatment. ***

*****NOTE: Further treatment may include one or more of the following: Lidocaine, Procainamide Magnesium Sulfate, beta blocker, ECMO, or percutaneous intervention (PCI).**



Wide Complex Tachycardia

TREATMENT GUIDELINE 9102

9102.1 REGULAR WIDE COMPLEX TACHYCARDIA

Definition:

Regular Wide Complex Tachycardia: Wide (QRS > 0.12 sec) ventricular complexes with regular rhythm and rate > 150 BPM.

9102.2 TREATMENT

A. Stable patient:

1. 12-Lead ECG if available.
2. Infuse adenosine, 6mg rapid IVP, followed by a 10 cc's NS flush. *(No repeat dose – see notes).
3. If adenosine has not changed rhythm or provided an assessment of origin, infuse 150mg amiodarone IV/IO. (Add 150mg to 100ml of NS and infuse total contents over ten [10] minutes).
4. If dysrhythmia persists, repeat amiodarone IV/IO. (Add 150mg to 100ml of NS and infuse total contents over ten [10] minutes).

B. Unstable patient (defined as chest discomfort, dyspnea, B/P less than 90 or CHF):

1. Consider sedation per Sedation Guideline # 9005 if patient is awake and aware.
2. Synchronized cardioversion - Biphasic 100J (or manufacturer recommended device specific setting); check pulse and rhythm.
3. If no response: repeat synchronized cardioversion - Biphasic 200J (or manufacturer recommended device specific setting); check pulse and rhythm.
4. If no response: repeat synchronized cardioversion - Biphasic 300J (or manufacturer recommended device specific setting); check pulse and rhythm.
5. If no response: repeat synchronized cardioversion - Biphasic 360J (or manufacturer recommended device specific setting).
6. **If rhythm does not convert with cardioversion or pulses not present:**

a. Refer to Ventricular Fibrillation / Pulseless Ventricular Tachycardia Guideline # 9101.

C. Contact base hospital for any questions or if additional therapy is required (i.e. extended transport times requiring ongoing amiodarone infusion).

9102.3 IRREGULAR WIDE COMPLEX TACHYCARDIA

Definition:

Irregular Wide Complex Tachycardia: Wide (QRS > 0.12 sec) ventricular complexes with irregular rhythm and rate > 150 BPM.

9102.4 TREATMENT

A. Stable patient:

1. 12-Lead ECG if available.
2. Base physician consultation.

B. Unstable patient (defined as chest discomfort, dyspnea, B/P less than 90 or CHF):

1. Consider sedation per Sedation Guideline # 9005 if patient is awake and aware.

2. Synchronized cardioversion - Biphasic 100J (or manufacturer recommended device specific setting); check pulse and rhythm.
3. If no response: repeat synchronized cardioversion - Biphasic 200J (or manufacturer recommended device specific setting); check pulse and rhythm.
4. If no response: repeat synchronized cardioversion - Biphasic 300J (or manufacturer recommended device specific setting); check pulse and rhythm.
5. If no response: repeat synchronized cardioversion - Biphasic 360J (or manufacturer recommended device specific setting).
6. **If rhythm does not convert with cardioversion or pulses not present:**
 - a. Refer to Ventricular Fibrillation / Pulseless Ventricular Tachycardia Guideline # 9101.

9102.5 VENTRICULAR ECTOPY

- A. Do not administer amiodarone (or any anti arrhythmic drug) unless criteria for ventricular tachycardia are met.
- B. Check O₂ saturation and EtCO₂ levels.

9102.6 SPECIAL CONSIDERATIONS

Defibrillator settings and energy delivered vary by device make and model. Paramedics must be familiar with the specific operation of the device utilized in cardioversion including the manufacturer's pre-set energy settings and recommendations for stepwise increases in energy delivery. Begin immediate transport if unable to establish IV/IO, continue treatment while transporting.



Irregular Narrow Complex Tachycardia (Atrial Fibrillation / Flutter)

TREATMENT GUIDELINE 9103

9103.1 DEFINITION

Atrial fibrillation: Appearance of irregularly irregular rhythm with variations in both R wave to R wave interval and amplitude. If QRS width > 0.12, refer to Wide Complex Tachycardia Guideline # 9102.

Atrial Flutter: Appearance of classic saw tooth pattern rhythm with ventricular response rates rarely > 150 to 180. If QRS width > 0.12, refer to Wide Complex Tachycardia Guideline # 9102.

9103.2 TREATMENT

- A. Atrial fibrillation / flutter is typically a well-tolerated rhythm that does not require aggressive therapy. Assess patient for other possible causes if symptomatic. Attempts to convert the rhythm should be reserved for the patient in extremis.
- B. Stable:
 1. IV NS TKO.
 2. 12-Lead ECG.
- C. Unstable: (Defined as systolic B/P \leq 80 in addition to signs of decreased perfusion such as acute ALOC, severe chest pain or signs of significant CHF).
 1. Consider early 250ml fluid bolus if patient is hypotensive and has signs of decreased perfusion; may repeat up to 10ml/kg.
 2. Synchronized cardioversion: Biphasic 120-200J (or manufacturer recommended device specific setting); check pulse and rhythm.
 3. If no response: repeat synchronized cardioversion - Biphasic 300J (or manufacturer recommended device specific setting); check pulse and rhythm.
 4. If no response: repeat synchronized cardioversion - Biphasic 360J (or manufacturer recommended device specific setting); check pulse and rhythm.
 5. Atrial flutter often responds to lower initial energy levels (50-100J is often sufficient).
- D. If the rhythm fails to convert after three (3) shocks, consult base hospital physician.

9103.3 SPECIAL CONSIDERATIONS

Defibrillator settings and energy delivered vary by device make and model. Paramedics must be familiar with the specific operation of the device utilized in cardioversion including the manufacturer's pre-set energy settings and recommendations for stepwise increases in energy delivery.



Regular Narrow Complex Tachycardia

TREATMENT GUIDELINE 9104

9104.1 INDICATIONS

- A. QRS < 0.12 sec documented rhythm in two (2) leads. (If > 0.12 sec, refer to Wide Complex Tachycardia Guideline # 9102).
- B. Compatible history (vague, nonspecific).
- C. P waves absent / abnormal.
- D. HR is regular and is > 150 bpm.
- E. History of abrupt rate changes (possible).
- F. Unstable: Chest pain, shock, AMI, CHF, BP < 90 systolic, decreased LOC and SOB.

9104.2 TREATMENT

- A. STABLE – regular narrow complex tachycardia:
 - 1. 12-Lead ECG.
 - 2. Valsalva maneuver.
 - 3. Establish IV NS TKO.
 - 4. Adenosine 6mg **RAPID** IVP followed by 10 cc's NS flush.
 - 5. If no response after two (2) minutes: Adenosine 12mg rapid IVP followed by 10 cc's NS flush.
 - 6. If no response after two (2) minutes: Adenosine 12mg rapid IVP followed by 10 cc's NS flush.
 - 7. Elevate the extremity during each rapid bolus.
- B. UNSTABLE – regular narrow complex tachycardia:
 - 1. Consider sedation per Sedation Guideline # 9005 if patient is awake and aware.
 - 2. Synchronized cardioversion - Biphasic 100-120J (or manufacturer recommended device specific setting); check pulse and rhythm.
 - 3. If no response: repeat synchronized cardioversion - Biphasic 200J (or manufacturer recommended device specific setting); check pulse and rhythm.
 - 4. If no response: repeat synchronized cardioversion - Biphasic 300J (or manufacturer recommended device specific setting); check pulse and rhythm.
 - 5. If no response: repeat synchronized cardioversion - Biphasic 360J (or manufacturer recommended device specific setting).

9104.3 SPECIAL CONSIDERATIONS

Defibrillator settings and energy delivered vary by device make and model. Paramedics must be familiar with the specific operation of the device utilized in cardioversion including the manufacturer's pre-set energy settings and recommendations for stepwise increases in energy delivery.

OVERALL TACHYCARDIA ALGORITHM

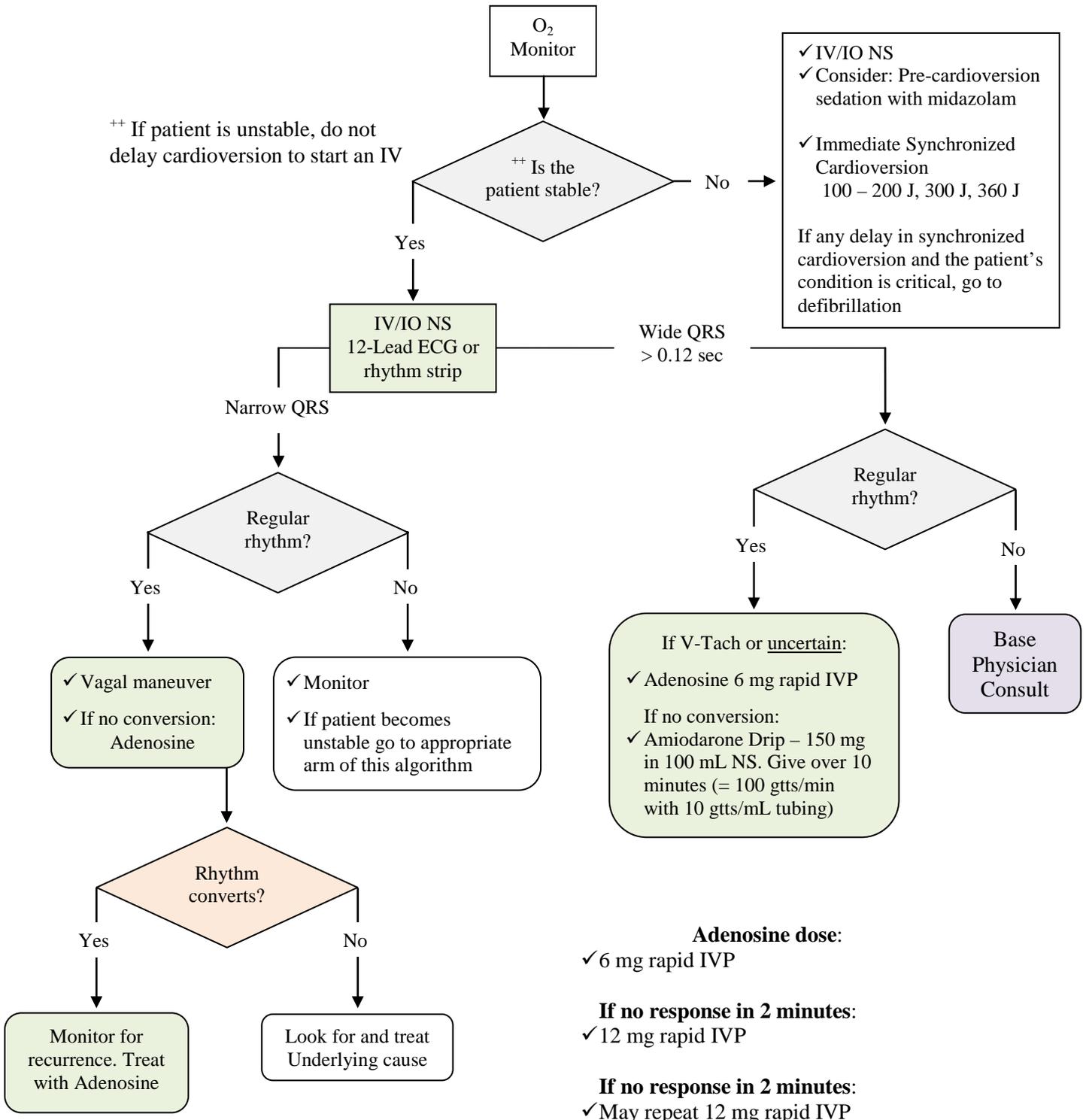
TACHYCARDIA

Routine Medical Care

- Serious Signs and Symptoms:
 - Chest Pain
 - Acute MI
 - BP < 90 / systolic
 - Shortness of Breath
 - Shock
 - CHF
 - Decreased LOC
 - Pulmonary Congestion

Synchronized Cardioversion:

- Stop if rhythm converts to Sinus Rhythm.
- Immediate cardioversion is seldom needed for heart rate < 150 beats / minute.
- Pre-cardioversion sedation in the awake patient whenever possible, however, use with caution in the hypotensive patient. See Treatment Guideline # 9005 Sedation.



Adenosine dose:

✓ 6 mg rapid IVP

If no response in 2 minutes:

✓ 12 mg rapid IVP

If no response in 2 minutes:

✓ May repeat 12 mg rapid IVP



Asystole / Pulseless Idioventricular Rhythm

TREATMENT GUIDELINES 9105

9105.1 CONSIDERATIONS

- A. If arrest was unwitnessed and asystole has been confirmed, criteria for field determination of death may have been met.
- B. If arrest was witnessed, monitor and refer to Ventricular Fibrillation / Pulseless Ventricular Tachycardia Guideline # 9101.

9105.2 TREATMENT

- A. Initiate chest compressions per AHA recommendations BEFORE ventilations (CAB not ABC). Refer to Cardiopulmonary Resuscitation (CPR) Guideline # 7014.
- B. Provide appropriate airway management. Initially use BVM, then if clinically indicated, intubate or use King Tube. Use waveform capnography in every cardiac arrest from beginning of resuscitation to transfer at hospital. Refer to King Tube Intubation Guideline 9804, Advanced Airway Management Guideline 9801, and Waveform Capnography Monitoring Guideline 9814.
- C. Establish IV/IO NS 10 cc/kg then TKO.
- D. Administer epinephrine 1mg (1:10,000) IV/IO; resume CPR five (5) cycles or two (2) minutes, perform rhythm / pulse check. (Atropine is no longer utilized).
 - 1. Repeat every three to five (3-5) minutes.

9105.3 SPECIAL CONSIDERATIONS

- A. Place a high importance on BLS skills.
- B. If able to maintain an adequate BLS airway, defer the placement of an advanced airway for several minutes into the arrest. AVOID HYPERVENTILATION.
- C. Establishment of IV/IO, airway and medication administration should occur during five (5) cycles or two (2) minutes of CPR and should not interrupt the compression cycles.
- D. Unless extenuating circumstances exist; continue resuscitating efforts until ROSC occurs or resuscitation efforts fail. Efforts should continue for \geq twenty (20) minutes and capnography value should <10 mmHg prior to termination of efforts. Refer to Cardiopulmonary Resuscitation (CPR) Guideline # 7014.
- E. EMS personnel shall initiate rapid transport and continue resuscitation when the following factors are present:
 - 1. Return of spontaneous circulation (ROSC) following cardiac arrest
 - 2. Near drowning.
 - 3. Hypothermia.
 - 4. Extreme, unusual or dangerous social or scene situations.
 - 5. Patient age less than <16 .



Pulseless Electrical Activity

TREATMENT GUIDELINES 9106

9106.1 TREATMENT

- A. Confirm pulselessness. Begin CPR. Initiate chest compressions per AHA recommendations BEFORE ventilations (CAB not ABC). Refer to Cardiopulmonary Resuscitation (CPR) Guideline 7014.
- B. Evaluate rhythm. If rhythm is unclear and possibly ventricular fibrillation, refer to Ventricular Fibrillation / Pulseless Ventricular Tachycardia Guideline 9101.
- C. Provide appropriate airway management. Initially use BVM, then if clinically indicated, intubate or use King Tube. Use waveform capnography in every cardiac arrest from beginning of resuscitation to transfer at hospital. Refer to King Tube Intubation Guideline 9804, Advanced Airway Management Guideline 9801, and Waveform Capnography Monitoring Guideline 9814.
- D. Establish IV/IO NS 10 cc/kg then TKO.
- E. Administer epinephrine 1mg (1:10,000) IV/IO; resume CPR five (5) cycles or two (2) minutes, perform rhythm / pulse check. (Atropine is no longer utilized).
- F. Repeat every three to five (3-5) minutes.
- G. For heart rate < 60:
 1. If external cardiac pacer is readily available, consider pacing, and refer to External Cardiac Pacing Guideline # 9810.

9106.2 SPECIAL CONSIDERATIONS

- A. Place a high importance on BLS skills.
- B. If able to maintain an adequate BLS airway you may consider deferring the placement of an advanced airway for several minutes into the arrest. AVOID HYPERVENTILATION.
- C. Establishment of IV/IO, airway and medication administration should occur during five (5) cycles or two (2) minutes of CPR and should not interrupt the compression cycles.
- D. Unless extenuating circumstances exist; continue resuscitating efforts until ROSC occurs or resuscitation efforts fail. Efforts should continue for \geq twenty (20) minutes and capnography value should <10 mmHg prior to termination of efforts. Refer to Cardiopulmonary Resuscitation Guideline 7014.
- E. EMS personnel shall initiate rapid transport and continue resuscitation when the following factors are present:
 1. Return of spontaneous circulation (ROSC) following cardiac arrest.
 2. Near drowning.
 3. Hypothermia.
 4. Extreme, unusual or dangerous social or scene situations.
 5. Patient age less than <16.
 6. With a PEA >40 BPM, an end tidal CO₂ >10, and a suspected pulmonary embolism.



Bradycardia

TREATMENT GUIDELINE 9107

9107.1 DEFINITION

Symptomatic Bradycardia: Heart rate < 60 bpm with decreasing perfusion and responsiveness (inadequate for patient's clinical condition).

9107.2 TREATMENT

- A. Treat only if serious signs and symptoms exist, that are related to bradycardia.
- B. Obtain 12-Lead ECG if available.
- C. If external cardiac pacing is readily available, consider cardiac pacing and refer to External Cardiac Pacing Guideline # 9810.
- D. Establish IV NS TKO.
- E. Consider fluid challenge if hypotensive and lungs clear, NS 10 cc/kg. Recheck vital signs every 250 cc's.
- F. Atropine 0.5mg IV/IO. Repeat every five (5) minutes to a total of 3mg.
- G. If inadequate response, IV/IO infusion of dopamine 400mg/250 cc's premix. Start at 10 ug/kg/min. Titrate to SBP 90.

DOPAMINE			
400mg in 250 cc NSS 60 gtts/min = 60 ml/hr			
Weight (kg)	gtts/min = 10 ug/kg/min	Weight (kg)	gtts/min = 10 ug/kg/min
35-45	15 gtts/min	85-90	35 gtts/min
45-55	20 gtts/min	95-105	40 gtts/min
60-70	25 gtts/min	110 & Up	45 gtts/min
75-80	30 gtts/min		

9107.3 SPECIAL CONSIDERATIONS

Begin immediate transport if unable to establish IV/IO; continue treatment while transporting.



Suspected Acute Coronary Syndrome (ACS)

TREATMENT GUIDELINE 9108

9108.1 DEFINITION

Characterized by: Substernal chest pain; chest or epigastric discomfort, heaviness, squeezing, burning or tightness; pain radiating or isolated to jaw, shoulders or back; nausea; diaphoresis; dizziness; dyspnea; anxiety; or back pain. Patient may have a history of coronary artery disease (CAD).

9108.2 TREATMENT

- A. Administer 162 mg aspirin (half [½] an adult tablet [325 mg] or two [2] 81 mg tablets) PO as one time dose. Have patient chew if possible. Do not use enteric coated tablets.
- B. Obtain 12-Lead ECG if available.
- C. If systolic blood pressure is above 100mmHg, administer nitroglycerin 0.4 mg SL - may repeat every five (5) minutes if signs / symptoms persists and systolic blood pressure remains above 100mmHg.
- D. If systolic blood pressure remains above 90mmHg and patient requests, administer fentanyl 50 mcg IVP (slow over 1 minute **).
 1. May repeat initial dose of fentanyl (twice) upon patient request and at provider judgment 50 mcg IVP every three (3) to five (5) minutes to a maximum of 200 mcg. Maintain SBP > 100mmHg.
 2. Repeat pain scale after each administration; Record pain scale expressed as a fraction before AND after fentanyl administration.
- E. If acute ST elevation myocardial infarction (STEMI) detected on 12-Lead ECG:
 1. Direct transport to the closest authorized STEMI receiving center (see Treatment Guideline # 7007 Patient Destination / Point of Entry. For questionable interpretations, consider base hospital consultation with transmission of the 12-Lead ECG.
 2. Contact receiving facility ASAP.
 3. Consider establishing a second IV NS TKO during transport.

9108.3 SPECIAL CONSIDERATIONS

- A. If systolic blood pressure is less than 100mmHg, administer a 250 mL fluid bolus.
- B. If systolic blood pressure is less than 90mmHg, refer to Treatment Guideline # 9109 Cardiogenic Shock and obtain **right sided** 12-Lead ECG.
- C. For transport times of over one (1) hour:
 1. Immediately apply half (½) inch of 2% nitroglycerin paste - may apply an additional half (½) inch if signs/symptoms persist and systolic blood pressure remains above 100mmHg (in addition to SL NTG).
- D. Nitroglycerin should NOT be administered to patients of either gender who have taken sildenafil (Viagra) or vardenafil (Levitra) within twenty-four (24) hours or tadalafil (Cialis) within seventy-two (72) hours.
- E. Aspirin should NOT be administered to patients with allergy to aspirin. (Allergy consists of a history of anaphylaxis, urticaria, swelling, etc). Patients who have had a history of an ulcer or upset GI SHOULD receive aspirin.
- F. Patients, who take other blood thinners (Lovenox, Coumadin [warfarin], Pradaxa [dabigatran], etc. SHOULD receive aspirin).
- G. Aspirin should NOT be administered to patients with an ACTIVE GI bleed.

NOTE: Rapid administration of large quantities of fentanyl has been associated with chest wall rigidity syndrome.



Cardiogenic Shock

TREATMENT GUIDELINE 9109

9109.1 DEFINITION

Systolic blood pressure < 90. Shock-like appearance suggestive of cardiac origin; **MAY** have chest pain typical of myocardial ischemia. Clear lung sounds. If rales present refer to Acute Pulmonary Edema / CHF Guideline # 9502.

9109.2 TREATMENT

- A. Obtain 12-Lead ECG if available.
- B. Treat significant arrhythmias.
- C. Establish IV NS, give 10 cc/kg fluid challenge. Recheck vital signs every 250 cc's. May give up to two (2) liters of fluid.
 - 1. **Reminder:** Lungs must remain clear.
- D. If lungs remain clear and after fluid challenge and systolic blood pressure remains < 90:
 - 1. IV/IO infusion of dopamine 400mg/250 cc's D5W.
 - 2. Begin at 10ug/kg/min.
 - 3. Monitor blood pressure q five (5) minutes.
 - 4. Aim for systolic blood pressure 90 or above.
- E. Consider placing multifunction defibrillator / pacer pads.

DOPAMINE			
400mg in 250 cc NSS 60 gtts/min = 60 ml/hr			
Weight (kg)	gtts/min = 10 ug/kg/min	Weight (kg)	gtts/min = 10 ug/kg/min
35-45	15 gtts/min	85-90	35 gtts/min
45-55	20 gtts/min	95-105	40 gtts/min
60-70	25 gtts/min	110 & Up	45 gtts/min
75-80	30 gtts/min		

9109.3 SPECIAL CONSIDERATIONS

- A. Begin immediate transport if unable to establish IV/IO or ETT, continue treatment while transporting.
- B. If hyperkalemia is suspected in renal dialysis patients. Administer 500mg of 10% calcium chloride and 1 mEq/kg of sodium bicarbonate IV/IO.



Inappropriate Shock from an Implanted Defibrillator

TREATMENT GUIDELINE 9110

9110.1 DEFINITION

Defibrillator shocks observed by paramedic in the absence of ventricular tachycardia or ventricular fibrillation. Refer to Ventricular Fibrillation / Pulseless Ventricular Tachycardia Guideline # 9101 and Pediatric Pulseless Arrest Ventricular Fibrillation / Pulseless Ventricular Tachycardia Guideline # 9702.

9110.2 TREATMENT

- A. Apply magnet directly over center of defibrillator (if any question of location, ask patient).
- B. Tape magnet in place.
- C. If another shock is delivered, magnet may have moved; re-center over defibrillator, and tape in place.
- D. The defibrillator device does not detect arrhythmias; however the pacer may still function.

9110.3 SPECIAL CONSIDERATIONS

Refer to Sedation Guideline # 9005 and treat as clinically indicated.



Ventricular Assist Device

TREATMENT GUIDELINE 9111

9111.1 OBJECTIVE

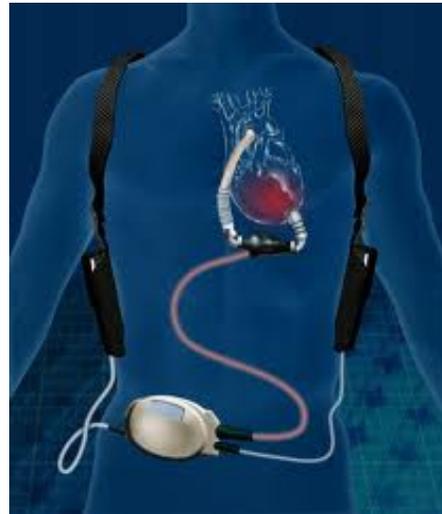
For specific emergency stabilization or patient management of Ventricular Assist Devices (VADs).

9111.2 TRANSPORT DESTINATION

Patients with VADs shall be transported to the closest most appropriate receiving facility for initial treatment and stabilization unless the VAD Coordinator and Base Hospital Physician feel the patient would benefit from direct transport to a facility with a VAD Program (e.g. Sutter Memorial Hospital – 5151 F Street, Sacramento).

9111.3 VAD COORDINATOR CONTACT

- A. Contact VAD coordinator as soon as possible. The VAD coordinator will assist to trouble shoot the equipment but may NOT direct medical care.
- B. If the VAD coordinator is not on the phone already, page the on-call coordinator immediately using **(916) 733-8133**.



9111.4 PROCEDURE

- A. Assist family and/or caregiver to trouble shoot VAD for disconnection, power or mechanical failure.
- B. Provide patient care as clinically indicated per Napa County EMS Treatment Guidelines with the exceptions:
 1. Withhold chest compressions UNLESS patient is pulseless and the VAD presents with a "red heart alert".
 2. Do not assist or give aspirin and/or nitroglycerine.
- C. Ensure early notification to the base hospital in all VAD patients.
- D. Determine blood pressure MANUALLY. You will obtain ONE NUMBER. Volume replacement is the first-line therapy in the pre-load dependent VAD patient.
- E. Collect all VAD equipment.
- F. Monitor and obtain 12-Lead ECG.
- G. Administer fentanyl as indicated for pain management.
- H. Transport expeditiously.