

ACLS PROTOCOL

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ACLS PROTOCOLS

SUSPECTED CARDIAC PATIENT WITH CHEST PAINS (ACUTE MYOCARDIAL INFARCTION)

Chest pain of cardiac origin is often difficult to diagnose. Thus, the following list of historical questions is suggested.

1. Do you have any discomfort in your chest? (Avoid using the word "pain" unless this is the word the patient uses.)
2. What type of discomfort? (If the patient seems unable to answer, you may offer a set of alternatives. "Is it burning, stabbing, needle like, pressure?")
3. Do you also feel the discomfort in your neck, arm, jaw, or anywhere else?
4. Is it improved or worsened by deep breathing? (If patient doesn't know, have him take a deep breath and tell you if that affects the pain and how.)
5. Where is your discomfort?
6. Is it constant and without change or does it come and go or get better or worse?
7. How long does each period of discomfort last?
8. Do you have it now?
9. Have you had pains in any way like this in the past? (Beware that the patients will frequently say no to this if they had a pain identical quality but lesser intensity, so you may need to explain that by "a similar" you mean the same general kind of feeling in the same location in the chest.)
If so:
 - a. Did the doctor say they were from your heart?
 - b. Did he give you a medicine to put under your tongue for this pain?
 - c. How long does it usually take to work?
 - d. Did you take it this time?
 - e. Did it work? (If not, how long ago did you first open this medication?)
 - f. How long did it take your pain to go away after medication this time?
 - g. Over what period of time have you been having pain like this?
 - h. Is today's pain any different from your usual pain? How?
10. Have you ever had a heart attack?
11. Are you short of breath? (This must be distinguished from a voluntary limitation of breathing due to pain).
12. Are you nauseated?
13. Document finding (1-10 Pain Scale, Radiation & Duration)

Remember: Chest pain which varies with movement or respiration or which is qualitatively much different from previous documented angina is much less likely to be of cardiac origin. Although the patient generally requires an IV and monitor, in these patients consider consulting medical Direction before administering Nitroglycerin (Nitro Stat).

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SUSPECTED ACUTE CORONARY SYNDROME PROCEDURE

REASSURE AND POSITION PATIENT

1. Maintain airway, breathing and circulation.
2. Pulse Oximetry, high flow oxygen, blood pressures in both arms.
3. EKG monitor (if dysrhythmias, begin appropriate algorithm) 12-Lead immediately. (Transmit as soon as possible to ER)
**If ST segment changes are found in Leads II, III, & AVF (Inferior Wall) Conduct a right side 12 lead EKG. (Move V4 to right side of the chest on the midclavicular line <same location as on the left> and run 12 lead again. Label 12 lead as "Right Side" look to V4 in right side 12 lead for ST segment Changes and notify ER)*
4. IV Normal Saline TKO rate, blood draws.
Administer Nitroglycerin (Nitro Stat) 0.3 to 0.4 mg (1/150 G) SL, repeated in 5 minutes up to 3 total (B/P > 100 systolic, > 60 diastolic) (Nitro may be given if no IV access for systolic B/P > 130)

(Nitro may be given if no IV access for systolic B/P > 130)

NITROGLYCERIN (NITRO STAT) IS NOT A HARMLESS DRUG! It should be administered only in patients with a satisfactory blood pressure who have typical anginal chest pain. If you are not certain about the anginal quality of the chest pain, consult medical direction.

5. Administer Baby Aspirin (ASA) 81 mg X 4 PO, or adult Aspirin (ASA) 325 mg PO.
6. Metoprolol (Lopressor) 5 mg IV slow push if hr > 60 and BP > 110 systolic (Given to ACS patients that fit the administration criteria). May repeat in 5 minutes if hr>60 and BP > 110 systolic
Consult Medical Direction
 - i. if history of asthma or emphysema
 - ii. if evidence of heart block or PR prolongation

WATCH FOR DYSRHYTHMIAS WATCH FOR HYPOTENSION

7. Administer Morphine Sulfate (if adequate blood pressure) 2 to 4 mg Slow IVP, IO, or Intranasal (if no relief, may repeat at 2 to 4 mg). **For further doses over 10 mg of Morphine, contact medical direction.** (Hold if pulse <60, SBP<100)
 - Follow Morphine with Zofran 4mg to help with nausea
 - For allergy to Morphine or hypotension give Fentanyl (Sublimaze) 25-50 mcg slow IVP, IM, or Intranasal
9. Treat any DYSRHYTHMIAS that exist with the appropriate protocol
10. Complete THROMBOLYTIC checklist
11. S-T elevation > 1mm in two contiguous leads NOTIFY receiving hospital of suspected acute MI
12. Transport.
13. Monitor ABC's.

EMS consideration for use of OneCall Program for aeromedical transport

WATCH FOR DYSRHYTHMIAS WATCH FOR HYPOTENSION

Order of drug administration may deviate with each patient

ACLS PROTOCOLS

STEMI – ST SEGMENT ELEVATION MYOCARDIAL INFARCTION

PROCEDURE

REASSURE AND POSITION PATIENT

1. Maintain airway, breathing and circulation.
2. Pulse Oximetry, high flow oxygen, blood pressures in both arms.
3. EKG monitor (if dysrhythmias, begin appropriate algorithm) 12-Lead immediately. (Transmit as soon as possible to ER)
**If ST segment changes are found in Leads II, III, & AVF (Inferior Wall) Conduct a right side 12 lead EKG. (Move V4 to right side of the chest on the midclavicular line <same location as on the left> and run 12 lead again. Label 12 lead as “Right Side” look to V4 in right side 12 lead for ST segment Changes and notify ER)*
4. IV Normal Saline TKO rate, blood draws.
5. Administer Nitroglycerin (Nitro Stat) 0.3 to 0.4 mg (1/150 G) SL, repeated in 5 minutes up to 3 total
(B/P > 100 systolic, > 60 diastolic)
(Nitro may be given if no IV access for systolic B/P > 130)
6. Administer Baby Aspirin (ASA) 81 mg X 4 PO, or adult Aspirin (ASA) 325 mg PO.
7. Administer Plavix (Clopidogrel) 600mg PO.
8. Metoprolol (Lopressor) 5 mg IV slow push if hr > 60 and BP > 110 systolic (Given to ACS patients that fit the administration criteria). May repeat in 5 minutes if hr>60 and BP > 110 systolic
Consult Medical Direction
 - i. if history of asthma or emphysema
 - ii. if evidence of heart block or PR prolongation
8. For continued pain, administer Morphine Sulfate (if adequate blood pressure) 2 to 4 mg Slow IVP, IO, Intranasal (if no relief, may repeat at 2 to 4 mg). **For further doses over 10 mg of Morphine, contact medical direction.** (Hold if pulse <60, SBP<100)
 - Follow Morphine with Zofran 4mg to help with nausea
 - For allergy to Morphine or hypotension, administer Fentanyl (Sublimaze) 25-50 mcg slow IVP, IM, or intranasal
10. **Heparin 50 units/kg (Max Dose of 4000units) Slow IV Push (Contact Med Control)**
11. Treat any DYSRHYTHMIAS that exist with the appropriate protocol
12. Complete THROMBOLYTIC checklist
13. S-T elevation > 1mm in two contiguous leads NOTIFY receiving hospital of suspected acute MI
14. Transport.
15. Monitor ABC's.

EMS consideration for use of OneCall Program for aeromedical transport

WATCH FOR DYSRHYTHMIAS

WATCH FOR HYPOTENSION

Order of drug administration may deviate with each patient

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VENTRICULAR ECTOPY

WHICH PVC'S SHOULD BE TREATED?

Consider treatment in the clinical setting of a possible myocardial infarction.

1. Close-Coupling or multiple runs of ventricular tachycardia > 6 beats
2. "R on T Phenomenon", R-on-P phenomenon
3. Multifocal PVC's.

PROCEDURE

REASSURE AND POSITION PATIENT

1. Maintain airway, breathing and circulation.
2. Pulse Oximetry, high flow oxygen.
3. 12-Lead EKG Monitor (if dysrhythmias, begin appropriate algorithm).
4. IV Normal Saline TKO rate, blood draws.
5. If bradycardic, begin Bradycardia Protocol.
6. Administer Amiodarone (Cordarone) 150 mg over 10 minutes if HR>60 and WIDE > .12 QRS.
7. May repeat Amiodarone (Cordarone) infusion 150 mg over 10 minutes after 5 minutes.
8. Transport.
9. Monitor ABC's.

WATCH FOR HYPOTENSION

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BRADYCARDIA (ASYMPTOMATIC)

1. Maintain airway, breathing and circulation.
2. Pulse Oximetry, high flow oxygen.
3. EKG monitor, 12-lead EKG.
4. IV Normal Saline TKO rate, blood draws.
5. Transport. Notify receiving hospital if HR <40
6. Monitor ABC's.
7. Consider placing TCP pads without initiating pacing.

BRADYCARDIA WITH SYMPTOMS

Bradycardia associated with chest pain, shortness of breath, decreased LOC, low BP, signs of symptomatic hypopofusion, hypoxia, shock, or pulmonary edema. **TREAT THE PATIENT.**

1. Maintain airway, breathing and circulation.
2. Pulse Oximetry, high flow oxygen.
3. EKG monitor, 12-lead EKG.
4. IV Normal Saline TKO rate, blood draws.
FOR 2° TYPE II, 3° HEART BLOCKS, OR MYOCARDIAL INFARCTION
GO TO TRANSCUTANEOUS PACING
5. Administer Atropine (Atropisol, Isopto):
Adults: 0.5 mg IV PUSH repeated every 3-5 mins. to a max. of 3 mg.
Children: 0.02 mg/kg IV PUSH repeated after 5 mins. (min: 0.1mg)
NOTE: complete heart block is often refractory to Atropine (Atropisol, Isopto). If NO RESPONSE TO FIRST DOSE, go Transcutaneous Pacing
REPEAT AT SHORTER INTERVALS FOR MORE DISTRESSED PATIENTS
6. Consider Transcutaneous Pacing:
Consider sedation for comfort. Versed (Midazolam) 2mg. Set rate at 10 over the intrinsic rate.
Increase miliamperage until electrical capture, AND pulses.
NOTE: pacing of pectoral muscle does not guarantee pacing of heart. Pectoral muscle contraction may cause appearance of QRS on monitor. Palpable pulses corresponding to pacer required.
Reassess patient.
VERIFY PATIENT TOLERANCE AND CAPTURE
7. Transport. Notify receiving hospital of patient requiring pacing.
8. Monitor ABC's.

Atropine
(Atropisol,
Isopto)

5kg = 0.1 mg
10kg = 0.2 mg
15kg = 0.3 mg
20kg = 0.4 mg
25kg = 0.5 mg

Consider Medical Direction if you suspect Beta Blocker or Calcium Channel blocker Overdose
with Glucagon 2-4mg IV PUSH and/or Calcium Chloride 1g

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ASYSTOLE (CARDIAC STANDSTILL)

CONFIRM IN TWO (2) LEADS IF TRAUMA, TRANSPORT IMMEDIATELY

1. Establish airway (intubation preferred), begin CPR. Minimize any interruptions to chest compressions (Use ResQPod if available)
* If monitor is equipped use capnography on all intubated patients. End tidal Co2 If capnography not available.
2. Maintain breathing and circulation.
3. EKG monitor.
4. IV Normal Saline TKO rate, blood draws.
 - iii. Administer Vasopressin (Pitressin) 40 units, then Epi 1:10,000 every 3-5 min.
If no R.O.S.C. after 10 minutes**
6. Consider possible causes.
 - a. Hypovolemia -fluid challenge/PASG
 - b. Cardiac tamponade -rapid transport
 - c. Tension pneumothorax -needle decompression
 - d. Hypoxemia -improve oxygenation
 - e. Acidosis -hyperventilation
 - f. Pulmonary embolism -rapid transport
 - g. Hypothermia
 - h. Drug overdoses i.e. calcium channel blockers, digitalis, tricyclics
 - i. Hyperkalemia-1g calcium chloride / Sodium Bi-Carb 50mEq Slow IV Push
 - j. Massive acute MI

(Narcotic overdose think 2.0 to 4.0mg. Narcan (Naloxone))
(Tricyclic antidepressant overdose think Sodium Bicarbonate 50mEq or 1mEq/kg slow IVP)
(If Known Dialysis Patient give 1gm Calcium Chloride *DO NOT mix with Sodium Bicarbonate*)
7. Administer Atropine (Atropisol, Isopto) 1.0 mg IV PUSH repeat every 5 minutes max 3 mg.
8. Consider fluid bolus of 500 cc normal saline if evidence of bleeding or hypovolemia
9. Sodium Bi-Carb 50mEq Slow IVP or 1 meq/kg IV
10. Transport.
11. Monitor ABC's.

IF THE RHYTHM IS UNCLEAR AND POSSIBLE VENTRICULAR FIBRILLATION,
DEFIBRILLATE AS FOR V-FIB ALGORITHM.
CONSIDER HYPOGLYCEMIA.

**May start with Eprinepherine (Adrenaline) 1mg 1:10,000 single dose prior to Vasopressin (Pitressin).

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TRANSCUTANEOUS PACEMAKER

INDICATIONS

- a. Symptomatic bradycardia (BP < 90, AMS, MI, or pulmonary edema).
- b. Symptomatic 3° heart block.
- c. Be prepared with 2° mobitz type II heart block, sick sinus syndrome, and drug-induced bradycardia.

CONTRAINDICATIONS

- a. Do not interrupt CPR and ACLS during pacing.
- b. Stop pacing if rhythm changes to ventricular fibrillation, ventricular tachycardia, or a sinus rhythm.

PROCEDURE

1. Inform patient about procedure.
2. Prepare equipment.
3. Attach pacer patches.
4. Prepare chest by removing clothing, shaving excess hair.
5. Remove backing and stick patches in place.
6. Use anterior-anterior or anterior-posterior placement.
7. Consider sedation for comfort. Versed (Midazolam) 2 mg IV if SBP > 100
8. Select pacing mode.
9. Set pacing rate at 10 over the intrinsic rate (May increase rate by 10 to regulate B/P).
10. Increase miliamperage until electrical capture and mechanical capture.
11. Assess capture, assess patient for improvement.
12. Muscle twitching may be seen, but does not guarantee capture.
13. Record monitor strips as appropriate.

ACLS PROTOCOLS

WIDE COMPLEX TACHYCARDIA

IF NO PULSE, TREAT AS V-FIB

STABLE

Patient's heart rate is greater than 150 or wide complex of uncertain origin.

IF NO PULSE TREAT AS V-FIB

1. Maintain airway, breathing, and circulation.
2. Pulse Oximetry, high flow oxygen.
3. EKG monitor; 12-lead.
4. IV Normal Saline TKO rate, blood draws.
5. Administer Amiodarone (Cordarone) 150mg IV over 10 minutes
6. Consider synchronized cardioversion as for unstable patients (consider sedation).
7. Transport.
8. Monitor ABC's.

****UNSTABLE POLYMORPHIC VT:** Unsynchronized shock at 200 Joules

****STABLE POLYMORPHIC VT:** 1.0 – 4.0 grams IV Magnesium Sulfate

If ineffective ⇒ Amiodarone (Cordarone) 150mg IV over 10

minutes

UNSTABLE (Monomorphic VT)

Patient is hemodynamically unstable with chest pain, dyspnea, pulmonary edema, BP<90, altered mental status or infarction. Cardioversion should be considered immediately if medication administration is delayed. If medication administration is available, both procedures can be performed simultaneously.

1. Maintain airway, breathing and circulation.
2. Pulse Oximetry, high flow oxygen.
3. EKG monitor, 3-lead initially followed by 12-lead.
4. IV Normal Saline TKO rate, blood draws.
5. Consider sedation (unless pulmonary edema, coma, or BP<90).
(Versed (Midazolam) 2.0mg slow IV push)
6. Synchronized cardiovert 100 joules. If unsuccessful, go to Step 7
7. Synchronized Cardiovert 200 joules. If unsuccessful, go to Step 8
8. Synchronized Cardiovert 300 joules. If unsuccessful, go to Step 9
9. Administer Amiodarone (Cordarone) 150mg IV over 10 minutes
10. If unresolved, synchronized cardiovert 360 joules.
11. If recurrent, consider Amiodarone (Cordarone) 150mg IV over 10 minutes.
12. Transport.
13. Monitor ABC's.

ACLS PROTOCOLS

NARROW COMPLEX TACHYCARDIA

STABLE

Patients present with sudden onset of tachycardia lasting from a few minutes to many hours. This includes atrial tachycardia, junctional tachycardia, atrial flutter and atrial fibrillation. The ventricular rate is usually between 150 and 220 bpm. The patient denies any other symptoms.

1. Maintain airway, breathing and circulation.
2. Pulse Oximetry, high flow oxygen.
3. EKG monitor, 12-lead.
4. IV Normal Saline TKO rate, blood draws.
5. Vagal maneuvers.
6. Administer Adenosine (Adenocard) 6 mg rapid IV PUSH.
7. If unsuccessful, Adenosine (Adenocard) 12 mg rapid IV PUSH after 2 minutes.
8. If unsuccessful, Adenosine (Adenocard) 12 mg rapid IV PUSH after 2 minutes.
9. Administer Amiodarone (Cordarone) 150mg in 100ml over 10 minutes
10. If still unsuccessful, and hr > 150 consider cardioversion with sedation.
11. Transport.
12. Monitor ABC's

UNSTABLE

Patient presents with chest pain, dyspnea, altered mental status, pulmonary edema, PVC's, ischemia, or infarction.

1. Maintain airway, breathing and circulation.
2. Pulse Oximetry, high flow oxygen.
3. EKG monitor, 3-lead initially followed by 12-lead.
4. IV Normal Saline TKO rate, blood draws.
5. Consider sedation (unless pulmonary edema, coma or BP<90). (Versed (Midazolam) 2.0mg IV)
6. Synchronized Cardiovert 100 joules.
7. Synchronized Cardiovert 200 joules.
8. Synchronized Cardiovert 300 joules.
9. Consider cause: Hypoxemia, CHF, acidosis, and electrolyte imbalance.
10. Synchronized Cardiovert 360 joules.
11. Synchronized Cardiovert 360 joules.
12. If synchronized cardioversion is unsuccessful ⇒ Administer Amiodarone (Cordarone) 150 mg IV over 10 Minutes
13. Transport.
14. Monitor ABC's.

If the rhythm converts transiently, but reverts to PSVT, repeated shocks are NOT INDICATED UNLESS OTHER THERAPY is given to prevent recurrences.

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SYNCHRONIZED CARDIOVERSION ALGORITHM

(Patient is not in cardiac arrest)

INDICATIONS

With serious signs and symptoms related to the tachycardia: If ventricular rate is > 150 beats/min, prepare for IMMEDIATE CARDIOVERSION. May give brief trial of medications based on specific arrhythmias. Immediate cardioversion is generally not needed for rates < 150 beats/min.

- a. Ventricular tachycardia.
- b. Paroxysmal supraventricular tachycardia.
- c. Atrial flutter.
- d. Atrial fibrillation.

A-FIB, A-FLUTTER ONSET > 24hrs CALL MEDICAL DIRECTION

PREPARATION

- a. Pulse Oximetry.
- b. Suction device available.
- c. IV Normal Saline.
- d. Prepare intubation equipment.
- e. Pre-medicate whenever possible. Versed (Midazolam) 2.0 mg IV if SBP > 90

PROCEDURE

1. Inform patient of procedure.
2. Prepare equipment.
3. Attach cardioversion patches to cable.
4. Prepare chest by removing clothing, shaving excess hair.
5. Remove backing and attach patches in place. (**Anterior/Posterior placement preferred**)
6. Select "SYNC" mode.
7. Set joules to 100, 200, 300, or 360.
8. Charge monitor.
9. Depress shock buttons until shock delivered.

"SYNC" MODE MUST BE SELECTED AFTER EACH SHOCK

10. Check patient and pulse.
11. Repeat steps 6-10 until desired effect or after medication administration.

**IF V-FIB, GO TO UNSYNCHRONIZED CARDIOVERSION
NOTIFY HOSPITAL EARLY**

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PULSELESS ELECTRICAL ACTIVITY

Patients present with some type of electrical activity, however, lack a detectable pulse. Search for the possible cause is of utmost importance, since early intervention may reverse effect.

PROCEDURE

IF TRAUMA, TRANSPORT IMMEDIATELY

1. Establish airway (intubation preferred), begin CPR. Minimize interruptions to chest compressions while performing other interventions (Use ResQPod if available)
* If monitor is equipt use capnography on all intubated patients. End tidal Co2 If capnography not available.
2. Maintain breathing and circulation.
3. Pulse Oximetry, high flow oxygen.
4. EKG monitor.
5. IV Normal Saline TKO rate, blood draws.
6. Administer Vasopressin (Pitressin) 40 units IV/IO, then Epinephrine (Adrenaline) 1:10,000 IV/IO every 3-5 min.
If no ROSC in 10 min
Or
Administer Epinephrine (Adrenaline) 1:10,000 1.0 mg IV/IO PUSH, repeated every 3-5 min.
7. Consider Correctable causes:
 - a. Hypovolemia -fluid challenge/PASG
 - b. Cardiac tamponade -rapid transport
 - c. Tension pneumothorax -needle decompression
 - d. Hypoxemia -improve oxygenation
 - e. Acidosis -hyperventilation
 - f. Pulmonary embolism -rapid transport
 - g. Hypothermia
 - h. Drug overdoses (i.e. calcium channel blockers digitals tricyclics)
 - i. Hyperkalemia ⇒ Calcium 1mg/kg, Bicarb
 - j. Massive acute MI
(Narcotic overdose-think Narcan (Naloxone) 0.4-2 mg IV/IO)
(Tricyclic antidepressant overdose think Sodium Bicarbonate 1mEq/kg)
(If Known Dialysis Patient give 1gm Calcium Chloride *DO NOT mix with Sodium Bicarbonate*)
8. If Bradycardic Rhythm, administer Atropine (Atropisol, Isopto) 1 mg IV PUSH q 5 minutes to a total of 3 mg.
9. Rapid transport.
10. Monitor ABC's.

ACLS PROTOCOL

VENTRICULAR FIBRILLATION AND PULSELESS VENTRICULAR TACHYCARDIA

Patient is unconscious and unresponsive without pulses or respirations and shows V-fib or V-tach.

WITNESSED ARREST

1. Check pulse.
2. Deliver 200J-Biphasic truncated or 360J-Monophasic
3. Go to "Unwitnessed Arrest."

UNWITNESSED ARREST

1. Begin CPR and maintain airway.
2. > 4 minute down time perform 2 minutes of CPR prior to defibrillation
3. Intubation during CPR when possible vent rate 8 BPM with an advanced airway.
(**NO HYPERVENTILATION**). Use ResQ Pod if available.
* If monitor is equipt use capnography on all intubated patients. End tidal Co2 If capnography not available.
4. Establish IV/ IO when possible.
5. Minimize CPR pause to < 5 seconds prior to shock.
6. Quick Look
7. Defibrillate at 200 joules Biphasic truncated/360 joules monophasic
8. Continue CPR (immediately after shock) at 150 compressions
(**5 cycles of CPR at 30:2 ratio**) or (**200 compressions with ET tube**)
9. If using 30:2 ratios check rhythm during pause for 2 ventilations.
10. If rhythm is organized check pulse only after a full 2 minutes of CPR.
11. If unorganized rhythm, continue CPR and administer Vasopressin (Pitressin) 40 units IV if no ROSC after 10 minutes administer 1mg of 1:10,000 Epinephrine (Adrenaline) IV.
(**If using Epinephrine (Adrenaline) 1mg IV of 1:10,000 repeat every 3-5 minutes**)
12. Defibrillate at 300J Biphasic truncated/ 360J Monophasic
Continue CPR (immediately after shock) at 150 compressions
(**5 cycles of CPR at 30:2 ratio**) or (**200 compressions with ET tube**)
If rhythm organized check pulse
If rhythm unorganized continue CPR and administer Amiodarone (Cordarone) initial dose of 300 mg IV/IO push.
13. Defibrillate 360J
Continue CPR (immediately after shock) at 150 compressions
(**5 cycles of CPR at 30:2 ratio**) or (**200 compressions with ET tube**)
If rhythm organized check pulse
14. If unorganized continue CPR and defibrillate at 360J.
Continue CPR (immediately after shock) at 150 compressions
(**5 cycles of CPR at 30:2 ratio**) or (**200 compressions with ET tube**)
Check Rhythm if organized check pulse.
15. If unorganized continue CPR and administer Epinephrine (Adrenaline) 1 mg IV if needed and 150 mg of Amiodarone (Cordarone) IV/IO push.
16. Defibrillate at 360 joules.
Continue CPR (immediately after shock) at 150 compressions
(**5 cycles of CPR at 30:2 ratio**) or (**200 compressions with ET tube**)
17. Transport.
18. Consider Sodium Bi-Carb 50 meq IV if downtime is > 10 minutes.
19. Continue CPR and medication/shock sequence.

(If Known Dialysis Patient give 1gm Calcium Chloride *DO NOT mix with Sodium Bicarbonate*)

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POST ARREST

1. Maintain airway, breathing, and circulation.
Check BP and consider treatment of ↓ BP with fluids or Dopamine (Intropine)
2. Pulse Oximetry, high flow oxygen.
3. IV Normal Saline (if not already established).
4. Continue EKG monitor.

WATCH CLOSELY FOR DYSRHYTHMIAS
REFER TO APPROPRIATE PROTOCOL

5. Place cold packs around head and neck
6. Transport.
7. Monitor ABC's.

WATCH FOR HYPOTENSION

CARDIAC HYPOTENSION (CARDIOGENIC SHOCK)

Verify patient not hypovolemic / bleeding

1. Maintain airway, breathing, and circulation.
2. Pulse Oximetry, high flow oxygen.
3. EKG monitor (if dysrhythmias, begin appropriate algorithm)
4. IV Normal Saline TKO rate, blood draws.
5. Administer Dopamine (Intropine): 5 to 20 mcg/kg/min Titrate to effect (BP > 90)
6. Transport Advise receiving hospital of patient in cardiogenic shock
7. Monitor ABC's.

Simple calculation for approx 5 mcg/kg/min (must be 1600mcg/ml
Concentration)

*Take the Patients weight in lbs and remove the last digit (175lbs = 17)

* Subtract 2 from that figure (17-2=15)

*This gives you the number of drops per min using a 60gtts set. (titrate to desired effect)

Example: 175lbs patient.

175 remove the 5 is 17

17 - 2 = **15 drops per min** (approx 5 mcg/kg/min)

ACLS PROTOCOL

PORTABLE VENTILATOR PROCEDURE

INDICATIONS

- a. Patient is intubated.

Discontinue if any of the following arise:

- a. If at any time mechanical malfunction is suspected, disconnect portable ventilator and initiate manual ventilation.
- b. If patient begins to excessively “buck” the ventilator and the ventilator has no demand mode, reassess breath sounds and either switch to manual ventilation or call medical Direction for a sedation order.

PROCEDURE

1. All devices must be approved by the FDA and by the EMS Medical Director.
2. A tidal volume of 5-10 ml/kg will be used for adults and a rate of 12-15 ventilations/minute.
3. Proper function of the ventilator will be assessed prior to each use as described in the ventilator-operating manual.
4. After verification of ET tube position and stabilization of the tube, the portable ventilator will be connected to the ET tube and placed in a position such as not to put traction on the ET tube.
5. Observe and document chest wall excursion as well as timing of ventilatory cycle to confirm accuracy of ventilator calibration.
6. Contact Medical Direction.
7. Use the following estimate of oxygen tank life during use of portable ventilator.

CYLINDER TYPE	ALUM-E	STEEL-E	ALUM-D	STEEL-D	JUMBO-D
OPER. Time (Time in Minutes)	57.0	52.3	34.8	30.2	54.0

*Assuming TV=800ml, RR=12 and lower operating limit of 200 psi.

8. Clean ventilator after each use in compliance with ventilator operating manual.