Dear ACLS Participant:

The course will be held in the Conference Center Building #26 on the Scott & White Temple campus in room A200A/B. Registration will be from Noon to 12:15pm. The class will begin promptly at 12:15pm.

There is a web-based pre-test required. The link to this test and the password are located in the ACLS book, or you may access the site at www.heart.org/eccstudent and use code: aclsprovider. YOU MUST HAVE A PASSING SCORE OF AT LEAST 70% ON THE PRE-TEST. IT MAY BE TAKEN MULTIPLE TIMES IF NEEDED TO ACHIEVE THE PASSING SCORE.

• All registrants exempt from the registration fee or whose department is covering their registration fee, will need to pick up their book for use at either of the following locations prior to the first day of class:

Scott & White Memorial Conference Center Room A232

Monday – Friday from 9:00 a.m. to 4:00 p.m.

Please call (254) 724-3197 prior to stopping by

OR

Scott & White Medical Library

3rd Floor, MEC Building

• All other registrants should receive a book in the mail at least two weeks prior to class. If you register within two weeks of the class, please contact the ACLS office.

• Complete the self-assessment and print your score; bring the printout of your score with you to the registration desk at the ACLS Course. The pre-test can also be scanned to the ACLS coordinator prior to the course. Also, please provide a copy of your current ACLS Provider Card pre-course by email or fax OR bring a copy of the card with you at registration.

Course materials can be found at http://cme.sw.org. Click on ‘Upcoming Activities’, then click ‘View Our Master Catalog’. Search for the appropriate course and click on ‘Event Materials’ for that course. Bring these documents with you to the course for your use.

NO CALL/NO SHOWS will be responsible for paying the full registration fee for the course.

Baylor Scott & White Central Region is an approved provider of continuing nursing education by the Texas Nurses Association, an accredited approver by the American Nurses Credentialing Center’s Commission on Accreditation.

Thanks for your participation in our course.

Sincerely,

Robin Wilson
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If a cervical spine injury is suspected, open the airway using a jaw thrust without head extension (Class IIb). If this maneuver does not open the airway, use a head tilt–chin lift technique because opening the airway is a priority for the unresponsive trauma victim (Class I). When breaths are given they should be approximately 1 second each (Class IIa). Your tidal volume administered to the patient should just cause chest rise (500–600cc – about a half a bag squeeze of a BVM). Rescuers should avoid delivering more breaths than are recommended or breaths that are too large or too forceful (Increased Intrathoracic Pressure). Endotracheal intubation reduces the risk of aspiration, should not be attempted by inexperienced people, and should be preceded by some other form of ventilation. HCP’s should manually stabilize the head and neck rather than use immobilization devices during CPR for victims with suspected spinal injury.

This review presents some of the important aspects of our ACLS course. It stresses the key points and core content you need to know for the final evaluation. Please review this entire study guide carefully and refer to your textbook for more detailed information. You must make at least 70% on the pretest.

**Circulation**

The Health Care Provider should take no more than 10 seconds to look for breathing and check for a pulse at the same time. Once the HCP recognizes the victim is unresponsive w/o breathing or no normal breathing (gasping) the HCP will activate the emergency response system (AED) or call 911. After activation rescuers should immediately begin compressions over the center of chest between nipples, compress at a rate of between 100–120/minute, at 2”–2.4”(5-6cm) in depth allowing for full chest recoil. The HCP adult CPR=30:2 compression to ventilation ratio.“High Quality Compressions”=deep, fast and trade people every 2 minutes. Performing a goal of chest compressions fraction of at least 60% is recommended with 80% as a goal with good teamwork. Do not interrupt CPR to apply pads from an AED and use ASAP. High quality chest compressions immediately preceding a defibrillation attempt increase the likelihood of success in converting the rhythm (Class I). When capnography is available, an ETCO2 equal to or greater than 10mmHg would be indicative of effective compressions. Shock as soon as possible once, resume CPR with NO pulse check. If Pt. starts showing signs of life, stop and assess Pt. When PEA is present, the underlying cause should be determined and treated appropriately.

5 H’s and 5 T’s of Cardiac Arrest are:

- **Hypovolemia (volume)**
- **Hypoxia (ventilation)**
- **Hydrogen ion [acidosis] (ventilation)**
- **Hyper/hypoelectrolytes**
- **Hyper/hypothermia**

- **Toxins [ovds, poisoning, etc.] (supportive)**
- **Tamponade [cardiac] (pericardiocentesis)**
- **Tension pneumothorax (decompression)**
- **Thrombosis [AMI, PE] (fibrinolytics)**
- **Trauma**

If a victim of any age has a sudden witnessed collapse, the collapse is likely to be cardiac in origin, and the HCP should activate the emergency response system, get an AED and return to the victim to provide CPR and use the AED when appropriate. Compressions only can be given to patients of witnessed collapse when the HCP is in a layperson setting and w/o PPD. If a victim of any age has a likely hypoxic (asphyxial) arrest, such as a drowning, or the arrested patient was unwitnessed, the lone healthcare provider should provide 5 cycles (about 2 minutes) of CPR when needing to leaving the victim to activate the emergency response system (cell phone) and retrieve the AED. Activation of Public Access Defibrillation (PAD) is a priority.

**Airway**

If a cervical spine injury is suspected, open the airway using a jaw thrust without head extension (Class IIb). If this maneuver does not open the airway, use a head tilt–chin lift technique because opening the airway is a priority for the unresponsive trauma victim (Class I). When breaths are given they should be approximately 1 second each (Class IIa). Your tidal volume administered to the patient should just cause chest rise (500–600cc – about a half a bag squeeze of a BVM). Rescuers should avoid delivering more breaths than are recommended or breaths that are too large or too forceful (Increased Intrathoracic Pressure). Endotracheal intubation reduces the risk of aspiration, should not be attempted by inexperienced people, and should be preceded by some other form of ventilation. HCP’s should manually stabilize the head and neck rather than use immobilization devices during CPR for victims with suspected spinal injury.
Airway Continued;

Because insertion of an advanced airway may require interruption of chest compressions for many seconds, the rescuer should weigh the need for compressions against the need for insertion of an advanced airway. Airway insertion may be deferred until patient fails to respond to initial CPR and defibrillation or demonstrates return of spontaneous circulation (Class IIb).

The optimal method of managing the airway during cardiac arrest will vary on the basis of provider experience, health system characteristics, and the patient’s condition. Studies suggest that the Supra Glottic Airways (SGA) can be inserted safely and can provide ventilation that is as effective as bag-mask ventilation (Class IIa). Continuous waveform capnography monitoring is recommended in addition to clinical assessment as the most reliable method of confirming and monitoring correct placement of an endotracheal tube (Class I). Use of capnography allows the team to monitor the quality of compressions and reduces the risk of unrecognized tube misplacement or displacement. A low ETCO₂ reading, (<10 mm Hg) might indicate ineffective compressions. In intubated patients, failure to achieve an ETCO₂ of greater than 10 mm Hg by waveform capnography after 20 minutes of CPR may be considered as one component of a multimodal approach to decide when to end resuscitative efforts. When a patient attains ROSC yet requires continued ventilation, the recommended ETCO₂ to achieve is 35~40mmHg. Securing the ET tube with circumferential ties around the neck is not recommended due to the potential obstruction of venous return from the brain. Use of tape or a commercialy available securing device that assures stability and proper location is preferred.

Providers should confirm the placement of any advanced airway immediately after insertion, in the transport vehicle, and whenever the patient is manipulated or moved. Once an advanced airway is in place 2 rescuers no longer deliver cycles of compressions (30:2) interrupted with pauses for ventilation. Deliver 100~120 compressions per minute continuously. Deliver 10 ventilations per minute for all age victims. Excessive positive pressure ventilation rates can increase intrathoracic pressure and compromise venous return to the heart and decrease cardiac output during CPR. HCP should ensure to limit the amount of and how often a breath is given.

Endotracheal succioning should be limited to 10 seconds while withdrawing the catheter. Prior to succioning, the patient should be adequately ventilated to minimize hypoxia.

Emphasis is on adequate ventilation, no matter the method chosen. Providers who perform endotracheal intubation require adequate initial training and either frequent experience or frequent re-training (Class I). The provider should master one method and perform it often.

Breathing

Ventilation should be monitored to maximize oxygenation, yet not cause gastric distention or too much volume which may also lead to raised intrathoracic pressure, reducing venous blood return to the heart. Check for blood gas abnormalities. Acidosis in arrest, regardless of the cause is first treated with adequate ventilation with 100% oxygen. When the pO₂ is decreased (hypoxia) and the pCO₂ increases (hypercarbia), the resulting situation reflects a low blood pH (acidosis). Arterial blood gases should be checked to monitor ventilatory effectiveness. Acidosis in cardiac arrest is usually self limiting once perfusion is restored. If the patient is dyspneic, is hypoxemic, or has obvious signs of heart failure, providers should titrate oxygen therapy to maintain oxyhemoglobin saturation ≥94%. The 94% O₂ saturation is a goal to maintain for all patients especially with ACS or ischemic Stroke like symptoms as hyperoxia may cause vasoconstriction of arteries that may lead to less actual blood flow to the tissues. Caregivers must be vigilant in observing patients for clinical deterioration and activate Rapid Response Teams (RRT) to prevent patient deterioration and arrest. With ROSC patients care should be taken to prevent hyperoxia as patients brain cells are trying to either decide to repair or implode (toxicity). All ROSC patients should be transferred for PCI treatment even when a 12 lead ECG is nondiagnostic for a STEMI after an IHCA or OHCA arrest. (In Hospital / Out of Hospital arrests.)
DEFIBRILLATION

ASAP defibrillation should be performed on any victim of cardiac arrest w/ VFib by the first person available whenever an AED or manual defibrillation is available. **Caution:** Oxygen should not be surrounding the patient’s chest when defibrillation is imminent (fire hazard). The use of ‘hands free’ pads is encouraged as the energy can be delivered more rapidly. VFib can appear to be artifact on the monitor, has no cardiac output, and requires early defibrillation. The most common rhythm produced by electrical shock with AC current is VFib (can also be caused by DC current). Delaying defibrillation to perform compressions before defibrillation should not delay any AED use. When an AED arrives, use it with 1 shock followed by immediate compressions is recommended with no rhythm check to limit interruptions in chest compressions Energy levels: 360J mono-phasic; 120J–200J for biphasic monitors. Use synchronization when a patient is requiring cardioversion. If unsure of correct joule, the default energy level for biphasic is 200 joules. Compressions-Shock-CPR-Shock-Vasopressor-Compressions-Shock-Antiarrhythmic repeat.

Patients in VFib, oxygen and epinephrine are the two drugs most likely to aid in the conversion of VFib to a perfusing rhythm. The most common rhythm in early sudden cardiac death is VFib. An automated external defibrillator (AED) can only assess the patient while CPR is ceased. The AED can advise that a shock be delivered and providers should compress on patients while an AED is charging (Class I). If no shock is advised or there is a problem with an AED compressions should resume. Limiting interruptions to chest compressions is a priority.

DRUGS

**Adenosine** produces a short lived pharmacologic response and has a direct effect on supraventricular tissues it is a drug for re-entry PSVT (Class I). It can be considered for possible VT only when the rhythm is regular. The recommended initial dose is 6mg rapid IV push followed by at least a 20ml normal saline flush. In 1-2 minutes, a 2nd dose of 12 mg IV push can be used if no response to the initial dose. A third 12mg dose can follow in 1-2 minutes if the patient still fails to convert. After 30 mg IV/IO push, one should move on to some other therapy. Remember, if the patient is in hemodynamic distress, synchronized cardioversion frequently is the most successful therapy. If given by central line, consider reducing the dose to 3mg initially.

**Amiodarone** is a complex agent with effects on the sodium, potassium, and calcium channels. It has both alpha and beta adrenergic blocking properties. In shock resistant VF, a dose of 300mg IV/IO push is recommended followed by a second dose of 150mg if VF continues or recurs (Class IIb). The maximum dose in 24 hours is 2.2Gm. With expert consultation amiodarone may be used for a treatment for some atrial and ventricular arrhythmias. A stable VT rhythm is treated with 150mg. IVP over 10 minutes. Life threatening VT rhythms are treated with synchronized cardioversion, pVT is defibrillated. Combination of several agents is most likely prohythmic and unlikely to improve conversion of VF/VT to a perfusing rhythm.

**Aspirin** inhibits thromboxane A2 platelet aggregation to reduce coronary reocclusion and recurrent events after fibrinolytic therapy. Also effective for unstable angina. Reduces mortality rate by 10% in AMI patients. All ACS patients should receive ASA unless patient has true allergy, (consider clopidogrel) either in out-of-hospital or ED setting (Class I). Give 160 to 325mg. nonenteric-coated orally, crushed or chewed (use rectal suppositories if nausea, vomiting, or peptic ulcer disease). Recent history of a bleeding disorder, severe hepatic disease, and true aspirin allergy are contraindications for use.

**Atropine** is used to increase heart rate in all symptomatic bradycardia at doses of 0.5mg. IV/IO push up to a total dose of 0.04mg.Kg (about 3mg in an average patient) (Class IIa). It may be useful in treating second and third degree heart block (but use with caution, it can worsen second and third degree block). Atropine can exacerbate ischemic pain associated with AMI. Proceed directly to TCP if a patient is unstable and symptomatic or has no IV/IO access. Chronotropic drugs can be Epinephrine or Dopamine drips used as chemical pacemakers at doses of 2-10mcg/Kg/min. Use the 4:1 button on the monitor to see if the drip is capturing and has a pulse. In organophosphate poisoning extremely large doses may be needed.

**Calcium Chloride** is the antidote for magnesium toxicity and is the clearly indicated treatment for calcium channel blocker overdose. The usual dose is 500-1000mg IV/IO push. All cardiac arrest dialysis patients should be treated as possible hyperkalemia patients. Caution should be taken in administering CaCl to patients receiving digitalis products and is warranted.

**Diltiazem** and other calcium channel blockers can be used to slow the rapid ventricular response associated with atrial fibrillation or flutter with preserved heart function (Class IIa). Diltiazem (Cardizem) is most commonly used and dosed at 0.25mg/Kg over 2 minutes initially, in 15 minutes then 0.35 mg/kg, may be infusion IV/IO push followed by a maintenance infusion of 5-15mg/Hr and titrated to heart rate.
**Dopamine** is a catecholamine used to increase cardiac output and blood pressure after fluids bolus. It can be considered for bradycardia instead of TCP to increase patients heart rate. Dosing for pacing is 2-10mcg/kg/min. Its effects are dose related and generally follow the pattern 1-5mcg/Kg/min (renal effects), 5-10mcg/Kg/min (Beta effects), and 10-20mcg/Kg/min (Alpha effects).

**Epinephrine** benefits the patient in cardiac arrest primarily by increasing myocardial and CNS blood flow due to its alpha effects. Give 1mg IV/IO push every 3-5 minutes for VF/Pulseless VT or 2-2.5 times that dose down the ET tube (Class IIb). Epinephrine should be administered ASAP for all non shockable pulseless rhythms. An Epi Drip can be considered for bradycardia instead of TCP to increase patients heart rate at a rate of 2-10mcg/Kg/min.(confirm pulses are present with chemical pacemaker). Higher doses may be considered with beta blocker or calcium channel blocker OD.

**Lidocaine** may be considered as an alternative to amiodarone for VF/PVT that is unresponsive to CPR, defibrillation, and vasopressor therapy. Initial ROSC lidocaine therapy of 1-4 mg/min infusion may be used to treat cardiac irritability in the initial ROSC patients or the post cardiac arrest phase of critical care (Class IIb). For patients that have VT with a pulse and develops hemodynamic consequences and becomes unstable, they should be cardioverted immediately (usually the most successful therapy).

**Magnesium** is indicated for the treatment of Torsade de Pointe VT (Class IIa). Hypomagnesemia hinders the cellular movement of potassium and thereby makes the heart prorhythmic. Magnesium is given during resuscitation as a 1-2Gm IV/IO push over 1-2 minutes followed by a continuous infusion if necessary. For Torsades with pulses the dose is 1 – 26 mg diluted in 100 in D5W over 5 – 60 minutes.

**Metroprolol** and other beta blockers have a depressing effect on the pumping action of the heart. Indicated in the treatment of AMI, they are used primarily to effect the blood pressure and heart rate to decrease associated morbidity and mortality.

**Morphine** is the analgesic of choice for treatment of ischemic pain associated with Acute Coronary Syndromes patients. Pain relief is a high priority in treating AMI / STEMI patients (Class I). Morphine is dosed in 2-4mg IV push increments and titrated to relieve pain. It is also useful in treating pulmonary edema as it decreases venous return to the heart and has a mild bronchodilatory effect. In UA / NSTEMI patients use morphine with caution because of possible adverse effects (Class IIa).

**Nitroglycerine (NTG)** is a vasodilator which relaxes vascular smooth muscle (Class I). It is useful managing on going chest pain, managing hypertension, and management or pulmonary congestion. It may be given sublingually, by spray, topically, and intravenously. IV NTG is highly recommended in any AMI complicated by CHF, HTN, large anterior MI’s, and with persistent or recurring ischemia. With hypotension, bradycardia, tachycardia with heart failure, and RV infarction NTG is not recommended. Before administration of any nitrates check for recent use of phosphodiesterase inhibitors, within 24-48 hours, in all ACS patients.

**Procainamide** is one of several drugs that can be used in treating stable monomorphic VT with preserved ventricular function, controlling rate in atrial fibr/flutter, or controlling rate in reentry SVT. The dosing of procainamide has four end points: QRS increases in width by 50% Hypotension develops Total of 1.2 Gm administered at 20-50mg/min Dysrhythmia subsides This calculation is for the average 70Kg patient. Procainamide use in pulseless arrest is not supported by science and is therefore not recommended.

**Sodium bicarbonate (NaHCO3)** is an inorganic buffer which reverses acidosis and causes alkalosis. It should not come into contact with catecholamine’s. You should not use NaBicarb unless you have a blood gas indicative of acidosis. The initial dose (with a blood gas) is 1meq/Kg IV push followed approximately every 10 minutes by half the initial dose. Usually no bicarb is required during uncomplicated cardiac arrest patients and should not be used. Sodium Bicarb is the clearly indicated agent for cardiac arrests associated with tricyclic overdoses, dialysis hyperkalemia, and pre-existing metabolic acidotic conditions.(H’s&T’s).

**Vasopressin** (Class Indeterminate). Vasopressin offers no advantage as a substitute for epinephrine in cardiac arrest. Vasopressin was removed from the ACLS Cardiac Arrest Algorithm as a vasopressor therapy in recognition of equivalence of effect with other available interventions (epinephrine). Vasopressin is the naturally occurring antidiuretic hormone that has powerful vasoconstrictive properties at high doses and is sometime indicated for other diesese processes in lower doses.

**Key Notes** (IV O2 Monitor is oneword) (Medicine for VFib is Defib) (when calling 911, just answer the questions) (TCP is transcutaneous pacing) (pVT is pulseless VT) (with PPCI patients, no one knows till the contrast flows) (know how to count heart rates from rhythm strips in more than one way) (anticipate the need for defibrillation and have the defibrillator charged and ready)
Acute Coronary Syndromes include the diagnosis of ST elevation AMI, ST depression strongly suggestive of ischemia, and the nondiagnostic ECG. A 12 lead ECG is done to determine heart damage and monitor the patient for lethal dysrhythmias. A normal ECG does not mean the patient is not having an AMI; but neither does an abnormal ECG mean that they are having a AMI. ‘Serial’ ECG’s are required to make intelligent decisions about intervention and are combined with other data such as serum markers to make a proper patient disposition. The uncomplicated AMI routinely needs only ASA, oxygen and pain relief during initial management. All patients presenting with ACS should be evaluated for Primary Percutaneous Coronary Intervention, (fibrinolytic therapy when > 90 minutes for PPCI treatment). Patients with the clear indications for PPCI or fibrinolysis (STEMI) should receive a targeted exam (<10 minutes), adjunctive treatment (heparin) and PPCI treatment within 30-60 minutes of arrival (90 minutes from first medical contact).

Stroke is the number 3 killer in the U.S. and must be treated with the same urgency as AMI. Immediate performance of a stroke scale assessment is indicated on all presenting possible stroke patients. A CT scan should be performed ASAP after arrival at the ED when a stroke is suspected. If CT capability is not available at a facility, then EMS must divert to a hospital with CT immediately available.

ROSC patient’s that remain hypotensive should receive fluid boluses of NS or LR of 1~2L as needed to maintain a minimum systolic BP of 90mmHg. (mean arterial >65 mmHg) {pressors may be needed}. Continued optimization of patient perfusion, ventilation, and oxygenation is the treatment priorities. Consider hypothermia is recommend for the comatose (ie, lack of meaningful response to verbal commands) adult patients with ROSC after out-of-hospital VFib cardiac arrest, cooled to 32°C to 36°C for 24 hours (Class I).

Medicolegal considerations include always initiating CPR when there is no medical or legal reason to withhold it. Negligence can be claimed by failure to act or improper action; an injury to the patient must occur; and an act of omission or commission on the part of the care giver must be shown. However, a bad outcome, in and of itself, is not evidence of negligence. Resuscitation may be stopped on the basis of lack of cardiovascular responsiveness. ACLS “certification” only indicates that an individual has successfully completed the cognitive and performance standards of the AHA course; an ACLS card implies no expertise in resuscitation advanced skills.

Esophageal-Tracheal Combitube

The Combitube is an Supra Glottic Airway (SGA) device that is a tracheal tube bonded side by side with an esophageal obturator. Ventilation can be achieved through either lumen depending on where the end of the Combitube rests. More than 80% of the time, the Combitube ends up in the esophagus after blind insertion. After inflating the two balloons on the Combitube, ventilation should proceed through the esophageal obturator. If no chest rise is seen and breath sounds are absent, one should immediately begin ventilating the secondary port, (tracheal tube) to achieve ventilation.

Advantages

Blind insertion technique does not interrupt compressions, and is superior to BVM ventilation, and is roughly equivalent to intubation. Can be considered when visualization of the vocal cords is obscured.
Supra Glottic Airways: (SGA) Laryngeal Mask Airway (LMA)  
Laryngeal Tube (King LT)

The LMA is an alternative invasive device that has a cuffed masklike projection at the end of the airway pathway. The King LT is a balloon sealing glottis device. LMA is inserted into the airway until resistance is felt; King LT use blue line to guide at the corner of mouth, rotate 90° to the hub, then the cuff is inflated in the hypopharynx which seals the airway and provides a clear airway into the trachea.

Advantages
The blind insersion technique does not interrupt cardiac compressions;  
There is no need for re-positioning the airway axis;  
There is a low incidence of fatal error when inserted by trained personnel.

Caution
The SGA’s may provides less airway protection from regurgitation than the tracheal tube, especially when used against positive pressure ventilations.  
(possible tube deviation or displacement with active compressions in progress)

Airway Confirmation for any advanced airway device:
Primary confirmation of proper placement of an airway device is by physical exam, “I saw the tube go through the cords.” Upon the first squeeze of the BVM, one should listen over the epigastrium while observing for chest rise. If no chest rise and you hear stomach gurgling, immediately remove the tube and reoxygenate the patient for another attempt at intubation. Reassess with each patient movement. If the chest wall moves and no gurgling is heard, auscultate the lung fields.

Continuous waveform capnography is recommended in addition to clinical assessment as the most reliable method of confirming and monitoring correct placement of an endotracheal tube (Class I). Capnography also allows the team to monitor the quality of compressions performed as with a ETCO2 reading of 10mmHg or greater would be indicative of effective compressions being performed on the patient. Sudden very high waveform readings may indicate ROSC and checking the monitor for a rhythm with a pulses is indicated. In intubated patients, failure to achieve an ETCO2 of greater than 10 mm Hg by waveform capnography after 20 minutes of CPR may be considered as one component of a multimodal approach to decide when to end resuscitative efforts but should not be used in isolation.

Other confirmation of correct placement involves the use of colorometric carbon dioxide detectors, “fogging” of the tube, or the esophageal detector device (EDD).

The “EasyCap” is a colorometric device that changes color in response to exhaled CO2. This device will be affected by heat, length of time in use, and recent ingestion of carbonated liquids. Read after 6 ‘cleansing’ breaths are given. The esophageal detection devise (EDD) is a bulb device that can be attached to the 15mm connector on the end of the ET tube. When squeezed and attached to a tube in the esophagus, it will not rapidly re-inflate (if at all) as the esophagus is a collapsible structure whose walls will be suctioned into the ET tube. If the tube is in the trachea, the EDD will immediately re-inflate as the trachea is a rigid structure that will not suction into the holes in the end of the ET tube.  

Note: apneic patients should recieve simple airway maneuvers and ventilated.
Endotracheal Intubation

This method secures and protects the airway. It is the placement of an endotracheal tube (ETT) into the trachea to ensure complete oxygenation into the patient’s lungs, and to minimize chances of aspiration of fluids into the lungs. It is used for patients in deep coma, respiratory arrest, CPR, and for patients where complete airway obstruction may be imminent i.e. burns, epiglottitis, etc. and for patients needing deep tracheal suctioning.

Providers must organize care to minimize interruptions in chest compression for rhythm check, shock delivery, vascular access or advanced airway insertion. When an ETT or SGA is inserted, rescuers should no longer deliver cycles of 30:2 of CPR. Chest compressions should be delivered continuously at a rate of 100~120cpm and a breath should be given once every 6 seconds for all age groups (10 bpm). Insertion of an advanced airway device may not be a high priority unless the patients arrest is probable from a respiratory compromised event. Securing the ET tube with circumferential ties around the neck is not recommended due to the potential obstruction of venous return from the brain. Use of temporary tape is OK until a commercially available device that assures stability and proper location is the preferred device for securing advanced airway adjuncts.

Laryngoscope Blades

There are two blades:

**Miller and MacIntosh**

They attach to a handle (batteries inside) and the blades should be walked down carefully lifting while looking for the landmarks particular to each blade.

**Miller – Straight Blade**

Fits under epiglottis.

**MacIntosh – Curved Blade**

Fits into vallecula.

**Handle** (shown on left) must be held in the left hand. Oxygenate your patient well for 2 minutes. Place head in sniffing position, neck flexed forward and head extended back. Intubation attempt time is 10 seconds or less, maximum time to withhold compressions, remember that you must visualize cords. “I saw the tube go through the cords!” Listen for breath sounds bilaterally and auscultate epigasstrum, Inflate cuff, mark at teeth and secure tube with a commercially available device to protect ETT.
Endotracheal tube (ETT)
- Adult – (female) – 7.0 – 8.0 (cuffed tubes)
- Adult – (male) – 8.0 – 9.0 (cuffed tubes)
- Child – Little finger (no cuffed tubes under 8 years)

STYLET – molds the ETT preferable into the shape of a hockey stick for tube insertion.

McGILL FORCEPS – removes foreign bodies and facilitates insertion of ETT.

INTUBATION COMPLICATIONS
1. Inadvertent esophageal intubation
2. Intubation of right mainstem bronchus
3. Trauma to mouth, teeth and trachea
4. Hypoxia or anoxia during procedure
5. Aspiration prior to insertion
6. Laryngospasm

This ACLS handout prepared by Kent Yarley, EMTP, Donna George, CCRN, Cindy Conley, RN, artwork by Dr. Bill Engvall (retired) of Scott & White Memorial Hospital. Reviewed by Jerry Caldwell, RN, MSN, LP, CCCC and by Taylor Ratcliff MD of Baylor Scott & White CTX. Layout by Jim Moshinskie, PhD. Baylor University.

Last update to current AHA 2015 recommendations February 1, 2016.
DISCLOSURE TO PARTICIPANTS
ADVANCED CARDIAC LIFE SUPPORT

OBJECTIVES: Upon completion of this activity, the participant should be able to:
1. Prioritize assessment needs; select appropriate diagnostic tests; identify and respond to significant changes in the unstable patient.
2. Recognize early management of the pre-arrest conditions that may result in cardiac arrest or complicate resuscitation outcome.
3. Demonstrate proficiency in providing BLS care including prioritizing chest compressions and integrating AED use, manage cardiac arrest until the return of spontaneous circulation, transfer of care, or termination of resuscitation.
4. Expedite the care of patients with acute coronary syndromes by identifying ischemic chest pain.
5. Treat ischemic chest pain by expediting the care of patients with acute coronary syndromes.
6. Demonstrate effective communication as a member or leader of a resuscitation team.
7. Recognize other life-threatening clinical situations, such as stroke.
8. Demonstrate effective communication as a member or leader of a resuscitation team.

TO CLAIM CONTINUING MEDICAL EDUCATION CREDIT, THE PARTICIPANT MUST:
1. Sign-in on the sign in sheet
2. Obtain 84% or higher on post-test
3. Complete the online evaluation and credit claim forms.

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CATARINA VAN ORMAN  LEROY VARGAS  VANESSA VARGAS  PHIL WARD
KATHLEEN WILDER  CODY WINNIFORD  TONY WOODARD  HOLLAND YOUNG
KENT YARLEY
WHAT SHOULD WE DO?

COMMIT to these three steps:

1. LEARN THE EARLY SIGNS & SYMPTOMS OF A HEART ATTACK
2. SHARE EHAC WITH OTHERS
3. TAKE THE PLEDGE

Pledge to be part of a movement to save hearts and save lives...

"Because Every Heart Matters"

EHAC Pledge

I understand that heart attacks have beginnings that may include chest discomfort, shortness of breath, shoulder and/or arm pain, and weakness. These may occur hours or weeks before the actual heart attack.

I solemnly pledge that if it happens to me or anyone I know, I will call 9-1-1 or activate our Emergency Medical Services.

Name __________________ Date __________________

Visit us at www.deputheartattack.org for more information about heart disease and prevention.

DID YOU KNOW HEART ATTACKS HAVE BEGINNINGS?

These "beginnings" occur in over 50% of patients.

Most importantly, if recognized in time, these "beginnings" can be treated before the heart is damaged!

ALARMING STATISTICS:

Heart disease causes approximately 1 of every 4 deaths in the United States.

About 50% of sudden cardiac deaths occur outside a hospital. This suggests that many people don't act on early warning signs.

Survey results show that only 27% of the respondents were aware of all major symptoms and knew to call 9-1-1.

BY SHARING EARLY HEART ATTACK EDUCATION (EHAC) WE CAN CHANGE THESE SOBERING STATISTICS!
WHAT IS EHAC?

EHAC or “Early Heart Attack Care” is three things:

1. A campaign intended to educate everyone as to the early symptoms of a heart attack in order to prevent the heart attack from ever occurring. Preventing the heart attack prevents heart damage.

2. A plea to the public to be responsible, not only for themselves, but for those around them who may be experiencing early heart attack symptoms, and to help them obtain immediate treatment.

3. A public education program that concentrates on the benefits of receiving early treatment, and activating emergency medical services.

What makes the EHAC campaign different?

Unlike most programs that promote recognition of the signs and symptoms of an impending heart attack, the EHAC initiative encourages early recognition when symptoms may be mild. For the 50% of people experiencing these symptoms, the heart attack can be prevented with early treatment — BEFORE ANY DAMAGE TO THE HEART CAN OCCUR!

DID YOU KNOW?

85% of heart damage occurs within the first two hours of a heart attack. EHAC is knowing the subtle danger signs of a heart attack and acting upon them immediately - BEFORE HEART DAMAGE OCCURS

SO WHAT ARE THE EARLY SYMPTOMS?

Remember, people may or may not experience any or all of these symptoms. People may experience mild chest symptoms, such as pressure, burning, aching or tightness. These symptoms may come and go until finally becoming constant and severe.

SURVIVE. DON’T DRIVE. CALL 9-1-1