ACLS Bridge Materials Cases 1 -10

Case	2000 Guidelines	Replace with the following information	Additional comments, resources
Case #1 Respiratory Emergencies	If C-spine injury is suspected use a jaw thrust	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).	Healthcare providers should manually stabilize the head and neck rather than use immobilization devices during CPR for victims with suspected spinal injury (Class IIb)
	Give breath over 1-2 seconds. Recommended tidal volume for rescue breaths for adults was approximately 700 to 1000 mL.	All rescuers should deliver each rescue breath during CPR (via mouth to mouth, mouth to shield, mouth to mask, or bag mask, or via advanced airway, with or without supplementary oxygen) over 1 second (Class IIa). The volume of each rescue breath should be sufficient to produce visible chest rise (Class IIa).	Rescuers should avoid delivering more breaths than are recommended or breaths that are too large or too forceful.
	Place an advance airway as soon as possible.	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 endotracheal tube was considered the ventilation adjunct of choice. (with footnote exceptions)	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 LMA and Combitube can be inserted safely and can provide ventilation that is as effective as bag-mask ventilation (Class IIa).	Providers who perform endotracheal intubation require adequate initial training and either frequent experience or re-frequent re-training (Class 1)
	Primary and secondary tube confirmation after insertion	To reduce the risk of unrecognized tube misplacement or displacement, providers should use clinical assessment plus a confirmation device such as an exhaled CO2 detector or an esophageal detector device to evaluate tube location (Class IIa).	Providers should confirm the placement of any advanced airway immediately after insertion, in the transport vehicle, and whenever the patient is moved.
	"Asynchronous" compressions and ventilations with ventilation rate of 12 to 15 per minute	Once an advanced airway is in place 2 rescuers no longer deliver cycles of compressions interrupted with pauses for ventilation. Deliver 100 compressions per minute continuously. Deliver 8 to 10 ventilations per minute for adult victims.	Excessive ventilation rates compromise venous return and cardiac output during CPR

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	In treating the unresponsive victim with FBAO, the healthcare provider was taught a complicated sequence that included abdominal thrusts	If the victim becomes unresponsive, the rescuer activates the emergency response number and provides CPR. Every time the rescuer opens the airway (with a head tilt–chin lift) to deliver rescue breaths, the rescuer should look in the mouth and remove an object if one is seen.	The tongue jaw lift is no longer taught, and blind finger sweeps should not be performed.
Case #2 VF treated with CPR and AED	Give a breath for 1-2 seconds	Give a breath over 1 second Reposition head if unable to give breath Breath should provide visible chest rise	Use BLS skill sheet If the arrest is witnessed and an AED is immediately available, use AED as soon as possible.
	Compress lower ½ sternum	Compress over center of chest between nipples Compress at a rate 100/minute Allow chest to recoil	Limit interruptions in chest compressions
	Compression to Ventilation ratio	30:2 compression to ventilation ratio	
	Apply AED	Do not interrupt CPR to apply patches	Provide CPR until AED is available; EMS providers consider 2 minutes or 5 cycles of CPR before defibrillation in an unwitnessed arrest
	Shock up to 3 times	Shock once, then resume CPR	Unless AED is programmed to utilize 1 shock followed by 5 cycles of CPR, AED **trainer** should be shut off after first shock and the rest of the sequence simulated by ACLS Instructor
Case #3 Ventricular Fibrillation Pulseless VT	Give a breath for 1-2 seconds	Give a breath over 1 second Reposition head if unable to give breath Breath should provide visible chest rise	Use BLS skill sheet If the arrest is witnessed and an AED is immediately available, use AED as soon as possible.
	Compress lower ½ sternum	Compress over center of chest between nipples Compress at a rate 100/minute Allow chest to recoil	Limit interruptions in chest compressions
	Compression to Ventilation ratio	30:2 compression to ventilation ratio	
	3 stacked shocks	1 shock followed by immediate CPR	CPR for 5 cycles or 2 minutes should be done before pulse check or rhythm check

Case	2000 Guidelines	Replace with the following information	Additional comments, resources
	Defibrillation dose	1 shock is recommended energy: 360J monophasic; 150J-200J for biphasic truncated exponential waveform, 120 J for biphasic rectilinear Subsequent doses: same or higher Initial : 360 J for monophasic 150-200 J for biphasic truncated 120 J for biphasic rectilinear, 200 J if not sure of type of biphasic Subsequent doses: same or higher	
	Drug-Shock	CPR-Shock-CPR-Vasopressor	Emphasis is on great CPR following defibrillation No rhythm or pulse check until 2 minutes of CPR is completed.
	IV		Emphasis on IV or IO route for drug administration. Epinephrine or Vasopressin can be used for the vasopressor
Case #3 Ventricular Fibrillation Pulseless VT cont	Airway	Advanced airway may be delayed several minutes to avoid interruption of chest compressions. LMA or Combitube provide effective ventilation.	Avoid hyperventilation. If an advanced airway is inserted, chest compressions should be delivered 100/minute and ventilations at 8 to 10 breaths/minute (1 breath every 6 to 8 seconds)
		Verify tube placement with EDD or CO2 devices	
	Medications-Vasopressors	Epinephrine 1 mg every 3-5 minutes Vasopressin may be given as an alternative to dose #1 or #2 of epinephrine	
	Medications-antiarrhythmics	If amiodarone is unavailable, lidocaine may be considered.	
Case #4 PEA=rhythm on monitor, without detectable pulse	Tailoring of provider response to the likely cause of arrest was mentioned in the 2000 Guidelines but was not emphasized in training.	If a victim of any age has a *sudden witnessed collapse*, the collapse is likely to be cardiac in origin, and the healthcare provider should activate the emergency response system, get an AED (when available), and return to the victim to provide CPR and use the AED when appropriate If a victim of any age has a likely *hypoxic* (asphyxial) arrest, such as a drowning, the lone healthcare provider should give 5 cycles (about 2 minutes) of CPR before leaving the victim to activate the emergency response system and retrieve the AED.	Effective ACLS begins with high-quality BLS, particularly high-quality CPR. Changes in the ACLS treatment of cardiac arrest have been designed to minimize interruptions in chest compression for rhythm check, pulse check, and ACLS therapies.

Case	2000 Guidelines	Replace with the following information	Additional comments, resources
		The algorithm for treatment of pulseless arrest was reorganized to include VF, pulseless VT, asystole, and PEA.	
	Aggressively manage the airway. Hyperventilate the patient as quickly as possible because hypoventilation and hypoxemia are frequent causes of PEA	Insertion of an advanced airway may not be a high priority.	If an advanced airway is inserted, rescuers should no longer deliver cycles of CPR. Chest compressions should be delivered continuously (100 per minute) and rescue breaths delivered at a rate of 8-10 breaths per minute (1 breath every 6 to 8 seconds)
Case # 5 Asystole	Asystole as an algorithm	The algorithm for treatment of pulseless arrest was reorganized to include VF/ pulseless VT, asystole, and PEA.	The priority skills and interventions during cardiac arrest are BLS skills, including effective chest compressions with minimal interruptions.
	Endotracheal intubation is the airway of choice. Chest compressions STOP for pulse checks, advanced airway insertion, and drug therapy.	Insertion of an advanced airway may not be a high priority. If an advanced airway is inserted, rescuers should no longer deliver cycles of CPR. Chest compressions should be delivered continuously Providers must organize care to minimize interruptions in chest compression for rhythm check, shock delivery, advanced airway insertion, or vascular access.	Increased information about use of LMA and esophageal-tracheal Combitube. Use of endotracheal intubation is limited to providers with adequate training and opportunities to practice or perform intubations.
	Drug therapy	Most drug doses are the same as those recommended in 2000. Treatment of asystole/pulseless electrical activity: epinephrine may be administered every 3 to 5 minutes. One dose of vasopressin may replace either the first or the second dose of epinephrine.	
Case #6 Acute Coronary Syndromes	Medications - Aspirin	EMS dispatcher may instruct patients with ACS to chew an aspirin.	(EMS section of Currents).
	Cardiac markers not emphasized as much in 2000	There is more information about identification of high-risk patients with UA/NSTEMI. Cardiac markers are a key element.	Use Table 3 in *Circulation* Consider added slides 4-9 in the updated Case 6 slides (see attached Case 6 PPT).
		Contraindications to fibrinolytics have been refined to match most recent criteria published by ACC/AHA.	See Table 1 from *Circulation*.
		Streamlined ACS algorithm	Use ACS algorithm in *Circulation* as handout

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Case # 7 Symptomatic Bradycardia	Drug therapy: atropine dose	The treatment of symptomatic bradycardia: the recommended atropine dose is now 0.5 mg IV, may repeat to a total of 3 mg. Epinephrine or dopamine may be administered while awaiting a pacemaker.	
	Consider the causes	The need to search for and treat reversible causes of cardiac arrest and failure to respond to resuscitation attempts. These contributing factors are referred to as the H's (hypovolemia, hypoxia, hydrogen ion, hypo/hyperkalemia, hypoglycemia, hypothermia) and T's (toxins, tamponade, tension pneumothorax, thrombosis, {includes coronary or pulmonary}, trauma {hypovolemia}).	
Case # 8 : Unstable Tachycardia	Several tachycardia algorithms divided treatments into those for patients with adequate ventricular function and those with poor ventricular ejection fraction.	Treatment of tachycardia is summarized in a single algorithm. Immediate synchronized cardioversion is still recommended for the unstable patient. If the patient is stable, a 12-lead ECG (or a rhythm strip) enables classification of the tachycardia as narrow-complex or wide complex. These two classifications can be further subdivided into those with regular or irregular rhythms.	The algorithm boxes with screened type are designed for in-hospital use or with expert consultation available (others can be used by ACLS providers as appropriate).
	Obtain 12-lead EKG occurred before: Performs rapid, problem focused history and physical exam directed toward the following critical decision: Is this a "symptomatic/unstable" tachycardia?	Increase emphasis on determining stable versus unstable and preparing for immediate Cardioversion. If the patient demonstrates rate-related cardiovascular compromise, with signs and symptoms such as altered mental status, ongoing chest pain, hypotension, or other signs of shock, provide immediate synchronized Cardioversion (algorithm box 4). Consider expert consultation. Serious signs and symptoms are uncommon if the ventricular rate is < 150 beats per minute in patients with a healthy heart. Patients with impaired cardiac function or significant co-morbid conditions may become symptomatic at lower heart rates.	If the patient is unstable with narrow-complex reentry SVT, you may administer adenosine while preparations are made for synchronized cardioversion (Class IIb), but do not delay cardioversion to administer the drug or to establish IV access.
	Biphasic energy levels for cardioversion not included in 2000 guidelines	The recommended initial dose for cardioversion of atrial fibrillation is 100 J to 200 J with a monophasic waveform. A dose of 100 J to 120 J is reasonable with a biphasic waveform. Escalate the second and subsequent shock doses as needed. Cardioversion of atrial flutter and other SVTs generally require less energy. An initial energy of 50 J to 100 J monophasic damped sine (MDS) waveform is often sufficient. If the initial 50-J shock fails, increase the dose in a stepwise fashion. More data is needed before detailed comparative dosing recommendations for cardioversion with biphasic waveforms can be made.	If there is any doubt whether monomorphic or polymorphic VT is present in the unstable patient, do not delay shock delivery for detailed rhythm analysis—provide high-energy unsynchronized shocks (i.e., defibrillation doses).

Case	2000 Guidelines	Replace with the following information	Additional comments, resources
	Polymorphic VT (treat like VF): 200Jj, 200-300J, 360J	Current research confirms that it is reasonable to use selected energies of 150 J to 200 J with a biphasic truncated exponential waveform or 120 J with a rectilinear biphasic waveform for the initial shock. For second and subsequent biphasic shocks use the same or higher energy (Class IIa). Providers should use the biphasic device-specific dose; the default dose is 200 J. If a monophasic defibrillator is used, use 360 J for all unsynchronized shocks	If using Tool kit slides note this change on Case 8, slide 18
	The H's and T's not on old algorithm	Increased emphasis on the need to search for and treat reversible causes of cardiac arrest and failure to respond to resuscitation attempts. These contributing factors are referred to as the H's (hypovolemia, hypoxia, hydrogen ion, hypo-/hyperkalemia, hypoglycemia, hypothermia) and T's (toxins, tamponade, tension pneumothorax, thrombosis [includes coronary or pulmonary], trauma [hypovolemia]). algorithms.	
Case # 8 : Unstable Tachycardia Cont.	New algorithm includes several new boxes guiding expert consultation	ACLS Providers must know when to call for expert consultation regarding complicated rhythm interpretation, drugs, or management decisions.	Additional References: 2005 AHA Guidelines part 7.3: Management of Bradycardia and Tachycardia 2005 AHA Guidelines part 5: Electrical Therapies
Case # 9 : Stable Tachycardia	New classification in algorithm	If the patient is stable, a 12-lead ECG (or a rhythm strip) enables classification of the tachycardia as narrow-complex or wide complex. These two classifications can be further subdivided into those with regular or irregular rhythms.	If using Tool kit slides note these changes on Case 8, slide 4 & Case 9, slide 5
	Atrial fibrillation / atrial flutter treatments now classified as narrow irregular rhythms	Recommend expert consultation and initial rate control with diltiazem, B-blockers, or magnesium for patients with atrial fibrillation and a rapid ventricular response. Amiodarone, ibutilide, propafenone, flecainide, digoxin, clonidine, or magnesium can be considered for rhythm control in patients with atrial fibrillation of <48 hours duration.	
	Additional information added for adenosine	Adenosine is safe and effective in pregnancy. Adenosine, however, does have several important drug interactions. Larger doses may be required for patients with a significant blood level of theophylline, caffeine, or theobromine.	The initial dose should be reduced to 3 mg in patients taking dipyridamole or carbamazepine, those with transplanted hearts, or if given by central venous access.

Case	2000 Guidelines	Replace with the following information	Additional comments, resources
	Additional pharmacological recommendations	Synchronized cardioversion is appropriate for treatment of monomorphic (regular) wide-complex tachycardia, particularly if the patient is symptomatic. If the rhythm is identified as likely VT in a stable patient, IV anti-arrhythmic drugs may be effective. If anti-arrhythmics are administered, we recommend Amiodarone (Class IIa).	Give Amiodarone 150 mg IV over 10 minutes; repeat as needed to a maximum dose of 2.2 g IV per 24 hours. Alternative drugs for wide-complex regular tachycardias are procainamide and sotalol.
Case #10 Acute Stroke		Increased emphasis on transport of probable stroke patients to facilities with specialized qualified stroke care units.	Use new stroke algorithm as handout fourth bullet from top. Consider attached updated Case 10 slides 11 & 12.