AHA Guidelines updates 2015 (BLS and ACLS)

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HIGHLIGHTS
of the 2015 American Heart Association
Guidelines Update for CPR and ECC
The 2015 Guidelines have 315 recommendations

- 25% Class 1
- 23% Class 2a
- 45% class 2b
- 2% No benefit
- 5% Harm
Cardiac Chain of Survival

**IHCA**
- Surveillance and prevention
- Recognition and activation of the emergency response system
- Immediate high-quality CPR
- Rapid defibrillation
- Advanced life support and postarrest care

**OHCA**
- Recognition and activation of the emergency response system
- Immediate high-quality CPR
- Rapid defibrillation
- Basic and advanced emergency medical services
- Advanced life support and postarrest care
Team Resuscitation

- For adult patient, RRT or MET system can be effective in reducing the incidence of cardiac arrest especially in general wards.
- For Paeds, Paediatric RRT/MET system may be considered in facilities with high risk children that being cared in general wards.
BLS FOR LAY RESCUE
Summary of Key Issues and Major Changes

- **Crucial links** in the out-of-hospital adults chain of survival are unchanged from 2010, emphasis on simplified universal adults BLS algorithm.
- Rescuers can **activate an emergency response (thru mobile phone)** without leaving the victims.
- Implementation of **PAD program** in communities with people at risk.
- Recommendation to encourage **immediate recognition of unresponsiveness**, activation of EMS & initiation of CPR if victims is found not breathing or not breathing normally.
- Emphasis of **rapid identification of potential cardiac arrest** by dispatcher, with immediate provision of CPR instruction to the caller (dispatch-guided-CPR)
BLS – Lay rescuer

Emphasis on Chest Compressions*

• 2015 (Updated):
  - Untrained lay rescuers should provide compression-only (Hands-Only) CPR, with or without dispatcher guidance, for adult victims of cardiac arrest.
  - Continue compression-only CPR until the arrival of an AED or rescuers with additional training.
  - All lay rescuers should, at a minimum, provide chest compressions for victims of cardiac arrest.
  - In addition, if the trained lay rescuer is able to perform rescue breaths, he or she should add rescue breaths in a ratio of 30 compressions to 2 breaths. The rescuer should continue CPR until an AED arrives and is ready for use, EMS providers take over care of the victim, or the victim starts to move.
Emphasis on high quality CPR:

- adequate depth, (5-6 cm)
- adequate rate (100-120/min)
- allowing complete chest recoil after each compression,
- minimizing interruption in compression (60% of CPR time is on chest compression),
- avoid excessive ventilation
For single rescuer BLS

- Initiate chest compressions before giving rescue breath (CAB rather ABC)) to reduce delay to 1st compression. Start with 30:2 (comp: vent)
- Recommended rate of chest compression is 100/min and not more than 120/min (100-120/min) (30 compression within 15-18 sec)
- Adult depth of compression is at least 2 inches (5cm) but not greater than 2.4 inches (6 cm).
- Bystander administered Naloxone may be considered for suspected life-threatening opioid-associated emergencies.
ADULT BLS FOR HCP
Adult BLS for HCP

- These recommendations allow flexibility for activation of the emergency response system to better match the HCP’s clinical setting.
- Trained rescuers are encouraged to simultaneously perform some steps (check breathing and pulse at the same time) to reduce time to first chest compression.
- Integrated teams of highly trained rescuers may use a choreographed approach that accomplishes multiple steps and assessments simultaneously rather than the sequential manner used by individual rescuers (e.g., one rescuer activates the emergency response system while another begins chest compressions, a third either provides ventilation or retrieves the bag-mask device for rescue breaths, and a fourth retrieves and sets up a defibrillator).
Adult BLS for HCP

- **Increased emphasis** has been placed on high-quality CPR using **performance targets** (compressions of adequate rate and depth, allowing complete chest recoil between compressions, minimizing interruptions in compressions, and avoiding excessive ventilation).
  - Compression rate is modified to a range of 100 to 120/min.
  - Compression depth for adults is modified to at least 2 inches (5 cm) but should not exceed 2.4 inches (6 cm).
  - To allow full chest wall recoil after each compression, rescuers must avoid leaning on the chest between compressions.
Adult BLS for HCP

- Criteria for minimizing interruptions is clarified with a goal of chest compression fraction as high as possible, with a target of at least 60%.
- Use 2 stopped watch technique

- Where EMS systems have adopted bundles of care involving continuous chest compressions, the use of passive ventilation techniques may be considered as part of that bundle for victims of OHCA.

- For patients with ongoing CPR and an advanced airway in place, a simplified ventilation rate of 1 breath every 6 seconds (10 breaths per minute) is recommended.
<table>
<thead>
<tr>
<th>Rescuers Should</th>
<th>Rescuers Should <em>Not</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Perform chest compressions at a rate of 100-120/min</td>
<td>Compress at a rate slower than 100/min or faster than 120/min</td>
</tr>
<tr>
<td>Compress to a depth of at least 2 inches (5 cm)</td>
<td>Compress to a depth of less than 2 inches (5 cm) or greater than 2.4 inches (6 cm)</td>
</tr>
<tr>
<td>Allow full recoil after each compression</td>
<td>Lean on the chest between compressions</td>
</tr>
<tr>
<td>Minimize pauses in compressions</td>
<td>Interrupt compressions for greater than 10 seconds</td>
</tr>
<tr>
<td>Ventilate adequately (2 breaths after 30 compressions, each breath delivered over 1 second, each causing chest rise)</td>
<td>Provide excessive ventilation (ie, too many breaths or breaths with excessive force)</td>
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</tbody>
</table>
Shock First vs CPR First

• 2015 (Updated):
  • Witnessed arrest- defib. immediately
  • Unwitnessed arrest- defib. as soon as available

• For witnessed adult cardiac arrest when an AED is immediately available, it is reasonable that the defibrillator be used as soon as possible. For adults with unmonitored cardiac arrest or for whom an AED is not immediately available, it is reasonable that CPR be initiated while the defibrillator equipment is being retrieved and applied and that defibrillation, if indicated, be attempted as soon as the device is ready for use.
Compression rate between 100-120/min

Why:
The minimum recommended compression rate remains 100/min. The upper limit rate of 120/min has been added because 1 large registry series suggested that as the compression rate increases to more than 120/min, compression depth decreases in a dose-dependent manner.

For example, the proportion of compressions of inadequate depth was about 35% for a compression rate of 100 to 119/min but increased to inadequate depth in 50% of compressions when the compression rate was 120 to 139/min and to inadequate depth in 70% of compressions when compression rate was more than 140/min.
Chest Compression Depth

• During manual CPR, rescuers should perform chest compressions to a depth of at least 2 inches (5 cm) for an average adult while avoiding excessive chest compression depths (greater than 2.4 inches [6 cm]).

• Reason:
  • A compression depth of approximately 5 cm is associated with greater likelihood of favourable outcomes compared with shallower compressions. While there is less evidence about whether there is an upper threshold beyond which compressions may be too deep, a recent very small study suggests potential injuries (none life-threatening) from excessive chest compression depth (> 2.4 inches [6 cm]).
  • Compression depth may be difficult to judge without use of feedback devices, and identification of upper limits of compression depth may be challenging. It is important for rescuers to know that chest compression depth is more often too shallow than too deep.
Chest Recoil

• It is reasonable for rescuers to avoid leaning on the chest between compressions, to allow full chest wall recoil for adults in cardiac arrest.

• Reason:
  • Full chest wall recoil occurs when the sternum returns to its natural or neutral position during the decompression phase of CPR. Chest wall recoil creates a relative negative intrathoracic pressure that promotes venous return and cardiopulmonary blood flow. Leaning on the chest wall between compressions precludes full chest wall recoil.
  • Incomplete recoil raises intrathoracic pressure and reduces venous return, coronary perfusion pressure, and myocardial blood flow and can influence resuscitation outcomes.
Minimizing Interruptions in Chest Compressions

• (2010) Rescuers should attempt to minimize the frequency and duration of interruptions in compressions to maximize the number of compressions delivered per minute.

• 2015 (New): For adults in cardiac arrest who receive CPR without an advanced airway, it may be reasonable to perform CPR with the goal of a chest compression fraction as high as possible, with a target of at least 60%.
<table>
<thead>
<tr>
<th>Component</th>
<th>Adults and Adolescents</th>
<th>Children (Age 1 Year to Puberty)</th>
<th>Infants (Age Less Than 1 Year, Excluding Newborns)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scene safety</td>
<td>Make sure the environment is safe for rescuers and victim</td>
<td>Check for responsiveness</td>
<td></td>
</tr>
<tr>
<td>Recognition of cardiac arrest</td>
<td>Check for responsiveness</td>
<td>No breathing or only gasping (i.e., no normal breathing)</td>
<td></td>
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<tr>
<td></td>
<td>No definite pulse felt within 10 seconds</td>
<td>(Breathing and pulse check can be performed simultaneously in less than 10 seconds)</td>
<td></td>
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<tr>
<td>Activation of emergency response system</td>
<td>If you are alone with no mobile phone, leave the victim to activate the emergency response system and get the AED before beginning CPR</td>
<td>Witnessed collapse</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Otherwise, send someone and begin CPR immediately; use the AED as soon as it is available</td>
<td>Follow steps for adults and adolescents on the left</td>
<td></td>
</tr>
<tr>
<td>Compression-ventilation ratio without advanced airway</td>
<td>1 or 2 rescuers 30:2</td>
<td>Unwitnessed collapse</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 or more rescuers 15:2</td>
<td>Give 2 minutes of CPR</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Leave the victim to activate the emergency response system and get the AED</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Return to the child or infant and resume CPR; use the AED as soon as it is available</td>
<td></td>
</tr>
</tbody>
</table>
| Compression-ventilation ratio with advanced airway | Continuous compressions at a rate of 100-120/min  
Give 1 breath every 6 seconds (10 breaths/min) |
<table>
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</thead>
<tbody>
<tr>
<td><strong>Compression rate</strong></td>
<td><strong>100-120/min</strong></td>
</tr>
</tbody>
</table>
| **Compression depth** | At least 2 inches (5 cm)*  
About 2 inches (5 cm)  
At least one third AP diameter of chest |
| **Hand placement** | 2 hands on the lower half of the breastbone (sternum)  
2 hands or 1 hand (optional for very small child) on the lower half of the breastbone (sternum)  
2 rescuers  
2 fingers in the center of the chest, just below the nipple line  
2 or more rescuers  
2 thumb-circumventing hands in the center of the chest, just below the nipple line |
| **Chest recoil** | Allow full recoil of chest after each compression; do not lean on the chest after each compression |
| **Minimizing interruptions** | Limit interruptions in chest compressions to less than 10 seconds |
Chest Compression Feedback

• It may be reasonable to use audiovisual feedback devices during CPR for real-time optimization of CPR performance.

• There is some evidence that the use of CPR feedback may be effective in modifying chest compression rates that are too fast, and there is separate evidence that CPR feedback decreases the leaning force during chest compressions. However, studies to date have not demonstrated a significant improvement in favorable neurologic outcome or survival to hospital discharge with the use of CPR feedback devices during actual cardiac arrest events.
Delayed Ventilation

• 2015 (New): For witnessed OHCA with a shockable rhythm, it may be reasonable for EMS systems with priority based, multitiered response to delay positive-pressure ventilation (PPV) by using a strategy of up to 3 cycles of 200 continuous compressions with passive oxygen insufflation and airway adjuncts.
• Reason: 3 studies in systems that use priority-based, multitiered response in both urban and rural communities, and provide a bundled package of care that includes up to 3 cycles of passive oxygen insufflation, airway adjunct insertion, and 200 continuous chest compressions with interposed shocks, showed improved survival with favorable neurologic status for victims with witnessed arrest or shockable rhythm.
Ventilation During CPR With an Advanced Airway

- Reasonable for the provider to deliver 1 breath every 6 seconds (10 breaths per minute) while continuous chest compressions are being performed (ie, during CPR with an advanced airway).

- This simple single rate for adults, children, and infants—rather than a range of breaths per minute—should be easier to learn, remember, and perform.
Team Resuscitation: Basic Principles

• 2015 (New): For HCPs, the 2015 Guidelines Update allows flexibility for activation of the emergency response and subsequent management in order to better match the provider’s clinical setting.

• Usually BLS is done in a sequence order to help single rescuer action.

• However, there are several factors in any resuscitation (eg, type of arrest, location, whether trained providers are nearby, whether the rescuer must leave a victim to activate the emergency response system) that may require modifications in the BLS sequence. The updated BLS HCP algorithms aim to communicate when and where flexibility in sequence is appropriate.
BLS Healthcare Provider Adult Cardiac Arrest Algorithm—2015 Update

1. Verify scene safety.
2. Victim is unresponsive. Shout for nearby help. Activate emergency response system via mobile device (if appropriate). Get AED and emergency equipment (or send someone to do so).
3. Look for no breathing or only gasping and check pulse (simultaneously). Is pulse definitely felt within 10 seconds?
   - Normal breathing, has pulse
   - No normal breathing, has pulse
4. Provide rescue breathing: 1 breath every 5-6 seconds, or about 10-12 breaths/min.
   - Activate emergency response system (if not already done) after 2 minutes.
   - Continue rescue breathing: check pulse about every 2 minutes. If no pulse, begin CPR (go to “CPR” box).
   - If possible opioid overdose, administer naloxone if available per protocol.
5. Monitor until emergency responders arrive.
No breathing or only gasping, no pulse
By this time in all scenarios, emergency response system or backup is activated, and AED and emergency equipment are retrieved or someone is retrieving them.

CPR
Begin cycles of 30 compressions and 2 breaths. Use AED as soon as it is available.

AED arrives.

Check rhythm. Shockable rhythm?

Yes, shockable
Give 1 shock. Resume CPR immediately for about 2 minutes (until prompted by AED to allow rhythm check). Continue until ALS providers take over or victim starts to move.

No, nonshockable
Resume CPR immediately for about 2 minutes (until prompted by AED to allow rhythm check). Continue until ALS providers take over or victim starts to move.
Impedance Threshold Devices

• 2015 (Updated): The routine use of the ITD as an adjunct during conventional CPR is not recommended. The combination of ITD with active compression-decompression CPR may be a reasonable alternative to conventional CPR in settings with available equipment and properly trained personnel.
Mechanical Chest Compression Devices

• The evidence does not demonstrate a benefit with the use of mechanical piston devices for chest compressions versus manual chest compressions in patients with cardiac arrest. Manual chest compressions remain the standard of care for the treatment of cardiac arrest.

• However, such a device may be a reasonable alternative to conventional CPR in specific settings where the delivery of high-quality manual compressions may be challenging or dangerous for the provider (e.g., limited rescuers available, prolonged CPR, CPR during hypothermic cardiac arrest, CPR in a moving ambulance, CPR in the angiography suite, CPR during preparation for ECPR).
Extracorporeal Techniques and Invasive Perfusion Devices

- ECPR is the initiation of extracorporeal circulation and oxygenation during the resuscitation of a patient in cardiac arrest.
- ECPR involves the emergency cannulation of a large vein and artery (e.g., femoral vessels).
- The goal of ECPR: support patients in cardiac arrest while potentially reversible conditions are treated.
- ECPR is a complex process that requires a highly trained team, specialized equipment, and multidisciplinary support within the local healthcare system.
Extracorporeal Techniques and Invasive Perfusion Devices

• ECPR may be considered an alternative to conventional CPR for select patients who have a cardiac arrest and for whom the suspected etiology of the cardiac arrest is potentially reversible.

• There are no clinical trials on ECPR, and available published series have used rigorous inclusion and exclusion criteria to select patients for ECPR. Although these inclusion criteria are highly variable, most included:
  • Patients aged 18 to 75 years
  • limited comorbidities,
  • arrest of cardiac origin,
  • after conventional CPR > 10 minutes without ROSC.
ACLS Summary of Key Issues and Major Changes

1. The combined use of vasopressin and epinephrine offers no advantage to using standard-dose epinephrine in cardiac arrest. Also, vasopressin does not offer an advantage over the use of epinephrine alone. Therefore, to simplify the algorithm, vasopressin has been removed from the Adult Cardiac Arrest Algorithm–2015 Update.

2. Low end-tidal carbon dioxide (ETCO2) in intubated patients after 20 minutes of CPR is associated with a very low likelihood of resuscitation. While this parameter should not be used in isolation for decision making, providers may consider low ETCO2 after 20 minutes of CPR in combination with other factors to help determine when to terminate resuscitation.

3. Steroids may provide some benefit when bundled with vasopressin and epinephrine in treating IHCA. While routine use is not recommended pending follow-up studies, it would be reasonable for a provider to administer the bundle for IHCA.
4. When rapidly implemented, ECPR can prolong viability, as it may provide time to treat potentially reversible conditions or arrange for cardiac transplantation for patients who are not resuscitated by conventional CPR.

5. In cardiac arrest patients with nonshockable rhythm and who are otherwise receiving epinephrine, the early provision of epinephrine is suggested.

6. Studies about the use of lidocaine after ROSC are conflicting, and routine lidocaine use is not recommended. However, the initiation or continuation of lidocaine may be considered immediately after ROSC from VF/pulseless ventricular tachycardia (pVT) cardiac arrest.
ACLS Summary of Key Issues and Major Changes

7. One observational study suggests that β-blocker use after cardiac arrest may be associated with better outcomes than when β-blockers are not used. Although this observational study is not strong-enough evidence to recommend routine use, the initiation or continuation of an oral or intravenous (IV) β-blocker may be considered early after hospitalization from cardiac arrest due to VF/pVT
Vasopressors for Resuscitation: Adrenaline/Epinephrine

- 2015 (New): It may be reasonable to administer adrenaline as soon as feasible after the onset of cardiac arrest due to an initial non-shockable rhythm.

Reason: A very large observational study of cardiac arrest with non-shockable rhythm compared epinephrine given at 1 to 3 minutes with epinephrine given at 3 later time intervals (4 to 6, 7 to 9, and greater than 9 minutes). The study found an association:

- Early administration of epinephrine – Increased ROSC,
- Increase survival to hospital discharge
- Increase neurologically intact survival.
ETCO2 for Prediction of Failed Resuscitation

• 2015 (New): 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.

• Reason: Failure to achieve an ETCO2 of 10 mm Hg by waveform capnography after 20 minutes of resuscitation has been associated with an extremely poor chance of ROSC and survival. However, the studies to date are limited in that they have potential confounders and have included relatively small numbers of patients, so it is inadvisable to rely solely on ETCO2 in determining when to terminate resuscitation.
Extracorporeal CPR

• 2015 (New): ECPR may be considered among select cardiac arrest patients who have not responded to initial conventional CPR, in settings where it can be rapidly implemented.

• Reason: Although no high-quality studies have compared ECPR to conventional CPR, a number of lower-quality studies suggest improved survival with good neurologic outcome for select patient populations.

• ECPR is resource intensive and costly, it should be considered only when the patient has a reasonably high likelihood of benefit— in cases where the patient has a potentially reversible illness or to support a patient while waiting for a cardiac transplant.
Post–Cardiac Arrest Drug Therapy: Lignocaine

• 2015 (New): There is inadequate evidence to support the routine use of lignocaine after cardiac arrest. However, the initiation or continuation of lignocaine may be considered immediately after ROSC from cardiac arrest due to VF/pVT.

• Reason: While earlier studies showed an association between giving lignocaine after myocardial infarction and increased mortality, a recent study of lignocaine in cardiac arrest survivors showed a decrease in the incidence of recurrent VF/pVT but did not show either long-term benefit or harm.
Post–Cardiac Arrest Drug Therapy: β-Blockers

• 2015 (New): There is inadequate evidence to support the routine use of a β-blocker after cardiac arrest. However, the initiation or continuation of an oral or IV β-blocker may be considered early after hospitalization from cardiac arrest due to VF/pVT.

• Reason:
In an observational study of patients who had ROSC after VF/pVT cardiac arrest, β-blocker administration was associated with higher survival rates. However, this finding is only an associative relationship, and the routine use of β-blockers after cardiac arrest is potentially hazardous because β-blockers can cause or worsen hemodynamic instability, exacerbate heart failure, and cause bradyarrhythmias. Therefore, providers should evaluate patients individually for their suitability for β-blockers.
Post–Cardiac Arrest (ROSC) Care Summary of Key Issues and Major Changes

- **Emergency coronary angiography** is recommended for all patients with ST elevation and for hemodynamically or electrically unstable patients without ST elevation for whom a cardiovascular lesion is suspected.

- **TTM** recommendations have been updated with new evidence suggesting that a range of temperatures may be acceptable to target in the post–cardiac arrest period.

- After TTM is complete, fever may develop. While there are conflicting observational data about the harm of fever after TTM, the prevention of fever is considered benign and therefore is reasonable to pursue.
Post–Cardiac Arrest (ROSC) Care
Summary of Key Issues and Major Changes

• Identification and correction of hypotension is recommended in the immediate post–cardiac arrest period.

• Prognostication is now recommended no sooner than 72 hours after the completion of TTM; for those who do not have TTM, prognostication is not recommended any sooner than 72 hours after ROSC.

• All patients who progress to brain death or circulatory death after initial cardiac arrest should be considered potential organ donors.
Coronary Angiography

• 2015 (Updated): Coronary angiography should be performed emergently (rather than later in the hospital stay or not at all) for OHCA patients with suspected cardiac etiology of arrest and ST elevation on ECG.

• Emergency coronary angiography is reasonable for select (e.g., electrically or hemodynamically unstable) adult patients who are comatose after OHCA of suspected cardiac origin but without ST elevation on ECG. Coronary angiography is reasonable in post–cardiac arrest patients for whom coronary angiography is indicated, regardless of whether the patient is comatose or awake.
Coronary Angiography

• Reason:

  Multiple observational studies found positive associations between emergency coronary revascularization and both survival and favourable functional outcome.

  In the absence of cardiac arrest, guidelines already recommend emergency treatment of STEMI and emergency treatment of non–ST-segment elevation ACS with electrical or hemodynamic instability. Because the outcome of coma may be improved by correction of cardiac instability, and the prognosis of coma cannot be reliably determined in the first few hours after cardiac arrest, emergency treatment of post–cardiac arrest patients should follow identical guidelines.
Targeted Temperature Management

• 2015 (Updated): All comatose (ie, lacking meaningful response to verbal commands) adult patients with ROSC after cardiac arrest should have TTM, with a target temperature between 32°C and 36°C selected and achieved, then maintained constantly for at least 24 hours.
Targeted Temperature Management

• Reason: Initial studies of TTM examined cooling to temperatures between 32°C and 34°C compared with no well-defined TTM and found improvement in neurologic outcome for those in whom hypothermia was induced. A recent high-quality study compared temperature management at 36°C and at 33°C and found outcomes to be similar for both. Taken together, the initial studies suggest that TTM is beneficial, so the recommendation remains to select a single target temperature and perform TTM. Given that 33°C is no better than 36°C, clinicians can select from a wider range of target temperatures. The selected temperature may be determined by clinician preference or clinical factors.
Continuing Temperature Management Beyond 24 Hours

• 2015 (New): Actively preventing fever in comatose patients after TTM is reasonable.

• Reason: In some observational studies, fever after rewarming from TTM is associated with worsened neurologic injury, although studies are conflicting. Because preventing fever after TTM is relatively benign and fever may be associated with harm, preventing fever is suggested.
Out-of-Hospital Cooling

• 2015 (New): The routine prehospital cooling of patients with rapid infusion of cold IV fluids after ROSC is not recommended.

• Reason: Before 2010, cooling patients in the prehospital setting had not been extensively evaluated. It had been assumed that earlier initiation of cooling might provide added benefits and also that prehospital initiation might facilitate and encourage continued in-hospital cooling. Recently published high-quality studies demonstrated no benefit to prehospital cooling and also identified potential complications when using cold IV fluids for prehospital cooling.
Hemodynamic Goals After Resuscitation

• 2015 (New): It may be reasonable to avoid and immediately correct hypotension (SBP < 90 mm Hg, MAP < 65 mm Hg) during post–cardiac arrest care.

• Reason: Studies of patients after cardiac arrest have found that a SBP < 90 mm Hg or a MAP < 65 mm Hg is associated with higher mortality and diminished functional recovery, while systolic arterial pressures of greater than 100 mm Hg are associated with better recovery. While higher pressures appear superior, specific systolic or mean arterial pressure targets could not be identified, because trials typically studied a bundle of many interventions, including hemodynamic control. Also, because baseline blood pressure varies from patient to patient, different patients may have different requirements to maintain optimal organ perfusion.
Prognostication After Cardiac Arrest

- 2015 (New): The earliest time to prognosticate a poor neurologic outcome using clinical examination in patients not treated with TTM is 72 hours after cardiac arrest, but this time can be even longer after cardiac arrest if the residual effect of sedation or paralysis is suspected to confound the clinical examination.

- 2015 (Updated): In patients treated with TTM, where sedation or paralysis could confound clinical examination, it is reasonable to wait until 72 hours after return to normothermia before predicting outcome.
Organ Donation

• 2015 (Updated): All patients who are resuscitated from cardiac arrest but who subsequently progress to death or brain death should be evaluated as potential organ donors. Patients who do not achieve ROSC and who would otherwise have resuscitation terminated may be considered as potential kidney or liver donors in settings where rapid organ recovery programs exist.
Acute Coronary Syndrome - Summary of Key Issues and Major Changes

- Prehospital ECG acquisition and interpretation
- Choosing a reperfusion strategy when prehospital fibrinolysis is available
- Choosing a reperfusion strategy at a non–PCI-capable hospital
- Troponin to identify patients who can be safely discharged from the emergency department
- Interventions that may or may not be of benefit if given before hospital arrival
THANK YOU FOR YOUR ATTENTION