Lesson START
Welcome, Introductions, and Course Administration 15 minutes

Instructor Tips

- Knowing what you want to communicate, why it's important, and what you want to have happen as a result is critical to the success of your presentation.
- Be flexible: Be ready to adjust your lesson plan to students' needs and focus on what seems to be more productive rather than sticking to your original plan.
- Introductions: Use a visual aid (flip chart, whiteboard) to display introduction requirements (name, occupation, specialty, place of practice).

Discussion

In a large group, with all students, do the following:

- Introduce yourself and additional instructors, if needed.
- Invite students to introduce themselves and ask them to provide the following information:
  - Name
  - Occupation
  - Specialty
  - Place of practice
- As students are introducing themselves, document their occupation, specialty, etc. This information will help instructors tailor future case scenarios and lessons.
- Explain that the course is interactive and hands-on:
  - Use of the provider manual, learning station checklists
  - Skills testing checklists
  - Hands-on learning stations
- Explain the use of feedback devices (audiovisual) during the learning and testing stations with cardiac arrest or respiratory arrest. Also explain how timing is a critical component of the learning and testing stations.
- Explain that parts of the course are somewhat physically strenuous.
  - For example, Lesson 3 involves adult CPR, which will require students to perform 1 minute of compressions, which could be physically strenuous.
- Ask that anyone with a medical concern, such as knee or back problems, speak with one of the instructors.
- Explain the layout of the building, including bathrooms and fire exits.
- Advise students where an AED can be found in the building.
- Tell students to silence their cell phones.
- Tell students that if they need to answer a call, they should leave the classroom before doing so.
- Tell the students, "We are scheduled to end at _____."

Precourse Preparation

Instructor Tips

- The time you invest in preparation is important. Prepare well, and anticipate questions and challenges.
- Anticipate what could happen, and have a plan for possible challenges such as
  - Instructor does not arrive
  - Equipment fails or malfunctions
  - Batteries are dead (bring extras)

30 to 60 Days Before Class

- Determine course specifics:
  - Target audience
  - Number of students
  - Special needs or equipment
- Review and reserve ACLS equipment.
- Schedule the room(s) as soon as dates are determined.
- Schedule additional instructors, if needed (Table 1 in the lesson plans).

Table 1. Class Size and Student-to-Instructor Ratios for Course Activities

Activity	Recommended size or ratio
Large-group interactions	The size of the group is limited by the size of the room and the number of video monitors or projection screens.
Learning stations and High-Performance Teams: Megacode Testing	6:1 up to a maximum of 8:1 The student-to-instructor ratio should be 6 students to 1 learning station, with 1 instructor for each station. In some cases, a maximum of 8 students to 1 instructor to 1 learning station may be used. To conduct the case with ACLS interventions, the minimum number of students per instructor is 3.

Optional

Instructors or Training Centers may consider offering an ACLS preparation course days or weeks before the ACLS Course to ensure that students understand

- ECGs (rhythm analysis)
- Pharmacology
- Airway management
- BLS skills

At Least 3 Weeks Before Class

- Confirm room reservations and setups.
- Send students a precourse letter with student materials.
- Ensure that students understand that precourse preparation is necessary for successful participation in the ACLS Course.
- Provide students information on the precourse self-assessment and video prework.
- Confirm additional instructors.
- Research local treatment protocols and prepare for discussion.

Day Before Class

- Set up the room.
- Coordinate the plan with additional instructors, if needed for class size.
- Use the Equipment List (found in Part 2 of this manual) as a checklist to ensure that all equipment is available and tested for operation (including feedback devices and their accessory devices, such as tablet computers and smartphones).
- Have extra batteries on hand for equipment.
- Check with your Training Center Coordinator to determine any Training Center-specific paperwork needed.
- Ensure that all course paperwork is in order, such as
  - ACLS Course roster
  - Testing checklists
  - Learning station checklists

Day of Class

- Make sure all equipment is working.
- Greet students as they arrive to help make them feel at ease.
- Have students fill out the course roster. Rosters may vary between Training Centers; refer to Atlas (**atlas.heart.org**). Required: Make sure all students have passed the ACLS Precourse Self-Assessment and have completed all of the ACLS video prework (depending on the agenda chosen) before entering the class.

Equipment List

Refer to Table 7 in the *ACLS Instructor Manual* for a list of the equipment and supplies needed to conduct this course. This includes a code cart for in-hospital health care professionals and a jump kit and defibrillator unit for prehospital health care professionals. The code cart or jump kit must contain the equipment and supplies listed in Table 7.

Lesson START
Welcome, Introductions, and Course Administration 15 minutes

Instructor Tips

- Knowing what you want to communicate, why it's important, and what you want to have happen as a result is critical to the success of your presentation.
- Be flexible: Be ready to adjust your lesson plan to students' needs and focus on what seems to be more productive rather than sticking to your original plan.
- Introductions: Use a visual aid (flip chart, whiteboard) to display introduction requirements (name, occupation, specialty, place of practice).

Discussion

In a large group, with all students, do the following:

- Introduce yourself and additional instructors, if needed.
- Invite students to introduce themselves and ask them to provide the following information:
  - Name
  - Occupation
  - Specialty
  - Place of practice
- As students are introducing themselves, document their occupation, specialty, etc. This information will help instructors tailor future case scenarios and lessons.
- Explain that the course is interactive and hands-on:
  - Use of the provider manual, learning station checklists
  - Skills testing checklists
  - Hands-on learning stations
- Explain the use of feedback devices (audiovisual) during the learning and testing stations with cardiac arrest or respiratory arrest. Also explain how timing is a critical component of the learning and testing stations.
- Explain that parts of the course are somewhat physically strenuous.
  - For example, Lesson 3 involves adult CPR, which will require students to perform 1 minute of compressions, which could be physically strenuous.
- Ask that anyone with a medical concern, such as knee or back problems, speak with one of the instructors.
- Explain the layout of the building, including bathrooms and fire exits.
- Advise students where an AED can be found in the building.
- Tell students to silence their cell phones.
- Tell students that if they need to answer a call, they should leave the classroom before doing so.
- Tell the students, "We are scheduled to end at _____."

Lesson 1
ACLS Course Overview, Organization, and the Science of Resuscitation

25 minutes

Instructor Tips

- Make sure to emphasize critical aspects of the course, such as the course agenda, design, and completion requirements.
- Breaks: Think about how you want to manage breaks during this course. Making yourself available allows you to answer questions people might feel too embarrassed to ask in front of others. It also gives you time to create rapport and get feedback.
- In these lesson plans, items that are in boldface have greater importance.
- Transitional language: After showing a video, be sure to provide language that helps students with the transition back to teaching, such as a recap of what the video covered and what is next.
- When reviewing the material presented in a video with students, ask leading questions to help facilitate discussion; avoid lecturing.

Discussion

In a large group, with all students, do the following:

- Present the course overview.
- Discuss the course agenda, design, and course completion requirements.
- Be certain that students understand major course concepts:
  - Importance of early high-quality CPR and early defibrillation to patient survival
  - Integration of effective BLS with ACLS interventions
  - The clinical signs of patient deterioration (preventing arrest)
  - The functioning of high-performance teams relative to patient survival
    - Timing, quality, coordination, and administration
- Discuss the importance of effective team interaction and communication during a resuscitation attempt.
- Explain the learning stations and rotations through the stations.
- Answer students' questions.
- Assign students to small groups for learning stations.
  - Limit the number of students to 6 (maximum of 8 per group).
- Tell students that they will be using their provider manuals throughout the course.

- Explain the course completion requirements, including the mandatory use of an audiovisual feedback device for all CPR practice and testing and mandatory measurement of CCF for the cardiac arrest and Megacode Practice and Megacode Testing Stations. Students must
  - Pass the Adult High-Quality BLS Skills Test
  - Pass the Airway Management Skills Test
  - Demonstrate competency in learning station skills
  - Pass the Megacode Test (team)
  - Pass the open-resource exam with a minimum score of 84% (does not apply to HeartCode students)

You should issue a course completion card immediately after a student successfully completes the course but no later than 30 days after class.

Lesson Note

If you are leading a HeartCode ACLS Hands-On Skills Session, skip ahead to the next lesson in the agenda.

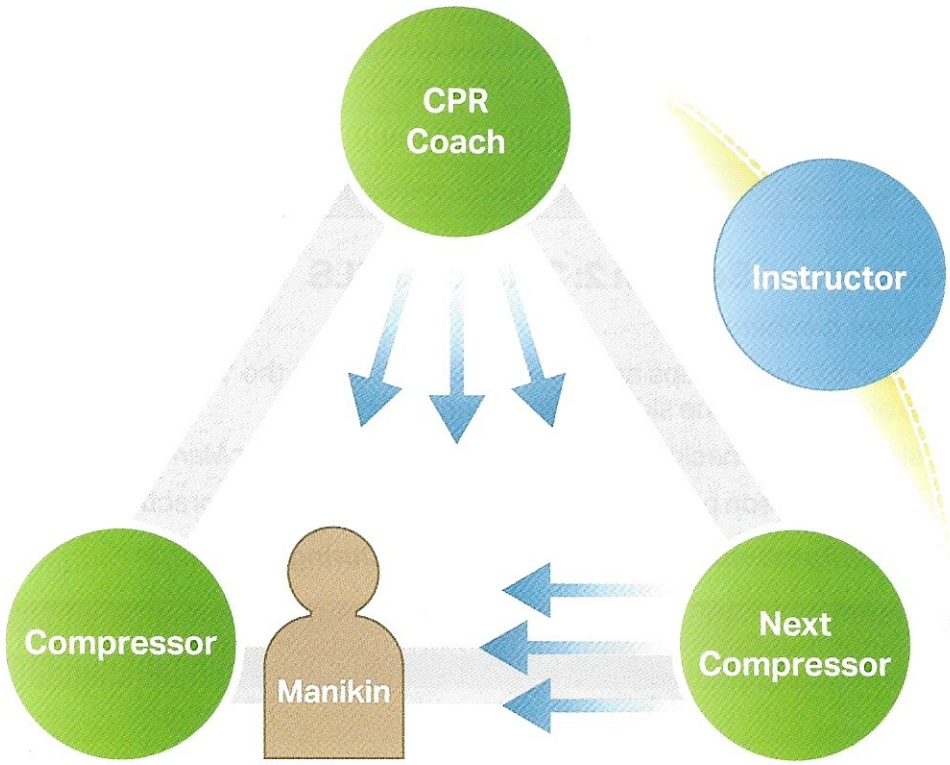
Play Science of Resuscitation Video

- Address what students will learn from the video.
- Play the video.

Discussion

- Discuss high-quality BLS and feedback devices.
- Answer students' questions.
- Review/summarize key points.

Figure 1. Positions for the High-Quality BLS Learning Station with a CPR Coach.



- Students rotate through continuous compressions practice for 1 minute on a manikin, adjusting their performance according to the real-time response of the feedback device and the CPR Coach (Table 2 in the lesson plans).
  - Owing to the total number of chest compressions that each student will have to perform throughout the entire course, we have adjusted the continuous compressions section of the High-Quality BLS Learning and Testing Stations to **1 minute per student**. This will still allow instructors enough time to evaluate rate, depth, and recoil. Please note this a training change and *not* a science change.
- Target CPR performance metrics include the following:
  - Push hard: Compression depth of at least 2 inches (5 cm) in adults
  - Push fast: Compression rate of 100 to 120/min
  - Allow complete chest recoil after each compression
  - Hand placement should be on the center of the chest, on the lower half of the sternum
- Monitor the rate and depth of chest compressions with an audiovisual feedback device. If possible, monitor chest recoil as well.
- Have peers coach other students on the basis of data from the feedback device.
- Give feedback during practice to both the Compressor and the CPR Coach.

Table 2. Student Rotations for CPR Coaches and Compressors During Session 1

Round 1	Round 2	Round 3
Student 1: Compressor	Student 1: CPR Coach	Student 1: Next Compressor
Student 2: Next Compressor	Student 2: Compressor	Student 2: CPR Coach
Student 3: CPR Coach	Student 3: Next Compressor	Student 3: Compressor

Students Practice Session 2: 2-Rescuer BLS

- Assign student numbers.
- Practice session (small groups around a manikin): Practice the 1- and 2-rescuer sequences according to the skills testing checklist.
- Have the skills testing checklist available (in the *ACLS Provider Manual*, handout, etc).
- Use Table 3 in the lesson plans to assign students for 2-rescuer practice.

Table 3. Student Rotations for 2-Rescuer Practice During Session 2

Person assessing and compressing	Person with AED	CPR Coach
Student 1	Student 2	Student 3
Student 2	Student 3	Student 1
Student 3	Student 1	Student 2

Lesson 2
2A: Learning/Testing Station: High-Quality BLS Practice

45 minutes

Learning Objective

- Perform prompt, high-quality BLS, including prioritizing early chest compressions, ventilation, and integrating early AED use

Instructor Tips

- Students should rotate through the skills station (2 different practice sessions).
- Tell students that the skills testing portion will happen immediately after this lesson.
- Monitor the rate and depth of chest compressions with a real-time audiovisual feedback device. If possible, monitor chest recoil as well.
- The students should correct their own chest compressions in response to real-time output from the feedback device.
- Use peer coaching to help with feedback and to allow students to feel comfortable correcting others.
- This lesson focuses on continuous compressions and AED use along with feedback from the CPR Coach and the feedback device. The Airway Management lesson will focus on ventilation.

Students Practice Session 1: Compressions

Arrange students in groups with manikins (Figure 1 in the lesson plans).

- 3 or fewer students per manikin
- 1 instructor per 2 manikins

Lesson 2
2B: Learning/Testing Station: High-Quality BLS Testing—Testing Details

Instructor Tips

- Make sure you are familiar with how to use the skills testing checklist (refer to Part 4: Testing in the instructor manual for information on how to use skills testing checklists).
- Complete a skills testing checklist for each student during this portion of the lesson.
- Use an audiovisual feedback device to provide real-time feedback on compression quality.
- This testing station is run exactly the same as the Students Practice Session 2: 2-Rescuer BLS section in Lesson 2A.

Test Each Student Individually (2-Person Team Needed)

- Tell students who are not being tested to practice on another manikin.
- Test each student in a reasonably private environment.
  - Each student must demonstrate the entire sequence of 2-rescuer BLS without instructor prompting.
- Fill out an Adult High-Quality BLS Skills Testing Checklist for each student.
- Carefully observe the student you are testing (2 students [in a 2-person team] are necessary to run the skills test, but only 1 student is tested at a time).
  - Monitor the rate and depth of chest compressions with an audiovisual feedback device. If your feedback device provides the necessary data, monitor chest recoil as well.
- If a student is unsuccessful, refer them for immediate remediation.
  - Each student may retest 1 additional time during this station.
  - A student who remains unsuccessful may require additional remediation (refer to the Exam and Remediation sections in Part 1 of the instructor manual).

Lesson 3
3C: Learning/Testing Station: Airway Management—Student Practice Details (Optional)

Instructor Tips

- This portion of the lesson is optional.
  - Whether or not you teach this lesson will depend on the makeup of your class. That is why it is important to ask students at the beginning of the class to introduce themselves and provide information about their occupations.

Optional: Play Advanced Airways Video

- Address what students will learn from the video.
- Play the video.
- Answer students' questions.

Students Practice: Advanced Airway Insertion (Optional, Based on Students' Scope of Practice)

- Rotate through all students inserting advanced airway devices and administering ventilations.
- Optional advanced airway device modules:
  - Supraglottic airway devices
    - Laryngeal mask airway (multiple variations)
    - Laryngeal tube
    - Endotracheal tube

Lesson 3
3A: Learning/Testing Station: Airway Management Practice

45 minutes

Learning Objectives

- Recognize respiratory arrest
- Perform early management of respiratory arrest

Instructor Tips

- Use a phone, stopwatch, or feedback device to make sure students are ventilating at appropriate rates and volumes.
- High-quality chest compressions and defibrillation are the highest priorities. As soon as enough personnel are available, initiate ventilation and oxygenation to support the resuscitation.
- Make sure students are not ventilating too quickly or forcefully (correct rate and volume: about one-third-a-bag to one-half-a-bag squeeze over 1 second).
- Health care professionals often deliver excessive ventilation during CPR, particularly when an advanced airway is in place. Excessive ventilation is harmful because it
  - Increases intrathoracic pressure and impedes venous return and, therefore, decreases cardiac output, cerebral blood flow, and coronary perfusion
  - Causes air trapping, leading to increased end-expiratory lung volume
  - Increases the risk of regurgitation and aspiration in patients without an advanced airway
- For the respiratory arrest cases, you need to use only the lead-in and initial information to lead the student through the bag-mask ventilation and OPA/NPA skills testing. You may use the whole respiratory scenario if you want to go deeper into respiratory distress, respiratory failure, and respiratory arrest. However, to accommodate this approach, you will need to expand the airway management station.

Optional (Depending on Agenda Chosen): Play Airway Management Video

- Address what students will learn from the video.
- Play the video.
- Answer students' questions.

Students Practice: Airway Management

- Assign student numbers.
- For the practice session (small groups around a manikin): practice OPA and NPA insertion, discuss oxygen and suction, and practice 1- and 2-rescuer bag-mask ventilation.
- Students practice OPA, NPA, oxygen, suction, and 1-rescuer bag-mask ventilation as in Figure 2 and Table 4 in the lesson plans.
- Organize students for 2-rescuer bag-mask ventilation practice as in Table 5 in the lesson plans.

Figure 2. Positions for the Airway Management Learning Station with a CPR Coach.

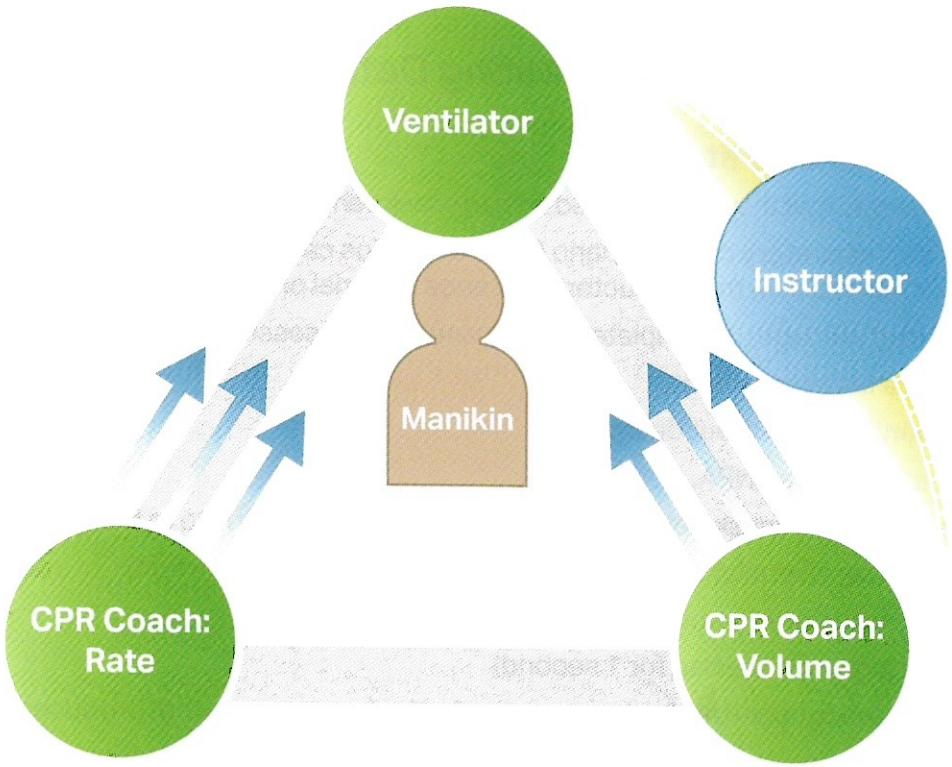


Table 4. Student Rotations for Ventilator and CPR Coaches During First Part of Practice

Round 1	Round 2	Round 3
Student 1: Ventilator	Student 1: CPR Coach (Volume)	Student 1: CPR Coach (Rate)
Student 2: CPR Coach (Rate)	Student 2: Ventilator	Student 2: CPR Coach (Volume)
Student 3: CPR Coach (Volume)	Student 3: CPR Coach (Rate)	Student 3: Ventilator

Table 5. Student Assignments for 2-Rescuer Bag-Mask Ventilation Practice

Person squeezing the bag	Person holding the mask	CPR Coach
Student 1	Student 2	Student 3
Student 2	Student 3	Student 1
Student 3	Student 1	Student 2

Lesson 3
3B: Learning/Testing Station: Airway Management Testing—Testing Details

Test Students One at a Time

- Advise students that they will be tested on bag-mask ventilation with OPA/NPA insertion skills.
- Present the respiratory case scenario (case scenarios can be found in the Appendix of the instructor manual or in the Instructor Reference Material on Atlas).
- Each student manages a complete airway case (testing session):
  - Perform a full assessment.
  - Begin ventilation without delay.
  - Insert an OPA or an NPA.
  - Connect the bag-mask device to oxygen and adjust the flow rate to the appropriate level.
  - Give bag-mask ventilation with the OPA/NPA for 1 minute (skills test).
    - Rate (once every 6 seconds)
    - Speed (squeeze the bag for 1 second)
    - Volume (about one-third-a-bag to a one-half-a-bag squeeze that produces chest rise)
  - Check off student's skills on the skills testing checklist as each student demonstrates adequate management of the respiratory case.
    - **Note the fail criteria for rate (ventilating once every 4 seconds or less or 8 seconds or more).**
  - Monitor ventilation with a phone, stopwatch, or feedback device to make sure students are ventilating at appropriate rates and at appropriate volumes, if that information is available.

Lesson 4
Technology Review

15 minutes

Instructor Tips

- If there are 2 instructors, this activity can be done in 2 smaller groups. For a single instructor, keep the class in one large group.
- It is important that students get hands-on experience with the equipment they will be responsible for using during the learning stations and testing stations.
- Ideally, equipment would be the same as what is used in a real emergency.
- Advise students that the equipment may be different in their workplace.

Discussion and Students Practice: Technology

- Demonstrate and review monitor/defibrillator functions, buttons, and connections (features of your equipment may vary) and then have some students demonstrate the functions, for clarity.
  - Power button
  - Transcutaneous pacing
  - Synchronized cardioversion
  - Blood pressure
  - P_{ETCO_2}
  - Pulse oximetry
  - Pad connections
  - ECG connections and lead placement (3-lead, 4-lead, 5-lead)
  - Optional 12-lead placement and right-sided 12-lead placement
- Review crash cart/jump kit supply locations.
- Explain the use of audiovisual feedback devices during the learning and testing stations involving CPR and ventilation. Also explain how timing and objective measures are critical components of the learning stations and testing stations.

Lesson 4
Technology Review

15 minutes

Instructor Tips

- If there are 2 instructors, this activity can be done in 2 smaller groups. For a single instructor, keep the class in one large group.
- It is important that students get hands-on experience with the equipment they will be responsible for using during the learning stations and testing stations.
- Ideally, equipment would be the same as what is used in a real emergency.
- Advise students that the equipment may be different in their workplace.

Discussion and Students Practice: Technology

- Demonstrate and review monitor/defibrillator functions, buttons, and connections (features of your equipment may vary) and then have some students demonstrate the functions, for clarity.
  - Power button
  - Transcutaneous pacing
  - Synchronized cardioversion
  - Blood pressure
  - P_{ETCO_2}
  - Pulse oximetry
  - Pad connections
  - ECG connections and lead placement (3-lead, 4-lead, 5-lead)
  - Optional 12-lead placement and right-sided 12-lead placement
- Review crash cart/jump kit supply locations.
- Explain the use of audiovisual feedback devices during the learning and testing stations involving CPR and ventilation. Also explain how timing and objective measures are critical components of the learning stations and testing stations.

Lesson 5
5A: Learning Station: Preventing Arrest: Bradycardia 60 minutes

Learning Objectives

- Recognize bradycardias that may result in cardiac arrest or complicate resuscitation outcome
- Perform early management of bradycardias that may result in cardiac arrest or complicate resuscitation outcome

Instructor Tips

- About a 60-minute lesson (30 minutes for showing the optional algorithm video, answering questions, discussing bradycardias [including setting up transcutaneous pacing]; up to 30 minutes for going through the 3 bradycardia cases [about 10 minutes each])
- Students often have difficulty differentiating between the heart block rhythms. Focus more on the treatments for stable vs unstable bradycardia than on detailed analysis of specific rhythms.
- For in-hospital case scenarios only, students should request rapid response team/MET response.
- For bradycardia case scenarios, refer to the instructor manual Appendix.
- When debriefing students:
  - Ask open-ended questions to engage group discussion and allow for greater detail.
  - When answering a question, acknowledge the individual with eye contact, and then answer to the entire room, coming back to the questioner periodically.

Optional (Depending on Agenda Chosen): Play Bradycardia Algorithm Video

- Address what students will learn from the video.
- Play the video.
- Answer students' questions.

Discussion

- Monitor/defibrillator technology review, if needed
  - Apply limb leads to patient so that pacing can be achieved through pacer pads.
- Signs of clinical deterioration
- Stable vs unstable patients
- Definition of unstable signs and symptoms
- First-degree atrioventricular block
- Second-degree type I atrioventricular block
- Second-degree type II atrioventricular block
- Third-degree (complete block)
- Junctional rhythms (slow)
- Idioventricular rhythm
- H's and T's
- Local protocol

Lesson 5
5B: Learning Station: Preventing Arrest: Bradycardia—Rotations

Instructor Tips

- This learning station is designed to allow 3 of the 6 students (adjust according to the number of students in your group) to be a Team Leader during this lesson and the other 3 to be a Team Leader in Lesson 6: Tachycardia.
- When students have to rotate roles during practice, provide enough space for rotation to allow for effective observation and monitoring of student performance.
- To ensure incorporation of knowledge into practice, make sure each student actually performs the skills of defibrillation, synchronized cardioversion, and transcutaneous pacing.

Students Practice: Student Rotations in Learning Station Cases According to Team Roles

- The Team Leader will direct the actions of the other team members. For example, the Team Leader will coach the Airway team member if the performance of bag-mask ventilation is not making the chest rise.
- Team members will perform interventions as directed by the Team Leader. This is an opportunity for students to practice skills and receive feedback from the Team Leader. Students will demonstrate effective team behaviors (eg, closed-loop communication, clear messages).
- For bradycardia, the Timer/Recorder will check off critical action boxes on the Bradycardia Learning Station Checklist.

Students Practice

- Select 3 cases for 3 students to manage individually in this station (Table 6 in the lesson plans).
- Students will run scenarios (individually) and perform debriefing for all 3 cases (case scenarios can be found in the Appendix of the instructor manual or in the Instructor Reference Material on Atlas).

Discussion

- Provide feedback on students' debriefing (Table 7 in the lesson plans).
  - Use the gather-analyze-summarize debriefing process described here.
  - What was challenging?
  - What worked well in this case?

Lesson 5
5C: Learning Station: Preventing Arrest: Bradycardia— Details for Case Rotations

Students Practice

Use Table 8 in the lesson plans to determine case rotations for this learning station.

Table 8. Timing and Tasks for Bradycardia Learning Station

Case rotations (3 rotations, up to 10 minutes each)	Directions for case rotations (Instructors must conduct the scenario in real time)
Start case scenario(s) (6 minutes)	• Review assigned team roles from the rotation chart for this case. • Ensure that students understand the expectations for their assigned roles (eg, "Your role is to use the bag-mask device to give ventilations that cause the chest to rise"). • Introduce the case by reading the case scenario. • Set the timer to 6 minutes. • Ask the Team Leader to begin managing the case. • Advise the Team Leader to observe and coach while being mindful of the case timing. • Students may use the Handbook of ECC, pocket cards, or crash cart cards. • Observe and coach – Effective team performance – Appropriate case management – High-quality skills performance, including high-quality CPR, when needed, throughout the scenario • Guide the Team Leader through management of the case. • Stop the case after 6 minutes.
Case debriefing (up to 4 minutes)	• Debrief for up to 4 minutes as needed (set timer if needed). • Conduct a debriefing at the end of the case (refer to Debriefing Tools in the instructor manual). • Ask the Team Leader to gather, analyze, and summarize the case, roles of team members, and areas for improvement. • Ask the Timer/Recorder to critique the case. • Give a summary of key concepts of the case: – Differentiating between signs and symptoms that are caused by the slow rate vs those that are unrelated – Correctly recognizing the presence and type of atrioventricular block – Using atropine as the drug intervention of first choice – Deciding when to start transcutaneous pacing – Deciding when to start epinephrine or dopamine to maintain heart rate and blood pressure – Knowing when to call for expert consultation about complicated rhythm interpretation, drugs, or management decisions

Repeat for each of the remaining cases.

Lesson 6
6A: Learning Station: Preventing Arrest: Tachycardia (Stable and Unstable)

60 minutes

Learning Objectives

- Recognize tachycardias that may result in cardiac arrest or complicate resuscitation outcome
- Perform early management of tachycardias that may result in cardiac arrest or complicate resuscitation outcome

Instructor Tips

- About a 60-minute lesson (30 minutes for viewing the optional algorithm video, answering questions, discussing tachycardias [including setting up synchronized shock]; up to 30 minutes for going through the 3 tachycardia cases [about 10 minutes each])
- Begin with the end in mind: knowing what you want to communicate, why it's important, and what you want to have happen as a result is critical to the success of your lesson.
- Emphasize the need for rapid treatment (ie, electrical therapy) in patients with unstable tachycardia.
- For in-hospital case scenarios only, students should request rapid response team/MET response.
- For tachycardia case scenarios, refer to the Appendix of the instructor manual.
- To ensure incorporation of knowledge into practice, make sure each student actually performs the skills for defibrillation, synchronized cardioversion, and transcutaneous pacing.

Optional (Depending on Agenda Chosen): Play Tachycardia Algorithm Video

- Address what students will learn from the video.
- Play the video.
- Answer students' questions.

Discussion

- Monitor/defibrillator technology review if needed
- Review tachycardias:
  - Stable vs unstable patient
  - Sinus tachycardia
  - Reentry supraventricular tachycardia
  - Atrial fibrillation
  - Atrial flutter
  - Junctional rhythms (fast)
  - Monomorphic ventricular tachycardia (with pulse)
  - Polymorphic ventricular tachycardia (with pulse)
  - Torsades de pointes
  - Wide-complex tachycardia of uncertain type
  - Discuss local protocol

Table 9. Student Rotations for Tachycardia Learning Station

Team role	Case 1 (Up to 10 minutes)	Case 2 (Up to 10 minutes)	Case 3 (Up to 10 minutes)
Team Leader	Student 3	Student 4	Student 5
Airway	Student 4	Student 5	Student 6
IV/IO/Medications	Student 5	Student 6	Student 1
Monitor/Defibrillator	Student 6	Student 1	Student 2
Compressor (if needed)	Student 1	Student 2	Student 3
Timer/Recorder	Student 2	Student 3	Student 4

Lesson 6
6B: Learning Station: Preventing Arrest: Tachycardia (Stable and Unstable)—Rotations

Instructor Tips

- This learning station is designed to allow 3 of the 6 students to be a Team Leader during this lesson and the other 3 to be a Team Leader in Lesson 5: Bradycardia.
- Other assigned student roles may vary depending on the number of students at the station.
- Cases may be run in a different order, but assigned student roles should not be changed.
- If students rotate roles during practice, provide enough space for rotation to allow for effective observation and monitoring of student performance.

Students Practice: Student Rotations in Learning Station Cases According to Resuscitation Team Roles

- The Team Leader will direct the actions of the other team members. For example, the Team Leader will coach the Airway team member if performance of bag-mask ventilation is not making the chest rise.
- Team members will perform interventions as directed by the Team Leader. This is an opportunity for students to practice skills and receive feedback from the Team Leader. Students will demonstrate effective team behaviors (eg, closed-loop communication, clear messages).
- The Timer/Recorder will check off critical action boxes on the Tachyarrhythmia Learning Station Checklist.

Students Practice

- Select 3 cases for 3 students to manage individually in this station (Table 9 in the lesson plans).
- Run the scenario and perform the debriefing for all 3 cases (case scenarios can be found in the Appendix of the instructor manual or in the Instructor Reference Material on Atlas).

Discussion

- Provide feedback on the students' debriefing.
  - What was challenging?
  - What worked well in this case?

Lesson 6
6C: Learning Station: Preventing Arrest: Tachycardia (Stable and Unstable)—Details for Case Rotations

Students Practice

Use Table 10 in the lesson plans to determine case rotations for this learning station.

Table 10. Timing and Tasks for Tachycardia Learning Station

Case rotations (3 rotations, up to 10 minutes each)	Directions for case rotations (Instructors must conduct the scenario in real time)
Start case scenario (6 minutes)	• Review assigned team roles from the rotation chart for this case. – Ensure that students understand the expectations for their assigned roles (eg, "Your role is to use the bag-mask device to give ventilations that cause the chest to rise"). • Introduce the case by reading the case scenario. • Set the timer to 6 minutes. • Ask the Team Leader to begin managing the case. • Students may use the Handbook of ECC, pocket cards, or crash cart cards. • Observe and coach: – Effective team performance – Appropriate case management – High-quality skills performance – Guide the Team Leader through management of the case • Stop the case after 6 minutes.
Case debriefing (Up to 4 minutes)	• Up to 4 minutes as needed (set timer if needed) • Conduct a debriefing at the end of the case. – Refer to Debriefing Tools in the instructor manual. • Ask the Team Leader to summarize the case, the roles of team members, and areas for improvement. • Ask the Timer/Recorder to critique the case. • Give a summary of key concepts of the case. – Begin with the end in mind: knowing what you want to communicate, why it's important, and what you want to have happen as a result is critical to the success of your lesson. – Discuss differentiating between signs and symptoms that are caused by a rapid rate vs those that are unrelated. – Emphasize the need for rapid treatment (ie, electrical therapy) in patients with unstable tachycardia. – For in-hospital case scenarios only, students should request rapid response team/MET response. – Discuss defibrillation, synchronized cardioversion, and transcutaneous pacing.

Repeat for each of the remaining cases (Stable and Unstable Tachycardia).

Lesson 7
High-Performance Teams

30 minutes

Learning Objectives

- Model effective communication as a member or leader of a high-performance team
- Recognize the impact of team dynamics on overall team performance

Instructor Tips

- Clearly communicate the objectives of this lesson to help the students gain a better understanding of the lesson.
- This team dynamics section is a great way to further engage the students.
- Change the inflection in your voice and also change your pace to help change the energy level in the room.

Play High-Performance Teams Video (In-Hospital, Out-of-Hospital, or Both)

- Ask students to open the provider manual to Part 3: High-Performance Teams.
- Address what students will learn from the video.
- Play the video.

Discussion

- Ask students what questions they have about high-performance teams:
  - What behaviors did they observe?
  - Discuss timing and measurement in relationship to impact on survival.
  - Discuss the H's and T's that can help the health care professionals to arrive at a diagnosis in this case.

Review/Summarize Key Points

- The better you work as a team (timing, quality, coordination, and administration), the better the potential outcome for your patient.
- Emphasize the importance of understanding the choreography of a resuscitation attempt as a team and the impact on timing.
- Remind students that they will be functioning as Team Leaders and as different members in the learning and testing stations and will need to apply these concepts.

Optional (Depending on Agenda Chosen): Play Cardiac Arrest Algorithm Video and Post–Cardiac Arrest Algorithm Video

- Address what students will learn from the video.
- Play the video.
- Answer students' questions.

Discussion

- Monitor/defibrillator technology review if needed
- Review team roles, responsibilities, and assignments for each case (refer to Lesson Plans 8B and 8C).
  - Case scenarios can be found in the Appendix of the instructor manual or in the Instructor Reference Material on Atlas.
- Students may use the Handbook of ECC, pocket reference cards, posters, or crash cart cards.
- To show the continuum of care, all VF case scenarios must achieve ROSC.
- Four cases will be VF/pVT resulting in ROSC (post–cardiac arrest care).
- Two cases will be split between PEA and asystole.
- Ask students to recall the post–cardiac arrest care priorities:
  - Maximize oxygenation and ventilation.
  - Maximize hemodynamics.
  - Obtain a 12-lead ECG; move to the cath lab if ST-segment elevation myocardial infarction (STEMI) is present.
  - Initiate temperature control.
- For post–cardiac arrest care, ensure that students address
  - Oxygenation and ventilation
  - Hemodynamic optimization (blood pressure, 12-lead, glycemic control)
  - Temperature control
  - Criteria for percutaneous coronary intervention
- Advise that students will perform debriefing.
  - Refer to Debriefing Tools in the instructor manual.
- Select cases for each student to demonstrate appropriate management.
- Identify and discuss local protocols as needed.
- Highlight effective patient management through the Adult Post–Cardiac Arrest Care Algorithm.

Lesson 8
8A: Learning Station: High-Performance Teams: Cardiac Arrest and Post–Cardiac Arrest Care

160 minutes

Learning Objectives

- Model effective communication as a member or leader of a high-performance team
- Recognize the impact of team dynamics on overall team performance
- Recognize cardiac arrest
- Perform optimized management of cardiac arrest until termination of resuscitation or transfer of care, including post–cardiac arrest care
- Evaluate resuscitative efforts during a cardiac arrest through continuous assessment of CPR quality, monitoring the patient's response, and delivering real-time feedback to the team

Instructor Tips

- If you have fewer than 6 students, you can assign multiple roles to individual students.
- Encourage students to use their provider manual, pocket reference cards, or Handbook of ECC early on during the cases but to become less reliant on those resources as the cases progress.
- For cardiac arrest and post–cardiac arrest care case scenarios, refer to the Appendix of the instructor manual.
- The instructor should have working knowledge of all vasopressors associated with the students' workplace.
- **Conduct prebriefing before starting the case.**
- The team should discuss the plan for managing each case including objective timing goals.
- Conduct learning station **cases in real time**.
- Be sure to use all equipment necessary to facilitate scenarios as realistically as possible and to allow students to be familiar with using the equipment. In addition, use a realistic setting for your students if possible.
- Monitor rate and depth of chest compressions along with CCF **by using an audiovisual feedback device with real-time feedback.** In addition, monitor chest recoil if possible and ventilations.
- Monitor ventilation in real time by using a timing device or an audiovisual feedback device.
- **CCF should be measured and discussed in debriefing.**
- When debriefing students:
  - Ask open-ended questions to engage group discussion and allow for greater details.
  - Discuss prebriefing goals (eg, CCF 82%,) vs actual results, with reflection on how students can perform better for the next case.
  - When answering a question, acknowledge the individual with eye contact, and then answer to the entire room, coming back to the questioner periodically.

Table 11. Student Rotations for Cardiac Arrest and Post–Cardiac Arrest Care Learning Station

Team role	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Team Leader	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6
Airway	Student 2	Student 3	Student 4	Student 5	Student 6	Student 1
IV/IO/Medications	Student 3	Student 4	Student 5	Student 6	Student 1	Student 2
Monitor/ Defibrillator/ CPR Coach	Student 4	Student 5	Student 6	Student 1	Student 2	Student 3
Compressor	Student 5	Student 6	Student 1	Student 2	Student 3	Student 4
Timer/Recorder	Student 6	Student 1	Student 2	Student 3	Student 4	Student 5

Table 12. Structured and Supported Debriefing Process for Cardiac Arrest and Post–Cardiac Arrest Care Learning Station

Phase	Goal	Actions
Gather	Ask what happened during the case, to develop a shared mental model of the events. Listen to students to understand what they think and how they feel about the simulation.	• Request a narrative from the Team Leader. • Request clarifying or supplementary information from the high-performance team.
Analyze	Facilitate students' reflection on and analysis of their actions.	• Review an accurate record of events. • Report observations (both correct and incorrect steps). • Assist students in thoroughly reflecting on and examining performance during the simulation as well as in reflecting on their perceptions during the debriefing. • Direct and/or redirect students during the debriefing to ensure continuous focus on session objectives.
Summarize	Facilitate identification and review of the lessons learned that can be taken into actual practice.	• Summarize comments or statements from students. • Have students identify positive aspects of their high-performance team or individual behaviors. • Have students identify areas of their high-performance team or individual behaviors that require change or correction.

Lesson 8
8B: Learning Station: High-Performance Teams: Cardiac Arrest and Post–Cardiac Arrest Care—Rotations

Instructor Tips

It is important that all students have a role in each case.

- Student role assignments may vary depending on the number of students at the station. However, every student must function as the Team Leader for 1 case.
- Cases may be run in a different order, but ensure that no single student always goes first in subsequent learning stations.
- Any additional students may be given roles as additional recorders.

Students Practice: Student Rotations in Learning Station Cases According to Resuscitation Team Roles

- The Team Leader will direct the actions of the other team members. For example, the Team Leader will coach the Airway team member if performance of bag-mask ventilation is not making the chest rise.
- Team members will perform interventions as directed by the Team Leader. This is an opportunity for students to practice skills and receive feedback from the Team Leader. Students will demonstrate effective team behaviors (eg, closed-loop communication, clear messages).
- The Timer/Recorder will use a phone or a stopwatch to time 2-minute intervals for case management, announce each 2-minute interval for switching roles, and record critical action times on the ACLS Code Timer/Recorder Sheet (in the Appendix of the instructor manual or in the Instructor Reference Material on Atlas) or on a whiteboard.

Students Practice

- Select the cases for the students to manage individually in this station (Table 11 in the lesson plans).
- Run the scenario and perform the debriefing for all cases (case scenarios can be found in the Appendix of the instructor manual or in the Instructor Reference Material on Atlas).

Discussion

- Provide feedback on the students' debriefing (Table 12 in the lesson plans):
  - What was challenging?
  - What worked well in this case?

Lesson 8
8C: Learning Station: High-Performance Teams: Cardiac Arrest and Post–Cardiac Arrest Care—Details for Case Rotations

Students Practice

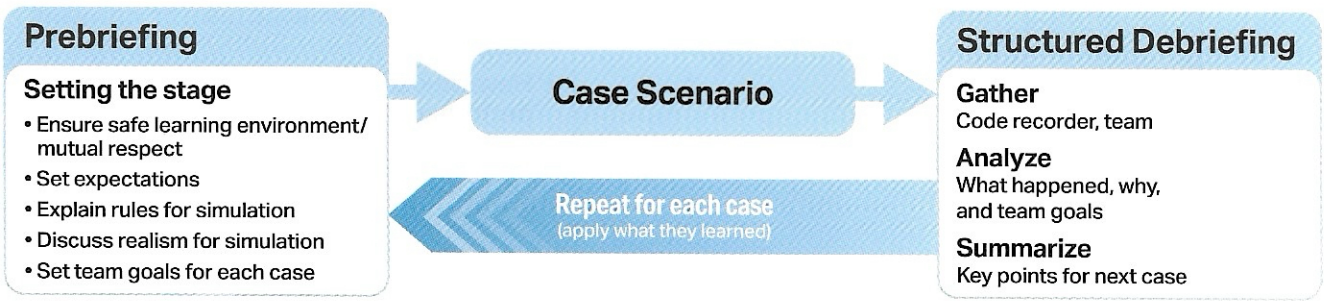
Use Table 13 in the lesson plans to determine case rotations for this learning station.

Table 13. Timing and Tasks for Cardiac Arrest and Post–Cardiac Arrest Care Learning Station

Case rotation (6 rotations, up to 25 minutes each)	Directions for case rotations (Instructors must conduct the scenario in real time)
Case prebriefing (Figure 3 in the lesson plans) (up to 5 minutes)	• Prebrief for up to 5 minutes as needed (set timer if needed). • Set case plan and goals including objective timing goals.
Start case scenario (10 minutes)	• Review assigned team roles from the rotation chart for this case. – Ensure that students understand the expectations for their assigned roles (eg, "Your role is to use the bag-mask device to give ventilations that cause the chest to rise"). • Introduce the case by reading the case scenario. • Set the timer to 10 minutes if needed. • Ask the Team Leader to begin managing the case. • Observe and coach – Effective team performance – Appropriate case management – High-quality skills performance, including high-quality CPR in real time throughout the scenario with real time audiovisual feedback on CPR quality • Guide the Team Leader through management of the case. • Stop the case after 10 minutes.
Case debriefing (up to 10 minutes)	• Debrief for up to 10 minutes as needed (set timer if needed). • Conduct a team debriefing at the end of the case. – Refer to Debriefing Tools in the instructor manual.

Repeat for each of the remaining 5 cases.

Figure 3. Prebriefing and structured debriefing tasks: a flow chart.



Lesson 9
9A: Learning Station: High-Performance Teams: Megacode Practice

175 minutes

Instructor Tips

- **Conduct learning station cases in real time (do not skip through the case).**
- For Megacode practice case scenarios, refer to the Appendix of the instructor manual.
- Each scenario should last 10 minutes, with prebriefing lasting up to 5 minutes as needed, and debriefing should last for up to 10 minutes as needed.
- Learning can be achieved just as effectively during structured debriefing as during the scenario.

Discussion

- Highlight effective patient management through several algorithms.
- **Demonstrate a Megacode case as a Team Leader and then assign a case to each student in that station.**
- Review team roles, responsibilities, and assignments for each case (refer to Lesson Plans 9C and 9D).
  - Case scenarios can be found in the Appendix of the instructor manual.
- Present a Megacode practice case for each student or team to manage (refer to Lesson Plan 9C).
- Students may use the Handbook of ECC, pocket reference cards, or crash cart cards.
- Conduct prebriefing before starting the case.
  - Teams should discuss the plan for managing each case including objective timing goals.
- If possible, use real equipment in a realistic setting for your students.
- Monitor the rate and depth of chest compressions along with CCF by using an audiovisual feedback device with real time feedback. In addition, monitor chest recoil if possible and ventilations.

Lesson 9
9B: Learning/Testing Station: High-Performance Teams: Megacode Practice—Instructor Demo

Instructor Tips

When debriefing students:

- Ask your audience open-ended questions that focus on their perspectives to engage their minds and increase energy focus.
- When answering a question, acknowledge the individual with eye contact, and then answer to the entire room, coming back to the questioner periodically.

Students Practice

Use Table 14 in the lesson plans to determine timing and tasks for this learning station.

Table 14. Timing and Tasks for Instructor Case Scenario Demonstration

Demonstrate a case scenario with you as Team Leader and students playing team roles	
Case prebriefing (up to 5 minutes)	• Prebrief for up to 5 minutes as needed (set timer if needed). • Set case plan and goals, including objective timing goals.
Start demonstration of a case scenario (10 minutes)	• Introduce the case. • Assign a Team Leader. • Assign team member roles to students. • Set the timer to 10 minutes (if needed). • Begin the case. • Students should demonstrate case management, showing – Effective team performance – Appropriate application of algorithm – High-quality skills performance, including high-quality CPR in real time throughout the scenario • Stop the case after 10 minutes.
Case debriefing (up to 10 minutes) Total time for case demonstration: up to 25 minutes	• Debrief for up to 10 minutes as needed (set timer if needed). • Go over the Megacode Practice Learning Station Checklist. • Discuss prebriefing goals vs actual results. • Discuss applying learning to the next case. • Summarize the case, emphasizing proper roles of Team Leader and team members.

Lesson 9
9C: Learning Station: High-Performance Teams: Megacode Practice—Practice Cases

Instructor Tips

- Make sure students understand their roles and responsibilities in managing a Megacode case.
- This is the last opportunity to facilitate learning before the Megacode Testing. Use this time to address critical areas where students may still be weak.

Students Practice

- Present Megacode practice cases for each student, one at a time, up to 25 minutes each (including up to 5 minutes for prebriefing as needed, the 10-minute case, and up to a 10-minute debriefing as needed).
- Determine the Team Leader for the first case (refer to rotations on the next lesson plan).
- The Team Leader organizes other students into team roles.
- Perform case prebriefing: set goals for the case, including objective timing goals.
- Provide the team with an individual case.
- Students may use the Handbook of ECC, pocket reference cards, or emergency crash cart cards.
- The Team Leader assigns and directs the team through the entire Megacode case.
- Rotate through all students practicing as Team Leader for the remaining 5 cases, depending on the number of students.
- The Timer/Recorder announces 2-minute intervals and checks off critical actions on the Megacode Testing Checklist.
- Give feedback and answer questions.
- Perform structured debriefing and have students apply learning to the next case.

Lesson 9
9D: Learning Station: High-Performance Teams: Megacode Practice—Rotations

Instructor Tips

- Cases may be run in a different order, but assigned Team Leader roles should not be changed.
- **Each student must have the opportunity to run a complete Megacode case as a Team Leader.**
- When students rotate roles during practice, designate specific areas in the room that provide ample space for practice and enable the instructor to observe and monitor performance effectively.

Students Practice

Use Table 15 in the lesson plans to determine case rotations for this learning station.

Table 15. Student Rotations for High-Performance Teams Learning Station

Team role	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Team Leader	Student 2	Student 3	Student 4	Student 5	Student 6	Student 1
Airway	Team Leader assigns other students to each team role.					
IV/IO/Medications						
Monitor/Defibrillator/ CPR Coach						
Compressor						
Timer/Recorder						

High-Performance Teams: Megacode Testing and Megacode Testing Details 12 to 75 minutes

Megacode Testing Stations

- Provide a Megacode case scenario.
- Use the Megacode Testing Checklist to test the team until they pass.
- You must conduct the scenario in real time and measure CCF.
- Monitor CPR quality with audiovisual feedback device(s) with real-time feedback.
- Students may use the Handbook of ECC, pocket reference cards, or emergency crash carts, with restrictions (refer to the instructor manual).
- The Timer/Recorder announces 2-minute intervals.
- Take no longer than 12 minutes to test and give students feedback on their performance (pass or fail).
- Do not give hints or provide coaching during the test.
- Refer students for remediation as needed.

Megacode Test Rotations

Use Table 16 in the lesson plans to determine case rotations for this test, if needed.

Table 16. Student Rotations for High-Performance Teams Testing

Team role	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Team Leader	Student 5	Student 6	Student 1	Student 2	Student 3	Student 4
Airway	Team Leader assigns other students to each team role.					
IV/IO/Medications						
Monitor/ Defibrillator/CPR Coach						
Compressor						
Timer/Recorder						

Testing Details and Testing Station Setups

Instructor Tips

- Organize students into 2 groups of 6 for the Megacode Testing Stations, depending on the number of students and instructors in the class.
- In this station, the focus changes from facilitating learning to evaluating student performance. Students must perform the test from beginning to end. Do not interrupt students while they are completing the test. Address any deficiencies during remediation.
- **Conduct testing station cases in real time.**

Megacode Testing Stations and Exam (Open-Resource Exam)

- Explain the testing rotation for the Megacode Test and exam.
- Remind students that the passing grade for the open-resource exam is 84%.

Recommended Testing Station Setup

- 2 Megacode stations, 2 instructors, 6 students each (consider 2 instructors per station to optimize student assessment)
- Other testing setups are permissible as long as
  - The open-resource exam is proctored and secure
  - The open-resource exam is not interrupted to move a student to the Megacode Test

Testing Details and Testing Station Setups

Instructor Tips

- Organize students into 2 groups of 6 for the Megacode Testing Stations, depending on the number of students and instructors in the class.
- In this station, the focus changes from facilitating learning to evaluating student performance. Students must perform the test from beginning to end. Do not interrupt students while they are completing the test. Address any deficiencies during remediation.
- **Conduct testing station cases in real time.**

Megacode Testing Stations and Exam (Open-Resource Exam)

- Explain the testing rotation for the Megacode Test and exam.
- Remind students that the passing grade for the open-resource exam is 84%.

Recommended Testing Station Setup

- 2 Megacode stations, 2 instructors, 6 students each (consider 2 instructors per station to optimize student assessment)
- Other testing setups are permissible as long as
  - The open-resource exam is proctored and secure
  - The open-resource exam is not interrupted to move a student to the Megacode Test

Exam and Exam Details

45 minutes

Exam

Exams are administered online. Refer to the *Program Administration Manual* on **atlas.heart.org** for more information about delivering exams.

Exam Details

- The exam is an open-resource exam.
  - Resources could include the provider manual, either in printed form or as an eBook on a personal device, any notes the student took during class, the Handbook of ECC, the latest *AHA Guidelines for CPR and ECC*, posters, etc. *Open resource* does not mean open discussion with other students or the instructor.
- Students may not talk to each other during the exam.
- Answer any questions.
- Students who scored less than 84% need immediate remediation.
  - Make sure the student understands the errors and corrects the answers.
  - Give a second test.
- Do not interrupt the exam to have a student go to the Megacode Testing Station.

Remediation (REM)

Instructor Tip

- For Megacode retesting, at least 3 students are needed to conduct the test.

Exam

The following information applies primarily to online exams and does not apply to HeartCode students:

- Review course material for each student who needs remediation.
- Retest students as necessary.
- Give feedback.
- Evaluate competency.