

# **Course Description and Outline**

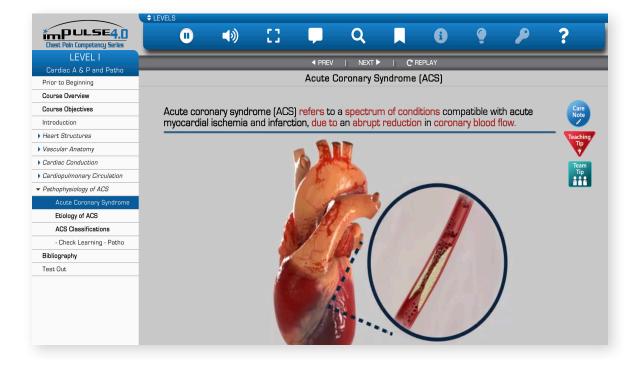
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Level I of imPULSE 4.0 brings cardiac anatomy and physiology to life with a clear, concentrated review of basic heart structures, vascular anatomy, and heart function. Knowledge of cardiac conduction and intrinsic pacemakers, along with cardiopulmonary and systemic circulation, are key elements required to understand the impact of circulatory issues and conduction abnormalities. Pathophysiology and etiologies of acute coronary syndrome are presented to prepare the healthcare team to differentiate clinical chest pain presentation into the three ACS classifications. Engaging visuals, dynamic quizzing, and interactivity throughout promote learning and retention!

## **Course Objectives**

- 1. Identify the heart's anatomical structures and their functions.
- 2. Examine the cardiac conduction system from automaticity to impulse transmission through the conduction pathway.
- 3. Recall the pathophysiology and classification of ACS.

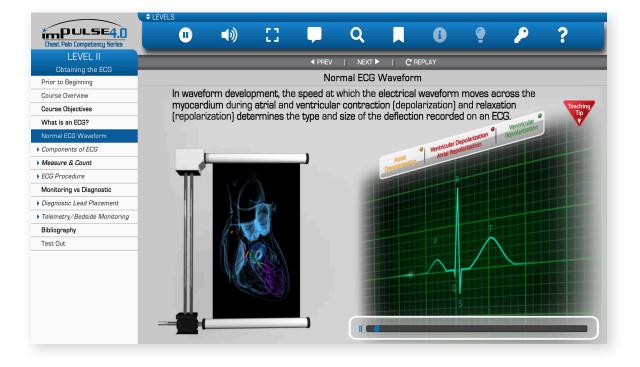




Level II of imPULSE 4.0 examines components of the electrocardiogram beginning with paper basics of time and voltage, how-to-measure waveforms, and methods for counting heart rate. Anatomical landmarks are illustrated with specific steps for proper diagnostic 12-lead and telemetry/bedside lead placement. Assess your basic ECG and lead placement progress with interactive activity quizzes throughout.

## **Course Objectives**

- 1. Recall basic ECG components, measurements, and counting methods.
- 2. Explain the procedure for obtaining an accurate ECG.
- 3. Differentiate between diagnostic (12 lead) and bedside (telemetry) ECG options.

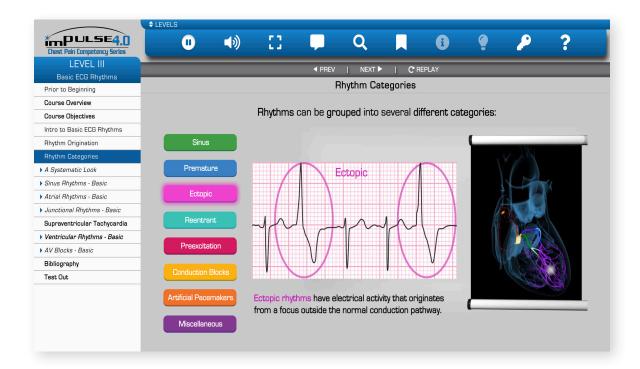




Level III of imPULSE 4.0 introduces basic cardiac rhythms by providing foundational knowledge of rhythm origination and rhythm categories as distinguished by electrical influence, cardiac rate, rhythm, and waveform characteristics. You will learn how to systematically look at each rhythm component to carefully and quickly identify basic normal and abnormal rhythms. These need-to-know rhythms are presented in groups by origination, are followed by a rhythm review, and ECG drag-n-drop quizzes to promote competency in rhythm interpretation.

## **Course Objectives**

- 1. Identify basic cardiac rhythms based on origination, rate, rhythm, and appearance of waveform components.
- 2. Systematically examine each component of the ECG rhythm strip.
- 3. Analyze basic rhythm strips to determine normal and abnormal rhythms.

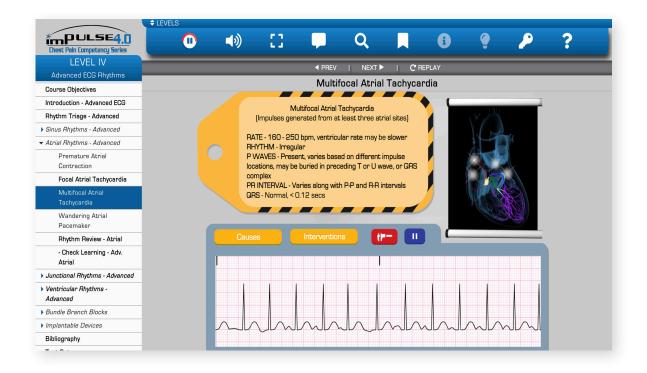




Level IV of imPULSE 4.0 focuses on more advanced, less common, or complex ECG rhythms. Triaged as non-problematic, should be cautiously watched, or as volatile and potentially lethal, these categories help alert to the need for close monitoring. Rhythms are presented in groups by origination and we examine distinguishing waveform characteristics which identify specific abnormalities. Cardiac devices including various pacemaker types and pacing modes and implantable cardioverter defibrillators (ICD) are discussed in a clear, simple manner along with indications, malfunctions, interventions, and associated rhythm strips. Rhythm reviews and frequent interactive rhythm-recognition check learning activities are provided to reinforce knowledge and competence.

## **Course Objectives**

- 1. Identify advanced cardiac rhythms based on origination, rate, rhythm, and waveform characteristics.
- 2. Distinguish specific rhythm components that relate to complex cardiac arrhythmias.
- 3. Recall implantable devices and their indications, functions, and malfunctions.

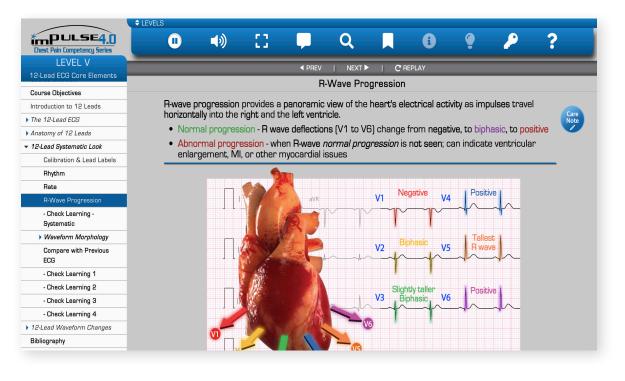




Level V of imPULSE 4.0 builds on basic information needed to view and understand diagnostic ECGs. We will correlate cardiac regions and coronary vessels to 12-lead layout so the origins of waveform abnormalities can be accurately identified. Precordial and contiguous leads, vectors, normal R-wave progression, and limb lead reversal issues are explored to provide meaningful insight into abnormal changes on the ECG. A systematic methodology is given to consistently analyze all components of the 12 lead, focusing on rate, rhythm, abnormal R-wave progression and waveform morphology. Zoom in to recognize relevant ECG changes associated with myocardial ischemia and injury (STEMI, NSTE-ACS), particularly ST-segment elevation, ST-segment depression, and T-wave inversion. Engaging check learning quizzes throughout this course will help to clarify and reinforce the complexities of 12-lead ECGs.

## **Course Objectives**

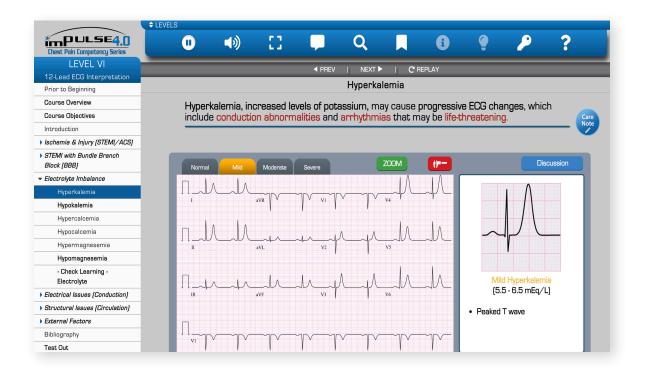
- 1. Summarize foundational information of the 12-lead ECG including indications, standard layout, and waveform deflections related to electrical impulse transmission.
- 2. Discuss 12-lead ECG regions and correlation to coronary vessels, contiguous leads, and R-wave progression.
- 3. Apply a systemic approach and analyze waveform morphology to accurately interpret a diagnostic ECG.



Level VI of imPULSE 4.0 applies foundational information in viewing and interpreting specific waveform changes seen on the 12-lead ECG as a result of clinical conditions. Changes associated with new or previous ST-elevation myocardial infarction (STEMI), acute coronary syndrome (ACS) and bundle branch block (BBB) are clearly discussed and colorfully illustrated. Abnormal 12-lead ECGs with key information are examined for conditions resulting from electrical and structural issues, and other external factors. Various check learning quizzes help to reinforce 12-lead analysis with the use of interactive zoom and caliper tools.

## **Course Objectives**

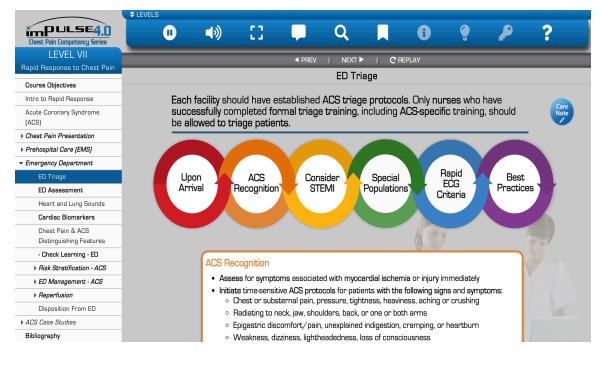
- 1. Evaluate ST segment, T wave, and Q wave changes in relation to ischemia and injury and differentiate STEMI with left and right BBB.
- 2. Identify abnormal ECG waveforms and key clinical observations for clinical conditions related to electrolyte imbalances, conduction, or circulation issues.
- 3. Differentiate various physical conditions or injuries and specific findings that affect heart physiology and ECG waveform patterns.



Level VII of imPULSE 4.0 follows established standard-of-care pathways to meet time goals for ACS patients, from prehospital recognition through emergency department management and disposition. The initial focus is on rapid recognition of cardiac and noncardiac presentations, prehospital assessment, interventions, and destination protocols. Best-practices for ACS emphasize the importance of triage and diagnostic protocols, risk stratification, differential diagnosis, acute management, and reperfusion strategies. Treatment pathways for management of ST-elevated myocardial infarction (STEMI), non-ST-elevated acute coronary syndrome (NSTE-ACS), and stable ischemic heart disease (SIHD) provide guidance for expert care to achieve optimal patient outcomes. Interactive check learning activities engage learners and reinforce presented information. This course concludes with ACS case studies to assess your ability to recognize STEMI, NSTE-ACS, and unstable angina.

## **Course Objectives**

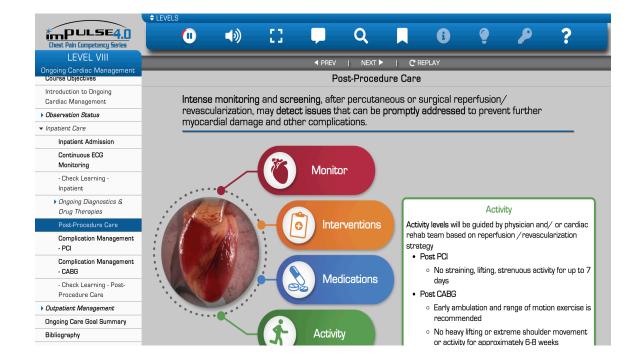
- 1. Recognize unique chest pain presentations and differentiate between cardiac and noncardiac.
- 2. Apply best-practice guidelines for assessment and initial management of chest pain and ACS in the prehospital and emergency department settings.
- 3. Describe ED assessments, diagnostics, treatment strategies, and established time goals for optimal outcomes in chest pain and ACS care.



Level VIII of imPULSE 4.0 addresses ongoing care needs of the chest pain patient in the observation, inpatient, and outpatient settings. Guideline-based strategies are provided to identify an appropriate chest pain or ACS treatment plan in observation status. Ongoing management for the inpatient focuses on post-revascularization care, guideline directed drug therapies, and interventions to reduce complications and prevent recurrent ischemia. Specific cardiac care for patients managed in the outpatient setting or via telemedicine is discussed. Check learning activities throughout will reinforce relevant information.

## **Course Objectives**

- 1. Define criteria and cardiac care strategies for observation, inpatient, and outpatient chest pain and ACS patients.
- 2. Discuss diagnostic testing, cardiac imaging, and technology used to provide ongoing cardiac monitoring and care.
- 3. Differentiate interventions and complication management for post-reperfusion / revascularization care and guideline-directed drug therapies used to treat myocardial ischemia or injury.

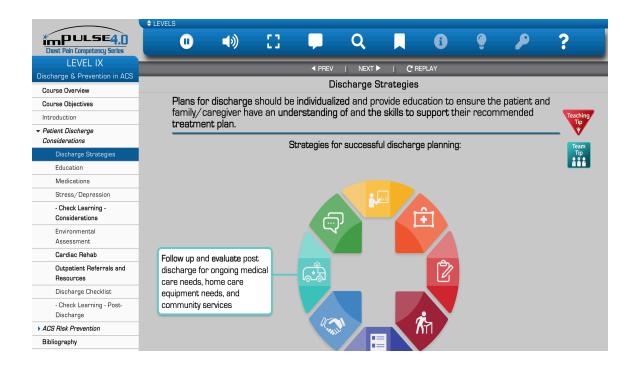




Level IX of imPULSE 4.0 provides important discharge and risk prevention information which allows the healthcare team to formulate a successful, individualized patient discharge plan. Physical needs for rehabilitation and dietary changes, medication adjustments, psychosocial challenges, referrals and many other needs are considered. Guideline-based ACS risk prevention recommendations promote awareness and wellness. This education helps the team prepare ACS patients and caregivers for discharge with an overall goal of preventing recurrence, reducing readmissions, and improving outcomes.

## **Course Goals**

- 1. Identify discharge considerations to support successful transitioning of patients to post-acute care.
- 2. Evaluate strategies to address challenges and barriers to patient and caregiver education.
- 3. Recall guideline-based ACS risk prevention recommendations based on atherosclerotic cardiovascular disease (ASCVD) and other specific risk factors.





Level X of imPULSE 4.0 focuses on the healthcare teams and practices required to provide ACS care excellence and achieve or maintain a chest pain or heart attack center designation. An overview of collaborative practice by the multidisciplinary team, emphasizes key roles, characteristics, and responsibilities. For appropriate STEMI care coordination within a regional system of care, specific capabilities of each chest pain or heart attack center are clearly outlined. Data-driven quality improvement techniques are provided to assist facilities in meeting quality care objectives to reduce care delays, improve organizational performance, and successfully meet certification and accreditation requirements.

## **Course Goals**

- 1. Identify ACS program best practices, ACS program team member roles, characteristics, and responsibilities.
- 2. Illustrate the capabilities of various chest pain and heart attack center designations and the advantages of alignment with regional ACS systems of care.
- 3. Outline useful strategies for reducing care delays and improving performance related to quality measures.

|   | ♦ LEVELS   |  |  |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|--|--|--|
|   | 🕕 🕕 🔝 📮 🔍 📕 🚯 🥊 🔑 ?  |  |  |  |  |  |  |  |  |  |
| LEVEL X   |  |  |  |  |  |  |  |  |  |  |
| Excellence in ACS Care                                    | ✓ PREV   NEXT ►   C REPLAY   |  |  |  |  |  |  |  |  |  |
| Prior to Beginning  | ACS Best Practice Care   |  |  |  |  |  |  |  |  |  |
| Course Overview   | Time is a driving factor in successfully managing chest pain and ACS patients.   |  |  |  |  |  |  |  |  |  |
| Course Objectives   | Standardizing processes, reducing barriers to emergency care, and providing      |  |  |  |  |  |  |  |  |  |
| Intro to Excellence                                       | timely treatment at an appropriate chest pain or heart attack center is critical |  |  |  |  |  |  |  |  |  |
| ✓ Collaborative Practice                                  | to improved patient outcomes.  |  |  |  |  |  |  |  |  |  |
| ACS Team  | EMS<br>Prenotification   |  |  |  |  |  |  |  |  |  |
| Interprofessional<br>Collaboration                        |  |  |  |  |  |  |  |  |  |  |
| ACS Best Practice Care                                    | - 3 (-3) Standardized ED Care  |  |  |  |  |  |  |  |  |  |
| Rapid Response Teamwork                                   |  |  |  |  |  |  |  |  |  |  |
| Team Characteristics                                      |  |  |  |  |  |  |  |  |  |  |
| - Check Learning  | ACS Team ACS Team  |  |  |  |  |  |  |  |  |  |
| STEMI Systems of Care                                     |  |  |  |  |  |  |  |  |  |  |
| Community Education                                       | Direct to  |  |  |  |  |  |  |  |  |  |
| - Check Learning  | 5 Cath Lab   |  |  |  |  |  |  |  |  |  |
| CP & Heart Attack Center<br>Certifications/Accreditations |  |  |  |  |  |  |  |  |  |  |
| Quality of Care   | Primary PCI C  |  |  |  |  |  |  |  |  |  |
| Bibliography  |  |  |  |  |  |  |  |  |  |  |
| Test Out  | Performance  |  |  |  |  |  |  |  |  |  |

## Level XI – Early Heart Attack Care (EHAC) for Support Staff

### **Course Description**

Level XI of imPULSE 4.0 (EHAC course) seeks to educate non-clinical, support staff and the community to recognize the early signs and symptoms which warn of a heart attack and the importance of seeking immediate medical care. Basic information regarding barriers to seeking medical care and tips to overcome resistance are discussed. Risk factors and prevention strategies are presented. Engaging visuals, interactivity, and dynamic quizzing throughout makes learning fun!

### **Course Goals**

- 1. State causes and risk factors of heart attacks and actions to prevent.
- 2. Recognize signs and symptoms of a heart attack and the importance of early heart attack care.
- 3. Explain actions to take in responding to heart attack symptoms and barriers to seeking medical care immediately.

|                              | ♦ LEVELS |   |        |                   |                   |                           |                 |                 |         |   |   |
|------------------------------|----------|---|--------|-------------------|-------------------|---------------------------|-----------------|-----------------|---------|---|---|
| Chest Pain Competency Series |          | • |        | - 11              |                   | Q                         |                 | i               | (       | 2 |   |
| LEVEL IX                     |          |   | _      |                   |                   | NEXT ►                    | C" REPLAY       |                 | _       |   | _ |
| Early Heart Attack Care      |          |   | _      | _                 |                   |                           | _               | _               | _       | _ |   |
| Prior to Beginning           |          |   |        |                   | VV                | hat is EHAC?              | <i>?</i>        |                 |         |   |   |
| Course Goals                 |          |   |        |                   |                   |                           |                 |                 |         |   |   |
| What is EHAC?                |          |   |        |                   |                   | hat is EHAC               |                 |                 |         |   |   |
| Importance of EHAC           |          |   |        |                   | Early F           | eart <mark>A</mark> ttack | Care            |                 |         |   |   |
| Heart Attack                 |          |   |        | 02 64 22 64 20    |                   |                           |                 | Emergel         | sey     |   |   |
| Risk Factors                 |          |   |        |                   |                   |                           |                 | -5.             |         |   |   |
| Recognize Heart Attack       |          |   | (1     |                   |                   | 0                         | 0               |                 |         |   |   |
| Bystander Response           |          |   |        |                   |                   |                           |                 |                 |         | _ |   |
| Questions to Ask             |          |   | A FH   | 4ΔC is a public a | wareness cam      | naion intended (          | to educate the  | public about th | e early |   |   |
| Let's Review                 |          |   | wa     | arning signs and  | symptoms of       | an impending he           | eart attack.    |                 | o ourry |   |   |
| Listen to Your Heart         |          |   |        |                   |                   |                           |                 |                 |         |   |   |
| EHAC Goal                    |          |   | 🛛 🐼 Ea | irly treatment c  | an prevent a de   | ath or damage             | to the heart.   |                 |         |   |   |
| Educate                      |          |   | •      |                   |                   |                           |                 |                 |         |   |   |
| Founder - Dr. Bahr           |          |   | 🔥 Th   | iis is an educati | onal site, but if | <i>i</i> ou are having a  | ny chest pain : | symptoms, plea  | se call |   |   |
| Test Out                     |          |   | 91     | 11 immediately.   |                   |                           |                 | -)              |         |   |   |
|                              |          |   |        |                   |                   |                           |                 |                 |         |   |   |
| Apex Innovations             |          |   |        |                   |                   |                           |                 |                 |         |   |   |



## **Continuing Education Information**

|      | Levels                        | Testing<br>Min. | CNE   | CME   | CPE   | CEH   | FL CEH |
|------|-------------------------------|-----------------|-------|-------|-------|-------|--------|
| I    | Cardiac A& P and Patho        | 45              | 2.50  | 2.50  | 2.50  | 2.00  | 2.50   |
| П    | Obtaining the ECG             | 45              | 2.50  | 2.50  |       | 2.00  | 2.50   |
| III  | Basic ECG Rhythms             | 60              | 3.50  | 3.50  |       | 3.50  | 3.50   |
| IV   | Advanced ECG Rhythms          | 60              | 3.50  | 3.50  |       | 3.00  | 3.50   |
| V    | 12-Lead ECG Core Elements     | 60              | 4.00  | 4.00  |       | 3.50  | 4.00   |
| VI   | 12-Lead ECG Interpretation    | 60              | 4.00  | 4.00  |       | 4.00  | 4.00   |
| VII  | Rapid Response to Chest Pain  | 45              | 4.00  | 4.00  | 4.00  | 4.00  | 4.00   |
| VIII | Ongoing Cardiac Management    | 45              | 2.50  | 2.50  | 2.50  | 2.00  | 2.50   |
| IX   | Discharge & Prevention in ACS | 45              | 2.50  | 2.50  | 2.50  | 2.00  | 2.50   |
| X    | Excellence in ACS Care        | 45              | 2.50  | 2.50  | 2.50  | 2.00  | 2.50   |
| XI   | EHAC (Support Staff)          | Unlimited       |       |       |       |       |        |
|      | TOTAL                         | 510             | 31.50 | 31.50 | 14.00 | 28.00 | 31.50  |

**JA.** In support of improving patient care, Apex Innovations is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC) to provide continuing education for the healthcare team.

**31.5 CNE.** Apex Innovations designates this enduring material for 31.5 ANCC contact hours for nurse.

**31.5 CME.** Apex Innovations designates this enduring material activity for a maximum of 31.5 *AMA PRA Category 1 Credits*<sup>TM</sup>. Physicians should claim only credit commensurate with the extent of their participation in the activity.

**14 CPE.** Apex Innovations designates this knowledge-based enduring material for 14 ACPE contact hours for pharmacists.

28 CEH. This CE activity is accredited for 28 CEH by Apex Innovations, an organization accredited by the Commission on Accreditation for Prehospital Continuing Education (CAPCE).
31.50 FLCEH. Apex Innovations has been approved by the Florida Emergency Medical Services as an educational provider for EMS and Paramedics continuing education hours and have course completion roster and tracking number available on the CE Broker website.