

## National Certified ECG Technician Detailed Test Plan

The following information in blue is where in your book you will find information to help you understand the topics of the test plan. (Current Book: Electrocardiography for Healthcare Professionals Fourth Edition, Kathryn A. Booth)

### Content Category: Patient Comfort and Safety

- **Topic #1** Properly identify the patient receiving the procedure.
  - Chapter 4 *Performing an ECG* Sections 4.1 and 4.2 pgs. 83-86
- **Topic #2** Document patient medical history and current medications.
  - Chapter 1 *Electrocardiography* pg. 12 Section titled “Documentation” and reference Table 1-2 on pg. 13
- **Topic #3** Obtain patient vital signs.
  - Chapter 1 pgs. 18-22 Section titled “Vital Signs”
- **Topic #4** Explain the ECG procedure to the patient.
  - Chapter 4 Section 4.2 “Communicating with the Patient” pgs. 84-86
- **Topic #5** Provide patient instruction regarding the Holter monitor.
  - Chapter 12 pgs. 290-292 (12.4 Section titled “Educating the Patient”)
- **Topic #6** Follow HIPAA regulations regarding Protected Health Information (PHI).
  - Chapter 1 pgs. 11-12 Section titles Protecting Patient Information: HIPAA, Practicing Ethics (paragraph that starts off with the word Confidentiality)

### Content Category: ECG Placement Techniques

- **Topic #7** Exercise infection control standard precautions.
  - Chapter 1 pgs. 15-18 Section 1.4 Safety and Infection Control and Chapter 4 *Performing an ECG* pgs. 91-94 Section 4.5 Safety and Infection Control
- **Topic #8** Prepare and position the patient for testing (e.g., gowning, skin preparation).
  - Chapter 4 pgs. 86 top of the page to end of section 4.2
- **Topic #9** Place electrodes on the patient appropriately for the test (e.g., stress, Holter, telemetry)
  - Chapter 4 pgs. 86-91 Sections 4.3 and 4.4
  - Chapter 11 pgs. 265-266 Section 11.6 *Performing Exercise Electrocardiography* (beginning of section to pg 266 first paragraph of page)
  - Chapter 12 pgs. 294-296 Section titled “Placing the Electrodes”

## National Certified ECG Technician Detailed Test Plan

- **Topic #10** Use additional resources as needed for specific diagnostic tests (e.g., blood pressure cuff, treadmill, Holter monitor).
  - **Chapter 11 pgs. 260-261 Table 11-2 The Stress Test Procedure**
  - **Chapter 12 pgs. 293- end of chapter (12.6 Applying an Ambulatory Monitor and 12.7 Removing an Ambulatory Monitor and Reporting Results)**
- **Topic #11** Adapt technique to patients with special considerations (e.g., amputee, right sided heart, pacemaker).
  - **Chapter 4 pgs. 104-105 (4.12 Special Patient Considerations)**
- **Topic #12** Adapt technique for special populations (e.g., age appropriate, isolation, special needs).
  - **Chapter 4 pgs. 102-103 (4.10 Pediatric ECG)**
  - **Chapter 4 pgs. 91-94 (4.5 Infection Control)**
- **Topic #13** Instruct the patient regarding behavior throughout the test.
  - **Chapter 4 pg. 86 (4.2 This page only)**
  - **Chapter 4 pgs. 95-96 (4.6, section titled Somatic Tremor)**
  - **Chapter 4 pg. 103 (4.10 only top paragraph on this page deals with pediatric behavior)**
  - **Chapter 11 Table 11-2 The stress test procedure**
  - **Chapter 11 Section 11.7 Common protocols (all of section)**

### Content Category: ECG Recording and Interpretation

- **Topic #14** Provide ongoing monitoring of the patient during stress testing.
  - **Chapter 11 Section 11.5 Providing Safety (all of section)**
- **Topic #15** Capture and record ECG tracings on a patient.
  - **Chapter 4 All**
- **Topic #16** Identify and measure waveform characteristics (e.g., P waves, T waves, QRS complexes).
  - **Chapter 2 Sections 2.5 and 2.6 All Including Table 2.4 ECG Components**
  - **Chapter 3 Section 3.5 ECG Graph Paper**
  - **Chapter 5 pgs. 125 Identifying the P Wave Morphology**
- **Topic #17** Identify and measure waveform quality (e.g., amplitude, symmetry, direction).
  - **Chapter 2 pgs. 42-45 What each Part of the Waveform Represents**
  - **Chapter 5 pgs. 121-122 Section 5.1 Rhythm Interpretation**

## National Certified ECG Technician Detailed Test Plan

- Chapter 5 pg 125-126 Step 3: Identifying the P Wave Morphology
- Chapter 5 pg 127 Step 5: Measuring the QRS Duration and Analyzing the Morphology
- **Topic #18** Reconcile atrial and ventricular rates (e.g., PVC, PAC).
  - Chapter 3 pgs. 71-End of chapter Section 3.6 Calculating Heart Rate
  - Chapter 5 pgs. 124-125 Step 2: Determining the Atrial and Ventricular Rates
- **Topic #19** Distinguish regular and irregular rhythms.
  - Chapter 5 pgs. 123-124 Step 1 Determining the ECG Rhythm or Regularity
- **Topic #20** Recognize basic rhythm classifications and rates
  - Sinus Chapter 5 Sections 5.3 to end of chapter
  - Atrial Chapter 6 (All)
  - Ventricular Chapter 9 (All)
  - Blocks Chapter 8 (All)
  - Other (e.g., pacemaker spike (Chapter 10 Sections 10.1, 10.2, 10.3), PEA (Check the links in your QUIA class page for a link "Information on PEA") asystole (Chapter 9, Section 9.8 Asystole – All of Section) )
- **Topic #21** Initiate response to life threatening arrhythmias per protocol.
  - Chapter 4 pg. 107 Section 4.13 Handling Emergencies
  - Chapter 8 pg. 194 Third Degree AV block (complete block) Section "How the patient is Affected and what you should do"
  - Chapter 9 pg. 210 Agonal Rhythm Section "How the patient is Affected and what you should do"
  - Chapter 9 pg. 212 Idioventricular Rhythm Section "How the patient is Affected and what you should do"
  - Chapter 9 pg. 214 Accelerated Idioventricular Rhythm Section "How the patient is Affected and what you should do"
  - Chapter 9 pg. 218 Ventricular Fibrillation Section "How the patient is Affected and what you should do"
  - Chapter 9 pg. 220 Asystole Section "How the patient is Affected and what you should do"
- **Topic #22** Monitor patient vital signs and tolerance during testing.
  - Chapter 11 pg. 264-270 Sections 11.5, 11.6, and 11.7 (All)
- **Topic #23** Prepare the report for the physician.
  - Chapter 4 Pg. 100-102 Section 4.8 Reporting ECG Results

## National Certified ECG Technician Detailed Test Plan

- **Topic #24** Transmit the report to the patient's EMR/EHR or chart.
  - Check the links in your QUIA class page for a link "Information on Reporting Diagnostic test results using EMR/EHR)

### Content Category: ECG Troubleshooting and Maintenance

- **Topic #25** Identify recording errors (e.g., improper tracing, standardization mark out of range, improper lead placement).
  - Refer to the Index at the end of your book I-10 and refer to each of the pages listed under Troubleshooting. These sections explain how to deal with various types of issues
- **Topic #26** Identify causes of artifact (e.g., somatic tremor, patient movement, wandering baseline, AC interference, seizures).
  - Chapter 3 pg. 66 Section titled "Artifact Filter"
  - Chapter 4 pg. 95-99 Section 4.7 Checking the ECG tracing
- **Topic #27** Account for patients with special considerations (e.g., clothing, shunts, piercings, scars, pacemaker/AICD-failure to pace).
  - Chapter 4 pg. 104-107 Section 4.12 titled "Special Patient Considerations" All
- **Topic #28** Correct artifacts and recording errors (e.g., paper placement, lead reversal, power loss, remove electronic devices, calm the patient).
  - Refer to:
  - Chapter Chapter 3 pg. 66 Section titled "Artifact Filter"
  - Index at the end of your book I-10 and refer to each of the pages listed under Troubleshooting. These sections explain how to deal with various types of issues
- **Topic #29** Ensure proper grounding of the ECG machine.
  - Two things ensure proper grounding
    - #1 The electrical plug will be of the 3 prong type, make sure the wire is not frayed or coming apart all the way from the prongs to the machine
    - #2 The Right leg electrode is the ground electrode. This aids in grounding the patient to avoid electrical interference with the tracing. Make sure that the lead wire and clip is in proper working condition all the way from the ECG machine to the patient. Also make sure the electrode is making good adhesion.
- **Topic #30** Check battery charge and condition.

## National Certified ECG Technician Detailed Test Plan

- ECG machines should be able to be used unplugged after the Battery has been charged sufficiently (Refer to the manufacturer User guides for the machine that is used in your facility). Most newer models will have a display that will show the Battery Charge, some do not. If the battery does not hold a charge for the time that the manufacturer says it should, or does not hold a charge at all, the battery will need to be repaired or replaced.
- **Topic #31** Clean and store the ECG machine after use.
  - The ECG machine should be cleaned on a regular basis using a damp cloth with a mild cleansing solution. All areas should be cleaned and checked for parts that may be needing repair or replacing.
  - Storage of the ECG machine should be in an area where there is less chance of damage to the machine and its components.