



# The Commonwealth of Massachusetts

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Department of Public Health

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## ADVISORY

TO: All MA ALS-Paramedic-Licensed Ambulance Services, Accredited Training Institutions  
CC: EMCAB Members  
FROM: Dr. Jon Burstein, State EMS Medical Director  
Abdullah Rehayem, Director  
DATE: January 20, 2011  
RE: 12-Lead Electrocardiogram (ECG) Competency

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The purpose of this advisory is to update the October 10, 2003 Advisory regarding 12-lead competency for EMT-Paramedics. All ambulance services licensed at the Advanced Life Support (ALS)-Paramedic level must ensure that their EMT-Paramedics demonstrate core competencies in the acquisition and interpretation of 12-lead ECGs. The service's affiliate hospital medical director must ensure that EMT-Paramedics demonstrate such competency as part of authorization to practice, at least every two years, as stated in the General Principles of the upcoming revised Statewide Treatment Protocols, v. 9.01, which takes effect March 1, 2011. The deadline for services to initially ensure 12-lead competency of all their EMT-Paramedics is no later than December 31, 2011.

As stated in the General Principles of the Statewide Treatment Protocols, all EMT-Paramedics must be able to acquire and interpret the 12-lead ECG, and then treat the patient according to current American Heart Associations (AHA) guidelines for Advanced Cardiac Life Support (ACLS), and the applicable Statewide Treatment Protocols. The primary applicable Protocol is 1.5 Acute Coronary Syndrome (ACS) (and related Appendices), as well as the other related Protocols that would be suggestive of 1.5, such as Shock of Unknown Etiology, Syncope of Unknown Etiology, Respiratory Distress, Acute Abdomen, DKA. (See introduction to 1.5 ACS Protocol.)

The Department requires the assessment of EMT-Paramedics' competency in this area to demonstrate both a (service-developed) written and practical competency. Ambulance services licensed at the ALS-Paramedic level must ensure this assessment is completed and documented for all its current EMT-Paramedic staff to run concurrent with their authorization to practice. For all newly employed EMT-Paramedics, the 12-lead ECG competency must be completed before the service's affiliate hospital medical director grants authorization to practice.

The following is a list of the necessary areas of competency that must be demonstrated by all EMT-Paramedics working for ambulance services licensed at the ALS-Paramedic level.

1. The appropriate clinical circumstances to obtain a 12-lead ECG (ACS-like symptoms that are of a non-traumatic etiology are to be viewed as being of cardiac origin until proven otherwise).

2. The actual acquisition of a 12-lead ECG, including the correct anatomical locations of all wires and/or electrodes. (and also how to obtain right-sided and posterior views)
3. Waveform indications of coronary artery insufficiency, including signs and symptoms of ischemia, injury, and/or infarct.
4. Delineate between ischemia (non-reciprocal ST depression, hyper-acute T waves, flipped T-waves), injury ( [STEMI,ST-elevated myocardial infarction, definite STEMI or possible STEMI] or new onset left bundle branch block [LBBB]), infarct (“Q- Wave MI of unknown age”) or “non-diagnostic 12-lead” ACS subsets.
5. The anatomical relationships of coronary artery and myocardial anatomy as well as anatomical groupings. (Left Coronary Artery [LCA], Left Anterior Descending [LAD], Left Circumflex [LCX], Right Coronary Artery [RCA], Right Posterior Descending Artery [RPDA], Right Marginal [R Marginal])
6. Recognition of classic patterns of myocardial injury
7. The ability to quantify the 12-lead ECG into one of the following categories:
  - Definite STEMI or New LBBB
  - Possible STEMI
  - Suspicious for Ischemia
  - Non-Diagnostic
8. Pseudo/Mimic ACS rhythms or patterns (narrow complex imitators; e.g., BER [Benign Early Repolarization], LVH [Left Ventricular Hypertrophy], and Pericarditis; wide complex imitators; e.g., IVR [IdioVentricular Rhythms], AIVR [Accelerated IdioVentricular Rhythms], PVCs, runs of VT [or sustained VT], or artificially actively VPaced Rhythms
9. Recognition of other suggestive imitator concerns; e.g., hypothermia, metabolic (electrolyte driven) QRS. ST, and T-wave changes, and drug (medication) induced changes.

All ambulance services licensed at the ALS-Paramedic level must ensure that their EMT-Paramedics have read and understood the requirements of this Advisory. In addition, these ambulance services are responsible for maintaining all documentation of their EMT-Paramedics' 12-lead ECG written and practical competency in accordance with this Advisory, and for making it available to the Department at its request.

If you have any questions, please contact Renée Lake, Compliance Coordinator, at DPH/OEMS.