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ADVISORY 21-09-01

TO: All MA ALS-Paramedic-Licensed Ambulance Services, Paramedic-level Accredited Training Institutions
CC: EMCAB Members
FROM: W. Scott Cluett, III, NRP, Director
Jon Burstein**,** MD, State EMS Medical Director
DATE: September 14, 2021
RE: Ensuring 12-Lead Electrocardiogram (ECG) Competency in Paramedics

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The purpose of this Advisory is to update and replace Advisory 18-08-01 regarding 12-lead competency for Paramedics.

The Department requires all ambulance services licensed at the Advanced Life Support (ALS)-Paramedic level to ensure that their Paramedics demonstrate core competencies in the acquisition and interpretation of 12-lead ECGs, and treatment on the basis of the information received from them. The service's affiliate hospital medical director must ensure that Paramedics demonstrate such competency every two years, as part of the paramedic's authorization to practice.

In order to provide care in accordance with the Statewide Treatment Protocols, all Paramedics must be trained in accordance with 105 CMR 170.840(B) and (C), and demonstrate ability to acquire and interpret the 12-lead ECG, in some cases, 15- and 18-lead ECG and then treat the patient according to current guidelines for Advanced Cardiac Life Support (ACLS), and the applicable Statewide Treatment Protocols. The primary applicable protocol is Acute Coronary Syndrome (ACS) and all related cardiac protocols. In addition, 12-lead ECG should be acquired, interpreted and treated in most conditions of illness, including but not limited to: Shock, Bronchospasm/Respiratory Distress, AMS/Diabetic Emergencies/Coma, and Sepsis.

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

1. The appropriate clinical circumstances in which to acquire a 12-lead ECG.
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. The appropriate clinical circumstances in which to acquire a right-sided (15-lead) ECG (4R, 5R, 6R) Right Ventricular Infarct (Inferior Wall) and/or 18-lead ECG (V7, V8, V9 Posterior Wall infarct)
4. ECG waveform indications of coronary artery insufficiency, including signs and symptoms of ischemia, injury, and/or infarct.

5. Delineation among ischemia (non-reciprocal ST depression, hyper-acute T waves, flipped T-waves), injury (ST-elevated myocardial infarction [STEMI], 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.
6. 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]
7. Recognition of classic patterns of myocardial injury
8. 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
9. Recognition of 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 Ventricular Tachycardia [VT] or sustained VT), or artificially actively paced rhythms
10. Recognition of other suggestive imitator concerns; e.g., hypothermia, metabolic (electrolyte driven) QRS, ST, and T-wave changes, and medication-induced changes.

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

Each ambulance service licensed at the ALS-Paramedic level must ensure that its Paramedics have read and understood the requirements of this Advisory. In addition, each ambulances service is responsible for maintaining all documentation of their Paramedics' 12-lead ECG written and practical competency in accordance with this Advisory. The 12-lead competency can be done via a stand-alone Department-approved continuing education course or included within a full National Core Curriculum Requirement (NCCR) program, with affiliate hospital medical director written approval. In any case, the service shall maintain documentation of the affiliate hospital medical director's written approval of the 12-lead competency method implemented.

Each service shall make all its Paramedics' 12-lead ECG competency documentation available to the Department upon its request, including all documentation of 12-lead ECG competency that any of its Paramedics obtained while working at other ambulance services under other affiliate hospital medical directors, or through NCCR programs accepted by those other services, which the service's affiliate hospital medical director has approved and on the basis of which has not separately verified 12-lead competency. At each relicensure inspection, the documentation to be made available for the inspector's review, at a minimum, shall be the 12-lead continuing education rosters and course completion certificates.

If you have any questions, please contact Renée Atherton, Clinical Coordinator, at renee.atherton@mass.gov.