

Emergency Medicine Update: What's New in Cardiovascular Disease

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Cardiovascular (CV) diseases continue to be the leading cause of death in Westernized nations. Considering the marked increase in the obesity epidemic that is currently underway, it is predicted that we may soon witness an abrupt end, or even a reversal, of the steady rise in life expectancy that has been occurring in the United States.^{1,2} This explosion in obesity and metabolic syndrome in our society will likely lead to an even further increase in the already large volume of CV disease present in the emergency department (ED).

Perhaps the most common and the most anxiety-provoking complaint in the ED is the symptom of chest pain (CP). Recognizing the potential seriousness of this symptom from a medical standpoint, including such diagnoses as acute myocardial infarction (MI), pulmonary embolism (PE), and aortic dissection (AD),³⁻⁵ as well as the potential for medical-legal consequences for both missed and even delayed diagnoses, this has necessitated the development of CP Units within EDs. This has improved and will continue to improve the efficiency of dealing with this potentially deadly, but often non-life threatening, medical symptom. Electronic technological advances have allowed specialists to quickly review echocardiogram tracings from remote locations. This along with rapid technological advances, including rapid and sensitive troponin assays, stress testing in areas adjacent to the ED or within the ED itself,^{6,7} short day stay units, as well as imaging technologies (e.g., the multi-slice computed tomography (CT) scan angiogram that can provide the "triple rule out" for MI, PE, and AD), all have provided

very rapid and efficient care for the patient with CP in the ED. Most of these technological advances, however, come with a "cost," including the cost of providing the care as well as dealing with the consequences of testing. For example, a patient may come to the ED for a non-CV cause of CP, but eventually could get a multi-slice CT angiogram as part of the "triple rule out." In this situation, there is no evidence of PE or AD, but, as in many adult patients in this society with a very high prevalence of atherosclerosis, often one or multiple coronary stenoses may be present. Therefore, a patient who came to the ED for gastroesophageal reflux or muscular CP, for example, may end up having a stress test or a catheterization with or without a revascularization procedure for potentially non-cardiac CP. Additionally, this initial dye load can produce temporary or persistent renal insufficiency, that could be worsened further by additional dye loads (e.g., catheterization and percutaneous revascularization procedures). Obviously, considerable work is still needed to optimize these potentially life-saving (and lawsuit-saving) procedures in a safe and cost-effective manner.

Although CP and MI are probably the leading CV concerns in the ED, similar emphasis is being placed on the epidemics of heart failure (HF)^{1,2,8,9} and atrial fibrillation (AF).^{2,10,11} With proper testing and triage, many such patients can be safely discharged within hours or certainly within 24 hours of initial ED entry. Prognostic markers, such as brain natriuretic peptide measurements, help expedite the care of patients with HF, whereas patients with acute AF can often be cardioverted quickly when symptoms are less than 24-48 hours in duration or after atrial thrombus has been excluded with transesophageal echocardiography.¹² In other patients, anticoagulation and rate control can also often be accomplished in 24 hours or less.

Although all of these management strategies are already in place in many EDs in the US, the next several years will likely see an explosion in such advances and further expedite the care of many patients with acute and chronic CV diseases seen in the ED.

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