



Controversy

Universal definition of MI: Above 99 percentile of upper reference limit (URL) for hs-cTn: Yes, but which URL?☆☆☆



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ABSTRACT

The definition of myocardial infarction (MI) is based on the detection of high-sensitive cardiac troponin (hs-cTn) levels above the 99th percentile of upper reference limit (URL) value for a healthy reference population. In the era of hs-cTn assay and the 4th definition for MI, the distinction between the injury and infarction is crucial for the clinician. Measurable troponin is present in the blood of healthy adult subjects. Thus, the calculation of the 99th percentile URL depends on the selected reference population. There is no consensus in the definition of 'reference population' among hs-cTn manufacturing companies. For example, gender, age, ethnic and populational differences affect the URL for hs-cTn assay. The URL level is substantially higher in elderly as compared with younger patients. Elevated levels of cTn are found in up to 22% of persons living in the community who are 70 years of age or older. Similarly, men have significantly higher URL levels compared to women. Using the same URL for men and women causes underdiagnosis of MI in women. Finally, the definition of MI covers a wide variety of systemic conditions that can affect the myocardium through injury or infarction. Professional societies have published their recommendations to solve the pre-analytic and analytic controversies in hs-cTn assay. In conclusion, hs-cTn assays have revolutionized the practice of cardiology. Universal healthy normal pool and consideration of different cut off levels for different populations (i.e. elderly) can potentially help to standardize the interpretation of the hs-cTn test.

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The definition of myocardial infarction (MI) is based on the detection of high-sensitive cardiac troponin (hs-cTn) levels above the 99th percentile of upper reference limit (URL) value for a healthy reference population [1]. In the era of hs-cTn assay and the 4th definition for MI, the distinction between the injury and infarction is crucial for the clinician [1]. Measurable troponin is present in the blood of healthy adult subjects [2]. Thus, the calculation of the 99th percentile URL depends on the selected reference population. Demographic and clinical characteristics of the reference population should be clearly stated by the manufacturers of hs-cTn assay. It is equally important to note that there is no consensus in the definition of 'reference population' among hs-cTn manufacturing companies. For example, gender, age, ethnic and populational differences affect the URL for hs-cTn assay [2,3]. The URL level is substantially higher in elderly as compared with younger patients [3]. Elevated levels of cTn are found in up to 22% of persons living in the community who are 70 years of age or older [4]. Similarly, men have significantly higher URL levels compared to women [5]. Using the same URL for men and women causes under-diagnosis of MI in women [5]. Finally, the definition of MI covers a wide variety of systemic conditions that can affect the

myocardium through injury or infarction [1]. Professional societies have published their recommendations to solve the pre-analytic and analytic controversies in hs-cTn assay [6]. In conclusion, hs-cTn assays have revolutionized the clinical practice. Universal healthy normal pool and consideration of different cut off levels for different populations (i.e. elderly) can potentially help to standardize the interpretation of the hs-cTn test.

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