

CARDIOMATH ONLINE: WEB-BASED ECHOCARDIOGRAPHY AND STRESS TEST CALCULATORS THAT FACILITATE KNOWLEDGE TRANSFER AND INCREASE QUANTIFICATION IN INTERPRETATION AND REPORTING

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Summary: The presentation will go over the implementation of a web-based cardiology calculation tool and the development of an online survey to assess the user demographics, satisfaction, and the potential clinical impact of this tool. This presentation will benefit those who are interested in developing an online clinical tool that incorporates educational elements, and those who are interested in incorporating online surveys to assess the potential impact of their e-learning projects.

Background: Many formulas are used in echocardiography. In addition, guidelines on reference values were published by major cardiovascular societies, such as American Society of Echocardiography (ASE) and American College of Cardiology (ACC). However, it is becoming increasingly difficult to organize, recall, and integrate all that information into clinical practice. This has hindered regular use of quantification in echo reporting.

Methods: A comprehensive set of web-based calculators with 23 echo formulas, and 6 stress test formulas was developed. Latest ASE and ACC reference values are provided. In some formulas, such as left ventricular (LV) mass and left atrial volume, adjustments to body size are made. For each formula, detailed explanation on the clinical application and live PubMed links to relevant references were provided. Illustrations are provided to explain how the measurements are made. To evaluate this online tool, a web-based nine-item survey was conducted among users between 10 Dec '06 and 5 Jan '07 to assess the user demographics, satisfaction and the potential clinical impact of this online tool.

Results: Since inception in Jan 2006, this online tool has been accessed 88,491 times as of 5 Jan 2007. 471 unique users had completed the online survey. The site was visited by users from 62 different countries [top three included USA (45%), Canada (14%), and Germany (4%)]. 50% of the respondents were physicians, 18% physician trainees, and 16% sonographers. 61% of those surveyed reported using it for clinical use, 19% educational purposes, 9% reference, and 4% research. 48% of the survey participants reported 1 to 5 accesses daily and 8% 6 to 10 accesses daily. Among the clinical users, 81% reported CardioMath online increased quantification in echo reporting and 84% thought the site improved patient care. The three most commonly accessed formulas include 1) PISA method for mitral regurgitation, 2) LV Mass Index, and 3) VTI method for aortic valve area.

Conclusions: The CardioMath online echo and stress test calculators had enabled users to increase quantification of measurements in echocardiography and to potentially improve patient care.

Web Address: The website can be accessed freely at: www.csecho.ca/cardiomath.

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