The need for appropriate use criteria: the proof of the pudding

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Appropriateness criteria represent a physician-directed effort to define appropriate utilization of cardiac imaging procedures.\textsuperscript{1} Despite multiple iterations of appropriate use criteria (AUC), there is currently no evidence regarding their incorporation and impact on echocardiography ordering in daily practice. This article by Fonseca et al.\textsuperscript{2} used thematic analysis of the opinions of 17 doctors from an Australian tertiary hospital to identify determinants of appropriate use of echocardiography. The majority of the participants were trainees, including 1st year since graduation, and over 40% did not work within cardiology. There is no Australian AUC for the use of echocardiography, and only 23% of the participants had read the American AUC. The number of participants aware and following practice guidelines (e.g. for the management of heart valve disease or endocarditis) is not specified.

The use of echocardiography by the participants was assessed on hypothetical clinical cases and was found to be strongly discordant with the American AUC. There were inappropriate test requests and also failures to request appropriate tests, in clinical scenarios not only described in the American AUC but also supported by both European and American guidelines for the management of heart valve disease.

Thematic analysis identified factors that influence echocardiography requests, classified as personal, systemic, and related to guidelines and protocols. Personal factors were training and medical experience, management of patient’s expectations, uncertainty, and relationships with colleagues as well as workload and mood impact on ordering behaviour. Systemic factors were service availability, availability of previous echocardiogram results, ease of access (distance, waiting time, and physical mobility), private sector (economic incentives and patients affording the cost), and health insurance cover of the test. The participants thought that appropriate use could be improved by education, electronic systems guiding the ordering process, audits, filtering of requests, and electronic records.

The number of participants is extremely low for important conclusions to be drawn regarding the robustness and the ability of the AUC to influence tests ordering behaviour; the attempt of the authors to draw such conclusions is a limitation of this study. Furthermore, the percentage of participants having even read the AUC is very small, and the study population has no direct incentive to follow the American AUC for echocardiography. The validity of the AUC restricts to the environment (country or continent) they were developed within and for. Additionally, to influence the test ordering behaviour, AUC have to be reinforced through the system reimbursing both the test provider and the test ordering individual. Without incentives and motivation physicians may not consult the AUC, as is the case with this study population. The AUC cannot be exhaustive, however, include the large majority of clinical scenarios encountered in clinical practice, and with sufficient knowledge and experience, physicians will easily match the scenario of their respective patient with the AUC. Moreover, an ‘unknown appropriateness’ test is certainly never ‘inappropriate’ and can often be ‘appropriate’ in specific cases. The AUC adherence is not expected to be 100%, even in the settings of AUC development; however, in this study, the concordance with the American AUC for echocardiography is unusually low. Despite similar lack of adherence incentive, a UK study\textsuperscript{3} found results comparable to the results reported by audits and studies performed in the USA\textsuperscript{4,5}: only about 10% of tests are inappropriate.

The number of study participants is sufficient for a robust thematic analysis. The strength of this study is the replication of several themes identified as influencing the use of imaging tests, at the beginnings of the AUC development work.\textsuperscript{6–10} The identification of these non-medical and non-scientific factors was the very reason for the development of AUC for the use of imaging. The aim of the AUC is to address both underuse and overuse\textsuperscript{11} of imaging, both manifested in this study. Underuse may result in incomplete, incorrect, or, as in this study (failure to request a 12-month follow-up echocardiogram in moderate aortic stenosis), in delayed diagnosis. Overuse may result in exposure of individuals to unnecessary risk, delay diagnosis for other individuals waiting for the same test, or, as in this study (repeat echocardiogram at 12 months in mild mitral regurgitation with no change in clinical picture) in unnecessary cost for the patient.

The reasoning behind underuse (elderly patient) or overuse (patient who can afford the cost), the general poor concordance with standard clinical practice and the factors influencing echocardiography requests identified by this study are a proof for the need of AUC in clinical practice: the proof of the pudding. Furthermore, as...
envisaged by the study participants, besides AUC, an educational intervention involving feedback was recently demonstrated to improve the use of echocardiography. 

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References