The rapid pace of technological development has brought a wealth of diagnostic and therapeutic options to the care of patients. These new diagnostic and therapeutic tools have dramatically altered medical care but have come with a steep price tag, and it is not clear that the improvement in the quality of care is proportional to the cost of the medical system. In recognition of the fact that there is a significant variation in the use of these tools, and that overuse of diagnostic test may entail unnecessary expenditures, the American College of Cardiology Foundation has taken on the laudable task of defining appropriate use criteria (AUC) for diagnostic imaging, with the goal of guiding a more efficient and equitable allocation of healthcare resources in cardiovascular imaging.\(^1\)

In this issue of *Circulation: Cardiovascular Quality and Outcomes*, Ye et al\(^2\) report on a study that evaluated the applicability of the AUC for radionuclide myocardial perfusion imaging to a group of 400 imaging studies from their institution. The study involved using 8 individual raters of varying levels of training to assess the appropriateness of the studies according to the AUC, and the results were remarkable in 2 respects. First, the raters agreed that only 61% to 70% of the studies were appropriate. Second, however, they could not agree consistently on which studies these were. Furthermore, the agreement between raters did not differ by level of education or type of physician—cardiology fellows’ ratings were no more likely to agree with each other than were ratings by interns. These findings are consistent with earlier studies that show modest to good inter-rater reliability in using AUC to assess appropriate care.\(^3,4\)

The study highlights the difficulty in applying the AUC, as they are written, to clinical practice. The challenge is in writing criteria that are simultaneously general enough to account for the complexities of modern medical practice and specific enough to be meaningful. The results from this article suggest that the AUC are failing in at least one of these regards, resulting in variation of interpretation of the criteria. This presents a significant barrier to widespread, consistent implementation of the AUC in practice, which is a prerequisite for the AUC having the desired effect of more efficient and effective use of radionuclide myocardial perfusion imaging.

If we stipulate that applying AUC to the decision-making process during test ordering and to reimbursement decisions will save money and result in more efficient and equitable resource allocation, then an effort must clearly be made to rewrite the AUC to make them less ambiguous and easier to implement. This is no easy task, and although existing data offer some glimmer of hope that implementation can be accomplished, the magnitude of the effect on the use seen is far from overwhelming. Lin et al\(^5\) found that the incorporation of an AUC-based decision support tool in the ordering process had a modest effect on appropriate test ordering. Similarly, Gibbons et al\(^6\) found a small temporal decline in the proportion of inappropriate perfusion studies ordered after publication of the AUC. However, the authors themselves concede that ordering systems to ensure appropriate test selection can be easily gamed, a phenomenon that may be difficult to measure retrospectively through chart review. When this is added to the fact that 2 clinicians can differ in their interpretation of the AUC, it is unclear whether interventions that rely solely on categorizing tests based on AUC can truly change established patterns of practice.

It may be tempting to conclude from these data that we should abandon the whole notion of using AUC as the cornerstone of policies guiding ordering of and reimbursement for tests. However, despite their shortcomings, the AUC have elevated the level of awareness on inappropriate test use and provided a framework for practice improvement, accomplishments that should be applauded. Nonetheless, much work remains to be done to reach the goal of ensuring that the appropriate patient receives the appropriate test. Future iterations of the AUC should be written with implementation in mind, and thus usability—not just by experts but by practicing physicians at all levels—should be a key consideration. In addition, a single set of AUC should not be the only method by which physicians, policymakers, payers, and others judge whether care in totality was appropriate or not. One could imagine, particularly with the existence of multiple AUC documents, a situation in which a physician could order a nuclear stress test that falls into an inappropriate category, but the test leads to a revascularization procedure that would fall into an appropriate category. How then would we judge whether appropriate care was given to that patient because appropriate test use is not necessarily synonymous with overall high-quality care.

Thus, the AUC should be a part of a broader effort to improve the entire clinical decision-making process and be focused on providing feedback to physicians to ensure that they are providing evidence-based, clinically appropriate care. An example of this kind of intervention is the Formation of Optional Cardiovascular Utilization Strategies program sponsored by the American College of Cardiology. The program provides not only a structured, Web-based tool for physicians to document

**Editorial**

Can Appropriate Use Criteria Lead to Appropriate Care?

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The opinions expressed in this article are not necessarily those of the editors or of the American Heart Association.

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their cases and track the appropriateness of their use but also an online community for physicians to ask questions of and receive feedback from fellow participants, allowing for the exchange of ideas and the development of best practices at the point of care. Preliminary results from the program show that participants who completed the intervention had better appropriateness rates than those who had not yet completed any part of the program. This kind of multifaceted approach, which emphasizes giving physicians the tools to identify their own practice patterns and also transparency among peers, holds promise in bridging the gap between appropriate test use based on AUC and providing overall appropriate clinical care to patients.

Disclosures
None.

References

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