

## Benefit-Risk Assessment in Diagnostic Imaging



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Diagnostic imaging has many effects and there is no common definition of value in diagnostic radiology. A new study proposes using a standardised benefit-risk criteria (BRC) framework to ensure consistent examination of differences among diagnostic alternatives. The study is in press in the journal *Academic Radiology*.

Several frameworks for assessing the value of diagnostic imaging have been proposed. From these proposals, the full spectrum of imaging test benefits and risks may include clinical, nonclinical, and direct or indirect effects, including alternative perspectives. Direct effects refer to those related to the procedure only (e.g., ionising radiation exposure). When imaging tests are necessary but not sufficient to explain the benefit or risk, those effects may be labelled indirect (e.g., cancer-free survival, or consequences of incidental findings). Whereas clinical outcomes may be captured in medical records or claims databases, nonclinical effects refer to the less documented cognitive, psychological, legal, and behavioural effects of the information provided by the test.

In this study, researchers performed a literature search and an online survey of physicians to identify and collect BRC relevant to diagnostic imaging tests. The team operationalised a process for selection of BRC with the use of four clinical use-case scenarios that vary by diagnostic alternatives and clinical indication. Respondent BRC selections were compared across clinical scenarios and between radiologists and nonradiologists.

The respondents identified criteria across all three domains (test-specific, provider-specific, and patient-specific), suggesting that imaging tests can be judged by more than diagnostic accuracy or potential for ionising radiation exposure. Based on this survey process, the researchers developed a process for standardising selection of BRC in guideline development.

"These results suggest that a process relying on elements of comparative effectiveness and the use of standardised BRC may ensure consistent examination of differences among alternatives by way of making explicit implicit trade-offs that otherwise enter the decision-making space and detract from consistency and transparency," the authors write. "These findings also highlight the need for multidisciplinary teams that include input from ordering physicians."

However, the study's piloting of the BRC involved a small number of clinical scenarios, only presented two of potentially several possible diagnostic alternatives, and had small sample sizes of respondents from one institution. These factors limit the generalisability of the results, the authors note.

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