

ORIGINAL ARTICLE

Diagnostic test guidelines based on high-quality evidence had greater rates of adherence: a meta-epidemiological study

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Abstract

Objectives: To determine the association between the quality of guidelines for diagnostic tests (both the quality and reporting and the quality of the evidence underpinning recommendations) and nonadherence.

Study Design and Setting: We conducted a meta-epidemiological study. We previously published a systematic review that quantified the percentage of test use that was nonadherent with guidelines. For the present study, we assessed these guidelines using the Appraisal of Guidelines for Research & Evaluation (AGREE) II tool. We then assessed the quality of evidence underpinning recommendations within these guidelines using Grading of Recommendations Assessment, Development, and Evaluation (GRADE). Linear models were then constructed to determine the association between guideline nonadherence and (1) AGREE II score and (2) GRADE score.

Results: There was no significant association between AGREE II score and nonadherent testing ($P = 0.09$). There was a significant association between GRADE score and nonadherence: recommendations based on low-quality and very low-quality evidence had 38% ($P < 0.01$) and 24% ($P = 0.02$) more nonadherent testing, compared with recommendations based on high-quality evidence.

Conclusion: Diagnostic test guideline recommendations based on high-quality evidence are adhered to more frequently. © 2018 Elsevier Inc. All rights reserved.

Keywords: GRADE; Guidelines; AGREE II; Primary care; Diagnostic tests; Meta-research

1. Introduction

In the last 15 years, clinical practice guidelines have become increasingly common. Guidelines emerged, in the era of evidence-based medicine, to try and ensure that medical decisions were based on the best available evidence.

In many countries, guidelines serve as the foundation of many performance and quality indicators [3–5]. Although, in some regard, they serve as a framework for the standard of expected medical practice [4], it is important to acknowledge that guidelines inform clinical practice rather than dictate it. Medical decisions are complex; clinical expertise and patient values should be considered alongside guideline recommendations [6,7]. Guideline recommendations are

not applicable to all patients in all clinical situations; it is likely that there will be times when doctors should depart from guidelines.

However, in many countries, guidelines have important medicolegal implications. Doctors can depart from guidelines in their patients’ best interest; but medical defense companies have issued explicit advice that “doctors must be prepared to explain and justify their decisions and actions, especially if they depart from guidelines issued by a nationally recognized body” [7].

Despite their importance, guidelines have been criticized for their varying quality and reporting [8,9], authors’ conflicts of interests [10], and poor-quality evidence supporting their recommendations [11]. Previous research has suggested there is marked variation in how often guidelines are followed [12], but there is a paucity of research exploring the association between guideline quality and adherence, particularly for diagnostic tests. No study has examined the quality of diagnostic test guidelines, and no study has looked at the association between guideline quality (in terms guideline quality and reporting, and quality of evidence underpinning recommendations) and guideline nonadherence. It is unclear

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What is new?**Key findings**

- There is much heterogeneity in the quality and reporting of diagnostic test guidelines.
- Of the guidelines we examined, most are based on poor-quality evidence.
- Guideline recommendations based on high-quality evidence have a significantly lower rate of nonadherent testing.
- There is no significant association between the quality and reporting of diagnostic test guideline recommendations and the rate of nonadherence.

What this adds to what was known?

- Previous studies have shown that the quality and reporting of guidelines pertaining to treatment recommendations is varied and generally poor (using the Appraisal of Guidelines for Research & Evaluation [AGREE] tools) [1]. Previous studies have also shown that the quality of evidence underpinning guideline recommendations is poor [2]. We present the first assessment of the quality and reporting of diagnostic test guidelines and are the first to explore the association between guideline quality (both quality and reporting of guidelines and also quality of the evidence underpinning recommendations) and nonadherence.

What is the implication and what should change now?

- We have highlighted gaps in the literature pertaining to diagnostic tests. Future research should endeavor to produce high-quality randomized controlled trials (RCTs) and diagnostic accuracy studies (DTAs) to fill these gaps.
- If the evidence is available, policy makers should endeavor to support their guideline recommendations with high-quality research (such as systematic reviews, RCTs, and/or DTA). Guideline recommendations based on high-quality evidence are adhered to more frequently. Guidelines developed via expert opinion or consensus, in the absence of evidence, were adhered to much less frequently.

whether adherence to high-quality guidelines is greater than that of poor-quality guidelines.

We used a recently published systematic review that quantified the nonadherence of primary care diagnostic test use with relevant national or international guidelines. Using data from this systematic review, we set out to determine

whether the guidelines used to measure nonadherence were of sufficient quality and whether there is an association between guideline quality and adherence.

2. Methods

This study was conducted and is reported in line with The Strengthening the Reporting of Observational Studies in Epidemiology checklist. No ethics approval was required.

2.1. Study design

We conducted a meta-epidemiological study [13]. Five steps defined the conduct of this study.

2.1.1. Measures of nonadherence

The measures of guideline nonadherence were extracted from a systematic review we previously published [12].

2.1.2. Assessment of guideline quality and reporting

For each of the measures of nonadherence, we identified the respective guidelines against which adherence was measured. We then used the Appraisal of Guidelines for Research & Evaluation (AGREE) II tool to determine the quality and reporting of these guidelines.

2.1.3. Assessment of evidence quality

For each identified guideline (from step 2.1.2), we identified the evidence supporting the guideline recommendations. We then assessed the quality of the evidence using Grading of Recommendations Assessment, Development, and Evaluation (GRADE).

2.1.4. Association between guideline nonadherence and guideline quality and reporting (AGREE II)

We constructed linear models to examine the relationship between guideline quality and reporting (step 2.1.2) and measures of guideline nonadherence (step 2.1.1).

2.1.5. Association between guideline nonadherence and evidence quality (GRADE)

We constructed linear models to examine the relationship between evidence quality (step 2.1.3) and measures of guideline nonadherence (step 2.1.1).

2.2. Guideline nonadherence

Our previously published systematic review [12] determined the nonadherence of diagnostic test ordering against their respective guidelines. The full methods of this systematic review are reported in the article [12]. Briefly, we included primary observational studies that measured the nonadherence of diagnostic test ordering against a national or international guideline. We extracted each primary study's measure of nonadherence: a measure of nonadherence could be either (1) overtesting—the percentage of tests ordered when a specific guideline recommended to

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