



Commentary

Implementation should be a standard component of practice guidelines and guidance documents

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Studies have demonstrated that guidelines that include implementation instructions or tools are more likely to be utilized in practice^{1,2} and presumably lead to desirable outcomes. Nonetheless, systematic evaluations of clinical practice guidelines have repeatedly demonstrated low applicability, meaning inadequate provision of tools to implement and sustain recommended practices.³ This situation has been reflected in a recent evaluation of surgical site infection (SSI) prevention guidelines using the Appraisal of Guidelines for Research & Evaluation II (AGREE II) tool.^{4,5}

Understanding how others have implemented recommended practices can help healthcare organizations translate evidence into practice by identifying strategies that others have used to successfully enact changes and spread them broadly.⁶ Historically, practice guidelines and guidance documents have summarized and reported evidence supporting the adoption of specific practices. But adopting a practice is not the same as implementing it,⁷ and the absence of information to assist with implementation of a recommended practice may delay adoption and, therefore, fail to achieve the intended outcome.⁸

To better link adoption and implementation, we propose that information and resources to assist with the implementation of recommended practices be a standard part of all practice guidelines and guidance documents. In this commentary, we provide arguments to support inclusion of implementation recommendations in all practice guidelines and guidance documents, counter possible perceived deficiencies in the available evidence, and offer suggestions for incorporating implementation tools and resources into existing guidance formats.

For the purposes of this document, we use the terms 'practice guideline' and 'guidance document' to refer to any recommendations-based document (eg, guideline, expert guidance, consensus statement) and 'implementation' to mean "methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice."⁹ A comprehensive discussion of implementation science and practice is beyond the scope of this commentary; however, we encourage readers to access

materials available through SHEA (<https://learningce.shea-online.org/search?text=implement>; <https://ortp.guidelinecentral.com/>) and published materials.^{10–13}

Benefits

High-quality evidence, such as that derived from well-conducted randomized clinical trials, is thought to drive the 'what' of practice but does little to explain the 'how.' Implementation science (the study of methods to promote implementation)⁹ seeks to drive the 'how.' Combining high-quality evidence with strategies, tools, and resources demonstrated to be effective in incorporating these evidence-based interventions into routine clinical practice could reap substantial benefits. For example, a published trial demonstrated a decreased presence of 3 multidrug-resistant organisms and *Clostridioides difficile* and lower incidence of transmission to subsequent patients when rooms were disinfected with a quaternary ammonium product (or bleach for *C. difficile*) followed by ultraviolet C irradiation (absolute risk reduction, 17.4%). The coverage with UV-C irradiation was ~55% (2,848 rooms of 5,178 rooms in the intention-to-treat cohort).¹⁴ In a recently published study on UV-C program implementation, irradiation of 86% of isolation rooms was achieved by utilizing devices with shorter disinfection cycles and a targeted approach to disinfect high-priority rooms.¹⁵ It is tempting to speculate how the benefit of the first study's interventions would increase if room coverage could be improved using the approach in the latter trial. Similar large-scale impacts could be envisioned in antimicrobial stewardship, in which implementation research has shown interventions like telehealth for rural facilities^{16,17} and handshake stewardship¹⁸ to be effective on a small scale. The feasibility (eg, time spent developing and executing the intervention) and qualitative experiential data (eg, stakeholders' perception of the intervention) reported could guide an institution to translate the evidence into action locally. The World Health Organization has recognized the need for implementation tools by publishing guides that accompany guidelines. The 2009 hand hygiene guideline established the widely adopted WHO Five Moments.¹⁹ The implementation guide offers ways to adhere to the Five Moments (eg, sink placement in room design, availability of hand sanitizer, monitoring systems, etc), enabling maximal prevention opportunity.²⁰ Additional implementation guides have been developed for a

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variety of areas, including healthcare provider vaccination²¹ and surgical safety.²²

Many facilities invest in implementation, and online resources are available to learn methodology. However, smaller and independent facilities and practices may not have access to these. When guidance documents provide evidence-based strategies for implementation, they likely help facilities justify the necessary infrastructure investment. Healthcare facilities are judged according to their outcomes, both financially and publicly. The push for transparency is important to ensure that high-quality care is provided to all. To this end, regulatory authorities like the US Centers for Medicare and Medicaid Services (CMS) and accrediting organizations like The Joint Commission emphasize using evidence-based guidance to create policies.²³ A written policy without effective implementation does not necessarily translate into practice.²⁴ Thus, implementing evidence-based practices would enable facilities to adhere to CMS and Joint Commission standards effectively, improve outcomes, and create safer healthcare environments for patients and staff.

Evidence availability and quality

A large volume of literature has been published detailing implementation principles, methods, validity, and applicability. It is likely that for any question raised in a practice guideline or guidance document, there will be evidence-based strategies to address it directly or in general, or a systematic review that provides an overview of previous experience.²⁵ Although the literature includes many single-center quality improvement (QI) reports, studies reporting results from large-scale networks and multifacility collaborations have demonstrated the means and impact of implementing evidence-based recommendations. Efforts have been published and utilized widely that have reduced healthcare-associated infection (HAI) rates, including central-line-associated bloodstream infection,²⁶ surgical-site infection,^{27,28} and catheter-associated urinary tract infection,^{29,30} as well as patient exposure to broad-spectrum antibiotics.³¹ The tools and other resources that were developed as part of these large-scale collaborations are prime examples of implementation evidence that should be incorporated into guidance.

Limiting guidelines to GRADE (Grading of Recommendations Assessment, Development and Evaluation)³² standards may exclude important insights, particularly for implementation. GRADE is often used to determine the inclusion of evidence in guidelines and is designed to favor randomized trials and to a lesser extent cohort or other observational studies. It is most applicable for safety and efficacy of therapeutics and vaccines in part because the US Food and Drug Administration requires such trials for approval or authorization. Randomized trials are less common in implementation science and infection prevention, and GRADE would classify much of the literature as 'low quality.'

Evidence for infection prevention practices and implementation is composed of a wider variety of study designs (eg, case-control or retrospective cohort). These studies are well conducted and appropriately designed, making them valid for answering important epidemiologic and practical questions and to guide practice. Acknowledging that restrictive literature review and evidence-grading methodologies can limit guidance development, especially in fields that face feasibility or ethical limitations for research topics (eg, infection prevention and healthcare epidemiology), the Society

for Healthcare Epidemiology of America (SHEA) has developed documents such as expert guidance and consensus statements to provide recommendations that are important to the safety of patients and healthcare personnel but are derived from published papers using a broader selection of validated study designs. Implementation evidence fits well within these guidance documents. The Infection Prevention in the Anesthesia Workplace expert guidance included an implementation section³³ as did a webinar discussing implementation in general and for the guidance document's recommendations.³⁴ Similarly, a companion guide was generated for implementing the COVID-19 Vaccine as a Condition of Employment Multi-Society Consensus Statement.³⁵ The 2014 and 2022 versions of the SHEA Compendium of Strategies to Prevent Healthcare-Associated Infections in Acute-Care Hospitals included implementation recommendations in all sections, and the latter will include a dedicated implementation chapter.^{36,37}

Guidance format

To operationalize this change, it is necessary to consider how implementation might be presented within current practice guideline and guidance document formats. An implementation effort's success relies heavily on 2 key factors: the context of the work (local factors such as operational support, informatics resources, familiarity and experience, willingness to change, safety culture, etc)³⁸⁻⁴¹ and the conceptual framework utilized for the effort. In 2010, Saint *et al*⁴⁰ articulated the importance of conceptual framework as it pertains to infection prevention by assessing the failure of Semmelweis' conclusive hand hygiene data to become standard practice. They speculated that it was due to 3 factors: a delay in publication, offending those who challenged his findings, and lack of a conceptual framework. Germ theory had yet to be proposed, and providers struggled to find a way to link "infective vapors" to hand hygiene.⁴⁰

In most current guidance, recommended practices are prescriptive by design, providing an action facilities or healthcare personnel should perform for improved outcomes. Guidance for implementation by its nature should not be prescriptive. Rather, it should make it easy for institutions to understand a framework used to generate evidence to help them determine how to proceed locally, such as identifying local factors that would affect implementation and choosing a framework likely to be successful. Summarizing others' experiences can help facilities decide which path to follow.³⁵ Similarly, evidence utilized need not be specific to the area in which the guidance is concentrated. For example, strategies used to guide consumer choices have been used to improve adherence to infection prevention interventions such as hand hygiene.⁴³⁻⁴⁵ Provision of source evidence may prove helpful to end users.

In conclusion, robust evidence of methods utilized to implement evidence-based practices is widely available and can generate meaningful guidance. Standardizing the expectation that practice guidelines and guidance documents will include implementation recommendations will help generate more robust research on how to put recommendations reliably and sustainably into practice, will enhance the impact of practice guidelines and guidance, and will create safer environments for patients and staff.

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