Rapid Appraisal System for COVID-19 Medical Information

Raymund R. Razonable, MD; William F. Marshall III, MD; Ryan W. Stevens, PharmD; Shaji Kumar, MD; M. Hassan Murad, MD; and Walter R. Wilson, MD

The novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection was first reported in Wuhan, China, in December 2019. Since then, the virus has spread across countries and continents, and on March 11, 2020, coronavirus disease 2019 (COVID-19) was declared a pandemic by the World Health Organization. Because COVID-19 is a novel disease, not much is known about its epidemiology, clinical course, treatment, and outcomes. As a result, medical providers around the world have grappled with how best to manage the pandemic. Over the months since the disease was reported, medical information has increased rapidly and exponentially on SARS-CoV-2 and COVID-19.

THE NEED

The paucity of baseline knowledge and clinical experience coupled with the rapid pace of new literature reported on SARS-CoV-2 and COVID-19 is overwhelming medical professionals who have reported mental fatigue amid the information overload. The premature opinions voiced in the lay press and social media have added further confusion, as they are often not accompanied by sound interpretation of, for example, a study’s methodology and findings. Whereas many reports have been useful in the clinical care of patients, the publication of prerelease (preprint), non-peer-reviewed papers has, at times, increased the risk of harmful outcomes and adverse drug events. To better guide our medical providers, we created a Rapid Literature Review Task Force to streamline our process of assessing the rapidly expanding medical information on COVID-19. The classic 4A’s approach (ask, acquire, appraise, apply) that was proposed in the early days of the evidence-based medicine movement captures the methods of this task force (Figure).

THE STRATEGIES

First, we defined the primary goal of the Rapid Literature Review Task Force, which was to provide guidance to our clinical practice by comprehensively and meaningfully assessing the rapidly expanding COVID-19 literature. We engaged stakeholders from within and outside our division, including faculty, fellows, pharmacists, and allied health professionals. We also sought diversity among the membership to ensure that the different aspects of COVID-19 were represented—from epidemiology to infection prevention and control, diagnostics, therapeutics, clinical care, and public health issues, among others.

Second, we established key relevant questions that guided our work, such as the following: How is SARS-CoV-2 transmitted? What are the prevention strategies and critical ways to preserve personal protective equipment? What is the role of antimicrobial agents as preventive and treatment measures? How do we best manage COVID-19? What is the role of asymptomatic individuals in the spread of the disease? Subgroups were created, assigned to each of the major topics, and tasked with rapidly reviewing and compiling the existing literature at the time the Rapid Literature Review Task Force was formed, and in real time, the evolving literature on their assigned topics. Priority was given to appraising peer-reviewed COVID-19 literature published in high-impact journals. We also involved a medical librarian, which was key to helping subgroups identify
relevant literature and screen out publications that were unlikely to be impactful.

Third, we partnered with the Mayo Clinic Robert D. and Patricia E. Kern Center for the Science of Health Care Delivery, which has an established program for evidence synthesis that supports national guideline development and other policymakers. The program developed a dedicated framework in response to the COVID-19 pandemic that included methods to conduct and index rapid reviews and repositories of studies published on the pandemic since the first reported case. To date, the Kern Center’s evidence synthesis program has indexed more than 2000 publications on this topic.

Fourth, the relevance of the publications and their findings were discussed among the subgroup members and then shared and discussed at virtual meetings with the full Rapid Literature Review Task Force. The following key questions guided our discussions: Is the information novel? Does the new finding confirm or change our current knowledge on disease transmission, diagnosis, prevention, or treatment? What is the risk of bias? Are the data from a peer-reviewed publication? Although the certainty in evidence (also called the strength of evidence) should be assessed for the effect of an intervention across all available studies, the rapid publications necessitated that the strength of the evidence from each study was reviewed. Greater emphasis was given to controlled clinical trials, large epidemiological studies, and well-conducted diagnostic test evaluation, among others.

THE IMPLEMENTATION
The Rapid Literature Review Task Force contributed relevant information to different sectors of our pandemic response—from infection prevention and control to diagnostic guidance and clinical management, among others. A careful review of the rapidly evolving literature allowed the contribution of solid and relevant findings to groups tasked with developing institutional guidelines for the prevention, diagnosis, and management of COVID-19.

The clinical and management guidance was initially shared within the institution through its publication on the internal infectious diseases division webpage and was subsequently built into the system’s internal platform for guidelines, clinical pathways, and care process models (eg, AskMayoExpert). This allowed findings from the Rapid Literature Review Task Force to be integrated into the clinical practice through widespread dissemination to medical providers and other end users, both within our health enterprise and beyond our walls.

The content of the guidance continues to be enhanced and expanded as new information becomes available. By carefully assessing the

FIGURE. Framework for rapid review and appraisal of coronavirus disease 2019 literature. PPE = personal protective equipment. Used with permission of Mayo Foundation for Medical Education and Research.
extensive available and emerging literature, the output of the Rapid Literature Review Task Force has optimized the institutional response to this pandemic and provided clinicians with a usable framework for the provision of individual patient care.

CONCLUSION
The rapid publication of medical information on the viral pandemic required an equally rapid review and appraisal of its relevance in our clinical practice. We applied a systematic approach to adequately and comprehensively appraise and apply the literature. Multidisciplinary collaboration is necessary to leverage everyone’s expertise—specifically, partnership among the data analysts and clinical experts has been instrumental to the success of this group’s task in contributing to the institutional pandemic response.

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REFERENCES