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CHEST

Hospital or Home?

A Pandemic Decision Tool in Context

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More than 175 million cases of COVID-19, the infection caused by SARS-CoV-2, have been detected worldwide.[1] Given the tremendous strain on health care systems caused by COVID-19, with cases meeting or exceeding capacity in several regions, there is an urgent need to discriminate between patients who can be treated safely in the outpatient setting vs those who require hospital admission. ED disposition is one of many challenges posed by the pandemic, and tools to assist clinicians in triage and discharge decisions have potential high value.

In this issue of *CHEST*, Douillet et al[2]present a clinical decision tool, the Hospitalization or Outpatient ManagEment of patients with SARS-CoV-2 infection (HOME-CoV) rule, to predict safe discharge from the ED of adult patients with confirmed or suspected SARS-CoV-2. The study was conducted in 34 EDs (France, 31; Belgium, 2; Principality of Monaco, 1) and included patients without critical care or resuscitation, care limitations, and social needs compelling admission. The HOME-CoV rule criteria were established with the use of a Delphi method that included 51 experts in emergency medicine, geriatrics, infectious diseases, and ethics.[3] Investigators tested the tool in two phases: (1) observational, with disposition decided by treating ED physician and passive assessment of HOME-CoV predictive value, and (2) interventional, when treating physicians applied the tool to determine discharge but were given latitude to overrule. Among patients who met HOME-CoV criteria for discharge and were sent home (n = 1239; 41%), four and six patients had an adverse outcome (intubation or death) within 7 and 28 days, respectively, with an area under the curve of 81 at each timepoint. After a weighting-based propensity score was applied to account for population differences, application of the tool did not result in an increased rate of discharge to home.

FOR RELATED ARTICLE, SEE PAGE 1222

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This article highlights several important areas of consideration in developing, evaluating, and implementing clinical decision-making tools to standardize care decisions during a pandemic. In this case, a Delphi method was used to collate expert opinion with an efficient and evidence-based approach. Development of such tools, especially early in a pandemic when disease-specific data are scarce, often requires extrapolation from similar populations and reliance on expert opinion. Indeed, throughout the pandemic, similar approaches have been used to standardize care of acutely ill patients with COVID-19 via dissemination of clinical guidelines[4] and to identify core outcome measures for clinical trials in patients with COVID-19.[5] Such recommendations and measurement sets provided essential guidance for clinicians on the frontlines and a pathway for efficient conduct of epidemiologic and interventional studies. Clinicians and researchers continue to rely on such expert guidance and Delphi methods to manage post-acute sequelae of SARS-CoV-2, which represents the next phase of the COVID-19 pandemic.[6]

When such tools and clinical guidelines are being evaluated, context is essential. The HOME-CoV rule was tested between April 9 to May 11, 2020, during the first surge in the region of study. The authors specifically noted that the capacity rate of ICUs in France was at ≥99% during this period.[3] With high demand encroaching on or exceeding capacity, triage precision is necessary for both individual patient safety and to prevent undue stress on the health system and population consequences thereof.[7] Although the current investigation aimed to discriminate between safe and unsafe discharge (as defined by the adverse outcomes mentioned earlier), Douillet et al[3] mentioned several other tools that had been developed to predict ICU care

needs. The validated Pandemic Respiratory Infection Emergency System Triage Severity Score,[8] highlighted by the American College of Emergency Physicians within an ED management tool,[9] was developed to predict risk of organ failure and/or death and similarly is based on information from history and physical examinations. Tools such as HOME-CoV and Pandemic Respiratory Infection Emergency System Triage, which were designed for rapid implementation at bedside without advanced diagnostics, have clear potential for benefit in both lower-resource settings and in the context of high volumes of patients whose condition requires evaluation.

Discharge safety and success, as defined by the authors, is also influenced by care availability after discharge. The HOME-CoV rule was designed and implemented largely in the context of a nationalized health system, and the authors discussed the potential organization of close ambulatory follow up by many hospitals for patients with probable or confirmed COVID-19. Because support for patients who are discharged from ED care with suspected or confirmed COVID-19 varies by region, health system, and patient resources, discriminative capacity in alternate systems would require interrogation where care is not comparable. Notably, the authors incorporated risk criteria for inadequate social resources into the decision tool, though only in combination with severe comorbidity. In the United States, uninsured or underinsured individuals and those who may not have primary care are vulnerable to discharge failure (eg, return to the ED with illness),[10] and this criteria may be of enhanced importance. Alternatively, higher intensity follow up, which includes remote patient monitoring programs or discharge clinics with specific expertise in acute and subacute COVID-19 manifestations and care, may provide a safety net and increased confidence in ED discharge.

Ultimately, implementation of decision tools and clinical practice guidelines relies on the rapid dissemination and uptake of emerging evidence alongside clinician judgment.[11] Given the speed with which evidence evolves in the setting of a pandemic, clinicians must have a framework for considering when and how to incorporate decision tools into practice.[11] Ongoing development of therapies, care structures, and prevention strategies continually influence the impact of decision tools, creating a need for iterative evaluation. Importantly, the COVID-19 pandemic has demonstrated the value of the development of novel methods to capture and analyze data that routinely are collected as part of clinical care[12] and provide a platform for discovery and innovation. Implementation science can use such data to evaluate the effectiveness of tools and interventions efficiently and to provide an opportunity for rapid adaptation and refinement in future crises.[12]

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