Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Both studies highlight the importance of ascertaining the true prevalence of COVID-19 in the community to obtain accurate rates of morbidity and mortality. Even the perception of a strained health system can lead to unintentional excess deaths, from COVID-19 and other conditions, because individuals might avoid seeking care until later stages of disease or might die at home, leading to underestimates of the true mortality burden attributable to COVID-19. Cultural preferences related to treatment intensity, social determinants of health affecting the ability to access health care, health literacy, and implementation and adherence to public health policy standards all affect community trends in disease morbidity and mortality, and need to be considered in the interpretation of in-hospital mortality data.

Future studies should focus on linking community SARS-CoV-2 seroprevalence data, community viral load (for example, using wastewater-based screening), COVID-19 surveillance data, patient viral load data, and the role of nosocomial transmission from health-care workers acquiring infection in the community with hospital admission outcomes to model the progression of the pandemic and determine the concurrent infection fatality risk.[5,9,10] For example, in areas of high community transmission and high coinciding hospital admission and death rates, interventions to improve self-quarantining, health literacy, access to health care and full protective equipment, and frequent testing for hospital staff (to prevent nosocomial infection) could be prioritised and implemented. To be successful, this approach, in turn, would need better understanding of community transmission dynamics. As we continue to battle COVID-19, identifying high-risk patients in hospital and community settings will be crucial, as will insights from population-based studies, helping to focus our community-based and hospital-based public health initiatives.

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*Purnema Madahar, Hannah Wunsch, Prabhat Jha, Arthur S Slutsky, *Daniel Brodie*
hdb5@cumc.columbia.edu

Division of Pulmonary, Allergy, and Critical Care, Columbia University Irving Medical Center and New York-Presbyterian Hospital, New York, NY 10032, USA (PM, DB); Interdepartmental Division of Critical Care Medicine, University of Toronto, Toronto, Ontario, Canada (HW, ASS); Center for Global Health Research, St. Michael's Hospital, University of Toronto, Toronto, Ontario, Canada (PJ); Keenan Research Center, Li Ka Shing Knowledge Institute, St Michael's Hospital, Toronto, Ontario, Canada (ASS)

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Use of point-of-care testing for respiratory viruses in hospital

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In *The Lancet Respiratory Medicine*, Tristan Clark and colleagues report the results of a randomised controlled trial of point-of-care testing for influenza in patients in two UK hospitals in Hampshire, UK.[1] Before the emergence of COVID-19, influenza was the most important cause of admission to hospital with a respiratory virus. In England, influenza is estimated to have caused an average of 11 300 deaths per year between the 2015–16 and 2019–20 influenza seasons.[2] Influenza often goes undiagnosed in hospital, in part because of an absence of routine testing of patients with respiratory illness in this setting. For example, a study from Canada found that only around a quarter of patients with hospital admissions due to influenza

had a laboratory-confirmed diagnosis.[3] Standard PCR-based laboratory tests in hospital typically have a turnaround time of at least 24 h and sometimes longer, so cannot affect initial treatment decisions or early decisions about isolation for patients admitted as an emergency.[4] This long turnaround time might explain, in part, why widespread ordering of influenza tests does not occur in hospital. Given that early antiviral treatment in patients with influenza is more likely to reduce mortality than is later treatment,[5] these missed or delayed diagnoses could contribute to mortality. Data suggest that about 15% of influenza cases in hospital are due to nosocomial transmission, and around 9% of new influenza cases seed ongoing transmission in hospital; influenza outbreaks in hospital are thought to be common but under-recognised.[4,6] Hence, routine use of rapid diagnostics could contribute substantially to the prevention of influenza and influenza-related mortality among susceptible patients in hospital, but only if the diagnostics change clinical practice through earlier initiation of antivirals and appropriate isolation.

It is unusual to see a well conducted randomised controlled trial of the effect on practice of a new diagnostic tool. Clark and colleagues have run exactly such a trial in their assessment of a molecular point-of-care test (mPOCT) for influenza in adults admitted to hospital.[1] The investigators randomly assigned 623 patients with acute respiratory illness to mPOCT, with results back within 1 h (n=307), or to usual practice (n=306). If influenza was detected by mPOCT, clinical teams followed national guidelines for the treatment of influenza. Median age of participants was 62 years (IQR 45–75) and 332 (54%) of 612 participants with data were female. Although 202 (33%) of 613 participants had influenza infection, only 63 (62%) of 102 with influenza in the control group were treated with antivirals within 5 days of admission to hospital compared with 99 (99%) of 100 diagnosed by mPOCT. Furthermore, the median time to initiation of antivirals was 1 h (IQR 0·0–6·0) in the intervention group compared with 6 h (0·0–12·0) in the control group. The authors found that, compared with standard of care, the use of mPOCT strongly affected the likelihood that patients with influenza were appropriately isolated in single-room accommodation, minimising the risk of onward transmission. 70 (70%) of 100 patients with influenza in the intervention group were accommodated in this way compared with only 39 (38%) of 102 in the control group. This observation suggests that routine use of rapid diagnostics could help to prevent influenza in vulnerable patients by supporting early isolation that prevents nosocomial transmission.


Dr P. Marazzi/SPL

The trial is pragmatic in the sense that the outcome measures are changes in clinical practice rather than hard measures of reductions in mortality, morbidity, or transmission. Nevertheless, unless diagnostics alter clinicians' behaviour, they cannot change clinical outcomes or affect onward transmission. We often rely on assessment of test characteristics such as accuracy, speed, and point-of-care delivery and assume that improving these characteristics will lead to meaningful changes in management.[7] Therefore, standards for assessing the clinical utility of diagnostics are considerably lower than those for new therapeutics. There is a need for improved evidence on the impact of novel diagnostics because the introduction of new technologies always leads to some disruption, additional costs, possibilities of unwanted consequences, and uncertain effects on practice.

At the height of the first wave of the COVID-19 pandemic, about 15% of COVID-19 cases in a hospital in London, UK, were due to nosocomial transmission; 36% of patients who became infected in hospital subsequently died.[8] However, despite the recommendation from April, 2020, that all patients admitted to hospital across the UK National Health Service be tested routinely using PCR for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2),[9] data indicate that an increasing proportion of patients with COVID-19 in hospital developed symptoms more than 7 days after admission, suggesting that they probably acquired infection in hospital.[10] These findings point to the need for increased use of rapid turnaround tests—an approach that was shown to be feasible for SARS-CoV-2 in a non-randomised trial of point-of-care testing by the same study group[11]—to enable appropriate isolation or cohorting of symptomatic patients while awaiting laboratory results.

When considering the use of rapid diagnostic tests for control of respiratory infections in any setting, there are important trade-offs between accuracy, speed, ease of use, coverage, the usefulness of true-positive and true-negative tests, harms associated with false-positive and false-negative results, the likelihood that

individuals or clinicians will act on the test results, availability, and cost. Although trials of the use of rapid diagnostics are ideal to assess the potential net effect of all of these variables on important outcomes, doing such trials across the wide range of potential uses of rapid diagnostics, especially in the context of a global health emergency, is challenging. Modelling studies that incorporate these parameters and are informed by real-world data from field studies can and should inform the investments being made in the development and use of rapid diagnostics. In future years, we will probably continue to need to respond to annual cycles of respiratory infection, including variants of SARS-CoV-2 and seasonal strains of influenza. Routine use of rapid diagnostic tests in emergency rooms and inpatient areas could play an important part in reducing mortality associated with these infections.

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Andrew C Hayward
a.hayward@ucl.ac.uk

Institute of Epidemiology and Health Care, University College London, London WC1E 6BT, UK

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Should we ration extracorporeal membrane oxygenation during the COVID-19 pandemic?

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The COVID-19 pandemic has raised challenging questions about the rationing of intensive care unit (ICU) beds, mechanical ventilators, and extracorporeal membrane oxygenation (ECMO).[1] Experts have recommended that ECMO be curtailed or even halted when patient numbers surpass an ill defined threshold, wherein demand for critical care outstrips available resources.[2] It might seem counterintuitive to reduce the provision of ECMO at precisely the time when demand increases, yet it could be deemed necessary. In this Comment, we argue that a decision to curtail or continue ECMO should be deliberate and reasoned, such that alternatives are actively rejected.

According to a large German registry, approximately 17% of patients with COVID-19 treated in hospital during the first few months of the pandemic required mechanical ventilation and 1% received ECMO.[3] Both modalities are complex and can entail a prolonged ICU stay; however, the resource intensity of ECMO is typically higher, especially with respect to ICU staffing.[4] Therefore, if ICU staff are the primary scarce resource, cessation of an ECMO programme might result in more patients being treated. However, if it is not staff that are scarce, but mechanical ventilators or ICU beds, the same might not hold true.

ECMO comes relatively late in the acute respiratory distress syndrome (ARDS) treatment algorithm, and is only considered in a subset of patients with the most severe forms of ARDS.[5] The value of ECMO is not universally accepted as part of established critical care in the way that mechanical ventilation is; therefore, access to ECMO might not be regarded as a right equal to access to mechanical ventilation.