high. Therefore, stopping the use of suboptimal vaccines in nationwide immunisation programmes needs to be taken seriously by decision makers.

Furthermore, Bennett and colleagues[1] noted that almost a third of the rotavirus strains genotyped from household contacts of cases were similar to those isolated from the case children. This finding is astounding as it implies that a big proportion of household contacts had rotavirus infection from sources other than the case children. Therefore, the presence of massive asymptomatic transmission of rotavirus in the community can be assumed, which calls for concerted prevention efforts.

To make sure that their work is complete, Bennett and colleagues[1] have gone a step further in showing the factors contributing to transmission of rotavirus infection and the risk factors that are responsible for developing rotavirus disease. This effort is highly commendable, as it has expounded on which factors need to be addressed to increase vaccine effectiveness against transmission, thus minimising the proportion of people that progress to developing rotavirus disease.

Furthermore, Bennett and colleagues[1] showed a 39% vaccine effectiveness against rotavirus transmission among the vaccinated population compared with a counterfactual unvaccinated population. Since vaccine effectiveness measures how well a vaccine performs when it is used in routine circumstances in the community, this percentage is a true representation of the reality of vaccine effectiveness in Malawi.[6] Notably, this finding goes beyond the directly protective effects of the vaccine on the children who received it, but shows its effects on protecting household contacts against transmission through vaccine-mediated herd immunity. This knowledge is very useful to promote the rotavirus vaccine in the community through health education and awareness campaigns, to ensure sustained vaccine uptake at health facilities, and to stimulate the development of better vaccines in the event that the vaccine is noted to have reduced effectiveness.

Vaccine effectiveness is an important factor in health economics and health planning. The idea of incorporating a vaccine into national immunisation schedules depends on the balance of understanding what proportion of the disease burden is vaccine-preventable. At any vaccine cost, the greater the burden of disease and the proportion of vaccine-preventable disease are, the more cost-effective a programme will be.[7] This consideration is crucial to guide the implementation of cost-effective immunisation strategies, especially in low-income countries, where there is a need to minimise wasting of resources. Cost-effective strategies will, in turn, impact positively the gross per-capita incomes of these countries, as resources will be channelled towards highly efficient interventions that will drive economic growth. We are therefore calling on decision and policy makers to strongly consider the evidence that has been presented in the Article by Bennet and colleagues,[1] as it could be a hallmark for evidence-based decision making.

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*Tisungane Edward Mwenyenkulu, Peter Austin Morton Ntenda
tisunganemwenyenkulu@yahoo.com; peterantenda@yahoo.com

Department of Clinical Sciences, Academy of Medical Sciences, Malawi University of Science and Technology, PO Box 5196, Limbe, Malawi (TEM); and Malaria Alert Centre, College of Medicine, University of Malawi, Private Bag 360, Blantyre, Malawi (PAMN)

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Alternatives to conventional hospitalisation that enhance health systems' capacity to treat COVID-19

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COVID-19 has led to hospitals exceeding their usual capacity and, in some cases, being forced to fully commit to COVID-19 management. Overwhelmed hospitals have established more demanding admission criteria, which have severely impacted long-term care facilities such as nursing homes. Other vulnerable


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groups, including homeless people, economically disadvantaged communities, and Black residents of US inner cities, have also been affected by high COVID-19 incidence rates and concomitant shortcomings in medical assistance.[1] In this context, the need for alternative care models for COVID-19 management outside the hospital has emerged.

On Nov 25, 2020, the Centers for Medicare & Medicaid Services announced a comprehensive strategy to enhance hospital capacity amid the surge of COVID-19 cases that expands the Hospital Without Walls programme and builds on previous work by the same services to expand telehealth coverage. The new strategy encompasses hospital-at-home units, the temporary certification of ambulatory surgical centres as hospitals, and the provision of inpatient care for longer than is normally allowed. Thus far, various outpatient alternatives have been proposed, adapted to local needs and resources. From providing shelter to patients whose housing does not permit quarantining to treating patients with non-severe COVID-19, the aims of the outpatient alternatives are translated into different levels of care intensity.

For more on this **strategy** see https://www.cms.gov/newsroom/press-releases/cms-announces-comprehensive-strategy-enhance-hospital-capacity-amid-covid-19-surge

Infection between cohabitants, especially those living in economically deprived environments and overcrowded housing, is one of the main drivers of COVID-19 dissemination.[2] Individual, well ventilated rooms and separate bathrooms are needed at home to appropriately quarantine people infected with SARS-CoV-2 and ensure the safety of cohabitants.[3] These requirements are unattainable for many people, even in high-income countries. Shelter hospitals are civil buildings, such as sports pavilions or hotels, that are adapted to accommodate patients with COVID-19 not needing acute medical care.[4] Patients can be referred from the community (including primary care) or hospitals (if they are discharged early with asymptomatic or mild disease). When hospital capacity is particularly under stress, alternatives are needed to provide essentially the same care as in hospital wards. Patients with non-severe COVID-19 can be treated in civil buildings or receive acute hospital care at home. Patients with moderate COVID-19 might rapidly worsen; therefore, other than optimising admission criteria, these alternatives should be able to provide adequate intermediate care and prioritised transfer to hospital within hours. This model has been applied by adapting sports pavilions, concert venues, and hotels, in addition to hospital-at-home units. Hospital-at-home units might be repurposed to manage patients with non-severe COVID-19 at their homes or nursing homes.[5] In-person visits by nursing and medical staff can be combined with telemedicine to increase capacity while preserving the quality of care.

Fangcang shelter hospitals in China played a major role in tackling the first wave of the pandemic. These hospitals were rapidly deployed by use of pre-existing civil buildings and thousands of patients with COVID-19, including many with moderate COVID-19, were managed with good outcomes.[6] Medicalised hotels can provide complex care to patients with COVID-19, including those with severe baseline conditions or solid organ transplant recipients.[7]

By improving the early detection of complications, the number of patients with mild COVID-19 but with risk factors for clinical worsening who are treated outside of hospital can be increased. Although this approach might rely on in-person visits, this model has also been facilitated by the application of telemedicine and monitoring devices. For example, so-called virtual hospitals have been established for patients discharged from emergency departments[8,9] and for health-care workers with COVID-19.[10]

Although there are some proof-of-concept data of the utility of alternatives for outpatient management of patients with COVID-19, many gaps remain. Adequate strategies for the clinical assessment of patients according to disease severity should be better characterised. Developing standardised criteria for allocating patients to the best fitting strategy should be a priority, although there is probably room for hybrid approaches. In addition, international guidance is required for the adaptation of civil buildings, especially with respect to staff safety and logistical needs. The deployment of alternative outpatient models in a specific setting should be planned and evaluated; therefore, further information on the cost-effectiveness of these models is warranted, as it might affect decisions such as timing (eg, opening only during surges or until the pandemic is over), staffing (ad hoc or structural), or whether some models could be used for other purposes (eg, vaccination delivery).

In conclusion, outpatient alternatives to conventional hospitalisation are promising models to improve the resilience of health systems against COVID-19.

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*David Nicolás, Emmanuel Coloma, Juan M Pericàs
dnicolas@clinic.cat

Hospital at Home Unit, Internal Medicine Service (DN, EC) and Infectious Disease Service (JMP), Hospital Clínic Barcelona, University of Barcelona, Barcelona 08036, Spain; Liver Unit, Internal Medicine Department, Vall d'Hebron University Hospital, Vall d'Hebron Institute for Research, Barcelona, Spain (JMP)

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The effect of seasonal respiratory virus transmission on syndromic surveillance for COVID-19 in Ontario, Canada

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Emerging evidence suggests that syndromic surveillance systems can predict outbreaks of COVID-19 with high spatial and temporal resolution.[1–3] These methods can be used as early warning systems to guide regional decisions about public health policy. Tools include passive methods (eg, tracking health-care encounters) and more active participatory surveillance, whereby individuals self-report symptoms by telephone or internet.[2–4] It is unknown whether circulating seasonal respiratory viruses affect the performance of surveillance tools for COVID-19, although symptomatic overlap makes it a theoretical concern.[5] We investigated the role of test positivity for non-SARS-CoV-2 respiratory viruses on two independent COVID-19 syndromic surveillance systems in Ontario, Canada.

We included COVID-19-like illness as recorded by self-reported symptoms from Outbreaks Near Me. We also recorded visits to emergency departments for respiratory infection from the Acute Care Enhanced Surveillance system, provincial COVID-19 case counts, and percent positivity for other respiratory viruses as reported by Public Health Ontario, from April 20 to Nov 1, 2020. COVID-19-like illness was defined according to the US Centers for Disease Control and Prevention surveillance case definition for COVID-19.[6] The Acute Care Enhanced Surveillance system uses validated machine learning algorithms to categorise visits to emergency departments into clinical syndromes.[7] See appendix (pp 1–2) for a full description of data sources and syndromic definitions.

We compared the weekly (ie, by International Organization for Standardization date week) number of reported COVID-19 cases against the proportion of Outbreaks Near Me respondents with COVID-19-like illness and the proportion of all visits to emergency departments for respiratory infection. Separately, we plotted the percent positivity for other respiratory viruses over the same time period (ie, weeks 17–44). We reported Pearson's correlation coefficients before and after the uncoupling of syndromic tools to COVID-19 cases. Data were analysed in R (version 4.0.1) in the RStudio software environment (version 1.1.463). The study was approved by the Research Ethics Board of the University of Toronto, Toronto, ON, Canada, and a waiver of informed consent was granted because the data were collected for purposes of public health surveillance.

There were strong positive correlations between COVID-19 cases and both COVID-19-like illness (r=0·86) and visits to emergency departments for respiratory causes (r=0·87) up to and including week 40. Subsequently, from weeks 41 to 44, there were strong negative correlations between COVID-19 and both COVID-19-like illness (r=–0·85) and visits to emergency departments for respiratory causes (r=–0·91; appendix p 3). We also observed a rise in enterovirus or rhinovirus percent positivity from weeks 35 to 39, to a peak of 22·8% in week 39, and a subsequent fall

See **Online** for appendix