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2. Santé Publique France. Available at: <https://www.santepubliquefrance.fr/maladies-et-traumatismes/maladies-et-infections-respiratoires/infection-a-coronavirus/documents/bulletin-national/covid-19-point-epidemiologique-du-9-avril-2020>. Accessed April 18, 2020.
3. World Health Organization. Clinical management of severe acute respiratory infection (SARI) when COVID-19 disease is suspected: Interim guidance V 1.2. Available at: [https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-\(ncov\)-infection-is-suspected](https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-(ncov)-infection-is-suspected). Accessed April 18, 2020.
4. World Health Organization. Integrated care for older people (ICOPE): Guidance for person-centred assessment and pathways in primary care. World Health Organization. Available at: <https://apps.who.int/iris/handle/10665/326843>. Accessed April 18, 2020.

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Hospital-at-Home as an Alternative to Release the Overload of Healthcare Systems During the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Pandemic



To the Editor:

The novelty and fast spread of the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) have made it impossible to scientifically determine the best approach for its management and to take evidence-based political measures to try to tackle it.¹ Several countries worldwide have adopted political measures of confinement of the population and restriction of free movement within their territories to mitigate the collapse of their healthcare systems.¹ In this scenario of countries' quarantine and of lack of healthcare resources, a potentially effective and efficient alternative to provide healthcare for noncritical patients with a confirmed SARS-CoV-2 infection is the promotion of Hospital-at-Home (HaH) services.

HaH is a healthcare modality that administers specialized medical care to patients within their own homes for illnesses that usually would require a hospitalization.^{2–4} This healthcare modality has been successfully used for the treatment of acute exacerbations of chronic respiratory diseases, as is the clinical presentation of a great number of patients infected with SARS-CoV-2.^{5,6} Furthermore, it has shown at least noninferiority in comparison to traditional hospital in-patient treatment options.^{2,5–7} In a context of lack of evidence on SARS-CoV-2, and given its similarity with viral infections (eg, picornaviruses or influenza A) that are a major cause of acute respiratory exacerbations,^{8,9} it is reasonable to assume that HaH could be an effective option for its management.^{5,7}

Considering the overload of the hospital emergency and intensive care departments and their limitation in the number of beds, previous research shows that the use of HaH might help to release this burden liberating them.^{2,7} The adoption of this type of attention could be particularly relevant in the prevention of new cases caused by potential nosocomial infections.¹⁰ Despite this, given the possibility of infection of other individuals living in the same home, the referral of HaH should be done in all cases, providing advice to the patient and relatives on specific self-isolation guidelines. Furthermore, as it was observed during the current pandemic, the lack of healthcare professionals caused by the necessary self-isolation after infection during their working time could be an important determinant of the collapse of the healthcare system. Therefore, promoting the fast implementation of HaH services might help to prevent the consequences of a likely upturn of SARS-CoV-2 infections, as well as the collapse of healthcare systems.

References

1. Jones DS. History in a crisis—Lessons for COVID-19. *N Engl J Med* 2020;382:1681–1683.
2. Conley J, O'Brien CW, Leff BA, et al. Alternative strategies to inpatient hospitalization for acute medical conditions. *JAMA Intern Med* 2016;176:1693.
3. Leff B. Defining and disseminating the hospital-at-home model. *Can Med Assoc J* 2009;180:156–157.
4. Arias-de la Torre J, Zioga EAM, Muñoz L, et al. Grupo de Trabajo HaD Cataluña. Early-discharge and admission-avoidance hospital-at-home programs: Outcomes and associated factors. *Emergencias* 2019;31:440–441.
5. Ram FSF, Wedzicha JA, Wright J, Greenstone M. Hospital at home for patients with acute exacerbations of chronic obstructive pulmonary disease: Systematic review of evidence. *Br Med J* 2004;329:315.
6. Jeppesen E, Brurberg KG, Vist GE, et al. Hospital at home for acute exacerbations of chronic obstructive pulmonary disease. *Cochrane Database Syst Rev* 2012:CD003573.
7. Davies L, Wilkinson M, Bonner S, et al. "Hospital at home" versus hospital care in patients with exacerbations of chronic obstructive pulmonary disease: Prospective randomised controlled trial. *BMJ* 2000;321:1265–1268.
8. Sethi S. Infectious etiology of acute exacerbations of chronic bronchitis. *Chest* 2000;117:380S–385S.
9. Viniol C, Vogelmeier CF. Exacerbations of COPD. *Eur Respir Rev* 2018;27:170103.
10. Moss P, Barlow G, Easom N, et al. Lessons for managing high-consequence infections from first COVID-19 cases in the UK. *Lancet* 2020;395:e46.

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Continuing Chronic Disease Care During COVID-19 and Beyond



Patients with chronic diseases incur indirect costs to health care through recurrent hospital admissions, generate congestion in emergency rooms, and present challenges with transportation for those with mobility impairment.¹ In Singapore, the proportion of older adults with 3 or more chronic diseases nearly doubled from 2009 to 2017.² In our local setting, patients with complex chronic diseases maintain scheduled in-person consultations with hospital-based specialists. The COVID-19 pandemic has prompted us to explore innovative ways of continuing outpatient care.

We have introduced the following outpatient-based measures to cope with the COVID-19 surge: (1) preemptive chart reviews and triaging of patients ahead of their appointments to determine the urgency of upcoming reviews; (2) postponing nonurgent follow-up visits while conducting phone, e-mail, or video consultations for selected patients; (3) limiting the number of accompanying acquaintances for patients attending clinics to reduce human traffic; (4) reconciling routine investigations common among different specialty clinics to be done at the same sitting; and (5) arranging for patients whose primary physicians are deployed to attend to patients with COVID-19 infections to be seen by other physicians. The implementation of these changes has led us to evaluate the utility and limitations of our current clinic structure.

We examine the current checkpoints for a patient during a typical clinic visit in our centers, which have become chokepoints due to the increasing complexity of interim care processes. These checkpoints include (1) triage point for routine parameters; (2) venipuncture room for completion of laboratory investigations; (3) waiting area for patients before in-person consultations; and (4) waiting areas at pharmacies. We see the redundancy of the triage point as it provides an inaccurate 1-time snapshot of a patient's clinical parameters that can also be confounded by a white-coat effect. Telemonitoring of these parameters between in-person consultations, coupled with graded and progressive medical interventions, would be more accurate and reflective of chronic care, as opposed to 1-time intervention based on snapshot parameters. To avoid overcrowding of patients in the venipuncture room, we could reorganize the phlebotomy service and completion of laboratory investigations at various primary care or community-based medical facilities that are within the vicinity of patients' residential areas. Such an arrangement would be especially convenient for frail older patients with mobility impairment.

Our vision of a chronic disease clinic of the future is that of virtual consultations interspersed with ad hoc in-person consultations when necessary. Telemedicine helps facilitate remote patient contact with the health care team and has previously been shown to reduce mortality and hospitalizations and lead to

an improvement in the quality of life when applied to the management of chronic diseases.^{3,4} Telemonitoring of relevant clinical parameters, together with protocolized investigations, can be consolidated into a virtual monitoring system supported in real-time by a multidisciplinary team, in regular communication with the patient's primary physician. Interventions, including lifestyle modifications, dietary counseling, and medication compliance, can be effected based on these parameters between in-person consultations. In our pandemic experience, processes that were conventionally performed in-person, such as counseling patients on their disease trajectories, personalized advice on preventing disease progression, discussions about advance care planning, and renal replacement therapy, could be effectively done over an extended phone discussion or via videoconferencing. Patient

Table 1
Outpatient-based Strategies During COVID-19 and the Vision Beyond

Outpatient Clinic Framework and Measures	
Conventional (Before COVID-19)	<p>Scheduled, regularly timed clinic visits consisting of in-person consultations by patients' primary physicians.</p> <p>Mandatory checkpoints at each clinic visit:</p> <ul style="list-style-type: none"> (i) Triage point (ii) Venipuncture room: <ul style="list-style-type: none"> • Designated area where laboratory investigations in preparation for the planned clinic session are completed. (iii) Designated waiting area for patients before consultation (iv) Hospital-based pharmacies where patients collect their medications following every clinic visit.
Current (During COVID-19)	<p>(i) For every scheduled clinic review, the physician will determine the suitability of 1 of the following 3 options:</p> <ol style="list-style-type: none"> 1. Deferment of the in-person consultation to a later date. 2. Conduct a phone consultation or video consultation in place of an in-person consultation. 3. If a patient requires an in-person consultation that cannot be postponed to a later date: <ol style="list-style-type: none"> a. Arrange for cover by another physician if the patient's primary physician is deployed to attend to patients with COVID-19 infections. <p>Phone or video consultations:</p> <ul style="list-style-type: none"> • Ideal for patients who are currently able to do home-based blood pressure monitoring, weight trending, and glycemia monitoring. • Enables continuity of care by physicians deployed to attend to patients with COVID-19 infections. <ul style="list-style-type: none"> (ii) Specialists may work together to arrange for completion of laboratory investigations at the same sitting, or reconcile routine tests to be done at regular intervals to avoid repetition. (iii) Promote the use of home delivery of medications to avoid patients having to congregate at pharmacy waiting areas. (iv) Limit the number of accompanying acquaintances for patients attending clinics.
Beyond COVID-19	<ul style="list-style-type: none"> (i) Implementation of home-based telemonitoring capabilities for all patients with chronic diseases who require them. <ul style="list-style-type: none"> • Removes the need for a triage point in the clinic (ii) Develop a multidisciplinary team (nurse practitioner, allied health professional) to <ul style="list-style-type: none"> • Monitor clinical parameters between clinic visits • Highlight any strikingly abnormal trends in clinical parameters to relevant physician(s) to effect interventions between clinic visits. (iii) Spread out the phlebotomy service and completion of laboratory investigations to more locations, including community-based medical facilities. (iv) Design an individualized outpatient schedule that combines teleconsultations with in-person consultations, coordinated between specialties and primary care providers.