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### Bringing the Hospital Home

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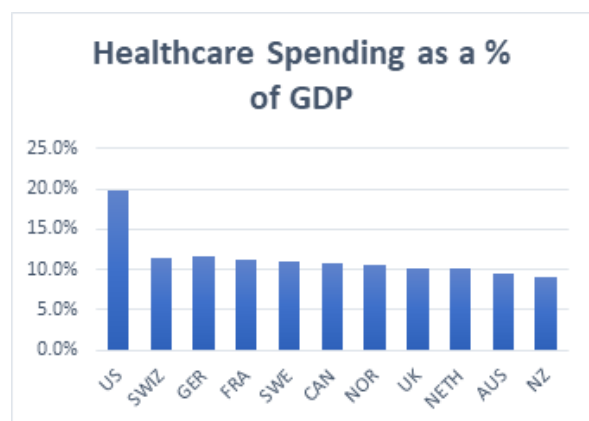
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# Bringing the Hospital Home

By Preston Wiley

Medical bills contribute to more than two-thirds of bankruptcies in the United States.<sup>1</sup> Many question whether the high cost of health care is worth the benefits. Americans also disparage over the relatively poor performance of the U.S. healthcare system compared to those of other developed countries who spend less on healthcare. At nearly 20% of GDP, the United States spends almost twice as much as countries of similar wealth. Switzerland and Germany come in second place, both at about 11% of GDP.<sup>2</sup>



Unfortunately, this excessive spending on healthcare does not translate to longer, healthier lives for Americans. Economists, public health professionals, physicians, and government officials are looking to new methods of healthcare delivery in hopes of lowering costs and improving treatment outcomes. An innovative model for delivering hospital-level care in patients' homes, known as "hospital-at-home," was made popular in the midst of pandemic conditions which created an immediate need for more hospital beds.

Patients and clinicians who are new to hospital-at-home programs have concerns about this care model. They wonder about the safety implications of delivering hospital-level care in patients' homes via telemedicine

and remote patient monitoring technologies. It is indeed safe, according to Jared Conley (MD, PhD), the associate director of the MGH Healthcare Transformation lab, and his colleagues. They note that findings indicate patients receiving this type of care can count on their treatment to meet, or exceed, the standards of traditional, hospital-based medicine.

The delivery of acute, home-based care through the hospital-at-home model continues to emerge as a viable method for enabling hospital-level care in patient homes. Improved treatment outcomes and reduced costs have been well-documented over the past decade. Economists and health systems estimate that moving acute care from the hospital to the patient's home reduces expenses by about 30%.<sup>3</sup> With policy changes on the horizon that will further enable the insurance reimbursement of home-based acute care, an increasing number of health systems are considering investing in the development of hospital-at-home programs.

This trend calls attention to the increasingly prevalent use of virtual visits to deliver home-based acute care. Leveraging virtual visits in this lighter-asset model offers an opportunity to conserve human capital and financial resources, as well as promote improved satisfaction for both clinicians and patients. Appropriately substituting virtual visits for in-person visits could further permit the development of hospital-at-home (HaH) programs. My research explored how this can be done.

While there are significant applications for virtual visits in other care environments, it's important to note that this discussion focuses on acute care, not chronic or palliative care. Virtual visits are being used in a variety of other acute care settings, such as urgent care and ED at home. However, this search focused primarily on the implementation of virtual visits in home-based acute care, typically delivered through HaH programs. These

programs usually admit patients through the emergency department of their affiliated health system. Home-based hospital-level care is offered to patients in lieu of admitting them to the hospital floor.

The term “virtual visit” refers to clinician-patient interactions via video chat and phone calls. “Virtual exam” refers to clinicians performing all, or part, of the physical exam remotely, aided by video and remote patient monitoring devices. In some cases, virtual exams are also aided by a clinician who is onsite with the patient.

The demand for home-based acute care has been accelerated by the COVID-19 pandemic and favorable CMS (Centers for Medicare and Medicaid Services) policy changes. As HaH programs grow, it becomes increasingly important to examine the use of virtual visits with a critical eye. For many decades, the standard in the U.S. has been to care for patients in a brick-and-mortar hospital, so it is reasonable for patients and healthcare providers to wonder about the limitations of this updated delivery model.

Clinicians, healthcare administrators, and researchers must continue defining safe and effective practices in the use of virtual visits in home-based acute care. This can be done by examining the experiences of countries like Spain and Australia, where the hospital-at-home model was successfully implemented many years ago. We can also learn from the those who are operating this model domestically and apply scientific rigor, where possible, to answer these important questions regarding home-based acute care:

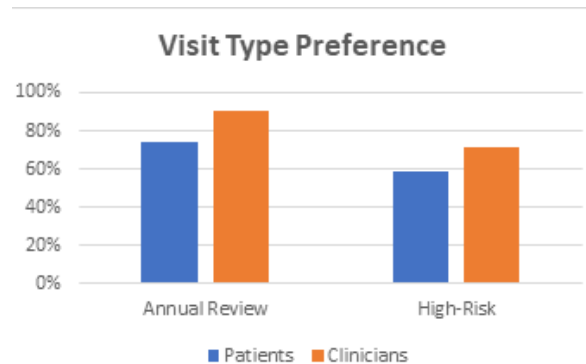
1. When is it feasible/safe to replace in-person visits with virtual visits?
2. Which aspects of the physical exam can be conducted effectively via virtual visit?
3. How do virtual visits impact patient satisfaction?
4. How do virtual visits impact provider satisfaction?

I conducted a review focused on these questions and leveraged a search for peer-reviewed literature describing the use of virtual visits in home-based acute care. To exhaust available information, I expanded the search to include informal sources and articles discussing virtual physical exams for relevant organ systems, even if the focus was not on acute care. Conditions that are commonly treated in HaH settings include

community-acquired pneumonia, congestive heart failure, acute exacerbations of chronic obstructive pulmonary disease, cellulitis, and complicated urinary tract infections.

Of the questions prompting the search, the most substantial findings addressed the use of virtual visits to perform physical exams. I will discuss a few highlights. A team of well-published cardiologists who call themselves “The Consult Guys” noted that jugular vein distention, which is used in the assessment of patients with heart failure, can be evaluated simply by proper positioning of the patient and camera. An article by four physicians from Northwestern University called “The Telehealth Ten: A Guide for a Patient-Assisted Virtual Physical Examination,” demonstrated that patient vital signs, skin, neck, lungs, heart, abdomen, extremities, and neurological status can all be examined either entirely or partially via virtual visit.

Findings also addressed the matter of patient and clinician satisfaction. Many patients and clinicians prefer virtual visits to face-to-face appointments. The Visit Type Preference graph shows data from a recent study discussing the use of telemedicine in managing heart failure.<sup>4</sup> The graph shows the percent of individuals that prefer virtual visits to face-to-face appointments. The information is divided into annual review appointments and high risk patient appointments and is specified for patients and clinicians separately. The majority of patients and clinicians prefer virtual visits, even when the patient is categorized as high risk. For regular annual review appointments, 90% of clinicians and over 70% of patients indicate this preference. When the patient is high risk, this preference holds for 70% of clinicians and about 60% of patients.



*Changing to remote management of a community heart failure population during COVID-19—Clinician and patient perspectives (Table 1)*

These findings are informative and encouraging, but some questions remain unanswered by the available literature. Despite this, industry experts at The Massachusetts General Hospital assert that, “Early experience points toward the use of these technologies in hospital at home as being safe and acceptable to patients and clinicians ... Technological advancements have long enabled enhancements to acute care delivery, through both improved safety and improved quality, and acute hospital care at home is no different”.<sup>5</sup> This trend offers the potential to improve healthcare quality while reducing costs.

For hospitals and health systems, it’s time to consider hospital-at-home development.<sup>6</sup> The HaH movement also has significant implications for healthcare investors who should recognize trends that will ride the momentum of this movement, including:

- Medical devices enabling remote patient monitoring will be increasingly important to healthcare providers.
- Software solutions aiming to integrate and streamline brick-and-mortar care with home care will be crucial.
- Entirely new businesses can be developed to deliver home-based acute care, enable virtual visits, and capture the rapidly growing demand for these services.

With the potential to reduce costs and improve quality, hospital-level care moving to the home carries a profound impact for patients and caregivers. Although there is a lack of formal data demonstrating the effectiveness and validity of virtual exams, industry experts are optimistic about the potential of the HaH model and the use of virtual visits to deliver home-based acute care. Health systems and investors who don’t wish to be left behind should consider this movement as they develop and invest.

Notes:

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