

HGA



# IMPACT OF TELEMEDICINE ON OUTPATIENT CARE

Insights from HGA's 2020 Exploratory Study



# INTRODUCTION

In 1925, a cover of *Science and Invention* magazine featured a doctor remotely diagnosing a patient via a yet-to-be-invented radio and video device. Some 95 years later, thanks to advances in telecommunications technology, it is now possible to achieve this and much more.

Enter the COVID-19 pandemic. When stay-at-home orders were put in place across the U.S., the engine fueling healthcare ground to a halt. Elective surgeries, procedures, and treatments were canceled to preserve precious supplies and resources in preparation for the expected surge in COVID cases. Staff were furloughed and across-the-board pay cuts were implemented. ED volumes plummeted as patients, even those with emergent illness, postponed needed care out of fear of contracting the virus while visiting a clinical setting.

To reduce exposure among patients and providers, most in-person care visits were suspended. In response, health systems ramped up the use of telemedicine technologies as a safe means to provide care during a public health emergency. It is not an exaggeration to say that telemedicine was an essential lifeline during the early months of the COVID-19 pandemic. Additionally, COVID-19 served as a catalyst for many health systems to implement telemedicine strategies that had been developed for several years at a more aggressive and larger scale.

The rapid expansion of telemedicine was enabled by COVID-driven changes to care reimbursement and regulations that had hindered widespread adoption for years. Suddenly healthcare organizations could be reimbursed for remote care at rates similar to in-person visits. State licensing rules were relaxed, enabling providers to practice across state borders. In addition, providers could offer care during lockdown from a much wider range of settings than was previously permissible. While some pre-COVID regulations may eventually be reinstated, the majority of our study participants believe that improved telemedicine reimbursement - among the most important drivers of recent widespread adoption - is likely here to stay.

## TELEMEDICINE DEFINED

A myriad of terms are associated with telemedicine, such as: telehealth, connected health, connected care, virtual health, and digital health. Generally speaking, telemedicine is focused on the use of technology to deliver clinical healthcare services and information at a distance. Telehealth (and similar terms such as virtual health and digital health) is typically broader in scope and includes remote non-clinical services. Because the focus of this study was outpatient care, we chose to use the term telemedicine throughout this work.

# THE STUDY

As with many other sectors of the economy, COVID-19 has radically reshaped our thinking about healthcare, both in the present and into the future. As a research-driven architecture and engineering design firm, we wanted to learn more about healthcare leaders' experiences with telemedicine during the pandemic, and what it means for healthcare organizations' business strategies, operations, and space needs going forward. To that end, a team of HGA researchers and practitioners conducted an exploratory study of the impact of telemedicine on outpatient settings.

## STUDY METHODS



### SECONDARY DATA ANALYSES

HGA conducted a literature search to understand the terms associated with telemedicine, adoption of telemedicine practices among providers and healthcare organizations before and after COVID-19, and telemedicine reimbursement and licensing policies. Additionally, we documented case study examples of telemedicine facility best practices and design innovations.



### INTERVIEWS

HGA conducted interviews with healthcare organizations leaders from across the nation. Interviewees included executives, clinicians, telemedicine strategists, consultants, and facilities directors from healthcare organizations of varying sizes.

Interviews were conducted during the summer and fall of 2020. Interviews were 60 minutes long and were transcribed and analyzed using NVivo®, a qualitative analysis software tool, to identify relationships and themes in the responses.



### WORKSHOP

HGA conducted a virtual workshop with over 15 participants including researchers, architects, planners, clinicians, consultants, telemedicine strategists, and healthcare organizations leaders. The workshop consisted of a brief overview of current findings and trends, and breakout sessions where participants were divided into three small groups. Each group focused on one of three main areas – patient experience, provider experience, or technology – and discussed the impact of telemedicine on outpatient services in the context of people, process and place.



We want to hear from you... [Take the survey](#) and contribute to our research.

# EMERGING INSIGHTS

As we considered the information gathered through research, interviews and the workshop, the following insights emerged around three aspects of healthcare practice:

- **BUSINESS STRATEGY:** How may telemedicine advance and shift organizations' strategic goals?
- **OPERATIONS:** How is telemedicine impacting day-to-day aspects of care delivery?
- **SPACE NEEDS:** How will the rise of telemedicine change the design of healthcare spaces?

## STRATEGY



- 1 Episodic care is shifting to continuous care delivery
- 2 Coverage areas – and competition – are blurring traditional borders
- 3 Specialized expertise is becoming more accessible – for providers and patients
- 4 Non-traditional providers are poised to disrupt the industry – and telemedicine enables this disruption

## OPERATIONS



- 5 Outpatient services will continue to leverage telemedicine
- 6 Patient convenience and satisfaction will drive future use
- 7 Telemedicine offers advantages to providers and systems – but only if processes are retooled
- 8 The rise of remote monitoring will impact staffing models

## SPACE



- 9 Outpatient facility design will evolve to better support telemedicine
- 10 Telemedicine may reduce outpatient space – or enable volume growth

# STRATEGY



The recent rise of telemedicine has encouraged some healthcare organization leaders to reevaluate aspects of their business strategies, considering new modes of care delivery and a rapidly evolving competitive landscape.

“

Telehealth is not a strategy in itself—telehealth enables strategy.

TECHNOLOGY EXPERT  
INTERVIEWED FOR STUDY

# EPISODIC CARE IS SHIFTING TO CONTINUOUS CARE DELIVERY

The rise of telemedicine has encouraged organizations to rethink care delivery to maximize efficiency and improve health outcomes. Patients now expect continuous, 24/7 care access, and telemedicine has become a catalyst for other types of care platforms. For example, several organizations in the study noted a dramatic increase in remote monitoring of patients – using technology to continuously monitor patient health and provide interventions as needed, versus relying on periodic visits driven by schedule or changes in health status.

This approach offers **benefits to patients in the form of enhanced convenience, a focus on preventive care, and the ability to provide treatment in the early stages of disease.** It also enables healthcare providers to re-examine staffing strategies. With the help of technology, a single care provider can manage the health of dozens of patients simultaneously, greatly improving efficiency over traditional “one-on-one” clinic visits. One study participant stated that while their organization found the financial benefit of replacing in-person visits with telemedicine visits to be negligible, **shifting from episodic visits to continuous remote monitoring offered significant staffing efficiencies.**

## EPISODIC VISITS VS. CONTINUOUS REMOTE MONITORING



Remote monitoring enables scaling of staff to cover many more patients than traditional one-on-one visits - and enables providers to practice at the top of their licensure.

According to a recent survey by the research division of Xtelligent Healthcare Media, **31% of respondents offer remote monitoring programs as part of their connected health strategy.** Program features include the following:

Connected devices supplied by the care provider (64%)

On-demand, two-way messaging (46%)

Medication adherence tools (36%)

Smart devices in the home (36%)

The organization also reports that 33% of hospital executives are planning to select a remote patient monitoring vendor in 2021.

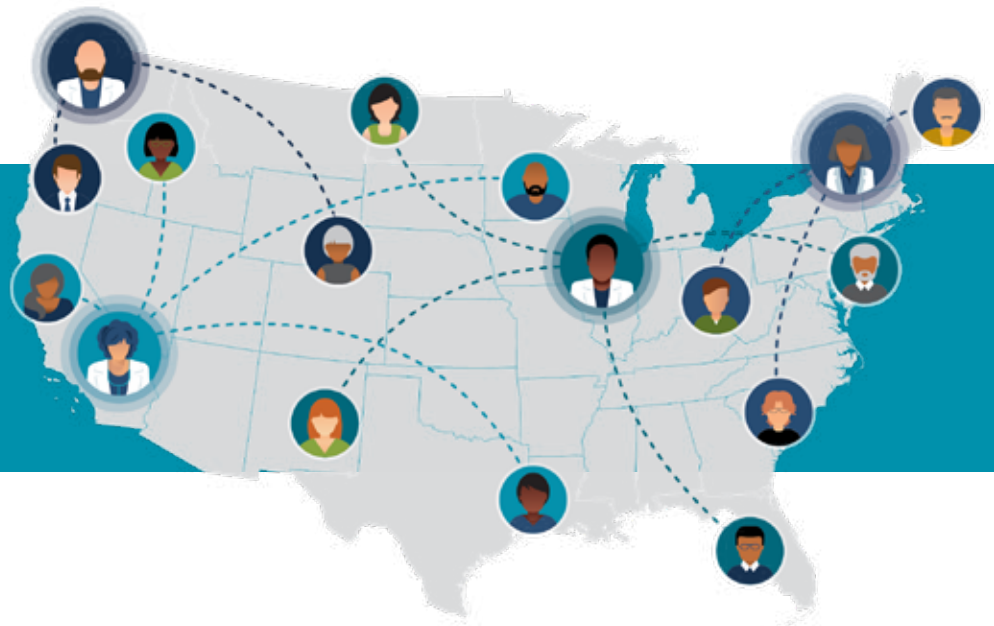
INSIGHT  
02

## COVERAGE AREAS – AND COMPETITION – ARE BLURRING TRADITIONAL BORDERS

Several organizations in the study observed that traditional geography-driven boundaries of coverage areas were being challenged as telemedicine becomes more prevalent. Sg2, a national healthcare consultancy, reported that **several high-profile health systems were leveraging technology and evolving care models to develop capture plans at the national level.**

Other organizations within the study mentioned the impact such developments could have on their own practices. A representative of a midwestern system, for example, stated that **geography will no longer offer the protection from competition it once did**; as a result, the pool of “direct competitors” has greatly expanded, with significant implications for the future of the system.

Telemedicine technologies are expanding healthcare access – and potentially increasing competition for healthcare organizations.



INSIGHT  
03

## SPECIALIZED EXPERTISE IS BECOMING MORE ACCESSIBLE – FOR PROVIDERS AND PATIENTS

Rural areas have long used telemedicine to provide patients with access to specialty providers in distant locations, and the recent investment in telemedicine technologies – and relaxation of state-driven licensing requirements – has expanded this approach further. One midwestern system in the study, for example, currently leverages a behavioral health specialist from Boston.

In a recent publication on rural telemedicine programs, **the CDC highlighted the importance of access to specialty care for rural residents.** Telestroke services, which connect specialists in stroke centers to providers in rural areas via videoconferencing, were found to increase the use of lifesaving “clot-busting” treatments and decrease mortality. Several study participants believed that such practices will increasingly become commonplace as telemedicine is further utilized, potentially offering **more robust care to remote areas and enhancing equity in healthcare access.**



# NON-TRADITIONAL PROVIDERS ARE POISED TO DISRUPT THE INDUSTRY – AND TELEMEDICINE ENABLES THIS DISRUPTION

Major technology companies have been building both partnerships and expertise in healthcare for some time, and the rise of telemedicine has created new opportunities to rethink care at a national scale. Well-known technology and retail organizations, including Apple, Amazon, CVS, Best Buy, Google, and many others are leveraging telemedicine to partner with – or challenge – traditional healthcare organizations.

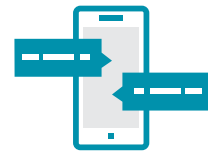
Here are a few examples:



**Apple and John Hopkins** developed a self-management app, **Corrie Health**, to assist cardiac rehab patients after a heart attack or stroke. The app tracks physical activity, medications, and diet in addition to connecting patients with additional recovery resources. Patient vitals including heart rate and blood pressure are tracked with smart tools including an Apple Watch and Bluetooth blood pressure monitor. **Learn more here.**



**Walmart Care Clinics** are being developed in locations across the country. Staffed by nurse practitioners, the clinics aim to provide convenient, low-cost, high-quality acute and primary care, as well as management of chronic conditions including diabetes, asthma, and high blood pressure. **See the announcement here.**



**Sam's Club** members have access to telemedicine visits through a text-based app, **98point6**. Members purchase a quarterly subscription to the app, which gives them unlimited telemedicine visits for \$1 per visit. The service is staffed 24/7 by board-certified physicians who can diagnose and treat 400 common conditions, as well as monitor some chronic conditions (e.g., diabetes, asthma). Sam's Club aims to make low-cost healthcare available to its millions of members. Read the **announcement here**, and learn the **details here.**

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Historically healthcare has been provider-centric...whatever the provider said is what you did. Telehealth is starting to change that.

VIRTUAL CARE STRATEGY LEADER

# OPERATIONS



COVID-19 has had a dramatic impact on the daily operations of healthcare organizations. Telemedicine – while an essential lifeline for many providers during the pandemic – has further altered traditional care delivery, and many organizations are still working to adapt their processes.

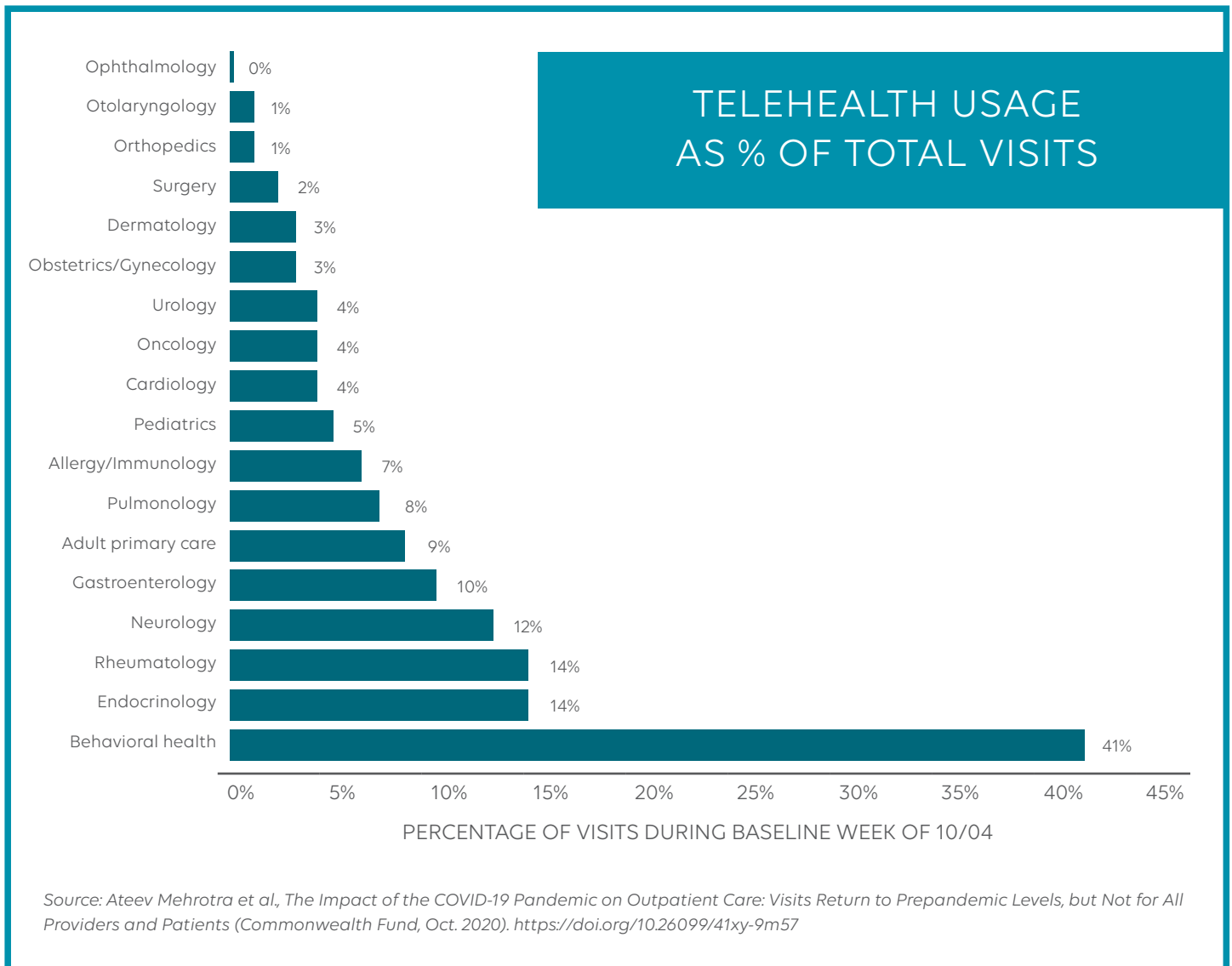
“ COVID has forced rethinking of our operations. Telehealth is a tool to get back to where you were before the pandemic.

VIRTUAL CARE  
STRATEGY LEADER

# OUTPATIENT SERVICES WILL CONTINUE TO LEVERAGE TELEMEDICINE

For many organizations, telemedicine became the only means of delivering outpatient care as facilities were forced to shut down and hospitals scrambled to build their PPE supplies during the early stages of the pandemic. Organizations around the country rapidly implemented or expanded telemedicine platforms to enable continued operations and care delivery, and the number of patients using these systems spiked dramatically.

Since this time, healthcare systems within the study reported that their telemedicine visits (as a percentage of total outpatient visits) **have leveled off to an average of approximately 20% across all outpatient service lines**. However, there are wide variations among various services, with primary care utilizing telemedicine at a much higher rate, and **behavioral health telemedicine visits reaching as high as 90% of total visits for some organizations**. Specialties, such as cardiology, typically saw lower rates of use, but there were significant variations within these services among the organizations in the study – and several reported that opportunities for use by outpatient specialties continued to be tested.



# PATIENT CONVENIENCE AND SATISFACTION WILL DRIVE FUTURE USE

The **reason most frequently given by study participants for the recent success of telemedicine was patient convenience**. Many reported that telemedicine minimized the time needed for patients to access provider insight or treatment – and one noted that this was particularly beneficial for working-age caregivers assisting elderly family members. Others mentioned that their telemedicine care platforms enabled them to expand clinic hours to further support patient convenience.

Patient satisfaction scores for telemedicine-based care reflect the benefits of these changes. Scores remain high across demographic groups, including those previously expected to be slow to embrace remote care (e.g., older adults).

In addition, some study participants indicated that – while it was too early to provide specific data on the success of care treatments – they **believed that telemedicine has the potential to improve care outcomes**. Reasons given included enhanced care access, more consistent treatment of chronic conditions, a more relaxed environment that encouraged patient communication, and – especially in the case of behavioral health patients – the ability to observe the patient’s living environment as a context for treatment.

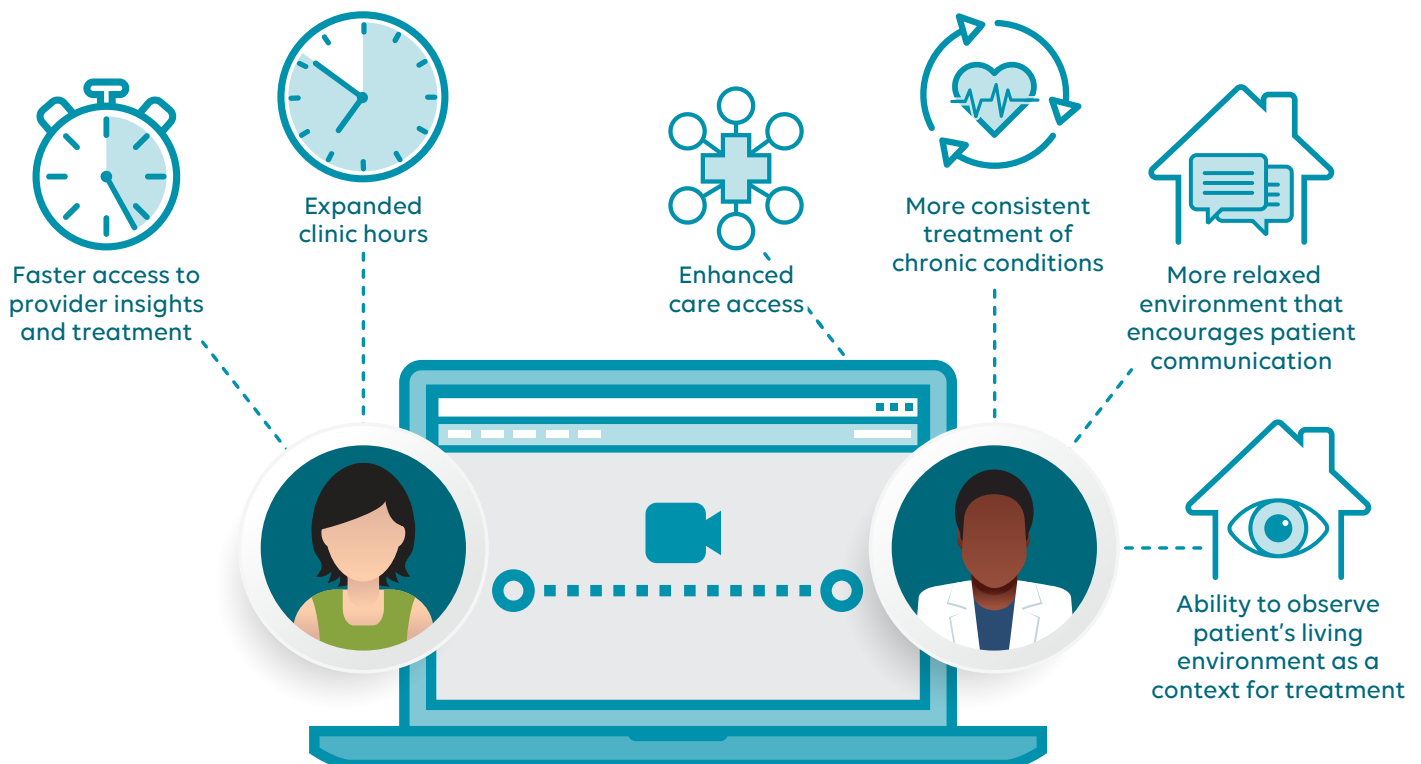


Human beings are going to want care delivered to them in a more convenient way than we do today.

CLINICIAN

## INCREASED PATIENT CONVENIENCE

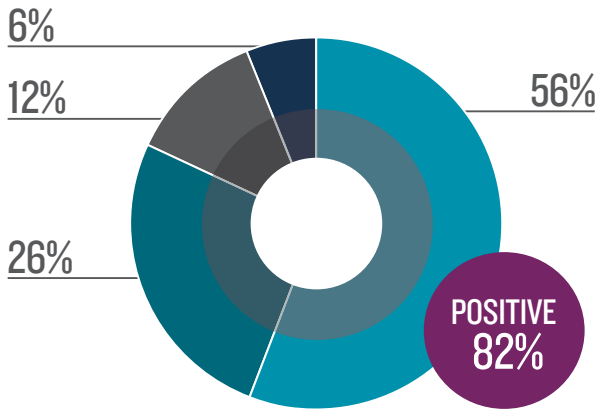
## POTENTIAL TO IMPROVE CARE OUTCOMES



# TELEHEALTH USAGE NOW AND POST COVID

## Feelings About Using or the Idea of Using Telehealth Services

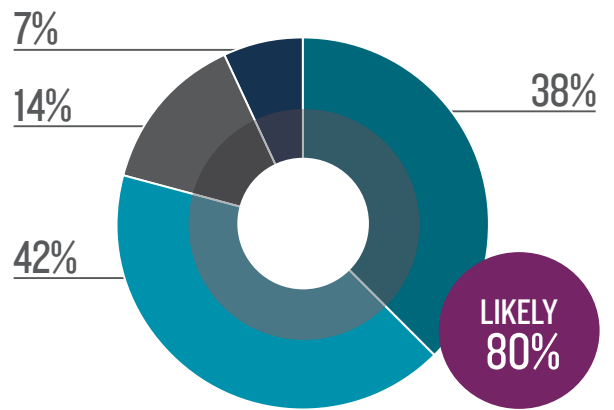
- LOVE IT
- LIKE IT
- DISLIKE IT
- HATE IT



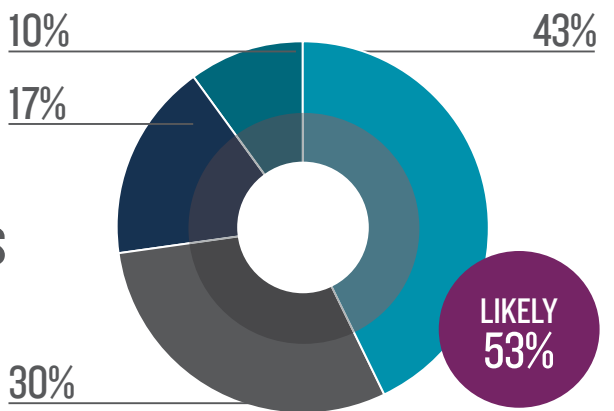
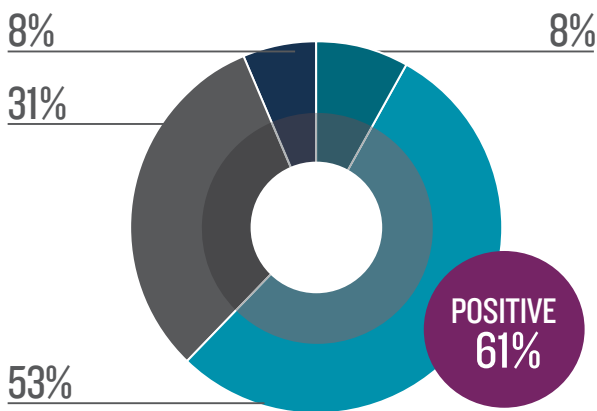
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## Likelihood Using Telehealth Services Post-COVID

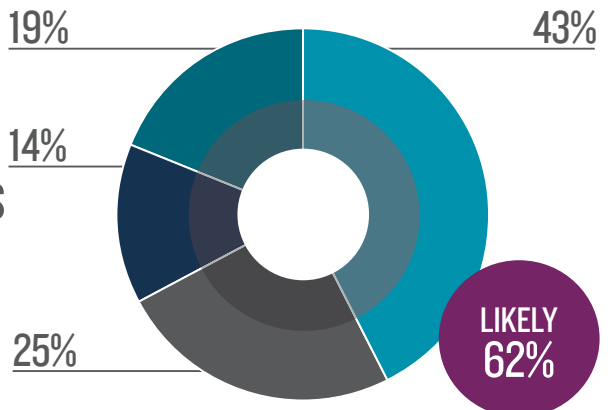
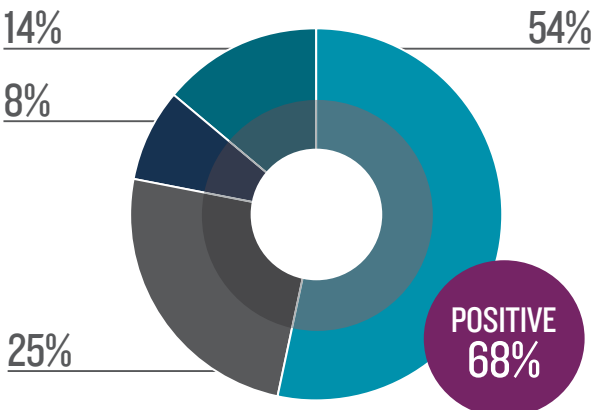
- VERY LIKELY
- SOMEWHAT LIKELY
- NOT VERY LIKELY
- NOT AT ALL LIKELY



NON-USERS



AMERICANS OVERALL



Source: The Harris Poll. Telehealth: The coming 'new normal' for healthcare. Digital Economy Insight Briefs. April 2020. Via Sg2.

# TELEMEDICINE OFFERS ADVANTAGES TO PROVIDERS AND SYSTEMS – BUT ONLY IF PROCESSES ARE RETOOLED

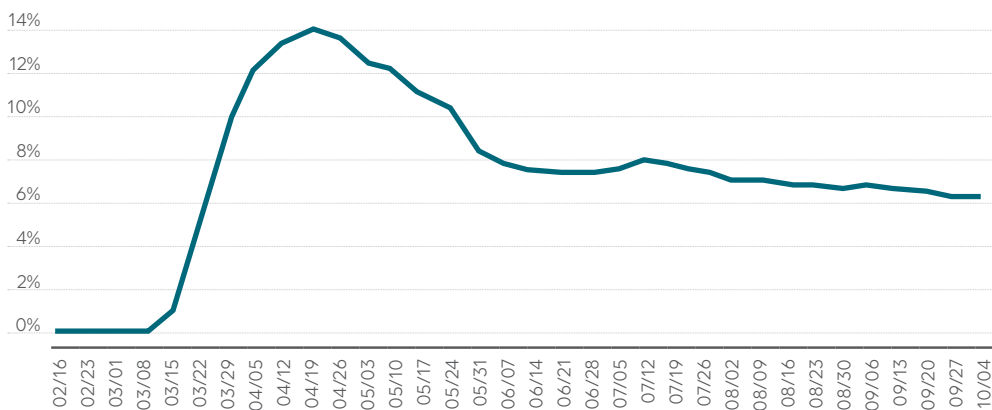
While patients have embraced care at home, many physicians have taken advantage of relaxed regulations around care delivery sites to provide care from their homes as well. Many study participants noted **an increase in provider satisfaction as result of improved flexibility and the enhanced ability to balance work schedules with other demands**. Some participants observed that providers showed greater interest in offering after-hours care given this new-found flexibility.

For providers working from a clinic setting, **the ability to provide seamless in-person and telemedicine care – in back-to-back appointments – was identified as a strong preference over dedicated telemedicine and in-person schedule slots or staffing assignments based on the care platform used**. Many study participants said that telemedicine was simply one “tool in the toolbox” to provide the best care to patients, and being able to switch quickly between care platforms avoided inefficiencies in provider schedules.

However, several study participants emphasized the need to support providers to ensure effective use of telemedicine platforms. One participant observed slow engagement by providers within their system as a way to exert agency in system-wide decision-making. Another recounted struggles in the early stages of the pandemic as providers learned new systems and protocols. That system established a provider-facing call center to successfully overcome this hurdle and build provider confidence.

In addition, some systems are finding that aspects of remote visits – such as calls in advance of the appointment to test technology – added steps to the typical process. The [Harvard Business Review](#) warns that **telemedicine can potentially create large amounts of extra work for providers, if it is not carefully managed**. Adding virtual visits on top of an already overscheduled day or having to duplicate information or work requests in multiple channels (e.g., messaging, virtual visits, in-person visits) due to a lack of interoperability between systems will decrease operational efficiency. These operational challenges have contributed to declining numbers of telemedicine visits over the course of the pandemic.

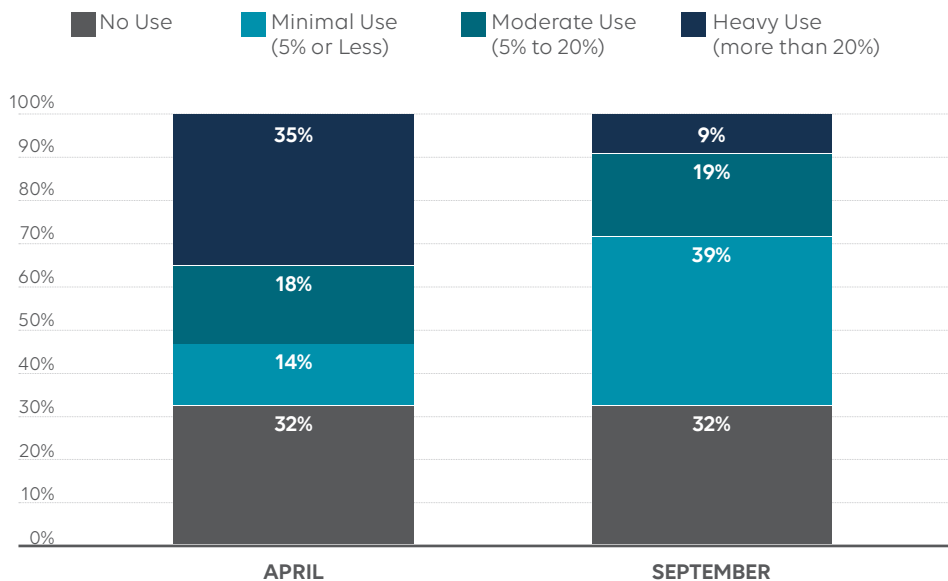
## TELEHEALTH VISITS IN A GIVEN WEEK



The percentage of all visits via telemedicine visits is slowly declining from its April peak, but continues to be well above the prepandemic baseline of very few telemedicine visits.

Source: Ateev Mehrotra et al, *The Impact of the COVID-19 Pandemic on Outpatient Care: Visits Return to Prepandemic Levels, but Not for All Providers and Patients* (Commonwealth Fund, Oct. 2020). <https://doi.org/10.26099/41xy-9m57>

## TELEHEALTH SHIFTS ACROSS PROVIDERS



Telemedicine use across provider organizations varies. Approximately one-third of organizations never adopted telemedicine at all.

From April to September, many organizations decreased their use of telemedicine. Operational inefficiencies contributed to this decline for some organizations.

Source: Ateev Mehrotra et al, *The Impact of the COVID-19 Pandemic on Outpatient Care: Visits Return to Prepandemic Levels, but Not for All Providers and Patients* (Commonwealth Fund, Oct. 2020). <https://doi.org/10.26099/41xy-9m57>

At Yale Medicine's multispecialty clinical practice group, operational retooling has taken the form of, "virtual rooming assistants" who admit patients into virtual exam rooms, take patient histories, and notify providers when their patients are ready to be seen, thereby improving workflow and provider efficiency.

Finally, the question of whether telemedicine could impact the longevity of providers' careers solicited mixed answers. While some believed it was plausible that telemedicine could extend the careers of providers nearing retirement given its enhanced flexibility, another noted that the opposite could occur. For example, providers that already had "one hand on the door" may consider retiring rather than learn new systems of practice. All participants, however, believed it was too early to determine the ultimate impact of telemedicine on the longevity of providers' careers.

## INSIGHT 08 THE RISE OF REMOTE MONITORING WILL IMPACT STAFFING MODELS

Staff members – aided by AI platforms – will increasingly monitor numerous patients, altering traditional staffing assignments and counts. Most of this work can likely occur at home – or in another non-clinical setting.

According to Sg2, remote patient monitoring (RPM) programs have the potential to provide a number of operational advantages for health systems. RPM is most appropriate for noncritical patients who can remain at home to manage their own monitoring and care, reducing the need for in-person visits, enabling providers to focus on high-risk patients, and improving patient-to-physician ratios. In addition, RPM programs with artificial intelligence (AI) capabilities can automate manual tasks such as data entry, removing them from providers' workflows. As health systems continue to invest in remote monitoring systems, we expect to see a shift in the numbers and types of providers and support staff needed to address outpatient volumes.

# SPACE



As telemedicine and other remote care platforms become part of standard care delivery, they are increasingly influencing the design of outpatient facilities. Clinic spaces are being retooled to accommodate seamless in-person and remote care delivery, and systems are evaluating whether virtual care platforms could reduce overall space needs.



You can use an exam room for telemedicine, but you're just occupying the space and not gaining efficiencies. You could design a telemedicine room with less space – the needs are just different.

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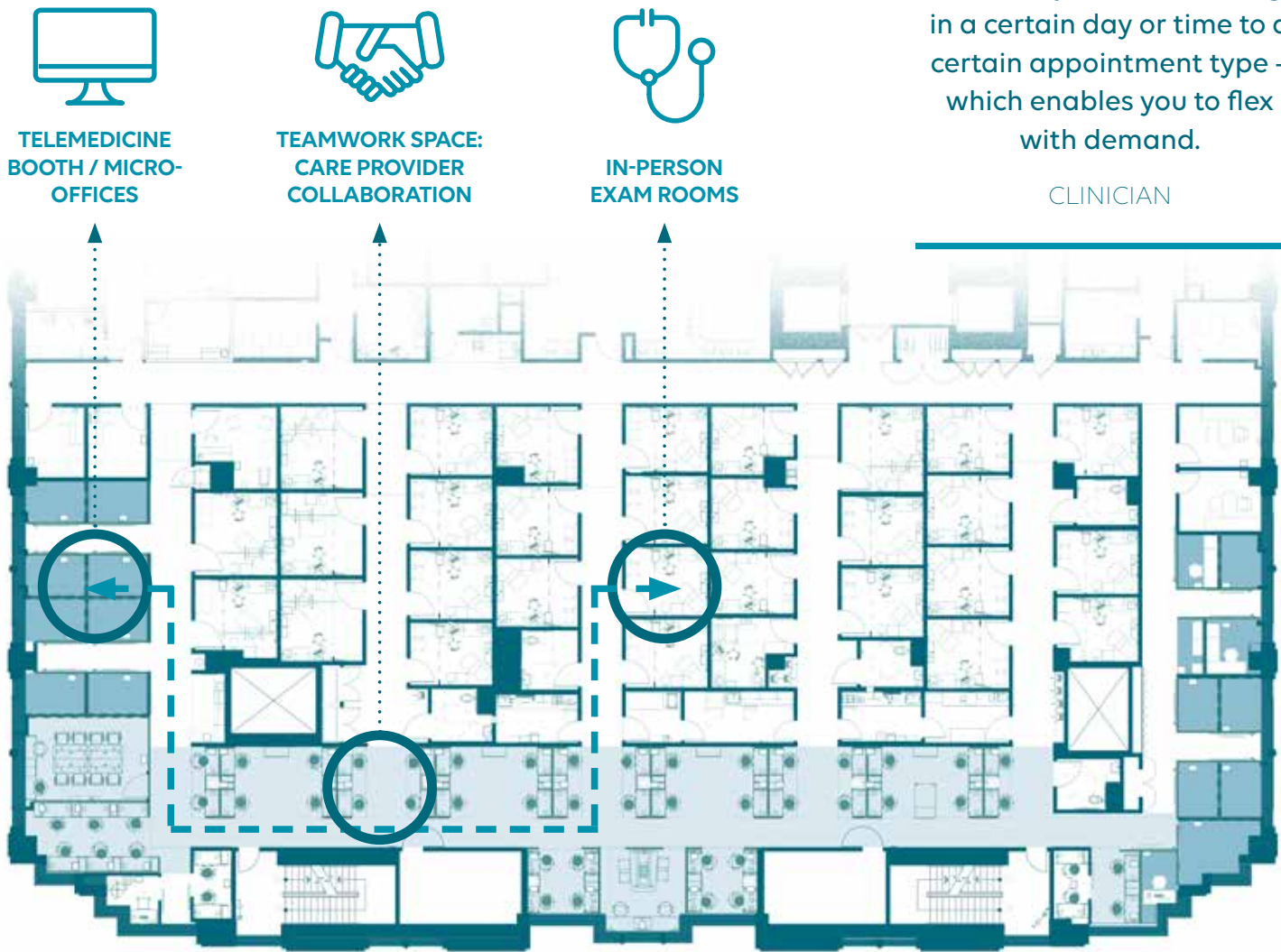


# OUTPATIENT FACILITY DESIGN WILL EVOLVE TO BETTER SUPPORT TELEMEDICINE

As noted earlier, most systems are beginning to rethink their space to better support telemedicine operations. While centralized versus decentralized telemedicine platforms continue to be debated, most study participants preferred facilities that offer a seamless transition between in-person and remote care versus stand-alone telemedicine hubs. Among the most popular adjustments we're seeing is the addition of small booths that enable auditory privacy for providers on telemedicine calls – especially in clinics designed around a collaborative care model with centralized, open workstations.

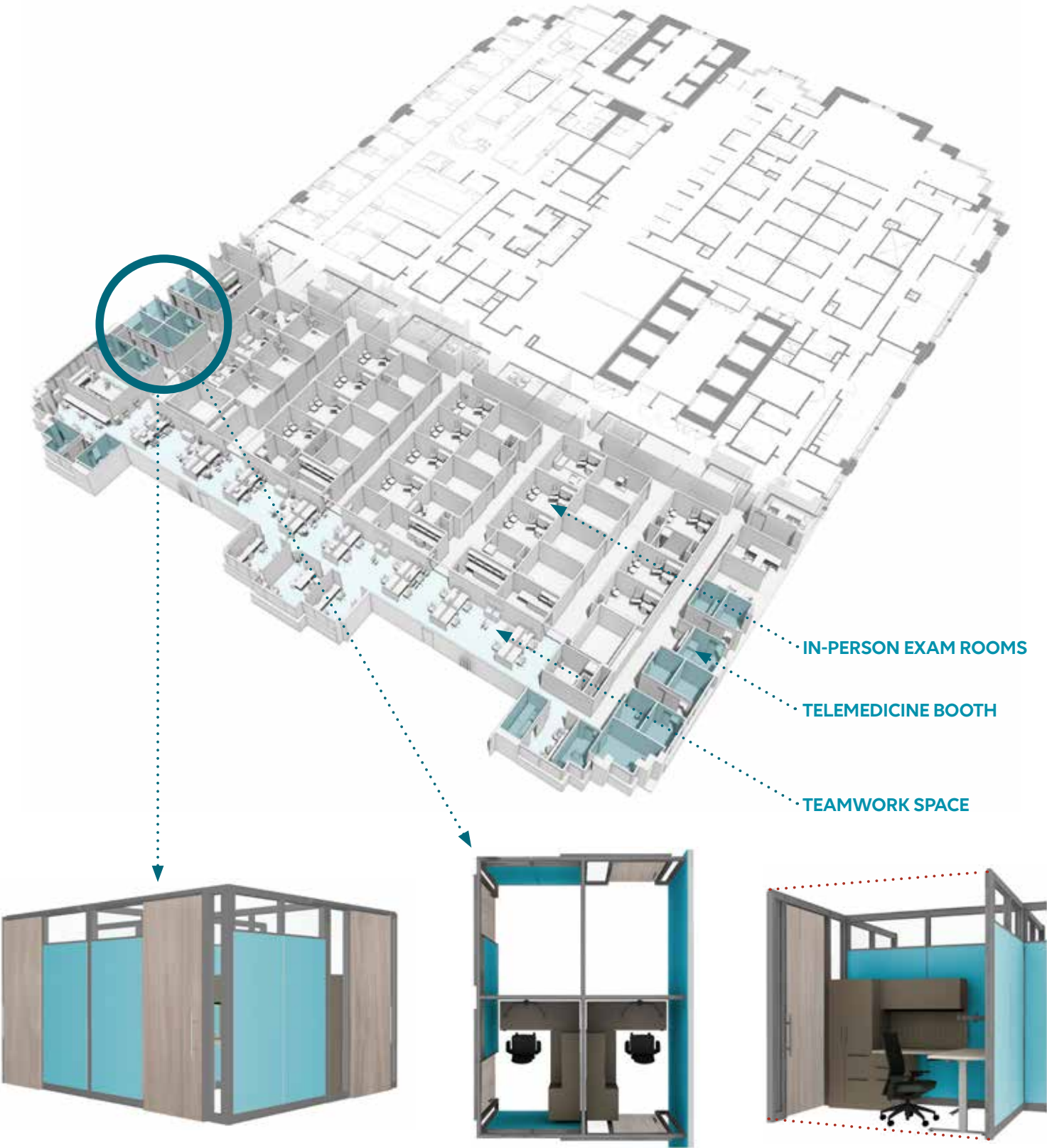
“ We need proximity of in-person exam rooms with a great space to do video consults – close enough that providers are happy walking between the two. This helps with scheduling because you're not locking in a certain day or time to a certain appointment type – which enables you to flex with demand. ”

CLINICIAN



Case Study: Micro-offices at the building perimeter are touchdown spaces for providers to conduct private telemedicine consultations. Various office configurations are provided to meet the needs of different consult types. The offices open to an expansive teamwork space to support collaboration between providers. The teamwork space serves as a link between in-person exam rooms and offices for video-consults so that providers can easily flex between the two throughout the day.

# MICRO-OFFICES / TELEMEDICINE BOOTHS



Micro-offices provide acoustical privacy

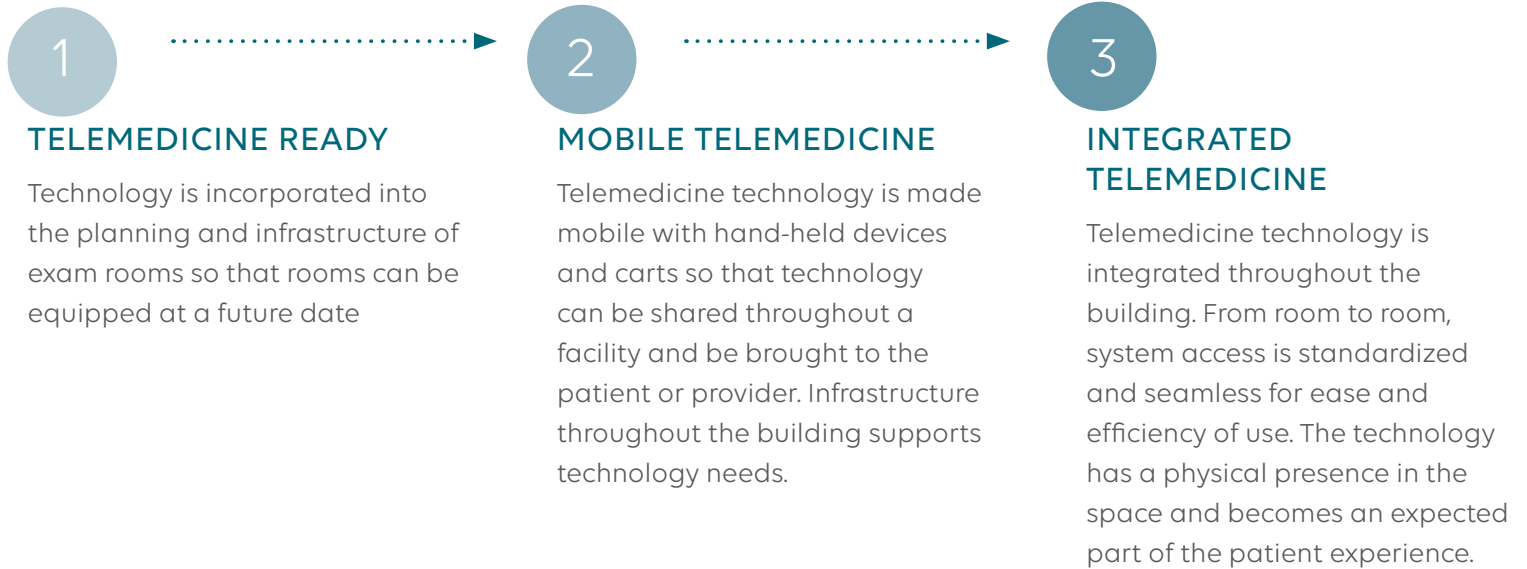
Demountable partitions provide long-term flexibility for facilities to adapt to changing needs over time.

Systems furniture can be tailored to specific needs to make efficient use of small spaces.

# POTENTIAL CHANGES TO EXAM ROOMS

Other changes to physical space include exam rooms better able to support connectivity. While most study participants preferred telemedicine calls to take place outside exam rooms to better optimize space, several noted that in-person exams are increasingly likely to include a telemedicine component (such as a connection to a remote specialist). Given this, exam rooms will increasingly blur the boundaries between traditional in-person visits and telemedicine.

## LEVELS OF EXAM ROOM INTEGRATION



## BEYOND TECHNOLOGY: DESIGN GUIDELINES

The Center for Health Design, in conjunction with the Facility Guidelines Institute, notes that implementing telemedicine goes beyond technology. Many considerations in the built environment contribute to a positive experience for the patient.

1. **Space Requirements:** Adequate space for diagnosis and treatments offered
2. **Privacy:** Ensure confidentiality for patient information, both visually and acoustically
3. **Acoustics:** Sound isolation is essential for protecting patient information and ensuring clear communication
4. **Lighting:** Lighting and camera quality enhance communication and contribute to clinical and social success of telemedicine
5. **Gaze Angle & Camera Distance:** Natural eye-contact puts participants at ease and contributes to a more engaging conversation
6. **Interior Surfaces:** Surrounding surfaces can create glare, reflections, and manipulated color-rendition if not mindfully planned
7. **Site Identification:** Facility identification, sometimes required for reimbursement, provides patients regarding the organization with whom they are consulting
8. **Equipment Support:** The ease of use of telemedicine technology is dependent on the entire support system – access to power and data where equipment is used, convenient storage, technical support and infection control

Source: <https://www.healthdesign.org/insights-solutions/virtual-care-guidance-brief>

# ORGANIZATIONS ARE EXPLORING NEW APPROACHES TO TESTING AND DIAGNOSTICS

Finally, telemedicine has begun to affect spaces outside direct outpatient clinical visits. One of the most challenging aspects of telemedicine is the ability to conduct the diagnostics tests needed to support direct patient consults. Many organizations have implemented or are exploring new approaches for this, including the following examples:



## DIAGNOSTIC KIOSKS

Kiosks are free-standing care booths that enable on-demand healthcare visits. They can be equipped with remote vitals monitoring equipment, including a stethoscope, otoscope, and pulse oximeter, as well as touch-screen interfaces. Because diagnostic kiosks can be introduced to any worksite, retail space, school system, or community location, the cost and staffing burden of traditional on-site clinics is eliminated.



## CENTRALIZED LAB AND IMAGING SERVICES AT FEWER LOCATIONS

One organization in the study specifically designated certain sites with lab and imaging services as the locations supporting telemedicine, enabling more predictable and efficient use of these high-expense services while minimizing the number of locations required to provide them.



## HOME-BASED DIAGNOSTIC KITS

Other potential solutions include home-based kits, which are becoming increasingly available and affordable. Tests are available for a wide variety of conditions, from regular glucose monitoring for diabetes patients to specialized tests to detect the risk of developing specific types of cancers.



## DRIVE-UP DIAGNOSTICS

The image of drive-through care is now commonplace following the onset of COVID. In many locations, this approach has expanded from COVID testing to a broader set of lab tests supporting telemedicine care and even treatment, such as vaccinations, prenatal visits, and blood pressure checks.

All of these alternative approaches to diagnostic testing and evaluation have the potential to impact the future design of clinical space.

# TELEMEDICINE MAY REDUCE OUTPATIENT SPACE – OR ENABLE VOLUME GROWTH

Given the financial constraints stemming from the pandemic, the significant and unexpected investment many organizations have needed to make in technology platforms, and the rapid shift toward remote care, most study participants expected a drop in investment in outpatient space going forward. The extent of the expected reduction varied widely, though, from minimal square footage reductions (“we tend to fill the space available”) to as much as a 40-60% reduction between a combination of telemedicine and a shift toward staff working from home.

While many healthcare leaders and strategists expect that telemedicine will eventually reduce space needs, many are hesitant to reduce their outpatient footprints in what remains a fluid situation. As an alternative to reducing space, several of our clients are opting to align their exam room counts with traditional volume calculations, but rely on telemedicine to accommodate projected volume growth. This approach aligns with recent studies that suggest the rise in telemedicine has not simply replaced in-person care, but rather it has increased the total number of visits across the country.

Whether health organizations elect to reduce outpatient space or leverage telemedicine to fuel growth without changing building footprints, it’s clear that this care platform will continue to influence decisions on outpatient real estate investment moving forward.

## IMPACTS ARE EVOLVING

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The impact of telemedicine and other remote care platforms on ambulatory services and environments continues to shift. There will certainly be more to learn and report as COVID-19 vaccines are deployed and eased financial and legal policies resulting from the pandemic are modified, made permanent, or revert to their original state.

Given this, we are continuing to conduct research and share findings around the following topics:

1. Outcomes of telemedicine strategies at various scales and within various organizational models.
2. The success of telemedicine implementation across outpatient service lines.
3. The rise of telemedicine in inpatient and emergent care environments.
4. The impact of telemedicine on user experience, both from the provider and the patient perspective.
5. Long-term implications of telemedicine for space design and real estate investment.

Visit us at [www.hga.com/Telemedicine](http://www.hga.com/Telemedicine) for updates, and share your experiences with telemedicine and remote care platforms [through this survey](#).

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