

# TELEMEDICINE BENEFITS FOR CROSSING THE HEALTHCARE DIVIDE



WHITE PAPER

One of the most distressing divides in the U.S. is between those who have access to good healthcare and those who don't. A substantial portion of the population has limited access to healthcare, sometimes receiving care only after a condition has seriously compromised their health. A factor contributing to this problem is that traditional healthcare delivery was designed for a different time. As new technologies become efficient and mainstream, the use of telemedicine will increase dramatically.

The impetus to change is substantial. Waiting until a condition becomes acute or life threatening is a worst-case scenario, not only for the patient, but for the healthcare system as well. It stresses emergency rooms, raises costs and requires more intensive treatment than when intervention is done early. For the patient, the outcomes can be considerably worse.

Telemedicine offers a new way to provide healthcare that crosses the divide, using new processes and technology to meet current and future challenges facing the healthcare system. The pandemic kick-started the initiative, which was one of the few positive effects of the crisis. When remote care became necessary to safeguard the well-being of both patients and healthcare staff, medical professionals started moving up the learning curve of telemedicine. Now that they have had a full year of working with the systems, clinicians and nurses have markedly improved the telemedicine experience. They and the makers of the systems have learned from telemedicine 1.0 what is needed and identified trends that will drive telemedicine 2.0.

This next generation of telemedicine has the potential to improve both patient outcomes and efficiencies. Patients will benefit from having faster access to medical professionals and more effective care. Medical institutions will be able to work more efficiently, because problems will be identified more quickly, which in turn supports better patient outcomes. Telemedicine also makes it possible to optimize both physical and staff resources.

## New Technologies Are the Foundation of Telemedicine

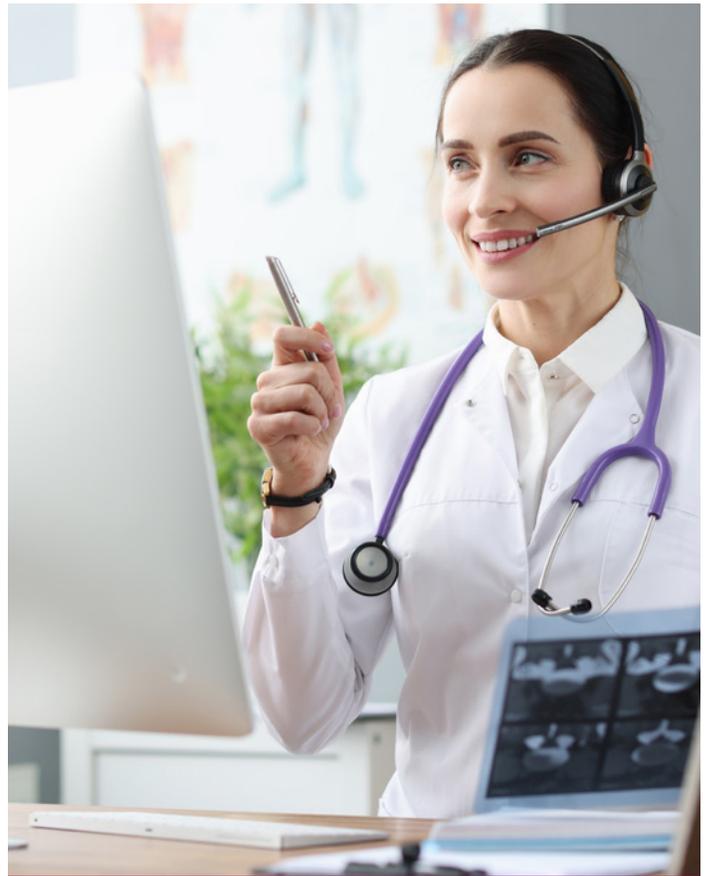
Supporting modern telemedicine requires deploying a technology platform with capabilities that go well beyond a simple video call. The starting point for creating such a platform is to rethink it in terms of how telemedicine can provide a holistic solution for a substantial number of medical needs. Modern telemedicine will include several new technical capabilities, such as:

- A range of devices and sensors that are locally linked and communicate wirelessly with wide-area networks. Patient monitoring, particularly for those with chronic conditions, will be critical, but the real game changer will be the ability to report this information to the clinician in real time.
- Increased use of AI and telemedicine apps to put more functionality and capability at the patient's endpoint. These solutions will require little patient interaction and seem automatic to the patient. The key to gaining full patient acceptance of these new medical tools is complete integration of the software, hardware and network.
- A common technology platform to improve the speed and efficiency of delivering new treatments, sensors for monitoring and healthcare apps. With a single platform, delivery of care is faster, costs are lower, and solutions are of better quality. The platform will likely include wireless connectivity, a "sealed" OS that doesn't need patient interaction, and devices that are purpose-built for telemedicine, rather than software and tools that are tacked on to existing infotainment hardware.

To deliver these capabilities for telemedicine, three important technologies will be foundational:

- A wide array of new sensor technology will provide detailed information, in real time, to the clinician. This will dramatically improve patient monitoring. A good conceptual reference is the internet of medical things (IoMT).<sup>1</sup>
- The network will be an important enabler of new sensing technology. It will not be unusual for sensors to create a large amount of data, and losing pieces of the data stream or having undependable connections will be problematic.
- The use of AI for both analyzing data from patients and simplifying the patient experience will be common. AI-empowered telemedicine apps can build in clinical standards or metrics and evaluate data to provide the patient with immediate feedback in a simple-to-understand fashion.

<sup>1</sup>"Gartner Predicts 2021: Healthcare Providers Must Accelerate Digital Transformation to Address Disruption," Gartner, Nov. 25, 2020



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These technologies, and the capabilities listed above, will not be possible without a fast, persistent, wireless network with enough bandwidth to support telemedicine apps. That makes 5G an essential enabling technology for next-generation telemedicine. The requirements demand more than a consumer-style approach to the problem. The use of 5G in telemedicine demands a carrier that is intimate with the unique issues of telemedicine and has strong working relationships with the partners that will provide the holistic solution.



## Telemedicine Benefits for Patients

Telemedicine has the potential to deliver important benefits to patients, from improved patient outcomes to better quality of life for those who have chronic conditions. One group that will benefit are “high-frequency” patients. Many chronic conditions demand more consistent interactions between patients and their medical team and more resources to treat them effectively. For many patients with chronic conditions, the need to travel to a doctor’s office frequently can feel like a contributor to their fatigue, and they would welcome the chance to eliminate that need. New sensor technology coupled with telemedicine visits can work effectively to treat many conditions. Using telemedicine also makes it more efficient to provide services for patients whose conditions put more strain on the healthcare system. This can be vitally important as access to healthcare becomes limited by the amount of resources in the system.

Another important telemedicine benefit is greater access for people who now are “missed” by current healthcare delivery processes. Patients may be unable to engage with healthcare for several reasons. Some patients are not ambulatory, while others are afraid of the doctor’s office or medical centers. And it is quite common for patients to fail to show up for follow-up appointments. In all these cases and others, telemedicine dramatically improves the ability of patients to get the care they need.

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Telemedicine can also ensure that more consistent and timely treatment is provided by taking the onus off patients to travel to a facility, since they instead simply use a virtual platform at home. That means time-sensitive interactions happen on schedule, with fewer cancellations of follow-up or recurring visits.

Patient outcomes are improved because IoMT sensors deliver more information, more frequently, to clinicians. This allows for prompt modification of treatments as a patient’s condition improves and eliminates the time lag between a worsening of a condition and the clinician’s awareness of that change. This results in better and more effective treatment.

## Telemedicine Improves the Business Model of Healthcare

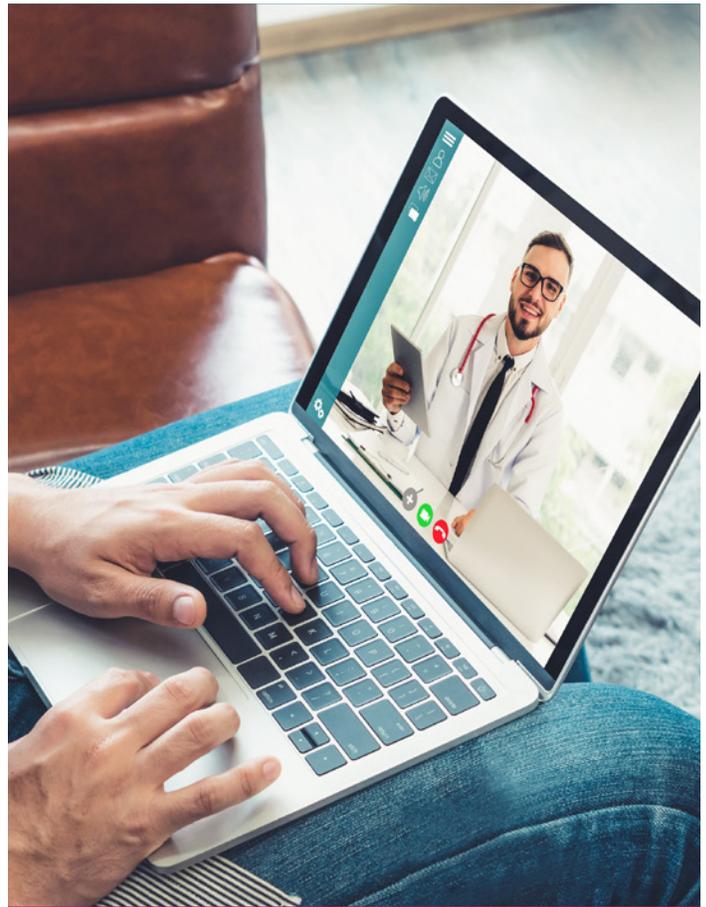
Medical staff and institutions put patients first and want to deliver quality care, but they face financial pressures nonetheless. Patient care will suffer if there is no sustainable business model for delivering it. There are many ways that telemedicine improves delivery efficiency and supports a better business model, including:

- Shorter duration telemedicine visits allow medical staff to interact with more patients. This is particularly important in situations where medical resources are limited.
- The use of advanced practice providers such as physician assistants and nurse practitioners are optimized. This increases the availability of resources to treat patients.
- The exposure of medical staff to infectious diseases is greatly reduced. The pandemic taught us that even viruses such as COVID-19 don't always demand in-person visits and reducing the staff's exposure to them benefits the entire healthcare system.
- Supply costs are decreased because every patient no longer requires things such as gowns and PPE. This lowers operating costs.
- Medical resources that aren't in the same geographic area can be leveraged. If all the specialists near a patient are fully booked, slack resources from another area can be used just as easily. This increases utilization rates and provides services more quickly to patients.

### Key Takeaways

The move to telemedicine has been getting underway slowly for several years, but the pandemic accelerated it to an incredible degree, as medical staff had to find ways to offer their services safely by interacting virtually. Very soon, patients and providers will move past simple video calls and benefit from an entirely new digital ecosystem: the internet of medical things. An advanced platform that leverages new and improved sensors, AI and ubiquitous high-speed 5G wireless networks will be the foundation for this advancement. Patients will have better outcomes, and the providers that deliver these improved patient outcomes will benefit from greater efficiencies that improve the business side of healthcare.

**For more information, check out how T-Mobile is supporting evolving advancements in telehealth.**



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**T-Mobile's 5G network:** Capable device required; coverage not available in some areas. While 5G access won't require a certain plan or feature, some uses/services might. See Coverage details, Terms and Conditions, and Open Internet information for network management details (like video optimization) at T-Mobile.com.