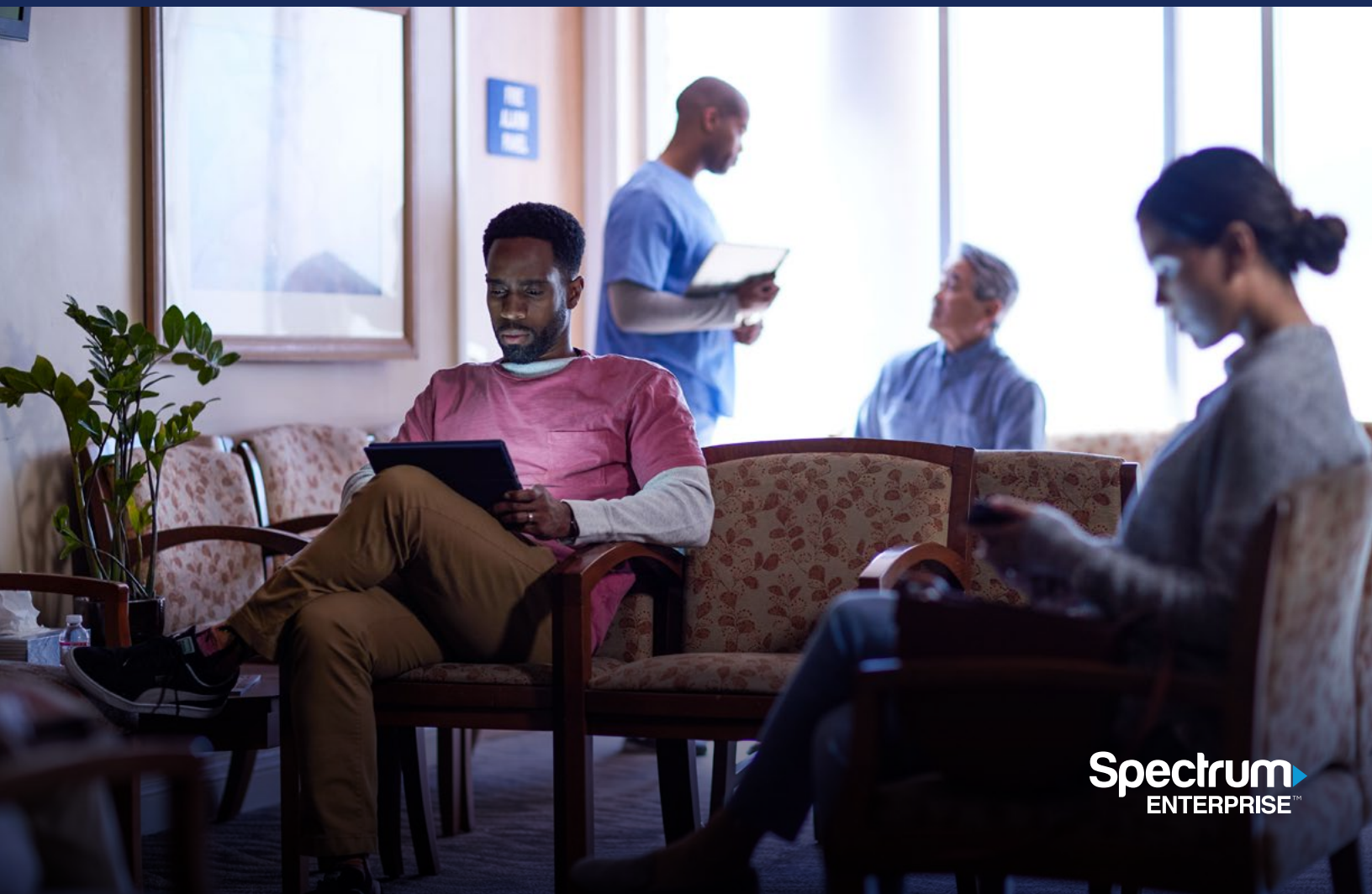
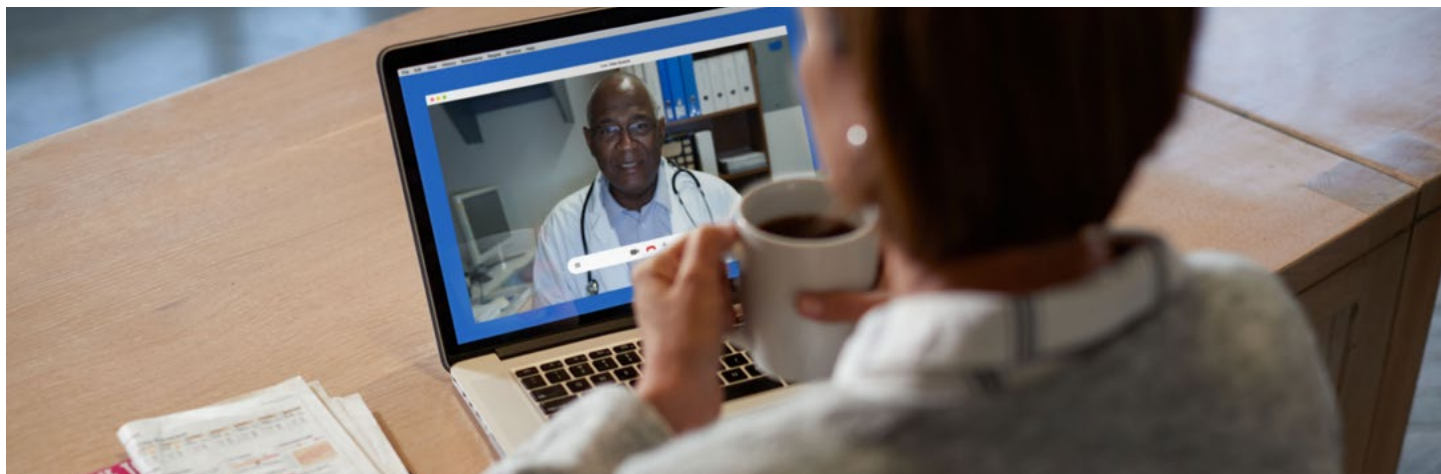


THE FUTURE OF HEALTHCARE

How to move from a reactive to a proactive
healthcare system



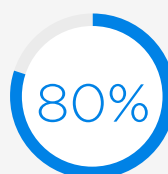


Healthcare organizations (HCOs) need to rethink integrating digital technologies and recast obsolete structures and operations. With that transformation, they can move from a reactive to a proactive healthcare system, provide a personalized patient experience and embrace the future of healthcare.

At a 450-bed teaching hospital in Northern Virginia (NOVA center), patients schedule their next in-person or video appointment using the organization's website or mobile app. Before their appointment, they complete the check-in process online. The day of their appointments, patients can choose their target location on a hospital campus map and navigate there in a car or on foot using the NOVA app's wayfinding service.

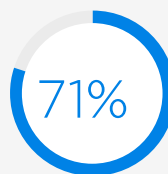
But there's more to come. In April 2022, the NOVA center launched a pilot to test an enhanced experience for the outpatient radiology and cardiology practices. Once on the hospital campus, patients will cross a geofence — a digital geographic boundary. Using beacons and low-powered Bluetooth, the geofence will trigger a text message that provides directions to the location they're visiting. When patients step off the elevator, a staff member will greet them and take them directly to an exam room. The technology cuts down on both patient wait time and staffing requirements, increasing efficiency and lowering costs.

Experiences like this are an integral part of the next generation of digital health transformation. HCOs have shifted from freestanding digital healthcare to digital technology integrated with traditional care delivery. By tying together conventional and digital offerings and channels, HCOs can support the digital transformation of healthcare.



80% of health systems said they plan to increase their investment levels in digital health over the next five years.

Source: [HIMSS](#), "2021 Future of Healthcare Report," August 11, 2021



71% of clinicians plan to use digital tools to the same or greater extent than they did during the Covid-19 pandemic.

Source: [Accenture](#), "4 truths show the future of healthcare technology," January 18, 2022

Stakeholders from patients to clinicians see a benefit in digital health transformation. Patients like the streamlined, enhanced, more convenient care experience they receive.

HCOs need to understand that simply investing in new technology will not solve their problems and processes for the long-term. Instead, they need a holistic view on where and how individual technologies and systems can integrate to create efficiencies and also detect the areas that may be too immature for such advancements.

Patient engagement pre, during and post-visit

Since the start of the pandemic, HCOs have raced to introduce digital technology to connect with patients and provide pathways to support care. The need to engage patients to gather information and improve healthcare decisions is as old as a very outdated medical practice. But the methods and technologies are changing. The goal now is to personalize experiences and empower patients to make the best possible care choices. That's a critical path to better health outcomes.

Pre-visit

The initial encounter with a healthcare provider sets the tone for the entire patient experience. Even before a visit, engaging patients starts with a digital front door that improves their experience and meets their expectations along the healthcare journey.

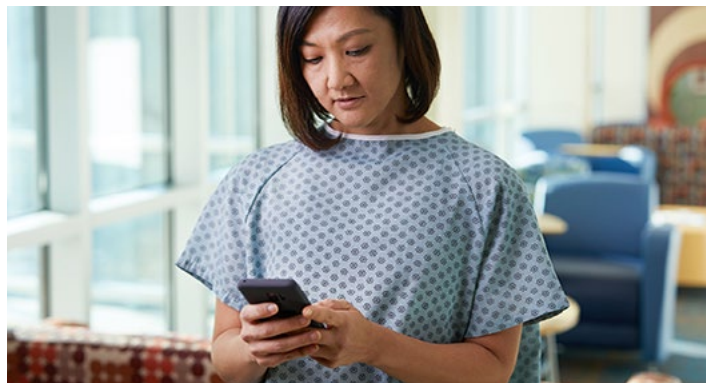
For example, chatbots can provide information accurately and efficiently, determine patient needs, help schedule visits and do it all at scale. Online patient portals and mobile apps provide access to MyChart information, upcoming appointments, test results, prescriptions and price estimates across multiple HCOs. SMS and voice streamline communications among patients and team members and facilitate connections.

"The digital experiences really give you the feeling that you have a connection to the company that's creating those interactions," said a digital solution architect for a major integrator of technology-based healthcare solutions. "The enhancement of that, which should be data-driven, is crucial to providing the best care."

In recent years, a New England healthcare center (NE network) completely revamped their patient pre-visits. "As a patient, you can double check all of your demographics, your guarantors, you can add your insurance information and a copy of your card," said an Electronic Health Record (EHR) applications analyst. "You can fill out the consent forms and e-sign them. And we can also send questionnaires. It's a huge time saver."

During visit

Telemedicine received a boost during the pandemic, especially after payers fully reimbursed for it. "I think telemedicine is a good screener or long-term triage approach to figure out who is the best person for a patient to see, rather than using physical staff for that," said the digital solution architect.



HCOs are now making the telemedicine foundation permanent. At the NOVA center, "We went from a handful of telehealth visits a month to about 85 percent, especially on the primary care side," the CIO said. "We had to stand up the infrastructure to support that growth in less than a week. That proved to our board that there is a demand for digital services and digital spending for patient engagement functions."

Initially, virtual visits used the Zoom healthcare app on iPads for video and a separate screen for Epic EHR documentation. Now the capability is native within the MyChart patient portal. Some 25 to 30 percent of primary care visits continue to be video appointments. "I'd say COVID accelerated our move to digital technologies for patient engagement by about five years," said the CIO.

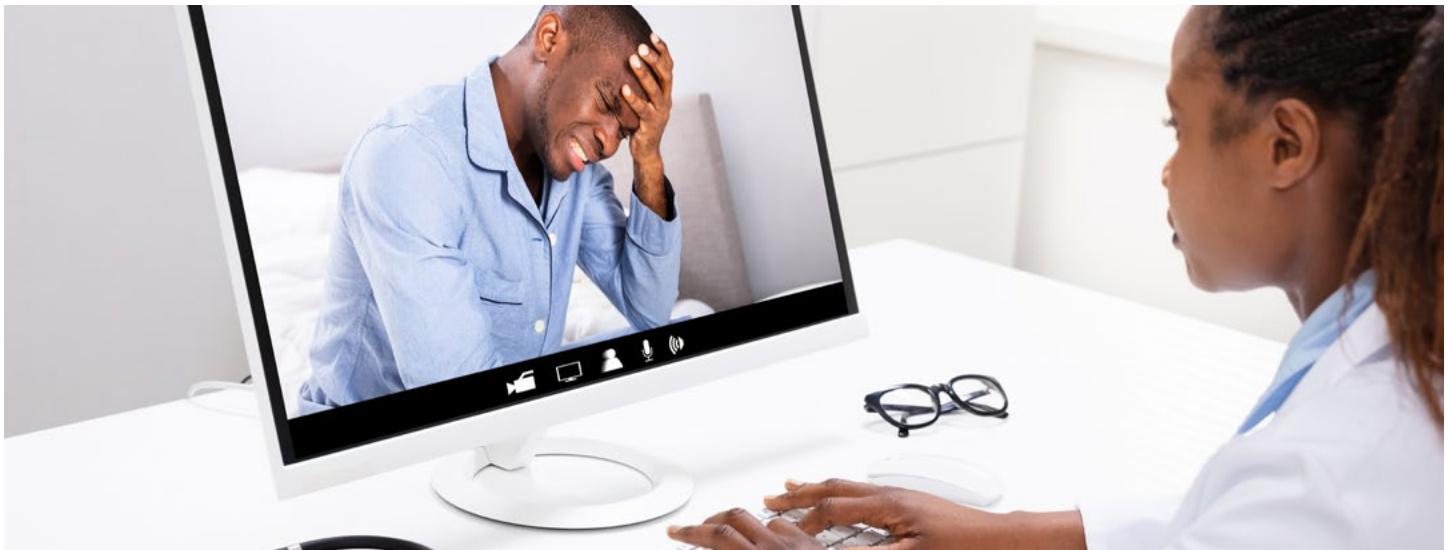
"COVID accelerated our move to digital technologies for patient engagement by about five years."

—CIO for the NOVA center

Post-visit

Digital integration continues even after patients' visits. At the NE network, patients once received a stack of paper with a care plan at the end of an appointment. Now they can also view that information through a MyChart portal.

For example, if a patient has screened positively for suicide risk, they can access contact information and healthy strategies for coping online. They can also see their diagnosis and the treatment plan developed by a multidisciplinary team that addresses care in a holistic way.



The EHR analyst noted that creating avenues to enhance communication makes a major difference in delivering the best patient experience. Through the MyChart portal, patients can now ask questions about everything from scheduling to test results to financial arrangements.

“In primary care, these capabilities have been available for several years,” the EHR analyst noted. “We’re trying to break down the barriers and standardize the patient experience across specialties and for inpatient and outpatient services. That’s become the expectation.”

Patient access that overcomes barriers

HCOs are implementing strategies to overcome the barriers to access that always existed and worsened during the pandemic. Those barriers included insufficient appointments for patients who needed to schedule around work and childcare, prolonged waits even to get an appointment, limited scheduling and options available online and long travel times or lack of transportation to get to healthcare facilities. Now consumers can more easily access care and treatment when and where and with whom they want it.

Digital solutions let healthcare providers connect with patients and their families in many ways: via portals, video, secure messaging, social media and other emerging technologies. Especially during the pandemic, organizations benefitted from finding new ways to continue to see a stream of patients and receive the associated revenue. And at times, patients still needed access to a physician.

The key was taking the desirable features of face-to-face interaction and providing them in a digital platform. That led to integrated delivery models and treatment outside traditional channels.

At the New England network, for instance, a dermatologist may see a patient who’s concerned about a skin growth. Instead of waiting months to visit a physician, the patient can take a photograph and upload it to a portal. Within 48 hours, a clinician can get back to the patient with a diagnosis. This shortens turnaround time for the patient, which enhances their care, and lets clinicians provide medical advice much sooner.

To serve patients better once the pandemic hit, the NOVA center quickly went live with an app. The app uses APIs in the Epic EHR to access MyChart information, such as upcoming appointments, test results, medications and price estimates across multiple HCOs.

With this digital front door, “Patients can self-schedule for in-person or video visits, receive appointment reminders from chatbots and communicate with their physicians through secure text messaging,” the CIO said.

The NOVA center also handled COVID testing and vaccinations through online registrations and scheduling, then used a tablet and wireless connectivity on-site to validate patients.

New models for care and services

At the NOVA center, all practices are patient-centered medical homes (PCMH) with a variety of mostly commercial payers. This organizational structure encourages partnerships between a coordinated care team of physicians, patients and families.

That's ideal because the center serves a large homeless population that suffers from mental health issues. Patient-focused, comprehensive care, including accessible services that promote quality and safety, is crucial. The NOVA center plans to meet some of these needs with pop-up therapy centers in locations convenient to patients.

The facility is also working to incorporate social determinants of health (SDoH) — such as nutrition, shelter and transportation — into care. These social, economic and environmental factors may have a significant influence on health outcomes by enhancing quality of life, according to the [Centers for Disease Control and Prevention](#).

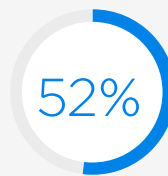
Hospital without walls

Digital tools also enable location-agnostic care — a “care anywhere” or “hospital without walls” model. Patients can receive treatment in a location convenient and appropriate for them, even if that's not a hospital or clinic. According to the [HIMSS](#) survey, 52 percent of patients were in favor of all healthcare visits being virtual by 2025.

For instance, the NOVA center is running a pilot program in obstetrics for home monitoring of low-risk mothers. The clinic issues a Doppler ultrasound and scale, both with Bluetooth®. The patient uploads information through the Apple Health app prior to a visit. A nurse practitioner examines it and — if the results are within normal tolerances — the patient doesn't have to come in for a visit. The facility plans to look at monitoring congestive heart failure patients in a similar manner.

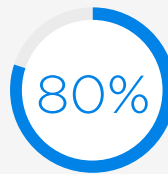
“Ultimately, at-home monitoring reduces unnecessary visits, solves clinical support shortages and frees up clinician time to spend with patients who really need it,” said the CIO.

The board of the NOVA center aims to open five new primary care practices each year (or the three therapy sites already noted) as pop-up facilities. They're also planning a couple of freestanding emergency centers — and an outpatient surgery center and on-campus pavilion that aren't pop-ups. The strategy is to gain a foothold in areas of the county and nearby capital area.



of patients were in favor of all healthcare visits being virtual by 2025.

Source: [HIMSS](#), “2021 Future of Healthcare Report,” August 11, 2021



of clinicians would like to move AI beyond administrative use cases and into the clinical realm.

Source: [Accenture](#), “4 truths show the future of healthcare technology,” January 18, 2022

If the pop-ups are successful, the center will build out from there. If not, they'll shut down and move on. Pilots that began in April 2022 will test the first two sites — an outpatient radiology practice and a cardiology health center practice.

AI and machine learning

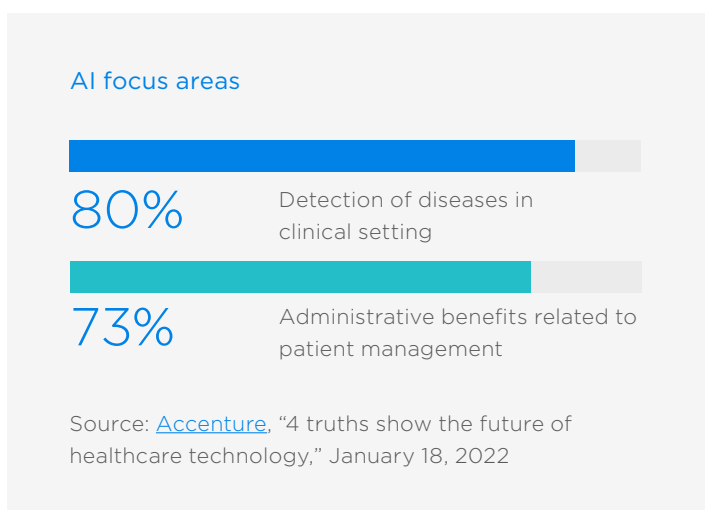
Digital integration also enables predictive analytics and artificial intelligence (AI) to support better clinical decisions, more personalized care plans and improved health outcomes.

According to [Accenture](#), 80 percent of clinicians would like to move AI beyond administrative use cases and into the clinical realm. With additional insights from AI, clinicians can increase productivity and arrive at informed answers faster.

A large hospital provider in the southeast that's working to create a digital front door serves as an example. The digital solution architect described a use case involving a young mother and her sick child. She's at home but she works and can't take her son to visit a doctor or an ER. The ER visit would also be expensive and resource intensive. So, to interact with the hospital, an AI chatbot could do a pre-diagnosis to determine if she should indeed take her son to the ER now, schedule an urgent care appointment or visit a doctor later.

Success applying AI depends on access to the right data — and that requires getting data out of silos and exchanging it between providers and payers. At a minimum, HCOs need claims data combined with clinical data from EHR, which can then be supplemented by other network sources. Bringing more data to clinical decision making offers a greater opportunity for personalized care while also lowering costs.

“Customer experience is the end goal of digital transformation,” said the digital solution architect. “The three core pillars in addition to customer experience are business agility, DevOps and insights coming out of AI and other data activities. So, understanding your data is critical.”



Implementing AI requires a substantial technology investment. One-third of health system respondents have AI and machine learning on their list of top focus areas over the next five years, according to the [HIMSS 2021 Future of Healthcare Report](#). Payers rank AI and machine learning as a high or moderate organizational priority. Patients, of course, expect improved diagnoses and better treatments.

The IT infrastructure for digital success

IT technology is critical to supporting digital health initiatives. Previously healthcare facilities needed only to manage bandwidth to support smartphones and iPads. Now, half of the people in an ER waiting room may be watching videos and carrying their devices along to exam rooms. To solve this issue, the NOVA center uses a dedicated circuit that segments public internet and entertainment traffic from mission-critical applications.

“I can’t have 50 patients coming in and watching Netflix,” the NOVA center CIO said when asked about IT infrastructure needs. “That doesn’t work. It’s a capacity issue.”

To fully meet the demands of digital transformation, HCOs need a resilient data and communications infrastructure. “But often IT is looked at as a cost center, not necessarily as an enabler,” said the digital solution architect. “We really do rely on these platforms to provide a needed connection with people.”

The digital health IT foundation must include a suite of services in four key areas:

- **Connectivity and wide area network (WAN):** High-performing connectivity solutions give you internet access over fiber and wireless networks. A WAN provides reliable connections to all your locations and private and public clouds via Ethernet and cloud.
- **Security:** Security services guard against threats through firewall protection and updates, detection, enhanced security for remote users across site-to-site and mobile virtual private networks (VPN) connections and compliance with federal mandates like HIPAA.
- **Voice and collaboration:** Flexible tools for collaboration offer superior quality while keeping costs low. Unified communications include collaboration features such as video chat, mobile phone integration, instant messaging and desktop sharing. Hosted call centers scale easily to support automatic call routing and monitoring, robust reporting and real-time tracking.
- **TV:** TV solutions that fit a range of budgets keep people informed and entertained throughout your facility. Options include streaming services via mobile smart devices as well as traditional viewing over TVs that support on-demand features.

Connection and protection cannot be sacrificed

Technology is changing how and where providers deliver care. That requires a preferred network and connectivity partner who understands the importance of a strong, secure and adaptable IT infrastructure. Your technology provider should be fully invested in your digital health transformation journey and committed to ensuring you have the right foundation to achieve success.

Spectrum Enterprise meets the needs of HCOs pursuing digital health transformation with the following services:



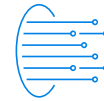
IT expertise and consultative approach

We understand the unique needs of hospital and health systems and that there are no one-size-fits all IT solutions. Our consultative approach means we work with you to plan, develop, deploy and support the connectivity solutions that help you meet your goals.



Advanced technology solutions

We offer flexible, scalable solutions designed to grow with your initiatives. We design our solutions to be straightforward and reliable so your team can work faster, smarter and more efficiently.



Network strength, reach and reliability

Our award-winning fiber network is engineered for exceptional performance to support every high-bandwidth activity across the healthcare campus. We have a nationwide private fiber network that offers secure, fast and reliable connectivity to support your virtual care offerings.



Extensive healthcare experience

We've partnered with over 100,000 healthcare providers nationwide to create technology-rich environments that lead to exceptional patient experiences and outcomes.



Industry leadership

As one of the largest providers of both Ethernet service and fiber-IT buildings in the US, we have the size, capacity and expertise to serve hospitals and health systems effectively. Our complete portfolio of IT solutions means you can rely on us as your single partner to meet all of your connectivity, voice and TV needs. This helps to simplify the management of your technology solutions and achieve cost savings.



Exceptional service and support

We put the needs of our clients at the center of everything we do. We offer top-ranked service with local account teams and technicians, 24/7/365 telephone support and an end-to-end service level agreement (SLA).

About Spectrum Enterprise

Spectrum Enterprise, a part of Charter Communications, Inc., is a national provider of scalable, fiber technology solutions serving many of America's largest businesses and communications service providers. The broad Spectrum Enterprise portfolio includes [networking and managed services solutions](#): [Internet access](#), [Ethernet access and networks](#), [Voice](#) and [TV solutions](#). The Spectrum Enterprise team of experts works closely with clients to achieve greater business success by providing solutions designed to meet their evolving needs. For more information, visit enterprise.spectrum.com.