



## ***Reimagining the Connected Hospital of the Future*** ***COVID-19 completely disrupted the healthcare industry – leading healthcare leaders to re-envision what their digital infrastructure needs to look like in the future***

**T**he COVID-19 pandemic has proven to be one of the greatest disruptors to traditional healthcare delivery. Health systems and hospitals were already grappling with massive changes, including consolidations, changing reimbursement models and evolving regulatory demands, when few outside the U.S. had yet heard of the novel coronavirus. By March 2020, as the pandemic swept across the country, healthcare facilities of all shapes and sizes found they needed to quickly pivot to address what was fast becoming a national public health emergency.

Within weeks, healthcare organizations (HCOs) quickly rolled out new information technology (IT) platforms to support telemedicine, remote work for nonclinical staff, pop-up testing sites, data analytics to predict outbreaks and much, much more.<sup>1</sup> Lea Sims, Marketing Lead for Healthcare, Insurance and Life Sciences, Verizon, said the impact COVID-19 had on hospital operations cannot be understated – and pushed many hospitals’ physical infrastructures to their limits.

“Like any service-focused venue, a hospital’s ability to deliver its highest quality services will depend greatly on its physical blueprint,” she explained. “Hospitals have traditionally operated like hotels, with a defining focus on fixed rooms and beds, a design that proved problematic for many HCOs during COVID-19, when pandemic response necessitated the rapid reconfiguration of intensive care units, isolation rooms and hybrid emergency rooms.”



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Lea Sims | Marketing Lead for Healthcare, Insurance and Life Sciences | Verizon



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Daniel Johnson | Executive Director, 5G and Networking | Verizon

Such rapid reconfigurations have healthcare stakeholders thinking strategically about what the connected hospital of the future should look like – as well as what sort of physical infrastructure will be required to support it. As noted in the recent HIMSS Market Intelligence report, *Understanding the Connected Hospital*, 87% of survey respondents, comprising hospital and health system leaders throughout the U.S., agreed that COVID-19 had led them to rethink their hospitals’ IT designs, especially after having to overcome significant hurdles with regards to in-room telehealth offerings, real-time pandemic data and the reconfiguration of their physical footprint to support pandemic-related-operations (Figure 1).<sup>2</sup> Given the level of disruption to healthcare delivery, Sims is not surprised so many leaders are re-envisioning their physical infrastructure in order to meet the needs of patients now – as well as their needs long into the future.

“It took the COVID-19 pandemic to expose the challenges of an outdated infrastructure that was already problematic in many ways for HCOs,” she noted. “Events like these force health systems and hospitals to adapt in ways they normally

would not have had the time or resources to consider before. When that happens, inefficiencies are revealed and necessity births new strategies.”

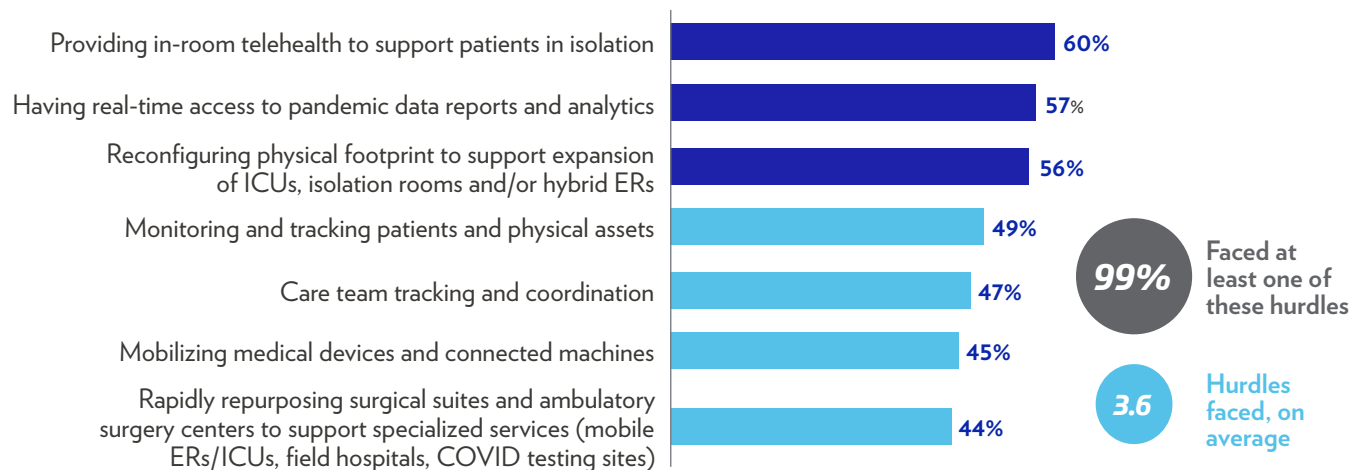
### Toward a more flexible connectivity roadmap

As they consider the connected hospital of the future, key stakeholders are realizing the importance of moving toward a more wireless infrastructure. Daniel Johnson, Executive Director, 5G and Networking, Verizon, said that many organizations see a migration away from wired, legacy networks as a high priority as they consider any digital transformation initiatives.

“Having the right network infrastructure was a critical piece of being able to adequately respond to COVID-19,” he said. “Too many legacy networks just can’t keep up with the pace of growing connected devices that now commonly reside in the hospital environment – and those devices were used quite widely during the pandemic. Those legacy networks also lack mobility. Hospitals now see the value in being more mobile and they want to support that kind of flexibility in the future.”

Figure 1. Top COVID-19 hurdles reported by hospital and health system leaders

Which of the following represent the greatest operational hurdles you’ve had to overcome to support your response during the COVID-19 crisis?



Base: Total Respondents: n=100

Source: HIMSS, November 2020. *Understanding the Connected Hospital*, in partnership with Verizon

*“Hospitals that can leverage big-data analytics, as well as artificial intelligence, will be better positioned to meet new challenges, whatever they may be. And, too many existing legacy systems simply can’t support the growing demand for data – which must be viewed as a critical component to support new innovations.”*

Daniel Johnson

Survey respondents agreed. Nearly 90% of respondents stated that “wireless from door-to-door and floor-to-floor” completely or mostly described the kind of infrastructure they expect when thinking about the connected hospital of the future (Figure 2). Johnson added that not only are the continued growth of the internet of things (IoT) and the need for mobility driving this reimagining of physical infrastructure, but also the increased need for real-time data to support operational and clinical decision-making.

“Having access to that data is driving opportunity for new innovations,” he said. “Hospitals that can leverage big-data analytics, as well as artificial intelligence, will be better positioned to meet new challenges, whatever they may be. And, too many existing legacy systems simply can’t support the growing demand for data – which must be viewed as a critical component to support new innovations.”

### A modular approach to infrastructure

To better respond to the pandemic, HCO leaders had to get creative about how they used their physical space. Hospitals

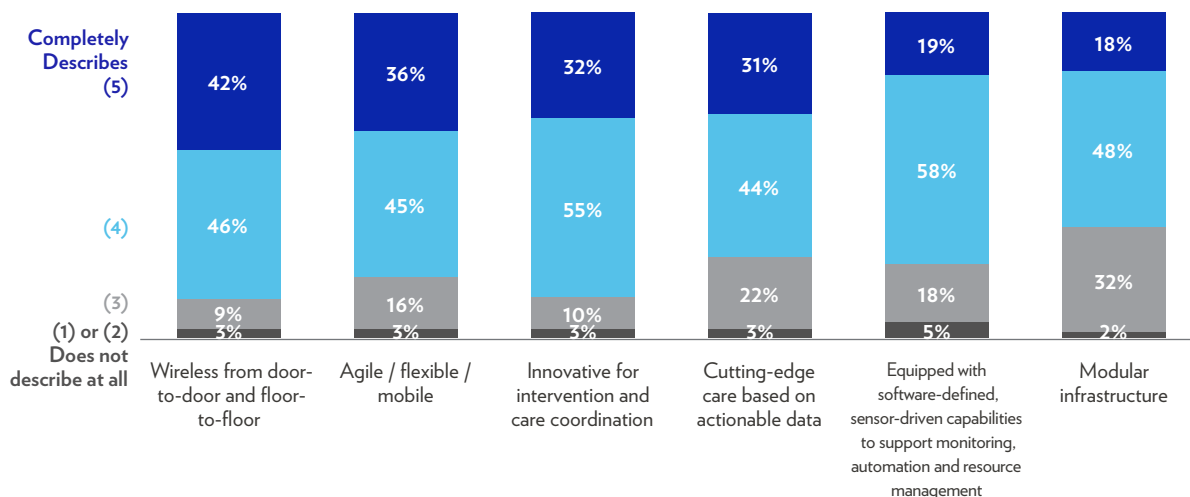
transformed operating rooms into COVID-19 units, set up clinics and testing sites in nearby parks and supported hybrid emergency rooms. The need for increased connectivity in such novel spaces took a toll on the network, as organizations needed to quickly access patient information, track assets in real-time and utilize connected devices – sometimes entirely outside the four walls of the hospital. This creativity made hospital leaders appreciate a more modular approach to building out the network infrastructure, according to Sims.

“A modular footprint gives these organizations the ability to easily adapt physical areas of the building based on their immediate needs – and move patients, beds and equipment in an agile way to successfully deliver care,” she said. “More things need to be portable, mobile and wirelessly enabled so they can easily move from place to place, and your network needs to support that.”

Johnson added that with new “smart” capabilities, taking a more modular approach to infrastructure will be even more vital to supporting the connected hospital of the future.

Figure 2. How healthcare leaders envision the ‘connected hospital of the future’

*Based on your experience with COVID-19, please rate each of the below descriptors when thinking of the connected hospital of the future:*



Base: Total Respondents: n=100

Source: HIMSS. November 2020. Understanding the Connected Hospital, in partnership with Verizon

*“The more you can design this as a holistic ecosystem, as opposed to separate operating environments, the more efficiencies you bring to bear and the more secure you can be. You want a situation that supports the kind of comprehensive security posture and strategy that permits you to be more proactive in addressing any security incidents that may occur.”*

Daniel Johnson

“As we look toward the future, we see hospital facilities are being physically constructed in a very modular fashion,” he said. “Your technology needs to be agile enough to support those physical builds and construction elements, certainly. But, with the kind of pop-up elements we saw with COVID-19, you see why your underlying wireless technology needs to be able to support the kind of dynamic fluidity where, all of a sudden, tennis venues and parking garages are being transformed into actual hospital facilities.”

### Balancing flexibility and security

As healthcare leaders consider how to best invest in more flexible, wireless infrastructures, network security remains top of mind. In fact, when asked to rank their top three IT priorities over the next one to three years, survey respondents rated addressing network security and threat detection capabilities as a leading concern (Figure 3).

Johnson said it’s yet another reason why HCOs are seeing the need to migrate away from their legacy networks.

“I’ve seen some stats where some hospitals deal with over 100 vendors to support their legacy infrastructure – you can only imagine how many separate conversations and technology

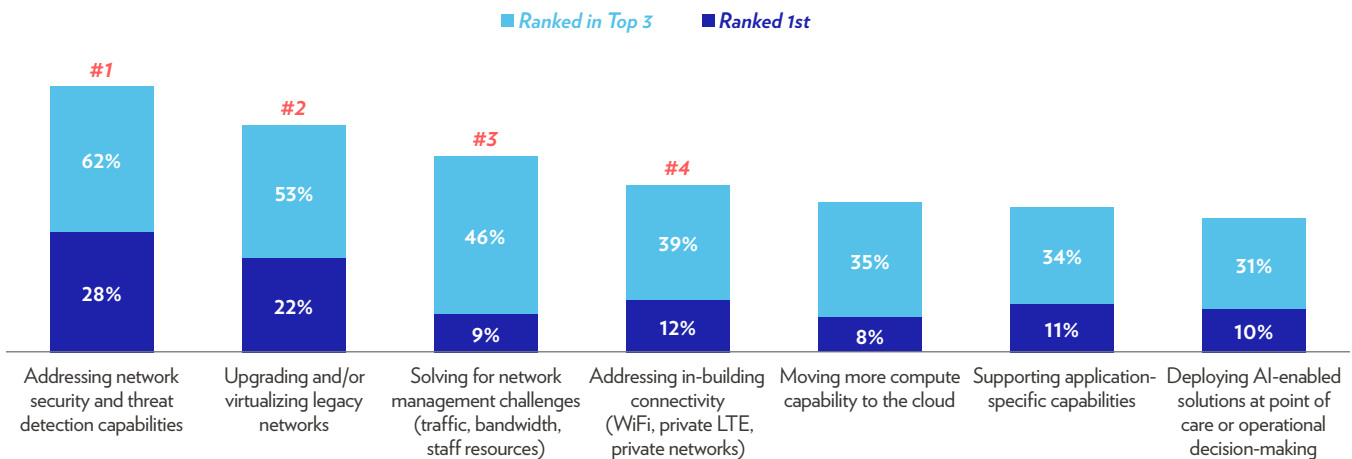
deployments must be taking place with so many vendors, as well as all the extra costs,” he said. “But, outside of that extra complexity, having such a disparate environment leads to a number of challenging security vulnerabilities that have the potential to expose the entire enterprise.”

And, as organizations add more connected devices – and work to support more mobile operations – to support patient care, the security picture only becomes more challenging. To protect data, as well as patient safety, HCOs need to upgrade or virtualize their legacy networks to improve their threat detect capabilities, solve for network management challenges and ensure their security strategy is flexible enough to manage the entire infrastructure.

“It is critical to make sure you are examining how both the IT and the operational technology infrastructures can be harmonized and integrated,” Johnson explained. “The more you can design this as a holistic ecosystem, as opposed to separate operating environments, the more efficiencies you bring to bear and the more secure you can be. You want a situation that supports the kind of comprehensive security posture and strategy that permits you to be more proactive in addressing any security incidents that may occur.”

**Figure 3.** Healthcare leaders list top IT priorities over next few years

*When thinking of your organization’s infrastructure transformation over the next 1-3 years, please rank your top 3 priorities:*



Base: Total Respondents: n=100

Source: HIMSS, November 2020. Understanding the Connected Hospital, in partnership with Verizon

*“As more applications and connected ‘things’ are added to an organization’s network footprint, the ability of those things to [navigate] real-time data and complex capabilities will be driven by the speed and agility of the networks they are riding on. Your network should be an enabler, not a barrier, to innovation.”*

Lea Sims

## Embracing the connected hospital of the future

Certainly, making changes to an organization’s network infrastructure is no small task – Johnson recommended that HCOs contract with a trusted, experienced partner who will work with them to assess their needs and define their operational goals in order to put the right plan in place.

“By assessing what your goals are, you can prioritize your upgrades and make sure they are happening in the right areas,” he said. “With digital transformation, you want to ensure you have a mobile-first strategy that can bring in all the information you need to provide the highest quality care for patients. So, taking the time to align your goals, reprioritize where your upgrades should take place and then invest in those critical areas first can help you map out your journey to getting your network where you want it to be.”

Sims agreed – and added that, as the industry works to support day-to-day care, as well as to respond to future public health emergencies, health systems and hospitals simply cannot deliver true technological innovation on the back of a slow, low-capacity legacy network.

“As more applications and connected ‘things’ are added to an organization’s network footprint, the ability of those things to [navigate] real-time data and complex capabilities will be driven by the speed and agility of the networks they are riding on,” she said. “Your network should be an enabler, not a barrier, to innovation.”

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To learn more about the connected hospital of the future, visit [verizon.com/business](https://www.verizon.com/business).

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### References

1. Frost & Sullivan. April 2020. Market impact of COVID-19 on the healthcare industry. <https://ww2.frost.com/wp-content/uploads/2020/04/COVID-19-Impact-on-Healthcare-GOs-min.pdf>.
2. HIMSS Market Intelligence. November 2020. Understanding the connected hospital. Chicago: Author.



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