

Insights Series

Transforming the System of Care

Perspectives on how
to increase health equity
and access for all with
smartly-connected
care systems



Preface

The pace of change throughout the healthcare industry remains extraordinary, with startling new challenges as well as dazzling new breakthroughs seeming to appear almost daily.

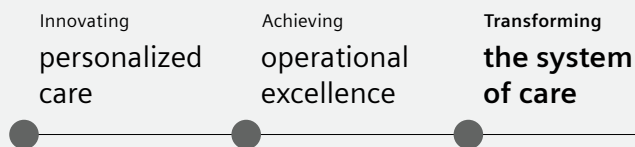
Many of the profound changes redefining today's global healthcare landscape were unimaginable just a few short years ago. A global pandemic has upended long-held assumptions about how to deliver care and respond to crises. Digital advances are revolutionizing the way patients manage their own health and treatment. Technological progress including Artificial Intelligence (AI) is building on many of our previous achievements while sparking rapid new changes.

Developments like these vividly demonstrate how difficult it is to predict the future. Nonetheless, **we believe that healthcare in the years ahead will be defined by three overarching themes**—three broad trends that encompass the most remarkable advances in healthcare as well as the most promising opportunities and the most pressing challenges.

These three themes are the improved patient outcomes made possible by advances in personalized care; the increasing importance of operational excellence; and the essential effort to continually upgrade and transform systems of care allowing for better access and greater health equity.

This thematic framework can make it easier to tackle day-to-day issues, providing a context in which to better understand how topics interrelate and how to develop long-term strategic goals that can be transformed into achievable and realistic targets.

At Siemens Healthineers, our purpose is to pioneer breakthroughs in healthcare. For everyone. Everywhere. Due to our unique capabilities in patient twinning,* precision therapy and digital, data and AI, we believe we are uniquely positioned to help our customers and partners better understand these themes and successfully tackle them.



This paper explores one of these themes—**Transforming the system of care**—offering both an in-depth analysis of how this issue is unfolding, and a detailed look at actionable steps towards realizing this goal.

* Patient twinning is currently under development. It is not for sale. Its future availability cannot be guaranteed.

Background

Transforming the system of care is very much on the minds of healthcare leaders around the world. It is a necessary response to a rapidly changing and increasingly competitive healthcare marketplace—one where helping to lead change may be the only viable alternative to being left behind. It is also a necessary response to the healthcare reality in many middle-income and particularly low-income countries, where too many people still do not have proper access to the healthcare they need. The decisions that are being made about how to transform the system will be driven by both opportunity and necessity.

Opportunity, because healthcare today is alive with it. AI, virtual care, augmented reality, telemedicine—the possibilities for transformation are greater than ever before. Necessity, because notwithstanding all that potential, healthcare inequity is rampant around the world. Simply put, the best available healthcare is not available to everyone, everywhere. Indeed, even in countries with universal health care coverage, access to health services is sometimes not within reach of all those who need it.

In addition, patients in many parts of the world have become increasingly knowledgeable about healthcare and more aware of the ways in which systems are underperforming. There is growing demand for value-based care, focused on patients' needs and expectations. Patients want care that involves them and their families in the process, that delivers a human-centered experience, and that improves their quality of life and overall health. In all these areas,

patients around the world often report that their healthcare systems are coming up short.

Finally, economic viability is a real and growing concern. Fast-growing countries need to build up affordable and accessible healthcare solutions, not only in metropolitan centers but also in remote, rural areas. Developed countries have aging populations and face a growing burden of chronic disease, forcing them to balance the need to deliver high-quality care with rising healthcare costs. The age-old dilemma of how to do more with less is very much at play in healthcare systems worldwide.

Steps need to be taken to increase efficiency. There are changes to be made to improve processes. There are investments to be made in new ways of gathering, analyzing, and employing patient data. Interoperability has become an imperative, within healthcare networks and also between them. Changing reimbursement policies are creating their own unique challenges.

All of this was true, and a concern, before the pandemic which magnified and accelerated existing problems, making it clearer than ever that transformation is essential. COVID-19 also served to make healthcare, and the resilience of healthcare systems, a political priority. Post-pandemic, providers and healthcare policy makers across the globe have a greater awareness of the importance of strategic investments as well as a stronger commitment to population health. Patient experience is now often a fundamental driver of healthcare policy, instead of an afterthought.

With all of this as context, there are three fundamental areas in which progress must be made by all healthcare systems and organizations committed to transforming the system of care. They must:

- **Expand access to care**
- **Deliver decentralized care closer to patients**
- **Build a smartly-connected system of care**

The first is to **expand access to care**, particularly in low- and middle-income countries. As the World Health Organization (WHO) has so strongly emphasized, “At least half of the world’s population does not have access to essential health services.”¹ About 17 million people die every year, before they reach the age of 70, from noncommunicable diseases such as diabetes, cancer, and cardiovascular disease. Of these deaths, 86% occur in low- and middle-income countries.² Overall, death rates are higher and productivity is lower. Economies suffer. In the absence of good healthcare, children cannot go to school and learn, and adults cannot work and contribute. The reasons for this lack of access vary, from geographical barriers to infrastructure limitations to financial constraints.

The second area that healthcare systems must address is the fact that even in countries where essential healthcare, services are widely available, they are not always available to people everywhere in the country.

There is access for some but not for all, often as a consequence of where they live.

In northern Finland, for example, some people must travel approximately 400 kilometers to reach their nearest hospital.³ In Australia, 58% of people who live in remote areas report not having a specialist nearby.⁴ In the U.S. today, there are only 1.3 physicians for every one thousand people in rural areas, compared to 3.1 physicians for every one thousand people in urban areas.⁵ Simply put, in far too many places around the world, postal codes determine quality of care. **Delivering decentralized care** to meet patients where they are can help to address these disparities.

A third component of transforming the system of care is **building smartly-connected systems of care**. By focusing on decentralization, low acuity and low complexity routine care can be brought to underserved communities. And with digitalization and technologies like AI, the expertise that exists in large hospitals can be delivered in small community settings, ensuring that patients in these communities can benefit from the expertise that exists in large urban centers. By smartly connecting people, data, and facilities, and also sharing knowledge, more patients can receive expert, high-quality care when and where they need it.

Transforming the system of care

Expand
access to care



Transform the provision of care with tailored solutions that **prioritize acceptability, availability, and affordability** to enable you to serve the underserved.

Read more on page 6

Deliver decentralized
care closer to patients

Ambulatory care



1001
10011 0100110 1 00010011 01 0010011

Integrate technology-based innovations that **shift routine care to community settings** enabling you to **efficiently bring high-quality care to more patients**, wherever they are.

Read more on page 8

Build a smartly-connected
system of care

Acute care



001110 011 110 0001 011
0011 0100110 00010011 10 00010011 010011011

Connect community and specialized care settings smartly, linking caregivers and patients to enable you to strengthen integrated and continuous care across the health system.

Read more on page 10

Perspectives

Expand access to care

In a world marked by technological advancement and global interconnectedness, the concept of health as a fundamental human right has never been more relevant.⁶ The United Nations recognizes “Good Health and Well-Being” as one of its 17 sustainable development goals, affirming the importance of health equity. Put simply, health equity means that every individual, regardless of their social, economic, demographic, or geographic background, should have the opportunity to lead a healthy life. Yet, achieving this goal remains a complex challenge, predominantly characterized by three barriers: Availability, Affordability, and Acceptability.⁷ Availability refers to people’s ability to obtain essential health services when and where they need them. Affordability means needed care that can be obtained without incurring financial hardship—not only because of any direct medical costs but also because of associated costs for travel, time off work, or accompaniment. Acceptability refers to people’s perception of a healthcare service or medical procedure—a perception that can be shaped by cultural, religious, and social factors, or by a lack of accurate information.

To overcome these obstacles and expand access to care, strengthening of healthcare outreach, enhancement of workforce capabilities, and collaboration with global partners are important.

Strengthening end-to-end healthcare reach

Non-communicable diseases continue to affect a huge percentage of the world’s population and remain the leading causes of death worldwide—diseases such as diabetes, cancer, cardiovascular diseases, and neuro-vascular diseases such as stroke. Improving access to care requires improvements at every step of the patient pathway, from screening to diagnosis to therapy to follow-up. Care innovations and technological advances

offer new opportunities to provide more patients with better care along the entire pathway. The importance of diagnostics was recently recognized by the WHO, that passed a resolution noting that improving the quality and reach of diagnostics is critical to improving health access. As the WHO resolution states, “Diagnostics are important to ensure quality, comprehensive and integrated primary health care and health services everywhere and for everyone.”⁸

Early screening is essential in fighting non-communicable diseases, and available technology can reach previously underserved areas. For instance, inexpensive visual urine strips can quickly and reliably detect a broad range of conditions and are simple to use. Access to essential mammography screening services through mobile solutions can enable early breast cancer detection and improve the likelihood of successful treatment. Advanced diagnosis has become more accessible thanks to innovations like MRI scanners that are smaller, lighter, and do not require additional helium resources. Nowadays such equipment can be loaded on trucks and driven to almost any location, as long as there is a paved road network, including remote areas. These MRI scanners are also more affordable to purchase, install, and maintain, reducing the total cost of ownership (TCO).

Building capacity with education and training

A critical aspect of expanding access to care in underserved regions is the development of local expertise. Individualized, local training programs, delivered in the local language, supported for example by digital approaches, can equip medical personnel, including radiology staff, with the necessary skills to provide quality care. In situations where local expertise is not immediately available, telehealth and telemedicine can deliver significant advances in healthcare access.

Physicians and technicians can now remotely train their on-site peers, conduct consultations, operate systems, administer tests, read results, and monitor patient conditions. Even complex cancer treatment plans can be prepared by physicians and physicists located far from their patients. This results in better, more affordable care for patients and providers. Finally, acceptability of healthcare services needs to be increased. Acceptability is low when patients perceive services to be ineffective or believe side effects outweigh the value of those services. To make healthcare services more acceptable, patient engagement and education are key. Raising awareness of availability, effectiveness, and safety of healthcare services is essential in breaking down the barriers of concern and reluctance.

Accelerating global development through partnerships

The reforms that are needed to make healthcare more effective and accessible worldwide cannot be achieved by any one organization working alone. In order to achieve real and lasting results, governments, public health bodies, NGOs, the academic and research communities, and medical technology companies must work together, ideally through coordinated partnerships, sharing expertise, networks, and strategies. At the global level, organizations, such as UNICEF and the World Economic Forum have a crucial role to play, as well as foundations such as the Movement Health Foundation, the City Cancer Challenge, and others. Companies in the MedTech sector can be particularly helpful in ensuring the existing technology is used to its full potential, reaching those who need it. Global partnerships are also crucial for facilitating access to tailored financing solutions that address specific country and organizational requirements. These flexible funds enable access to necessary expertise and technology, aiming to bridge gaps in the supply of quality medical equipment. An even wider network of partners is needed to tackle issues related to infrastructure and telecommunications.



Case study

Healthcare for all in a remote African province | General Hospital of Cabinda, Angola

Until recently, contracting an illness or suffering an injury in Angola's province Cabinda could be extremely serious. Cabinda is not only one of the poorest provinces of Angola, it is also cut off from the rest of Angola by a narrow strip of land belonging to another country (the Democratic Republic of the Congo). For the one million inhabitants of Cabinda Province, a serious illness either meant crossing multiple borders or seeking care in another country. This was not only expensive and time-consuming, but potentially life-threatening in cases of emergencies.

This all changed on April 21, 2022, when the General Hospital of Cabinda opened its doors. The hospital provides services—accessible to all people, rich or poor—that did not previously exist in the province or even in the country. These new services include personalized hospitalization, differentiated delivery services that offer comfort to mothers and newborns, an intensive care unit, as well as cardio-pneumology services and minimal access surgery. The hospital is equipped with an MRI scanner that requires almost no helium and thus is not reliant on imports of helium into the inaccessible area. In addition, remote scanning helps medical professionals on-site obtain expert opinions from radiologists around the world.

To read this study in its entirety, please see reference 9 and 10.



50%

of world's population still lacks access to essential health services.¹

Deliver decentralized care closer to patients

The need to bring care closer to patients through decentralized healthcare is not restricted to low- and middle-income regions. Too many patients around the world have to travel long distances to access a doctor, hospital or specialist. Shifting routine care to community and outpatient settings can be an important step towards increasing healthcare access.

A shift to more decentralized care is driven by three factors, and offers three distinct benefits:

- 1 Cost:** Outpatient care is less expensive for providers to deliver and more affordable for patients. Both win.
- 2 Improved clinical outcomes:** Advances in technology and clinical techniques enable healthcare providers to deliver the same quality of care in outpatient settings.
- 3 Consumerization of care:** As we saw during the pandemic, patients have a choice. When given the option of receiving care closer to home when it is convenient to them, they are more likely to opt in for screenings and wellness exams—ultimately creating healthier communities.

A number of strategies exist for bringing care closer to patients. Virtual care is perhaps the best example. We know that the willingness of patients to embrace such technologies is strong, and results can be impressive. Through a combination of telehealth and virtual patient monitoring, it is possible to greatly reduce the need for patients to travel in search of healthcare. The caveat, of course, is that this benefit is only available to patients and caregivers who have access to connected devices and are able to handle digital technologies.

A second approach to bringing care closer to patients is to physically bring the services, equipment, and caregivers to where patients are. Mobile screening trailers are already widely used for early detection of breast and lung cancer, among others. Entire mobile clinics can now be packed into containers and shipped to rural areas in the event of catastrophe or dire need. A more sophisticated example is mobile stroke units—specialized ambulances equipped with the personnel, equipment, and CT imaging capability to diagnose acute strokes and begin drug treatment in a pre-hospital setting. Bringing care to where patients are is likely to become more popular in the coming years as healthcare devices and technology become smaller, lighter, and easier to operate.

Various other community care models are also likely to gain traction in the future. For example, there is a gradual shift underway from hospital-based imaging services to a mixed model of both hospital and outpatient center imaging. This trend will continue, largely due to new reimbursement policies that favor outpatient services. Already, in certain countries, it is not uncommon to find imaging centers in shopping malls, community centers, churches, or other areas where one would not previously have expected to encounter medical services.¹¹

Such care is not restricted to imaging. There are outpatient clinics that offer services from physiotherapy to cancer treatment. In addition, ambulatory surgery centers, general practitioner clinics, community health centers, and urgent care clinics for after-hour services are growing in number every day in countries around the world. And not only can these centers provide much of the care people need closer to home, they can in the process ease pressure on acute care hospitals and emergency departments.

One of the most effective ways to deliver care into the community while still drawing on larger hospitals' acute care expertise is through the so-called "hub-and-spoke" approach (see also page 14). This model of service delivery consists of a primary anchor establishment, the hub, which offers a full spectrum of healthcare services, along with secondary establishments, the spokes, which are located around a region or country, close to where patients live.

The spokes focus on diagnosis, routine treatment and follow-up, and act as gateways to the hub. They can also offer a range of outpatient services, including lab tests, drug treatment, surgery, and cancer therapy. The typical patient journey starts with screening and diagnosis at the spoke. Post diagnosis, if required, the patient is sent to the hub for treatment. Post treatment, the spokes again assume responsibility for the patient, for follow-up therapy and treatment. It is important to note that the hub-and-spoke model, like so many other aspects of decentralized care, depends on an effective digital connection between different providers. This is explored further in the next section.



Case study

Fast, high-quality imaging at affordable cost | Lumina Imaging and Diagnostics, U.S.

The leaders at MetroHealth System in Cleveland, Ohio, had a theory about MRI and CT scans: that they should not be as expensive as they are, nor as difficult to schedule. In 2019, they created a non-profit business, Lumina Imaging and Diagnostics, to test their theory.

Today, Lumina offers high quality outpatient MRI and CT scans at three Ohio locations, with more on the way. Long-term, the plan is to offer the company's innovative model across the U.S. And it would be hard to argue that the model is not innovative. Lumina offers flexible scheduling, meaning patients can have their images completed quickly, with little or no wait time, and receive their reports within 24 hours. The cost is 50–70% lower than in major hospitals.

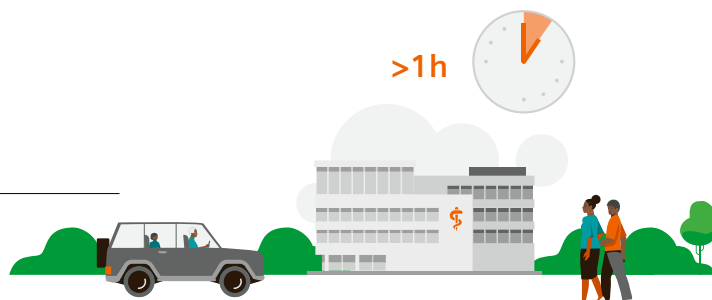
By shifting routine imaging services to community outpatient settings, without compromising on quality, Lumina is providing more patients with more convenient, cost-effective access to the care they need to live longer, healthier lives, no matter where they are.

To read this study in its entirety, please see reference 13.

Percentage of global population who need more than one hour to reach a healthcare facility¹²

9%

of those who use motorized transportation



43%

of those who walk

Build a smartly-connected system of care

The healthcare system of tomorrow will depend for its existence and effectiveness on smart inter-connectivity. The system of care comprises everything from acute care urban hospitals to community care settings that encompass far-flung spokes and remote diagnostic and treatment services. And successful system transformation will depend on these parts communicating with one another, sharing knowledge, and collaborating across all locations.

Healthcare systems should begin planning for and building connected environments where patients can interact with their providers through multiple channels along various touch points. Remote home monitoring is increasingly easy to set up, and it may well soon be common for doctors to make recommendations after video calls, and also follow-up with prescriptions. It is estimated that virtual care will also have a positive impact on reducing unnecessary emergency department visits.

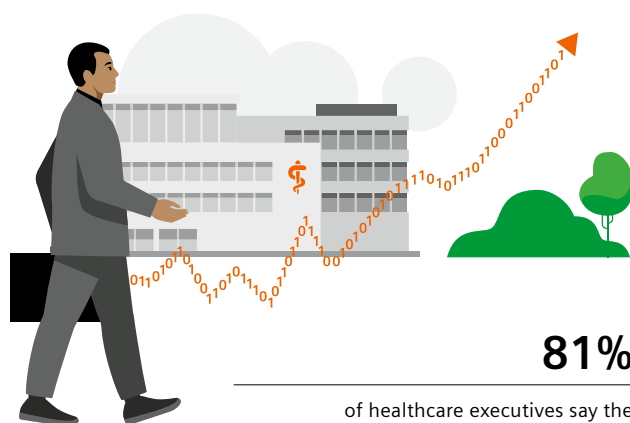
As the transformation of healthcare unfolds, there will be less need for patients to travel to major centers to receive tests. Diagnostic imaging will be taken in the communities where patients live, with technologists operating multiple imaging systems from one central "command center." From the command center, it will also be able to provide assistance to less experienced technologists who are on site where the scan is being

performed. For hospitals there are also benefits. Many scanning services can be performed by external providers, resulting in greater consistency and quality as well as cost savings.

The impact of AI on healthcare is only beginning to be felt, and the coming years can be expected to bring dramatic changes, from the automation of routine processes to diagnosis and treatment to patient follow-up. Because of its potential to enable automation, predict the outcomes of therapies or interventions, provide support in making therapy decisions, and help manage chronic diseases, AI will be essential in enabling access to high-quality care in remote and underserved regions globally. It will also play a significant role in reducing costs.

Consideration will have to be given to better connection between healthcare sites. The hub-and-spoke model is a perfect example of an innovation that depends on connectivity, to allow for patients to be properly directed and to ensure that their information travels with them. Another example can be found in the various forms of mobile health delivery such as mobile stroke or imaging units, which depend for their success on a connection with experts or emergency departments. In short, patient information is going to have to be available to everyone involved at every health touch point.

Patient portals and eHealth platforms are an area of healthcare that has improved dramatically over the past several years, and patients are going to expect it to keep doing so. Increasingly, patients will be receiving their healthcare information at home, electronically, on various devices. From consultations to medication plans to the booking of appointments to people simply deciding they want to examine their own patient records, it will be imperative that healthcare systems are always able to deliver to patients the information they want, when they want it. As noted above, however, this provider-to-patient connectivity depends on patients having access to the right technology, and in many parts of the world this infrastructure is still lacking. Smartly-connected care systems will improve healthcare access, help providers and patients avoid costly health care services, reduce travel, and increase convenience for patients.



81%

of healthcare executives say the pace of digital transformation for their organization is accelerating.¹⁴



Case study: **Digitalization, standardization, and quality | Geisinger Health System, U.S.**

The mission of Geisinger Health System is to expand access to quality care, achieve greater consistency in scanning and image interpretation, address staffing shortages, and reduce staff-related expenses.

Geisinger runs a network of ten hospital campuses and a variety of outpatient facilities and affiliated practices in central Pennsylvania, U.S., delivering care to about one million people. The company set about leveraging digital technology and expert training to ensure that every site that provides radiology services delivers the same high standard of care throughout the entire network. This initiative is complemented by an enterprise-wide drive to streamline clinical operations.

Standardized radiology operations mean that every patient receives the highest possible quality of care. Streamlined operations enable Geisinger to provide all patients with equal access to high-quality care, regardless of where that care is delivered. These efforts together allow Geisinger to deliver high-quality care to more patients without retaining additional full-time or freelance technologists.

To read this study in its entirety, please see reference 15.

Healthcare systems around the world are being transformed to increase access, equity, and convenience



★ Selected initiatives highlighted in this paper

● Additional initiatives

★ Fast, affordable imaging | Lumina Imaging and Diagnostics, U.S.

By shifting routine imaging services to community outpatient settings, a Cleveland health system is proving, every day, that low-cost, high-quality MRI and CT scans are not just a dream but a reality.

★ Digitalization and standardization | Geisinger Health System, U.S.

A U.S. hospital network leverages consistency and efficiency in their radiology services, in order to provide all patients with equal access to high-quality care, regardless of where that care is delivered.

★ Healthcare for all | General Hospital of Cabinda, Angola

A new hospital has been a game changer for the million residents of an isolated region of Angola, delivering free of charge, first-class care, accessible to all, where none was previously available.

- 1 Affordable high-quality care | Canada¹⁶**
Health systems in Ontario, Canada are leveraging enduring collaborations and new operational workflows to manage their technology needs and optimize utilization of both technology and staff. This enables greater financial stability while maintaining the ability to deliver high-quality patient care.
- 2 Bringing care to where it's needed | Colombia¹⁷**
A collaborative Smart Clinic initiative with the Colombian government and the Colombian Red Cross showcases the transformative potential of a mobile healthcare system. A dedicated team of healthcare professionals travels with a mobile health unit, delivering essential medical services to underserved areas, particularly focusing on maternal and child healthcare.
- 3 Immediate diagnostics for trauma patients | Ghana¹⁸**
Holy Family Hospital in Techiman, Ghana, is using an improved emergency department and the only CT scanner within hundreds of kilometers to deal with around ten thousand emergency cases every year. This has become a model for how healthcare in countries with limited resources can work.
- 4 Upgraded cardiovascular care | Portugal¹⁹**
Hospital do Espírito Santo de Évora in the Portuguese province of Alentejo is becoming a leading hospital for cardiovascular interventions, attracting doctors and patients from all over the country.
- 5 Mobile lung cancer screening | UK²⁰**
The targeted lung health check program in the UK is focused on improving early diagnosis and survival for those diagnosed with lung cancer, using a mobile screening service to meet patients in their communities.
- 6 Robot-assisted lab automation | Germany²¹**
Leveraging a standardized robotic solution, this intelligent lab automation enhances processes in small and mid-sized labs, increasing productivity, easing employee workload, and securing high-quality standards.
- 7 Virtual consultation and education | Egypt²²**
An innovative technology company is using ingenious models, tools, and partnerships to close healthcare gaps in Egypt, ensuring that more people receive the best possible care.
- 8 Using 5G for remote radiology | China²³**
In China, Universal Medical Imaging is leveraging the potential of 5G remote scanning technology to strengthen the connection between frontline medical staff and imaging experts in large cities, allowing more patients to receive the screening and diagnoses they need.
- 9 Advanced stroke treatment | Vietnam²⁴**
A dedicated stroke hospital in Vietnam's Mekong Delta, where no stroke care previously existed, helps to ensure that the 20 million people living in this region received the timely care that is crucial after suffering a stroke.
- 10 Access to MRI in the mountains | Philippines²⁵**
Cordillera Hospital of the Divine Grace, a 74-bed tertiary hospital located in the mountainous area of La Trinidad, Philippines, is making quality healthcare more accessible to the remote region's patients with a next-generation, easy-to-install MRI.

Strategies and future outlook

Transformed systems and integrated high-quality care—that is the future promise of healthcare. As healthcare leaders begin implementing the steps outlined in this paper, they can be inspired and guided by three main drivers of health system transformation.

Healthcare access

Future health systems should be designed with the goal of achieving greater health equity. Care should be available to everyone, everywhere, and barriers of the past, such as socioeconomic status or rural geography, should not remain barriers in the future.

Improving access to care by increasing the availability, affordability, and acceptability of care in areas where

access has historically been limited is an important first step. Another is to work towards more decentralized care, ensuring that wherever patients are, there is care within their reach. The smartly-connected hub-and-spoke approach described in this paper combined with mobile and telehealth solutions is an excellent example of a health system innovating to deliver more care to more people.

The healthcare system of the future should operate without concerns about workforce shortages and capacity limitations. Building capacity can be achieved through innovative, more flexible on-site and online approaches to education and training, helping to provide new healthcare workers with the skills and qualifications they need. A second dimension is retention. This can be achieved in numerous ways including a stronger focus

The smartly-connected hub-and-spoke approach



on their health and well-being, more flexible working arrangements and using technology for task automation, thereby freeing up more time for healthcare workers to focus on what matters most.

Meeting patient expectations

The second driver of health system transformation is the need to meet patient expectations. Patients are behaving more like consumers, and especially in more developed countries are increasingly demanding a larger role in shaping the healthcare decisions that affect them. They expect flexibility, autonomy in decision-making, and to be treated as individuals with unique needs.

The response, around the world, is taking the form of more patient-centric care. This is care that is convenient, transparent, and personalized, encompassing everything from patient-friendly technology to hospital spaces that both comfort and heal. It is also value-based healthcare that seeks to achieve the best outcomes for patients at the most reasonable cost by emphasizing preventive care and placing self-reported health outcomes and quality of life at the center of healthcare decision-making.

The move towards decentralization can also support this effort, ensuring that convenient and high-value care is available where patients are. Increasing connectivity of healthcare will also be a factor, allowing patients to self-monitor their health conditions and helping them focus on prevention through better behaviors and ongoing communication with their caregivers.



69%

of Millennials and members of Generation Z choose their healthcare providers based on the availability of digital services.²⁶

Healthcare sustainability

In the absence of sustainable systems, nothing else in healthcare will matter for very long. Because of factors such as an aging population, service price increases, and the rising cost of chronic disease, the healthcare sector faces an extremely serious affordability challenge. However, it has also been presented with a significant opportunity to create value and improve care by transforming care delivery, improving clinical productivity, simplifying administrative procedures, and applying innovative technology.

With smartly-connected care systems, the potential for increased efficiency and cost savings is significant. From streamlining appointment bookings to improving prescription safety to remotely linking doctors to patients and making information available across the entire care pathway, improving the connectivity of health systems is an important component of healthcare sustainability.

The emerging ability of AI to analyze previously impossible amounts of data and then use data insights to make treatment decisions has been a game changer. AI could ensure that all necessary information is always at hand, that workforce productivity is always top-notch, and that patient satisfaction is high because every aspect of the patient experience is as seamless as it can be.

In the coming years, health systems across the globe will have to evolve and adapt to rapidly changing circumstances. There are many reasons for optimism that these changes will result in systems that are more responsive to patient needs, more sustainable, and more effective:

- 1 Technology has evolved to the point where it stands ready to enable system transformation in a myriad of ways.
- 2 The COVID-19 pandemic has brought about a cultural shift, forcing us to take a fresh look at how we deliver care and how providers interact with patients.
- 3 Patients in many parts of the world are demanding change, increasingly wielding influence as informed consumers, insisting on a greater role in managing their own care, and taking part in their own care decisions.
- 4 Healthcare sustainability depends upon systems becoming more efficient and finding less costly ways of delivering the care patients need, where they need it.

The vision for a transformed system of care

In many ways, the healthcare provider of the future will not be a traditional hospital but a more patient-centered system of care that enables patients to manage their health in their own environment at affordable costs. There will be a focus on wellness, on keeping people healthy instead of curing them when they are sick. Technology will work to make care better, and also more convenient by streamlining appointment booking and expediting the delivery of test results. Care will be available around the clock.

This vision represents the best answer to the questions being asked today about health equity, meeting patient expectations and transforming systems of care—by expanding access, delivering more decentralized care, and by building smartly-connected systems of care.

The results and statements by the Siemens Healthineers customers described herein were achieved in the customers' unique setting. Since there is no "typical" hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption), there can be no guarantee that other customers will achieve the same results.



Suggested follow-up:

If you are interested in exploring solutions offered by Siemens Healthineers on increasing access to care and bringing care closer to patients please see: [siemens-healthineers.com/insights/transforming-the-system-of-care](https://www.siemens-healthineers.com/insights/transforming-the-system-of-care)

- Insights Series, Issue 44: Meeting patients where they are. Available at: [siemens-healthineers.com/meeting-patients-where-they-are](https://www.siemens-healthineers.com/meeting-patients-where-they-are)
- Insights Series, Issue 46: Providing access that matters. Available at: [siemens-healthineers.com/insights/news/mobile-health-units-japan](https://www.siemens-healthineers.com/insights/news/mobile-health-units-japan)
- Insights Series, Issue 19: Unlocking the Digital Front Door. Available at: [siemens-healthineers.com/insights/news/unlocking-the-digital-front-door](https://www.siemens-healthineers.com/insights/news/unlocking-the-digital-front-door)



Information:

The Siemens Healthineers Insights Series is our preeminent thought leadership platform, drawing on the knowledge and experience of some of the world's most respected healthcare leaders and innovators. It explores emerging issues and provides practical solutions to today's most pressing healthcare challenges.

All issues of the Insights Series can be found here: [siemens-healthineers.com/insights-series](https://www.siemens-healthineers.com/insights-series)



Contact:

For further information on this topic, or to contact the authors directly:

Christina Triantafyllou, PhD
Global Head of Transforming the system of care
Siemens Healthineers

christina.triantafyllou@siemens-healthineers.com

About the authors



Sonja Zolg
Senior Global Marketing Manager
Transforming the System of Care
Siemens Healthineers

Sonja Zolg serves as Global Marketing Manager in the central Marketing Department of Siemens Healthineers, where she is responsible for topics related to Transforming the system of care. Previously, Sonja spent six years as Global Marketing Manager for Value Partnerships at Siemens Healthineers. Her deep knowledge of the healthcare sector and front-line experience working with C-level industry leaders enable Sonja to develop marketing strategies and drive customer liaison on a wide range of topics related to the company's portfolio, innovation initiatives, and business goals. In addition to her extensive experience in the healthcare sector, Sonja holds a Master of Science degree in Medical Process Management.



Christina Triantafyllou, PhD
Global Head of
Transforming the System of Care
Siemens Healthineers

Christina Triantafyllou, PhD, is Head of Transforming the system of care at Siemens Healthineers and engages in thought leadership content and portfolio-related activities. Prior to that she and her team were looking into Improving the patient experience. Christina began her healthcare career at Harvard Medical School, Boston, U.S., then continuing in the Brain and Cognitive Sciences Department at MIT, Boston, moving into industry at Siemens Healthineers, Germany. Here, she served as the Director of Global Ultra-High Field MRI Solutions, focusing on business strategy, KOL-based collaborations in innovation/clinical translation, and product management for the first worldwide clinical 7T MRI system. Christina holds a PhD in Medical Physics from King's College, University of London, UK.

References

1. World Health Organization. Improving service access and quality [Internet]. 2022. Available from: [who.int/activities/improving-service-access-and-quality](https://www.who.int/activities/improving-service-access-and-quality)
2. World Health Organization. Non communicable diseases [Internet]. 2022 [cited 2023 Aug 4]. Available from: [who.int/news-room/fact-sheets/detail/noncommunicable-diseases](https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases)
3. Sillanauke P., Salo S., Meinhardt R., et al. Achieving Healthcare Happiness – The Finland Model [Internet]. Siemens Healthineers Insights Series. 2020;(15). Available from: [siemens-healthineers.com/en-us/insights/news/the-finland-model](https://www.siemens-healthineers.com/en-us/insights/news/the-finland-model)
4. Australian Institute of Health and Welfare. Rural and remote health [Internet]. 2019. Available from: aihw.gov.au/reports/rural-remote-australians/rural-remote-health/contents/access-to-health-care
5. National Rural Health Association. About Rural Health Care [Internet]. 2023 [cited 2020 Nov 30]. Available from: ruralhealthweb.org/about-nrha/about-rural-health-care
6. Ghebreyesus TA. Health is a fundamental human right [Internet]. 2017 [cited 2023 Jul 28]. Available from: [who.int/news-room/commentaries/detail/health-is-a-fundamental-human-right](https://www.who.int/news-room/commentaries/detail/health-is-a-fundamental-human-right)
7. Meinhardt R., Staehr H. Siemens Healthineers Insights Series Issue 35. Healthcare: available, affordable, and accepted [Internet]. 2022. Available from: [siemens-healthineers.com/insights/news/healthcare-available-affordable-accepted](https://www.siemens-healthineers.com/insights/news/healthcare-available-affordable-accepted)
8. World Health Organization. Strengthening diagnostics capacity [Internet]. 2023. Available from: [apps.who.int/gb/ebwha/pdf_files/EB152/B152\(6\)-en.pdf](https://apps.who.int/gb/ebwha/pdf_files/EB152/B152(6)-en.pdf)
9. Stamm E. Healthcare for all in a remote Angolan province [Internet]. 2023. Available from: [siemens-healthineers.com/perspectives/access-to-care-angola](https://www.siemens-healthineers.com/perspectives/access-to-care-angola)
10. Mota-Engil. Inauguration of the Cabinda General Hospital [Internet]. 2022. Available from: [mota-engil.com/en/2022/05/02/inauguration-of-the-cabinda-general-hospital](https://www.mota-engil.com/en/2022/05/02/inauguration-of-the-cabinda-general-hospital)
11. Nieto Alvarez I., Grau J., Triantafyllou C. et.al. Siemens Healthineers Insights Series Issue 44. Meeting patients where they are [Internet]. 2023. Available from: [siemens-healthineers.com/insights/news/meeting-patients-where-they-are](https://www.siemens-healthineers.com/insights/news/meeting-patients-where-they-are)
12. Weiss D.J., Nelson A., Vargas-Ruiz C.A. et al. Global maps of travel time to healthcare facilities [Internet]. 2020. Available from: [nature.com/articles/s41591-020-1059-1](https://www.nature.com/articles/s41591-020-1059-1)
13. Siemens Medical Solutions USA. MetroHealth's Lumina Imaging and Siemens Healthineers form strategic partnership to expand outpatient imaging [Internet]. 2023. Available from: [siemens-healthineers.com/en-us/press-room/press-releases/metrohealth-lumina-imaging-strategic-partnership](https://www.siemens-healthineers.com/en-us/press-room/press-releases/metrohealth-lumina-imaging-strategic-partnership)
14. Safavi K., Thompson A., Kalis B. et al. Accenture Digital Health Technology Vision 2021 [Internet]. 2021. Available from: [accenture.com/content/dam/accenture/final/a-com-migration/pdf/pdf-156/accenture-digital-health-tech-vision-2021.pdf](https://www.accenture.com/content/dam/accenture/final/a-com-migration/pdf/pdf-156/accenture-digital-health-tech-vision-2021.pdf)
15. Siemens Healthineers AG. The Value of Partnership in Expanding Access to Quality Care [Internet]. 2022. Available from: [siemens-healthineers.com/en-us/services/value-partnerships/together-operations](https://www.siemens-healthineers.com/en-us/services/value-partnerships/together-operations)
16. Siemens Healthcare GmbH. Value Partnerships in Canada. Tailored solutions that go beyond technology management [Internet]. 2023. Available from: [siemens-healthineers.com/services/value-partnerships/asset-center/value-partnerships-in-canada](https://www.siemens-healthineers.com/services/value-partnerships/asset-center/value-partnerships-in-canada)
17. Siemens Smart Clinics [Internet]. 2023. Available from: [siemens.com/global/en/company/sustainability/empowering-people/smart-clinics.html](https://www.siemens.com/global/en/company/sustainability/empowering-people/smart-clinics.html)
18. Stamm E. Immediate diagnostics for trauma patients in rural Ghana [Internet]. 2020. Available from: [siemens-healthineers.com/perspectives/mso-diagnostics-in-rural-ghana.html](https://www.siemens-healthineers.com/perspectives/mso-diagnostics-in-rural-ghana.html)
19. Meyer M. Upgrading cardiovascular care in rural Portugal [Internet]. 2022. Available from: [siemens-healthineers.com/services/value-partnerships/asset-center/thought-leaders/upgrading-cardiovascular-care-in-portugal-hese](https://www.siemens-healthineers.com/services/value-partnerships/asset-center/thought-leaders/upgrading-cardiovascular-care-in-portugal-hese)
20. Siemens Healthcare Limited. Lung Cancer Screening in the Community [Internet]. 2023. Available from: [siemens-healthineers.com/en-uk/clinical-specialties/oncology/cancer-types/lung-health-check](https://www.siemens-healthineers.com/en-uk/clinical-specialties/oncology/cancer-types/lung-health-check)
21. RobSolutions. Smart laboratory automation [Internet]. 2023. Available from: [robsolutions.group/solutions/the-box](https://www.robsolutions.group/solutions/the-box)
22. Elgabaly H. Healthcare for everyone [Internet]. 2022. Available from: [events.siemens-healthineers.com/sessions/customer-talk/healthcare-for-everyone-hatem-elgabaly](https://www.events.siemens-healthineers.com/sessions/customer-talk/healthcare-for-everyone-hatem-elgabaly)
23. Siemens Healthcare GmbH. Siemens Healthineers and Universal Medical Imaging reach an agreement to promote 5G remote imaging diagnosis for primary care in China's regions [Internet]. 2022. Available from: [siemens-healthineers.com/press/releases/5g-remote-scanning-china](https://www.siemens-healthineers.com/press/releases/5g-remote-scanning-china)
24. Krüger J. Advanced stroke treatment in Southeast Asia [Internet]. 2021. Available from: [siemens-healthineers.com/perspectives/stroke-care-vietnam](https://www.siemens-healthineers.com/perspectives/stroke-care-vietnam)
25. Siemens Healthcare Inc. Cordillera Hospital of the Divine Grace introduces the first MRI in La Trinidad, Benguet with the MAGNETOM Free.Star [Internet]. 2022. Available from: [siemens-healthineers.com/en-ph/press-room/press-releases/chdg-free-star](https://www.siemens-healthineers.com/en-ph/press-room/press-releases/chdg-free-star)
26. NRC Health. Healthcare Consumer Trends Report [Internet]. 2020. August 5, 2021. Available from: [nrchealth.com/wp-content/uploads/2020/02/5j12dmcx.pdf](https://www.nrchealth.com/wp-content/uploads/2020/02/5j12dmcx.pdf)

Read all papers in this series



Innovating Personalized Care

Perspectives on how more nuanced diagnosis and more precise treatment can dramatically improve patient outcomes.

We pioneer breakthroughs in healthcare. For everyone. Everywhere. The innovative healthcare solutions offered by Siemens Healthineers are crucial for clinical decision-making and treatment pathways. We are a team of 70,000 highly dedicated employees across more than 70 countries passionately pushing the boundaries of what's possible in healthcare to help improve the lives of people around the world.



Achieving Operational Excellence

Perspectives on leading your healthcare institution through workforce and climate crises.



Transforming the System of Care

Perspectives on how to increase health equity and access for all with smartly-connected care systems.

All previous issues of the Insights Series can be found at siemens-healthineers.com/insights-series



To receive thought leadership insights on current healthcare topics and industry developments, subscribe to the Siemens Healthineers Insights Series [here](#).

Siemens Healthineers Headquarters

Siemens Healthcare GmbH
Henkestr. 127
91052 Erlangen, Germany
Phone: +49 9131 84-0
siemens-healthineers.com