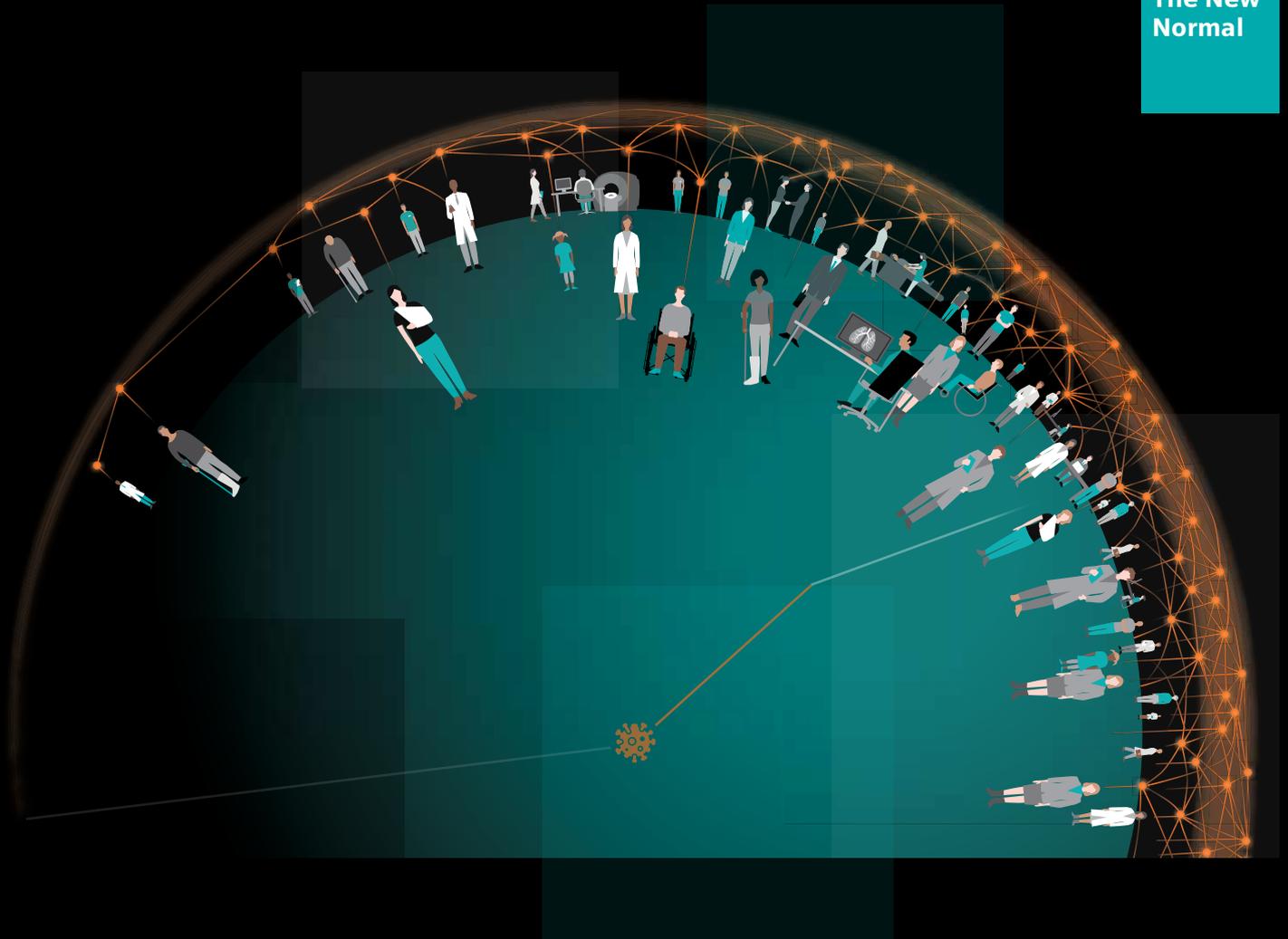


The New
Normal



Remote work for healthcare professionals: From a stop-gap measure to a lasting transformation

A thought leadership paper on how to
'Transform care delivery'

Preface

The Insights Series

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. The Series explores emerging issues and provides you with practical solutions to today's most pressing healthcare challenges.

We believe that increasing value in healthcare – delivering better outcomes at lower cost – rests on four strategies. These four principles serve as the cornerstones of the **Insights Series**.



The New Normal

The New Normal is a special edition of our **Insights Series** focusing on the COVID-19 pandemic. This series provides recommendations on how to confront the current SARS-CoV-2 outbreak and its implications, as well as strategies and ideas on how to emerge from the current crisis stronger, more resilient, and better prepared to address the healthcare challenges that lie ahead.

Please visit [siemens-healthineers.com/insights-series](https://www.siemens-healthineers.com/insights-series)

Paper

Remote work for healthcare professionals

Executive summary

The ongoing challenge of transforming care delivery has been given new urgency and heightened importance as a result of the COVID-19 pandemic.

Caregivers across the globe have struggled to treat those infected by SARS-CoV-2, while at the same time protecting their own health and that of other patients, often with stretched resources, uncertain public health guidelines, dramatically increased caseloads, and in highly stressful working conditions.

If there is a thin 'silver lining' to the coronavirus outbreak, it is that this unprecedented challenge has produced remarkable examples of frontline innovation, creative solutions for a more efficient allocation of resources, and new approaches to patient care.

Many industries and sectors have been transitioning toward increased remote work over the past years, supported by technology that allows employees, suppliers, customers, and others to perform their work, regardless of where they are physically located. Yet healthcare has been slow to adopt this growing trend.

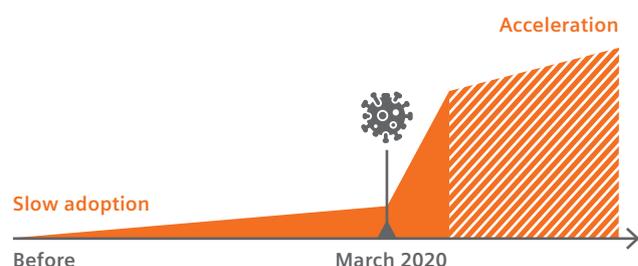
COVID-19 has changed that. Remote work in the healthcare sector has emerged as one of the most effective ways to mitigate coronavirus infection rates, access necessary medical expertise, maximize resources, streamline treatment of patients, and allow employees to continue working even when under quarantine and forced to remain at home.

As the healthcare sector works to transform care delivery in the wake of the current pandemic, what lessons can hospitals and other caregivers learn? What are the most effective ways to take advantage of the opportunities presented by remote work in the long term? What are the dimensions of remote work and where in the healthcare sector can it achieve the greatest impact?

These are some of the questions addressed in this paper. It looks at real-world examples of how remote work currently functions, and provides clear recommendations on how it can contribute to more effective care delivery in all types of healthcare organizations – insights that are particularly valuable at this transformational moment.

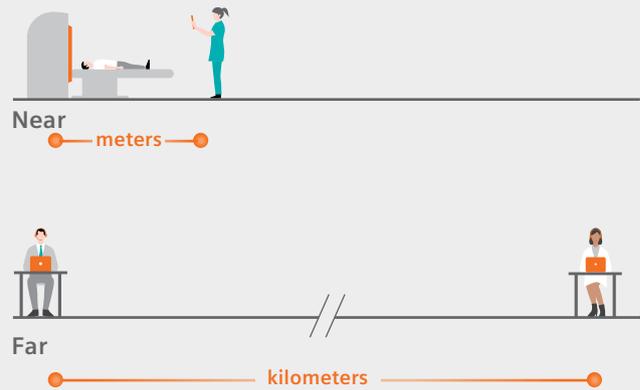
The paper concludes that the benefits of remote work can be significant, for employers, employees, and for patients. A deeper understanding of these benefits provides a compelling argument for why remote work solutions should be integrated into the plans and infrastructure of healthcare providers.

COVID-19 has accelerated the adoption of remote work solutions



Remote solutions ...

... bridge distances ...



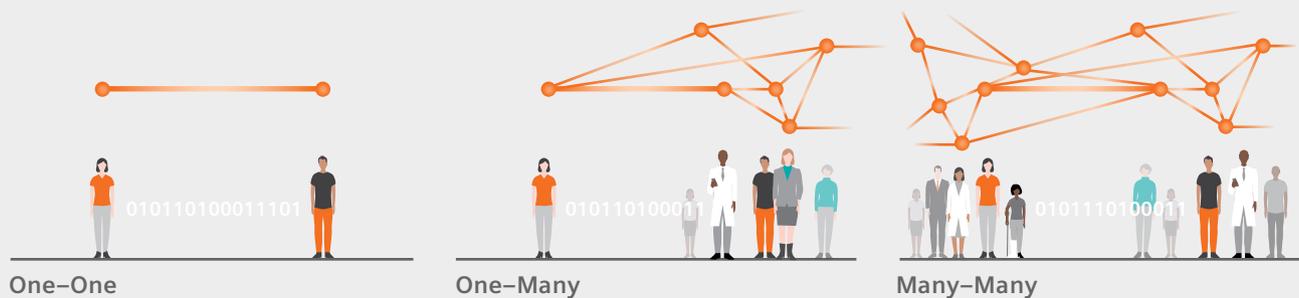
Introduction

The COVID-19 situation has resulted in extraordinary changes in the way we shop, work, consume entertainment, socialize, and communicate. Because of mandatory restrictions on travel and group gatherings, many workplaces have been profoundly affected, with 'remote work' becoming the new normal for countless employees across the globe.

In some lines of work – professional or administrative services, for example – this transition to remote work has been relatively seamless and the current shift can be seen as the continuation of a trend that has been gaining traction for several decades. As connectivity has increased, so too has the ability of many workers to do their jobs from locations outside their offices – with clear and obvious benefits for both employees and their employers. Research suggests that remote work can result in better employee morale, heightened productivity, less absenteeism, and greater workplace satisfaction.^{1,2}

The COVID-19 pandemic has shifted the transition to remote work into overdrive. TIME magazine called the emerging phenomenon “The world’s largest work-from-home experiment,” pointing out that as a result of the coronavirus outbreak working from home is “no longer a privilege, it’s a necessity.”³ Data also illustrates the enormity of the recent changes. During the early weeks of the pandemic, the daily time spent on Microsoft Teams Meetings (an online communications platform) increased almost eightfold, from 560 million minutes on March 12 to 4.1 billion minutes in April, 2020.^{4,5} Many of the recent changes are likely to have an enduring impact. A Gartner, Inc. survey of 317 CFOs and financial leaders conducted in late March 2020 revealed that 74% will move at least 5% and 48% will move at least 10% of their previously on-site workforce to permanently remote positions post-COVID-19.⁶

... and are scalable



Implications for healthcare

In the healthcare sector, however, the shift to remote work raises different questions and presents different challenges. How can healthcare workers continue to work at peak efficiency during a time of social distancing? Can the needs of patients be satisfied remotely? Can the level of precision required when analyzing test results or images be maintained? Can the barriers of time and distance be safely overcome when life-and-death decisions are being made?

At the outset, it is important to distinguish between “remote work” and “working from home.” For the purposes of this analysis, we treat working from home as a subcategory of the broader phenomenon of remote work. Remote solutions can bridge long distances of many kilometers, but can also be crucial over short distances of even just a few meters. In the current healthcare context, this type of remote work is of particular relevance: this way of working can help to maintain a safe distance from potentially infected patients, reducing risk and eliminating the time, effort, and cost associated with hygiene protocols (e.g., putting on personal protective equipment (PPE)).

Individual activity is the most obvious example of work that can easily be performed remotely. An employee working on a project independently can do so with full productivity and efficiency from home, from a hotel room while travelling, or from virtually any remote location, provided the necessary connectivity is in place. Work that demands

collaboration with others has, in the past, presented greater obstacles. However, as technology evolves, these obstacles have crumbled.

Today, remote work in a healthcare context can effectively connect:

- Workforce with workforce
- Workforce with patients

The scalability of remote-work technologies is also a vital factor, enabling contact not only between small groups of people but also among larger groups.

In this paper we look at both the why and the how. We argue that working remotely can significantly strengthen healthcare in three fundamental ways: workplace safety can be improved; capacity constraints can be overcome; and efficiency and productivity can be enhanced. In addition, we will analyze both dimensions of remote work – workforce-workforce and workforce-patient – as well as the technologies that support these types of remote work.

How healthcare providers can benefit from remote work

Improving workplace safety

The clearest benefit of remote work was brought into sharp focus during the COVID-19 outbreak: remote work protects healthcare workers from infection. The COVID-19 pandemic placed unprecedented demands on healthcare infrastructure across the globe. Frontline caregivers were often exposed to SARS-CoV-2, and in many locations this risk was exacerbated by shortages of PPE. Especially in areas where the pandemic struck early, we saw doctors and nurses falling ill and dying. In Spain, approximately 14% of COVID-19 cases in the beginning of April were medical professionals.⁷ Enabling employees to perform tasks remotely can help to mitigate the risk of infection.

Helping to overcome capacity constraints

During the COVID-19 pandemic, we saw many examples of an enormous gap between workforce supply and demand. Particularly in pandemic hotspots, the demand for healthcare workers often far exceeded usual capacities. Sudden rises in hospitalization rates led to an increased demand for workforce while, at the same time, healthcare providers were struggling with a decreasing number of employees. Those who were quarantined were not able to provide support even if they were asymptomatic or had only very mild symptoms. In addition, the physical and mental strain that overworked staff were under may have contributed to treatment errors because of fatigue. In many jurisdictions, retired doctors and nurses were asked to resume service.

Much attention was given to the shortages of ventilators in certain hard-hit areas during the pandemic, but another dimension of this issue that received less attention was shortages of qualified ventilator technicians. As Eric Toner from the Johns Hopkins Center for Health Security noted, “In a severe pandemic, we certainly could run out of ventilators, but a hospital could just as soon run out of respiratory therapists who normally operate these devices.”⁸

The use of remote workforce outside the hospital can help to overcome this critical shortage. Remote solutions can connect healthcare workers with different tasks and contribute to achieving the right balance. Specialists in low-demand areas could, for example, provide virtual consultations and support colleagues in areas with higher demand.⁹ Some quarantined employees with mild symptoms could have worked from home, while in isolation.⁹ In addition, remote assistance could bring expertise to where it is needed, giving support and confidence to those in particularly challenging environments.

Enhancing efficiency and productivity

A more general and overarching benefit of remote work is its contribution to greater efficiency and productivity. Remote work can significantly reduce an employer’s overhead costs as many employees are no longer working on-site. Studies also suggest that productivity and quality are enhanced by such working arrangements. The output of employees working remotely can be increased by more than 4% and quality defects can be reduced by as much as 40%.¹⁰

Additional benefits for employees include the reduction or elimination of long and time-consuming commutes. Days can be planned with greater flexibility (e.g., for those with competing commitments such as family obligations), fewer distractions, and less stress.

Benefits

These kinds of flexible arrangements also contribute to improved employee morale, more successful recruitment of new and geographically diversified talent, and better staff retention. Studies suggest that more than half of employees would change jobs for one that offered more workplace flexibility, and that employee turnover could be reduced by as much as 12%.¹⁰ And for more than 71% of employees, the ability to work remotely could make the difference in choosing one employer over another.¹¹ The corresponding benefit to employers is thus even more substantial, allowing them to hire the best employees, no matter where they are.¹²



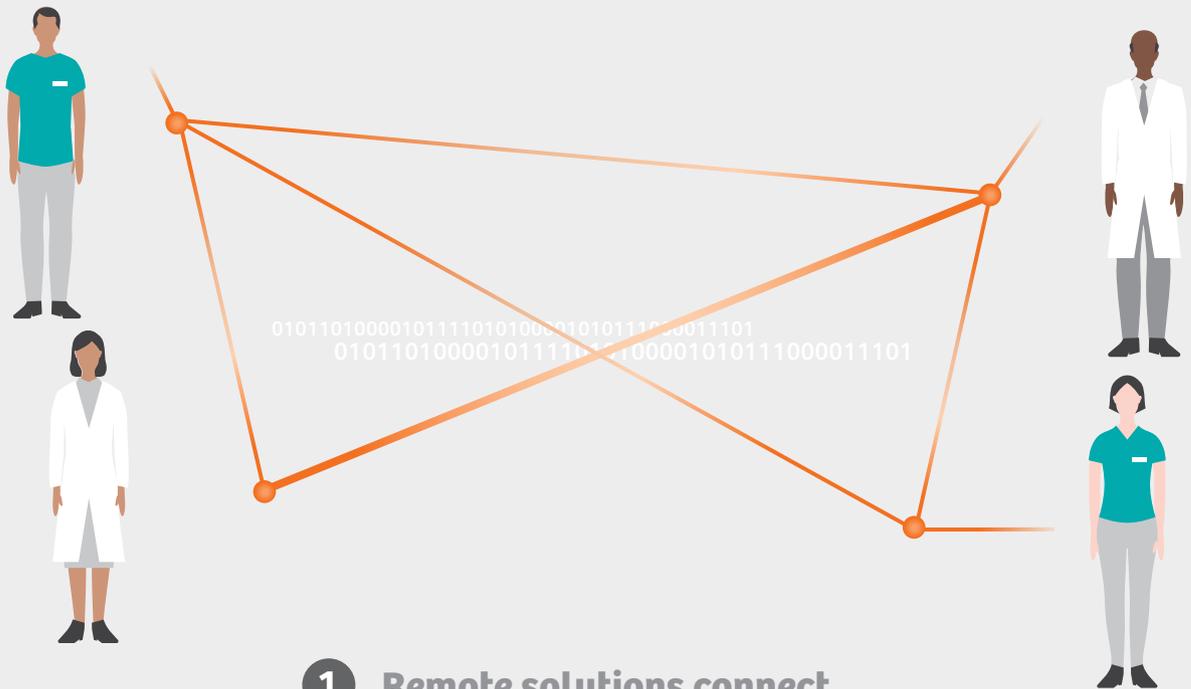
Improving
workplace safety



Helping to overcome
capacity constraints



Enhancing efficiency
and productivity



1 Remote solutions connect workforce with workforce

How remote solutions can be applied in healthcare

1 Workforce-workforce

Transforming care delivery in a way that improves patient outcomes requires meaningful coordination and collaboration between caregivers and other healthcare professionals. Remote solutions, using today's technologies, can more effectively connect healthcare workers. These workforce-workforce solutions allow healthcare workers to share expertise, engage in joint decision-making, schedule and perform administrative and planning tasks remotely. Contact with partners outside the healthcare organization can also be enhanced, e.g., communication with public health authorities in times of crisis, with service providers, or academic organizations.

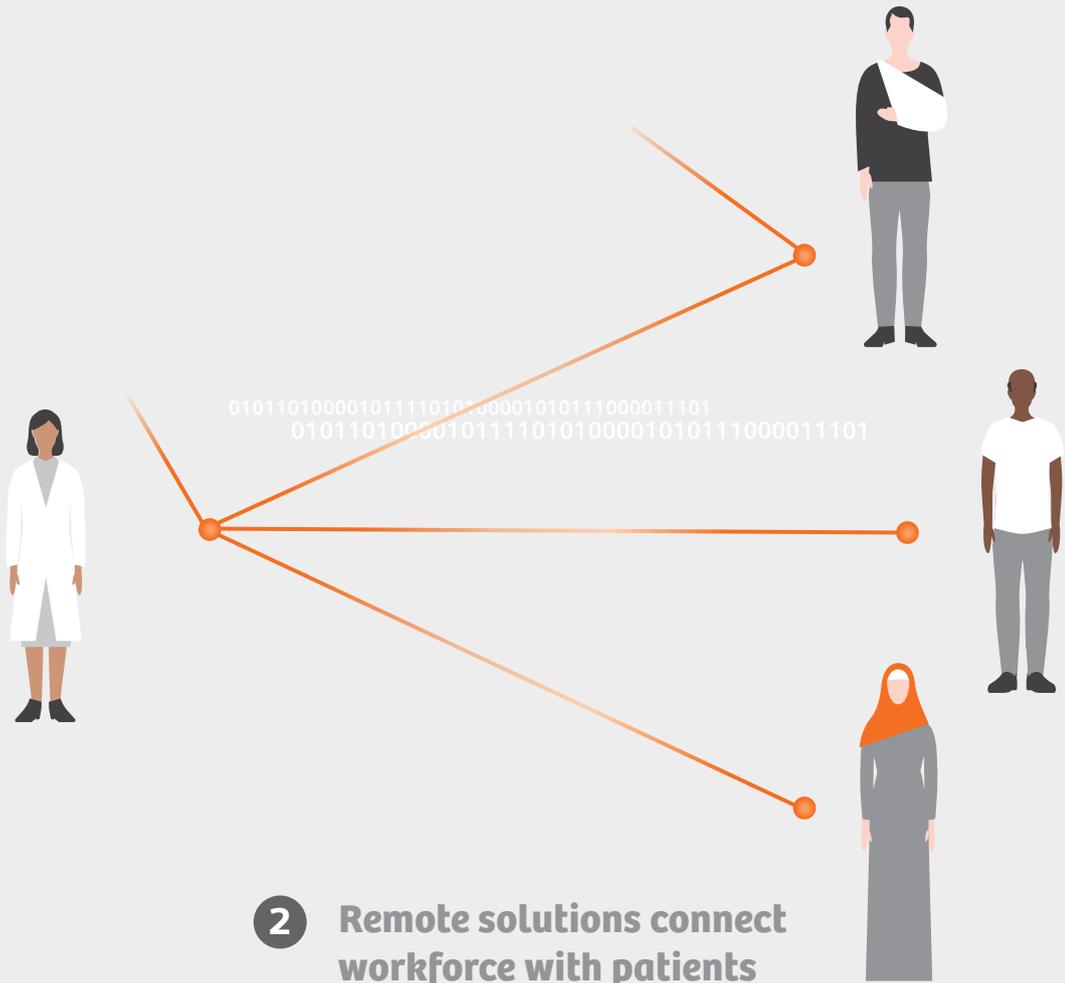
Accessible expertise

During times of exceptionally high workload with limited capacities, or shortages of qualified workforce, remote solutions connect employees and provide an easy and flexible way to share expertise within an institution or to access expertise from outside the institution. For example, technologies exist to allow experienced employees working remotely to support less experienced on-site workers with the operation of medical devices via chat, voice, or video. Physicians dealing with new or challenging medical issues can get a second opinion from a colleague in another country, or remotely brief their teams before a complex surgical procedure. Family doctors, meanwhile, can reach out to the appropriate specialists for help in answering questions or tackling complicated clinical cases. This was possible previously, by telephone for example, but today's technologies make such consultation far more

comprehensive and precise, enabling the remotely connected colleague to not only offer an educated opinion but also giving them access to all of the patient's information (e.g., data, scanned images, etc.) in real time. The remote specialist can thereby provide insights as accurately as if she were standing at the patient's bedside. The benefits of this type of remote connectivity are valuable in many medical situations, but particularly so in times of crisis or uncertainty. Other types of external expertise or assistance can also be made more accessible, for example work with suppliers can be performed without the necessity of on-site visits, thereby reducing the number of outside people entering hospital premises. The performance and condition of medical devices can be monitored proactively, preventive maintenance can be carried out remotely, and software updates and upgrades can be installed without the need for a technician to be on-site.

Collaborative decision-making

Perhaps the single most important aspect of workforce-workforce interaction during a time of crisis or uncertainty is joint decision-making. During the initial weeks of the SARS-CoV-2 outbreak, there was a profound absence of certainty about basic medical issues including how the virus was transmitted and risks of infection among certain populations. Being able to consult with colleagues is vital at a time like this, to ensure that information is as current as possible and to allow new insights to be shared quickly. Tele-conferencing tools enable a fast and encrypted exchange of patient data, and by sharing a common tool, experts across different locations can analyze data and decide on next steps. For example, radiologists can share, interpret, and discuss clinical images remotely to ensure a correct and quick diagnosis. This shared decision-making can also extend across various specialties.



Efficient planning and coordination

Administrative and planning matters are perhaps the best example of where remote work can be utilized effectively. Many non-patient-facing administrative tasks and functions can be performed off-site (e.g., accounting, human resources, legal, medical records, marketing). Fleet management tasks such as performance and maintenance management can also be done remotely via online platforms.

In addition, teams can be coordinated remotely. Management and administration tools can be used by department heads regardless of where they are physically located. Scheduling can be done on platforms accessible to anyone, anywhere. Continuing education programs and training seminars can be assigned and performed remotely, and their completion tracked. Training, for example, can be delivered online to individuals and groups through video tutorials and webinars. Virtual classrooms and workshops can connect healthcare workers with teachers or trainers, while offering convenient flexibility in terms of location.

2 Workforce-patient

The more interesting challenges arise when patients are involved. Providing effective care is of course the first priority of any type of health service; this cannot be compromised. Additionally, the patient experience, an increasingly important aspect of healthcare delivery, must also be considered. The workforce-patient relationship is an area with tremendous potential for new approaches that allow healthcare workers to remotely interact with patients along the entire patient pathway from monitoring, to diagnosis, to therapy.

Accurate monitoring

Remote patient monitoring has the potential to dramatically transform care delivery, improving access to care for patients, increasing workforce productivity, and optimizing clinical operations. The overall result: improved patient outcomes.

Especially for chronic conditions, remote monitoring can be a highly effective way for healthcare providers to better manage diseases. Research shows that remote care management programs can have a positive impact on the number of unplanned hospital readmissions,¹³ on mortality,¹³ overall costs, and patient experience.¹⁴

For physicians, remote patient monitoring technologies enable them to track patient data outside the healthcare provider's setting and while seamlessly connected with other members of the patient's care team and other experts. In the event of deviations or abnormalities, care teams are notified automatically, and care teams can reach out directly to patients via dedicated apps or video chat. Such solutions are also scalable. Large numbers of patients can be monitored at the same time, allowing care teams to better manage large patient populations. Interoperability of different EMRs across several sites is also feasible.

Precise diagnosis

For many patients, receiving a correct and timely diagnosis is a complex process. Getting to see a doctor can mean a long wait for an appointment, followed by lengthy periods of time in crowded waiting rooms. During the COVID-19 pandemic, mobility restrictions, quarantines, and simple fear of infection exacerbated these difficulties. Tele-visit services can provide an easy and elegant solution.

Remote solutions can work between two sites at opposite ends of a large hospital, or across distances of hundreds of kilometers

The transformation made possible by telehealth switches the interaction between doctor and patient from face-to-face to online. Diagnosis and dialogue become available through one tool at the patient's fingertips. Post-diagnosis, the remote caregiver can direct the patient to an on-site healthcare provider for further consultation, if required. Alternatively, treatment programs and online prescriptions for self-treatment can be provided.

In such a model, distance becomes irrelevant. Remote solutions can work between two sites located at various ends of a large hospital complex, or across distances of hundreds of kilometers. Both can be highly advantageous – to patients and to physicians.

The operation of medical devices that play an essential role in diagnosing patient conditions (e.g., CT scanners) can also be performed remotely, with tablets or remote controls. The flexibility this gives healthcare providers is significant. And – although those features were originally designed to permit caregivers to be close to patients – in the current circumstances, the safety and hygiene benefits are significant, allowing caregivers to remain at a safe distance from potentially infected patients.

Effective therapy

Therapy usually requires some type of interaction between caregiver and patient. However, these interactions do not necessarily have to be in person.

Telehealth services can be utilized to allow caregivers to provide patients with live, interactive advice, answering questions and discussing options, even when neither patient nor caregiver are in a traditional healthcare facility. Some types of therapy particularly well suited to telehealth communication include behavioral, mental health,

physical, speech, occupational, and respiratory therapy. In the field of mental health and psychiatry, studies indicate an exceptionally high degree of patient satisfaction. Telepsychiatry patients felt that they could present the same information via telehealth as in person (93%), were satisfied with their sessions (96%), and were comfortable talking (85%).¹⁵

Robotic surgery is a further step along the telehealth continuum, expanding the field into tele-treatment. Some types of procedures are now performed robotically, with physicians viewing the patient on monitors and precisely controlling surgical tools or therapeutic devices through a control console from a distance. As these technologies advance, the distances can also increase, helping to improve access to care and helping to reduce time to treatment.

This could be especially helpful in geographic areas where shortages of highly skilled specialists may exist, and for emergent procedures, such as heart disease and ischemic stroke, where time to treatment is critical. Endovascular telerobotic systems are one example of a technology that could enable remote interventions from a control room next door or from kilometers away.¹⁶

In 2018, in Ahmedabad, India, five patients underwent an elective percutaneous coronary intervention procedure performed robotically by a physician more than 30 km away.¹⁷ Whether the surgeon is several meters from the patient, in an adjacent room, or kilometers away, the advantages are significant. Barriers to care are overcome, time is saved, and by reducing person-to-person contact the safety of caregivers is enhanced by limiting their exposure to potential infections as well as radiation from imaging devices.

Conclusion

The benefits of remote work are significant – for patients, for employers, for healthcare employees, and for business partners. An understanding of these benefits provides a compelling argument for why remote work solutions should be integrated into the strategic plans, infrastructure, and workflows of healthcare organizations.

The healthcare sector has, however, been slow to embrace this growing trend. This is a consequence of numerous factors, including financial and legal issues. Capital expenditures for bricks and mortar must be recouped. Reimbursement guidelines for services rendered remotely remain unclear in many jurisdictions. In addition, there are difficult legal and regulatory issues that must be resolved. In the U.S., for example, prior to the pandemic a ‘virtual’ physician providing remote advice had to be licensed not only in the state where he or she was located, but in every state from which a patient called.

Demographic, cultural, and technological factors also play a role. Some demographic and social groups might be unwilling to confront the challenges associated with new technologies; for these groups, the default is often to simply continue doing things as they were done in the past. Perhaps the most difficult barrier to overcome is cultural. In many organizations there is a strong desire to maintain traditional working arrangements and traditional concepts of patient proximity. This inherent desire to maintain the status quo can be difficult to overcome.

Technological concerns, however, should not serve as an impediment. Recent technological advances have created remarkable new opportunities and flexibility, permitting healthcare workers to embrace remote work and ensuring that patient needs are met. The COVID-19 pandemic has made the advantages of remote work even more apparent, highlighting issues of safety both for patients and for frontline healthcare providers.

In order for healthcare providers to capitalize on the transition to remote work, we recommend that the following five steps be applied and followed:

1. Make the transition to remote work a central part of your overall strategic plan

Healthcare providers should give priority to remote work solutions in their strategic planning. Strategic investments will pay off in future. Remote work must be understood as a comprehensive and enduring part of the transformation of healthcare, not simply a short-term response to COVID-19.

2. Identify functions and positions where remote work can leverage maximum benefits

Look at tasks from the perspective of patients, employees, and providers. The issue is not just about realizing cost savings. Ask: where can remote work solutions improve access, clinical outcomes, and satisfaction? How can remote access expand our reach and broaden our catchment area? How can remote work allow us to more effectively utilize (and monetize) our expertise and assets?

3. Equip your institution with the right infrastructure

Realistically evaluate key issues including current financial conditions and capital investment requirements. Identify opportunities for partnerships with external vendors based on quality, experience, and existing relationships.

And determine which hardware and software is required and whether existing equipment can be upgraded or updated. In addition, new functions and positions will have to be created and given the appropriate authority and resources to establish and manage a remote work infrastructure.

4. Create organization-wide capabilities and a culture that embrace remote work

Cultural change and long-term investments in people's education support the transition towards remote work. Successfully navigating this transition will require many employees to re-evaluate their roles and responsibilities and must be accompanied by future-oriented and modularized trainings that create a clear upskilling pathway.

5. Continually analyze, measure, and evaluate remote workflows

Remote work must be understood along a continuum of both time and distance. Progress will at times be gradual and must be evaluated in an overall context. Foster opportunities for feedback, the sharing of best practices, and encourage continual improvement. Integrate remote workflows in everyday routines until they become habits.

If these steps are applied, the transition to remote work can be a valuable part of every healthcare organization's strategic plan, helping to achieve business objectives, prepare for future challenges, comply with rigorous safety and regulatory standards, and better meet the needs of patients and employees. Looking ahead, we believe that updates to functions, networks, and platforms will continue to advance rapidly, and that the growing role of AI will further contribute to greater insights and more precise care.

Remote healthcare delivery – Your path forward



1

Make the transition to remote work a part of your **strategic plan**



2

Identify functions where remote work can leverage benefits



3

Equip your institution with the **right infrastructure**



4

Create remote work **capabilities** and **culture**



5

Analyze, measure and evaluate remote workflows



Suggested follow-up on

[Siemens-healthineers.com/news/transforming-care-delivery](https://www.siemens-healthineers.com/news/transforming-care-delivery)

- Siemens Healthineers Insights Series, issue 7:
Do one thing, and do it better than anyone else
- Siemens Healthineers Insights Series, issue 4:
Achieve twice as much but only work half as hard
- Siemens Healthineers Insights Series, issue 2:
Culture of diversity, respect, and inclusion
- Harvard Business Review:
Transforming Care delivery to increase value



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For regulatory reasons, the solutions described in this paper may not be commercially available in all countries and their future availability cannot be guaranteed.

Remote telerobotic capabilities are largely under development and not commercially available. Their future availability cannot be ensured.



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Ralf Meinhardt engages in thought leadership activities for transforming care delivery. Prior to his role at Siemens Healthineers, he spent several years in the pharmaceutical industry, consulting and scientific research. Ralf Meinhardt holds a Doctor of Economics and Social Sciences degree from the University of Erlangen-Nuremberg. In addition, he holds a Master of Science degree in Management and Bachelor of Arts degree in Business Administration. He studied at the University of Erlangen-Nuremberg and Indian Institute of Management, Bangalore (IIMB). His scientific background is in the field of corporate strategy where he has authored several publications.



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At Siemens Healthineers, our purpose is to enable health-care providers to increase value by empowering them on their journey towards expanding precision medicine, transforming care delivery, and improving patient experience, all enabled by digitalizing healthcare. An estimated five million patients worldwide benefit every day from our innovative technologies and services in the areas of diagnostic and therapeutic imaging, laboratory diagnostics and molecular medicine as well as digital health and enterprise services.

We are a leading medical technology company with over 120 years of experience and 18,500 patents globally. With about 50,000 dedicated colleagues in over 70 countries, we will continue to innovate and shape the future of healthcare.

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