Technology Leaders and the Future of Connected Care

CIOs, CTOs, and technology leaders are uniquely positioned to transform not only their own organization but enable change for the entire health and wellness ecosystem. Empowered with the skills, expertise, and influence necessary, technology leaders can lead the way to significantly improve the quality of care and patient outcomes.

Today's CIO/CTO role entails much more than simply managing technology—especially given the need to ensure providers are equipped with the technology and processes needed to deliver the best possible care to all patients within each healthcare system. Additionally, patients must be placed at the center of care and be empowered with the ability to manage and advocate for their own care.

Moving to a connected care model

With a connected care model, technology enables patients to receive personalized and proactive care regardless of where they are—at home, in a hospital, or primary care centers. **Technology leaders can therefore enable and orchestrate this shift to make a significant impact on patients by improving the quality of their care.**

With the member/patient at the center, connected care elevates the overall care experience through an individualized, persona-centric approach to care. With a complete view of patients and the ability to predict outcomes, organizations can practice personalized care in a way not previously possible.

From a health and wellness ecosystem standpoint, connected care delivers a holistic view that enables providers to improve patients' overall health and meet wellness goals by leveraging initiatives such as precision medicine, remote monitoring, digital therapeutics, and streamlined clinical trials, to name but a few. Through connected care's positive impact on these areas and others, healthcare systems can fast-track their progress to implement value-based care. Connected care also enables payers to accelerate the shift to value-based reimbursements.

Connected care provides many other benefits to healthcare systems by reducing costs by optimizing referrals and eliminating follow-up office visits with remote monitoring and minimizing complications through preventive interventions. The impact of the skills gaps is also lessened by utilizing automation and data analytics to improve end-to-end processes.

For example, many patients are now more quickly prescribed the most effective medications for their individual DNA through pharmacogenomics (PGx), which uses pharmacology and genomics to recommend the best options for each patient. By using AI-based technology, PGx considers drug-drug, drug-gene, and gene-gene interactions to create a list of the best choices. Experts expect PGx's personalized treatment to be profound for issues such as neurodegenerative disorders, cardiovascular diseases, and cancer. Furthermore, because the right treatment is started faster, the impact on the patient's life span may be greatly reduced.

However, to successfully transition to connected care, technology leaders must see the health and wellness ecosystems from the business lens to support this model. Connected care requires access and the ability to manage real-time data, which depends on a modern, cloud-based infrastructure. Many organizations mistakenly begin implementing connected care technologies without understanding the needs of all involved and the technology they require. By starting from the core of healthcare — the patient — you can design the connected care ecosystem that meets the needs of the patients and the health and wellness ecosystem.

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Starting with the stakeholders

The most successful connected care systems are specifically designed for the needs of the patients and the healthcare system involved—**one size does not fit all**. The connected care journey starts with a clear understanding of each stakeholder's needs so you can select the right use cases, technology, and processes.

The three key stakeholders:

○ **Patients** – The patient is at the center of the health and wellness ecosystem and is the ultimate beneficiary, making it imperative for connected care solutions to be built around the best patient outcome and experience possible in mind.

○ **Providers** – Providers need a skilled workforce and the right technology to best care for their patients. By surveying your providers, you can identify their specific pain points as well as bottlenecks in current processes that affect their stress and subsequently, patient care.

○ **Caregivers** – Caregivers, including nurses and support staff, as well as home and family caregivers, need specific resources to provide the best patient outcomes possible. For example, many caregivers want the ability to access apps and data from their mobile devices, as this makes it easy to provide care regardless of their location.

Building the ecosystem

While the connected care approach ultimately benefits all three stakeholders, many different roles are involved in the implementation and maintenance of this model. Each player must receive adequate training to understand both the benefits and uses of the connected care processes and technologies. As a result, many organizations start with a few high-value, persona-centric use cases and then expand connected care and build upon it.

Common elements of the connected care ecosystem include, but are not limited to:

○ **Payers** – Insurance companies need access to connected care data to help manage their member's holistic well-being. Additionally, payers need access to data for value-based care and bringing in the right interventions.

○ **Health System** – In addition to improving patient care, connected care provides valuable information about resources and operations that healthcare systems can use to reduce costs and improve efficiency, which ultimately benefits patients.

○ **Pharmacy Benefit Management (PBM)** – With more accurate data about the most effective treatments, PBMs can more effectively manage both therapy availability and cost.

○ **Life Sciences** – With better access to real-time patient data, life science professionals can create more preventive, personalized, and relevant treatments in a timely manner by leveraging technology elements like digital twins, AI/ML, etc.

○ **Medical Devices** – Because connected care relies on collecting accurate real-time data, manufacturers can take advantage of cutting-edge technologies such as IOT and 5G/6G to create a meaningful connected care ecosystem.

○ **Distributors** – Connected care enables distributors to streamline the medical supply process between manufacturers and providers. Technology plays a pivotal role in efficiently managing the shelf life and tracking data of their medical supplies.

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Setting up the enablers

Organizations across the healthcare value chain are in various stages of maturity for the implementation of connected care through technology. The CIO and other technology leaders must work with the ecosystem to select, deploy, and maintain innovative technology enablement to bridge the long-standing gaps in healthcare.

A successful connected health model requires a core infrastructure that supports both the medical devices and the emerging technologies that enable them. **Before adopting connected care, ensure that your healthcare system has the following:**

○ A cloud-based infrastructure

○ The ability to collect and manage data

○ Interoperability that provides a full view of the patient and healthcare system's operations

○ Security measures that reduce the risk of breaches and cybersecurity attacks

With this foundation in place, the next step is to integrate emerging technologies that add features and functionality to your connected health model. **Here are common emerging technologies that help expand the capabilities of medical devices and connected health:**

○ **Device Master Record** – With electronic medical records (EMR) at the center of connected health, the device master record (DMR) is the master record of all health records used to create the EMR.

○ **Telehealth** – Telehealth drives and enables distributed care and relies on how well the clinical and communication components integrate with EHRs.

○ **IoT** – More things are getting connected in the health and wellness ecosystem from networked systems, remote monitoring, and EHRs, as well as wearables and implanted devices. This provides a wealth of accurate data from patients and healthy people alike that enables caregivers to gain a more holistic view.

○ **AI/ML** – Through AI and ML technology, your healthcare system can use advanced data analytics features to evaluate large volumes of data for predictions and insights, such as identifying which patients are most likely to develop complications, or the best intervention for a specific patient.

○ **5G/6G** – Using advanced technology in healthcare, especially remote monitoring, requires reliable connectivity with low latency. Many organizations are turning to 5G for healthcare technology connectivity to make full use of advanced technologies.

○ **Digital Twins** – Digital twins allow the simulation of outcomes for different scenarios and enable the selection of the option with the most potential for success in each situation. Virtual replicas that send and receive data make it possible to understand the implications of different paths before determining a course of action.

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Achieving the outcomes

Once connected care is in place, your organization can begin to see specific outcomes from use cases.
By prioritizing your outcomes, you can then select use cases that maximize aspects of care:

- **Value-based care** – Connected health provides the data needed to measure outcomes for value-based care.

- **Digital therapeutics** – Delivering digital therapeutics becomes more streamlined with the connected health infrastructure in place.

- **Personalized medicine** – With large volumes of data on each patient, providers can provide a level of individualized care previously not possible.

- **Clinical trials** – With digital technologies, data management and remote monitoring, clinical trials are much more accurate and streamlined.

- **Remote monitoring** – Instead of relying on patients to self-report symptoms or return for multiple visits, remote monitoring, enabled by IOT and 5G technologies, helps providers offer a higher level of care and prevent complications.

- **Health & Wellness** – When patients are empowered to manage and be a part of their own care, their health and wellness often also significantly improves by being more predictive and proactive rather than reactive.

Making it real

Cancer is a complex medical condition that requires timely intervention from multiple caregivers, providers, and health and wellness ecosystem players tailored to the unique needs of each patient over the duration of their treatment. Given the sheer volume of stakeholders involved, fragmented health and wellness ecosystems are the greatest obstacle to the ability of members and caregivers to receive and provide high quality care at affordable costs.
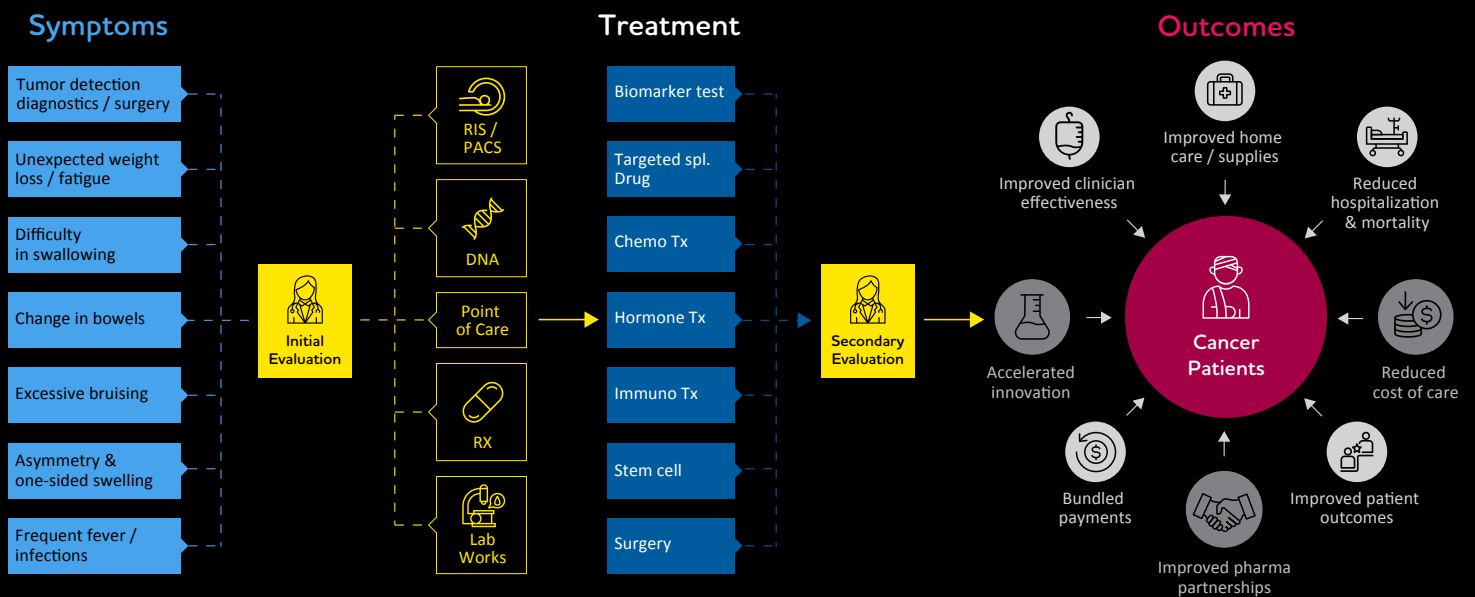
Indeed, a recent study by BMC Health Services Research highlights the current barriers to effective cancer care coordination, including suitable and timely referral, and interdisciplinary communication. At TCS, we believe this is where connected care can make the biggest impact by addressing many of the challenges impeding members from benefiting from the latest developments in healthcare.

Connected care stands to become one of the most important care coordination tools, allowing data to flow seamlessly between caregivers in a timely, secure, and orchestrated manner to ensure accuracy and quality of care.

For example, implementing a rich data ecosystem powered by AI and machine learning becomes a real possibility with connected care, enabling personalized care pathways for members by connecting the dots between the multitude of health and wellness ecosystem players.

The diagram below illustrates the future of the oncology ecosystem with the adoption of connected care. Leveraging connected care places, the patient at the center of healthcare, addressing the challenges that stand in the way of critical advancements to solve pain points, improve care coordination, patient experience, health outcomes, cost, and access to care. Oncology is just one example of the many areas of healthcare that connected care can ameliorate and advance.

A Connected Care Ecosystem View: Oncology Care

Symptoms
- Tumor detection diagnostics / surgery
- Unexpected weight loss / fatigue
- Difficulty in swallowing
- Change in bowels
- Excessive bruising
- Asymmetry & one-sided swelling
- Frequent fever / infections

Initial Evaluation

RIS / PACS
DNA
Point of Care
RX
Lab Works

Treatment
- Biomarker test
- Targeted spl. Drug
- Chemo Tx
- Hormone Tx
- Immuno Tx
- Stem cell
- Surgery

Secondary Evaluation

Outcomes
- Improved clinician effectiveness
- Improved home care / supplies
- Reduced hospitalization & mortality
- Accelerated innovation
- Cancer Patients
- Reduced cost of care
- Bundled payments
- Improved pharma partnerships
- Improved patient outcomes

The role of the technology leaders in the future of healthcare

Healthcare currently sits at an important junction, either facing stagnation from lack of innovation or evolving from the creation of a new experience that prioritizes patients and delivers improved outcomes. As a result, technology leaders hold a unique position of initiating lasting change and forward movement. Leaders who understand their position and take advantage of this opportunity can become the connector, orchestrator, and disruptor.

Instead of overseeing "just technology," CIOs can now position their role to be responsible for transforming the entire organization through technology. **They can lead and enable critical change** by using modern systems and infrastructure to leverage data, insights, and next-best actions (NBAs).

While technology is the key enabler of the future of healthcare, wearing a business hat and keeping the most important stakeholders, patients/members, and caregivers, at the center of what we do, along with building trust across the ecosystem, will help with accelerated adoption.

TCS can help realize your connected care transformation goals. We can help you achieve more from your existing IT platforms and build a future-ready organization by bringing in our depth of expertise in Healthcare and Lifesciences coupled with technology know-how.

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