Using technology to become a high-reliability healthcare organization

The practice of medicine has evolved. More than ever, it's incumbent on healthcare providers to access and understand the latest in evidence-based research in order to make decisions that have real impact. Leaders are turning to technology like telemedicine to enable evolution of information access and guidance.

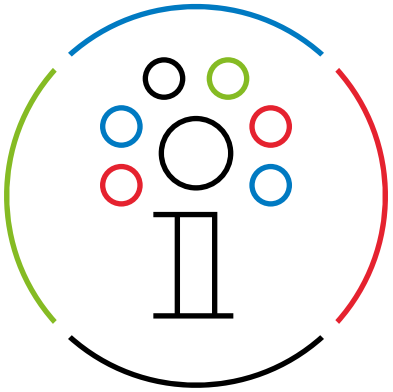
Driving this adoption are many undercurrents:

- Government regulations and requirements.
- New generations of digitally native clinicians.
- More information in the hands of patients via consumer technology.
- New expectations from patients around healthcare interactions and environments.
- Financial pressures on organizations to optimize and standardize, or even just keep the doors open.

To achieve this, leaders are implementing a variety of tech initiatives to improve the way they deliver care. **The following three core principles are essential:**

1. Full access to the right data and information

Many of healthcare's change initiatives going back two decades can be traced to the optimization and coordination of health data. Yet until now, so much essential data has remained siloed, unstructured, inconsistent, or proprietary.



During the first years of the Covid-19 pandemic, private and public stakeholders around the world got together, tearing down the walls that keep data apart. *As Sir John Bell put it in a November 2021 podcast*, "Covid has changed the relationship between regulators and the pharmaceutical industry for the good, mostly because of speed."

Healthcare data functions as the brain and central nervous system for decision-making. Unfortunately, beyond a pandemic, sharing health data for research across borders has remained very difficult. A 2021 report from the European scientific academies explained the consequences of stalled data transfers on patients as beneficiaries of research and pushed for responsible solutions.[1]

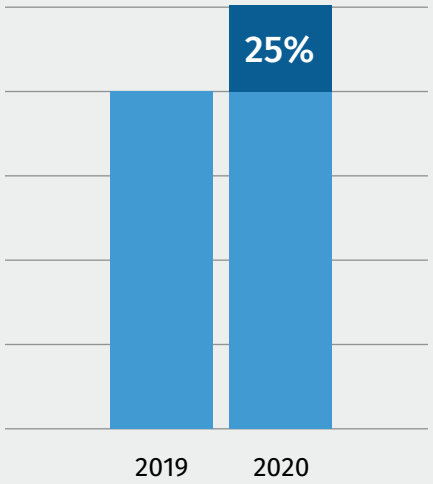
In order to improve care coordination and get closer to a truly patient-centered care model, the barriers to accurate and actionable data must be removed.

Once data is processed, it becomes information that can be applied in clinical settings. Or does it?

Clinicians today are faced with a dizzying volume of research, emerging information, government and health organization guidance, and the need for speed. Can individuals alone manage this explosion of new information? More importantly, can clinicians turn the right information into action as they care for patients?

The impact of Covid-19 on scholarly publications

Paper submissions growth



According to the Copyright Clearance Center, paper submissions to publishers grew by 25 percent in aggregate in 2020. Some publishers even reported their submission rates to be five times higher than the same period in the previous year.[2]

Online resources like scholarly publications, databases, and grey literature (clearinghouses, conference proceedings, etc.) are clinicians' main references. In fact, digital accounted for 89 percent of the scientific and technical segment of the global scholarly publishing market in 2020, according to the International Association of Scientific, Technical, and Medical Publishers (STM Global Brief 2021)[3].

Clinicians often need treatment recommendations they can trust that don't yet exist or are not clearly outlined in peer-reviewed literature. A systematic review of 48 studies on clinician expectations on the benefits and/or harms of treatments, tests, or screening tests showed that in most studies most physicians had inaccurate expectations.

Clinicians and patients alike are also confronted with an unrelenting amount of misinformation that is now so pervasive that the World Health Organization has coined it an *infodemic.*

Most guidelines (which clinicians rely on to guide treatment decisions) do not fully acknowledge the poor quality of the data on which they are based.[4]

According to “How to survive the medical misinformation mess” published in the *European Journal of Clinical Investigation of 2017*,[5] **there are four key problems:**

1

Much of the published medical research is not reliable or is of uncertain reliability, offers no benefit to patients, or is not useful to decision makers.

2

Most healthcare professionals are not aware of this problem.

3

Even if they are aware of this problem, most healthcare professionals lack the skills necessary to evaluate the reliability and usefulness of medical evidence.

4

Patients and families frequently lack relevant, accurate medical evidence and skilled guidance at the time of medical decision-making.

Health misinformation can also undermine the patient-clinician relationship and negatively impact health outcomes.

For example, misinformation about medication has been shown to reduce adherence. Patients might be concerned about taking too many medications, and have misinformation or misunderstandings about treatment (thinking, for example, “When my test results are normal, I can stop treatment”). Personal beliefs about “becoming dependent” upon medicine or preferences for lifestyle changes or alternative approaches to healthcare also affect medication adherence.

Clinicians, healthcare professionals, and patients need to stay vigilant. They should also be empowered to identify and assess the quality and usefulness of the evidence and information they read, which includes checking sources.

2. Transparency and trust to turn the best evidence into action

The true optimization of the best evidence-of-the-moment approach assesses and distills new evidence and an abundance of grey literature to harness evidence at pace, align care around best practices, and even serve as an early-warning system for public health threats.

Clinicians make decisions for care and management every day, so they must have timely access to guidance that synthesizes the best available evidence augmented by the wisdom of clinical experts and other relevant information sources that should have a bearing on clinical decision-making.

A best-evidence-of-the-moment approach can reliably distill the massive amounts of data that new research and clinical care generate at speed, and can transform it into reliable and actionable treatment recommendations. In the past, the slower pace of medical change tended to obscure when care team members were not fully aligned. However, today, when people act on disparate information, care is not just inefficient, it can be truly harmful.

In contrast, a rapidly vetted single source of truth creates a true opportunity to align care across settings and, globally, has a dramatic effect on safety, quality, and patient outcomes. That's especially important in an age of resource constraint and heightened consumer engagement where alignment across the healthcare continuum is critical to the provision of clinically effective care.

"It is unhelpful for busy clinicians making a difficult decision for a patient to read guidance concluding that the evidence is insufficient to make a recommendation or simply be pointed to a summary of potentially relevant studies."

Peter Bonis, MD,
Chief Medical Officer, Wolters Kluwer, Health

Making the best evidence available in a format that can be used by frontline healthcare providers holds enormous potential for improving post-pandemic care and saving lives—but only if done right.

This includes dealing with unknown or complex conditions such as infectious diseases and cancers for which therapies rapidly change or are still emerging.

Clinical decision support in the workflow is critically important for:

Aligning and connecting care teams across specialties and settings for helping to standardize best practices.

Ensuring that patients are offered the best choices based upon the available evidence and clinical experience.

Critical components to balancing the best science with action

Synthesized evidence

Rigorous processes are required to systematically review relevant sources of evidence. These must be synthesized thoughtfully and presented to clinicians in a way that they can be understood quickly and accurately.

Peer review

A team effort is required to ensure that recommendations for care are clear, useful and reflective of contemporary thinking. Formal peer-review processes are essential. Feedback from end users—i.e. clinicians- should be incorporated into the editorial process.

Rigor and speed

The process must be efficient but cannot sacrifice quality. This means that content has to be founded on the best evidence and peer reviewed by specialists following a rigorous process that is clearly outlined.

Recognizable expertise

Clinical experts are essential to translate published evidence (often incomplete and/or variable) into recommendations for care. Experts must understand the evidence and have experience caring for patients with the conditions for which they offer guidance.

Transparency

Because no clinician can distill the firehose of new data on a regular basis, clinicians need to understand how experts evaluate data and arrive at a recommendation. Grading clinical recommendations by the quality of evidence indicates confidence levels that guide decision-making.

Easy-to-find information

Clinical decision support should come in formats that easily integrate into workflows and wherever clinicians are working. Health system leadership's adoption of this approach into facility workflows can expedite appropriate practice change, ensuring clinical improvements enhance the process of building trust.

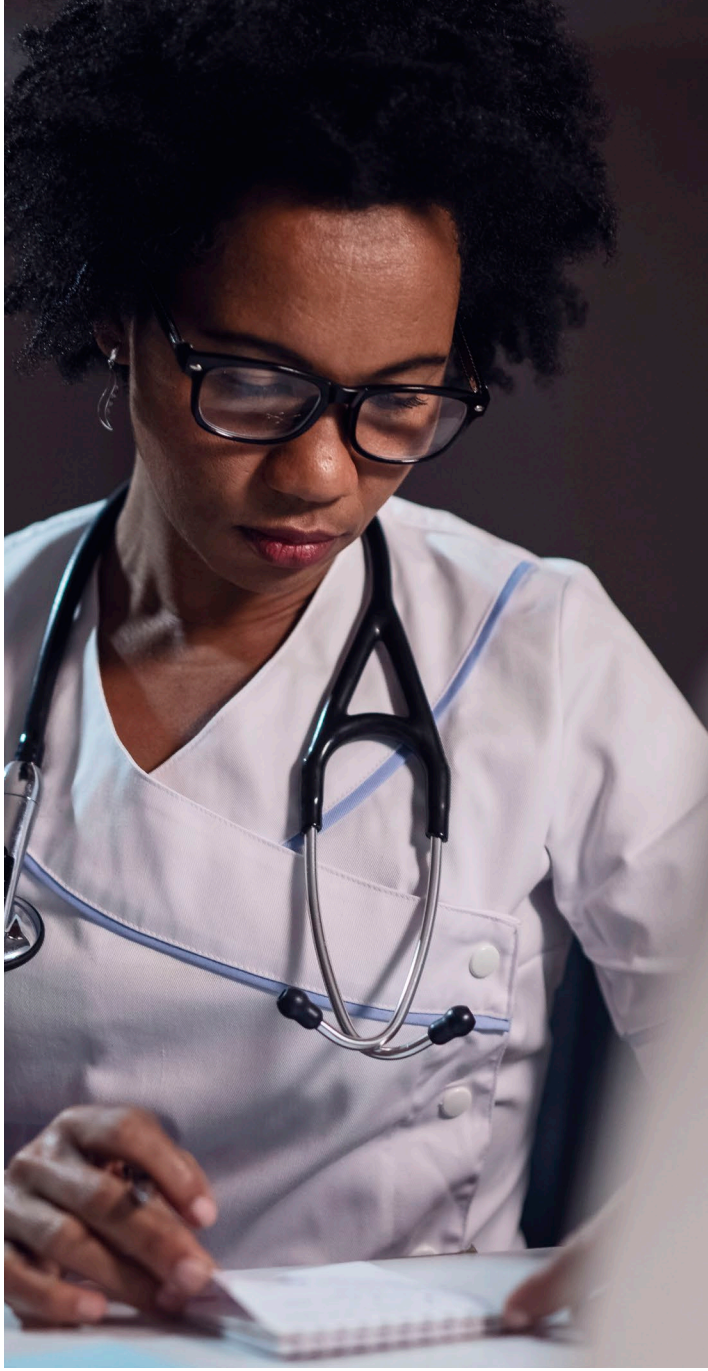
3. Empowering the healthcare workforce

Efforts to digitize and standardize healthcare also stem from the dire gaps in staffing resources and shrinking budgets.

The reallocation of care staff and expansion of roles that were started decades ago were exacerbated during the crisis phase of the Covid-19 pandemic. Care management and team-based responsibilities as well as more data-driven roles are now commonplace.

While these can temporarily address workforce shortages, they do not address the deep burnout that many clinicians are now reporting. Doctors, nurses, and other frontline clinicians have left the profession at alarming rates.

In England, NHS hospitals, mental health services, and community providers are now reporting a shortage of nearly 94,000 full-time staff, **one in ten posts being vacant in nursing.**[6]



Future-based workforce strategies will have to keep pace.

The challenge will be to architect new models that foster retention, career development, and restorative self-care—not to mention all-new areas such as teaching soft skills that are increasingly important with new delivery options and care models.

But technology also competes with other budget needs within hospitals, and within the IT budget, priorities need to be appropriately assessed and ranked in terms of their potential return on the quality of care provided to patients.

Nada Al-Qadheeb, PharmD, BCCCP, FCCP, FCCM, is a Clinical Pharmacy Consultant in Critical Care, the Chief of Pharmaceutical Care and Formulary Management Affairs for the Eastern Health Cluster (EHC), which includes 22 hospitals and was the first one organized in the Kingdom of Saudi Arabia as part of *the national Vision 2030 plan.*

When asked about technology, she echoed what most healthcare leaders go through. "We just hired a new IT lead for the entire cluster for a comprehensive look and coordination of our technology ecosystem. We believe in technology, but it's very expensive and we have competing priorities. And technology needs vary across the cluster."

She added that while her larger hospital has access to a lot of technology, like the Pyxis™ automated medication dispensing system which is connected to the information system, barcoding, etc., other smaller clinical centers lag far behind.

4 workforce imperatives as care delivery shifts.

Incorporate training into new delivery models

Programs must incorporate training that reflects the changes in team-based and technology-driven care delivery.

Anticipate new learning styles

Lessons must be delivered in short sessions and take advantage of both existing and emerging technology tools that include video, virtual simulation, 3D models, and digital tools.

Address mental health and well-being

Efforts dedicated to fostering resilience and professional fulfillment are critical. Leadership must proactively engage leaders and healthcare workers in collaborative action planning to provide appropriate mental health support and improve practice environment and culture.

Pursue academic and research partnerships that focus on quality

Partnerships between healthcare organizations and academic institutions help ensure that professionals who graduate are practice-ready, and, conversely, that research studies are engrained in delivery.

For care delivery, clinicians will have to reinforce their competence with new tools and technologies—from telehealth and remote patient monitoring to how to access, analyze, and use data gleaned from electronic health records and a host of other data sources.

Clinicians should also be supported to bolster their soft skills and competence with technology for future understanding of how to interact effectively to meet their own needs and those of patients.

For on-the-job training, as artificial intelligence becomes more refined and its use expands, algorithms could surface insights much earlier that generate mini-lessons, clinical updates, remediation, and reminders within existing workflows.

Used correctly, technology can drive more-efficient care delivery and workforce training.

[1]Bentzen, H.B., Castro, R., Fears, R. et al. Remove obstacles to sharing health data with researchers outside of the European Union. Nat Med 27, 1329–1333 (2021). https://doi.org/10.1038/s41591-021-01460-0. Accessed 6/17/22

[2]Kenneally, Christopher. Publishing in 2021: Advancing at the Speed of Science. Copyright Clearance Center (blog), December 16, 2020. https://www.copyright.com/blog/publishing-in-2021advancing-at-the-speed-of-science/ Accessed 6/9/2022

[3]STM Global Brief 2021, Economics & Market Size - An STM Report Supplement. https://www.stm-assoc.org/2021_10_19_STM_Global_Brief_2021_Economics_and_Market_Size.pdf Accessed 6/9/2022

[4]Lenzer, J., Hoffman, J. R., Furberg, C. D., Ioannidis, J. P., & Guideline Panel Review Working Group (2013). Ensuring the integrity of clinical practice guidelines: a tool for protecting patients. BMJ (Clinical research ed.), 347, f5535. https://doi.org/10.1136/bmj.f5535 Accessed 6/21/2022

[5]Ioannidis, J.P.A., Stuart, M.E., Brownlee, S. and Strite, S.A. (2017), How to survive the medical misinformation mess. Eur J Clin Invest, 47: 795-802. https://doi.org/10.1111/eci.12834

[6]The NHS workforce in England is in crisis: urgent action is required to tackle a vicious cycle of shortages and increased pressures on staff, which has been exacerbated by the Covid-19 pandemic. The King's Fund. 23 February 2022. https://www.kingsfund.org.uk/projects/positions/nhs-workforce Accessed 6/22/2022