GE Healthcare

THE EFFICIENCY IMPERATIVE: THE APPROACH HEALTHCARE INSTITUTIONS MUST TAKE TODAY TO THRIVE TOMORROW

The people involved in providing healthcare not only take pride in what they do, they also have a strong sense of mission. This generally translates into a feeling of professional satisfaction and a natural desire for greater productivity. At least that's how it should be.

But today, systemic changes across the healthcare sector are making it difficult for everyone from physicians to nurses to CEOs of health systems and more to achieve professional satisfaction. Much of the problem comes from the increasing difficulty of delivering sustainable, high-quality care to patients. In some cases, the current healthcare environment even poses an existential risk to institutions like hospitals and physicians' groups.

THE SOLUTION LIES IN A NEW APPROACH TO AN OLD CONCEPT.

While researchers have written a great deal about the need for efficiency and productivity in healthcare, they have generally approached the issue from a purely linear, calculated standpoint. As a result, the efficiency conversation is usually dominated by a sense of value-in, value-out and a focus on how each element contributes to a very specific definition of worth. It's worth noting that despite the attention given to efficiency much of the healthcare sector is still struggling with growing costs, greater pressure on providers, and anemic bottom lines.

But a select number of innovative institutions are charting a new path, showing that steps exist to help both individuals and institutions achieve their mission while navigating through the changing healthcare landscape. These steps are accessible to any institution, but the trick is that to successfully apply these methods, institutions will need to completely reframe their concepts like productivity, effectiveness, and efficiency. In fact, nothing short of a paradigm shift in how we view and define efficiency will be required to survive the seismic changes that characterize the contemporary healthcare sector.

The Three Principles of Intelligent Efficiency

Integrate technology, data, and the human

When tech, data, and operations work together seamlessly, they create a self-reinforcing system that improves the lives of everyone who touches it.

Be consumer-centric and provider-centric

Every endeavor must simultaneously take into account the needs of both patients and providers. In an intelligently efficient system, they thrive together.

Take a comprehensive approach

Addressing the major issues facing healthcare requires a comprehensive approach that involves all relevant stakeholders to solve a diverse set of problems all at once. An ad hoc approach often solves one problem while creating others.

THE EFFICIENCY IMPERATIVE

Before exploring how successful institutions are adapting, it is critical to understand why changes must be made today.

In recent years, healthcare institutions have faced rising demand and declining reimbursements, resulting in pressure to serve more patients, drive more value, and show more productivity. At the same time, a move towards consumerization in medicine is causing patients to demand the same type of service and convenience they receive in other aspects of their lives.

The effects are already being felt across the sector. On the provider side, some studies show physician burnout now tops 40 percent.[i] On the consumer side, many patients are disappointed with their experience. For example, National Health Service data reveals patient satisfaction in the United Kingdom fell to its lowest level in a decade in 2019.[ii]

These issues are coupled with significant financial pressures. A model by Deloitte predicts that only 50 percent of current health systems in the United States will remain a decade from now.[iii] In Europe, 12 percent of hospitals in Germany were in "financial distress" at the beginning of 2020.[iv] In fact, the average operating margin for hospitals in parts of Europe in 2018 was a mere 1.8 percent.[v] Parts of Asia are also feeling the pain, with China's medical insurance fund expenditure growth exceeding income growth in both 2018 and 2019.[vi]

While it's tempting to blame the emergence of COVID-19 for ushering in the most disruptive elements, these issues have actually been years in the making. The pandemic has however accelerated the rate of change and urgency.

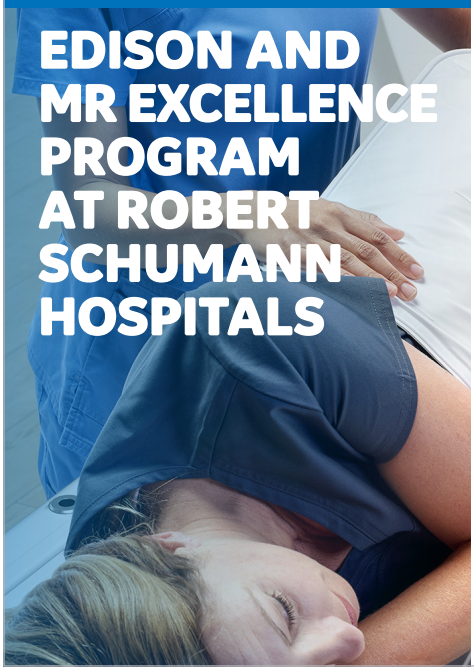
So, what happens if institutions continue on this path? Given the rapid rate of change, will they be able to overcome the mounting financial or technical challenges in five years? How will those who have not taken action successfully survive in a competitive landscape?

While the pandemic has had negative, tragic, consequences, it has also encouraged novel thinking and a willingness to try new approaches. Healthcare professionals and even patients are now more open to applying these approaches to existing challenges. This new opportunity, combined with today's difficult healthcare landscape, makes taking immediate action an imperative.

EFFICIENCY FOR ALL

The institutions that want to be tomorrow's healthcare leaders must view efficiency as a process that improves every component of the care system and uplifts every individual who interacts with that system. Data and analytics are front and center for administrators, providers, and patients. The result is time gained across the care spectrum and operations that add value behind the scenes.

CASE STUDY



EDISON AND MR EXCELLENCE PROGRAM AT ROBERT SCHUMANN HOSPITALS

Robert Schumann Hospitals in Kirchberg, Luxembourg faced a critical challenge. They needed to reduce wait time for their MR systems. The long wait times meant patients with serious pathologies were forced to delay treatment because they were not able to get a timely MR scan, and that was having a negative effect on patient outcomes and provider morale.

To help solve for this, GE Healthcare helped them integrate Edison applications into their technology and workflow. Using the MR Excellence Program to develop standardized protocols, Robert Schumann Hospitals sped up staff processes and improved reproducibly for patients with serious pathologies.

The integration was managed by a cross disciplinary team. Imaging Insights provided the data intelligence to enable better outcomes in MR, including increased patient throughput, better machine utilization, more clinical consistency, and optimal use of equipment technology. Customer enablement support brought together a team of radiologists, technologists, and department heads to help them work towards common goals.

Ultimately, this modernization and standardization turbocharged Robert Schumann Hospitals' efficiency. The number of protocols was reduced by 47 percent. The stress on staff, particularly technicians, decreased. System utilization time went up 11 percent, with greater visibility into inactive usage windows. And, most importantly, MRI wait times were reduced by 3 weeks.

In short, efficiency must become a universal concept that is creatively integrated into the DNA of an operation. For some institutions this is already becoming a reality, as they strive for a state in which quality care flows seamlessly and efficiently for providers **and** patients, guided by relevant insights. **A concept termed Intelligent Efficiency.**

This new approach to efficiency is already beginning to divide institutions into distinct groups. Leaders are proactively rising to meet the looming challenges and use the intelligent efficiency approach to drive the adoption of new innovations and become guiding lights in this new landscape. The followers will tread water and make it through turbulent times by eventually copying the leaders. The stragglers, a significant portion of institutions, will be so slow to embrace intelligent efficiency that they will struggle to make it through the transition at all.

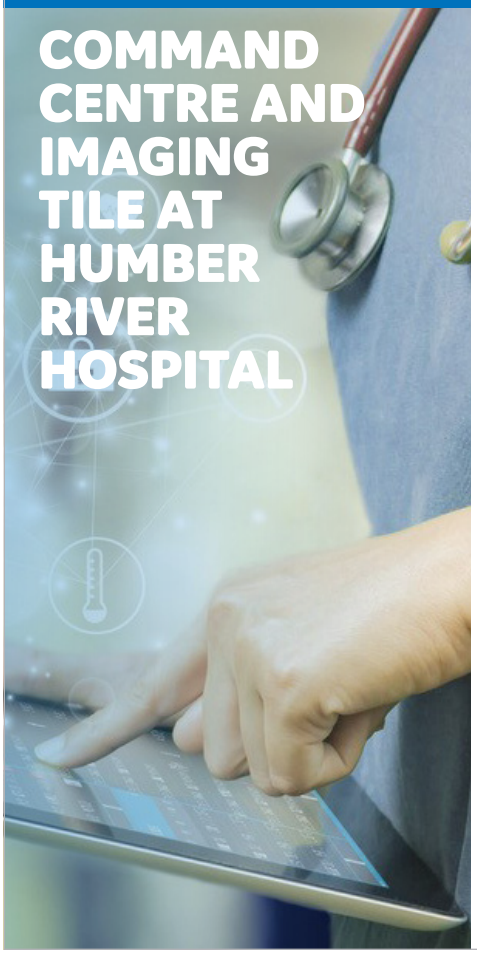
The question every single person who works in healthcare and medicine right now needs to ask is: which institutions do I want us to be? Which do I want to work for? Which do I want serving my patients, my community, my family?

The differences between these three groups will be subtle at first. After all, even the stragglers are currently adopting new technologies. But if these technologies are applied without attention to the principles of Intelligent Efficiency, they are likely to cause as many problems as they solve.

For example, newer forms of electronic health records are often associated with an improvement in one area, such as the ability to see a greater number of patients. However, in many cases they are also correlated with lower patient satisfaction scores and higher rates of physician burnout. In fact, a study by the Cleveland Clinic showed a negative effect on patient satisfaction with the adoption of a new EHR system, and other studies have shown use of a poorly designed computerized physician order entry system was associated with 29 percent greater rates of physician burnout.[vii]

CASE STUDY

COMMAND CENTRE AND IMAGING TILE AT HUMBER RIVER HOSPITAL



With a rapidly growing community exceeding 850,000 residents, and rising ED volumes topping 400 per day, Toronto's Humber River Hospital (HRH) determined in 2016 it would be facing a capacity shortfall of 40-50 medicine beds by the year 2020, despite the opening of a larger and digitally advanced replacement hospital in 2017. Humber River subsequently engaged GE Healthcare to establish a hospital command centre that would help enable patient flow, better patient care logistics and the delivery of high reliability healthcare.

One of Humber River's 21 command centre analytics is the Medical Imaging Tile, which notes in real time when an ordered inpatient imaging exam remains unscheduled too long, when the order is for a critical care patient or a patient ready for discharge, or when the exam needs to be coordinated with other exams when the patient has multiple exam orders. An artificially intelligent algorithm dynamically prioritizes the queue of unscheduled inpatient exams based on a methodology provided by the hospital, and suggests optimal times during which to schedule the inpatients, accounting for the real time status of how scheduled outpatients and already scheduled inpatients are progressing. Information on the Tile is promptly actioned by the Imaging Expediter role within the command centre team. This team member, a Medical Imaging Technologist, uses their expertise and relationships with the modality teams and physicians as they work the Tile throughout the day to progress inpatient scans, reduce care delays, reduce unnecessary patient days and enable some patients to go home sooner.

Since implementing the Medical Imaging Tile, Humber River has seen a 16-27 percent reduction in the average time inpatients wait for medical imaging exams, depending on the modality. Inpatients are receiving a better patient experience as the Tile helps ensure they receive their exams in a timely way. Hospitalists and other caregivers are more satisfied now that they no longer need to track down contacts across the different modalities to see when their inpatients can get scanned. They now have confidence that their inpatient imaging orders are being actively managed throughout the day, intelligently, and with a level of efficiency not previously possible.

To avoid these types of pitfalls, healthcare institutions need to consider three major principles in the application of Intelligent Efficiency: integration of tech, data, and the human; a simultaneous focus on both consumers and providers; and a holistic approach to the adoption of new techniques or technologies.

THE FIRST PRINCIPLE:

Integrate technology, data, and the human

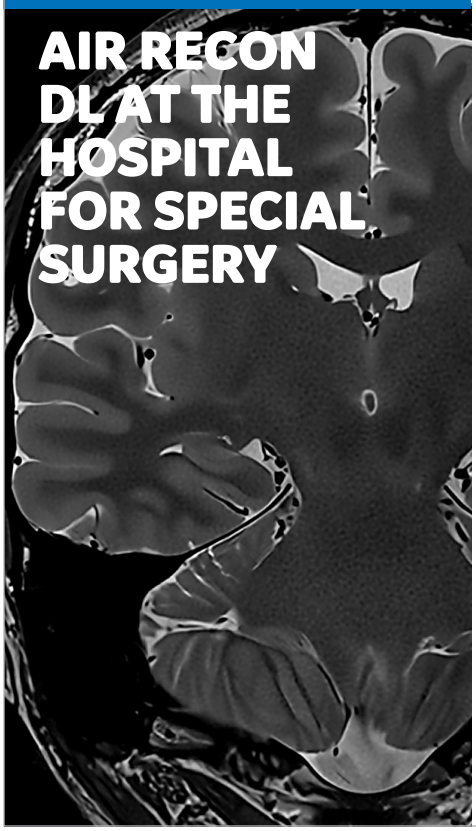
To truly succeed in a state of systemic-level pressures, healthcare entities will need to adopt an organization-wide ethos that, above all, prizes the smart integration of technology, data, and operations. That means rolling out technologies that are part of an efficiency mosaic with effects throughout the hospital or clinic.

Examples of a successful efficiency mosaic can be found at Germany's Nuremberg hospital, an institution with 2,730 beds and 6,000 staff. Feeling pressure from payors to speed up its report times for cardiology diagnostic procedures, they instituted a solution that went well beyond the cardiology department. Rather than simply conducting a training for cardiologists or adopting a one-off piece of technology that would foster faster reporting, the hospital conducted a full workflow analysis and connected all diagnostic modalities to a single cardiology information system that could generate a report available to all relevant care providers.

The effort involved adopting the Centricity™ Cardio Workflow system, but it also involved extensive training and education for a wide variety of hospital employees, advanced project management, and the creation of a new type of administrative report. The results reveal the benefits of this type of approach: the team decreased the time spent by cardiologists to complete cath lab reports by 60 percent and increased quality control compliance to 100 percent.[viii]

The improved structures built on these types of comprehensive efforts will play a key role in promoting a type of efficiency that speaks to every element of a healthcare organization. In turn, the resulting benefits like time savings promote greater profitability.

CASE STUDY



The Hospital for Special Surgery (HSS) has a long history of GE collaboration in the co-development of innovative MR orthopedic solutions, such as imaging around metal implants, quantitative characterization of cartilage and nerve imaging, to name a few. Approximately 2 years ago, GE and HSS undertook a clinical evaluation study to examine a novel, deep-learning based MR reconstruction technique called AIR™ Recon DL‡, a technique that uses GE's Edison AI Platform, trained on over 10,000 images.

During the course of this study and subsequent commercial product pilot evaluation, HSS evaluated AIR Recon DL and its impact on image quality, spatial resolution and acquisition scan time in peripheral nerve and musculoskeletal (MSK) imaging. The difference in enhanced image quality was "night and day," said HSS. AIR Recon DL improved SNR and image sharpness when looking at musculoskeletal structures, such as ligaments, tendons, nerves and the trabecular detail of the bones. When using AIR Recon DL on a 512 x 512 matrix with one excitation (1 NEX), trabecular detail was not blurred, and the individual nerve fascicles were clearly demonstrated. Previously at a 512 x 512 matrix, SNR would be a significant challenge. AIR Recon DL also works seamlessly with AIR Touch™ workflow tools that automate the scan process to drive consistency and help facilitate shorter scan times.

With AIR Recon DL, HSS doctors found that they could confidently evaluate the internal architecture of the nerve—something they couldn't routinely see before—leading to faster radiology reads and more confidence in their diagnoses established through an early adopter user survey. Ultimately that put HSS in a position to serve more patients while also producing better patient outcomes. With the accompanying new software release, HSS is now considering orthopedic protocols that are under 10 minutes or less.

‡ Not yet CE marked for 1.5T. Not available for sale in all regions.

THE SECOND PRINCIPLE:

Be consumer-centric and provider-centric

But thriving in the new normal also means embracing the types of internal changes that will address the pressures of consumerization and create a seamless patient experience. Healthcare entities ranging from national systems to individual physicians must create systems that satisfy greater patient interest in the clinical decisions that affect both their physical and financial well-being.

Front-line medical providers must be able to effectively meet consumer demands and provide timely, understandable, and actionable information to patients about clinical processes, the safety of their care plan, and guarantees regarding outcomes. The most crucial new technology will find a way to make this type of contact a seamless part of care that does not take excess time or make care delivery less efficient.

Setting up systems and adopting technologies that help patients better understand their care and consistently communicate its benefits and risks, as well as reduce waiting times for tests and procedures will be essential to meeting the challenges of consumerization. Of note, it will boost patient satisfaction and improve patient loyalty to a hospital system.

That is why Intelligently Efficient platforms like Centricity™ Cardio Workflow also include significant advantages that help healthcare professional provide better care for patients. At the nearly century-old American Hospital in Istanbul, Turkey, the cardiology department incorporated the system to automate their cath lab and echo workflow, bringing in the hospital's IT department to assist with the adoption. The system eliminated the need for manual entry of some patient information, paper-based worksheets, and transcription, which allowed the hospital to reduce turnaround times for anxious patients. But even more importantly, the cardiology department was able to virtually eliminate error-prone manual processes.

At the same time, it is also important to remember that the application of any truly efficient innovation also takes into account the needs of physicians, nurses, technologists, and other providers. Given providers' strong desire to give the best care for their patients, improving patient satisfaction will likely improve provider satisfaction. However, providers also need to be treated as important stakeholders in their own right. True Intelligent Efficiency is inclusive of all elements of the system, including those at its heart.

CASE STUDY

REVOLUTION MAX AT FRANCE IMAGING CENTER

The leadership of a medical imaging center in Nancy, France needed to upgrade their equipment to machines that could simultaneously be used for emergency, inpatient and outpatient care, and handle wildly differing cases, including interventional imaging.

With the help of GE Healthcare, they found Revolution Maxima.

Among many capabilities, the Revolution Max provided them radiation dose exposure minimization, a 3D camera that analyzes the patient while lying on the table and allows technologists to detect more precisely, helping automatically identify patient scan landmark and start/end location in order to perform scout acquisition. The tablets on the gantry also enabled technologists to plan all the exam setup directly by the patient's side for a better patient experience.

Their move from a manual CT scanner to a completely automated protocol automatically centering and positioning the patient, not only changed the way the Center works for the better, making them faster and more precise, it also left more time for the technologist to care for what matters most: the patients.

THE THIRD PRINCIPLE:

Take a holistic approach

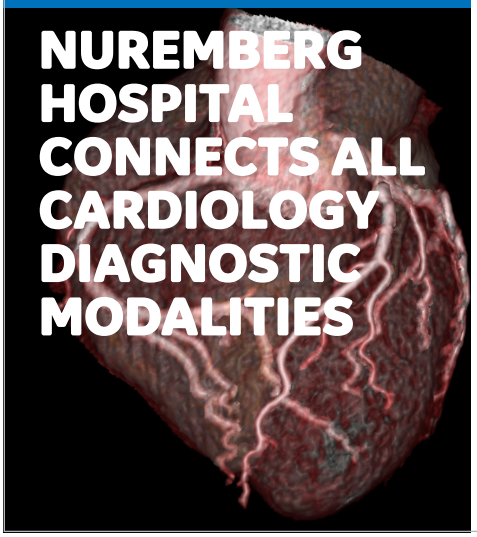
Most new developments in healthcare practice are designed to increase productivity, foster better communication, and help organize the explosion of actionable data. These are all laudable goals, but if they are not applied holistically, they run the risk of failure.

An example of a true holistic approach is Oregon Health and Science University's (OHSU) adoption of the Mural™ Virtual Care Solution (Mural), a platform that integrates real time data from multiple systems and devices to paint a comprehensive picture of patient status and prioritize clinicians' attention to the most critical patients across multiple facilities, based on hospital defined protocols. In the face of the COVID-19 pandemic, the timely adoption of Mural allowed the teaching hospital to operate more efficiently by enabling specialists in a central location to provide clinical support to bedside teams caring for patients in multiple ICUs.

OHSU took a system-wide approach to the adoption of Mural, working with front line providers to ensure the solution would support their current workflows by digitizing their defined protocols and best practice standards. The result was a system that improved efficiencies in care delivery by allowing critical care experts to remotely oversee data such as patients' vitals and best practice standards in near real time. Just as importantly, it also allowed for better visibility into ICU bed access for those in need of intensive care, better data collection and monitoring for individual patients, greater satisfaction among providers who found it easier to fulfill their mission of delivering high-quality patient care, and a more efficient distribution of hospital beds across the system.

The OHSU experience shows that, in contrast to haphazard or ad hoc adoption of new technologies, Intelligent Efficiency's comprehensive approach addresses the major issues confronting contemporary healthcare and the desires of multiple stakeholders. Adopting new innovations in an attempt to increase some sort of hazy notion of "efficiency" is the shortsighted approach of stragglers. Leaders look at innovation with a more complete view.

CASE STUDY



NUREMBERG HOSPITAL CONNECTS ALL CARDIOLOGY DIAGNOSTIC MODALITIES

A successful efficiency mosaic can be found at Germany's Nuremberg hospital, an institution with 2,730 beds and 6,000 staff. Feeling pressure from payors to speed up its report times for cardiology diagnostic procedures, they instituted a solution that went well beyond the cardiology department. Rather than simply conducting a training for cardiologists or adopting a one-off piece of technology that would foster faster reporting, the hospital conducted a full workflow analysis and connected all diagnostic modalities to a single cardiology information system that could generate a report available to all relevant care providers.

The effort involved adopting the Centricity™ Cardio Workflow system, but it also involved extensive training and education for a wide variety of hospital employees, advanced project management, and the creation of a new type of administrative report. The results reveal the benefits of this type of approach: a 60 percent reduction in time to report spent by cardiologists, 100 percent data quality compliance, and automated stock management reduced from a two-hour process to the single click of a mouse. Just as important, the efforts improve care well beyond the cardiology department.

INTELLIGENT EFFICIENCY: A MISSION, NOT A MANTRA

The goal of every healthcare provider centers around serving their patients. Everything from the rising rate of physician burnout to runaway costs are making it more difficult for healthcare institutions to accomplish that goal, the reason they entered the field of medicine in the first place. When the very core of a such a critical part of our community and the healthcare profession is at risk, institutions must take action—so they and all those who are a part of it may thrive. True, smart efficiency must be a mission, not a mantra; a promise and a purpose, not punditry.

By adopting solutions that move away from the old "value-in, value-out" approach, leading healthcare institutions are already demonstrating how the principles of Intelligent Efficiency help serve patients better.

Intelligent Efficiency means physicians and other frontline providers are empowered and freed to deliver quality treatment, with better, more integrated data and tools, and without the current issues that lead to widespread physician burnout. It lets providers spend more time treating their patients and less time struggling with ad hoc systems that often take away from doing so.

Intelligent Efficiency can mean helping reduce patient wait times for tests, results and treatments. Patients spend less time waiting for tests, results, and treatments. It means more of the face time with caregivers that consumers demand. And, ultimately, it means better health outcomes.

Intelligent Efficiency not only helps improve processes and outcomes, but most importantly, it can help improve lives. Healthcare leaders are already beginning to see how this new approach holds potential solutions for the most pressing problems confronting modern healthcare. This concept is the first step towards a new type of system that uplifts all who touch it.

[i] https://www.advisory.com/daily-briefing/2019/01/18/burnout-report

[ii] https://www.kingsfund.org.uk/publications/public-satisfaction-nhs-social-care-2018

[iii] https://www2.deloitte.com/us/en/pages/life-sciences-and-health-care/articles/great-consolidation-health-systems.html

[iv] https://www2.deloitte.com/content/dam/Deloitte/cz/Documents/life-sciences-health-care/2020-global-health-care-outlook.pdf

[v] ibid

[vi] https://www.ey.com/Publication/vwLUAssets/EY-the-rise-of-private-health-insurance-in-china/$FILE/EY-the-rise-of-private-health-insurance-in-china.pdf

[vii] https://www.mayoclinicproceedings.org/article/S0025-6196(19)30836-5/fulltext

[viii] https://www.gehealthcare.com/-/jssmedia/syneos/centricity-cardio/ge-healthcare-klinikum-nurnberg-case-study.pdf

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