



Delivering Actionable Data to Clinicians at the Point of Care

Hospitals and health systems are reconnecting, rewiring, reshaping and rethinking how they can deliver actionable, real-time data to clinicians at the point of care to improve clinical and business outcomes.

Introduction

It's a common scene in medical TV dramas: A doctor is performing life-saving surgery on a patient who's flatlining. The surgeon asks the operating room (OR) nurse to hand him a scalpel, a retractor, suction and then a clamp in a series of rapid-fire commands. The nurse responds immediately to each order. The patient pulls through. Cue the beeping heartbeat monitor.


But what if the nurse had needed to walk out of the operating room after each command — first for a scalpel, then for a retractor, etc.? The patient's odds of survival might be zero because the nurse didn't have what the surgeon needed in real time in the room where it was needed.

Yet, that's the same dynamic many clinicians experience at the

patient's bedside, whether in the emergency department (ED), specialty care unit, general medical-surgical floor or intensive care unit (ICU). Clinicians often have some but not all the data they need at their fingertips or in plain sight to provide the best possible care for their patients.

Forward-looking hospitals and health systems are flipping the script on that dynamic by giving clinicians all the actionable data they need in real time at the point of care to improve their organization's clinical, financial and operational performance.

This Trailblazers report from the American Hospital Association's Market Scan outlines a six-part road map for other hospitals and health systems that want to follow the same path forward. ●



The percentage of more than 200 surveyed hospitals and health systems that cited “clinical workflow optimization” as a health IT investment priority in 2024

34%

Source: [Bain & Company](#); [KLAS Research](#)

6 STEPS: Delivering actionable data to clinicians at the point of care

STEP 1 | Know the technology

Delivering actionable data to clinicians at the point of care in real time is a buzzy statement. But what does it mean in terms of technology and functionality? It means feeding into and displaying all relevant data clinicians need to assess and treat a patient on a single, customizable dashboard. The data elements fed into and displayed on the single dashboard include such core vital signs as:

- 1 | Heart rate.
- 2 | Heart rhythm.
- 3 | Blood pressure.
- 4 | Temperature.
- 5 | Blood oxygen level.
- 6 | Respiratory rate.

The single dashboard complements the core vital signs with metrics from other devices and lines connected to an individual patient. Those other devices and lines could include:

- 1 | Ventilators.
- 2 | Near-infrared spectroscopy devices.
- 3 | Extracorporeal membrane oxygenation.
- 4 | Electroencephalogram that monitor brain activity.
- 5 | Other bedside devices specific to a patient's diagnosis and medical condition.

The on-demand dashboard also pulls in electronic health record (EHR) data, clinical notes and diagnostic test results.

Because all data reside securely in a web-based platform, clinicians can access the single dashboard on a bedside display, a tablet or a smartphone. Users can access all the data on any device for one patient in one location, multiple patients in one location or multiple patients in multiple locations — all 24/7.

STEP 2 | Anticipate barriers to adoption

Hospitals and health systems that want to provide actionable, real-time data at the point of care to their clinicians will face barriers to adoption. The barriers will happen at two points in the journey.

The first point is before starting. Barriers fall into three categories: staff, processes and technology. People are wary of solutions that promise to reinvent patient care. They've been

burned by short-lived digital health flavors of the month. Internal processes for scaling technology solutions aren't mature or effective, so why take on another solution that's destined to fail? As for technology, another information technology (IT) solution could be a hard sell to a chief financial officer who wants proof of the return on investment (ROI).

The second point is after go-live. Staff may see it as a point solution to solve one problem in one unit rather than an enterprisewide opportunity to dramatically change care delivery. They may not have an effective process to roll out a solution across the enterprise. From a technology standpoint, they may not have easily integrated or interoperable systems that can feed into one platform.

Anticipating these before-and-after barriers enables advocates for change to develop plans to overcome each barrier before it threatens to trip up adoption.

STEP 3 | Embrace new capabilities

New capabilities enjoyed by health care organizations that make the leap forward into actionable data at the point of care fall into the same three categories: clinicians, processes and technology.

The two biggest things people can do now are practice at the top of their license and synthesize data all at one time in one place — moving from "I could do that, but I can't because I don't have the data" to "I'm trained to do that and I can right now because I have the data." Clinicians can see all the important data on a single dashboard, crunch the numbers and make the right clinical decision at the point of care instantly. The role in this technology isn't to replace the clinical decision. It's to directly support and inform the decision by the clinical team.

In terms of process, the ability to monitor one patient in one location, multiple patients in one location or multiple patients in multiple locations completely changes workflows. Clinicians can virtually round, monitor patients remotely, check on patients from anywhere at any time and can apportion their time more effectively based on the individual needs of patients.

Disparate technologies become more effective working in concert rather than separately. An added bonus is fewer nuisance alarms disturbing patients and interrupting doctors and nurses.



"It's easier to synthesize the information when all the data are visible. When you have all the information together — timestamped — you're not only able to be laser-focused on what's happening at that moment, but you can zoom out and assess how the patient is trending."

Joellan Mullen
 Lead, Clinical
 Engagement
 Specialist, Medical
 Informatics Corp.

STEP 4 | Accrue benefits from new capabilities

New capabilities health care organizations obtain through such technology generate a host of benefits for the organization, their patients and communities, and their business partners. The benefits accrue in five areas: administrative, clinical, financial, operational and shared services.

ADMINISTRATIVE BENEFITS

- Improved accuracy and efficiency of clinical documentation.
- Improved claims-management performance, reducing appeals and denials.
- Risk management supported with continuous recording of patient data.

CLINICAL BENEFITS

- Clinicians provide safer and better care to patients.
- Patients receive safer care and enjoy better outcomes.
- Clinician and patient experience and satisfaction improve.

FINANCIAL BENEFITS

- Fewer adverse events lower costs.
- Reduced lengths of stay lower costs.
- Higher staffing ratios reduce costs.

OPERATIONAL BENEFITS

- 24/7 patient monitoring.
- Reduction in ICU lengths of stay.
- Improvement in patient throughput.

SHARED SERVICES BENEFITS

- More robust innovation research from having continuous and complete data sets.
- Leading-edge analytics with continuous and complete data sets.
- Better and safer clinical protocols generated by more complete and accurate retrospective quality assurance reviews.

The technology generates continuous data points on all patients during each episode of care. The benefits are as vast as an organization's vision for what it can do with all the data.

Top 5 reasons physicians are interested in using point-of-care/workflow-enhancement tools, according to a 2022 survey of 1,300 physicians

- 1 | Improve clinical outcomes.
- 2 | Improve work efficiency.
- 3 | Improve care coordination.
- 4 | Improve diagnostic ability.
- 5 | Increase patient safety.

Source: [American Medical Association](#), 2022

STEP 5 | Make a list of use cases

To maximize the clinical, financial and operational ROI in tech that delivers actionable data at the point of care in real time, health care organizations should make a list of use cases for the technology. Organizations should think big. Some examples:

- Conduct retrospective quality-assurance reviews with continuous and complete data sets.
- Monitor ventilated patients on different floors and units within one view of platform.
- Monitor patients simultaneously while doing clinical documentation using a split screen.
- Partner with revenue cycle to provide data in support of initial claims and in support of claim delays, denials and appeals.
- Partner with risk-management and legal departments to help defense in liability cases.
- Remotely monitor patients during cardiovascular physical therapy sessions.



“Clinicians can focus better on their patients when they don’t have to dig and click for data.”

Raajen Patel
 Executive
 Vice President of
 Innovation, Medical
 Informatics Corp.

PROTIP

SECRETS TO SUCCESS

- 1 | **Seat a representative from each stakeholder team at the table** from the start to ensure that the solution works for everyone, not just those who attended the meeting.
- 2 | **Identify and empower influencers and champions** who are interested in the next generation of technology for improved patient care delivery.
- 3 | **Go into the endeavor with an enterprise mindset** and think about patient monitoring in a truly strategic, not tactical, way.



The percentage of 200 global health system leaders surveyed in 2023 who cited “acute care workflows and throughput” as one of the biggest potential positive impacts of digital health technologies

Source: [McKinsey & Company](#)

- Set up a virtual observation center that notifies bedside caregivers of changes in patients’ medical conditions, enabling immediate and early interventions.
- Time sequence data from continuous monitoring technology with EHR data and camera-enabled technology for a 360-degree view of patient care 24/7.
- Use data to move patients out of the ICU faster and end ED bottlenecks.

Again, the only limits on use cases are an organization’s imagination for what can be done with the data.

STEP 6 | Measure your success

Providing actionable real-time data to clinicians at the point of care promises several capabilities, benefits and use cases —

for a potentially large investment. Given the many barriers to adoption, it will be important for hospitals and health systems to identify, track and report a number of key performance indicators (KPIs) after they go live.

Again, KPIs can fall into many major categories such as administrative, clinical, financial and operational performance.

ADMINISTRATIVE

- Claim denial rate.
- Clinician turnover rate.
- Patient satisfaction scores.

CLINICAL

- Health care-associated infections.
- Mortality rates.
- Readmission rates.

FINANCIAL

- Full-time equivalents (FTEs).
- Lengths of stay in the ICU.
- Lengths of stay overall.

OPERATIONAL

- Patient throughput.
- Ventilator days.

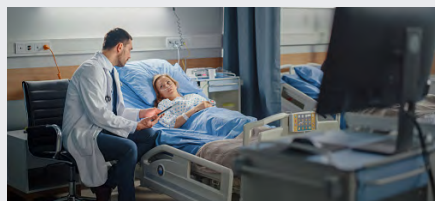
Each service line, unit, medical specialty, clinician discipline and clinical department can define its own KPIs from its new capabilities powered by actionable real-time data at the point of care. The same is true of any administrative, financial and operational department that taps into the vast database created by such technology. The return on investment promises to be substantial based on the right KPIs.

The most important KPIs will track clinical outcomes for patients and productive workflows and work environments for clinicians. ●

PROTIP

SECRETS TO SUCCESS

- 1 | Invest in **ongoing training** after initial training and go-live.
- 2 | **Identify and promote superusers** to maintain momentum after go-live.
- 3 | **Collaborate with vendor** for continued iteration of the solution.



Save time and save lives like never before with actionable data.

Medical Informatics' Sickbay Clinical Platform is an FDA-cleared clinical platform that standardizes patient monitoring and enables virtual care at scale. Sickbay users customize views of up to 80 patients to monitor them from anywhere, from any device throughout their hospital stay. Sickbay standardizes monitoring by delivering near real-time, time-synchronized native resolution waveforms inclusive of all monitoring technologies. Clinical teams comprehensively monitor each patient using our vendor-neutral integration of bedside devices displayed by a single source of truth, Sickbay.



Cost-effective

With Sickbay, monitor patients from anywhere, on any device, and scale virtual command centers quickly. Utilize monitoring data to support revenue-cycle management and clinical documentation improvement processes to efficiently collect clinical documentation for billing and respond to denials.



Scalable

Scale with only 175mb data storage per patient per day, aggregating your data in Sickbay's vendor-neutral platform. Easily support additional workflows and services with a few clicks instead of costly devices and IT implementation hours.



Streamline

Automate clinical workflows to reduce manual tasks such as strip export and electrocardiogram waveform labeling. View up to 80 patients within a single view, allowing for risk prioritization and staffing allocation improvements.



Improve Care

Collaborate on care with teams across the health system with a common set of data with built-in analytics tools in Sickbay. Analyze aggregated data from one second to one year and close the loop from bedside care delivery to performing clinical research with AI-powered models.

Medical Informatics Corp.'s Sickbay platform unlocks the capacity to effectively monitor patients not just within a unit, but across an entire health system. Sickbay supports the data needed to empower change based on hospital strategy and care provider priorities. Recently, Medical Informatics Corp. was named one of the "Best Digital Health Companies" of 2024 by Newsweek, and was singled out from that list as being among the top 50 Data Analytics in the U.S. by Becker's. Let us know what challenges you face and find out more about how we can help. Visit www.sickbay.com.



CASESTUDY **Guthrie Clinic**

Expanding the reach of a contracted workforce

The [Guthrie Clinic](#) is an integrated delivery system anchored by the Guthrie Medical Group, a 1,000-physician and advanced practitioner multispecialty group practice, and six hospitals, including flagship [Guthrie Robert Packer Hospital](#), in Sayre, Pennsylvania.

Guthrie's clinical workforce plunged by 43% between April 2022 and April 2023, dropping to 98 FTEs from 172 FTEs with many nurses resigning for traveling roles. With patients waiting for ICU beds and staff burnout rising, Guthrie leaders reevaluated how they could support both patients and caregivers. After analyzing costs, staffing needs and technology options, Guthrie launched a centralized command center, consolidating on-site staff and hiring experienced virtual nurses and intensivists. The command center allows remote nurses to monitor patients visually using a software-based monitoring and analytics platform, cameras and two-way audio communication.

Guthrie incorporated internal staff in the rollout, avoided using temporary staff for backfill and asked critical care nurses to help design the virtual system.

Guthrie's Pulse Center, a remote-patient monitoring hub, opened in April 2022. It enabled Guthrie to onboard experienced nursing staff and eliminate its reliance on travel nurses. In just 18 months, Guthrie bolstered patient safety and engagement throughout its 13-county service area. Nurse satisfaction soared as a result, with turnover rates plummeting to 13% from 25%. In the center's first year, Guthrie saved \$7 million in labor costs.

Guthrie now uses the pulse center as a transfer center to coordinate and streamline patient transfers between facilities or care levels. Leaders plan to expand virtual care, encompassing online registration, pharmacy management and virtual support for community hospitals, including consultations. It also has an initiative in place to provide virtual care for home settings. This effort is part of Guthrie's five-year strategy, with a focus on foundational developments in the first year. Eventually, leaders hope to reach patients nationwide. ●

[READ](#) the full case study.



"It's important to evaluate the return on investment of digital technologies that can extend the reach of nurses."

— **TERRI COUNTS** —
 Vice President and Chief Digital Information Officer, Guthrie Clinic

Eliminating a paper trail and improving patient care

Michigan Medicine (<https://www.uofmhealth.org>) is the name of University of Michigan Health, the university-based health system in Ann Arbor, Michigan. The system includes the [University of Michigan Medical Center](#) and the University of Michigan Medical School. The system has more than 25,000 employees, more than 7,000 nurses, more than 4,000 faculty members and nearly 2,000 residents and medical students. It's a big operation with a big problem, according to Rob Wonnacott, manager of Michigan Medicine's nursing information systems department.

The big problem? Paper strips — the kind that a clinician prints out from a heart monitor or other type of device, annotates them with dates, time stamps and initials, and then physically delivers to another clinician to read, interpret, make a medical decision and instruct the first clinician what to do.

Wonnacott described the many challenges of that inefficient workflow in a presentation at HIMSS 2024 held in Orlando, Florida, in March.

The inefficient paper strip workflow was endemic of the two broader challenges of how to get raw data into the hands of physicians instantly and how to improve physicians' visibility into the data from many patients in multiple locations. The solution was a cloud-based technology platform that enables clinicians to access real-time data from any patient from anywhere on any connected HIPAA-compliant device.

Michigan Medicine first connected its ICUs, EDs and telemetry beds to the platform without changing any workflows. Six months later, the system eliminated the paper strips, which Wonnacott estimated at as many as 400 a day. The move generated hard savings from elimination of paper and ink costs, the cost of printer maintenance and time spent scanning strips into patients' EHRs. More importantly, it eliminated wasted time that is now put to better use on direct patient care. ●

[LISTEN](#) to "Michigan Medicine's Care Delivery Transformation" on BrightTALK by TechTarget.



"Let's face it, the patients who are unmonitored really have the furthest to fall. So how do we get visibility with them?"

— **ROB WONNACOTT** —
 Manager, Nursing Information Systems,
 University of Michigan Health

Conclusion

Physicians, nurses and other clinicians must be in the room where care is delivered to provide the optimal level of safety and effectiveness for patients. The most important role technology can play in health care operations is to make it easier for physicians, nurses and other clinicians to do their jobs. Live-streamed data collected from devices, the EHR and alerts gives physicians, nurses and other clinicians actionable real-time data at the point of care from wherever they are is the bridge between those two goals.

The technology creates new capabilities, which generate measurable enterprisewide clinical, financial and operational benefits. The benefits support the overarching strategic objectives of the organization. That future state is available today to forward-looking hospitals and health systems. ●



Contributors

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For more information, visit www.sickbay.com



The Sickbay platform serves as the cornerstone in constructing a standardized architecture for patient monitoring. Sickbay stands out as the unparalleled, vendor-neutral, FDA-cleared software solution designed to integrate the patient monitoring layer seamlessly. Sickbay platform is powered by Intel Xeon Scalable Processors, Optane, Python and BigDL libraries to support a balanced architecture with built-in acceleration and advanced security to help pave the way for the healthcare monitoring revolution and AI innovation.



MARKET SCAN

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