



How Qlik Helped Us Transform Intelligent Health Care

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I started my career as a Pediatric Hematology/Oncology Nurse. We had patients who were in our hospital for over a year without leaving. They essentially lived with us. For our nursing team, the days were long, but what got us through the day was spending time with our patients and their families.

Then, something changed in my own career. I moved from direct patient care to the analytics side at AdventHealth. While I wouldn't work directly with patients, this was my chance to enhance patient care in a different way. This new role was my chance to provide frontline workers with a tool to help make their jobs easier.

Technology has led to monumental changes to healthcare. We now have safer patient care and fewer errors, but we can also do more to help integrate that technology more deeply into the existing workflows of our frontline workers.

Administrative areas of hospitals—like finance, HR, and supply chain—often have specialized tools to streamline workflows and increase team members' quality of work life. The clinical team could greatly benefit from their own specialized tool. What if we had one place where nurses could see the actionable steps needed to improve patient care? As healthcare organizations, our purpose is to provide for our patients. Sometimes, the best way to provide for patients is to take care of those taking care of our patients.

Dashboard Intervention

As a nurse myself—who understands the challenges they face—I knew we could provide meaningful assistance.

In the past, team members were provided with historical reports. While historical reports play an important role in the care of patients, we wanted to provide a tool that was useful from an operational standpoint. Our goal became developing near-real-time dashboards to give our nursing team and leadership the opportunity for

action—not reaction. To provide the best patient care, help prevent infections, and manage patients through the healthcare continuum, we must provide our team members with the necessary tools.

Our real-time dashboards were developed to bridge these gaps by providing a comprehensive tool for all levels of team members—from frontline nurses to the chief nursing officer. The dashboards are used operationally to make actionable decisions to impact both patient outcomes and ensure good stewardship.

Structuring Our Dashboards

My role for the past four years has been using [Qlik](#) to develop these real-time operational dashboards. When we first created the dashboards, we were focused on building efficient infrastructure. We wanted to keep the impact on the overall Qlik system minimal to allow for quick turnaround times. Much of our effort was dedicated to creating optimized queries, which used information from a combination of reports, ETL, and other applications. By keeping the footprint small, we created a system that could reload every five minutes.

These dashboards have a diverse user base: everyone from C-suite executives, down through directors, managers, and to our frontline team members. By the end of 2019, these dashboards accounted for more than 70% of all AdventHealth's Qlik sessions and were being used at almost all our hospitals across the county, as well as by our regional and corporate leadership. No other tool that I have used provides this level of quick, precise information flow between members of such a large organization.

Practicing Practical Dashboard Applications

The real key to using data in operational decisions is providing quick and simple access to practical information. Searching through each individual patient chart is time-consuming and searching line by line in a historic report is not practical.

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Providing clear information in an easy-to-consume format is key to ensuring that all users can understand and utilize the provided tool to positively impact patient care. This means that all levels of team members must be able to view the data and make informed decisions, without needing an extended period of time to digest and comprehend the tool. Dashboards provide a simple but robust interface between immense amounts of data and users who are not data analysts.

At AdventHealth, our main tool for this purpose is our Clinical Leader Dashboard, which is centered around three focus areas: **Infection Prevention**, **Safety and Quality**, and **Care Management**.

Each focus area contains a *Main Tab*, *Metrics Tab*, and *Action Tab*. The *Main Tab* is designed with leadership in mind. The *Main Tab* gives a high-level overview of the metrics included within that focus area. The *Metrics Tab* provides patient-level detailed information surrounding each metric. The *Action Tab* provides a one-page view of all metrics within that focus area. Only patients with actionable items that need to be addressed will appear. This allows team members a simple and quick way to identify all patients within their area on whom to focus.

Within the **Infection Prevention** section, team members can monitor metrics related to disease prevention. This includes topics such as wound care, central line and IV site maintenance, vaccinations, catheter care, and ventilators. Ensuring that timely care is provided to catheters and central lines can help prevent serious complications such as urinary tract infections, bloodstream infections, and sepsis.

The **Safety and Quality** area focuses on metrics such as fall prevention, blood glucose levels, pain medications, and cardiac telemetry monitoring. The telemetry metric aggregates all patients that are connected to telemetry equipment to monitor their heart rate and rhythm for abnormalities. The addition of the telemetry

metric to the dashboard eliminated multiple manual processes. This metric ensures that all team members have an up-to-date list of cardiac monitoring patients and prevents miscommunications that can result in patients remaining on monitoring longer than necessary.

The third area, **Care Management**, focuses on topics such as length of stay, readmissions, and discharge readiness. Throughout this section, team members can monitor a patient's progression of care.

Planning for discharge must begin at admission to ensure all services are organized prior to the decision to send a patient home. This reduces delays and unnecessarily elongated hospital stays. The **Care Management** metrics provide a singular place for all team members to view the necessary steps in the discharge process. Balancing patient care and financial responsibility is much easier when the team has access to ongoing tracking at both the aggregate and individual levels.

In addition to the three main sections, our dashboard also includes the Patient Summary and Metrics Definition pages. The former serves as a comprehensive but quick information exchange tool that is useful during shift changes or other patient transfers. The Patient Summary displays key information regarding all metrics in a per-patient view. The latter facilitates clarity over the specifics of each metric. Since our dashboard serves multiple facilities and team at a variety of levels, it is critical that everyone has the same understanding regarding terms.

Saving Time and Lives

Unlike with spreadsheets or periodically printed reports, all of this data is presented using interactive full-color charts and graphs. Colors are used to help quickly identify areas of needed focus and areas of success. Unique icons, such as colorful hearts for telemetry or specific checkmarks indicating levels of completion, provide visual cues to help simplify and expedite understanding. The dashboards are optimized to provide the maximum amount of useful information in a quickly digestible format.

Frontline workers have access to up-to-date information to more efficiently accomplish their work. Administrators can quickly get an overview of the status of key performance metrics for their entire hospital or region.

Specifically, the *Action Tab* allows us to provide team members with a large amount of actionable data in as few as two-to-four clicks. This optimized view gives users simplified subsets of data—from each metric—for patients with actionable items. This data is pre-filtered to provide the necessary information to quickly identify and positively impact these patients' lives. The *Action Tab* drastically reduces time spent searching throughout patients' charts or even clicking on each individual metric to find the same information.

Simplifying data into actionable items creates clear communication that is practical and useful for frontline workers.

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Simplifying the data into actionable items creates the kind of clear communication that is practically useful in large organizations. It allows team members to focus on priorities and maintain their connection to the organization's larger purpose.

Data and Our Future

The COVID-19 pandemic created some special changes for the healthcare system as a whole. One of the ways AdventHealth responded was by working on a COVID-19 tracker accessible from the Clinical Leader Dashboard. The tracker includes information about active patient monitoring and testing as well as patients who have been cleared after testing negative.

Our existing dashboard infrastructure also allowed us to create a system-wide tool to more efficiently coordinate efforts to serve patients. We created immediate, clear lines of communication between our

leadership and frontline team members. We anticipate that our dashboard will be one of our most vital tools in responding to this pandemic.

Ultimately, data is only useful if people can quickly translate information into action. That is what our tool helps team members accomplish. And while it is only one of the many tools available to our healthcare team, our goal is to care for our patients by supporting our frontline team in real time.