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Staying One Step Ahead Of COVID-19 With A Data-Driven Response

By Jennifer Bresnick, Inkless Creative Services

As the COVID-19 pandemic continues to rage in the United States and around the world, healthcare organizations are under stress from all directions. From managing huge numbers of seriously ill patients and protecting staff members from harm to coping with the financial fallout of pausing elective care, healthcare providers are being pushed to their limit.

Fortunately, they are not alone in their efforts to battle the disease and its wide-ranging impacts on society. Partners from across the industry, including regulators, public health entities, researchers, and technology companies are also taking an active role in the fight – and data is their primary weapon.

Near-real-time visibility into disease outbreaks at the community level and local health system capacity is crucial for monitoring and managing COVID-19.

With more and more hospitals running out of critical care resources, understanding how the virus is spreading, and where the next hotspot will emerge can mean the difference between life and death for an untold number of patients.

In Kansas, Washington State, and Puerto Rico – three very different healthcare environments – a shared data-driven approach to public health management is helping to keep the spread of COVID-19 under control.

Leaders at three cornerstone organizations are developing the best practices that will keep their communities as safe as possible during the challenging months – or years – ahead.

Springing Into Action As COVID-19 Hits American Shores

The nation snapped to high alert about COVID-19 at the beginning of 2020 as cases started to spread across Asia and Europe. In March, the first major outbreak in a Washington State nursing home dominated headlines and thrust EvergreenHealth into the spotlight.

At the Kirkland, Wash. hospital, clinicians and executives had very little to go on as they rapidly developed protocols for treating patients with puzzling and severe symptoms. But they knew that their data analytics tools would be a major asset as they worked through the wave of patients.

“It was clear right away that we needed visibility into the data to make good decisions,” said Jessica Foy, RN, BSN, Director of Clinical Informatics and Analytics at EvergreenHealth.

“Our executives were already comfortable using data to make decisions, so they knew what they wanted to see and why they needed it. That was critical for helping our small analytics team get this project off the ground and start building the dashboards necessary to address the situation.”

It took just one day for Foy’s team to create usable data dashboards for the hospital’s incident command team and colleagues in laboratory services.

“The lab folks needed line item tracking of the tests and results, but the incident command team wanted to see summary-level data,” Foy explained. “They needed to see how many tests were done, how many were positive, and where those tests took place. They needed reports on those numbers several times a day so they could respond to internal needs and the growing number of media requests we were getting at the time.”

“We had the flexibility with our tools from Dimensional Insight to very easily produce what they asked for to tell the story of what was going on in near-real-time with our patients. The fact that we can share automated data that refreshes every four hours isn’t something you can often do in healthcare. It’s made a huge difference in the way the executive team worked.”

After implementing social distancing and other lockdown strategies, Washington saw its rate of new COVID-19 cases diminish in May and June. But as the state eases up on restrictions, the number of patients is once again on the rise.

Hospitals across the region are still refining their approaches to identifying and managing coronavirus patients, and EvergreenHealth is no exception. Foy and her team are currently working on adding more key data elements to their dashboards to support informed care of COVID-19 patients, including data on comorbidities, medications, and additional lab results.

“We’re working on identifying trends in age groups, ethnicity, race, and treatment factors so we can tell a richer story and hopefully uncover some new insights into how to help people recover fully and quickly,” she said.

A Cutting-Edge Approach At A Centuries-Old Hospital

The Hospital de la Concepción in southwest Puerto Rico first opened its doors in 1511. After serving the island for hundreds of years in challenging conditions, including the devastation of Hurricanes Irma and Maria in 2017, hospital leaders are no strangers to crises.

Hospital de la Concepción, one of the most advanced healthcare providers in Puerto Rico, also uses Dimensional Insight solutions to monitor its hospital operations and emergency department needs.

When COVID-19 started to affect Puerto Ricans, Juan Caban Medina, Director of the Information Systems Department, started to prepare for yet another widespread public health event filled with uncertainty and the need for quick thinking.

“Just like in most of the states, there have been inconsistencies in official reporting and lack of integration across healthcare entities. There are also questions about whether we’re testing enough people, what tests we’re using with them, and how to interpret the results when some tests give a high number of false positives or negatives,” Caban Medina said.

To develop more clarity, the hospital started with the basics, he continued.

“We needed insight into how many COVID-19 patients we had, where they are, and what type of tests we’re performing so that we can have those results back into the EHR as soon as possible. Then we needed to develop new business rules to account for the complexities in testing, such as requiring more than one consecutive PCR test to confirm a negative case.”

Providers can now visualize a variety of important metrics, including utilization rates for ICU beds, isolation rooms, and ventilators; the geographic locations of patients; and trends in positive test rates, recoveries, and mortality rates.

Hospital staff views the data hourly, in some cases, to ensure they can care for incoming patients. Caban Medina stressed that the data provides consistency and reliability in a situation that can change incredibly quickly.

“Our epidemiologist and the team in charge of coronavirus response at the hospital use the dashboards to provide daily updates to staff,” he said. “All the administrative staff has access to the data so they can take the proper measures to keep the patients – and our colleagues – safe as we deal with the virus.”

“We strongly believe that our use of data helps patients feel assured that we are well prepared to take care of them. Their trust is a very important part of being able to manage this crisis.”

Enhancing COVID-19 Visibility Across The Care Continuum

Hospitals aren’t the only healthcare stakeholders engaged in the fight against COVID-19. Across the country, they are receiving much-needed support from public health officials, physician practices, and health information exchanges like the Kansas Health Information Network (KHIN).

Non-profit KHIN and its technology arm, KONZA, are providing the data interoperability and analytics insights that help public health departments and primary care practices do their part to care for patients and prevent future outbreaks.

Several different dashboards, alerting systems, and data feeds combine to create an actionable portrait of coronavirus activities in the region.

For public health officials, KONZA offers access to data including patient demographics, diagnosis codes, dates of admission and discharge, and other information important for identifying exposure patterns and initiating contract tracing. Researchers can access de-identified data to understand transmission patterns and verify the information feeds from hospitals.

KONZA also equips primary care providers (PCPs) in Kansas with vital alerts for follow-up and aftercare.

“Most of our primary care doctors will routinely follow up with patients after they’ve been discharged from the hospital,” says Laura McCrary, president and CEO of KONZA. “Transitional care management is a big part of value-based care. PCPs that are participating in accountable care organizations (ACOs) have a time limit for conducting some of these activities, so they need to get access to information about hospitalizations quickly.”

In addition to demographic data, KONZA provides alerts about the patient’s hospitalization, including admit and discharge dates, ICU admission status, and whether the patient was discharged home or to another type of facility.

“Our connected PCPs were already getting that information for any hospitalization,” McCrary explained. “For COVID-19, they can click on a tab and see just their virus patients. They can create a map of positive patients using data from the disease registry

if they want. Then the providers can focus on those individuals and work through that list to make sure every patient is contacted."

Without the health information provided by KONZA, "PCPs likely wouldn't be getting this information," she continued. "This alerting is automated so there isn't any chance the PCP is going to miss it. It's a really important tool to bridge that gap between the hospital and the community, and for population health management at a larger scale."

Lessons Learned On The Front Lines Of The Pandemic

Healthcare providers, researchers, public health departments, and regulators are still working to develop best practices for controlling the pandemic and treating patients with COVID-19.

But all these stakeholders have one thing in common: they agree that comprehensive visibility into near-real-time data is critical for saving lives.

"This is something we need to watch day by day," said Caban Medina. "It's a highly contagious virus and the risks are very large. But in the Hospital de la Concepción, we have been leading the process in Puerto Rico not just because we work successfully with the highest volume of cases in the region, but also because we have the data, the tools, and the processes in place to keep our patients, employees, and medical faculty safe."

At EvergreenHealth, data remains at the heart of the hospital's efforts to control new surges and support communities in the long term.

"It's a little intimidating to be the first organization in the nation to have to deal with a crisis like COVID-19," Foy said. "All eyes were on us at the time, so we were very fortunate to already have the tools and skills in place to respond quickly to an emergent need."

To ensure the effectiveness of new dashboards or data feeds, "make sure you're working with the people who need to use the dashboard when you're designing it," she advised.

"You have to try to understand their vision and their processes so you can include the right data in the right way for them. Our data would not have as much integrity if we didn't work very closely with both our executives and our lab experts, and we wouldn't have been able to jump into action as quickly."

As the pandemic keeps spreading across the country, data analytics will continue to be one of the most valuable weapons at the healthcare system's disposal. Combined with the perseverance and creativity of healthcare professionals, flexible and robust data dashboards will ensure that providers can care for COVID-19 patients and eventually bring an end to this devastating disease.

About The Author

Jennifer Bresnick, founder of Inkless Creative Services, has extensive experience as a writer and thought leader in the health IT space. Her work focuses on how to leverage data-driven tools and organizational change to meet the goals of value-based care.