

Boston Medical Center: Forging a Path to Data-driven Radiology Practice Management

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Situated in Boston's historic South End, Boston Medical Center (BMC) serves a large and diverse patient population. Standing by its stated mission to serve every patient with "Exceptional care. Without exception," BMC is committed to making forward-thinking investments in data-driven radiology practice management.

One big example: Philips' PerformanceBridge Practice.

Leveraging the useful insights, actionable data, and flexibility provided by PerformanceBridge Practice – a solution powered by the combination of technology, analytics, and professional services – BMC's Radiology Department has been able to improve its own operations and workflow, as well as impact performance of the entire facility, which receives more than 1 million patient visits per year.

A challenge and an opportunity

The patient community served by BMC is not just large, but also largely diverse.

- More than 60 percent of BMC patients speak a language other than English.
- Nearly 70 percent of patients are insured by Medicare or Medicaid.

- Nearly 60 percent of patients live in under-served communities.

"These realities greatly impact how BMC serves its community," said Carlos Arellano, Senior Administrative Director of Radiology and Otolaryngology. "We have a diverse patient population and while that is very rewarding, it presents challenges in terms of how we provide them with top quality care. Additionally, having our challenging payer mix, pushes us to be smart in the way we allocate resources across the hospital."

"Patient demographics, insurance, and visit data can all be used to optimize radiology operations," Arellano added, "whether it's to improve patient flow, scheduling tasks, turnaround time, or even to predict patient no-shows for radiology exams. We do this with the overall objective of providing a great experience for our patients and clinicians. Getting the data to fire on all cylinders can only be seen as an opportunity."

Accessing the data

BMC's 40 attending radiologists read more than 300,000 exams per year in a 24/7 operation, covering all modalities and supporting the largest Level 1 trauma

center in New England. Among the first challenges Arellano experienced when he was appointed to lead the department in 2016 was the lack of timely data analytics he believed was critical to support improvements within the department. He recalls the frustration he felt having to wait a week for the Radiology Information System (RIS) to issue a report, and then wait several more weeks just to get the data into a usable format. By the time the information was ready, he couldn't react in time.

"It took three months to put something together that should have taken a couple of days," Arellano said.

Arellano's goal was to get the data he needed much more quickly and efficiently. At that time, data analytics tools for radiology were emerging from a variety of vendors, with each vendor taking its own approach. After completing a comprehensive evaluation of their options, Arellano's team chose to partner with Philips and leverage its PerformanceBridge Practice solution.

"The thing we really liked about PerformanceBridge is that it gives the user flexibility to manipulate the data to be able to create customized dashboards and pull ad hoc information as needed," Arellano said. "Especially for people like me, who are data driven, it's a much better experience because I don't have to rely on anybody to manipulate the data to get what I need. I can do it myself, designing it exactly the way I envision it."

Facilitated data gathering

Once Philips' PerformanceBridge Practice solution was up and running, Arellano's team identified the key



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performance indicators they would focus on analyzing. One of the first: turnaround time for CT requests from the emergency department (ED).

Data gathered with the solution showed that radiology had been relying on a clunky "push" system under which patient transport to and from the ED was coordinated through phone calls. Today, an ED nurse simply clicks a tab in the electronic medical record when the patient is ready for CT; the technologist then places an order for transport to pick up and take the patient to radiology, allowing the technologist to manage the CT flow more efficiently. Thanks to PerformanceBridge, CT turnaround time has fallen by 14%—a significant workflow improvement in a department that performs 30–40 CT scans a day.

Actionable insights gathered via PerformanceBridge are also used daily to broaden the information shared with other departments in the hospital.



Leveraging the useful insights, actionable data, and flexibility provided by PerformanceBridge Practice, BMC's Radiology Department has been able to improve its own operations and workflow.

"We're being transparent with our partners in the hospital about our performance and in parallel identifying areas where we can affect a broader part of the operation," Arellano said. "For instance, if we see that the ED had 20 patients arrive throughout a particular morning, but all the CT orders were crunched into a 30-minute interval, we can go back to them and say, 'if you input the orders as they come in, it will make the whole operation run much more smoothly than if you add all the orders in at one time.'"

The future is near

Arellano and his team have been supportive partners and involved in product development, providing feedback to the PerformanceBridge design team. Working

collaboratively, they are helping to inform new functionalities within the PerformanceBridge solution.

"Right now, we're working together on some artificial intelligence (AI) functionalities that are in development. We're identifying gaps between what the data can do and what we need in operations, and specifically, predictive analytics capabilities," he says.

One opportunity within radiology with a potentially high rate of return would be the ability to predict patient no-shows. Given the cost of many imaging exams, insight into a patient's history, along with certain demographics such as age, insurance, no-show history, and how far in advance an appointment is booked could serve as predictive indicators and identify which patients staff should call with appointment reminders. In terms of resource allocation, scheduling staff would focus their attention on patients with the highest likelihood of missing their appointment.

"In addition to focusing our resources more accurately in these situations and making those reminder calls," Arellano explained, "we can act on that information proactively, using data analyses to help us identify our patients that need us most and be able to provide the appropriate resources so they can get their exams. That's where PerformanceBridge is going, and that functionality helps us better serve our patients while keeping us running efficiently at the same time."

