Sravani Nyayapathy
Manager — Systems, Data and Development
at Sydney Children's Hospitals Network

Dynamic, Real-Time Insights That Reduce Friction for Healthcare Professionals

DECEMBER 5, 2022 - <u>VIEW ONLINE</u>

All data is complex, but healthcare data is in a league of its own. Every patient protocol reflects individual needs, and every procedure will vary according to the changing health environment. Making sense of it all is almost impossible—but its inherent complexity makes it all the more necessary to understand. And when it comes to our most vulnerable citizens, the need for visualised data becomes even more critical.

That's where we found ourselves at the <u>Sydney Children's Hospitals Network</u> (SCHN). We are a pediatric-based specialty network that falls under the umbrella of NSW Health, and we work hard to provide healing to children and their families across the state. This past year, we served 173,941 children, addressed 56,000 admissions, and saw 97,000 emergency presentations with our 8,000+ member team.

The data and analytics team at SCHN sits under the Performance Unit, which also consists of the Clinical Coding, Clinical Costing, Privacy and Medico-Legal, Health Information and Patient Administration, along with MSAU (Business Intelligence, Data Warehousing, Costing and Analytics).

I worked with the team for about a year as a business analyst and now serve as the Manager of Systems, Data, and Development for the sprawling business units of SCHN. I manage the dashboard development team, the data warehouse team, and the EMR programmers—coders who build and write reports from our production EMR.

The goal of SCHN has always been to improve kids' lives and ensure that everybody who walks into our hospital receives the utmost care. While the clinical team works hard to meet healthcare goals and objectives, my team and I work in the background to build representations of what they're doing and how well they're doing.

The Importance of Accessible Data

Healthcare industry data must be fast, accurate, and surfaced in real time to support good clinical decision-making and serve kids from every walk of life. It also needs to be accessible and easily understood by doctors, clinicians, and healthcare experts who need to make rapid-fire decisions with as little friction as possible. It's not enough to throw out data in ways that people won't consume it. It is imperative to build reports (even if they are developed using MS Excel) that are intuitive and allow the clinical teams to retrieve information without having to deep dive or spend more time than necessary.

The best healthcare innovations spring from a solid background of data. It comes from collecting years of information, analysing it from various perspectives, and placing it in a format that's both presentable and readable. It's my job to transform the raw information feeding into the system into readable, accessible, rich, user-friendly dashboards. Our favorite tool for this is Qlik.

When I joined SCHN about four years ago, QlikView was just settling into the reporting landscape. After using some legacy software systems and more traditional Excel reporting, we were starting to feel the need to ramp up our reporting capabilities.

We primarily used Qlik as a visualisation tool for static operational use cases such as HR and finance along with a few clinical dashboards. While these were helpful, they fell short of our ultimate goal: a highly functional set of dashboards that could improve clinical decisions, outcomes, and overall patient care. QlikView was a good tool, but the platform required developers to perform a lot of data transformation and modelling to present information in a clean, accessible, and visually appealing format.

A Maturing Platform for a Maturing Team

As our team grew, so did Qlik, which released Qlik Sense. Not only was the platform substantially more user-friendly, but we found the visualisation possibilities to be highly dynamic. Qlik Sense had the potential to open the doors to a whole new world for our teams and department leads.

We weren't going to transition from QlikView to Qlik Sense without testing the waters first. Our team first built a use case through a couple of dashboards, including one for our inpatient activity. We previously created brief reports used by specific departments, but there was no central point of truth where all departments could convene together. We wanted to build a more holistic, self-service solution adapted for busy executives and department leads across the board.

While QlikView was a great tool, Qlik Sense had a much better user interface and design along with smarter features that allowed for self-serve reporting. A wonderful example is the Outpatient Activity Dashboard that we scoped, designed, and delivered in less than four weeks.

The turnaround time was an unexpected benefit, and we started setting up training sessions for SCHN's various departments.

We had replaced hours and hours of tedious work in terms of ad hoc requests and manual reporting with just a few weeks of pointed development. And it wasn't just a placeholder dashboard, either. The data included specific metrics and deep-dive KPIs, which were useful for quick situational overviews and more granular explorations. Everything was entirely self-directed. A user could look at every number regarding activity, presentations, and output or take a surface-level skim read of high-level insights.

I knew we had found something special, and other clinicians shared this sentiment. Hospital staff immediately saw how a real-time dashboard would cut down a lot of time in manual reporting and physical decision-making. Real-time dashboards present everyone with the same information simultaneously, so nothing needs to be version controlled. Everybody could look at a singular source of truth to make decisions, putting time back in their day to do even more for their patients.

When clinicians can look at a singular source of truth to make decisions, they get more time in their day to do even more for their patients.

SHARE IT   TWEET IT

It wasn't long before we received a flurry of questions about what Qlik could do and how we could make it happen. Complex departments with piles of data were over the moon about building new dashboards, and we set to work helping others start their Qlik journey. We showed off some capabilities by creating a thorough POC and answered any questions along the way.

We've been extremely impressed with the versatility of Qlik Sense since SCHN transitioned a couple of years ago. It's like having the same powerful engine of QlikView with hundreds of new visualisations, which is mission-critical for what we do. Everyone settled into Qlik Sense—until COVID disrupted our flow.

A Precedent-Setting Project in Just 24 Hours

The pandemic pulled everyone in different directions, and my team pivoted to focus on emergent threats and their role in our healthcare system. Government and ministry requirements meant we had to track COVID activity around the network, so we built an initial COVID testing metrics dashboard and demoed it to the executive team.

Our executives returned to us with a more pointed question: "Can you build us a COVID dashboard that gives us information about ED, inpatients, outpatients, destinations, testing sites, and models of care?" It was a job for Qlik, and it became known as our COVID activity dashboard.

We tag-teamed the MSAU team and took an innovative, collaborative, and structured approach to deliver the COVID Total Activity Dashboard. It was developed as part of the SCHN's COVID response to meet the needs of the EOC and virtualKIDS team. The first version of the dashboard was scoped, conceptualized, designed, built, and delivered within 24 hours. This

achievement was unprecedented in the state and was only made possible through the use of SCHN's local EMR data warehouse.

In addition to the EOC and virtualKIDS team, the dashboard further supported and empowered multiple teams within SCHN to plan various stages of the COVID response including Patient Administration, ED data managers, Department Heads, Performance Unit, Infectious Diseases, and Research. The dashboard has been presented across NSW at the Technical Networking Group (TNG), with the Ministry of Health and multiple LHDs commending the work effort in terms of design, development, and usability.

We've gone through a lot of iterations since then. We've added a few statistical modelling graphs that provide basic forecasting data, created new clinical forms, and refined our raw data for EMR and the Virtual Kid's Clinic. Today, everybody from general admissions to the Infectious Disease Team can use the tool to streamline their daily tasks.

Our COVID activity dashboard won Qlik's 2022 Patient-Centered App Innovation Award, perhaps one of the proudest moments in my career. Our dashboard is a rare example of maximum utility from a single workbook, particularly one where clinical teams, operational teams, and executives can work together to develop actionable insights. That award was a testament to the hard work of our entire team.

AI, ML, and the Future of Healthcare Models

Qlik Sense has totally transformed the way we handle reporting. These days, SCHN has moved from building only operational-level dashboards to many clinically focused ones, two of the most popular being the surgical dashboard and COVID dashboard. Both of these have seen phenomenal success and extremely high traffic. They're not just being used by one or two teams but by a host of people within our network.

And we have far more innovation ahead of us as we uncover new insights. We're doing a great job leveraging what we have so far and maturing our data as healthcare evolves. We're also making great strides towards utilising, learning, and implementing AI and ML capabilities.

Beyond the awards and accolades, I'm incredibly proud of working with such a talented and focused team. Everyone takes a personal stake in our work and constantly thinks 10 steps ahead. We're always asking questions. How can we build in the right direction? How can we effectively implement data and channel our knowledge towards bigger and better things? How can we bring up new technologies and make them stick? How can we leverage what's new to ensure our builds are leaner and more streamlined?

Qlik is a huge part of this. We're already channeling our data to track operational KPIs and looking for ways to build dashboards that create forecasted, predictive healthcare models. With Qlik, I don't think it will take us long to get there.