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Better Analytics, Better Health Outcomes: How Data Is Transforming Patient Care in Western Sydney Local Health District

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Healthcare data is powerful. We have so much information to share, and digitising that information puts everything in the patient's hands in a way that's accessible, empowering them to make decisions about their health and wellbeing. For patients, data can help them understand their health journey and the different pathways open to them. For clinicians, data can show better models of care, boost clinical engagement, and speed up the path to treatment. And for us as data analysts, data can be a simple reporting tool or an entity that we can refine and improve to facilitate better patient care.

[Western Sydney Local Health District](#) (WSLHD) is one of the largest local health districts in New South Wales, Australia. We are a leader in clinical services, research, and education, providing a diverse range of public healthcare to nearly one million residents. WSLHD employs more than 13,000 people across over 70 sites, including hospitals and a network of comprehensive, integrated care and community-based services. One of our hospitals, Westmead, has 1,000

beds and will have at least 700 patients at any time. Needless to say, we have a lot of data at our disposal.

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I first came to Western Sydney in 1991 as a clinical biochemist, working as a hospital scientist in biochemistry. It was a great vocation—I worked quite close to the patient, doing rounds with the doctors and nurses. Still, after 10 years, I decided to move to a private company that implemented laboratory information systems. That led me to the field of business intelligence (BI).

Proving Value Through Actionable Insights

When I returned to WSLHD as a Project Manager and then onto Manager, Business Analytics Services, I was one of those few “purple people”: If technical people are blue and hospital people are red, I’m in the middle. I have clinical experience and understand how hospitals work, and I can translate clinicians’ needs into technical terms. More and more, healthcare data analytics professionals perform that act of translation. It’s about integrating the clinical knowledge about patient flows and bringing data into the picture to ultimately improve patient outcomes.

That fits into the vision of the Business Analytics Services team: ‘better analytics solutions, better health outcomes’. It’s not just about creating dashboards to deliver a report to senior management. What’s the true value of creating a dashboard in the first place? My team needs to see the actionable insights the dashboard provides, and we’ve written papers and presented at conferences on evaluating the effectiveness of those dashboards and insights. If a patient comes into emergency and later walks out alive, one way of thinking says that’s a good result. But has the patient’s diabetes management improved? Are they on the right medication now so they won’t return to emergency again? We can integrate different data models to ask these more nuanced questions.

We use a hybrid agile development methodology that delivers more functionality in bite-sized chunks. We will run a project for a couple of weeks or months, and at the end of each sprint we review and ask, “What did we just do, and how can we make it better?” At the end of the project, we conduct another review to determine what we could have done better to improve delivery. We also perform development governance reviews with our team every three months to improve development standards.

That evaluation process is so important to include as part of the project framework. Coupled with a continual improvement and solution-focused approach, it helps the team achieve our vision of delivering the best possible analytic solutions. Better analytics, better health outcomes—I should really put that on a mug.

Empowering Subject Matter Experts to Tell Their Own Stories

The ABM portal helps keep the entire NSW Health system fiscally safe by tracking activity and ensuring we provide appropriate and high-quality healthcare in a cost-efficient way.

We often get so busy with our daily responsibilities that we sometimes don't see the big picture. One of the best things about the Qlik-powered ABM portal is that it encourages curiosity, which is key to finding new insights. We have a cost stratification tab that can break down the cost of every patient. This tab allows us to get a high-level overview and drill down to granular details. Who are our most expensive patients? How long did they stay in the hospital? What was the cost associated with treatment? What was the outcome? When looking at these types of items, it's easier to see patterns and trends worth investigating.

The direct comparisons of our health system counterparts help us better understand our decisions. Using the portal, we might see that our treatment plan requires seven days in the hospital, but the same treatment plan at another hospital only requires five days—why the

clinical variation? This information leads to all sorts of informal discussions about why we do what we do, what's being done differently, and whether there's a better approach.

I often talk about how [Qlik](#) lets data analysts at WSLHD tell the stories of their data. We've done that quite well in our team, but a few years before COVID, we also started empowering the data managers of individual departments with Qlik. These people are the subject matter experts within their fields, such as Mental Health or Drug and Alcohol Services. Previous to Qlik, many of these people were stuck only using Excel spreadsheets for ages. We gave these data managers some training and ongoing support, and now it's a different story. The data manager for Drug and Alcohol Services develops automated dashboards independently, while the manager for Mental Health has created around 10 different dashboards.

We've trained around 30 data analysts in Qlik over the past five years. Of those, 22 are still working in health, and 16 have created their own dashboards. It's a divide-and-conquer approach; I haven't got the resources for my team to cover everything, but we can empower the data managers to upgrade their skills with Qlik and obtain the data they need. The data managers can then provide insights to senior clinicians and their directors. Rather than rely on a static monthly report that has a graph with some trend line, Qlik's dynamic visualisations help departments get to the heart of how to enhance services.

Building a Data Analytics Community Through Continued Support

The best way to build a large number of applications and end users is by offering continued support after the initial training.

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Qlik has been a great solution for us in Western Sydney because of its ease of use. We keep using Qlik because it's accessible, our SMEs can easily pick it up and run with it after a bit of training, and its visualisations and dashboards provide us with a valuable view of our data. We have grown to 1,700 end users who use more than 80 Qlik applications.

We've managed to build such a large number of applications and end users by offering continued support after initial training, such as our bi-monthly Qlik Q&A sessions. We're creating what you might call a data

analytics community of practice. Really, it's a networking opportunity to share ideas. If you admire someone else's dashboard and you want to do something similar, you can ask them how they did it, and my team can add input to provide extra functionality.

We also hold events that promote the greater significance of our efforts. For the past few years, we've held an annual analytics forum where we showcase our dashboards. Professors of medicine rave about some of these dashboards. "This is the only solution of its type in the state," they say, or, "This is only the solution of its type in Australia." It feels incredible to get that feedback on the data models and the visualisations we created and to see the activities of our clinical champions who have supported and collaborated with us. That feeling continues into our "How I Use Your Data" sessions, where an end user explains to the development team how the application they created changes patients' lives. This demonstration puts the entire project in context for developers.

Putting Analytics into Everyone's Toolkit

The impact of all these efforts is that we can dive into better analysis and KPIs on models of care. Rather than say, "I had 50 patients," we can ask, "What happened to those 50 patients?" Shifting the lens translates into increased patient focus and improved clinical engagement. Using the more complex data models available through Qlik, for example, we can provide better insight than only using the electronic medical record (EMR) into what happens to diabetes inpatients. The EMR offers a list of all patients who have diabetes, but it can't provide a medication review across the hospital in three clicks. A Qlik dashboard can do that. It's the difference between reporting on basic information and creating complex models to get better insights from the data.

Another example: It used to be that the hepatologist wouldn't see the results of all the hepatitis tests given in their hospital. A doctor in cardiology might order a patient a hepatitis test and, upon discharge, would note that hepatology should follow up with the patient as an outpatient. Now, one dashboard shows the hepatologist all the hepatitis tests in their hospital before the patient is ever referred. Seeing those patients earlier means getting them on treatment earlier, and now that hepatitis C is curable, possibly curing a patient earlier.

At their ANZ Health and Public Sector Digital Transformation Awards, Qlik recently recognised WSLHD for Excellence in Healthcare. We've been recognised for individual solutions before, but receiving this recognition from our BI peers is a great reflection of the program. Sometimes as a developer, you're so busy with your head down coding that you don't see the bigger picture. That award acknowledges how my team is making a difference in the world.

Data in healthcare should be about giving visibility to everyone—not just the IT department. My vision is to make analytics part of everyone's toolkit. There's an analytics set right for every role in healthcare, and we can work smarter with better data at everyone's disposal.

About Qlik

Qlik's vision is a data-literate world, where everyone can use data and analytics to improve decision-making and solve their most challenging problems. A private company, Qlik offers real-time data integration and analytics solutions, powered by Qlik Cloud, to close the gaps between data, insights and action. By transforming data into Active Intelligence, businesses can drive better decisions, improve revenue and profitability, and optimize customer relationships. Qlik serves more than 38,000 active customers in over 100 countries. [Qlik.com](https://www.qlik.com)