



Improving patient care and cutting infection rates through big data analytics

U.S. Public Health System | Healthcare



Business opportunity

Central lines are catheters inserted into large veins to provide medicines, fluids and nutrition for patients. Where hygiene standards are not rigorously observed, central line-associated bloodstream infections (CLABSIs) can result. CLABSIs cause patient harm, and result in thousands of deaths and billions of dollars in extra costs annually – including regulatory fines of about \$42,000 per incident in the U.S.

To improve patient safety, reduce fines and protect its reputation, one public health system set out to enhance the visibility of processes designed to prevent CLABSIs. A key goal was to ensure that medical staff did not accidentally overlook scheduled procedures to clean central lines.

Technical challenge

In operational terms, a key challenge was that it was easy to accidentally delay vital hygiene operations during hectic shifts. For example, a sudden medical crisis might require multiple nurses to shift their focus to a single patient, putting scheduled hygiene tasks on hold. There was a risk – particularly when nursing shifts changed – that the new nurses would miss these delayed tasks.

The health system had plenty of data but it was not being surfaced in a useful and timely way for nurse managers. As a result, with nursing teams already overstretched, it was hard to ensure that vital cleaning of central lines was prioritized.

Our solution

Together, the health system and [Kyndryl Consult](#) created a compliance reporting solution that surfaces powerful insights from data, running on [Microsoft Azure](#). This highly targeted solution draws relevant data from the Epic EHR system and governs, protects and manages it with Microsoft Purview, then runs analytics on it using Apache Spark in Azure Synapse Analytics.

Beyond technology expertise, Kyndryl brought deep experience in solving business challenges with data and leveraged relevant audit expertise from the financial services industry. Kyndryl also empowered clinical staff by providing vital training on how the analytics solution could free them to focus on care.

Kyndryl subsequently extended the solution into monitoring other hospital-acquired infections, falls and room availability, all important to improving patient care and nursing capabilities.



The power of partnership

Building the solution on Microsoft Azure enabled the health system to benefit from pre-built, best-of-breed data and Power BI components.

What progress looks like

With the Kyndryl solution in place, preliminary data suggests the health system's CLABSI rate has significantly improved and subsequently decreased the risk of costly regulatory fines. In addition to improving outcomes for patients, the reduced CLABSI rates greatly lessen the stress and worry for the families of seriously ill patients. The solution:

- Provides accurate and visible CLABSI rates; reduces risk of regulatory fines
- Highlights potential procedural errors in direct patient care, helping save lives and helping nurses perform better
- Ensures data reliability and consistency across different sources and models
- Facilitates the use of data pipelines and parameters for deployment, maintenance and re-use, saving time and resources

Meet the team

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