



Healthcare providers

Study of three international health systems showcases the benefits of supply chain transformation

The World Health Innovation Network (WIN) provides the first research of its kind by developing empirical case studies that quantify the operational and financial benefits of highly automated and integrated supply chain infrastructure in health systems, enabled by global standards adoption. Examining Alberta Health Services (AHS) in Canada, the National Health Service (NHS) in England, and Mercy in the US, the research uncovers their implementation strategies, outlines the emerging impact and identifies returns-on-investment as high as 7:1 from adopting supply chain processes to strengthen health system performance. Although, the case studies profile supply chain implementations in three different countries (characterised by unique leadership approaches, implementation strategies and system governance structures), all three reported significant outcomes.

By Dr. Anne Snowden



The need for research

In 2016, the seminal research paper, *Visibility: The New Value Proposition for Health Systems*, proposed a new direction to improve patient safety and health system performance by transforming supply chain infrastructure to increase visibility and transparency through global supply chain standards adoption.

Following up that paper, empirical case studies documenting the evidence of the impact of supply chain infrastructure across three health systems have been produced. This type of evidence was identified as a critical gap in knowledge needed to inform governments and health system leaders of the value and opportunity to improve quality and safety of care for patients and strengthen health system performance, all enabled by the adoption of global standards.

These organisations were chosen because of their system-level approach to transforming supply chain infrastructure across the entire health system. AHS, NHS and Mercy are also considered international leaders in supply chain transformation.

The research

Each case offers a unique perspective regarding the need for supply chain transformation and the opportunity it offers health system safety and performance.

Each health system has a unique governance structure and leadership strategies that progressed in very different ways. AHS and the NHS are both publicly funded, while Mercy is a for-profit health system.

The case study data was derived from observations, public health system reports, financial data, online publications and key informant interviews. Findings highlight drivers of change, evidence of returns-on-investment, and the outcome and impact achieved through the transformation of supply chain.

Alberta Health Services

Alberta Health Services is Canada's first and largest province-wide, fully integrated health system. When Alberta's health regions were consolidated into one publicly funded health system in 2008, it provided a unique opportunity to accelerate supply chain integration and transparency.

AHS' approach to introducing supply chain transparency focused on four key areas:

1. Implementation of ERP (Enterprise Resource Management Programme) infrastructure:

By implementing new procurement software province-wide, AHS standardised all e-commerce processes across the province. This enabled streamlining of procurement processes to ensure clinical programmes had the products they needed, when and where they needed them.

2. Price harmonisation: In consolidating Alberta's previous health authorities, AHS gained visibility to multiple contracts with different price points for the same item, allowing them to standardise pricing and gain economies of scale to purchase products at the lowest price possible.

3. Province-wide item master and data infrastructure: The AHS team adopted global standards to identify all products with unique item numbers in an item master file to create an accurate item master, including product data with 100,000 items.

4. Centralised warehouse strategy: Alberta leaders created a provincial warehouse system to efficiently stock and distribute supplies to all sites across the province. By centralising, AHS gained greater visibility of products, reduced duplication and reduced waste due to surplus or expired items.

Key wins for AHS include:

- ✓ 7:1 return-on-investment in supply chain efficiency and inventory cost savings
- ✓ One-time savings of \$80 million from the consolidation of procurement contracts and standardisation of pricing

National Health Service (NHS) of England

The NHS is a nationally governed health system under the leadership of the UK's Secretary of State for Health and Social Care.

Two crises influenced the NHS to transform supply chain processes: a public inquiry into a high number of patient deaths at the Mid Staffordshire NHS Trust from 2005-2008 and the recall of breast implants in 2012, which demonstrated NHS' inability to identify the 30,000 women who had received the defective implants.

These safety events informed the NHS' strategy to reduce variation and strengthen safety, a programme called Scan4Safety, which supported participating hospitals to adopt both GS1 and PEPPOL standards.

The Scan4Safety programme goals are defined as "patient, product, place and process." Adoption of GS1 and PEPPOL standards enabled NHS trusts to track and trace people, products, places and care processes to improve efficiency of health services and patient safety. This encompasses:

- Patient—improving safety, improving care
- Product—everything recorded, everything accounted for
- Place—everything trackable, everything traceable
- Process—simplifying processes, releasing time to care for clinicians

Key wins for the NHS include:

- ✓ Anticipated £1.5 billion in inventory savings when Scan4Safety is implemented across all 148 trusts
- ✓ 4:1 return-on-investment in inventory savings alone. This figure is expected to be higher once clinician time savings and patient safety outcomes are counted.
- ✓ Average savings of £2.4 million per participating hospital trust realised from operational efficiencies
- ✓ Average savings of the equivalent of 16 full-time staff per trust gained from releasing clinician time from managing supply chain processes back to patient care
- ✓ Patient safety improvements with 93 percent of implants now being accurately tracked

Read more about the Scan4Safety programme on [page 101](#). Case studies about two NHS trusts— University Hospitals of Derby and Burton NHS Foundation Trust and Leeds Teaching Hospitals NHS Trust —can also be found on [page 43](#) and [page 46](#), respectively.

Mercy

Mercy, the fifth largest Catholic health system in the US, viewed supply chain as a strategic asset for health systems to improve operational, clinical and financial performance.

Mercy’s objectives for supply chain transparency focused on three goals:

- 1. High-value care delivered by clinical programmes:** Supply chain transparency enabled by GS1 global standards has allowed products to be tracked and traced from manufacturer to individual patient at the point of care, documenting care procedures and clinicians linked to patient outcomes. Automated inventory management systems track products to reduce the risk of using expired or recalled products in surgical procedures.

- 2. Sustainable change in operational performance:**

Point-of-care scanning has substantially reduced clinician workload burden due to efficiency of scanning products and uploading product data into a patient’s electronic health record (EHR), overcoming the time-intensive burden of manual documentation.

- 3. Strengthened financial outcomes across the system:** Three key areas provide the greatest financial savings.

- Asset inventory management: Dynamic inventory management in high-cost programmes accurately tracks product use and identifies the best outcome for patients at the lowest cost.
- Inventory reduction: Inventory waste has been minimised by improving product forecasting based on greater visibility of product use and expected patient volumes.
- Charge capture: Automated capture of product use due to point-of-care scanning achieves greater accuracy in case-costing, creating transparency of product costs per case and labour costs per case.

Key wins for Mercy include:

- ✓ Reduction of “never events” by 70 percent in participating hospitals as a result of implementing standards-enabled, point-of-care scanning in perioperative programmes
- ✓ 29 percent reduction in labour costs since implementing point-of-care scanning in perioperative programmes
- ✓ \$81 million growth in revenue over a four-year period since implementing tracking and tracing in perioperative programmes at just two of its 45 hospitals
- ✓ Identification of \$2.4 million in unrecognised inventory assets
- ✓ Optimisation of charge capture by \$13 million in just one year after implementation

Read the Mercy case study on [page 60](#).

Key findings across the case studies

The role of executive and government leadership:

All three cases identified the need for both executive leadership and supply chain champions to drive implementation. In Alberta and the NHS, large-scale change was driven by senior levels of government. At Mercy, it came from the strong mandate of a CEO who believed in the significant value of supply chain transformation.

Cost savings: Significant economic impact of supply chain transformation was demonstrated in all three systems. Significant cost savings generated support and momentum for implementation across the health systems.

Clinical time: Each organisation reported that significant labour cost savings were achieved by releasing clinician time from managing supply chain processes back to patient care.

Integration: Integrating supply chain expertise into clinical programmes was identified as one of the key conditions for success. Integrating supply chain data and technology into clinical data and processes of care advanced efficiency in care delivery, strengthened safety and quality outcomes for patients, and improved clinician efficiency and effectiveness.

Conclusion

In all three cases, there was a very strong leadership mandate to transform supply chain infrastructure to advance safety, quality and financial sustainability. Although the three health systems implemented supply chain infrastructure to achieve different objectives, each health system demonstrated significant financial cost savings, improved patient safety and strengthened efficiency, allowing more time for clinicians to spend on patient care.

About the Author



Dr. Anne Snowden is a professor and Academic Chair of the World Health Innovation Network (WIN), and Scientific Director and CEO of SCAN Health, a Networks of Centres of Excellence International Knowledge Translation Platform located at the University of Windsor's

Odette School of Business. Dr. Snowden works to build collaborative partnerships around the globe to advance innovation and scalability of innovation across health systems to strengthen performance, economic value and sustainability.

About World Health Innovation Network

The World Health Innovation Network (WIN) is based at the Odette School of Business at the University of Windsor, Ontario, Canada under the leadership of world renowned researcher, Dr. Anne Snowden. WIN brokers partnerships between key stakeholders to source, embed and scale innovations in health systems. WIN develops the evidence of impact and scalability across health systems and disseminates this information to accelerate health system transformation, drive economic growth and improve patient outcomes.

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