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Safer, more efficient care starts with a simple scan

Perspectives from executive leaders

"I would encourage other doctors around the world to get involved and support the adoption of standards. Knowing that we can make our hospitals better and safer is compelling enough to make standards part of everyone's job."

bernhoven

– **Dr. Erik van Ark**, Executive Director of Medical Staff, Chairman of Operating Rooms, Bernhoven Hospital, Netherlands

Executive Summary

Hospitals worldwide are making significant changes in their operations to improve patient care, safety and outcomes. They are turning manual processes into digital ones and realising the value of GS1 standards as critical enablers of this transformation.

GS1 standards are enabling healthcare providers to uniquely identify products, patients, caregivers, assets and locations for transparent processes across the healthcare value chain. GS1 standards provide a global common language—identification, barcodes and data sharing—so that all stakeholders can work together seamlessly.

To better understand the impact of standards on hospital operations, GS1, the not-for-profit standards organisation, spoke with clinical and non-clinical executives from multiple parts of the healthcare industry.

They advised that clinicians are teaming with non-clinical professionals to deliver better and safer patient care through comparative analysis of procedures and outcomes, extending the value of standards from the supply chain into doctors' hands.

Hospitals are collaborating more and more with suppliers and group purchasing organisations (GPOs), leveraging GS1 standards to determine products' total lifecycle costs and effectiveness in treating patients.

Evidence is emerging that demonstrates the tangible benefits of using GS1 standards to create a positive patient experience and drive significant improvement in order-to-cash, stock management, medication administration, asset tracking and other processes.

The use of GS1 standards has become a strategic priority for hospitals— an investment that delivers near-term returns and a foundation for sustained success.

The executives counselled that healthcare players can no longer wait to use standards—the health of the industry depends on it. As hospitals digitise their processes and harness data for the benefit of clinicians and patients alike, adopting GS1 standards has never been more important.

GS1 offers its sincerest appreciation to the following executive contributors:

Rosemary Kennedy, Executive Director-Business and Infrastructure, Australian Capital Territory Health – Australia

Erik van Ark, MD, Director of Medical Staff, Chairman of Operating Rooms, Bernhoven Hospital – Netherlands

Lars Nielsen, CEO, Capital Region Hospital Pharmacy – Denmark

Kevin Downs, Director of Finance and Performance, Derby Teaching Hospitals NHS Foundation Trust – UK

Deb Templeton, Chief of Care Support Services, Geisinger Health System – U.S.

The Rt Hon Lord Philip Hunt PC OBE, Shadow Deputy Leader, House of Lords, Labour spokesperson for Health – UK

Matt Malone, CIO, Healthscope – Australia

Megan Main, CEO, New Zealand Health Partnerships – New Zealand

Alex van der Putten, Supply Chain Manager, Radboud University Medical Centre – Netherlands

Dominique Legouge, CEO, Réseau des Acheteurs Hospitaliers – France

Vincent Callan, Director of Facilities Management, St. James's Hospital – Ireland

Wilfried E. B. Winzer, CFO, University Hospital in Dresden – Germany

A passion for creating a digital health system

One constant driver for healthcare providers worldwide is to do more, better and with less. As the number of patients accelerates, hospitals are being tasked to improve patient outcomes, prevent errors and control costs—all with the same level of resources.

Erik van Ark, MD, is an anesthesiologist, Executive Director of Medical Staff and Chairman of Operating Rooms at Bernhoven Hospital in the Netherlands. Dr. van Ark summarises today's challenges in healthcare, "Every business unit in our hospital is led by a doctor and a non-clinical business manager. Together we put the patient and staff at the centre of all care processes, striving to deliver the best possible care. Yet, with stricter controls and less funding from government and insurance companies, we need to perform in much more efficient and standardised ways."

Deb Templeton, a pharmacist and Chief of Care Support Services for the Geisinger Health System in the U.S. echoes healthcare's conundrum, "We need to ensure our quality of care is where it needs to be while lowering our overall cost structure and reducing the complexity of our operations."

Ms. Templeton quickly points to trusted product data—used by clinicians and non-clinicians—that holds tremendous promise to help hospitals thrive during these turbulent times.

Rosemary Kennedy, Executive Director-Business and Infrastructure, Health Directorate of the Australian Capital Territory (ACT), agrees the digital world allows hospitals "to do many things that we could never do before. There's a huge amount of patient safety that can be realised through the use of digital transactions and processes."

In her government leadership position, Ms. Kennedy calls on her clinical experience of 20 years to drive the transformation of ACT's healthcare system. "I've been on the ground level of hospital operations and have a personal passion to make sure we change our processes in the right way," explains Ms. Kennedy.

For the past five years, Ms. Kennedy and ACT teams have been creating a digital health system in the Australian Capital Territory—a group of projects designed to make workflows more efficient and safety practices more effective.

"Our aim is to constantly minimise risk since, after all, patients are not a commodity," says Ms. Kennedy. "Early on in our decision process, it became obvious to our executive committee that we needed GS1 standards. Otherwise, we would risk implementing processes and systems that didn't capture the same data and allow us to use it effectively."

The Rt Hon Lord Philip Hunt PC OBE, Shadow Deputy Leader of the House of Lords and Labour spokesperson for Health, has focused for many years on health services and medicine as one of his major policy interests. Lord Hunt continues to work for improvements in Britain's healthcare system with the Department of Health's National Health Service (NHS).

"It's a very challenging yet exciting time in our country's healthcare industry as we transition to digital processes," says Lord Hunt. "The NHS in its latest procurement policy is mandating the use of GS1 standards along with enhancements in the procurement process—something that will have an immediate positive impact on the cost of buying goods, equipment and services."

"Early on in our decision process, it became obvious to our executive committee that we needed GS1 standards. Otherwise, we would risk implementing processes and systems that didn't capture the same data and allow us to use it effectively."

– **Rosemary Kennedy**, Executive Director-Business and Infrastructure, Australian Capital Territory Health

"The NHS (National Health Service) recognises the direct impact standards have on patient safety. They are now conducting demonstrations and calling on trusts to 'scan for safety.'"

– **The Rt Hon Lord Philip Hunt PC OBE**, Shadow Deputy Leader, House of Lords, Labour spokesperson for Health

"Assessing the value of products on patient outcomes has become an important part of the procurement process. To do this, hospitals need trusted product data."

resah +
Réseau des Acheteurs Hospitaliers

– **Dominique Legouge**, CEO,
Réseau des Acheteurs Hospitaliers

"In addition to lower costs, the NHS recognises the direct impact standards have on patient safety," continues Lord Hunt. "They are now conducting demonstrations and calling on trusts to 'scan for safety.'"

Procurement and patient care

Hospital executives are taking bold steps to leverage technology and standards while collaborating more than ever with suppliers and GPOs. The driving force is improved patient care—giving back time to clinicians and nurses to care for patients.

Dominique Legouge, CEO of Réseau des Acheteurs Hospitaliers (Resah) notes how hospitals that once took primarily a price-based approach to procurement are now assessing the total cost of ownership of products. "They are considering the complete life cycles of products and their impact on patient care," explains Mr. Legouge. "Assessing the value of products on patient outcomes has become an important part of the procurement process. To do this, hospitals need trusted product data."

Established in 2007 as a not-for-profit organisation, Resah is promoting the strategic value of healthcare procurement in France and abroad. "We have organised a collaborative effort with healthcare players based on the GDSN® (GS1 Global Data Synchronisation Network™)," explains Mr. Legouge. "With standardised, quality data from suppliers, hospitals can then use information to determine products' life cycles, trace products and conduct investigations."

Mr. Legouge believes that, more than ever before, controlling data is key for a hospital's future success. "Healthcare will progress, thanks to the management of trusted data. Data is and will continue to be at the heart of a competitive, safe hospital."

Megan Main, CEO of New Zealand Health Partnerships and former CEO of Health Purchasing Victoria in Australia, agrees that procurement has a direct impact on patient safety and care.

"Hospital conversations are becoming increasingly sophisticated about the overall value of products. 'Product A' may be slightly more expensive than 'product B,' but it is more effective in getting patients out of the hospital sooner or producing better outcomes or it's safer."

With more than 12 years of health supply chain experience, Ms. Main has witnessed the maturity of hospital procurement and supply chain organisations, transitioning from being considered as a cost centre to a source of value.

"Clinicians are now working with supply chain professionals in order to deliver better and safer patient care—something we didn't see 10 years ago. Together, they are taking the benefits of using standards to a whole different level."

Matt Malone, CIO with Healthscope advises that doctors in addition to patients are "his primary customers" in this large private health system in Australia.

"We are making technology and supply chain investments to ensure our doctors have consistently positive experiences when practicing at our hospitals," says Mr. Malone. "Equally important is the patient's experience. Always having the right products there for doctors when needed for their patients can give us a competitive edge and contributes to patient safety."

Ms. Templeton with Geisinger adds, "Our implementation of standards has definitely expanded beyond the loading dock. We call it our 'dock to doc' strategy where the value of standards touches clinicians and patients."

The choice is clear

Dr. van Ark supported Bernhoven's implementation of GS1 standards in his OR department to better manage medical devices. "Patient safety was the major driver for us, yet the financial benefits were a crucial side effect," explains Dr. van Ark. "We used the financial returns to cover the needed investment, thus substantiating the business case."

Today, Dr. van Ark's OR department has one automated process in place to handle the vast majority of medical devices as they enter the OR and are ultimately used for surgeries. Furthermore, the recall process for medical devices has dramatically improved with the use of standards. Now, the OR department can quickly retrieve recalled devices by using the device's unique identification number, the Global Trade Item Number® (GTIN®) and batch number.

"We're able to efficiently carry out a 100 percent complete recall within the shortest possible time," says Dr. van Ark. "Our standards-based system gives us the needed information on the patients affected and the devices still in stock."

The department has taken total control of its stock, reducing levels by 31 percent and waste by 80 percent. By implementing minimum and maximum parameters, out-of-stock situations are now a thing of the past.

Approximately 70 percent of suppliers are already using GS1 barcodes on medical devices—a requirement that is part of Bernhoven's purchase contract.

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NZ HEALTH PARTNERSHIPS

– **Megan Main**, CEO,
New Zealand Health Partnerships

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> "For me, the choice is clear: Using standards should no longer be a choice. The benefits are tangible and the potential enormous as we expand our use of standards to other parts of the hospital."

bernhoven

– **Dr. Erik van Ark**, Executive Director of Medical Staff, Chairman of Operating Rooms, Bernhoven Hospital, Netherlands

"By not using standards, there are drawbacks that introduce risks, errors and elaborate work-arounds in our department," says Dr. van Ark. "For me, the choice is clear: Using standards should no longer be a choice. The benefits are tangible and the potential enormous as we expand our use of standards to other parts of the hospital."

Radboud University Medical Centre (Radboudumc), one of the largest hospitals and a leading academic centre in the Netherlands, has also implemented a stock management system that Alex van der Putten, Supply Chain Manager continues to enhance. With a retail background, Mr. van der Putten leverages this experience and expertise to continuously optimise the level of stock and reduce associated waste.

To date, Radboudumc has cut stock waste by 25 percent with plans for an additional 70 percent reduction. Stock handling costs are also declining as a result of optimising the procure-to-pay chain.

"We have the mission 'to make a significant impact on healthcare,' therefore, patient safety is the number one driver of changes in our stock management processes," says Mr. van der Putten. "One way to measure this is the availability of stock for procedures and care. My target is 100 percent, which is possible with GS1 standards."

Pushing the boundaries

Derby Teaching Hospitals NHS Trust in the UK has also experienced a reduction in its stock and waste by scanning GS1 standards on devices and consumables in its theatres. Kevin Downs, Director of Finance and Performance, developed the initial business case for implementing standards and monitors performance results.

"After accounting for its cost, with our stock system we are making a demonstrable five to seven percent reduction of consumables across all theatres," says Mr. Downs. "Since stock is now readily available, we're getting two days back for performing surgeries."

Derby quickly moved to use GS1 standards to also identify its staff, patients and even clinical procedures. "Our clinicians are pushing the boundaries in their respective areas of specialisation and, as result, undertake some complex patient cases," says Mr. Downs. "GS1 standards are now helping them collect the data needed to analyse the comorbidity and outcomes of procedures performed."

GS1 standards also enable Derby to identify the resources and time required for procedures to calculate complete and accurate costs. "Our clinicians trust the information we present to them about their cost per procedure, and how they compare to the costs of their colleagues," says Downs. "With improved information and cooperation, clinicians have identified process changes that have translated into significant cost savings."

GS1 identifiers have also been assigned to possible complications and treatments associated with each procedure.

"If a patient, for example, has unexpected bleeding as a complication, we'll link this patient and the procedure to the complication, using GS1 identifiers," explains Mr. Downs. "This will provide our clinicians with an electronic database of information about patients, procedures and any complications."

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Radboudumc

– **Alex van der Putten**, Supply Chain Manager, Radboud University Medical Centre

Simple scans enable safer care
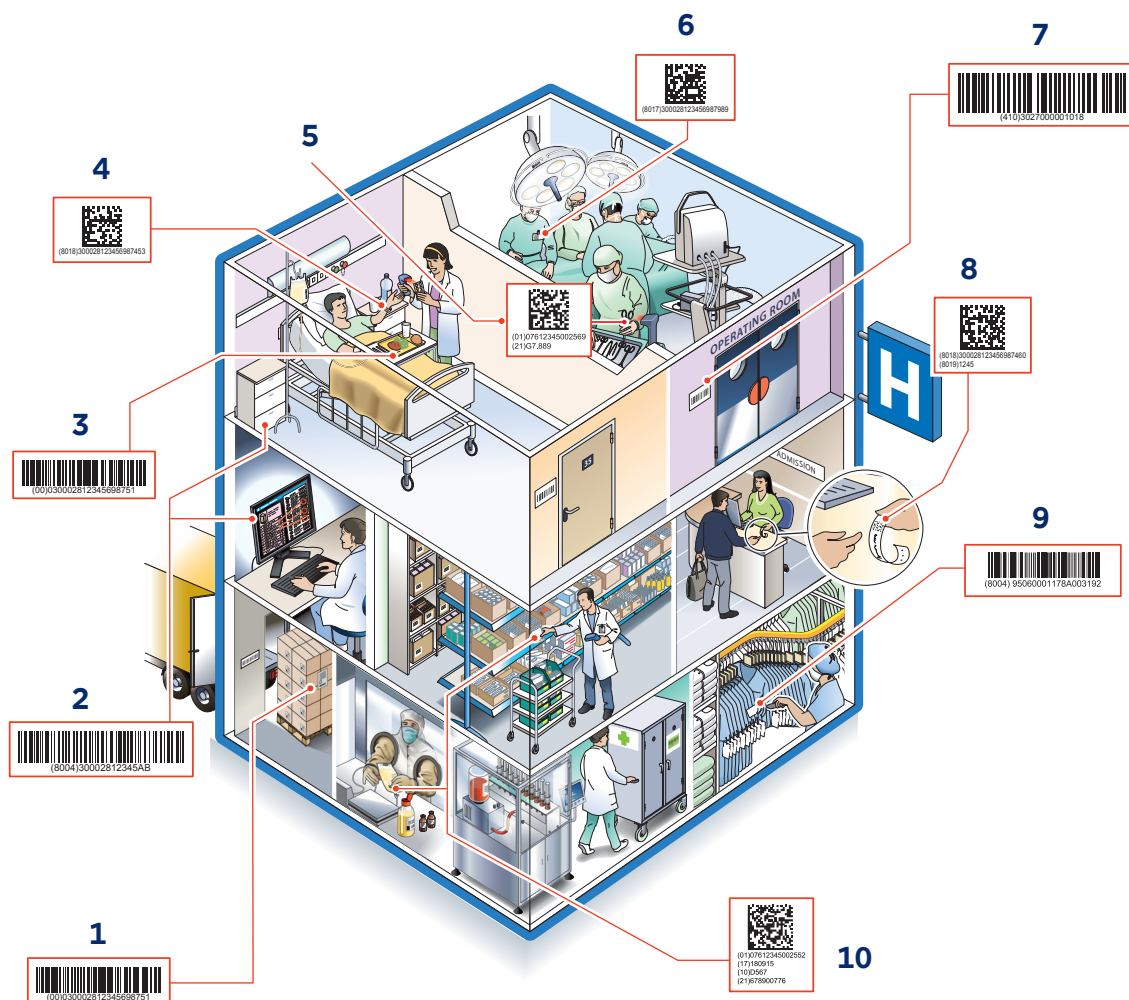
1. **Logistic unit identification:** GS1 barcodes are scanned at the point of receipt of goods into the hospital storage area for accurate receiving, improved stock management and traceability.

2. **Asset identification:** Barcodes containing GS1 identifiers for hospital equipment, including furniture and medical assets are scanned to enable efficient asset tracking and service history recording.

3. **Catering transport unit identification:** GS1 identifiers and barcodes are used to confirm that the right patients get the right meals.

4. **Patient identification:** GS1 identifiers and barcodes on patient wristbands ensure that patients are accurately identified during processes such as medication administration and pathology sample collection. This also ensures activities are accurately captured in electronic health records.

5. **Surgical instrument identification:** By scanning GS1 identifiers in barcodes on surgical instruments, hospitals can trace the use of each instrument to an individual patient in case of infection or recall.

6. **Caregiver identification:** GS1 identifiers and barcodes enable the identification of caregivers during care processes and the recording of this information in patients' electronic health records.

7. **Location identification:** GS1 identifiers and barcodes are used to help ensure that deliveries are made to the right locations within the hospital.

8. **Patient identification:** A GS1 identifier and barcode is issued at the point of patient administration and is used throughout the patient's hospital stay.

9. **Linen identification:** Medical linens and other inventory items can be traced and more effectively managed with GS1 identifiers and barcodes.

10. **Product identification:** GS1 identifiers and barcodes are used to manage inventory, prepare deliveries and trace products internally and externally – as well as associate information with the electronic patient record. The batch number, expiry date and serial number allow for more granular traceability.

"For example, 'nine times out of 10, if a bleed complication occurs during a particular procedure, we can expect up to three days of extra needed recuperation.' Information enabled by GS1 standards could help clinicians determine if and how a medical procedure and treatment could be changed and the possible impact on patient outcomes," adds Mr. Downs.

Where it matters most

At University Hospital Dresden, collaboration between finance, procurement, IT and clinicians is a natural way of working. CFO Wilfried E. B. Winzer is responsible for not only the financial health of the hospital, but also its logistics, information technology and administrative operations. Mr. Winzer works closely with the hospital's CEO, Professor Dr. Michael Albrecht, when making strategic decisions and investments in the hospital.

"I was convinced that we needed standards to make the hospital safer and processes more efficient," says Mr. Winzer. "If we had continued handling processes in the same time-intensive way, we would need many more people—a cost that could not be sustained over time."

Under Mr. Winzer's leadership, University Hospital Dresden is quickly becoming a fully digital hospital with many of its processes automated. Starting with a pilot in its orthopaedic department, the hospital now relies on GS1 standards for full traceability of medical devices for improved patient safety and in compliance with Germany's medical device regulatory requirements.

The order-to-cash process is also fully automated, using GS1 EDI communications and standards with many of Dresden's suppliers. As devices are used, each is scanned for updating the hospital's stock system and each patient's electronic medical record.

When stock levels reach a specified threshold, automated orders are placed by Dresden with confirmations of orders received from suppliers. As orders arrive and stock is replenished, barcodes are scanned to update Dresden's stock system and invoices are approved for expeditious payments to suppliers.

"Throughout our administrative processes, we are preventing errors and reducing risks by reducing human intervention," says Mr. Winzer. "At the same time, we are increasing the time our caregivers spend with patients—where human intervention matters most."

Managing risks in care

Vincent Callan, Director of Facilities Management with St. James's Hospital in Dublin, explains the efficiency gains from their automated order-to-cash process. "We placed an order with one of our main suppliers, received the products and the invoice fully cleared for payment in a four-hour cycle," says Callan. "Before using standards and EDI, the minimum timeframe would be a number of days, and if discrepancies existed, it could be weeks or even months for completion of the full cycle—all due to a misalignment of data."

Starting on the ground level more than 20 years ago, Mr. Callan has worked "in about every corner" of St. James's. He is now responsible for the majority of non-clinical services and part of the hospital's Executive team.

Through international benchmarking, Mr. Callan has shaped and continues to hone the hospital's operational strategy that supports eProcurement and future improvements such as medicine dispensing and lab sample traceability.

"Information enabled by GS1 standards could help clinicians determine if and how a medical procedure and treatment could be changed and the possible impact on patient outcomes."

Derby Teaching Hospitals NHS
NHS Foundation Trust

– **Kevin Downs**, Director of Finance and Performance, Derby Teaching Hospitals NHS Foundation Trust

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Universitätsklinikum Carl Gustav Carus
DIE DRESDNER.

– **Wilfried E. B. Winzer**, CFO, University Hospital in Dresden

"The business case to invest in GS1 standards was obvious to us," explains Mr. Callan. "The processes supporting traceability were very paper based and presented significant risk for our clinical environment. Starting the journey to adopt standards was the natural next step to manage risk and further support our hospital's mission to deliver best-in-class care for our patients."

Circle of quality medication management

One centralised pharmacy in the Capital Region of Denmark now serves seven hospitals after a merger of three pharmacies in 2007. With this reorganisation the Hospital Pharmacy needed to gain tremendous efficiencies—from receiving products from suppliers to managing warehouse operations and on to serving its hospitals.

CEO Lars Nielsen also had patients in mind when he decided to use GS1 standards to ensure the right patient received the right medicine. "We call it our 'circle of quality' for medication management," says Mr. Nielsen. "As products arrive, we scan GS1 barcodes to not only update our stock system but to verify that we received the right product. As doctors place prescriptions for their patients in our system, the pharmacy clinical staff ensures the right products are being ordered. As these orders are fulfilled and leave our warehouse, barcodes are scanned to verify the right products are being shipped."

The circle of quality continues as medicines are administered in Capital Region's hospitals. "In hospitals, identification of medicines need to be applied at the primary level, rather than just the package level," says Mr. Nielsen. "By using our collective buying power via our GPO and asking our suppliers to comply with our needs, about 95 percent of our top suppliers use GS1 barcodes, and 80 percent of all primary packages now carry them."

When administering medicine, the nurse verifies that it is the right medicine by scanning the primary packet's barcode. The dosage is dropped into a flask with the barcode identifying the patient. Before giving the medicine to the patient, the patient's wristband with her identifier encoded in a barcode is scanned along with the barcode on the flask. If there is a match, the nurse is assured that the right medicine is being administered to the right patient, thus completing the circle of quality.

Accuracy enables reduction of complexity

When Geisinger started its journey with GS1 standards in 2005, it was spurred by the need to get the right deliveries to the right hospital, on time. "Our footprint spreads across a large geographic area," says Ms. Templeton. "A crucial order would be delivered to the wrong hospital. It was frustrating for everyone, especially for our clinicians waiting on the order. And it certainly didn't meet our standards of care."

Geisinger started adopting standards by assigning Global Location Numbers (GLNs) to each of its locations and departments. Since then, Geisinger has continued to invest in implementing standards and technology for automating and improving processes.

"Standards bring accuracy to transactional processes. This accuracy enables greater transparency in processes by helping to eliminate 'noise,' and yields different conversations and interactions with our suppliers as well as how we deliver services to our patients," says Ms. Templeton. "With transparency, we can begin to reduce 'chaos' and its inherent costs."

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OSPIDÉAL NAOMH SÉAMAS
ST. JAMES'S HOSPITAL

– **Vincent Callan**, Director of Facilities Management, St. James's Hospital

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The Hospital Pharmacy

– **Lars Nielsen**, CEO, Capital Region Hospital Pharmacy

"The costs to adopt standards are minimal when compared to the costs of errors and 'business as usual.' People may see the thousands of dollars we invest to upgrade a business system because this is a focused, one-time implementation event, yet they fail to see the millions of dollars in wasted time due to system inaccuracies that happen at the transactional speed of technology today!"

Geisinger

– **Deb Templeton**, Chief of Care Support Services, Geisinger Health System

When considering investing in the implementations of standards, Ms. Templeton stresses the need to focus on the costs associated with waste. "The costs to adopt standards are minimal when compared to the costs of errors and 'business as usual.' People may see the thousands of dollars we invest to upgrade a business system because this is a focused, one-time implementation event, yet they fail to see the millions of dollars in wasted time due to system inaccuracies that happen at the transactional speed of technology today!"

Based on the key tenets of standards—identify, capture and share—Geisinger has transitioned from traditional tracking in the supply chain to its health system where standards are being actively deployed. The company is using a real-time location system (RTLS) with active EPC-enabled RFID (radio frequency identification) that allow it to track employees, equipment and patients. With active tracking tags placed on patient wristbands, Geisinger is conducting a pilot in one of its hospitals to track patient flows and expedite room availability during the discharge process.

"When a patient was discharged, a nurse or clerk would manually enter the discharge into our system, most times resulting in delays and rooms not available when we needed them," explains Ms. Templeton. "Now when a patient is discharged, the standards-encoded patient wristband is removed, which sends an alert to environmental services, advising the room is empty so that it can be cleaned and made available much quicker than before."

Geisinger is also conducting a patient flow study to identify bottlenecks in hospital processes. "We're just starting to uncover the 'tip of the iceberg' with the data we've collected. We intend to streamline our processes, making patients' experiences stress free with less time waiting. We're making our hospital environment a healthier one for patients."

In its logistics processes, Geisinger is using standards to track employees' routes for supply delivery and other processes. The health system has launched its Healthcare Enabled Logistics Program (HELP) to better understand how many and what types of logistics and administrative duties are performed by nurses so that it can free up their time for patient care.

"With standards, we have gained a tremendous amount of efficiency in the supply chain part of our business," concludes Ms. Templeton. "I know that eventually we will see a full cycle of value once standards are fully embedded and more mature in our clinical processes."

A compelling commitment

To realise the full value that GS1 standards promise, all executives stress the importance of gaining commitment from the people who are making the needed changes to use standards.

"Hospitals must plan carefully since it's one thing to say that you're adopting standards, and quite another to actually make sure there is comprehensive use of standards," advises Lord Hunt. "To realise value, clinicians and staff must equally embrace the use of those standards."

Mr. Callan with St. James's adds, "Perhaps the most critical key to successfully implementing standards is to gain commitment and empower stakeholders as they use standards every day. While we can make decisions in the Board room, if that dedication isn't evident in the roots of the organisation, success will be short lived."

To secure and nurture this level of stakeholder commitment, Ms. Kennedy with ACT has engaged users from the very beginning of its process of adopting standards, taking a bottom-up and top-down approach. "If clinicians in particular can see that the work they're doing can be made safer, that's a persuasive discussion."

Certainly, Dr. van Ark is enthusiastic about the trust he has in Bernhoven's standards-based systems to help him deliver better and safer care. "My task as a doctor is to focus on patient care, not to ensure that all products have the right barcodes. But it sure helps if I support the people who are taking care of that part of patient care and safety. I would encourage other doctors around the world to get involved and support the adoption of standards. Knowing that we can make our hospitals better and safer is compelling enough to make standards part of everyone's job."

"Hospitals must plan carefully since it's one thing to say that you're adopting standards, and quite another to actually make sure there is comprehensive use of standards. To realise value, clinicians and staff must equally embrace the use of those standards."

The Rt Hon Lord Philip Hunt PC OBE,
Shadow Deputy Leader, House of Lords,
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About GS1 Healthcare

GS1 Healthcare is a global, voluntary user community, bringing together all healthcare supply chain stakeholders, including manufacturers, distributors, healthcare providers' solution providers, regulatory bodies and industry associations. The mission of GS1 Healthcare is to lead the healthcare sector to the successful development and implementation of global standards by bringing together experts in healthcare to enhance patient safety and supply chain efficiencies. GS1 Healthcare members include over 70 leading healthcare organisations worldwide. www.gs1.org

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