

Achieving 'Perfect Order' and beyond

ABSTRACT

Trading partners use GS1 Standards in every transactional step – from manufacturing plant to patient bedside – contributing to patient safety and supply chain optimisation with fully automated order processes and transactions. BD and ROi launched their collaborative effort in early 2011 to implement GS1 Standards and achieve 'Perfect Order.'



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Collaborative effort of BD and ROi

Through a collaborative effort launched in early 2011 and continuing through today, BD (Becton, Dickinson and Company), Mercy and its supply chain company, ROi, implemented GS1 Standards at each step from manufacturing to patient bedside, realising significant benefits, including those associated with patient safety and an optimised supply chain. This end-to-end global data standard integration represents the first known instance in the United States that a healthcare provider and manufacturer used the Global Location Number (GLN) and Global Trade Item Number (GTIN) in both supply chain and clinical processes, achieving fully-automated, accurate electronic processing of order transactions, also known as 'Perfect Order.'



The organisations implemented their project in two phases:

Phase 1: Establish the technology infrastructure and processes to enable true system-to-system transactional processing, eliminating 100% of all human interaction throughout the entire procurement and replenishment process across the entire spectrum, from the manufacturing plant to the patient, to achieve 'Perfect Order' and beyond.

Phase 2: Implement GS1 Standards to make the process even more efficient and sustainable. The use of GS1 Standards allows

for easier scalability of future 'Perfect Order' initiatives and for improved recognition of product usage at the patient level through the use of package barcodes and supported scanning technology.

The implementation of GS1 Standards was integrated into an overall 'Perfect Order' engagement that leveraged both organisations' supply chain capabilities. The achievement of 'Perfect Order' and effective use of GS1 Standards are part of a comprehensive supply chain strategy.

State of the healthcare industry

The U.S. healthcare supply chain is functioning in a sub-optimal state. Healthcare providers, distributors and manufacturers struggle with a large error rate related to the procurement process of medical devices. Inefficiencies or errors in the procurement process extend all the way to the patient, manifesting in ordering errors, not having enough product on hand to treat the patient, clinicians receiving the incorrect product, expired inventory and other scenarios.

Perfect Order

A standard prevalent in many industries including retail, **Perfect Order** is defined by Strategic Marketplace Initiative (SMI) as "a purchase order processed electronically (from order to payment) without human intervention, delivered to the correct location, on time, undamaged, at the right price, with the desired quantity, on the first attempt." This process ensures effective use of available resources by eliminating errors and maximising the use of technology.

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USA: Achieving 'Perfect Order' and beyond

The industry has been challenged by disparate proprietary data for medical devices and location information. Data translations and manual processes cause a multitude of errors and create an insidious obstacle to achieving the desired future state of efficiency or implementing specific clinical systems and programs. The lack of common supply chain performance metrics creates further obstacles. Common shared metrics provide benchmarks which illuminate both good and bad supply chain performance. Something as basic as the true cost per transaction is largely a mystery to many manufacturers and healthcare providers.

“GS1 data standards enable healthcare trading partners to speak the same language when it comes to product or location information, saving valuable time and resources, as well as reducing costs and enhancing patient safety.”

chain by scanning the package barcode containing the GTIN that BD prints on product labels through ROI's distribution management system at the point of receipt. The native package barcode that BD prints containing the GTIN is again scanned during product consumption,

and then interfaced to the electronic health record (EHR) for documentation and patient billing purposes. The GTIN is being successfully transmitted through all the steps of the supply chain as well as through to the clinical care setting.

'Perfect Order' metrics

BD and ROI began their initiative by reviewing past transactions between the two organisations. By using an objective set of 'Perfect Order' metrics to calculate transactional errors retrospectively, and then conducting extensive root cause analyses, the organisations gained insight into how to reduce errors going forward. After extensive collaboration and a significant number of process changes, the two organisations are now achieving many of the desired 'Perfect Order' outcomes, including:

- 30% reduction in days payable outstanding
- 73% reduction in discrepancies, including a complete elimination of vendor part number and unit of measure (UOM) discrepancies by supplanting part number and UOMs with GTINs on purchase orders
- improved sourcing of products by use of a single scan of a barcode to determine the right product and product UOM to reorder
- less calls to customer service
- fewer stock outs due to the inherent simplicity offered to nursing staff for scanning barcodes at the bedside
- better charge compliance resulting from scanning as a surrogate to traditional practices.

End-to-end integration: GS1 Standards go where the product goes

The GTIN unambiguously identifies products and is helpful in communicating product data throughout the supply chain and through to the clinical setting and beyond; while the GLN is used as a consistent standard to identify delivery locations and to replace custom account numbers.

GTIN

BD and ROI are transacting by using the GTIN as the primary product identifier on purchase orders, invoices and other electronic data interchange (EDI) transactions. The organisations are also able to follow the actual product through the supply



GTIN/GLN usage in BD's supply chain

BD enumerates products with catalog numbers and GTINs, and captures the codes in applicable systems before the company releases the products to market. GTINs are created for each packaging level (i.e., Each, Shelf Pack, Case, etc.). Catalogue numbers are directly associated with the GTINs in a configuration that allows healthcare providers and distributors to interpret packaging hierarchies.

BD creates and manages many forms of product data that are ultimately associated with GTINs and catalogue numbers, including unit of measure, shelf life, dimensions, allergens, etc. BD defines and records data requirements early in the product life cycle, and updates and maintains relevant product data the entire time a product is marketed.

As part of the 'Perfect Order' effort, BD shared an initial set of product data with ROI via the GS1 Global Data Synchronisation Network (GDSN).

BD has enumerated its medical devices sold in the U.S. with GTINs and prints the GTIN in a GS1-128 barcode at the shippable packaging level. BD scans the GTINs at multiple points in its internal supply chain, and stores the information in BD systems.

“True collaboration and use of an agreed upon set of common Perfect Order metrics provide the healthcare industry a real opportunity to improve operational effectiveness and eliminate costs from the supply chain.”

Steve Gundersen
Vice President, Corporate National Accounts, BD

BD uses additional GS1 Standards, such as the Serial Shipping Container Code (SSCC), to identify a single shipping unit, and is beginning to use the Global Shipment Identification Number (GSIN), to identify groupings of shipping units to track shipments from BD Distribution Centers to customers. This shipment data is stored in BD's enterprise resource planning (ERP) system and made available on shipping documentation.

BD Distribution Centers use the SSCC, GTINs and production data when receiving products from manufacturing plants to verify receipt and track inventory. Having this information at the moment it is needed speeds up supply chain processes and helps ensure overall process accuracy. GTINs, specific quantity data and production data are captured and associated with a pallet license plate barcode, a type of SSCC. That information is stored in internal systems and is used for each material movement through the use of the scanning system. The data can be shared with distributors and healthcare providers in EDI transactions, such as order acknowledgements (855), automated shipping notices (856) and invoices (810).



GTIN/GLN usage in Mercy's and ROI's supply chain

Through its collaboration with BD, ROI is now implementing GTINs as the global standard product identifier for BD products rather than creating custom labels. The GTINs are entered into Mercy's item master, and are being used to track and order products. Because the GTIN is pre-loaded into the provider's item master, the process of validating receipt of product delivery is made much simpler and orders in general are more accurate.

ROI now consistently uses GTINs when ordering, picking and shipping BD products. In addition, both organisations use production data assessed via the manufacturer assigned barcodes to rotate inventory and for quality control processes. Finally, ROI's Distribution Center and Mercy facilities have active GLNs, obtained through the GLN Registry for Healthcare®. ROI is working with vendor partners to share its GLN information to replace custom account numbers.

GTINs stored in Mercy's systems are the primary reference numbers for transacting, and serve as a common identifier, enabling the tracing of supplies from the point of replenishment to the point of use. Upon shipment, ROI sends an Advance Ship Notice (ASN) to the Mercy department receiving the shipment.

“In addition to improving the efficiency of the healthcare supply chain, data standards play a significant role in ensuring patient safety through improved product recall management. With data standards in place, hospitals can rely upon the uniqueness of the packaged barcode and use it to drive critical processes.”

Gene Kirtser,
President/CEO, ROI



GTINs are used to order and track medical devices for use in labs, pharmacies, storage locations and in patient care areas. GTINs can also be scanned to help search for products in Mercy's materials management information system. A Receiving and Delivery software programme is used to scan-out products to various departments throughout the facility.

Caregivers scan patient wrist bands to identify the patient and the location where care is taking place. Caregivers also scan GTINs on consumed products, capturing critical information to drive:

- product consumption
- real-time usage
- real-time inventory control
- patient charging

As surgeries are performed, products used during the procedure are tracked and documented in the patient's EHR. GTIN data can then be tracked from end-to-end, all the way from the point of order to the near exact time the product was applied to a specific patient. Transactions entered in the patient EHR flow through to patient billing. In time, recall notifications for specific GTINs could trigger automatic reports alerting administrators of affected patients.

GLN

Healthcare providers need to manage and store a multitude of customer numbers assigned by their suppliers. For example, ROi has 124,000 manufacturer assigned numbers for Mercy facilities stored in its systems today. Thirty GLNs can cover the majority of ROi transactional locations. Throughout the BD/Mercy/ROi collaboration, GLNs were utilised to unambiguously identify

locations and further reduce transactional errors. ROi and BD continue to transact with the GLN today, and are each working with other partners to implement GLN going forward.

BD is migrating to use GLNs from a system that is currently based on proprietary customer numbers. Since each distributor and GPO maintains unique proprietary numbering systems for each location, manufacturers must utilise resources to continually manage the different numbers representing the same customer locations. Because proprietary enterprise resource planning (ERP)-generated customer numbers are necessary in the current environment, GLNs must be correlated to these ERP numbers. BD is only using GLNs that have been validated by the location owner and are maintained in the GS1 US GLN Registry for Healthcare. BD has assigned itself GLNs to define the company as a global entity, a U.S. organisation and specific transactional locations for EDI usage.

Because ROi already distributes to Mercy locations and has an enumeration process in place, GLN numbering was a fairly simple process and mirrored recommendations from industry best practices. ROi decided to use one primary Ship-to GLN per location. Data reconciliation began with BD reviewing Mercy's GLN locations. The primary focus was on the ROi Distribution Center and 23 Mercy hospitals.

GTINs and GLNs in EDI transactions

ROi and BD implemented both GLNs and GTINs into EDI transactions. For this initiative, the EDI transaction between BD and ROi was the last step in the implementation, occurring after all the steps involved with GLN enumeration and GTIN reconciliation and synchronisation.

Conclusion

GLNs and GTINs can be implemented now to help improve the healthcare supply chain. Clearly identify and agree to goals in advance. To prevent “scope creep” and distractions, identify and prioritise project phases. Trading partners need to ensure that technology providers can support the agreed upon goals and established work plan.

BD and Mercy/ROi were able to use and leverage GS1 Standards throughout the supply chain and beyond, realising many benefits, including:

- achievement of 'Perfect Order'
- more accurate purchase orders, invoicing and payment processes
- clean data on delivery locations and account information
- real-time product usage and consumption
- better product and lot number tracking
- improved infrastructure and data accuracy for future patient care initiatives and the recall process
- stronger business relationships with critical healthcare partners.

About BD

BD is a leading global medical technology company that develops, manufactures and sells medical devices, instrument systems and reagents. The Company is dedicated to improving people's health throughout the world. BD is focused on improving drug delivery, enhancing the quality and speed of diagnosing infectious diseases and cancers, and advancing research, discovery and production of new drugs and vaccines. BD's capabilities are instrumental in combating many of the world's most pressing diseases. Founded in 1897 and headquartered in Franklin Lakes, New Jersey, BD employs approximately 29,000 associates in more than 50 countries throughout the world. The Company serves healthcare institutions, life science researchers, clinical laboratories, the pharmaceutical industry and the general public. For more information, please visit www.bd.com.

About ROi

ROi (Resource Optimization & Innovation) is a recognised leader in the healthcare supply chain management industry. Founded by Mercy in 2002, ROi provides a single source, fully integrated supply chain solution, including group contracting, clinical and operational consulting, pharmaceutical repackaging, custom procedure tray manufacturing, print operations, purchasing and master item file management, and distribution and transportation management. For more information, visit www.roiscs.com

About Mercy

Mercy is the eighth largest Catholic healthcare system in the U.S. and serves more than 3 million people annually. Mercy includes 30 hospitals, more than 200 outpatient facilities, 38,000 co-workers and 1,500 integrated physicians in Arkansas, Kansas, Missouri and Oklahoma. For more about Mercy, visit www.mercy.net

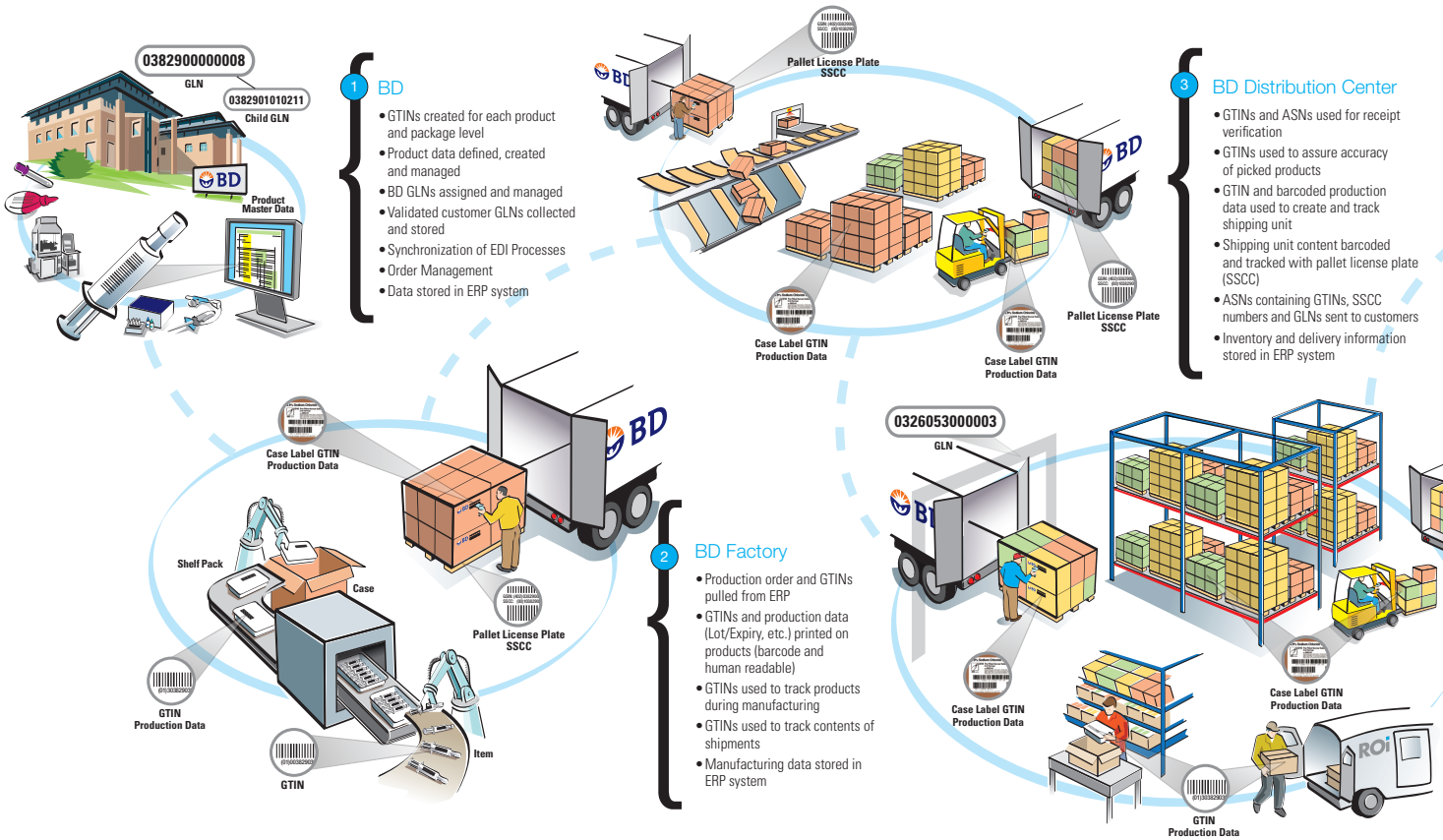


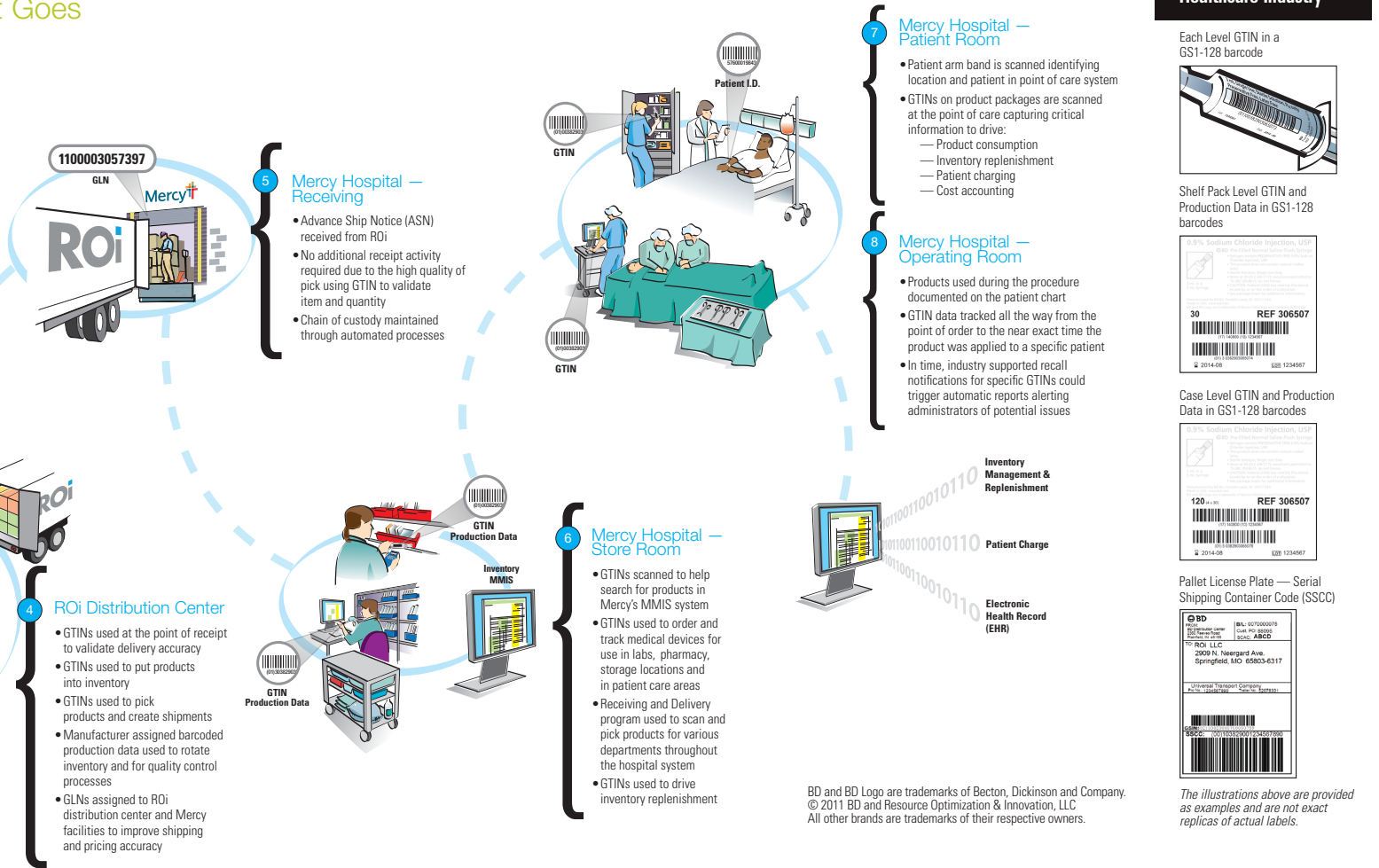
For more information about this case study, refer to “Perfect Order and Beyond: BD and Mercy/ROi Achieve Far-Reaching GS1 Standards Integration” at www.gs1us.org/BDMercyStudy or contact Siobhan O’Bara at sobara@gs1us.org.

Perfect Order and Beyond

BD and Mercy/ROi Achieve Far-Reaching GS1 Standards Integration

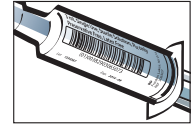
End-to-End Integration: GS1 Global Standards Go Where the Product





GS1 Standards in the Healthcare Industry

Each Level GTIN in a GS1-128 barcode



Shelf Pack Level GTIN and Production Data in GS1-128 barcodes



Case Level GTIN and Production Data in GS1-128 barcodes



Pallet License Plate — Serial Shipping Container Code (SSCC)



The illustrations above are provided as examples and are not exact replicas of actual labels.

ABOUT THE AUTHORS

Dennis Black is Director, e-Business at BD. With more than 20 years of healthcare industry experience, Dennis has responsibilities related to achieving "Perfect Order," leading operational effectiveness initiatives, and other e-Business processes. Dennis is on the GS1 Healthcare US Leadership Team and the GS1 Healthcare Global Leadership Team. He participates in work groups within SMI, AdvaMed and MDSCC and other organisations that are focused on improving the healthcare supply chain. Dennis is involved in a number of pilot and implementation activities to enable BD and healthcare providers to achieve operational efficiencies.

Alex Zimmerman is the Director of Information Management at ROI, the supply chain division of Mercy. He has more than 11 years experience in the health care supply chain industry, covering a broad range of leadership, planning, systems integration and program management roles. Alex joined ROI in 2002, at the inception of the company. During his career, he has engaged primarily in health care e-commerce initiatives, clinical information technology, information management and standards development. His direction of e-commerce initiatives helped ROI/Mercy win the 2006 GHX Supply Chain Provider of the Year award and the 2007 Innovator of the Year award. Alex is helping lead an organisation-wide effort on GS1 standardisation.