The Global Language of Business

Healthcare EDI Implementation Kit

Why this GS1 EDI Implementation Kit?

Several GS1 Member Organisations have developed EDI implementation guides for healthcare for local use. In the absence of a global guideline, these local guides were not aligned with each other, so multinational healthcare companies with operations in different countries were having issues with inconsistencies.

The business need:

The use of GS1 EDI standards in healthcare needs to be better aligned in order to reduce implementation costs and increase deployment.

The offer:

GS1, together with manufacturers, hospitals and solution providers, have developed the harmonised global guideline to align GS1 EDI standards for use throughout the global healthcare supply chain, from supplier to logistics end-user. The global guideline also contains a business process model for order to cash and consignment stock management.

To access the global guideline go to:
http://www.gs1.org/gs1-edi-healthcare-guidelines

"By adopting the global GS1 EDI Guideline for Healthcare, healthcare companies will increase the accuracy of their business transactions and help to improve the quality of patient care."

Ulrike Kreysa
Vice-President Healthcare
GS1

What's inside

1. Overview

"For B. Braun, a truly international organisation, efficient and electronically enabled processes based on global standards are critical. The global GS1 EDI Harmonised Guideline for Healthcare provides a mechanism for our business to achieve the efficiencies of EDI whilst enabling consistency across the various markets in which we operate."

Holger Clobes,
Head of Global eCommerce & Auto ID
B. Braun Melsungen AG.

GS1 EDI Implementation Kit project

Target audience

This kit is intended for healthcare industry stakeholders and GS1 Member Organisations (MOs).

We want to help

The GS1 EDI Implementation Kit will provide GS1 MOs and healthcare industry stakeholders with the tools to implement GS1 EDI standards as well as key steps on how to align local EDI guidelines with the global GS1 EDI Guideline for Healthcare (global guideline).

Sharing best practices

To create this kit, healthcare companies and GS1 MOs from around the world have come together to share their key learnings, best practices and the many benefits of successfully implementing GS1 EDI standards. By sharing their experiences, these companies provide their unique views about the obstacles along the way as well as the real-life return on investment (ROI) in EDI.

To help you get started

Tools in this kit include:

- Value proposition to explain the benefits
- Case studies to show the actual value of implementation
- Cost and savings calculators to get immediate results on ROI
- Implementation approaches to help answer all your implementer's questions
- Technical standards now in use for GS1 EDI and the global guideline
- Training tools for you, your staff and your members
- And much, much more

Did you know?

By using GS1 standards to improve EDI accuracy and achieve the perfect order, BD and ROi/Mercy realise benefits including:

73% reduction in discrepancies on purchase orders, increasing accuracy and costs savings due to significantly fewer reworks

30% reduction in days payable outstanding, improving cash flow

Introduction

The global guideline

The global guideline has been designed with a modular structure to facilitate use across the wide range of healthcare order-to-cash environments that exist today. The first part of the guideline details both the business process descriptions and the data needed for these processes. This information is an excellent resource for any implementation in any country.

The second part of the guideline contains a mapping between the data elements needed for each business process and the two EDI formats supported within the GS1 standards—GS1 XML and GS1 EANCOM. For countries implementing GS1 XML or GS1 EANCOM as the order-to-cash messaging format in healthcare, this mapping is a foundation for any new implementation as well as a resource to assist with aligning current implementations with the global guideline.

Why harmonise?

Harmonising EDI processes, data and message structure can deliver significant benefits for both healthcare manufacturers and providers. Consider that the resources and financial costs involved in the initial set-up and ongoing support of multiple, non-harmonised EDI processes can be significant and extremely complex.

It is important to note that harmonisation does not need to happen at once. Rather, it can take a staged process approach as changes are made to implementations or as new implementations are introduced. As migration occurs, support can be provided to ensure a clear understanding of the harmonised guideline and the overall harmonisation approach.

To access the global guideline go to:
http://www.gs1.org/gs1-edi-healthcare-guidelines

A special thank you

to contributors from industry stakeholders and GS1 MOs. Their support to develop both the global guidelines and the EDI Implementation Kit and associated engagement tools make the resulting documents inclusive, relevant and powerful.

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GS1 Member Organisations

GS1 Argentina
GS1 Australia
GS1 Austria
GS1 Belgium & Luxembourg
GS1 Canada
GS1 China
GS1 Colombia
GS1 Denmark
GS1 Egypt
GS1 Finland
GS1 France
GS1 Germany
GS1 Hong Kong
GS1 Ireland
GS1 Mexico
GS1 Netherlands
GS1 Portugal
GS1 Serbia
GS1 Spain
GS1 Sweden
GS1 Switzerland
GS1 UK
GS1 US

2. Steps for creating new implementations

"The St. James's Hospital implementation of EDI is designed to eliminate paper-based, error-prone processes by automating electronic communication of transactional data between our hospital and its suppliers. During our first live implementation, an order was placed early in the morning, the goods arrived mid-morning and the invoice was on the payment run in the afternoon with no manual intervention. The speed and accuracy of the whole process was incredible, a first for Irish healthcare."

Pat Bailey,
SAP System Support
St James's Hospital

Getting started

Before engaging in any implementation of GS1 standards in healthcare, GS1 MOs and healthcare industry stakeholders should consider what opportunities exist for their organisation to better serve existing users or trading partners as well as how to expand the use of GS1 standards in this sector.

Get started by fully understanding your local healthcare market and its stakeholders—healthcare providers, suppliers, distributors, associations and solution providers. Identify their business priorities, the challenges they face, and the problems they wish to solve.

Understanding the market

Research your healthcare market to devise strategies about how to best position the value of GS1 EDI standards and the global guideline.

Start with the size, players and mix of your local market.

- How many healthcare companies operate in your market?
- How many are:
  - Healthcare providers?
  - Pharmaceutical and/or medical device manufacturers?
  - Hospital & retail pharmacies?
  - Wholesalers and/or distributors?
- What leading solution providers exist? Among them, who is implementing GS1 EDI?

Understand the overall needs of the market.

- What challenges do they face?
- What are their business priorities, e.g., reduce costs, increase efficiencies, improve patient outcomes?
- How do the needs of each segment differ?

Identify which standards are in use and how they are being used.

- What GS1 standards do they use?
- How many companies use GS1 EDI standards?
- How are these standards used and in which processes?
- What messages/standards are used and by whom?
- What are the most widely implemented messages?
- What versions are used?
- What other systems are used, such as paper, invoicing, proprietary systems or other standards?
- What are the most widely implemented non-GS1 EDI standards?

Analyse healthcare associations' implementation statistics and plans.

- What associations exist in the market? Which ones are most influential?
- What is their knowledge of GS1 standards?
- What is their position regarding implementation of GS1 standards?

Collaborate with solution and service providers to measure EDI traffic or usage.

- Which solution providers operate in the market?
- What is their knowledge of GS1 standards?
- What is their capability regarding GS1 standards?
- Are they able to share information about the general capability of their customers (both suppliers and buyers) with regards to use of GS1 standards?
- What are the implementation barriers they see and advice to overcome them?

EDI implementation drivers in healthcare

Drivers for the implementation of EDI in healthcare may vary between markets as a result of internal and external factors. However, they generally fall into the following categories:

- Helping to ensure quality of care
- Meeting regulatory or trading partner requirements
- Facilitating product traceability
- Increasing supply chain efficiency and accuracy and reducing costs
- Enabling new business processes

Helping to ensure quality of care

The use of EDI ensures more accurate communication about products ordered, shipped and received throughout the healthcare supply chain. This is particularly important in a hospital or pharmacy environment when supply chain miscommunication or errors could mean the product needed for patient treatment is not available at a critical time, potentially risking quality of patient care and outcomes. For example, a required, yet unavailable product may mean a delayed surgery. This leads to patient stress and confusion, increased risk of contracting an unrelated infection due to a longer stay in the hospital, and financial impact for the patient and their family. Additionally, the hospital and healthcare system is now faced with an unused operating theatre, clinical staff members who must be reassigned to alternate tasks, and an expanding waiting list since the original surgery must be rescheduled. All of these disruptions and changes to the flow of services throughout the hospital may have a negative impact on the safety and health outcomes of other patients since their surgeries may also be delayed.

Meeting regulatory or trading partners requirements

Many trading partners have realised the broad-scale benefits of EDI-driven transactions—either to reduce costs or combat fraud—and are, therefore, requesting that their trading partners become EDI enabled. In response, a significant number of companies are implementing EDI to meet their trading partner requests.

Facilitating product traceability

EDI messages can include information identifying the specific product being discussed as well as information about the product's batch / lot or even serial number. Where traceability of products is important, this detailed product data helps ensure accurate and complete electronic records about the specific products ordered and shipped to a particular trading partner.

In the case of a product recall or withdrawal, this information can then be used to efficiently track the product to its current location, accelerating its removal from shelves.

Increasing efficiency & accuracy and reducing costs

The use of EDI automates manual processes, thus eliminating the need for paper, printing, physical storage of documents and postage for increased efficiencies and cost savings. Electronic documents can also be processed more quickly than those requiring manual intervention, ensuring that customer needs are met for higher customer satisfaction.

Inventory levels can be more effectively managed due to the reduction in lag time between the receiving and processing of order-to-cash documents. In addition, invoices and other financial documents can be processed in a timelier manner for increased cash flow.

Enabling new business processes

Beyond making existing processes more efficient, EDI is a potent enabler for creating totally new business processes and supply chain solutions. Features like reliable communication, high-quality product data and near real-time processes are the foundation for solutions such as vendor managed inventory (VMI), automated reconciliation of invoices and traceability systems.

Creating partnerships

To drive the implementation of GS1 standards for EDI in healthcare, partnerships should be created between the industry representatives implementing GS1 standards and the local GS1 MO. Companies implementing EDI may also request that their trading partners develop EDI capabilities.

Creating a partnership and building trust with companies will take time. To create strong partnerships, in conjunction with industry stakeholders, GS1 MOs may provide support activities for companies implementing standards. Examples include:

- Helping to draft relevant technical documents
- Providing input to trading partners' communications about EDI implementation developments
- Participating in joint information seminars
- Providing training to trading partners' staff
- Providing telephone and email-based support for the companies
- Briefing EDI service providers to ensure GS1 standards-compliant implementations
- Developing automated testing tools

All of these activities will help to ensure implementations comply with the requested standards.

Example of partnership:
The National E-Health Transition Authority (NEHTA) and GS1 Australia

Summary

The National E-Health Transition Authority (NEHTA), the lead organisation supporting a national vision for eHealth in Australia, partnered with GS1 Australia to launch GS1 XML as the messaging format for their eProcurement solution. This is a nation-wide implementation of GS1 XML by the eight Australian state and territory public health governments and has since been leveraged extensively by the private sector.

Background

NEHTA is an independent Australian government organisation that was chartered to drive and support eHealth reform in healthcare throughout Australia. Supply chain reform is a major NEHTA initiative, encompassing the creation of a National Product Catalogue (NPC), development of an eProcurement solution, and documenting a business intelligence strategy.

In 2006, GS1 Australia partnered with the NEHTA team to leverage the GS1 Global Data Synchronisation Network™ (GDSN®) as the NPC. Since then, the partnership has also developed and delivered industry services such as GS1 Locatenet for Healthcare for sharing locations identified with GS1 Global Location Numbers (GLNs) and GS1 Recallnet Healthcare, a recall management portal.

Consultation and submission

In February 2007, NEHTA issued the business document, Format Choices for Health E-Procurement – A Preliminary Evaluation. This preliminary review was designed to enable stakeholders' submissions to the NEHTA initial finding that a non-GS1 EDI standard seemed to meet the public healthcare EDI requirements.

The submission from GS1 Australia clarified a range of areas regarding GS1 XML functionality and support for the Australian Standard 5023. Following this activity, NEHTA then published its final evaluation in June 2007, finding that GS1 XML was the best choice for public health EDI in Australia.

eProcurement solution

The resulting NEHTA eProcurement solution is comprised of GS1 XML messages for purchase orders (POs), PO changes, PO responses, despatch advices, invoices and settlement advices. Additional messages such as the booking request/loan product consumption were added later to support healthcare consignment stock processes. GS1 Global Trade Item Numbers (GTINs) and GLNs are used to uniquely identify products and locations within messages.

NEHTA also specified the requirement for a "federated hub" model[1] so that EDI service providers could exchange GS1 XML messages without interconnection fees. Suppliers and buyers participating in the EDI transaction are then able to choose a single EDI service provider, based on their business criteria, who can communicate GS1 XML messages to the EDI service provider of their trading partners.

Benefits

Today, NEHTA states the key benefits from implementing the eProcurement solution, include[2]:

- "Interoperability between suppliers and purchasers
- Right Product – Right Patient – Right Time and Right Place
- Increased transactional accuracy
- Reduced order errors
- Improved compliance
- Improved payment times
- Timely information for improved purchasing and inventory management"

Partnership activities

GS1 Australia worked with NEHTA to draft the technical Message Implementation Guidelines (MIGs) that were the basis of the roll out. Other joint activities between GS1 Australia and NEHTA included subsequent standards updates.

GS1 Australia continues to provide expertise and support to healthcare providers and their suppliers as they implement EDI. Assistance and guidance has also been jointly provided to EDI solution providers that service the healthcare market in Australia.

Status

In 2010, Western Australia was the first state to implement the NEHTA eProcurement solution[3]. Since then, the Australian Capital Territory, New South Wales, South Australia and Victoria have all developed GS1 XML capability with other states and territories as works in progress. Key players in the private healthcare sector such as Ramsay Health Care (Ramsay) have leveraged the work of the public sector, implementing GS1 XML as part of the NEHTA eProcurement solution. NEHTA has recently formed a working group to support the industry's ongoing adoption of EDI transactions using GS1 XML as the core standard for continued supply chain efficiencies and reform.

1 - http://www.nehta.gov.au/get-started-with-ehealth/what-is-ehealth/supply-chain/eprocurement-solutions/federated-hub-model
2 - http://www.nehta.gov.au/get-started-with-ehealth/what-is-ehealth/supply-chain/eprocurement-solutions/messaging-structures-and-syntaxes
3 - http://www.nehta.gov.au/news-and-events/news/350-wa-e-procurement-system-a-national-first-for-health

Understanding existing implementations

Prior to an EDI implementation, a clear understanding of the status and capabilities of the implementation partner is necessary. This fulfils two objectives:

- Ensures the implementing companies are confident that the strategic business decision they have made is aligned with the overall industry direction
- Provides an evaluation of trading partner EDI capabilities for each company to identify possible partners for initial implementations

Organisation-specific approach

To gain an understanding of existing implementations, it is recommended that key stakeholders are contacted by either the implementing company or the local GS1 MO. Contact may be by telephone, face-to-face meeting or written survey. If the GS1 MO has an active healthcare industry engagement program, much information may be already known.

The objective is to be able to map the overall market capability as it relates to the implementing company to drive the specific tactics. Recommended information sourced:

- Key trading partners
- Messaging formats being used, both inbound to and outbound from the organisation
- Messages being exchanged and business processes impacted
- Timeline for implementation of each message type
- Future EDI implementation plans

Example: capability and intent matrix

The table below illustrates a basic example of how an implementing company could document the current status and capability of its trading partners. A subset of business sub-processes and messages in the global guideline are included.

In this example:

- A buyer, Company A wishes to implement EDI
- By surveying its top 100 suppliers, the following current and intended future capabilities were identified

From the survey, Company A was able to confirm that its decision to implement GS1 XML was aligned with the general direction of the market. The company also identified that the priority message for which their suppliers intend to develop EDI capability in the next 12 months is the purchase order, followed by the invoice. Purchase order response capability is on the plan for some suppliers in the next three years, with despatch advice not yet a focus for the majority.

This knowledge translates to a tactical development plan that focuses first on implementing the GS1 XML-formatted outbound purchase order, followed by invoice receipt. Purchase order response receipt will be the third priority, followed by the despatch advice.

	Total Surveyed			
Format	**Purchase Order** (Place Order*)	**Purchase Order Response** (Place Order)	**Despatch Advice** (Deliver)	**Invoice** (Issue Invoice)
Paper – no plan to change	5	0	92	51
Email – no plan to change	10	72	2	22
GS1 EANCOM – current	5	0	0	0
GS1 XML – current	7	0	0	1
Other EDI format – current	6	0	0	2
GS1 EANCOM – within 12 months	0	0	0	0
GS1 XML – within 12 months	34	0	6	23
Other EDI format – within 12 months	6	0	0	0
GS1 EANCOM – within 3 years	5	0	0	1
GS1 XML – within 3 years	17	28	0	0
Other EDI format – within 3 years	5	0	0	0
Total	**100**	**100**	**100**	**100**

***Indicates the sub-processes from the GS1 Model for Supply Chain Management in Healthcare, Part 1 – Framework, Figure 6-1**

"Whole of industry" approach

When the local Healthcare User Group, GS1 MO or a government agency wishes to determine which GS1 EDI format should be recommended for broad-scale implementation by their healthcare market, where EDI messaging is already in place in some areas, a whole-of-industry assessment should be undertaken. The first step would be to understand the overall supply chain and the different groups of stakeholders—segmenting and mapping the market.

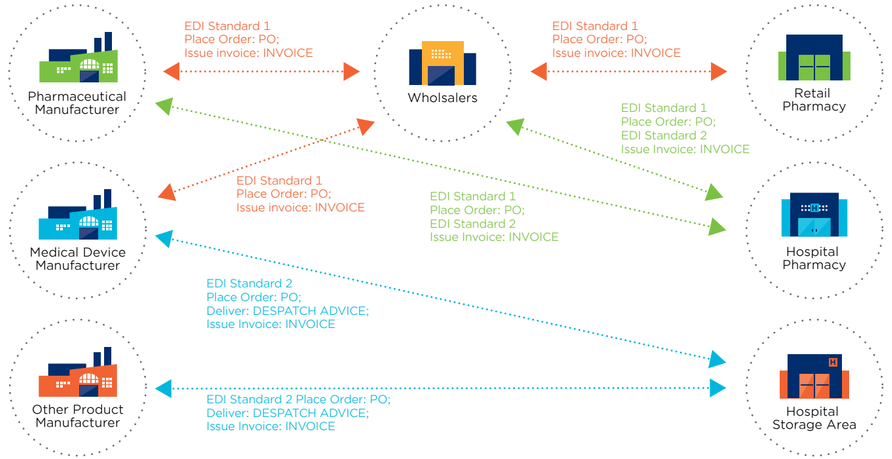
Once stakeholder groups have been identified, contact should be made with key market influencers—both buyers and suppliers—to:

- Validate the initial market segmentation
- Understand, at a high level, the capability of the different groups with respect to EDI
- Document this understanding into an industry map

Engaging industry associations is extremely important in the whole-of-industry approach since these associations will have an awareness of the capability of their members. Undertaking such activity will ensure that the recommendations made are in line with market direction.

Example: whole-of-industry map

The figure below is an example of how to approach documenting a whole-of-industry map. Business sub-processes in the harmonised guideline are listed below as well as the messages being exchanged in two EDI standards.



Using the global guideline to create local guidelines

The role of standards and the global guideline

The global guideline was developed by the GS1 community of users and GS1 MOs to define best practices associated with the GS1 EDI standard in the global healthcare supply chain. Consequently, the guideline only contains processes and data that are commonly applicable across multiple countries and regions. GS1 EDI standards contain more information than the guideline, partly because they need to accommodate all industries and since some information is only used in a single country. This is typically due to local laws and regulations and, at times, due to local business practices.

The information in the global guideline is often more restrictive than the standard. For example, it could exclude codes that are not relevant for the described process and adapt the guiding text to healthcare.

The GS1 set of EDI standards is the only normative reference. It is not possible to add additional information to the guideline that hasn't been sourced from the standards (normative reference). If additional information is required, it must be published in a new version of the standard before it can be added to the guideline.

Using the global guideline to create new local guidelines

A staged approach is recommended. While you may be tempted to go straight to the syntax description, follow these steps to save time and resources in the long run.

- Having a common and agreed upon understanding of the processes will minimise the risk of divergent interpretation of the standards.
- Separating syntax dependent from syntax independent information enables mappings across standards, migration paths and version handling.

1 Select the process in the GS1 Model for Supply Chain Management in Healthcare, Part II eCom Processes, and gain agreement with users that this correctly describes the area being addressed.

- Review and agree with the team that the descriptions in the process model are applicable locally.
- If needed, add additional local processes. In case of missing processes considered global, or disagreements, a work request should be initiated to update the BDS.

2 Review the list of data in the Business Document Specification (BDS) for the process, e.g., BDS order.

- Select the data elements and codes that are relevant for the organisation developing the guideline. Note: Information that is marked as mandatory or required cannot be excluded.
- If needed, add additional local information. In case of missing data considered global or disagreements, a work request should be initiated to update the BDS.

3 Use the Mapping Specification (MS) for the desired syntax to find how the chosen information is expressed in the syntax, e.g., MS-EANCOM-ORDERS or MS-XML-Order.

- Some MOs may offer mapping specifications to other syntaxes, but these are only supported locally.

4 If agreed locally, share the final local guide with the GS1 Global Office (GO).

- GS1 GO will not share or distribute it, but will use it as a resource for future versions and developments.

Ongoing alignment with the global guideline

1. How to keep local implementations aligned with the global guideline, in case they change due to standards releases or new requirements

New releases of the GS1 EDI standards, EANCOM and GS1 XML, are published every two years. In addition, minor changes (typically additional codes, temporary attributes and errata) are published between official releases.

The global guideline is not periodically revised, but updated upon request. This could be triggered by the new release of a standard or requests to add or change the content received from the healthcare community.

To ensure that the local guideline remains compliant with global standards and the global guideline, it is recommended that the issuing organisation undertakes periodic reviews of global development.

To capture minor changes between official releases, the issuer of the local guideline should follow the work of the relevant GS1 working group, in this case typically the GS1 Global Standards Management Process (GSMP) EDI Standards Maintenance Group (SMG). This could be done by joining the group as a member or, if resources are limited, by reviewing the weekly GSMP communication.

2. How to specify local requirements for global consideration

Local information defined in the local guideline does not need to be included in the global guideline as long as it is truly local in nature, such as national regulations and local tax systems. This information must, however, be present in the base GS1 standard.

If a local requirement is deemed to be relevant for inclusion in the global guideline, a work request must be submitted to GS1 (http://wr.gs1.org/). If it is deemed a minor change, the work request will be forwarded to the GSMP EDI SMG. If more complex, a Mission-specific Work Group (MSWG) will be formed.

If the required information is not present or is incorrect in the base GS1 standard, a separate work request should be submitted. The development of the standard and the guideline can be carried out in parallel.

3. Steps for harmonising existing implementations

"The worldwide harmonisation of EDI messages is one of our key topics. The EDI implementation kit, as a result of the international harmonisation effort, is an excellent tool to support new implementations and to consider country-specific requirements."

Jörg Pretzel,
Chief Executive Officer
GS1 Germany

Harmonising existing guidelines

The role of the standards and the global guideline

The global guideline was developed by the GS1 community of users and GS1 MOs to define best practices associated with the GS1 EDI standard in the global healthcare supply chain. Consequently, the guideline only contains processes and data that are commonly applicable across multiple countries and regions. GS1 EDI standards contain more information than the guideline, partly because they need to accommodate all industries and since some information is only used in a single country. This is typically due to local laws and regulations and, at times, due to local business practices.

The information in the global guideline is often more restrictive than the standard. For example, it could exclude codes that are not relevant for the described process and adapt the guiding text to healthcare.

The GS1 set of EDI standards is the only normative reference. It is not possible to add additional information to the guideline that hasn't been sourced from the standards (normative reference). If additional information is required, it must be published in a new version of the standard before it can be added to the guideline.

How to use the global guideline with existing local guidelines

Applying the global guideline when local guidelines exist and are in use is a significant project since upgrading to a new version may mean costs for users.

Consider two basic scenarios:

Scenario 1: An important number of users today are confronted with divergent local guidelines and a consensus exists to develop a new version that is aligned with the global guideline. In this case the development follows the same logic as described in the previous section with the additional step of mapping the information into the existing local guideline. Care should be taken to ensure backward compatibility, whenever possible.

To achieve the desired benefits, this will often require collaboration and development across several countries where cross-border trade is commonly conducted. Whether a regional (multi-country) implementation guide or individual country guides with agreed upon contents is the best fit, is a local decision.

Scenario 2: Alignment to the global guideline is not sufficient motivation to create a new local version by the user community. The global guideline will, in this case, be used as a foundational reference when the next local version is developed for other reasons. In this scenario, it could be helpful to publish the global guideline as a reference document for users as it likely provides additional information on processes and data already included in the local guideline.

Aligning existing implementations with the global guideline

Step 1: Completing the gap analysis

A gap analysis requires a systematic approach to provide a clear picture about the degree of alignment between an existing implementation and the global guideline. It's important to remember that the global guideline focuses on both data elements and the business process so the harmonisation activity should concentrate specifically on these areas. The objective is to assess if the data element mapping in the global guideline is the same or different from that in the current local guidelines.

Completion of this activity means that a matrix has been created, identifying and categorising compliant mapping, partial mapping, non-compliant mapping and identifying local requirements.

The process for the data element mapping need not be overly complex, but it does need to be consistent and completed by a single EDI technical resource. Involvement of the local GS1 MO healthcare expert may also be required for healthcare specific questions.

Refer to the gap analysis examples found later in this section to help you do an initial mapping. These are examples only, but have been successfully used to do some initial alignment work.

The table on the next page details the potential categorisations of data elements when completing the gap analysis.

Definitions of mapping status and resulting actions

Status	Definition	Action
Compliant	The data element is mapped to exactly the same location and in exactly the same way as in the global guideline and in the current local guideline.	No action required.
Partial	An aspect related to the mapping is unclear and further information is required to assess the true status of the data element mapping when comparing the global guideline and existing local guideline, e.g., different terms are used for the same data element in both documents.	Clarification should be sought to determine if the partial mapping is, in fact, compliant, non-compliant or local. It is important to note that at the completion of the overall mapping exercise and when all additional information has been received, all partial mappings should have been re-classified per the action above.
Non-Compliant	The data element is not mapped to the same location in the harmonised guideline and the existing local guideline.	Migrate the local guideline mapping to be aligned with that of the global guideline.
Local	The data element is included in the existing local guideline, but not in the global guideline and is a requirement for the local market.	If this data element is similar to data elements exchanged in other markets, place a work request to have this element included in the global guideline. (Refer to Ongoing alignment with the harmonised guideline.) If this data element only exists for the local market, e.g., a legal requirement, keep the mapping as it is in the current local guideline.
Global	The data element is included in the global guideline but not the in the local guideline.	There is no obligation to include optional information in the local guideline, but careful consideration should be made if this would impact users, notably those conducting cross-border trade.

Gap analysis example

Below are example gap analyses between local guidelines and the global guideline. The GS1 XML example uses the local guideline as the basis for comparison with the global guideline. The GS1 EANCOM example takes the opposite approach and uses the global guideline as the basis for comparison with the local guideline.

C = Compliant
P = Partly compliant
N = Non-compliant
L = Local (not in global guideline)
G = Global (not in local guide)
M = Master Data, contract

GS1 XML example

Local guideline chapter	Local guideline data element	XML tag	Compliance status	Comments
5.1	Message Function	documentStatus	P	Only 'original' allowed in guideline, 'copy' allowable in local guideline
5.2				N/A – applies only to order change
5.3	Order date/time	creationDateTime	C	
5.4	Order Number	orderIdentification	C	
5.5	blank	contentOwner	C	Not explicitly used in harmonised guideline, required by GS1 standard
5.6	Buyer	buyer	C	
5.7	Buyer business number	buyerCompanyRegistrationNumber	L	
5.8	Supplier	seller	C	
5.9	Supplier business number	sellerCompanyRegistrationNumber	L	
5.10	Bill to	billTo	P	Element called 'invoicee' in harmonised guideline
5.11.1	Buyer Contact name	orderContact	P	harmonised guideline only covers department
5.11.2		language	C	
5.11.3	Buyer Contact Phone	communicationChannel	C	If Mandatory = no, cardinality should be 0..1
5.11.4	Buyer Contact Fax	communicationChannel	C	
5.11.5	Buyer Contact Email	communicationChannel	C	
5.11.6		communicationChannelCode	C	
5.12.1	Ship to location	shipTo	P	Element called 'delivery place' in harmonised guideline
5.12.2	Details	shipmentTransportationInformation	L	
5.12.3		carrier	L	
5.12.4		serviceLevelCode	L	
5.12.5		shipmentSpecialHandlingCode	L	
5.12.6		transportationMethodType	L	
5.12.7	Required Delivery Date	requestedDeliveryDate	P	Element called 'requested date' in harmonised guideline - requested = required?
5.12.8	Deliver not after date	latestDate	P	Element called 'earliest delivery' in harmonised guideline
5.12.9	Deliver not before date	earliestDate	P	Element called 'latest delivery' in harmonised guideline

GS1 EANCOM example

Global guideline data element	EANCOM data element	Compliance status	Comments
Document type	BGM/1001	P	Consignment order is missing
Document identification	BGM/1004	P	G: an..35, L: an..17
Document Function	BGM/1225	N	G: required, L: note used
Response type	BGM/4343	L	
Creation date/time	DTM/C507	P	Date format G: 204, L: 203
Currency	CUX/C504	G	Conditional in G - only master data in Country X
Shipping marks text	FTX/4451,4453,C108	G	
Requested delivery date	DTM/C507	C	
Earliest delivery data	DTM/C507	C	
Latest delivery data	DTM/C507	C	
Reference to price list	RFF/C506	P	G: an..70, L: an..17
Reference data/time	DTM/2380	L	
Reference to contract	RFF/C506	P	G: an..70, L: an..17
Reference data/time	DTM/2380	L	
Supplier identification, GLN	NAD/3035, C082	C	
Buyer identification, GLN	NAD/3035, C082	C	
Buyer reference	RFF/C506	L	MVA number
Invoice address, GLN	NAD/3035, C082	P	G: ITO, L: IV
Consignee identification, GLN	NAD/3035, C082	G	
Delivery place identification, GLN	NAD/3035, C082	C	

General considerations

- What **version** of the standard is used for the local guideline? If an old version is used, full compliance may require a migration to the same as the global guideline.
- For which **industry** is the local guideline intended? Even if it was developed for food retail it may still be useable for Healthcare when basic business processes are applied.
- For which **business processes** is the guideline used? If it is only used for a specific purpose, for example traceability for hospital pharmacies, some data in the global guideline may not apply or may be used differently.
- Some data found in local guidelines may be missing from the global guideline as that data is transmitted in another message or standard.

Step 2: Defining the migration approach

Once the gap analysis has been completed and an updated local guideline is written (as aligned with the global guideline), an overall migration and implementation approach needs to be agreed upon by consulting with key stakeholders.

When making a decision about the migration approach, consideration should be made as to whether the new local guideline applies in the following:

1. **Implementation with new trading partners:** If EDI is to be implemented with a new trading partner where it is not currently in place, the new local guideline should apply.

2. **New document types added to existing trading partner implementations:** In cases where new documents are introduced, e.g., a purchase order response in a trading relationship where EDI for the purchase order and invoice is already in place using the previous version of the local guideline, the updated local guideline should take effect for this new document type.

3. **Existing implementations:** The key trading partners will need to assess if there is value in migrating existing implementations to be aligned with the new local guideline. In some situations, e.g., where companies are generating EDI messages directly from their internal systems, maintaining multiple mappings for a single document type such as a purchase order may prove difficult. If the migration of existing implementations is to occur, this should be decided by consulting with both sides of the EDI relationship. In other cases, maintaining existing implementations, per the previous version of the local guideline, may prove to have less impact for the market yet still deliver the EDI benefits.

Overall, it is strongly recommended that once the migration approach for the new local guideline is agreed upon and the guideline published, its implementation in line with that approach takes effect immediately.

It is also important to clearly communicate the availability of the new local guideline, along with migration expectations and contact points for questions, to impacted organisations and the broader industry sector. Information sessions such as webinars or seminars may be required to explain the changes and migration approach of the new local guideline.

Ongoing alignment with the global guideline

1. How to keep local implementations aligned with the global guideline, in case they change due to standards releases or new requirements

New releases of the GS1 EDI standards, EANCOM and GS1 XML, are published every two years. In addition, minor changes (typically additional codes, temporary attributes and errata) are published between official releases.

The global guideline is not periodically revised, but updated upon request. This could be triggered by the new release of a standard or requests to add or change the content received from the healthcare community.

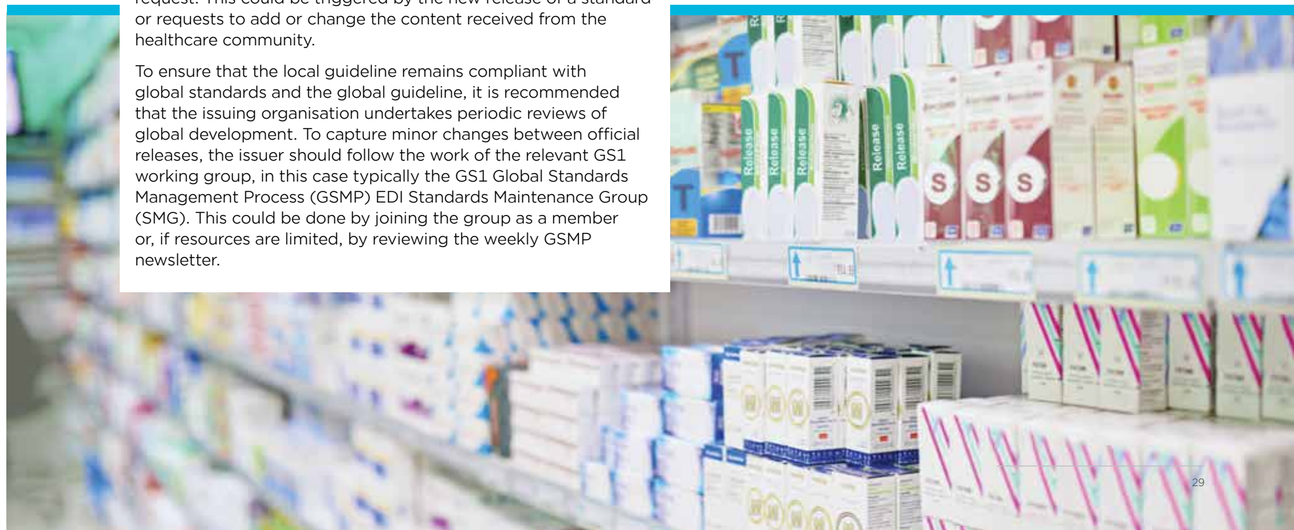
To ensure that the local guideline remains compliant with global standards and the global guideline, it is recommended that the issuing organisation undertakes periodic reviews of global development. To capture minor changes between official releases, the issuer should follow the work of the relevant GS1 working group, in this case typically the GS1 Global Standards Management Process (GSMP) EDI Standards Maintenance Group (SMG). This could be done by joining the group as a member or, if resources are limited, by reviewing the weekly GSMP newsletter.

2. How to specify local requirements for global consideration.

Local information that are defined in the local guideline do not need to be present in the global guideline as long as they truly are local, such as national regulations and local tax systems. They must however be present in the base GS1 standard.

If a local requirement is deemed to be relevant for inclusion into the global guideline, a work request must be submitted to GS1 (http://wr.gs1.org/). If it is deemed a minor change the work request will be forwarded to the GSMP EDI SMG. If more complex, a Mission Specific Working Group (MSWG) will be formed.

If the required information are not present, or incorrect, in the base GS1 standard, a separate work request will have to be submitted. The development of the standard and of the guideline can however be carried out in parallel.



4. Marketing tools

"GS1 EDI standards have delivered significant benefits to the Australian Healthcare sector. One example is the implementation by Ramsay Health Care where procure to pay processing costs have been decreased by approximately 95% per document. This is a substantial saving for any hospital network. The global GS1 EDI Guideline for Healthcare helps reduce implementation barriers for global suppliers by providing consistency of EDI requirements across markets, meaning even more organisations will be in the position to realise similar savings."

Maria Palazzolo,
Chief Executive Officer
GS1 Australia

GS1 EDI in healthcare value proposition

Target	**For...**	All partners in the global healthcare supply chain, including healthcare providers, suppliers and third-party companies.
Needs	**Who...**	Need to increase the speed and accuracy of transactions between healthcare parties to offer a better quality of care. Getting the right product on time, less ordering errors and lowering costs for orders, delivery and invoicing.
Competitive framework	**Unlike...**	• Solution providers' offerings for EDI solutions • Local EDI standards • Manual and proprietary methods
Offer	**We offer...**	GS1 global standards and guidelines in healthcare for information exchange that enable efficient, accurate and secure electronic exchange of business data between healthcare partners. • GS1 EDI set of standards: GS1 EANCOM and GS1 XML • GS1 identification keys: Global Trade Item Number (GTIN), Global Location Number (GLN) and Serial Shipping Container Code (SSCC) in the GS1 Logistic Label
Benefit	**That...**	• Improve quality of care due to fast, accurate, secure information being exchanged, enabling availability of healthcare products. • Create cost savings due to enhanced information available to all healthcare participants, as appropriate and increased efficiency of transactions.
Reason why	**Because...**	• Neutral global platform recognised by the healthcare sector, GS1 EDI is widely used by manufacturers, hospitals, pharmacies, Group Purchasing Organisation (GPO) and logistics providers. (See case studies later in this document.) • Rigorous development process—the GS1 Global Standards Management Process (GSMP) • GS1 EDI is global with local implementation guidelines • GS1 standards are recognised by global standards bodies (ISO, UNCEFACT), governments and healthcare buyers • GS1 is a reference in global standard development with 40 years of experience
Facts and case studies	**As evidenced by...**	The case study from Ramsay Health Care shows: Thanks to GS1 standards, Ramsay has increased both the speed and the efficiency of their purchasing processes, underpinned the efficient operation of their hospitals and helped ensure the continuous delivery of quality healthcare. Procure to pay processing costs have been decreased by approximately 95% per document. The case study "Using GS1 standards to improve EDI accuracy and achieve the perfect order" shows that BD and ROi/Mercy achieve benefits including: • 73 percent reduction in discrepancies on purchase orders, increasing accuracy and costs savings due to significantly fewer reworks • 30 percent reduction in days payable outstanding, improving cash flow

GS1 EDI in healthcare

Ordering, delivering and paying for products is what most healthcare companies do.

Without GS1 EDI

Manual entry errors

- Customer order errors
- Increased waiting times

Inefficiencies

- Continuously tracking of data points is time-consuming and inefficient
- Use of many disparate systems mean interpretation of data between systems

High Cost

- High operating costs for paper transactions
- Lack of accuracy and risk for human error increases costs
- Reduced productivity and complex trading cycle also increases costs

Without the global guideline

Inefficiencies

- Lack of standardised business processes
- Countries with different EDI guidelines lead to increased complexity

Lack of traceability

- Requires that all parties involved must manually link the physical flow of materials and products with the flow of information; lack of traceability limits possible improvements in quality of care

Automating the process, using GS1 standards, makes it faster, more accurate and cheaper.

With GS1 EDI

Speed

- Instant exchange of business data
- Lower operating costs: Saves time and money

Accuracy

- No risk of data entry error
- Less errors means greater accuracy due to no data entry and less human error

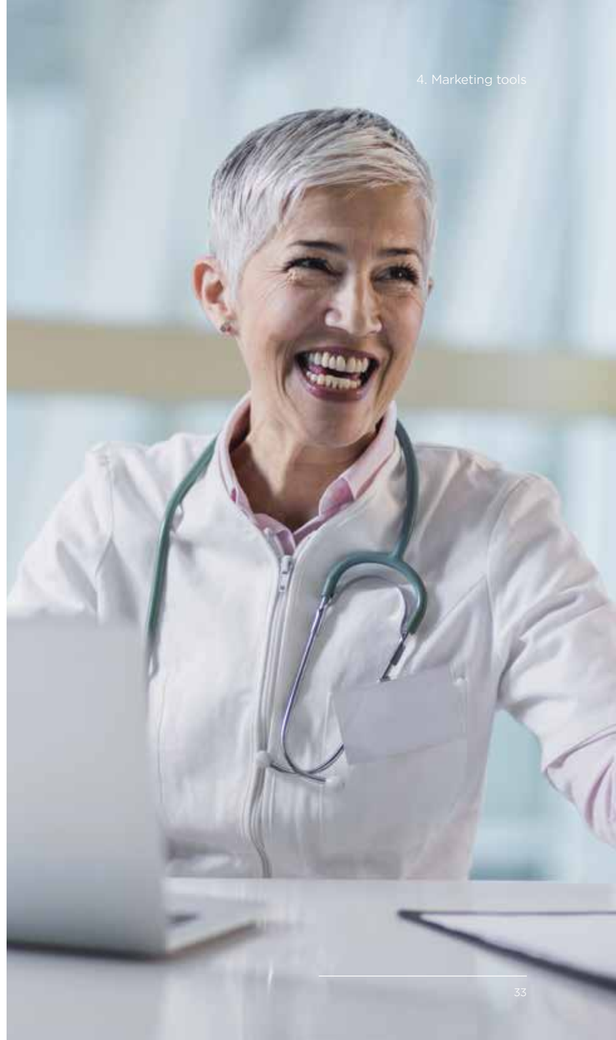
Efficiency

- Seamless integration of complete supply chain processes
- Increased productivity; more efficient personnel and faster throughput
- Faster trading cycle with streamlined processes for improved trading relationships

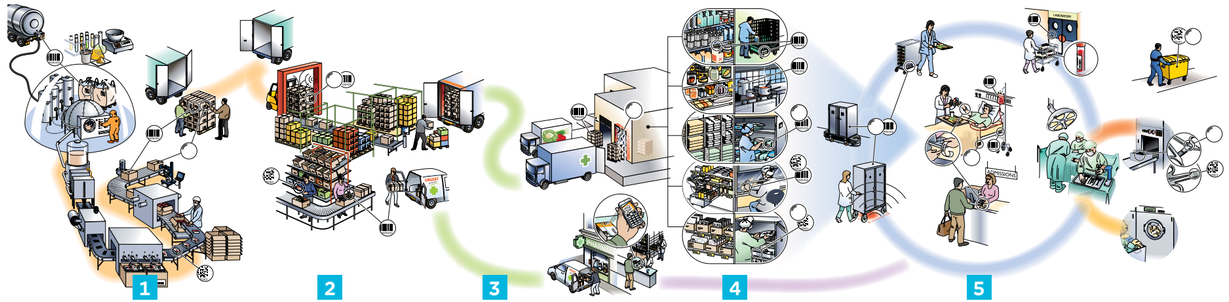
With the global guideline

Time and money savings

- Buyers, sellers and other participants save time and money when the business process, from contract to invoice, is carried out electronically and according to agreed upon rules
- Facilitate system integration and reduce development costs
- Enable and ease integration of new business partners
- Consistent business processes mean quality of care and patient safety are improved



The healthcare supply chain landscape



1 Production

The raw material is delivered to the production site and products are manufactured.

The information from the despatch advice is used in combination with the identities of the logistic units (SSCCs) to confirm that the right quantities have been delivered. The GTIN and batch/lot number of the raw material are read and registered.

The registered GTINs and batch numbers of the raw material are used in the manufacturing process to enable traceability from the product back to the raw material site.

Each packaging level of the manufactured products is assigned a GTIN. The products are marked with batch/lot numbers and dates, and the information is registered in order to achieve traceability in the next stage of the supply chain. The logistic units are marked with identities (SSCCs), and this information is also registered in order to achieve traceability at the logistic unit level.

2 Warehouse Preparation

The products are received and stored at the warehouse.

During the storage period, physical inventories are performed. Upon receipt of a customer's order, the ordered products are picked and logistic units are created and made ready for shipping.

Product arrivals can be managed using the identities of the logistic units (SSCCs). During storage, physical inventory can be carried out using the GTINs and batch /lot numbers of the products and the identities of the logistic units (SSCCs). Inventory management can be optimised using batch/lot numbers.

Orders may be sent electronically. Each logistic unit created at order picking is assigned an identity (SSCC). Traceability can be achieved by connecting the SSCCs with the identity of the recipient of the goods (GLN), the identities of the products (GTINs) and the batch/lot numbers.

3 Shipping

The logistic units are loaded onto the transport vehicle.

The vehicle leaves the warehouse. When the logistic units are loaded onto the transport vehicle the identities (SSCCs) are read and registered. Before the transport vehicle leaves the warehouse, a despatch advice is created and sent to the goods recipient. This enables more efficient and effective delivering, goods receipt and invoicing processes.

4 Receiving

The despatch advice is received prior to the goods.

The goods are received and reconciled and the inventory records are updated when the transport vehicle arrives. Planning for the receipt of goods can be efficiently managed based on the despatch advice. Upon receipt of the goods the identity of each received logistic unit (SSCC) is read which enables an automatic connection to the despatch advice. In this way the subsequent control and payment of

the invoice can be automated through matching to the relevant order.

5 Healthcare delivery

At a hospital there are many internal processes, all aiming to provide quality care to patients.

The internal processes are more efficient and secure by using the GTINs of the products and the identities of the internal functional units (GLNs). The internal processes use the same data, e.g., serial number or batch number, as was received when the goods were delivered, which creates traceability backward through the supply chain.

Patients, and the care provided to them, e.g., surgical operations, blood transfusions, X-ray treatments and medications,, are identified using the Global Service Relation Number (GSRN), which is read and registered in a database at each stage and movement of the patient, during her hospital stay. Therefore, the GSRN contributes to the safety and traceability of the patient.

To access the global guideline go to:
http://www.gs1.org/gs1-edi-healthcare-guidelines

Steps to sharing successful implementations

Sharing case studies of successful implementations is an effective way to drive interest and adoption of GS1 standards and uptake by other industry stakeholders, including GS1 EDI. The case study should showcase the tangible results and benefits associated with the implementation of GS1 standards such as reduced costs, improved productivity, increased cash flow and more...

To ensure a successful case study, it is important to have an effective framework in place before the development of the story commences. This includes:

- Get buy-in from internal and external stakeholders on the implementation scope and objectives before initiating the work.
- Develop and gain agreement regarding the development schedule; or if not achieved, document the reasons why.
- Set key performance indicators (KPIs). The key to an effective case study is to show the positive benefits of the GS1 standards implementation. To do this, a baseline or set of pre-implementation measures is needed, as well as outcomes or post-implementation measures. Consistently measuring the results during both stages is critical.
- Anecdotal information is valuable. Observations, learnings and experiences enhance the case study and ensure readers are able to relate to the work. Record observations, take photos, interview the participants and keep detailed records.
- Ensure there is stakeholder approval of any case study created, as well as the channels by which this will be shared. This is an essential step.

Within the GS1 Healthcare environment, there are many ways in which to showcase exciting case studies including:

Global

- GS1 Healthcare Reference Books
- Nomination for the GS1 Healthcare Provider Advisory Council Awards (HPAC Awards)
- HPAC monthly webinars
- Presentations at GS1 Healthcare conferences

Local

- Media releases
- Articles in local GS1 newsletters
- Presentation at local GS1 Healthcare seminars

Have a look at our case study examples gathered as part of this kit.

GS1 EDI and global standards implementation barriers

There are a few barriers when it comes to companies adopting GS1 EDI standards.

Healthcare companies not aware of the benefits.

Today, many pharmaceutical and medical device manufacturers, as well as wholesalers and distributors leverage global standards for data exchange. More and more hospitals and retail pharmacies are also starting to realise the benefits as GS1 standards become a foundation for collaboration. This collaboration in turn drives capability to implement new processes, which benefit all parties in the trading relationship including ultimately, the patient. Examples include:

- More effective inventory management resulting in awareness of product availability across trading relationships
- Automation of transactional data sharing, removing the need for manual data entry and resulting error correction, reducing costs.

For more information about the benefits, review the EDI in Healthcare Value Proposition in the previous pages.

Why move to EDI? After all, email is easier.

Indeed, both are computer-to-computer exchanges and both use an electronic mailbox. However, email messaging format is not based on a standard. Email requires a human interface and is not acceptable to applications; whereas, EDI requires standard message formats between trading partners.

The ability to send business documents between machines simplifies and expedites the business process. Many healthcare companies choose EDI as a fast, inexpensive, and safe method of sending purchase orders, requests for quotations, quotations, invoices, payments, and other frequently used business documents.

Standards are a necessary and important part of EDI communication. Every business has application files that are used to manipulate their data in ways that are familiar to the business. The problem is that most businesses, even using the same types of data, do not use the same application programs or hardware and software platforms. If businesses need to be able to communicate data to one another, they must have common ground to allow the exchange of information. Standards provide the solutions to this problem. All businesses that conform to specific standards can share data in the formats delineated by those standards.

This is where GS1 EDI standards come in. GS1 standards are the best choice for linking healthcare organisations in the private and public sectors.

Users receive support from their local GS1 MO in their own language, according to their local business needs.

Not sure which standards are the best.

- GS1 has 40 years of experience in standards for supply and demand chains worldwide
- GS1 EDI standards provide solutions for multiple healthcare stakeholders
- GS1 EDI development is based on an organised process
- The development and modifications of GS1 standards follow a rigorous, well-documented change management procedure: the Global Standards Management Process (GSMP)
- Each GSMP step includes broad user involvement and is validated by users regarding the relevance of the change and commitment to implement
- The final solution is checked for compatibility with other GS1 standards and approved by the users

Existing business processes built around sluggish paper handling may not be suited for EDI and would require changes to accommodate automated processing of business documents.

The full implementation of GS1 EDI messages for the order to cash process can help solve this problem. Despatch and receiving advices, combined with the scanning of healthcare products during despatch and receipt, help to generate an invoice based on products that have actually been sent and accepted.

Cost in time and money: The preliminary expenses and time that arise from the implementation, customisation and training can be costly and therefore may discourage some businesses.

Some of our GS1 Member organisations have developed cost and savings calculators that demonstrate that using GS1 EDI in Healthcare brings competitive advantages (refer to next section).

The key is to determine what method of integration is right for the company which will determine the cost of implementation.

For a small healthcare company or supplier that only receives few orders per year from a hospital of pharmacy, fully integrated EDI may not make economic sense.
In this case, businesses may use an inexpensive solution such as web EDI provided by EDI solution providers.

Healthcare partners have different business processes and use different standards.

- Our standards are global, created by users for users and can support multiple business processes
- Our GS1 EDI standards in healthcare are developed based on analysing the actual business processes of all companies involved
- Check with your local GS1 MO regarding the Message Implementation Guide available for your market. Make sure they are aligned to the global guideline

Global healthcare multinationals with operations in different countries are having issues with overlap since many local EDI implementation guides for healthcare are for local use.

To support healthcare companies in their daily businesses and to allow them to get the best of GS1 EDI standards to gain value, GS1 together with manufacturers, hospitals, solution providers and GS1 MOs have developed the global guideline to align GS1 EDI standards for use throughout the global healthcare supply chain, from supplier to logistics end-user. They developed a business process model to ensure a common understanding of the entire healthcare supply chain.

Cost and savings calculators

Cost and savings calculators are important tools to help companies implementing EDI to determine the investment and return from the implementation.

Some GS1 Member Organisations have developed cost and savings calculators that demonstrate that using GS1 EDI in Healthcare brings competitive advantages.

As an example, GS1 Australia in collaboration with its members, including retailers, buying organisations and suppliers have developed and tested a Cost and Savings calculator as detailed below.

Measure the value

Calculate the potential economic benefits from implementing GS1 standards throughout your supply chain with the GS1 Savings Calculator.

Four Simple Steps to Savings

The GS1 Australia Savings Calculator is a tool designed to assist all trading partners in the supply chain from suppliers and retailers to third parties, who want to identify the potential savings their organisation could extract by implementing GS1 standards.

Step 1
Gather data

Step 2
Input data

Step 3
Calculate

Step 4
Generate report

Realise your potential savings by generating a report in the GS1 Australia Savings Calculator with four easy steps.

The Challenge

Manual, paper based processing of business transactions exchanged between trading partners (such as product master data, purchase orders, delivery advices and invoices) leaves much room for human error. It can be very costly and time consuming.

Adopting a standards based approach to paperless trading across all these processes will create business value for your company, your business partners and ultimately the end consumer or end user.

The impact of automated order-to-cash processes in the supply chain is particularly tangible: more fluid stock movements, greater flexibility and accuracy in stock management, improved traceability and better product availability.

To help companies measure the potential savings, GS1 Australia has created the Savings Calculator. The Savings Calculator is a decision-making tool which allows each company to assess the benefits of using GS1 standards based on their own supply chain processes and variables.

GS1 Australia has leveraged the work completed by GS1 UK and GS1 France. They have also collaborated with Deakin University and Cranfield University UK to ensure the Savings Calculator delivers accurate results.

A number of GS1 Australia members, including retailers, buying organisations and suppliers have also assisted in the development and testing of the Savings Calculator.

Why use the Calculator?

By inputting your own supply chain metrics and allowing the tool to calculate and analyse your probable savings, the Savings Calculator can help you develop a more accurate business case for the further automation of order-to-cash processes in your supply chain.

GS1 provides global standards for unique identification, data capture and data sharing that enables the automation of supply chain processes. This automation ensures that business transactions are exchanged and executed in a rapid, efficient and accurate manner.

The Benefits/Proven Results

Order-to-cash automation with GS1 gives companies a competitive advantage:

- Cutting operational costs to the business
- Eliminating errors in processes
- Shortening delivery time
- Reducing out of stocks
- Significantly lowering distribution costs
- Improving customer satisfaction

Access the savings calculator at the following link:
https://www.gs1au.org/our-services/savings-calculator/

Case study:
Ramsay Health Care getting the benefits of using GS1 standards

NEED: Ramsay Health Care wanted to improve the efficiency of their supply chain processes while leveraging Australian national e-procurement recommendations.

SOLUTION: The group has deployed a full suite of GS1 standards for identifying, capturing and sharing information to support interaction with their suppliers, including GS1 EDI.

BENEFITS: Thanks to GS1 standards, Ramsay has increased both the speed and the efficiency of their purchasing processes, underpinned the efficient operation of their hospitals and helped ensure the continuous delivery of quality healthcare. Procure to pay processing costs have been decreased by approximately 95% per document.

Ramsay Health Care was established by Paul Ramsay, in Sydney, Australia, in 1964 and has grown to become a global hospital group operating more than 220 hospitals and day surgery facilities across Australia, France, the United Kingdom, Indonesia and Malaysia. It is one of the top five private hospital operators in the world.

As of late 2015, GS1 standards-based EDI has been deployed with ten of Ramsay Australia's highest volume suppliers, and pilots are underway with five additional vendors.

Guided by the Australian eHealth initiative

Like many organisations in the healthcare sector in Australia, Ramsay Health Care supports the objectives defined within the National E-Health Transition Authority (NEHTA) supply chain program.

Launched in 2005 with the goal to ensure a safe, secure and efficient health system that will deliver better health outcomes for all Australians, NEHTA recommends the use of GS1 standards, specifically:

- GS1 Global Trade Item Numbers® (GTINs®) for the unique identification of products
- GS1 Global Location Numbers (GLNs) for uniquely identifying facility and internal locations
- GS1 Global Data Synchronisation Network (GDSN®) as the foundation of the Australian National Product Catalogue (NPC)
- GS1 XML as the standard language used for Electronic Data Interchange (EDI) purchasing processes

Beyond respecting the Australian national direction

Aligning with the industry defined NEHTA's e-procurement recommendations was only one motivation behind Ramsay's work to deploy EDI.

Having benefitted in the early 2000s from both organic and external growth, Ramsay needed to improve the efficiency of their supply chain and the accuracy of their procurement processes by embracing new technologies and wanted to leverage their size and buying power.

"With NEHTA and GS1 driving the change in the public system to e-health and e-procurement, the choice to ride the wave was straightforward," notes Andrew Potter, Group Inventory Manager of Ramsay Health Care in charge of the EDI deployment project, "Furthermore, a significant acquisition had left our company with two incompatible ERP systems. The need for reform was clear."

The time was right to design and build all of the improvements Ramsay wanted, and to put in place the measures to align with the NEHTA recommendations. This alignment with whole of industry has helped support a solution where master data is controlled and properly protected from unwanted influence.

A collaborative effort

Getting things up and running has been a team effort. Ramsay worked with GS1 Australia, SAP and their local EDI solution provider, Pacific Commerce, to build a system supported by standards that can handle increasing volumes of EDI transmissions and exchanges.

How GS1 helps

Every Ramsay facility – and every storage location within those facilities – has now been assigned a GS1 GLN. Suppliers undertaking EDI have also sourced themselves GLNs. Products in Ramsay's SAP systems are synchronised with supplier data from the Australian National Product Catalogue (NPC), sourcing data for each product against each GTIN assigned to all relevant packaging levels. Business messages are exchanged with suppliers using GS1 EDI XML standards containing GTIN and GLN as the primary identifiers for products and locations.

A range of benefits

Ramsay is seeing a wide range of benefits from their EDI deployment, as is every supplier with whom they have worked to implement EDI.

Andrew Potter is the Group Inventory Manager for Ramsay Health Care Australia and has been with Ramsay for more than 10 years in hospital and corporate supply chain roles. Over his 20 year career in supply chain he has also worked in small to medium enterprises such as Medical Device suppliers and Scientific and Life Sciences suppliers. His primary focus at Ramsay is to deliver continuous improvement projects which deliver commercial benefit in supply chain, with the EDI Implementation project being at the centre of his work programme. Additionally he manages the team that provides SAP master data management and delivers business support services to procurement, hospital supply chain and Australian executive stakeholders.

Ramsay has achieved their goal of efficiency savings. Due to use of the NPC as the source of product master data and the foundation for EDI, improvements have been seen in the accuracy of product information and prices. Mr. Potter confirms "Accurate product master data is the lifeblood of any business and accurate data was essential for our EDI implementation."

Vastly fewer purchase orders are blocked or rejected, and Ramsay teams are overall much more certain that they are receiving what they ordered and invoices are reliably paid as per trading terms. Hospitals have greater visibility of lead times, and Ramsay can more easily pinpoint issues where delivery times will not meet expectations.

Ramsay has also seen another important benefit from their efforts: their staff are now able to spend significantly less time on low- to no-value tasks like manually entering data, chasing payments or reworking mistakes – and as a result, are spending much more time serving the needs of patients, clinical staff and hospital executive or resolving accounts with true issues.

"I could talk about improvements in accuracy, efficiency, standardisation and controls," notes Mr. Potter, "but all those things can all be summarised in two key words. We have saved time, and we have saved money."

The cost to implement the standards and configure the EDI system was less than $100K and ongoing costs for use of an EDI service provider and GS1 memberships are approximately $25Kpa. This means that based on an approximate manual procure to pay cost of $35 AUD, the cost from automated processing of purchase orders and invoices is reduced to approximately $2 AUD. Document volumes via EDI are expected to exceed a quarter of a million documents in 2016 so the savings are significant.

Lessons learned and advice for others

Is your organisation thinking of deploying EDI? Andrew Potter and his team at Ramsay have words of wisdom to share. For example, be sure you and your team understand and can map all of the business processes you want to automate.

"I could talk about our improvements in accuracy, efficiency, standardisation and controls but all those things can all be summarised in two key words.

Thanks to GS1 EDI, we have saved time, and we have saved money."

Andrew Potter
Group Inventory Manager
Ramsay Healthcare

Build a solution for tomorrow, and not just for today: make it scalable to fit your future needs. Work with your suppliers using a "win/win" attitude – there must also be benefits for them in moving to EDI. This will support a successful implementation and mutual benefit.

And finally, Mr. Potter stresses the importance of having clean, high-quality master data before you even consider undertaking EDI: "For business, master data is just like the blood in your veins. It flows through every part of your organisation and through every business transaction. Master data is the lifeblood of your activity. It is the most important thing driving efficiency. So you need to care for the health of your master data just like you would care for yourself and your own health. Because if you don't maintain your master data, then all your business processes will suffer."

Case study: eProcurement at St James's Hospital, Dublin

Delivering world-class patient safety and efficiency in healthcare by taking paper and cost out of procurement.

Abstract

In 2013 St James's Hospital (SJH) embarked on a proof-of-concept (POC) project in conjunction with a number of suppliers. The objective of the POC was to fully standardise and automate the ordering process between the hospital and the supplier. The process replaces paper-based systems and provides direct links between the hospital's financial and clinical systems.

The globally unique GS1 identifiers for products and locations are at the heart of this solution, enabling automation and traceability.

In September 2014, St James's Hospital went live with their first supplier, Cruinn Diagnostics. SJH is currently working with further suppliers to join the programme, which is based on the full adoption of GS1 standards.

Background

St James's Hospital has a long history of using GS1 standards for identification to enhance patient safety, traceability and accuracy across the healthcare pathway. The success of both the Haemophilia solution to track products from supplier to patient and the HSE national surgical instrument track and trace programme for instrument trays and endoscopes are globally recognised. Both solutions use barcode scanning to remove paper and automate the processes.

1995	2003/4	2008	2011	2011	Today	Future
Master Data Management and structured coding	Haemophilia Track and Trace project commenced GS1 Datamatrix SAP Installed (EPR & GUI)	Wireless Kanban for ward stock management	First hospital to pilot the HSE funded surgical instrument track and trace programme using GS1 standards	eProcurement project (standardised coding, and data and messaging) GTIN GLN GS1 XML 3.0	1st Sept 2014 First Supplier to GoLive Cruinn- Communications and meetings with Top 50 Suppliers	Working towards implementation of eProcurement with all Suppliers Target to be first hospital fully compliant to GS1 Standards Full Traceability to ElectronicHealth Record

The Challenge

In addition to the patient safety and efficiency drivers, the economic situation in Ireland means there is huge pressure on costs. This, combined with a change in government policy towards a "money follows the patient" model and impending regulatory changes for pharmaceuticals and medical devices meant that the time was ideal for St James's Hospital to take a significant step forward.

Currently Irish public, voluntary and private hospitals have a considerable task to manually reconcile paper invoices with paper purchase orders and proof of delivery dockets for the purpose of payment. Using traditional paper based systems results in an enormous paper trail. This is an error prone process which requires resources to check and audit everything to prevent any risk to patients.

The Australian government recognised and addressed this challenge several years ago. They set about establishing a model for the standardisation of product coding, locations and product data using GS1 standards. The learnings from this standardsbased national approach were taken to develop the best practice

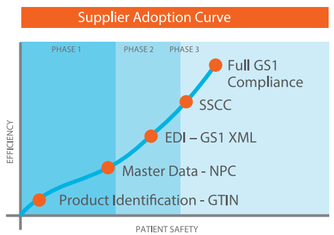
The Vision

The 2012 McKinsey[1] report recognises the need for healthcare to align to one global standard in order to achieve the benefits that retail and other sectors have already realised. This approach, also evidence based by the report, is the means to achieving the ultimate best practice that all hospitals aspire to - the ability to electronically and consistently record activity at the point of patient care and to have an audit trail for the purposes of efficient recall and reporting.

The Solution

St. James's Hospital, together with its suppliers Cruinn Diagnostics, Fannin/DCC Vital and Johnson and Johnson, implemented the eprocurement solution starting with the standardisation of product coding by linking existing codes to GS1 Global Trade Item Numbers (GTINs). Supplier data is mapped to an agreed minimum dataset eg: brand name, description, unit of trade etc. This data is then uploaded by the supplier to the National Product Catalogue (NPC) and is available for SJH to review and import. The second stage of the process is to exchange four electronic procurement messages based upon Electronic Data Interchange (EDI).

Ensuring operational efficiency and patient safety through adoption of GS1 standards



- **Unique Identifier:** The Global Trade Item Number (GTIN) for standardised identification of products
- **Product Data:** The Global Data Synchronisation Network (GDSN) for standardised sharing of Master Data via the National Product Catalogue (NPC)
- **Unique Location:** The Global Location Number (GLN) for standardised identification of locations
- **Standardised Messaging:** The GS1 XML messages for standardised exchange of business transactions messages (Purchase Order, Advance Shipping Notice, Receiving Advice and Invoice)

Note: the Serialised Shipping Container Code (SSCC) for standardised labelling of pallets or boxes at goods receiving is planned as part of the next phase of the project.

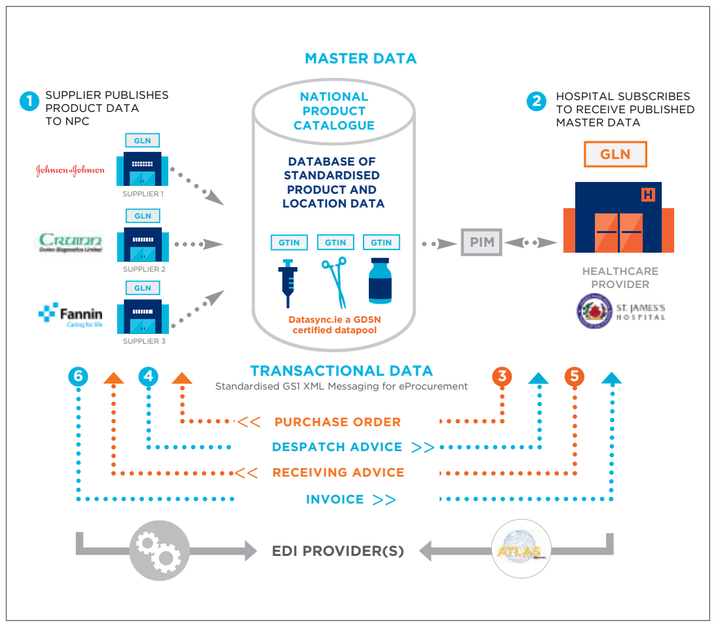
 1 - Strength in Unity: The promise of global standards in healthcare

Step 1: Standardised product coding and master data

The first key requirement for St. James's Hospital is the standardisation of product coding and alignment of product data with their suppliers at product setup stage. This needs to occur in advance of the ordering process.

Completing this action ensures accuracy of the data between the hospital and the supplier.

GS1 Ireland supported both SJH and the suppliers in this process.



What is the National Product Catalogue (NPC)?

The National Product Catalogue is a registry of all products sold in the Irish healthcare sector. The NPC is 'the' single source of item master data for health institutions seeking to purchase medicines, medical devices and other necessary healthcare items.

The NPC is hosted by GS1 Ireland on datasync.ie, a GDSN certified data pool. This platform enables the secure sharing of item master information such as product identifiers and descriptions, units of measure, package contents, product classification, pricing and related healthcare information. Accurate product data is critical not only for supply chain efficiency but also for clinical purposes to support patient safety.

Getting Started Steps

1. Assign GTIN	The supplier determines if GTINs are available.
2. Map GTIN	The supplier maps the GTINs to their product listing.
3. Collect Master Data	Master data elements such as product name, description and unit of measure are collected by the supplier in line with to the dataset agreed by SJH.
4. Upload Data to NPC	The master data is then uploaded to the National Product Catalogue.
5. Receive Data	SJH receives supplier data and any subsequent updates from the NPC.
6. Review and Match Data	Using the Product Information Management (PIM) tool, SJH reviews the supplier data and matches this data to the internal hospital data.
7. Import Data	SJH then takes the data into their ERP system via a direct download from the PIM.

Step 2: Standardised electronic procurement

This second requirement eliminates the paper based processes through automated electronic communication of the transactional data between the hospital and supplier. All messages are exchanged via the EDI partners in GS1 XML Standard format.

For this process SJH engaged an EDI provider, Atlas Products, to facilitate the exchange of four key standardised procurement messages. GS1 Ireland was engaged to undertake the development of the procurement messages.

Product Information Manager (PIM)

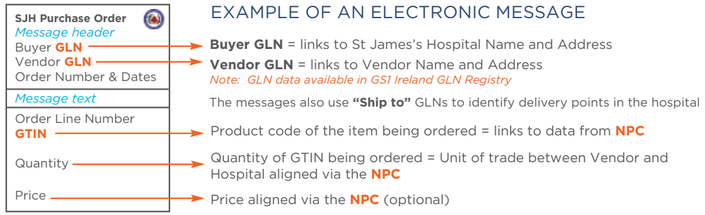
The Product Information Manager is a software tool which allows SJH to match, review and import supplier data from the NPC.

Product data from suppliers can be populated in the hospital ERP system via a controlled and automated machine-to-machine process with no rekeying of data.

What is Electronic Data Interchange (EDI)?

Electronic Data Interchange is the electronic exchange of business information using a standardised format; a process which allows one company to send business messages such as purchase orders and invoices to another company electronically rather than with paper. EDI, based on global standards, allows the messages to be exchanged quickly, efficiently and accurately between trading partners.

EXAMPLE OF AN ELECTRONIC MESSAGE



Order-to-invoice using the GS1 GTIN and GLN Identifiers

Identifiers	Confirm the supplier can process the electronic procurement messages based on GTIN & GLN.
Choose EDI provider	Typically an EDI partner is chosen to manage the translation and transmission of the electronic messages based on GS1 XML 3.0 format.
PO	SJH generates the EDI Purchase Order (PO) that is transmitted following translation by their EDI provider to the supplier. The translation to the common format is applied to each subsequent message.
ASN	Upon receipt of the order the Supplier prepares the order for shipment and responds with an EDI Advance Shipping Notice (ASN) which includes the details of the goods to be shipped to SJH.
RAN	On receipt of the goods, SJH warehouse staff compare the delivery to the information in the ASN. By confirming the receipt of goods an EDI Receiving Advice Notice (RAN) is sent to the supplier.
INVOICE	The supplier generates an EDI invoice based on the information in the RAN to settle the payment process.

Benefits

St James's Hospital embarked on this exercise based on its belief that the best approach to delivering patient safety required an end-to-end process design and adherence to international standards.

The benefits were known to be considerable and included:

- improved patient safety with consequential reduction in duplicate patient procedures
- increased ability for accurate traceability and recall
- standardisation and increased accuracy of product information
- elimination of inefficient paperwork and duplication of data input
- reductions in stock holdings and level of waste stocks
- reduction in number of credit notes generated
- automatic invoice matching
- more efficient utilisation of supply chain management and finance resources.

"The adoption of GS1 standards and the development of a shared product catalogue enables end-to-end traceability and full automation for healthcare supply chains. In addition, it provides the means to converge clinical and business systems which supports the 'money follows the patient' model."

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

Costs

The set-up costs for the implementation of this model mainly involved (i) SJH system modifications, (ii) the engagement of an EDI service provider and (iii) participation in the product catalogue.

Ongoing systems costs are expected to be no greater than current system running costs and further savings are likely to be achieved as the system is extended.

Lessons learned and next steps

The learnings established during the project were used to develop the final dataset and business rules which resulted in the first supplier achieving Go-Live with St James's Hospital in September 2014. To read about the initiative in greater detail please see the whitepaper Achieving World Class Patient Safety and Efficiency in Irish Healthcare which has been published by St James's Hospital. The requirement for compliance to GS1 standards is now included in tenders and SJH is working to engage their key suppliers in this programme.

About the authors:

Vincent Callan, has 18 years Healthcare experience and is currently the Director of Facilities Management at St James's Hospital and has held previous management positions in Materials Management. The Facilities Management Directorate provides a full range of non-clinical services in an integrated manner that supports the treatment of patients. Vincent has been the key sponsor for the eProcurement Project.

Pat Bailey is one of the leads in the SAP Programme office at St James's Hospital. Pat has an extensive knowledge of Materials Management and business system implementation within SJH. He has played a key role in the eProcurement Project.

About St James's Hospital

St. James's Hospital is the largest acute academic teaching hospital in the Republic of Ireland with 1,000 beds and provides a comprehensive range of diagnostic and treatment hospital services to a population in excess of 300,000 at local, regional and national level. There is a strong academic commitment with Trinity College Dublin and the Trinity Health Sciences Centre is located on site.

Case study: Louisiana hospital system achieves the “touchless order” via GS1 standards implementation

Franciscan Missionaries of Our Lady Health System (FMOLHS) is currently engaged in a two-year pilot to develop a high performance, streamlined and automated supply chain, in large part via the implementation of GS1 standards. Like many hospital systems, FMOLHS aims to eliminate human error and bad data while putting into place supply chain processes that are automated from end-to-end - from the time an order is placed through its materials management information system (MMIS), to the delivery of the product, use of the product at the patient bedside and accurate recording of the product in the patient’s electronic medical record. In 2014, FMOLHS achieved what was previously considered by the U.S. healthcare industry as “mission impossible” – it processed the Touchless Order with zero errors, and has since replicated the process with additional suppliers.

Background

Based in Baton Rouge, La., FMOLHS is the leading healthcare provider in the state of Louisiana. For many years, hospitals in the United States have been working towards establishing a true “Touchless Order” process, a major goal of supply chain management. FMOLHS leveraged lessons learned and best practices of other leading hospital systems, including Mercy, Mayo Clinic and others, and achieved the milestone in the summer of 2014 with its first supplier partner, Cook Medical, and did so ahead of schedule. In addition, the hospital system developed a repeatable process for use with additional supplier partners, including BD, Johnson & Johnson, Abbott Laboratories, Terumo Medical, Bard and Medtronic, to automate the order process from end-to-end and without human touch. FMOLHS expects to implement the Touchless Order for additional suppliers in the months ahead.

Challenge

The current era of accountability across the healthcare system means that all of healthcare must pull together to provide quality care to patients, reduce healthcare costs and improve the health of the community at large. However, a hospital cannot achieve operational excellence if it uses faulty data. Accurate, consistent data is important to every function within the hospital, as it impacts quality of care provided to patients, the safety of the products used in the delivery of that care and the security of the supply chain. With healthcare’s ongoing reliance on electronic communications and business transactions, the very foundation of quality healthcare rests with sound, accurate and reliable information every step of the way.

Solution

GS1 standards in a fully automated supply chain wrapped with sound business processes work together to enable improved patient safety, supply chain security, and critical information sharing each step of the way (from manufacture to patient use and beyond). Standardised data provides countless predictable and unpredictable benefits.

Having a clear view of the supply chain leads to improvements in every area that a product touches, including inventory management, contract management, claims and reimbursements, patient care and records management, among others. The information can be used for U.S. Food Drug Administration actions, such as product recalls, post-market surveillance and counterfeit abatement efforts. Standardised data also supports regulation, such as U.S. FDA Unique Device Identification (UDI) and pharmaceutical product serialisation, as required by the Drug Supply Chain Security Act. Standards also support many industry priorities as well (Meaningful Use, Triple Aim, and others.). At FMOLHS, the transition to Touchless Order has been much smoother than the team at FMOLHS had originally expected.

FMOLHS started implementing GS1 standards with Cook Medical in May 2014, and its first go-live order was processed successfully on July 7, 2014. The order was 100 percent touchless, meaning that FMOLHS was able to create a purchase order, submit it, receive the product at its central dock, scan it into their IT systems, send receipt acknowledgement, receive and pay the invoice, and have the product accurately delivered within the hospital, all without manual entry.

Global Location Number (GLN):

Location Identification Standardised location identifier that replaces custom account and location numbers.

Global Trade Item Number® (GTIN®): Product Identification

Standardised product identifier that replaces custom product numbers. Manufacturers are moving toward adopting a standardised product identifier to ensure accuracy of product information at every level of packaging throughout the supply chain.

Global Data Synchronisation Network™ (GDSN®)

Source of standardised product information. With this network, all supply chain partners will be able to access identical, up-to-date, reliable product data efficiently. The GDSN plays an integral role in the adoption of GTINs. Healthcare organisations can use the GDSN to store and share product information for faster standardisation and better communication across the industry.

FMOLHS GS1 standards implementation project phases

- Completion of pilot and key decisions
- Document project activities and processes
- Identify and communicate with parallel projects (e.g. launch of FMOLHS's new, centralised distribution center and alignment with ROi)
- Closure plan, including internal certification of system readiness certification
- Rollout (for Cook Medical, FMOLHS is entering monitoring phase. In this phase, will conduct analytics for financial and other benefits)
- Transition to Operations (30-60 days post pilot)

A few basic steps

Working closely with Cook Medical, FMOLHS went through a few basic steps to implement GS1 standards, specifically the Global Location Number (GLN) to identify locations and the Global Trade Item Number® (GTIN®) to identify products. This process is now being replicated with other suppliers:

1. FMOLHS established its hierarchies and registered the GLN for its facilities. The information was shared with Cook Medical, which now uses GLNs instead of customer numbers created in house. Cook also shared their GLNs with FMOLHS.

2. FMOLHS tested all of its transaction points using GLNs. This step involved working with data translator partners to ensure EDI transactions were being processed using GLN information.

3. FMOLHS coordinated efforts with its MMIS provider (Infor v. 9.1.03) to ensure that their software was able to accommodate GLN information. For now, this involved simply setting up a transaction table within the system. Future versions of the software will contain GLN and GTIN fields.

4. FMOLHS conducted round trip order processing tests (successfully), and then implemented the orders live.

Cook Medical has assigned a Global Trade Item Number (GTIN) for each of its products, and is now requiring customers to transact using GTINs going forward. FMOLHS received the GTIN for the items used, and loaded that information into the MMIS. The FMOLHS team verified that all the product attributes were accurate, and that the information in the hospital information system matched with Cook's descriptions for consistency. Once all the records that contained GTINs were in the MMIS, FMOLHS was able to submit orders using GTINs. For four weeks, the FMOLHS team monitored every electronic order closely, and every single automated order was processed accurately.

The GTIN piece is very important, because it is through these transactions that FMOLHS is supporting FDA UDI. Capturing GTIN allowed FMOLHS to know where the product went once it was in the hospital, which improves patient safety, security in the supply chain (to prevent counterfeits, for example) and for potential product recalls. As hospitals launch initiatives to track patient outcomes and population health, knowing when and where a specific product was used and on which patients will become even more critical.

Benchmarks

It is important to look at before/after scenarios to evaluate effectiveness of any business process change. To that end, FMOLHS has established benchmarks to assess metrics in the following areas:

- Accuracy in purchase order, invoicing and payment.
- Revenue reporting factors (charge accuracy, claims processing efficiencies, real-time product usage and consumption, automated replenishment, demand-driven supply chain, and point-of-use systems and processes).
- Inventory management (value of inventory on hand, reduction in inventory, re-labeling activities, recalls, expiration date management).

Conclusion

The journey to the Touchless Order has resulted in FMOLHS finally having a complete, accurate and up-to-date item file for our materials management processes. As FMOLHS embarks on this exciting transition with other partners, it does so knowing that the long-time healthcare ideal of a fully automated supply chain is now within reach. With the Touchless Order, what seemed like an unattainable vision just a few years ago is now a reality that the hospital experiences everyday. In short order, it could become "business as usual" for the healthcare system.

For those hospitals that have been hesitant or have been delaying their efforts for any reason, a significant lesson learned for FMOLHS is that as intimidating as implementation may seem at the beginning, the adoption of standards is completely "doable," no matter the size of the hospital system.

These standards are the foundation of our ability to order supplies error free, and track the product all the way from order to dock to patient, and beyond."

Sandi Michel,
Director of Supply Chain Systems and Quality,
FMOLHS

About the author:

Sandi Michel is Director of Systems and Quality, MMIS, Implementations, and Audits at Franciscan Missionaries of Our Lady Health System in Baton Rouge, Louisiana. She currently leads the implementation of GS1 global data standards and a team of Supply Chain Analysts.

About FMOLHS

Based in Baton Rouge, the Franciscan Missionaries of Our Lady Health System is the leading health care innovator in Louisiana. They bring together outstanding clinicians, the most advanced technology and leading research to ensure that patients receive the highest quality and safest care possible. This commitment is grounded in a history that is more than 100 years old, but reflected today by its strategic vision of transforming healthcare through superior performance and excellent patient care.

Case study:
Using GS1 standards to improve EDI accuracy and achieve the perfect order

In 2011, Becton, Dickinson and Company (BD), Mercy Health (Mercy) and its supply chain company Resource Optimization & Innovation (ROi) launched a collaborative initiative to fully automate their order-to-cash process to achieve the "perfect order," implementing GS1 standards from manufacturing site to patient bedside. This end-to-end integration of global data standards—in supply chain and clinical processes—by a healthcare manufacturer and provider is a first-time accomplishment in the U.S. healthcare industry. Moving forward, the trading partners have continued to perfect and extend their perfect-order success, resulting in highly accurate and efficient processes with a continual focus on improving patient care. This review will provide an update on how the two organisations implemented EDI to achieve supply chain efficiencies and how their use of GS1 standards continues to evolve.

Adopting a phased approach

Today's U.S. healthcare industry faces many challenges such as increasing regulations, new demands from patients and rising costs.

For healthcare providers and manufacturers alike, the supply chain holds considerable opportunity to better control and reduce accelerating costs by addressing a major contributor—errors.

To eliminate transaction errors, BD and ROi/Mercy took a phased approach to implement GS1 standards, enabling automated EDI transactions to reduce human intervention in their procurement and replenishment processes.

"Achieving the perfect order has helped us become a more efficient business partner, streamline our internal procure-to-pay processes and enabled us to provide better care for our patients," explains Matt Mentel, Executive Director, Integrated Performance Solutions with ROi/Mercy. "In addition, through this work we have helped our own operations by reducing redundancies and the overall cost of doing business."

Dennis Black, BD's Director of e-Business, Solutions Group, adds, "Over the past few years, we have continued to look for new opportunities to leverage GS1 data standards in our business processes. We continue to realise new benefits as our experience and network of partners grow."

What makes an order "perfect"?

Defined by the Strategic Marketplace Initiative (SMI), the perfect order is "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.

Taking first steps with identification

For ROi/Mercy, the decision to use GS1 standards was a straightforward one. As Mercy's supply chain company, ROi fully understood how improved supply chain processes could have a positive impact on clinical operations.

For example, Mentel stresses the importance of having accurate product data for consumption at the point of care by clinicians.

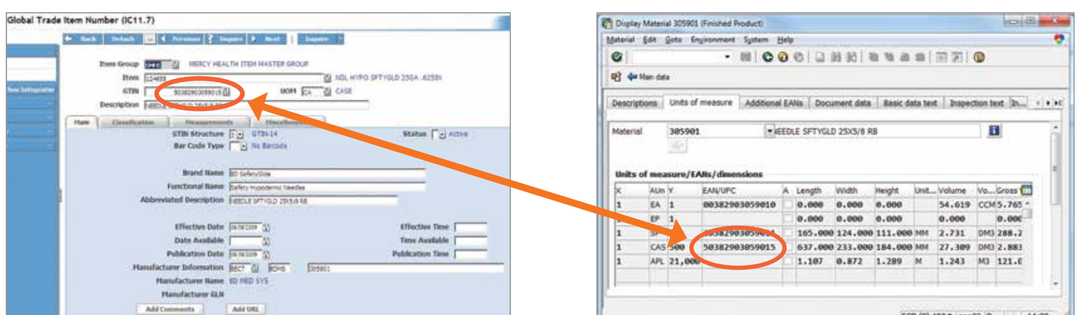
"Having and using GS1 standards enables us to automate the scanning and documenting of product at the point of consumption, while also automating the replenishment of that product back to inventory. This removes the burden of manually tracking product consumption and replenishment from our clinicians and allows them to focus on their patients, knowing the right products will be available at the right time and place."

The transformation started with BD assigning GS1 Global Trade Item Numbers (GTINs) to uniquely identify its products and Global Location Numbers (GLNs) to identify its locations. Subsequently, ROi assigned GLNs for its distribution centres and Mercy hospital locations, sharing these GLNs with BD and other suppliers to ensure shipments were delivered to correct locations and traceability records are fully aligned.

Black advises, "From the beginning, we decided that we would only use GLNs assigned by our respective trading partners. If we want accurate location data on Mercy Health and ROi/Mercy, we need to use their interpretations, not the work of a third party. Accurate GLN assignments can help us reduce pricing and shipping errors."

"Adopting and leveraging GS1 standards across the healthcare industry is essential, providing us improved efficiencies in our supply chain operations and affording us the ability to continue to improve the patient experience."

Gene Kirtser,
Chief Executive Officer
ROi



Product master data aligned in ROi/Mercy and BD internal systems

Enabling seamless EDI transactions

When ROi/Mercy and BD first began working to establish the perfect order, both companies worked to ensure that every BD product had an established GTIN for every item in Mercy's item master at each unit of measure. Today, ROi/Mercy leverages these GTINs when ordering, picking and shipping BD products throughout Mercy.

Where applicable, Mercy also uses GTIN data to scan products at the point of care and to store product usage information in the patient's electronic health record (EHR) and registries.

BD and ROi/Mercy also use GS1 standards in their EDI transactions for the instant exchange of business transactions for improved efficiencies and accuracy throughout the order-to-cash process.

By transitioning from manual data entry to automated, EDI-driven processes, both trading partners have realised a wealth of benefits such as significantly improved accuracy, reduced costs, increased product availability and improved productivity.

BD and ROi/Mercy began transacting via EDI long before they began using GS1 data standards. The use of GLNs and GTINs in EDI transactions has created further efficiencies and enabled the two trading partners to speak the same business language. Both have the exact understanding of the data represented by a specific GLN or GTIN.

The value of EDI is evident based on its growing use by companies worldwide. In its 2015 EDI implementation survey, GS1 found the implementation of GS1 EDI standards—GS1 EANCOM® and GS1 XML—by responding member companies has continued to show steady growth for the past 10 years.[1]

"BD uses EDI transactions for more than 90 percent of our sales volume in the U.S. region," says Black. "EDI is an efficient process for purchase orders, advance ship notices (ASNs), invoices and other supply fulfillment transactions. We have worked with Mercy Health and other leading healthcare providers to use GLNs and GTINs in EDI transactions. The use of data standards in EDI transactions can help to reduce master data errors and add to the efficiency of using EDI."

"BD is investing in product master data, applying accurate barcodes to our labels, and perfecting business processes so that we can better serve our customers. This work is an example of the offerings included in our "Signature Solutions" program where we are offering up resources and expertise to further collaborate with our customers."

David Ortiz,
Director, Solutions Group
BD

Gaining accuracy and visibility of orders

When placing an order, ROi/Mercy uses the GTINs on purchase orders (POs), which takes the guesswork out of ordering the right products.

"GS1 standards provide a common language for our EDI transactions, directly impacting data quality," says Mentel. "The GTINs associated with BD products in our materials management information system (MMIS) match the data in BD's ERP system. We no longer confuse levels of packaging or have errors due to the use of internal product numbers."

Each BD product's GTIN with lot/batch and expiry data is encoded using GS1 barcodes, which is printed on the product's package label in BD factories. As orders are assembled for shipping, the BD distribution centre uses the GS1 Serial Shipping Container Code (SSCC) to identify a single logistic unit and its individual contents. A Global Shipment Identification Number (GSIN) is also used to quickly identify the shipment and access the groups of logistic units that are included. In application, the pallet is coded with an SSCC license plate label which provides a common means to identify pallets across partner's systems and a link to their contents using the product GTINs. The pallets are then shipped, identified with the Global Shipment Identification Number that can be encoded to allow for instantaneous access to the shipment info. With GS1 standards for products, logistic units, shipments and EDI communication, the trading partners have the needed foundation for seamless and error-free transactions.

BD is also experimenting with publishing and managing their product data in the GS1 Global Data Synchronisation Network™ (GDSN®). "We currently use several different methods to share product data with ROi/Mercy and other customers. We are now experimenting with GDSN to provide product data in a trusted and secure way for any product a hospital consumes," says Black.

As a shipped order travels from a BD factory to its distribution centre, it then moves on to the ROi/Mercy distribution centre and eventually gets distributed throughout Mercy. Through this process, ASNs containing the GTINs and GLNs are used to verify the receipt and accuracy of the order, providing visibility of the shipment and its products, each step of the way.

Upon receipt, the ROi/Mercy distribution centre scans the shipping label to verify receipt of products included in the shipment and record the product information in its inventory system. From there the product is distributed to the facility where the GTIN is scanned to the shelf and made ready for consumption. As a result, quality control processes are improved through this workflow as ROi/Mercy can use the manufacturer-provided production data for managing inventory. With immediate access to accurate information, this speeds both the BD and ROi/Mercy supply chain processes and helps ensure overall accuracy of orders.

"GS1 standards provide a common language for our EDI transactions, directly impacting data quality."

Matt Mentel,
Executive Director, Integrated Performance Solutions
ROi/Mercy

1 - "Implementation of GS1 EDI Standards in 2015: Executive Summary," GS1, http://www.gs1.org/edi.

Matthew Mentel, CMRP, M.H.A., M.B.A.
Executive Director, Integrated Performance Solutions

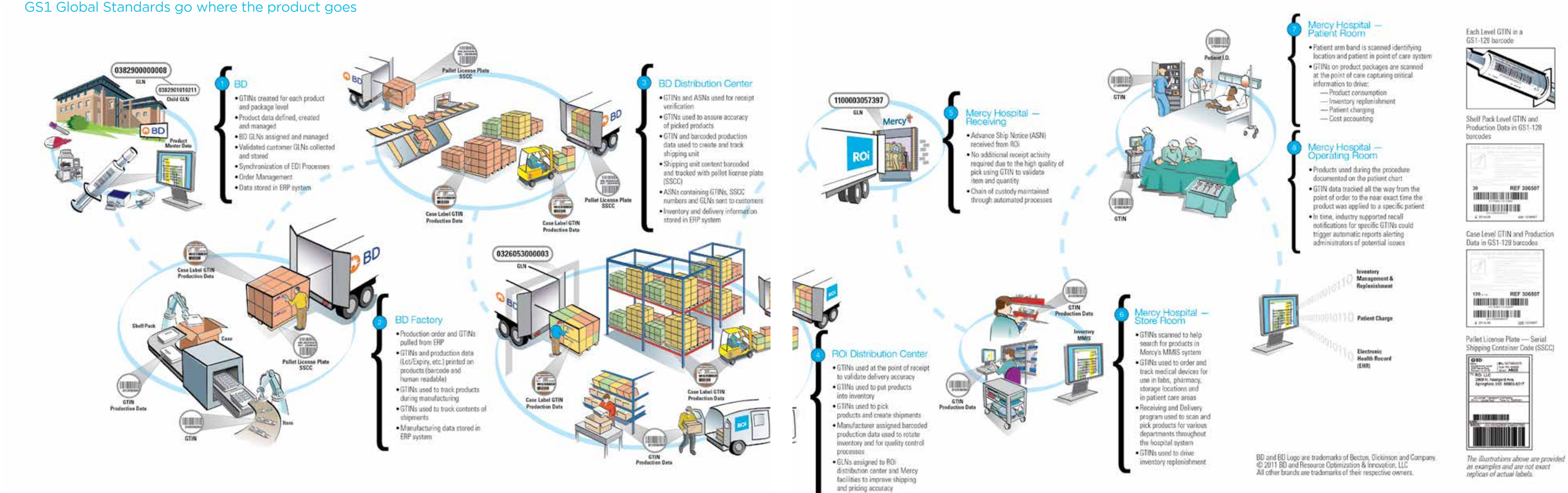
As the Executive Director for Integrated Performance Solutions, Matt and his team are responsible for identifying, designing and implementing creative solutions as well as leveraging current technology to drive efficiency and expense reduction throughout Mercy. He oversees several key initiatives that seek to optimise the use of tools, technology, process improvement and metrics across the entire care continuum, driving more predictive and outcomes based decisions that help improve and enrich the Mercy experience for caregivers and patients.

Matt has more than 24 years of experience in health care, including 15 years in supply chain and information technology. He has held various positions with Mercy — the sixth largest Catholic health care system in the United States. Matt's career includes service to a variety of other health care providers, including ROi (Resource Optimization & Innovation), SSM Healthcare System, BJC Healthcare and St. Louis University Hospital, as well as a health care consulting/accounting firm.

Matt is a member of the Association for Healthcare Resource & Materials Management (AHRMM) and Healthcare Information and Management Systems Society (HIMSS). Matt received a bachelor's degree in Management Information Systems with a Certificate in Health Information Management, a Master of Health Administration, and a Master of Business Administration from St. Louis University.

4. Marketing tools

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



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

Ensuring the chain of custody

When shipping products to any of its hospitals, the ROi/Mercy distribution centre transmits an ASN to the Mercy location receiving the shipment for ease of product receipt and verification. As products travel throughout Mercy's hospitals, their GTINs enable ROi/Mercy to trace products from points of replenishment to points of use.

Where applicable, ROi/Mercy uses GTINs to track products for use in its procedural areas, pharmacies, storage locations and patient care areas. GTINs can also be scanned to help search for products in Mercy's materials management information system.

Caregivers scan patient wristbands to identify the patient and location where care takes place. They can also scan GTINs on consumed products, capturing critical information to drive product consumption, near real-time usage and inventory control as well as patient invoicing.

As products are consumed in Mercy facilities, a replenishment order/PO is generated with the needed product GTINs as well as the GLN of the hospital where the products should be shipped. The PO is automatically transmitted via EDI to the ROi/Mercy distribution centre where products are picked and shipped.

Mentel advises, "Scanning and tracking of a GTIN throughout the supply chain and on to the point of consumption is key. The scanning of the GTIN allows us to manage and remove the risk of an expired product being used at the point of care. In addition, once GTINs are more extensively used in recalls, we will also be able to leverage this same scan to remove the risk of recalls being used on patients, accurately track the recalled product to the patients who received it and trace it back to the supplier who sourced it. GS1 standards also help us confirm the authentication of products received, verifying their chains of custody."

In December 2015, 97.64 percent of BD products purchased by ROi/Mercy were via EDI and 96.46 percent of the line items were "touchless," accounting for some items that require human intervention as part of the fulfilment process. The effective error rate during this month was an impressive 1.18 percent, considering that EDI transacted orders can fail for a variety of reasons.

Dennis Black,
Director, e-Business, Solutions Group

With more than 25 years of healthcare industry experience, Dennis has responsibilities on the BD Signature Solutions team that include, leading collaborative initiatives with healthcare providers, UDI implementation, achieving the "Perfect Order", and refining e-Business processes. Dennis is on the GS1 Healthcare Global Leadership Team, and the GS1 Healthcare U.S. Executive Leadership Team. He also participates in work groups within GS1, SMI, AdvaMed, MDSCC and other organizations that are focused on improving the healthcare supply chain. Dennis is currently involved in a number of pilot and implementation activities to enable BD and healthcare providers to achieve operational efficiencies using GS1 standards.

"To be successful with EDI transactions, we need to align master data, agree on business rules, select a common EDI format and manage many other variables. By synchronising product master data using GLNs and GTINs with our customers, we can enable our ERP systems to speak a common business language and help eliminate EDI errors."

Carol Harrison-Bradley,
Manager, e-Business

BD

Perfect order for improved patient care

Three years after instituting the Perfect Order program between BD and ROi/Mercy, EDI utilisation remains high and error rates remain very low.

In December 2015, 97.64 percent of BD products purchased by ROi/Mercy were via EDI and 96.46 percent of the line items were "touchless," accounting for some items that require human intervention as part of the fulfilment process.

The effective error rate during this month was an impressive 1.18 percent, considering that EDI transacted orders can fail for a variety of reasons. This continually high EDI success rate has been achieved without expending significant resources. To maintain a high EDI success rate, the trading partners continue to share master data. For example, BD and ROi/Mercy have established a process to add GTIN data and other key product data attributes into their IT systems before new BD products are purchased.

This means that BD and ROi/Mercy continue to achieve many of their targeted perfect-order benefits, including:

- 31.1 percent improvement in the ROi/Mercy ready-to-pay timing
- 75 percent improvement in the ROi/Mercy receive-to-match timing
- 30 percent reduction in days payable outstanding, improving cash flow
- 73 percent reduction in discrepancies on purchase orders, increasing accuracy and costs savings due to significantly fewer reworks
- Increased productivity, increasing the time people can work on other value-added activities
- Fewer number of calls to customer service, increasing satisfaction
- Improved inventory management with fewer stock outs, increasing product availability for improved patient care

The use of GTINs and GLNs in EDI transactions also leads to a range of benefits for both sides of the trading relationship.

- By using GTINs, trading partners can eliminate cross-reference tables for translating provider-assigned product numbers to a manufacturer's catalogue number, thus reducing potential errors.
- GTIN usage can also eliminate confusion when dealing with products containing multiple levels of packaging. Each unique GTIN is assigned to a unit of measure so there is no need for the healthcare provider to supply a UOM in the EDI message, ensuring that the correct level of packaging is ordered, shipped and invoiced.
- By assigning GLNs, healthcare providers are not required to use the manufacturer-assigned, or distributor-assigned customer numbers for EDI, again eliminating the need to map tables and resulting potential errors.

Being more efficient and eliminating supply chain errors means healthcare providers can focus their resources on patient care instead of supply chain rework. Also, eliminating supply chain errors helps to ensure that the right products arrive at the right location when needed by the clinicians.

"The barcode scanning capability in our Cath Labs enabled us to capture coronary stent GTINs and associate them with the patients in which the devices were implanted. That was the key to bringing device and clinical data together so that we could track stent performance over time assessing both safety and effectivenes by key device attributes such as dimensions or impregnated drug. This is powerful information for physicians and patients and will have applicability to all implanted devices."

Dr Joseph Drozda,
Director of Outcomes Research
Mercy Health System

"In the U.S. and many other countries, there's a tremendous amount of discussion about migrating to GS1 standards. We're sharing our work as much as possible to help move the industry forward. It's about making our healthcare system work better for everyone."

Dennis Black,
Director, e-Business, Solutions Group
BD

Exploring clinical applications

Using GS1 standards in EDI transactions and business processes is really only the beginning. Today, Mercy uses GS1 standards, where applicable, to track products throughout its supply chain all the way down to the point of consumption in the clinical setting. Awarded a grant by the U.S. Food and Drug Administration (FDA) in 2012, Mercy began by tracking and documenting the consumption of coronary stents in its cardiac catheterisation laboratories. To automate this capture and gain better visibility to product, Mercy implemented a scanning solution, first within its cardiac cath labs, to document the receipt, storage, consumption and reordering of stents—all using Unique Device Identification (UDI) enabled by GTINs.

These GTINs were linked to attributes contained within the FDA's Global UDI Database (GUDID) as well as key clinical attributes in Mercy's Supplemental UDI Database. These GTINs have also been integrated in Mercy's ERP software, its inventory management system, and in a database along with electronic health record data to uniquely identify stents as they are managed as inventory and used in patients.

Since this project, Mercy has been awarded another FDA grant to continue to expand this research with two other health systems.

"We continue to expand the tracking of UDI and GTINs beyond our cardiac cath labs, which involves a relatively small number of products, to other procedural areas, such as the OR," explains Mentel. "By documenting consumption, we have access to accurate inventory and replenishment practices to ensure that needed products are always there. This information can also provide our clinicians with some very compelling data about these products, how they are used, and their effectiveness levels."

Looking to the future

ROi/Mercy continues to encourage its other suppliers to use GS1 standards and EDI communication for transactions. Simply put, storing GTINs in internal hospital systems creates a foundation for GTIN usage in scanning programs, electronic health records, comparative effectiveness research, recalls and other clinical applications.

BD is also urging its customers to use the GS1 data standards since they provide a common business language that can enable accurate business transactions and support many of the clinical initiatives that healthcare providers are implementing.

BD has a comprehensive EDI program in place and is looking to extend this further. Considering the EDI transactions exchanged with the largest healthcare provider systems in the U.S., over 96 percent of products purchased from BD are via EDI and error rates per order are very low, ranging between 0 to 3 percent of line items. BD's goal is to have 100 percent of its products purchased via EDI with zero transactional errors in any given month—and many customers today are achieving this.

For hospitals, using GS1 standards is quickly becoming a fundamental element of their operations. "Using GS1 standards on all products is essential to the overall successful operations of hospitals, long term," explains Mentel. "Going forward, we want to ensure the results and practices developed from our work with BD are extended to all Mercy suppliers and beyond to the entire industry."

Black with BD agrees, "In the U.S. and many other countries, there's a tremendous amount of discussion about migrating to GS1 standards. We're sharing our work as much as possible to help move the industry forward. It's about making our healthcare system work better for everyone."

"By documenting consumption (with GS1 standards), we now have accurate inventory and replenishment practices to ensure that needed products are always there. This information can also provide our clinicians with some very compelling data about these products and their effectiveness levels."

Matt Mentel,
Executive Director, Integrated Performance Solutions
ROi/Mercy

Use of BD GTIN Data in a Mercy Health Electronic Health Record

Patient MRN Id	OR Procedure Name	Supply Item Type	EPIC Supply Item Name	Manuf Cd	Item Nbr	Part Nbr
E1402260637	APPENDECTOMY	Basin	BASIN SURGI-START SGL 31144333	TYCI	120234	31144333
E1402260637	APPENDECTOMY	Catheter	CATH FOLEY 16FR TRAY 900016A	CRBA	77894	900016A
E1402260637	APPENDECTOMY	Lab	BACTISWAB AEROBIC C/S R723115	ATC	181335	R723115
E1402260637	APPENDECTOMY	Lab	CULTURETTE SPECIMEN ANAEROBIC	BECT	129066	00382902365006
E1402260637	APPENDECTOMY	Laparoscopic	ENDO CATCH 10MM 173050G	TYCI	259427	173050G
E1402260637	APPENDECTOMY	Laparoscopic	SPNG ENDO KITTNER 13300	VICN	207726	13300
E1402260637	APPENDECTOMY	Clip	APPLIER ENDO CLIP II 1-USE W/MED-L	TYCI	266114	176657
E1402260637	APPENDECTOMY	Dressing	DRSG BANDAID 0.75X3" 3065LF	TYCI	42376	3065LF
E1402260637	APPENDECTOMY	Dressing	DRSG GZE 4X4IN 10/PK 2539	TYCI	182350	2539

"Scanning and tracking of a GTIN throughout the supply chain and on to the point of consumption is key. The scanning of the GTIN allows us to manage and remove the risk of an expired product being used at the point of care. In addition, once GTINs are more extensively used in recalls, we will also be able to leverage this same scan to remove the risk of recalls being used on patients, accurately track the recalled product to the patients who received it and trace it back to the supplier who sourced it. GS1 standards also help us confirm the authentication of products received, verifying their chains of custody."

Matt Mentel, Executive Director,
Integrated Performance Solutions

ROi/Mercy

About BD

BD is a global medical technology company that is advancing the world of health by improving medical discovery, diagnostics and the delivery of care. BD leads in patient and health care worker safety and the technologies that enable medical research and clinical laboratories. The company provides innovative solutions that help advance cellular studies and genomics, enhance the diagnosis of infectious disease and cancer, improve medication management, promote infection prevention, equip surgical and interventional procedures, optimize respiratory care and support the management of diabetes. The company partners with organizations around the world to address some of the most challenging global health issues. BD has more than 45,000 associates across 50 countries who work in close collaboration with customers and partners to help enhance outcomes, lower health care delivery costs, increase efficiencies, improve health care safety and expand access to health. For more information on BD, please visit www.bd.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. www.mercy.net

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 management, and distribution and transportation management. www.roiscs.com

5. Technical information

"FMOLHS is currently engaged in a two-year pilot to develop a high-performance, streamlined and automated supply chain, in large part due to the implementation of EDI and GS1 standards. In 2014, we processed the 'touchless' EDI order with zero errors, and have since replicated the process with additional suppliers. The journey to the touchless order has resulted in our health system confirming that our long-time healthcare vision of a fully automated supply chain is now within reach."

Sandi Michel,
Director of Supply Chain Systems and Quality

Franciscan Missionaries of Our Lady Health System (FMOLHS)

GS1 EDI standards in healthcare

There are no healthcare specific EDI messages at this time since the GS1 EDI standards are generally applicable across sectors. Messages that are not applicable to Healthcare are not included in the following reference table, e.g. Despatch Advice - Fish Traceability Extension.

GS1 XML

Trade Messages

Align
Item Data Notification
Order
Configure to Order
Order
Order Response
Deliver
Consumption Report
Despatch Advice
Inventory Report
Receiving Advice
Pay
Advanced Remittance Notification
Buyer Reconciliation of Request for Payment
Claims Notification
Debit Credit Advice
Invoice
Request for Payment
Settlement
Plan
Goods Requirements
Goods Requirements Response
Performance Measurement
Purchase Conditions
Replenishment Proposal
Replenishment Request

Logistics Messages

Warehousing
Logistics Inventory Report Request & Report
Warehousing Common
Warehousing Inbound Instruction & Notification
Warehousing Operations Instruction & Notification
Warehousing Outbound Instruction & Notification
Transport Planning
Transport Capacity Booking & Response
Transport Capacity Plan
Transport Capacity Requirements
Transport Execution
Transport Instruction & Response
Transport Pick-up Drop-off Request & Confirmation
Transport Status Request & Notification
Product Recall
Product Recall
Artwork content
Artwork Content and Response
Component Libraries
EDI Common Library
Shared Common Library
Application Level Messages
Application Receipt Acknowledgement

EANCOM

Master Data Messages

PARTIN	Party Information
PRICAT	Price/Sales Catalogue
PROINQ	Product Inquiry
PRODAT	Product Data

Transaction Messages

CNTCND	Contractual Conditions
COACSU	Commercial Account Summary
COMDIS	Commercial Dispute
DESADV	Despatch Advice
HANMOV	Cargo/Goods Handling and Movement
IFCSUM	Forwarding and Consolidation Summary
IFTMAN	Arrival Notice
IFTMBC	Booking Confirmation
IFTMBF	Firm Booking
IFTMIN	Transport Instruction
IFTSTA	Transport Status
INSDES	Instruction to Despatch
INVOIC	Invoice
ORDCHG	Purchase Order Change Request
ORDERS	Purchase Order
ORDRSP	Purchase Order Response
OSTENQ	Order Status Enquiry
OSTRPT	Order Status Report
PAYMUL	Multiple Payment Order
QUOTES	Quotation
RECADV	Receiving Advice
REMADV	Remittance Advice
REQOTE	Request for Quotation
RETANN	Announcement for Returns
RETINS	Instructions for Returns
TAXCON	Tax Control

Report and Planning Messages

APERAK	Application Error and Acknowlegdement Message
BANSTA	Banking Status
CREMUL	Multiple Credit Advice
CONTRL	Syntax and Service Report Message
DELFOR	Delivery Schedule
DEBMUL	Multiple Debit Advice
DIRDEB	Direct Debit
FINCAN	Financial Cancellation
FINSTA	Financial Statement
INVRPT	Inventory Report
MSCONS	Metered Services Consumption Report
QALITY	Quality Test Report
SLSFCT	Sales Forecast Report
SLSRPT	Sales Data Report

Other Messages

CONDRA	Drawing Administration
GENRAL	General Message

EDI message testing / validation

An important step in implementing GS1 EDI is testing the messages. They need to be checked to ensure they are conformant to the standard and to the requirements of the business partners; if they contain correct data, proper references, etc.

While implementing companies can perform testing internally, as the number of the partners connected via EDI grows, it may be more efficient to outsource. Some GS1 MOs may offer such testing services.

The following levels should be checked:

- Communication compliance: Does the communication software conform to GS1 recommendations, such as AS2 profiles?
- Technical compliance: Does the tested EDI file conform with the base XML or UN/EDIFACT specifications (also referred to as syntax compliance)?
- GS1 EDI compliance: Is the messaging being implemented standards compliant?
- Global guideline compliance: Is the messaging being implemented global guideline compliant?
- Local guideline compliance: Is the messaging being implemented local gudeline compliant?
- Choreography compliance: Are the messages exchanged in the right order? Apart from each message being tested, validation can be set-up to test the interdependence of exchanged messages.

The result of the validation can be a compliance report or a certificate.

A testing service can have various scope and financial models.

- Some MOs offer specialised tools owned by the MO or outsourced to an external IT company. The offer ranges from simple file testing to full-blown certification programmes.
- Some EDI software providers offer on-line services that can be made available by MOs to their users.
- Some local GDSN data pools also offer testing services, but this is often limited to the messages used in GDSN.

6. Training

"It is well proven that EDI implementation in healthcare delivers benefits. GS1 standards, supported by the GS1 EDI Global Guideline for Healthcare, provide the framework by which these benefits can be even more easily achieved. GS1 Netherlands was proud to chair this strategic and important project."

Pieter Maarleveld,
Chief Executive Officer
GS1 Netherlands

GS1 EDI in healthcare training

GS1 offers a set of training courses to support the global guideline which are available on the GS1 website. The below modules are available as eLearn sessions that the student can access and complete at the pace suitable for him/her. Presentation slide decks for classroom training are also available.

As necessary, GS1 MOs will arrange access to the eLearn modules for their industry stakeholders.

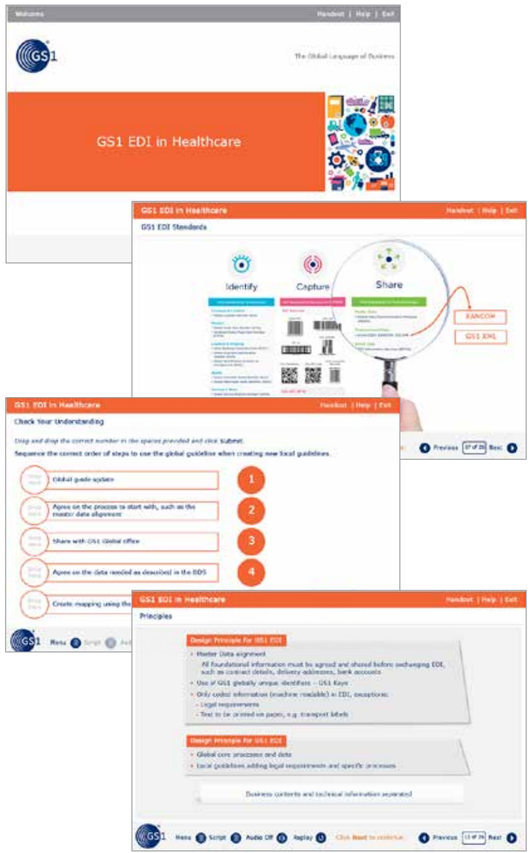
Two training modules have been developed to provide a comprehensive training experience. The audience is expected to have a fair knowledge of the Healthcare supply chain as well as of the basics of the GS1 Standards and, notably, the GS1 EDI standards.

Module 1 provides an overview of how to implement the global guideline to ensure Healthcare supply chain efficiency, both locally and globally.

Module 2 concentrates in detail on the EDI business process in healthcare as well as the various EDI technical documents necessary for using the global guideline including the collaboration processes, business document specification and mapping documents.

This module also explains how implementers should leverage the global guideline when there are existing local guidelines or in the situation where no local guidelines have been developed.

Link to course
https://learning.gs1.org/mod/scorm/view.php?id=2589



7. Reference documents

We work with healthcare providers and suppliers to provide improved patient safety, achieve greater regulatory compliance and to drive operational efficiencies.

Frequently asked questions

Who is using EDI in healthcare?

In the healthcare sector GS1 EDI is widely used by manufacturers, hospitals, pharmacies, Group Purchasing Organisation (GPO) and logistics providers.

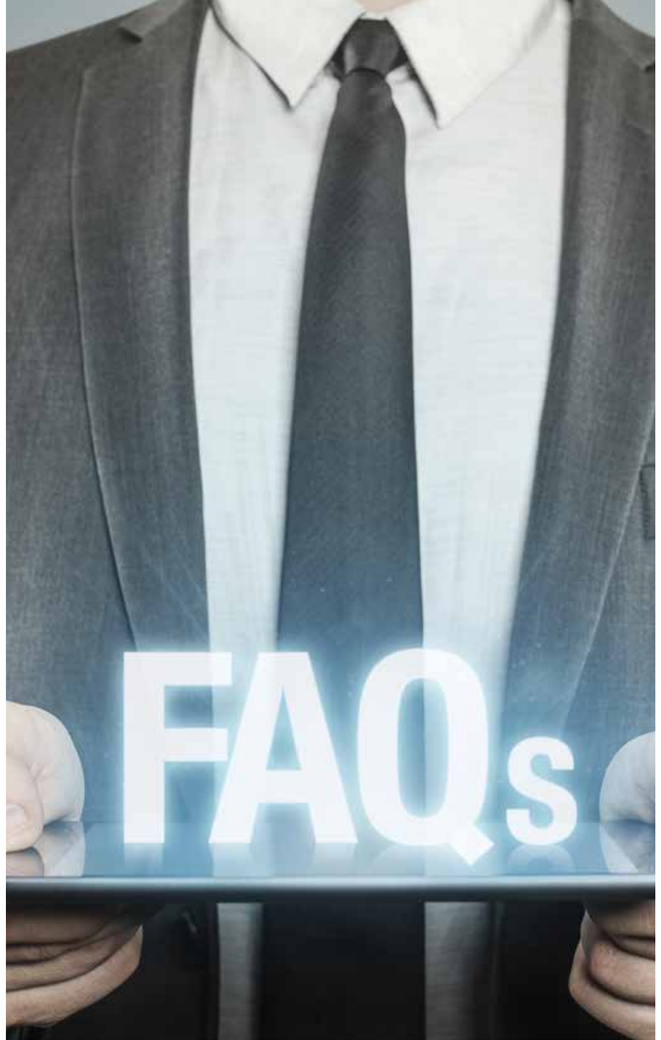
Why was the global guideline developed?

The widespread use of GS1 EDI has, in some cases, led to differences in interpretation and application. To alleviate this, GS1 has produced a harmonised global guideline, including business process model and a Healthcare Interoperability Model.

What are the different sections in the global guidelines?

Part I of the global guideline outlines a model for harmonised and streamlined business processes to be used by the participants in the healthcare supply chain. Part II of the guideline describes in detail the EDI processes associated with the healthcare process model (Part I).

The processes described are supported by the Business Document Specifications and the Mappings Specifications developed for both the GS1 EANCOM and GS1 XML EDI standards. The Business Document Specifications describe what information should be included in the electronic business documents sent between the business systems. The Mapping Specifications define how the elements of the business documents are mapped to an EANCOM message and an XML message respectively.



What training is available for suppliers and buyers implementing the harmonised guidelines?

Training about how to use the harmonised guidelines has been developed in a 'train the trainer' model. There are slide decks and also eLearn modules available for use, as referred to earlier in this kit.

How is the healthcare approach to EDI different to other industries?

Healthcare uses the GS1 EDI standards in the same way as other industry sectors. By using the global guidelines healthcare stakeholders can take a globally consistent approach to implementation.

What should I do to start an EDI implementation in healthcare?

EDI implementation consists of three stages:

1. **Initial implementation** - when setting up EDI for the first time, the following decisions must be taken:

   a. Selection of standards - GS1 recommends the use of EANCOM or GS1 XML

   b. Determining the business models relevant to the business partners involved in the EDI process and based on the global guideline

   c. Selection of messages from the global guideline suitable for the given business models

   d. Selection of network - GS1 Member Organisations may have a list of the network and software providers available at the local market

   e. Selection of software - may depend on the selected service provider

   f. Development of application and allocation of resources - this step is the most time consuming and costly part of EDI implementations. The IT system currently used and its capability determine the necessary investment in the IT development. Besides, the internal IT resources may need to be trained to ensure that they fully understand the GS1 System, and EDI messaging processes. If the company is engaging external resources, it should ensure that the adequate references are provided, to guarantee the capability of the resources.

2. **Roll out** - The EDI process involves at least one other company, so its success is also driven by their ability. A company must be aware of its trading partners' capability and select first the most feasible partner. There is information earlier in the guide about assessing where to commence an implementation.

3. **Enhance** - adding more applications. The EDI implementation should not be limited to just one business model, and further enhancements will be required to ensure that all the steps in the business cycle are covered. By reviewing the global model, some further opportunities to develop and enhance the internal systems and make them compatible with EDI messaging could be noticed.

What is Order to Cash?

The supply chain in trading of products can be divided into three basic steps:

- Ordering products
- Delivery of ordered products
- Payment for products delivered

That is why it is called Order to Cash.

These steps require exchange of business information between the buyer and seller:

1. Buyer needs to send an order
2. Seller needs to inform the Buyer which and when the products are sent and when they will arrive
3. Seller needs to send an invoice to receive payment for the products delivered.

This information can be exchanged in traditional ways or it can also be automated, which allows to eliminate errors and speed up the process. Such automation can be achieved by the use of EDI.

What are the basic messages I need to implement in Order to Cash?

EDI standards define many different messages adapted to various business scenarios. There are three core messages for Order to Cash process:

- Order
- Despatch Advice
- Invoice

Implementing these three messages can significantly improve supply chain efficiency and accuracy, shorten the time of waiting for delivery and payment. They can be later complemented by messages such as the Order Response, Receiving Advice, Remittance Advice or Invoice Response.

What GS1 standards other than EDI messages which need to be used in Order to Cash?

Within the EDI messages, the following GS1 Identification Keys are used:

- GTIN – Global Trade Item Number identifying products; all information about the products in Order to Cash transactions will be referenced by their respective GTIN.
- GLN – Global Location Number identifying physical and functional locations, as well as business partners; all information about the partners involved in Order to Cash transactions and their locations will be referenced by their respective GTIN.
- SSCC – Serial Shipping Container Code identified logistic (shipping) units assigned for their life time; the Despatch Advice contains the content details of each individual logistic unit. If there is a need to provide additional information on the transport item, it can be placed together with SSCC on the GS1 Logistic Label. This additional information can be addressed to logistic providers or to complement the Despatch Advice content necessary at the goods despatch or receipt.

Who do I contact for more information about GS1 EDI in healthcare?

Contact your local GS1 Member Organisation or send an email to GS1 at contactus@gs1.org

Glossary

- Business document specification – The Business Document Specifications describe what information should be included in the electronic business documents sent between the business systems.
- Business process – A set of activities and tasks that, once completed, will accomplish an organisational goal related to goods movement through the supply chain.
- Business sub-process – A part of a business process.
- Global Data Synchronisation Network (GDSN) – Enables trading partners to globally share trusted product master data. You can exchange product information with business partners in an automatic and efficient way that ensures brand integrity.
- GS1 Healthcare – The Global Healthcare User Group brings together all related healthcare stakeholders, to lead the successful development and implementation of global standards in healthcare.
- Global Location Number (GLN) – Used by companies to identify their locations, giving them complete flexibility to identify any type or level of location required.
- Global Service Relation Number – The Global Service Relation Number can be used by services organisations to identify their relationships with individual service providers (such as doctors who work for a hospital) and individual service clients (such as hospital patients, the metering points of an electricity company, or the loyalty account members of a retailer).
- Global Standards Management Process – The GS1 GSMP (Global Standards Management Process) is a community-based forum for businesses facing similar problems to work together and develop standards-based solutions. Standards created by industry, for Industry. A neutral participant, GS1 facilitates dialogue and the development of standards-based solutions among business and technical people from nearly sixty countries. Industries represented include retail and consumer goods, fresh foods, healthcare, transport and logistics, governments and many more.
- Global Trade Item Number (GTIN) – Used by a company to uniquely identify all of its trade items. GS1 defines trade items as products or services that are priced, ordered or invoiced at any point in the supply chain.

- GS1 EDI – GS1 EDI provides global standards for electronic business messaging that allow automatic electronic transmission of agreed business data between trading partners. This automation ensures that the exchange is done in rapid, efficient and accurate manner.
- GS1 General Specifications – The GS1 General Specifications is the core standards document of the GS1 System describing how GS1 bar codes and identification keys should be used.
- Healthcare Provider Advisory Council – A group of leaders and early adopters of GS1 Healthcare Standards from the global clinical provider environment working to identify projects that support the adoption of GS1 Healthcare Standards in Healthcare institutions and retail pharmacies. Their final goal is to improve patient safety, cost efficiency and staff productivity.
- Implementation Kit – A set of tools and references to help enable implementation of GS1 standards.
- Local guideline – An EDI guideline specific for a particular country or region.
- Logistics end-user – End customer or buyer of products subject to GS1 EDI.
- Logistics Label – The physical label used to identify logistic units using the GS1 standards.
- Mapping specification – The Mapping Specifications define how the elements of the business documents are mapped to an EANCOM message and an XML message respectively.
- Order-to-cash process – Order to cash comprises all activities from ordering and delivery to invoicing and finally payment.
- SSCC – The Serial Shipping Container Code (SSCC) can be used by companies to identify a logistic unit, which can be any combination of trade items packaged together for storage and/ or transport purposes; for example a case, pallet or parcel.
- Supplier – An entity that is the source for goods or services subject to GS1 EDI.
- Track and trace (also Traceability) – Traceability is the ability to track forward the movement through specified stage(s) of the extended supply chain and trace backward the history, application or location of that which is under consideration.
- Vendor managed inventory - A means of optimising supply chain performance in which the manufacturer is responsible for maintaining the distributor's inventory levels. The manufacturer has access to the distributor's inventory data and is responsible for generating purchase orders.
- Work request – An incoming request for development or modification of the GS1 standards.
- XML – Extensible Markup Language (XML) is a language designed for information exchange over the internet. GS1 uses XML to create a set of standard messages for the GS1 EDI (Electronic Data Interchange). GS1 XML messages can be exchanged using any technical solution or internet transport protocol.

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.
For more information about GS1 Healthcare, and to view this kit please visit www.gs1.org/healthcare.

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