

eCommerce within the hospital pharmaceutical supply chain lays foundation for improved patient safety

ABSTRACT

The Monash Pharmacy project, a phased project with participants representing healthcare manufacturers and wholesalers, hospital pharmacy and tertiary education institutions, aimed to set the standards for eCommerce and supply chain management in the healthcare and pharmaceutical industries in Australia. Phase One, completed in mid-2004, demonstrated that the GS1 System could deliver benefits when implemented within the hospital pharmaceutical supply chain. This phase incorporated the use of EANCOM-format electronic purchase orders, purchase order acknowledgements and dispatch advice messages between suppliers and the hospital pharmacy of a major Australian hospital. Phase Two commenced in mid-2005 and involved broader implementation of the processes used during the first phase to additional suppliers as well as to all hospitals in the Southern Health network. In addition, the scope was expanded to include a data synchronisation pilot via the National Product Catalogue (NPC). Phase Three commenced in mid-2008 and will broaden the project scope further.



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Background

The supply of pharmaceuticals and other goods to Australian hospitals is complex due to the mix of state, federal and private interests as well as a plethora of regulatory requirements. Yet while other Australian industry sectors, such as retail, have gained irrefutable benefits through the use of electronic commerce, the supply of healthcare products has remained predominantly paper-based with manual processing.

In 2003, seeing an opportunity to introduce greater efficiency in their supply chain, a group of proactive and leading health sector companies banded together to participate in a project to demonstrate the use of electronic commerce in a tightly defined but manageable project, the Monash Pharmacy Project. The pharmacy department of a major Melbourne hospital, the Monash Medical Centre, chose to work with suppliers, representing small, medium

and large enterprises: Clifford Hallam Pharmaceuticals, Hospital Supplies of Australia and Orion Laboratories as well as key stakeholders including Health Purchasing Victoria (an independent statutory authority for the procurement of services, equipment and goods for Victorian public hospitals and other health agencies), National Supply Chain Reform Task Force (NSCRTF), Pharmhos Software and the project managers, EAN Australia (now GS1 Australia).

The GS1 System

At the heart of an effective electronic commerce system is a global way to identify trade items and logistic units: the GS1 System of global standards. To gain unilateral support across the Australian pharmaceutical/healthcare sector for 'one standard' identification system, the Monash Pharmacy Project team needed to illustrate the benefits to all industry suppliers.

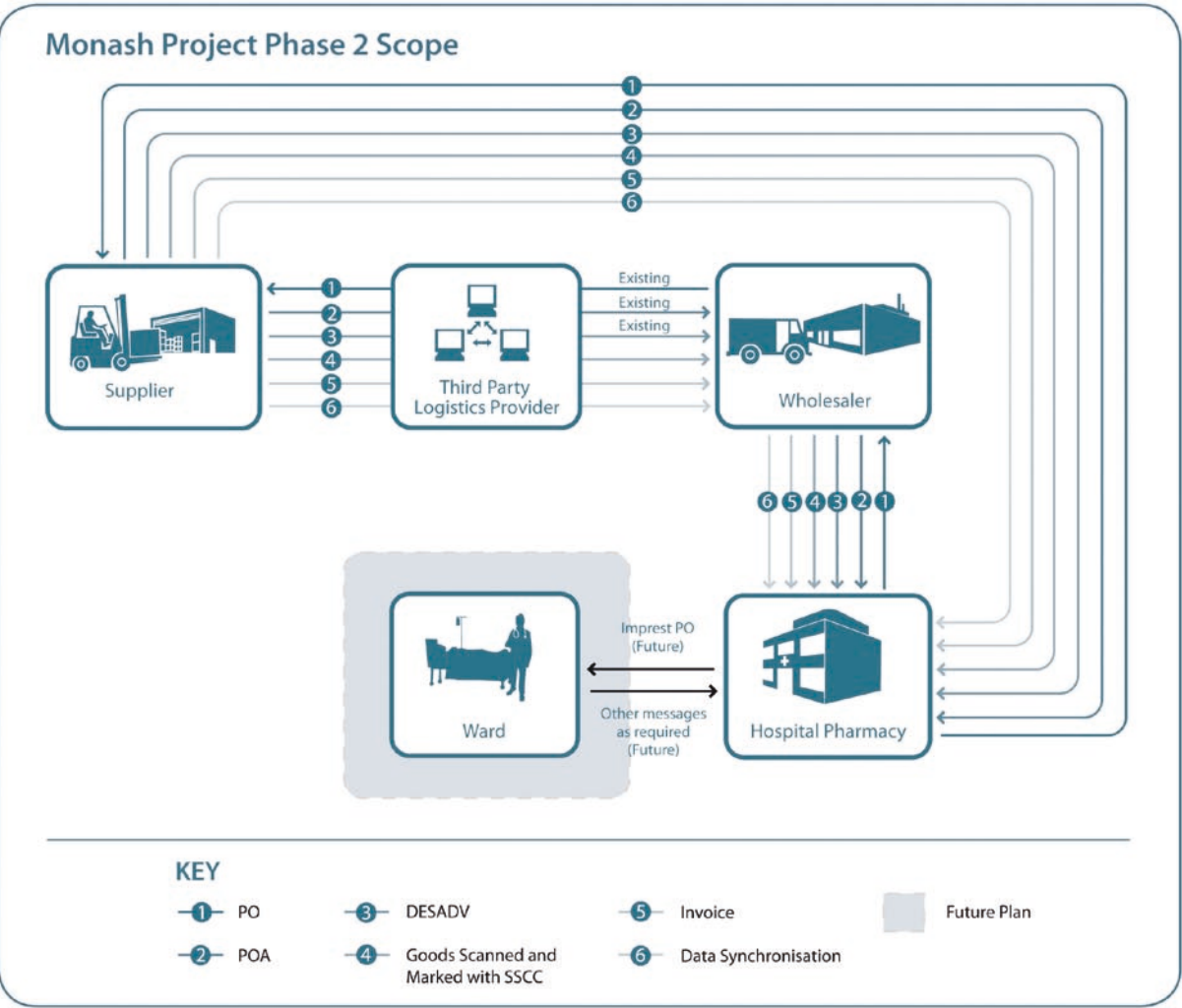
The premise of the GS1 System is that by introducing standards to key aspects of supply chain identification and communication, organisations can more easily implement best-practice processes because all trading partners will understand the standards used and not request proprietary solutions. Everyone speaks the same language when standards are used. This project used GS1 Standards for identification, electronic messaging, bar coding and data synchronisation.

The GS1 System identifies trade items using Global Trade Item Numbers (GTINs). These are internationally unique, non-significant numbers assigned by GS1 members (who are product brand owners) using their GS1 company prefix. Each different variant of an item and packaging level is identified by a different GTIN.

Logistics units are identified using Serial Shipping Container Codes (SSCCs). These globally unique identifiers are issued by the creator of the logistics unit, using their GS1 company prefix. Global Location Numbers (GLNs) are issued by GS1

or created using the GS1 company prefix of the issuing GS1 member company, to identify physical, functional and legal entities during electronic messaging exchanges. GS1 identifiers provide trading partners with an accurate and abbreviated means of referencing entities, trade items, and logistics units in their databases.

GS1 EANCOM provides a standardised and predictable structure for electronic business messages, enabling business partners to communicate business data rapidly, efficiently and accurately, irrespective of their internal hardware or software. As a subset of the UN/EDIFACT standard (United Nations Electronic Data Interchange for Administration, Commerce and Transport), GS1 EANCOM provides for the collection of the message elements needed by business applications and required by the syntax (mandatory elements). GS1 EANCOM also incorporates the GS1 standards for the identification of trade items, logistics units and trading partners which allows for the integration of the physical flow of goods with related information sent by electronic means.



Phase 1

Phase 1 of the Monash Pharmacy Project, completed in mid-2004, was a demonstration of electronic messaging using the GS1 System in the hospital pharmaceutical supply chain.

During Phase 1, the ability to send or receive (as appropriate) standards-compliant purchase orders, purchase order acknowledgements, and receive despatch advices was put in place by both the Southern Health pharmacy and suppliers. SSCCs were placed on the logistics units being supplied to the pharmacy and a project was undertaken to study the process and requirements for bar coding pharmaceutical items.

Phase 1 successfully proved the application of the GS1 System of identification, bar coding and electronic messaging in the areas of hospital pharmaceutical ordering, picking, packing, despatch and receipt of goods.

The outcomes of Phase 1 established that improved trading efficiencies and cost savings could be achieved by the healthcare industry through the use of electronic messaging and improved supply chain processes underpinned by the use of the GS1 System.

The immediate benefits included a reduction in stock receipt time at the hospital pharmacy of 25 per cent, improved accuracy in order fulfilment accuracy of about 50 per cent, and an embracing of the new processes and technologies by staff. In addition, a number of key issues were identified which needed further investigation, including:

- The allocation of GS1 Global Trade Item Numbers (GTINs) and bar coding at a higher level
- Packaging (inner and shipper/carton level)
- Future requirements for batch/expiry date tracking
- The need for broader adoption of supply chain standards
- The need for data quality to be maintained continuously through master data synchronisation

Primarily, the first phase of the project provided the incentive and confidence to undertake Phase 2.

Phase 2

Phase 2 of the project furthered the Phase 1 concept, by broadening both the project team and the implementation scope, whilst focussing on ease of implementation and further roll out of the standards. Seven pharmaceutical manufacturers (Abbott Australasia, Baxter Healthcare, Bristol

Myers Squibb, Hospira Australia, Novartis Australia, Orion Laboratories and Pfizer Australia), two wholesalers (CH2 and Symbion Hospital Services) and the Southern Health Pharmacy Department, operating from five hospitals, participated in Phase 2. Others involved included Monash University, Health Purchasing Victoria, and GS1 Australia.

Three areas of implementation of the GS1 System were identified for the Phase 2 project scope. These related to the project objectives outlined above and were driven by the learnings from the Phase 1 demonstration:

- Identification and bar coding of trade items
- Electronic messaging (using GS1 EANCOM) and improving order fulfilment accuracy
- A pilot of data synchronisation via the National Product Catalogue (aligning with the objectives of National E-Health Transition Authority or NeHTA¹)

For data synchronisation between trading partners the project piloted GS1net, the Australasian data pool service for the synchronisation of item, price and industry specific data between buyers and suppliers. This simultaneously provides all trading partners with accurate and consistent item data. Compliant with the Global Data Synchronisation Network (GDSN), GS1net minimises data errors by eliminating human intervention and the need to maintain multiple catalogues.

The NPC is hosted on GS1net, allowing for supply chain and healthcare industry specific data to be exchanged.

Participant organisations selected their scope from the three project options, in line with their organisation's business goals, objectives and short-term capabilities. As the project proceeded and participants understood the benefits of their chosen project implementations, some began to introduce aspects of this with other trading partners outside of those originally selected.

Quantitative Key Performance Indicators (KPIs) were defined for each of the possible sub-projects. In addition to these, structured interviews were conducted with key project participants to ensure anecdotal, qualitative data was captured.

Key outcomes from Phase 2 of the project included:

- Scanning Serial Shipping Container Codes (SSCCs) and matching these with the electronic Despatch Advice

¹ NEHTA was established by Australian Health Ministers to develop national eHealth standards and infrastructure requirements.

resulted in a quantitative reduction of 60 to 92 per cent in time taken to receive stock into the Southern Health pharmacy system

- The Southern Health purchasing staff recognised that the benefits are increasing as more companies implement standards-based electronic messaging
- Implementation of the project electronic messaging methodology beyond the current project team – to other customers and suppliers – was undertaken by a number of participating organisations
- Varying degrees of data discrepancy were reported as part of the GS1net pilot. This involved comparison of Baxter NPC to Southern Health Pharmacy system data: trade item description and label name (100 per cent discrepancy), brand (92 per cent), Baxter internal code (29 per cent), selling unit of measure (73 per cent) and classification (15 per cent) highlighting the need for data synchronisation via the NPC in healthcare. This pilot was the first instance in which healthcare data was exchanged on GS1net, a GDSN-compliant platform
- Anecdotal reports from the project team indicated that working in a collaborative environment mean implementation timeframes for electronic messaging could be reduced from 2–3 months to 2–3 weeks due to sharing of learnings – a significant saving of time and money
- A number of project learnings were documented for sharing with the broader industry

AUTHORS

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Anthony Keyes is Customer Support Manager, Australia and New Zealand, Baxter Healthcare. Anthony has over 30 years experience in the healthcare industry. Anthony started with Baxter in 1978 and has been managing Baxter's national Customer Service and Homecare divisions in Australia since 2004 and New Zealand since 2006. Anthony was awarded the 2006 National Customer Service Manager of the Year by the Customer

Looking forward

The Monash Pharmacy project is an excellent example of industry collaboration driving supply chain reform. What started as a small demonstration project, involving four trading partners, has grown to include representation from more than a dozen organisations throughout the healthcare industry.

Moving forward, the objective is to use the project to further refine and improve supply chain efficiency within the industry. The next phase will look to broaden the scope of customer participation across Victoria to develop a more comprehensive scope of activity for supply chain reform. This could be used as input for the next Victorian pharmaceutical tender, which will also focus on supply chain performance. The Monash project would then be an avenue to work with proactive partners to implement these supply chain reform activities and demonstrate the value that an efficient supply chain can bring to all stakeholders. This collaboration between stakeholders will also encompass opportunities for the Victorian implementation of the National Product Catalogue.

It is important to remember that all of the foundations being laid throughout the Monash Pharmacy Project are the foundations for the ultimate healthcare goal – improved patient safety.

Service Institute of Australia and in 2008 the Customer Support team won the Baxter Global Supply Chain Award. Anthony is a licensed customs broker and holds a number of business qualifications.

Ian Larmour has been a Director of Pharmacy, at a number of major hospitals, since 1981. Currently he holds the position of Director of Pharmacy for the Southern Health group of hospitals in Melbourne. Ian is a member of the Melbourne Teaching Hospital Drug Usage Group (now called Victorian Therapeutic Advisory Group) and was Chairman from 1993 until 1995. Since 2000, Ian has been a member of the Victorian Ministry of Health Poisons Advisory Committee. Over the years Ian has been involved in a variety of other organisations in a diverse range of roles and has published many articles on a wide range of topics, most notably a prospective study of Hospital Admissions due to Drug Reactions (AJHP, 1991, 21, 90-95).