

# Monash Pharmacy Project

## PHASE 2 REPORT



# Acknowledgements

The success of this project is due to the collaborative efforts of the project team member organisations and their staff. The enthusiasm, dedication and expertise of these people have brought to fruition the vision of electronic commerce using the GS1 System in healthcare.

The project team would like to acknowledge the contributions of the staff who have openly shared their knowledge and, in doing so, have ensured the Monash Pharmacy project achieved its goals.

These people are the champions of electronic commerce in Australian healthcare and are committed to the continued roll-out of the GS1 System within this industry sector.

## The organisations involved are:

### Manufacturers:

- Abbott Australasia
- Baxter
- Bristol-Myers Squibb
- Hospira Australia, formerly Mayne Pharma
- Novartis Australia
- Orion Laboratories
- Pfizer Australia

### Wholesalers:

- CH2
- Symbion Hospital Services

### Hospital Pharmacy Departments:

- Southern Health Pharmacy Departments

### Project Chair:

- Health Purchasing Victoria

### Project Manager:

- GS1 Australia

### Educational Institution:

- Monash University

The project team would like to acknowledge the input of Deakin University into this case study, and also Pharmhos Software for their support of the project via the Merlin Pharmacy System used at Southern Health.



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# Executive Summary

Phase 1 of the Monash Pharmacy Project was an influential demonstration of electronic messaging using the GS1 System in the hospital pharmaceutical supply chain. It 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 benefits measured during Phase 1 included a reduction in stock receipt time of 25 per cent at the hospital pharmacy, improved accuracy in order fulfilment, and an embracing of the new processes and technologies by staff.

The Phase 2 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.

The overall project objectives were to:

- Demonstrate increased efficiency in receiving, order placement, order acknowledgement, invoicing and associated processes
- Ensure improved accuracy of both information exchange and order fulfilment
- Lay foundations that work towards the goal of improving patient safety

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
- Data synchronisation via the National Product Catalogue (NPC), aligning with the objectives of the National E-Health Transition Authority

Participant organisations selected their scope from the sub-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 the project included:

- Scanning Serial Shipping Container Codes (SSCCs) and matching these with the electronic Despatch Advice 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 organisations such as Abbott, Baxter, CH2 and Symbion
- Varying degrees of discrepancy were reported as part of the Baxter NPC to Southern Health Pharmacy system data analysis: 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
- One Southern Health staff member has been allocated the task of post-tender internal data cleaning, which will take an estimated two weeks. This highlights the need for further data alignment and quality control in Australian healthcare
- 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

Whilst a number of the Phase 2 project implementations are still in progress, all of these are nearing completion. The need to continue the momentum created by the Monash Pharmacy project and open participation to additional interested parties via Phase 3, commencing in early 2008, has driven the requirement to finalise this phase.

Phase 3 is intended to further refine and improve the supply chain efficiency of those organisations involved. As such it will again encompass the ongoing promotion of electronic commerce and its applications, benefits and opportunities, as well as the application of new standards and technologies.

# Associated Industry Organisations

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## NEHTA

At a meeting of state, territory and federal Health Ministers on 29 July 2004, the Ministers endorsed the immediate formation of a National eHealth Transition Authority (NEHTA) team. This team was a reaffirmation by the Ministers of the importance of Information Management and Information Communication Technology (IM&ICT) to the healthcare sector. NEHTA is responsible for establishing a new national health IM&ICT entity and, simultaneously, for the progression of work on the most urgent national IM&ICT priorities.

NEHTA has a number of initiatives. The one relating to supply chain involves three projects endorsed by the NEHTA Board:

- A national product catalogue (NPC) across all procurement areas – underpinned by GS1net
- An eProcurement model to facilitate relevant transactional data transfer – using the GS1 XML messaging format
- Business intelligence tools for the state, territory and federal health jurisdictions to further enhance analysis and reporting

NEHTA's announcements about the NPC and eProcurement model were made after Phase 2 of the Monash Project had begun, but reinforced the learnings from Phase 1, which identified the need for the widespread adoption of standards-based data synchronisation and electronic messaging.

For more information go to [www.nehta.gov.au](http://www.nehta.gov.au)

## GS1 Healthcare User Group

The Monash Pharmacy project is guided by the outputs and directions of GS1 Healthcare (the GS1 global healthcare user group) and the local Australasian chapter known as the GS1 Healthcare User Group Australasia (or HUG Australasia).

These groups, along with other local chapters, are reviewing, developing and refining the GS1 System to ensure it is applicable for all aspects of the global healthcare sector whilst remaining relevant to other industry sectors. Along with other areas of focus, this has meant potentially extending the concept of a trade item to 'unit of use', which is the level of trade item dispensed to the patient in a hospital environment.

For more information go to [www.gs1.org/hug](http://www.gs1.org/hug) and [www.gs1au.org/hug\\_australasia](http://www.gs1au.org/hug_australasia)



Above: Receiving Symbion delivery

# Introduction and History

The supply of pharmaceuticals and other goods to Australian hospitals is complex due to the mix of state, federal and private interests. Yet while this process is of unquestionable importance to the health of the Australian population, it has remained predominantly paper-based with manual processing.

Other industries have gained irrefutable benefits through use of electronic commerce. One notable example is the Australian retail supply chain which is now almost completely electronic from purchase order to remittance.

In comparison, electronic commerce remains notably absent from much of the healthcare sector, with the most common use being to send purchase orders. A possible cause for this disparity is the comparatively large number of players in the pharmaceutical/healthcare industry.

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, such as accurate inventory management and increased efficiency, to all industry suppliers.

Phase 1 of the Monash Pharmacy Project was an influential demonstration of electronic messaging using the GS1 System in the hospital pharmaceutical supply chain. This project became a catalyst for other hospitals to implement the same standards and processes. It 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.

As Ian Larmour, Southern Health's Director of Pharmacy, simply stated, *'The most critical outcome is that this process can be duplicated by other hospitals and their suppliers. The key benefit of hospital budgetary and efficiency savings can then be passed on to improve the level of patient care within Australia's hospital and healthcare system, whilst at the same time, improving the profitability of Australia's healthcare industry suppliers.'*

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, 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:

1. GTIN allocation and bar coding at higher level packaging (inner and shipper/carton level)
2. Future requirements for batch/expiry date tracking
3. The need for broader adoption of supply chain standards
4. The need for data quality to be maintained continuously through master data synchronisation

Primarily, the Phase 1 project provided the incentive and confidence to undertake Phase 2, hereafter referred to as 'the project'.

The full report about the Monash Project Phase 1 and Phase 2 can be downloaded from the Information Library of the GS1 Australia web site, [www.gs1au.org](http://www.gs1au.org)

## Standards Used

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Standards Used

### GS1 System

The GS1 System is the most widely used set of supply chain standards in the world. It encompasses the identification of trade items, logistics units, assets and locations as well as standards for bar codes, electronic messaging, data synchronisation and radio frequency identification (RFID).

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.

### Trade item and logistics unit identification

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.

### Data Synchronisation

GS1net™ (formerly EANnet®) is 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 Australian healthcare National Product Catalogue (NPC) is hosted on GS1net, hence allowing for supply chain and healthcare industry specific data to be exchanged. This is being deployed by the National eHealth Transition Authority (NEHTA). In addition to healthcare, GS1net is widely used in Australia and New Zealand by the retail grocery, liquor, automotive aftermarket, and hardware sectors.

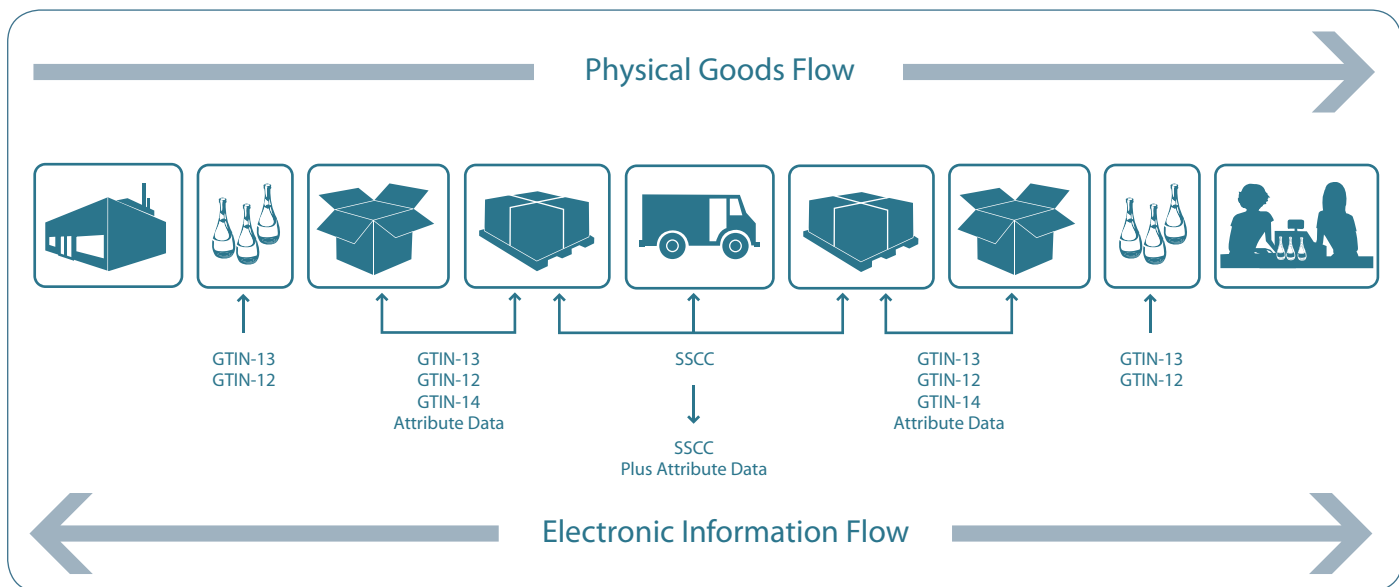
### Electronic Messaging

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.

The first version of GS1 EANCOM was released in 1990 and it continues to be one of the world's most widely used electronic messaging standards. For this project EANCOM purchase order, purchase order acknowledgement, dispatch advice and invoice messages were in scope.

To ensure the data content used in the project electronic messaging was consistent and met the requirements for the healthcare sector, the data set exchanged for all electronic messages was Australian Standards AS5023 compliant.



Above: The diagram shows how the GS1 Identification Keys are used across the supply chain

## IT Infrastructure

### Merlin Pharmacy System

Southern Health Pharmacy uses the Merlin Pharmacy Information System provided by Pharmhos Software Pty Ltd. Merlin provides an integrated business and clinical solution to meet the requirements of pharmacy management. It has Inventory Management, Dispensing, Debtors/POS, Additive, Cytotoxic and Parenteral Nutrition modules, with use of bar code readers for inventory distribution, purchasing and dispensing script-scan checking.

Merlin is used in over 35 sites, mostly large metropolitan-clustered hospitals, and is the most widely used product in the Victorian public hospital pharmacy sector. Merlin is also used in other public and private hospitals in other states (ACT, NSW and Queensland) and in Singapore.

Pharmhos, as the solution provider to Southern Health, has provided the GS1 EANCOM electronic messaging capability within Merlin, and piloted the protocol for communications using Web Services.

Merlin is installed on a central server and accessed by all Southern Health sites across a wide area network (WAN). The Merlin server communicates directly with trading partners across the Internet connecting either directly to the supplier or to a supplier's service provider. Merlin has been required by Southern Health always to initiate connections from the Merlin server, so that purchase order (PO) messages are 'pushed' to suppliers, and purchase order responses (POR), despatch advice (DA) and invoice (INV) electronic messages are 'pulled' by the Merlin server from the supplier or HUB.

### Service Providers

Service providers, often called hubs or VANs (Value Added Networks), are chosen by many organisations to achieve and manage eCommerce connectivity by facilitating electronic messaging between trading partners.

In addition to simply moving data from one trading partner to another, service providers offer other solutions such as: the translation of messaging formats to or from native (or proprietary) internal business formats to standard supply chain formats such as GS1 EANCOM and GS1 XML; encryption of the messages; data management (i.e. translating data attributes from one format to another, for example changing the code KG to KGM in line with the standard being used), and management reporting.

When using a service provider, organisations may not need to map electronic messaging formats directly into their internal systems as the service provider will take the native output file and map this to the required standard.

### Direct Connections

Direct or point-to-point connections are used to communicate electronic messages without the use of a service provider organisation. Potentially this can establish an almost immediate electronic messaging communications link between trading partners.

When using direct connections, organisations may build data mapping protocols from their internal systems to create or receive the electronic message formats required by their trading partners.

Alternatively, translation software may be put in place to ensure that the correct messaging standard for each trading partner is produced. The translation software converts the native output file into the messaging standard and allows mapping of the return file into the native format.

Communication methods used for direct connections include FTP (file transfer protocol) and the Internet.

# Project Team: Who Got Involved and Why

The project included representation from all companies involved in the Phase 1 demonstration as well as additional participants from key manufacturers and wholesalers.

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Participants in the Phase 2 project were:

## Manufacturers:

- Abbott Australasia
- Baxter
- Bristol-Myers Squibb
- Hospira Australia, formerly Mayne Pharma
- Novartis Australia
- Orion Laboratories
- Pfizer Australia

## Wholesalers:

- CH2
- Symbion Hospital Services

## Hospital Pharmacy Departments:

- Southern Health Pharmacy Departments

## Project Chair:

- Health Purchasing Victoria

## Project Manager:

- GS1 Australia

## Educational Institution:

- Monash University

The reasons for joining the project were many and varied. Some related to internal business objectives and initiatives, others were to ensure an organisation's competitive advantage was maintained by illustrating leadership by being at the forefront of driving the adoption of new and emerging technologies.

Dianne Prince, Customer Supply Chain Manager, Abbott Australasia said, *'Abbott became involved in the project primarily through a commitment to working with customers to improve supply chain processes for the benefit of both parties. The company was keen to expand their eCommerce capability which was limited to receiving wholesale purchase orders via EDI from some of its industry partners. This project provided an opportunity to pilot the use of standards in eCommerce between Abbott, Monash Medical Centre Pharmacy (Southern Health) and CH2. The promise of efficiencies arising from a single synchronised source of product information (NPC) for multiple customers was also attractive.'*

Iain Murray, Manager, Supplier and Systems Development, Symbion says, *'The original reason for becoming involved was the customer need (Southern Health). The philosophy of GTIN coding for all products used globally actually flew in the face of "old" thinking, which was if you could get your numbers into a customer's system it was hard for them to change. Getting past that initial hurdle, the benefits of order accuracy and speed of response came to the forefront.'*

*'One of the biggest drains on profits can be the time and effort spent on credit and recharging invoiced goods where the original price had been incorrect. The level of consistency between the manufacturers, distributors and hospitals can be alarmingly erratic without the correct checking processes in place. The concept of a live-time information flow of pricing information is exciting.'*

Ged Halstead, CIO, CH2 says, *'The attraction of the project for CH2 was the prospect of working openly and collaboratively with customers, suppliers and a leading hospital software provider under the project leadership of Health Purchasing Victoria (HPV) and GS1 Australia. Discovering what the genuine needs and challenges are within the healthcare supply chain has enabled CH2 to rapidly develop and design a GS1 and NEHTA-compliant system that is now well established within the industry.'*

# Project Objectives and Strategy

The overall goal of the project was to drive uptake of supply chain standards (the GS1 System) and best practice processes in the hospital pharmaceutical supply chain.

The broad project objectives were to:

- Increase efficiency in the receiving, order placement, order acknowledgement, invoice and associated processes
- Increase accuracy of information exchange and order fulfilment
- Lay foundations that work towards the ultimate goal of improving patient safety, with the belief that if the hospital pharmacy is able to access the right drug at the right time from their suppliers, then patient needs will be met

To ensure these objectives were achieved, the project team needed to make some key strategic decisions about the project structure and working environment.

- The size and diversity of the group was expanded, with more participants than in Phase 1 and all sections of the supply chain were represented. It was anticipated that this would enable implementation of processes applicable to the broader healthcare supply chain.
- All participants understood and agreed up front to the project's common goal and objectives.
- Each organisation determined the scope of their own implementation to ensure the demands of the project were kept manageable. This was achieved by choosing from a range of options which could be aligned with their own organisational objectives.
- Working as a team meant sharing learnings, acknowledging weaknesses, and leveraging from each other's strengths. It was clearly understood that standards implementation is not an area for competitive advantage, but an area where collaboration is needed for the benefit of the broader industry.

Simon Hill, Business Analyst at Baxter, saw the Monash Pharmacy Project as, 'a collaborative, non-competitive industry forum which provided a quality development environment involving committed customers, Southern Health and HPV. In addition, there was the benefit of GS1's supervision and technical input as project managers.'

GS1 Australia's General Manager – Member and Industry Support, John Hearn, confirms, 'This type of collaborative working environment is exactly what GS1 Australia recommends for a greater level of adoption and learning. It suits our role as an independent industry advisor and, in this way, we can partner with industry to explore the possibilities for implementation of the GS1 System, and provide assistance and guidance during the planning, design and implementation phases.'

Tania Snioch, Senior Advisor at GS1 Australia and Monash Pharmacy Project Manager, adds, 'It is exciting to see the momentum that the Monash Pharmacy Project has created in the Australian hospital pharmaceutical sector. This project commenced as a demonstration and now involves a number of key Australian organisations working together, sharing information and learnings.'



Above: GS1 Bar Code shown on a Baxter irrigation solution

# Project Scope

Three areas were identified for the project scope. These relate to the broad project objectives and to the learnings of the phase 1 demonstration.

## Sub-Project 1: Identification and Bar Coding Trade Items

While more than 90 per cent of pharmaceutical products traded in Australia carry a GS1 GTIN in a bar code format at the 'unit of use' or dispensing unit level (i.e. each consumer unit), this number reduces significantly once higher levels of packaging such as inners (e.g. shrink wraps of 12 consumer units) or shippers (i.e. carton-level packaging used in warehousing) are considered. Furthermore, there is an emerging need for companies to track their higher levels of packaging using a combination of GTINs to identify the trade item, and batch and expiry date or serial number, in a standard GS1 bar code.

Phase 1 identified that the introduction of batch and expiry date tracking via bar codes was a long-term project because all relevant internal documentation, including Standard Operating Procedures (SOPs), would need to be updated with this new requirement. In addition, the dissemination of this data in an electronic format by suppliers (in a Despatch Advice, or DA) is not prevalent. However, with the use of DAs on the customer side in Phase 1 (between wholesalers and Southern Health), the wholesalers are now asking manufacturers to make the necessary changes to their systems to provide DAs with batch/expiry data, which can then be coupled with bar coded information to enable full traceability.

Hence, in Phase 2 participants could choose to allocate GTINs and implement bar coding at all levels of packaging for key products traded with a trading partner, and also include batch and expiry date information in the GS1 bar code on the inner and/or shipper levels of packaging.

## Sub-Project 2: Electronic Messaging and Improving Order Fulfilment Accuracy

Phase 1 provided a robust electronic messaging methodology which included: electronic exchange of GS1 EANCOM 1997 and Australian Standards AS 5023 for complaint purchase orders (PO), purchase order responses (POR) and despatch advices (DA). Also included was scan receiving goods using the GS1 serial shipping container code (SSCC) assigned to each logistics unit.

The use of electronic messages highlighted the potential for efficiency benefits. Therefore the scope for Phase 2 included a broader roll-out of the methodology to:

- All Southern Health sites (expanding from the Monash Medical Centre Pharmacy used in Phase 1)
- Other wholesalers and manufacturers trading with Southern Health

Financial transactions were also out of scope for Phase 1. Hence, Phase 2 was seen as a good opportunity to broaden the scope, meaning participants had the option of implementing the electronic invoice (INV) message with their trading partners.

During Phase 1, the ability to generate standards compliant purchase orders, receive purchase order acknowledgements, and receive despatch advices was built into the Merlin Pharmacy System. A common software platform is used at all Merlin sites.

Moving into Phase 2 Merlin users outside of the project expressed a readiness to leverage this work and, at the time of writing this case study, another 26 hospitals had begun to implement the project methodology.

The introduction of electronic data/scanning systems to improve accuracy and/or efficiency of order fulfilment has always been a key project focus (i.e. scan pick and pack systems or other technologies such as pick-to-light or pick-to-voice). Phase 1 showed that these systems increased order fulfilment accuracy, but needed to be integrated with existing business processes – a long-term sub-project which was offered as part of the scope for Phase 2.



# Projects Undertaken

## Project Commencement

Organisational 'eReadiness surveys' were completed prior to the potential project scope being defined, so organisations could understand their readiness for each of the sub-projects.

Participants then selected from the sub-project options in line with their organisation's business goals, objectives and short-term capabilities.

## Refining the Project Scope

As organisations further investigated their capabilities, resourcing availability and timelines for completion of the project, some individual project scopes were refined from those originally selected. This allowed participants to implement a more tightly defined project (e.g. by limiting the types of electronic messages exchanged) in order to complete their chosen options to best practice levels within available timeframes.

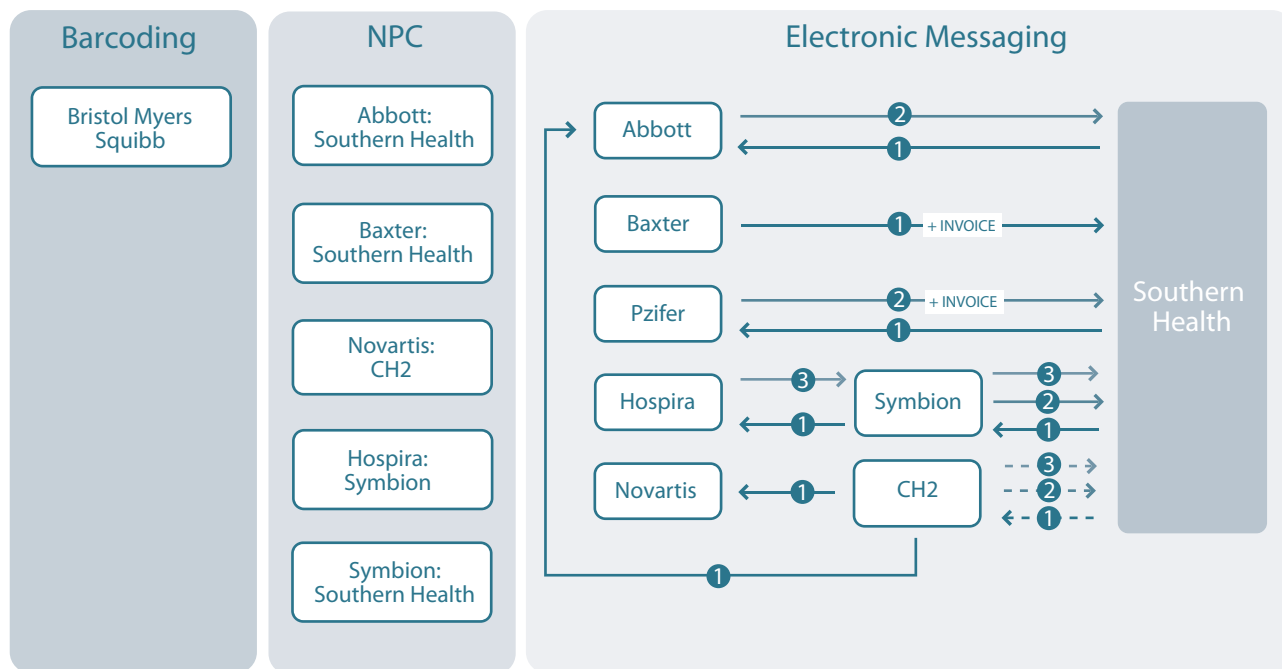
Participants also understood that, after this phase was complete, they could drive further implementation and review the scope.

## Projects Undertaken in Addition to Original Scope

As the project proceeded and participants understood the benefits of their chosen sub-projects, some began to implement aspects of their scope with trading partners outside of those originally selected.

For further information about these implementations refer to the 'Participant roles, challenges and learnings' relating to each project team member.

### Monash Project Phase 2 Scope - Participation Flow Chart



#### KEY

- ① PO
- ② POA
- ③ DESADV
- Phase 1 Implementation

# Key Performance Indicators and Process Mapping

Key Performance Indicators (KPIs) were defined for aspects of each of the possible sub-projects.

Where relevant the organisations that selected a particular sub-project were required to complete a period of KPI measurement so that the impact of introducing the new processes, technologies and standards could be assessed.

Company specific process mapping was undertaken at each of the project team sites to identify 'as is' and recommended 'to be' processes. This assisted in defining the used KPIs. The 'to be' process could also be used by organisations to assist with implementation planning.

In addition to quantifiable KPIs, structured interviews were conducted with key project participants to ensure anecdotal, qualitative data was captured.

## Sub-Project 1: Identification and Bar Coding Trade Items

KPIs for sub-project 1 related to confirmation that the bar codes produced met the GS1 standards. Two areas were assessed:

- Bar code scanning efficiency
- Ensuring the correct GTIN is bar coded on the correct product

## Sub-Project 2: electronic messaging and Improving Order Fulfilment Accuracy

In addition to KPI measures for electronic messaging, trading partners were required to keep baseline data about the number of orders, deliveries and lines ordered/delivered during KPI measurement periods. The KPIs measured were:

- Time taken to receive stock into internal system
- Number of times DESADV does not match physical delivery – post implementation only

## Sub-Project 3: Data Synchronisation via NPC

KPIs for sub-project 3 were:

- Number of GTINs in both Baxter NPC data and Southern Health system data
- GTINs in Baxter NPC data only
- Of the matched GTINs, the number of mismatched fields for key data elements:
  - Trade Item Description/ Label Name
  - Brand Name
  - Manufacturer Internal Code
  - Selling unit of measure
  - Additional classification category
- Suggestions were made for additional information that is available via the NPC and useful to hospital pharmacies



Above: Receiving stock into Merlin

# Participant Roles, Challenges & Learnings

In the following sections, project team members are grouped by their function, i.e. manufacture, wholesaler and hospital, then the organisations contained within each of these groups listed alphabetically.

**Note about tables:** These tables aim to provide a complete explanation of the overall project so that the reader can understand the current status of the sub-project and the factors that influenced its progress. The number in 'Related Learnings' refers to the overall project learnings detailed in later in this report.

## Manufacturers

### Abbott

At the start of the project, Abbott selected two sub-projects involving interaction with Southern Health and CH2.

Trading Partner	Project	Status at Project Conclusion	Related Learning
Southern Health	Electronic messaging – PO, POR	On hold	5
CH2	Electronic messaging – PO	In progress	13
Southern Health	Data synchronisation via NPC	Complete for Abbott, pending Victorian strategy	12

Dianne Prince, Customer Supply Chain Manager, recognises the value that participation in this project has given Abbott, *'Through participation in this project the benefits of electronic commerce, global standards, and product identification have become apparent. The advantages of much improved communication between supplier and customers – a greater sense of collaboration (and shared frustration) – are extremely valuable and this builds broader, stronger business relationships. The future is here, and although Abbott has some way to go, we are closer now than if this project had not happened.'*

*'Because of an internal re-allocation of priorities Abbott has had to change its Phase 2 project objectives. In the area of product identification Abbott has allocated 1,300 GTINs to its products and submitted these to the NPC. Since the initial data load to the NPC, and the subsequent migration of the NPC to GS1 net, further changes are required and these will be scheduled over the next few months.'*

*'No electronic trading has been fully implemented as far as the Monash Pharmacy project is concerned. The goal to receive a PO from Southern Health and to generate a POR has not been achieved for a variety of reasons, but the organisation is currently in the final stages of User Acceptance Testing for an electronic GS1 EANCOM PO with CH2.'*

## Baxter

Baxter chose to undertake three sub-projects interacting with Southern Health.

Trading Partner	Project	Status at Project Conclusion (and Related Learning)	Related Learning
Southern Health	Electronic messaging – PO, POR	Complete	
Southern Health	Electronic messaging – INV	On Hold	13
Southern Health	Data synchronisation via NPC	Complete	

KPIs were not measured for Baxter's implementation of the PO and POR as these sub-projects were to be completed prior to actual project commencement. These implementations have provided the platform for electronic messaging with other trading partners.

Simon Hill, Business Analyst, advises, *'Other hospitals are leveraging the work done for the Monash Project. Baxter has already rolled out the electronic messaging implemented for Southern Health with the Wesley Hospital and St Andrew's.'*

Baxter identified many organisational specific challenges and learnings unique to implementing standards within their supply chain operations; however, the benefits of electronic messaging are well understood at Baxter. Previous measurement by Baxter indicates that electronic POs are processed at one-twelfth of the cost of a traditional order. This has meant that progression down the electronic commerce path is encouraged by the organisation.

Simon Hill indicates that the uniqueness of the healthcare sector, in needing almost immediate POR responses, was a challenge, *'Southern Health was the first customer to focus on the POR turnaround time. This was an issue, but one that was effectively resolved by working with our trading partners and service providers to understand the process flow for messaging through our selected service provider, then making some minor modifications.'*

Baxter chose to participate in a specialist sub-project involving piloting and demonstrating data synchronisation via the NPC (GS1 net). This pilot has proved extremely valuable for understanding and learning the process for implementing the NPC in Australian healthcare.

*'Implementing the NPC had a unique set of challenges,' says Simon, 'Collecting GTINs from our local and international suppliers for products we distribute was a significant but achievable effort. We also had to create fields for storing the additional data required in our ERP and make the collection of this data part of our new product process.'*

*'Baxter needed to undertake a process of selecting an NPC population method and bureau partner, as well as completing data loads, data validation and data correction processes with GS1 guidance. The change in platform from EANnet to GS1net has also meant some changes to the implementation and these will be undertaken over the coming months.'*

## Bristol-Myers Squibb

Bristol-Myers Squibb chose to apply GS1 bar codes containing GTINs, batch and expiry date information on all of their shipper (carton) level products. The aim was to enable item, batch and expiry date tracking by their organisation throughout the warehouse, and for their trading partners receiving carton-level stock.

Trading Partner	Project	Status at Project Conclusion	Related Learning
N/A	Identification and bar coding trade items	In Progress	8, 11

Sonia Khazaal, Associate Director Supply Chain says *'Bristol-Myers Squibb is currently exploring its options for implementation of electronic commerce. We see the ability to provide despatch advice messages together with use of SSCCs as a great opportunity for our organisation to work more closely with our trading partners and third party logistics provider.'*

## Hospira Australia, formerly Mayne Pharma

Hospira selected two sub-projects for data synchronisation and electronic messaging with their key trading partner Symbion.

Trading Partner	Project	Status at Project Conclusion	Related Learning
Symbion	Data synchronisation	On Hold	1
Symbion	Electronic messaging – PO, DA	On Hold	1

Work was progressing extremely well with respect to these sub-projects. However, the acquisition of Mayne Pharma by US organisation Hospira, meant organisational integration plans needed to be developed and implemented.

Nigel Gilligan, Director, APAC Supply Chain Operations, said, *'In addition to the integration plans, the acquisition meant ERP migration and hence the inability of resources to support Monash Project implementation until the ERP change is completed. We wanted to ensure that the electronic messaging implementation was done well and fully integrated with our new ERP, hence the decision to wait.'*

## Novartis

Novartis chose sub-projects around data synchronisation and electronic messaging using the purchase order. CH2 was the Novartis trading partner for the data synchronisation and electronic messaging projects.

Trading Partner	Project	Status at Project Conclusion	Related Learning
CH2	Data synchronisation via NPC	In Progress	11
CH2	electronic messaging - PO	In Progress	11

At the completion of Phase 2, all these sub-projects were in progress and moving forward successfully. Murray Coventry, Key Account Manager, said, *'Novartis found the biggest challenge in driving implementation of these sub-projects was assigning the coordination and ownership across different business functions – these projects require dedicated logistics and IT involvement.'*

*'Also, like any project, to ensure the concept has management support, the return on investment (ROI) needs to be demonstrated. Initially the ROI focus was financial; however, exposure to the work of the other project team members allowed us to identify and clearly articulate additional benefits such as closer strategic relationships with trading partners.'*

*'Our participation in this project has also developed our understanding of the processes involved in the implementation of electronic commerce, data synchronisation, and trade item identification and bar coding. This will be extremely valuable moving forward.'*

Novartis is in the process of enhancing its ERP to allow storage of GTINs. The ERP is a global implementation so any local enhancement request has to be thoroughly investigated by the Novartis Global IT team to ensure that it doesn't have an adverse effect for the organisation in any other country. The investigation has now been finalised and permission to proceed has been received. Novartis is now in the implementation phase, which should be finished in three months (by March 2008), then electronic messaging can commence.

## Orion

Orion furthered activities undertaken in Phase 1, in which they focused on ensuring GS1-compliant bar codes were in place for all levels of pack for the 15 highest-volume items sold to their customer Southern Health. Update of external labels to inner (middle level of packaging) and shipper (carton level) to carry GTINs together with batch and expiry date has continued as part of Phase 2.

Learnings indicated that full implementation of bar coding GTINs at all packaging levels for healthcare organisations may be a longer term project. Orion found potential resource constraints due to the need to update internal process documentation and other external requirements.

Concurrent to this activity, an internal project focusing on NPC readiness, utilised the available internal resource. This did constrain Phase 2 progress significantly but NPC readiness complements the overall initiatives of the Monash Pharmacy project.

Today Orion's Business Manager, Merryn Wallace, advises that, *'All Orion products now carry a bar coded GTIN at unit level. Our systems have been updated to provide our wholesalers with batch and expiry details with each shipment. We are poised to roll out GTINs with batch and expiry for higher level packaging and are pleased to be NPC ready. We envisage this will not only assist our trading partners but bring internal efficiencies for Orion.'*

## Pfizer Australia

Pfizer chose to undertake three sub-projects relating to identification and bar coding of trade items, data synchronisation via the NPC and electronic messaging. Southern Health was Pfizer's nominated trading partner.

Trading Partner	Project	Status at Project Conclusion	Related Learning
N/A	Identification and bar coding trade items	In Progress	7
Southern Health	Data synchronisation via NPC	In Progress	2, 3, 6, 13
Southern Health	Electronic messaging – PO, POR, INV	On Hold	3, 5

Andrea Squire, Pfizer Australia's Integrated Business Planning & Inventory Manager, says, *'In line with Pfizer Australia's vision to be Australia's most innovative and valued healthcare company, Pfizer fully embraces the Monash Project's goal to drive the uptake of supply chain standards and best practice processes in the hospital pharmaceutical supply chain. Pfizer Australia views this as the first step toward establishing effective national eProcurement and ePrescribing strategies that will ultimately deliver improved patient safety.'*

To date, Pfizer Australia has allocated GTINs to all packaging levels of its marketed products, and implemented bar codes to its retail or point of dispensing trade items. Further work is being undertaken with Pfizer's Global Supply Chain to determine an appropriate roll-out of the application of bar codes to higher level packaging, as dictated by market requirements.

Andrea Squire says, *'Data synchronisation is a key strategic initiative, and Pfizer Australia has worked tirelessly toward meeting the Australian public healthcare data requirements. Pfizer has actively engaged with NEHTA and the Monash Project in this process as we wish to be certain data synchronisation supports the commercial realities of the hospital pharmaceutical supply chain.'*

*'Pfizer has supplied data to fulfil the interim EANnet requirements and is working to meet the revised NPC on GS1net requirements. Pfizer expects Southern Health to be its first trading partner to exchange data through the GS1net platform in 2008.'*

Pfizer has completed a number of electronic messaging implementations with trading partners both in healthcare and other industry sectors. Changes to Pfizer's Value Added Network service provider in 2007 delayed timelines. However, Pfizer expects to go live with Southern Health in 2008. In addition, Pfizer is working with its 3PL, DHL Exel Supply Chain, to develop DA messaging capabilities through the use of SSCCs. When complete, this functionality will be available to Pfizer as well as to other healthcare suppliers using DHL's services.

## CH2

CH2 undertook two sub-projects with Novartis and one project with Abbott (as reported in the sections relating to the Novartis and Abbott implementations). In addition, as the project progressed, CH2 took the opportunity to re-evaluate the Phase 1 systems in place with Southern Health and decided to develop a robust, sustainable and scalable solution for electronic messaging. This has led to their current B2B offering which is being deployed throughout the Merlin hospital base. This meant a re-implementation of GS1 EANCOM messages (PO, POR and DA) transmitted via a VAN, as well as use of SSCCs on logistics units. The implementation was staggered to leverage key learnings and adapt to partners' requirements.

This rework of the B2B exchange demonstrates a number of key points:

1. CH2 management commitment to building sustainable capabilities for the future
2. The ease of implementing using GS1 EANCOM guidelines
3. The ease of implementing in a collaborative environment with common goals and objectives
4. The expectations of trading partners have been raised to new standards; companies must stay vigilant to these changes, and adapt where practical, to stay competitive in the industry

CH2's CIO, Ged Halstead says, *'As a wholesaler, CH2 is a trade and data intermediary between a number of manufacturers and hospitals, hence our EDI connections with partners are paramount to the way we do business. Our aim is to be an easy company to do business with.'*

*'Beyond its phase 2 scope, CH2 has started to roll out electronic messaging in the EANCOM format with other key trading partners, some participating in this project, others not.'*

*'CH2 is also a leading wholesaler of medical devices and consumables, as well as pharmaceuticals, to hospitals and nursing homes. CH2 already trades electronically with over 1,000 customers and is now actively working with a number of medical suppliers such as 3M, B Braun, Kimberly-Clark and Becton Dickinson, to use EANCOM messaging for supply chain integration.'*

*'CH2 is in the early stages of piloting the NEHTA eProcurement model with Western Australia Health. The activity is quite feverish and is catching on quickly in the sector.'*

CH2 is also encouraging the spread of the use of the GS1 System into the private hospital sector, as well as working with non-Merlin public hospitals to encourage the adaptation of their systems to leverage the capabilities established in the Monash Pharmacy project.

Ged Halstead observes, *'As a collective, the project team has been able to influence software providers and electronic messaging service providers to design and implement the GS1 System in accordance with the communications methodology specified in the NEHTA eProcurement strategy. This is important as industry leaders can now observe a clearly articulated and demonstrated roadmap.'*

In addition, CH2 are in the process of implementing Radio Frequency (RF) scanning for receipt, put-away, picking and packing within their seven state-based warehouses. RF-generated pick-slips, communicated using handheld personal digital assistants (PDAs), and DA messaging, are now operational in a phased in approach. Staff take-up of the new technology has been excellent.

To facilitate the RF project, CH2 has gone through the process of collating supplier GTINs, loading these into their systems, and assessing which products are bar coded and which are not.

*'This process has highlighted the need for synchronised supplier data provided via a central source – i.e. the NPC,'* said Ged Halstead. *'To this end CH2 has teamed with Abbott to achieve data synchronisation. This has been quite successful with Abbott submitting 1,300 GTINs to the NPC, and CH2 has been able to identify and correct inconsistencies quickly. The ease in accessing the good-quality Abbott item data through a single source was encouraging. We look forward to Abbott and CH2 being capable of doing full 'machine to machine' data synchronisation in early 2008.'*

## Symbion Hospital Services

As well as projects with Hospira (previously discussed) Symbion also chose to implement electronic messaging projects with Southern Health.

Trading Partner	Project	Status at Project Conclusion (and Related Learning)	Related Learning
Southern Health	Electronic Messaging – PO, POR	Complete	
Southern Health	Electronic Messaging - DA	In Progress	2, 13
Southern Health	Data Synchronisation	On Hold	2, 13

In addition to the above scope, Symbion has been driving implementation of electronic messaging with other hospitals such as the Austin in Victoria and St John of God in Queensland.

Ian Murray, Manager, Supplier and Systems Development, confirms one of the most significant challenges for Symbion was 'overcoming the culture of "ownership" of codes.' He continued, *'Symbion distributes nationally, to hospitals and retail pharmacies, so consideration of the effect of any system changes on the business as a whole was paramount.'*

*'The IT changes for this project had significant impact on the operations side of the business, even something that would appear to be easy (e.g. the bar coding of totes or cartons to be delivered) creates changes for operations. This is why training and education are so important.'*

*'There has been great benefit from the electronic messaging side of the project, particularly as we have worked with Pharmhos to roll out the platform to other hospitals.'*



Above: Using the Merlin Pharmacy System

## Hospital Pharmacies

### Southern Health

The scope and status of sub-projects involving Southern Health as a buyer or data recipient have already been discussed. In addition, the purchasing team at Southern Health have captured some valuable KPI data that illustrates the benefits of electronic commerce in the hospital pharmaceutical supply chain in terms of decreased receiving times and data quality improvements.

Ian Larmour says, *'The success of the project has been in extending the scope of the implementations to include additional suppliers; and to propagate electronic messaging and the use of the GS1 System beyond the scope of the Monash Medical Centre Pharmacy. What was initially a small project has been driven by a number of proactive, innovative organisations and is well on the way to critical mass adoption.'*

*'Already we have seen the additional five Southern Health pharmacies implement electronic commerce, other Merlin sites roll this functionality out to their suppliers, and wholesalers such as CH2 promoting and implementing the functionality with their suppliers.'*

*'The GS1 EANCOM Message Implementation Guidelines (MIGs) that were developed for the Monash Pharmacy Project have been implemented by wholesalers packing 'ward boxes', and this allows pharmacies to route the correct box to the correct ward.'*

As illustrated by the KPI results, Southern Health is seeing real benefits from electronic commerce and data synchronisation, and the organisation realises that future steps include engagement of other suppliers for broader adoption and further business benefits.

*'Accurate and complete data provided by the NPC will be extremely valuable to Southern Health as we further expand this project,'* confirms Ian. *'This data will provide the foundation for additional electronic messaging implementations, meaning our processes for supplier engagement and roll-out will be even more effective.'*

Operationally, Ian sees that there needs to be a focus on order fulfilment accuracy processes, such as the scan pick/pack process being introduced at CH2. The vision is that order fulfilment will also include batch and expiry traceability that can be used from the supplier to the wholesaler, to the hospital, and then to the patient – promoting patient safety.

*'The work we are doing now will lay the foundations for effective patient safety routines such as the bedside scanning initiatives being implemented by the New Zealand Ministry of Health. These sorts of processes will become crucial in Australia in the future.'*

As in any project, there are challenges faced. Ian sees the challenges as falling into two categories – Political and Operational.

*'All suppliers have their own internal priorities, including internal personnel and international affiliations. The Monash Pharmacy Project is one of many projects for each organisation and, as such, has an internal priority. Operationally, suppliers have also to manage various matters such as computing platforms, packaging changes, and other processes that an individual representative may not be able to change within the timeframes of a project such as this.'*



Above: GS1 SSCC shown on a healthcare logistics unit



“The success of the this project has been in extending the scope of the implementations to include additional suppliers; and to propagate electronic messaging and the use of the GS1 System beyond the scope of the Monash Medical Centre Pharmacy.”

Ian Larmour  
Directory of Pharmacy  
Southern Health

“The work we are doing now will lay the foundations for effective patient safety routines such as the bedside scanning initiatives being implemented by the New Zealand Ministry of Health. These sorts of processes will become crucial in Australia in the future.”

Ian Larmour  
Directory of Pharmacy  
Southern Health

# KPI Results and Discussion

## Sub-Project 1: Identification and Bar Coding Trade Items

As implementations related to this sub-project are currently in progress, KPI data has not been reported.

## Sub-Project 2: Electronic Messaging and Improving Order Fulfilment Accuracy

The KPIs collected for sub-project 2 were modelled on those used for implementation of the same electronic messages during Phase 1, but minimised due to the conclusive benefits Phase 1 had previously illustrated. The aim of this sub-project was not proving the case for electronic messaging, but rather facilitating broader roll-out of the beneficial functionality.

KPI Description	Pre-Implementation Measure	Post-Implementation Measure	Averaged Time Saving %
Time taken to receive stock into internal system by scanning SSCCs	2 mins - 2mins 30 sec	10 sec - 1 minute	60% - 92%

It is important to note that the KPI measure above relating to receiving speed was purely reporting the time taken to receive stock into the hospital internal system by users. This did not measure the time taken for checking the stock for order fulfilment accuracy, as well as batch and expiry date acceptability. The next step in the hospital receiving process is improvement of order fulfilment accuracy by the supplier introducing scan pick/pack or other order fulfilment processes, meaning accuracy of the shipment is assured by the supplier. This will then further increase the efficiency of hospital receiving as the hospital-based checking processes are minimised.

Considering the results, the time taken for manual data entry (the pre-implementation measure) will vary depending upon user experience, with more experienced users taking less time to manually receive stock. This highlights the benefits of scan receiving, especially at times of staff change, as the measures recorded for this project show that time taken by new staff to complete a scan receiving process is the same as for experienced staff, hence maximising the efficiency of these new staff.

During the post implementation KPI analysis period, the other points of significance were:

- There was only one instance where a communications issue prevented transmission of the DA
- The POA functionality was used to confirm a new replacement item when off-range trade items were ordered
- There were no instances where the DA did not match the physical delivery

### Qualitative Results

Interviews with purchasing staff at Southern Health have lead to some very interesting qualitative data. Karen Martin, Purchasing Officer, reports, *“As more companies are moving to standards-based electronic messaging, the benefits seen from the order placement perspective are increasing and very positive.”*

*“Previously, to place an order electronically with a supplier, we would have to go into up to three different systems – our internal Merlin System, a communications module and then the supplier system. Now, we access Merlin and all communication is directly through that interface. Whilst we didn’t measure the time taken to place orders pre and post-implementation, I can say that the timeframe has definitely reduced significantly with the new processes.”*

In addition, Trevor Ireland, Purchasing Officer, confirms, *“This project has allowed access to functionality we previously didn’t have. For example, now that we have electronic messaging perpetual inventory functionality has been enabled in Merlin, meaning we can set stock inventory minimums and maximums and the system produces a suggested purchase order.”*

Overall, both Karen and Trevor agree that the introduction of electronic messaging and scan receiving has been beneficial for the organisation and look forward to more suppliers becoming involved.

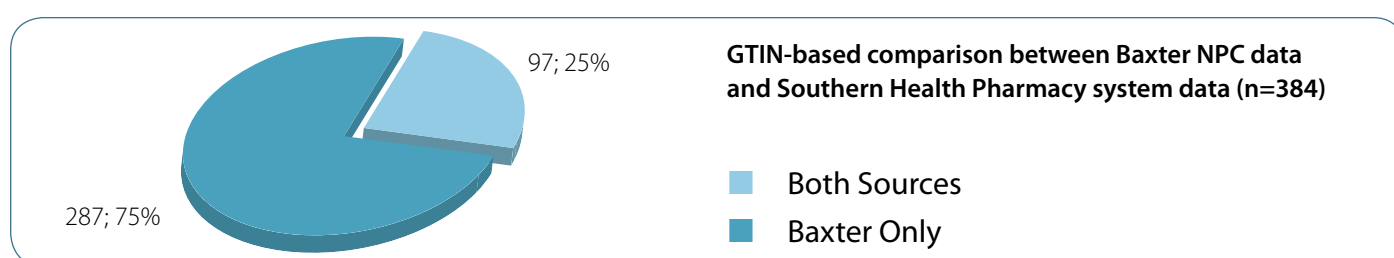
## Sub-Project 3: Data Synchronisation via GS1net

### Quantitative Results

Sub-project 3 involved analysis of the Baxter NPC data and comparison of this data with the current Southern Health data from the Merlin System. The Baxter NPC file contained 384 GTINs, with required NPC fields populated for both supply chain and medicines data.

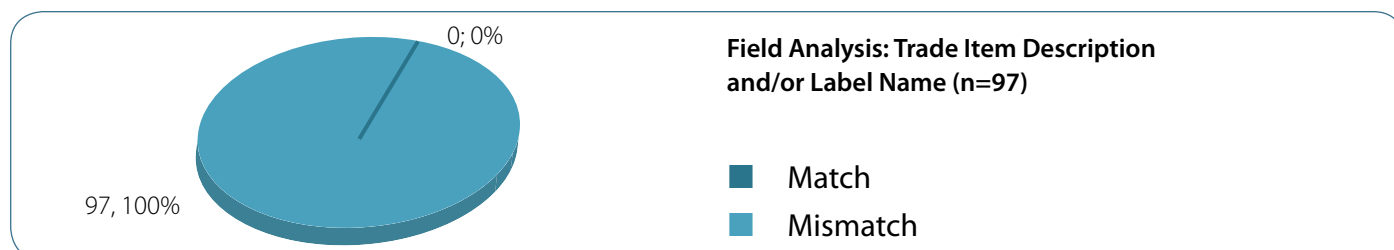
Initial comparison was to determine, by GTIN match, the number of Baxter NPC GTIN records in the Southern Health Pharmacy system.

The analysis showed a limited match which highlighted that currently Merlin only holds records for items purchased. A catalogue of all items is not held, meaning the hospital purchasing decisions are limited to the items previously bought.



Of the 97 records matched by GTIN, further analysis was completed by studying key fields, the results of which are below.

### 1. Trade Item Description and/or Label Name

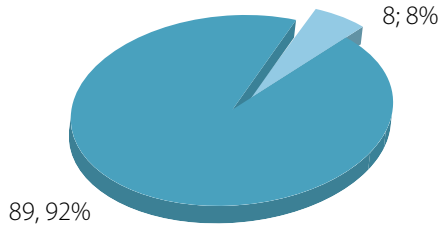


There were no matches for Trade Item Description and/or Label Name fields. Examples of the mismatches included:

- Packaging included in one description but not the other  
e.g. Steri Pour bottle included in the Baxter description but not in the Southern Health description
- Mismatch of item type and pack size  
e.g. Baxter 10% GLUCOSE, SODIUM CHLORIDE 4mmol, POTASSIUM CHLORIDE 2mmol/150ML 500ML  
Compared with  
SOLUTION 150 in 10% DEXTROSE 500mL  
INFUSION BOX(18) AHK6007

- Different terminology and pack size  
0.9% SODIUM CHLORIDE & 5% GLUCOSE INTRAVENOUS INFUSION BP 1000ML  
Compared with  
GLUCOSE-SODIUM CHLORIDE 5%–0.9% (1L) IV FLUID BOX (12) AHB1064
- Different units of measure  
Baxter Viaflex 10% GLUCOSE 1000ML IV X12  
Compared with  
GLUCOSE 10% 10% (1L) IV FLUID BOX(12) AHB0164

## 2. Brand Name



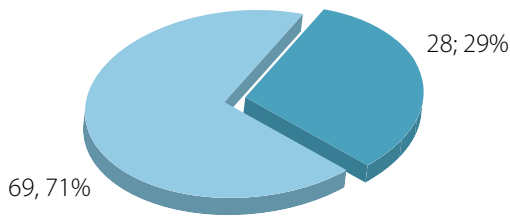
Field Analysis: Brand Name (n=97)

- Match
- Mismatch

Brand name matches were found in 8 per cent of cases, with 92 per cent of records being mismatches. An example of the mismatches found is:

- Baxter Viaflex 1.5% GLYCINE IRRIGATION SOLUTION 2000ML X 6  
Compared with  
GLYCINE UROMATIC 1.5%, 2000mls  
IRRIGATION BOX(6) AHB7316

## 3. Baxter (Supplier) Internal Code

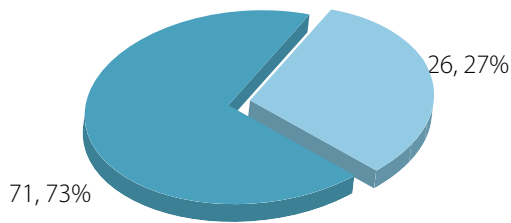


Field Analysis: Baxter (Supplier) Internal Code (n=97)

- Match
- Mismatch

Supplier internal code was matched in 29 per cent of the records.

## 4. Selling Unit of Measure

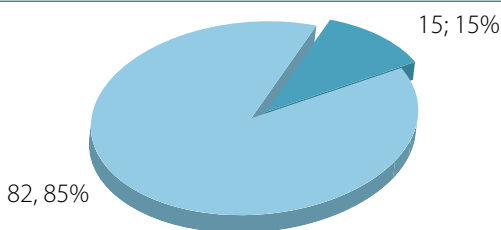


Field Analysis: Baxter (Supplier) Internal Code (n=97)

- Match
- Mismatch

Selling unit of measure was matched in 28 per cent of cases. Throughout this analysis it was found that Southern Health often shows the 'BOX' or 'CASE' as the selling unit when Baxter data specifies EACH. Perhaps this is due to confusion about the level of packaging (as defined by the GTIN) that is saleable.

## 5. Additional classification category



Field Analysis: Additional Classification Code (n=97)

- Match
- Mismatch

Southern Health uses a different classification to the NPC. However, the data analysis identified that 15 per cent of the classification descriptions quite clearly did not align, irrespective of the classification system used. Examples included: Laxatives vs. Multivitamins, plain or Antiseptics vs. Sodium Chloride

In addition to the KPI data above, analysis highlighted that many of the key NPC fields populated by Baxter data were not populated in the Southern Health data.

Fields such as 'Trade Item Net Content', 'Order Lead Time' and key dates such as 'First Order Date' and 'Item Availability Date' as well as flags to say which is the 'Orderable Packaging Level' would be very useful in a hospital pharmacy purchasing system. The availability of this data, via the NPC, will help hospitals make accurate, informed purchasing decisions avoiding errors and delays which result in supply chain inefficiencies and impact patient care levels,

Overall, the data analysis showed that there is significant scope for data quality improvement between the organisations studied. These levels of discrepancy (coupled with the qualitative data reported below) can easily be extrapolated to other organisations, illustrating that there is potential for improvement, in terms of both data accuracy and data completeness, in Australian healthcare.

The NPC will alleviate issues in both of these areas – accuracy as the data is sourced directly from the supplier systems and completeness because the data set for the NPC has been agreed upon by the NEHTA jurisdictional representatives as meeting the supply chain needs for Australian public healthcare.

It should be noted future studies are recommended by the project team to assess additional effects of a lack of data accuracy and completeness. These include impacts on:

- Product availability
- Product identification/authentication
- Accuracy in prescribing/administering drugs

## Qualitative Results

The staff from the purchasing area of the Southern Health Pharmacy Department understand first-hand the importance of accurate item master data.

Some statistics collected independent of the Monash Pharmacy Project, have highlighted that the current processes for data provision in Victoria sometimes results in inaccurate master data. For example, the Southern Health Merlin system was updated with data related to a recent tender. This data came from multiple supplier sources, was subject to a number of post-tender quality control check steps and also a checking process by the Merlin software provider.

For various reasons, when the data was loaded into Merlin, Southern Health experienced an increase in claims due to master data discrepancies. Upon investigation, one cause was GTIN mismatches – an issue that had previously been eliminated. The impact of GTIN mismatches is that Southern

Health staff receive an error during order placement as the GTIN they are ordering is incorrect and does not exist in the supplier system. They are therefore required to contact the supplier to clarify the data and confirm the correct GTIN, causing a delay in the order placement and therefore order fulfilment processes.

Karen Martin, Purchasing Officer, says, *'Once the GTIN mismatch is identified and updated in Merlin, this update is provided to all Merlin user sites via a monthly data update. We are happy to know that the work being done at Southern Health is helping other hospitals.'*

In addition, there were instances where the tender data was not able to be loaded into Merlin as records for those items did not exist and therefore could not be matched. This data will be loaded into the system manually at Southern Health and other Merlin sites.

To address all sources of discrepancy and ensure data completeness, Southern Health has assigned Purchasing Officer Trevor Ireland to validate the data.

Trevor estimates, *'This will take two weeks full-time work to finalise, but will be worthwhile when completed, as whilst this work is being resourced from Monash Medical Centre, the updated data will be published to all Southern Health sites. We will also need to make sure there is a process for ongoing data maintenance to ensure sustainability of the data in the long term.'*

Nigel Allsop, Manager Strategic Procurement, Health Purchasing Victoria, has indicated that the introduction of stronger quality controls in data management, such as data synchronisation via the NPC, will add further assurance to the tender process.

Nigel also mentioned that, *'The recent experiences from Southern Health highlight what HPV already has concerns about – the implementation of quality control in data management to ensure accurate data which is the foundation to the supply chain process.'*

*'HPV has already implemented a number of improvement measures to ensure data accuracy in formats of tendered data, such as controlled format fields in the tender pricing schedule. HPV has also extended the contract evaluation upon request of industry. In recent tender processes, HPV has experienced improvements in tendered data (formatting) but as Southern Health is experiencing, data accuracy still is an opportunity for improvement.'*

# Overall Project Key Challenges and Learnings

Throughout the project period, the project team documented a number of challenges and related learnings that will be appropriate to all companies wanting to implement aspects of supply chain standards. These are detailed in the table below.

Number	Challenge	Learning
1	Merger of organisations, meaning software capabilities are affected	<p>In the healthcare sector, organisational mergers and acquisitions are commonplace.</p> <p>In situations such as these, organisations may be required to rebuild functionality that existed as part of a previous software platform. Back-up plans and communication with trading partners during this time ensure a smooth transition.</p> <p>In some cases organisational mergers may mean all development will be put on hold, limiting participation in projects such as this.</p>
2	Implementation of electronic commerce and supply chain standards requires education	<p>The need for education cannot be under-estimated when implementing projects such as this.</p> <p>Education is needed to ensure relevant organisations clearly understand what is involved in each part of the scope; this then helps them to refine the implementation to ensure it is manageable.</p> <p>Education is also essential for staff implementing new processes so that they understand the work effort and impact of their roles, and therefore set realistic timeframes for completing the project.</p>
3	Selecting an electronic messaging connectivity method	<p>Both direct connectivity and the use of a service provider have pros and cons. Selecting either of these methods for electronic messaging connectivity is an individual business decision, but either of these is a valid option that will be seen in healthcare for many years to come. Both are supported by the project team.</p> <p>This project illustrated that the use of a service provider may mean that messaging response time, i.e. the time between sending a PO and receipt of a POR can be slightly longer – times between 1 and 10 minutes were recorded – when compared with direct connections, which provided sub 1-minute responses in this implementation.</p> <p>Conversely, the use of a GS1 Standards compliant service provider means that changes in messaging formats or requirements are seamlessly handled and do not mean significant internal IT resources are required to change internal system mappings. Additional service provider services, such as message encryption, tracking and management reporting, are also important to some organisations.</p>
4	Choosing a service provider for electronic messaging - absence of specialist knowledge relating to electronic messaging as well as GS1 standards	<p>When selecting a service provider for electronic messaging, it is important to assess if this is the organisation's area of speciality. Selecting a service provider whose primary business is not electronic messaging may lead to confusion and poor communications effectiveness as well as lack of support for trouble-shooting.</p>

Number	Challenge	Learning
5	High level IT security used in the Healthcare sector	<p>Hospital information systems contain large amounts of confidential data and, as a result, these organisations are very wary of installing third-party communications software on their business servers. When a trading partner (via their service provider) must communicate using such software, security concerns can prevent electronic messaging being implemented.</p> <p>Whilst most service providers have solutions that manage this security risk, e.g., AS2 or Web Services, there are some situations where these are not available.</p>
6	Introduction of industry guidelines and standards following project commencement	<p>Phase 1 of this project commenced prior to the formation of NEHTA and therefore has implemented GS1 EANCOM messaging standards where NEHTA has adopted GS1 XML.</p> <p>The project team is committed to alignment with the NEHTA objectives, and will ensure migration to GS1 XML will occur as appropriate in future phases of the project. However, in some cases this may result in some rebuilding of implementations.</p> <p>The learnings and implementation issues identified as part of this project will be relevant and valuable for future GS1 XML implementations.</p>
7	Driving bar coding implementation globally	<p>The Australian market is a small percentage of the world pharmaceutical market, yet Australian organisations can effectively drive their global head offices to implement bar coding as part of packaging processes.</p> <p>In some cases the global head office is 'waiting for the requirement' to enable implementing batch and expiry tracking on shipper and inner packs.</p> <p>In addition, other countries are currently requesting, or even writing into legislation, the need for batch and expiry date bar code-based tracking, which will drive the presence of bar codes in the Australian industry.</p> <p>However, this does not mean Australian organisations should wait for the international drive – we should continue to request changes to meet our own traceability needs.</p>
8	Using local resource to implement bar coding	<p>In cases where driving global head office to implement bar coding is not possible, companies may choose to use local resources to undertake this task. This may be a third-party logistics provider (3PL) or an internal resource given the responsibility to arrange application of bar codes to products.</p> <p>If an organisation chooses to resource this undertaking through their 3PL, it is vital to ensure the 3PL can efficiently and accurately undertake the service, as when this is not a standard offering, it can be difficult to get commitment for the work.</p>

Number	Challenge	Learning
9	Lack of communication means often companies implement in isolation	<p>A significant effort was made to ensure that the project team was operating in a non-competitive environment. This encouraged sharing of learnings and next steps.</p> <p>This sharing meant organisations implementing with the same trading partner or using the same service provider were able to leverage each other's implementations or service provider engagements. They knew which trading partners to engage with (i.e. who was ready to implement which aspect of the project) and which service providers had already done certain development work. Overall, this resulted in a positive outcome in terms of faster implementations.</p> <p>Anecdotal reports from the project team indicated that 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.</p>
10	Often a common software platform at different sites does not exist	<p>This project is proof of the benefits of a common software platform existing at different implementation sites.</p> <p>The same version of the Merlin Pharmacy System is installed at all Merlin sites and upgraded consistently at these sites. The initial driver for this was the benefit to the software owners, Pharmhos, in only having to provide support and maintenance for one platform.</p> <p>For this project however, the benefit has been the functionality developed for Southern Health has been installed at all Merlin hospital sites, meaning that these organisations were able to learn about the project, understand the benefits, and then immediately leverage the functionality already existing in their systems. There was no cost or development barrier preventing these organisations implementing the project methodology.</p> <p>In cases where there is not a common platform, the use of global standards helps to minimise the efforts involved in implementing electronic messaging.</p>
11	Maintaining a consistent business owner	<p>Every project needs an internal business owner.</p> <p>This person must be sufficiently senior so they can 'sell' to the business the benefits of standards implementation and electronic commerce as well as taking ownership and driving the project. It can be difficult to assign an owner to a project such as this as it spans many functional areas of the organisation.</p> <p>For this project, organisations that took some time to identify a business owner illustrated a slower project progression until an owner was allocated then progress increased significantly.</p> <p>Where there were changes in organisational staff and project ownership was re-assigned, there was a delay in driving implementation until the new owner became familiar with the project. In some cases, this meant the project was not completed at the time of writing this case study but was, nevertheless, well underway.</p>

Number	Challenge	Learning
12	Structure for data synchronisation in Victoria	<p>Data synchronisation has become a key focus for Victoria's Department of Human Services through the introduction of the NPC. However, the structure for the Victorian public health system for receiving data (as discussed earlier) is still in the process of being put in place.</p> <p>This means that whilst some of the Monash Pharmacy Project participants have commenced work on data synchronisation, and completed the NPC by loading their item data, they are waiting for Victoria to be able to accept and use the data. They will then add the relevant pricing information.</p> <p>The Baxter and Southern Health NPC project ensured that the roles for data receiving in Victoria were clearly understood and rehearsed. This helps to lay the foundation for implementation of data synchronisation in this state.</p>
13	Key business priorities drive overall electronic commerce initiatives	<p>During the project, some organisations found that their or their trading partners' overall electronic commerce business strategies were modified. This rearrangement of priorities impacted the key business objectives driving participation in the project. Some implementations that were initially a secondary priority became primary and were allocated additional resources.</p> <p>Likewise, the priorities for some solution providers were also rearranged due to other business requirements. This meant that some functionality needed to further the project could not be delivered in the necessary timeframe.</p>
14	Understanding the NPC data model for mapping into internal system data models.	<p>Solution providers and organisations mapping NPC data into their own internal data models require education and assistance to ensure that the data mapping process is accurate.</p> <p>The aim and benefit of the NPC is consistent, timely and accurate data, but for this to be effective, the correct data needs to be mapped into the appropriate database fields in each hospital and pharmacy internal system.</p>
15	Hospitals pharmacies do not receive full catalogues of data from all suppliers	<p>The Baxter and Southern Health NPC pilot highlighted that aside from the wholesalers, hospital pharmacies generally do not receive full electronic catalogues from their suppliers. This means that the data loaded into their purchasing systems relates only to items previously purchased. The ability, via the NPC, for pharmacies to receive full catalogues to allow wider scope for purchasing is recognised as an exciting benefit.</p>
16	Limited supplier ordering data currently available	<p>The Baxter and Southern Health NPC pilot illustrated that via the NPC, hospital pharmacies will be able to access trade item data that is not currently available. Access to fields such as 'Trade Item Net Content', 'Order Lead Time' and key dates such as 'First Order Date' and 'Item Availability Date', as well as flags to indicate the 'Orderable Packaging Level' will help hospital pharmacies to make accurate and informed purchasing decisions.</p>

## Conclusion and Next Steps

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

Yet again, the benefits of standards-based electronic commerce have been understood and quantified, and will to further be realised as implementations continue. Whilst a number of the Phase 2 project implementations are still in progress, all of these are nearing completion. The need to continue the momentum created by the Monash Pharmacy project, and open participation to additional interested parties in early 2008 via Phase 3, has driven the requirement to finalise this phase.

Also, driving the project forward is the realisation that many of the project team companies are now 'electronic commerce champions' implementing GS1-compliant bar coding and electronic messaging, as well as data synchronisation via the NPC, with companies outside of the current project team, and this will further enhance the reach of the project.

As Phase 2 of the project comes to a close, the objectives of the group will be reviewed and refined. The Monash Pharmacy Project team understands the need to ensure the objectives, standards, and implementations of the project align with those of each participating businesses, as well as state, territory, and federal health jurisdictions through an ongoing relationship with NEHTA.

Phase 3 is intended to further refine and improve the supply chain efficiency of those organisations involved. As such it will again encompass the ongoing promotion of electronic commerce and its applications, benefits and opportunities, as well as the application of new standards and technologies

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.



Above: CH2 logistics units showing GS1 SSCCs

# Appendix 1 – Company Profiles



## Abbott

Abbott is a global, broad-based healthcare company founded in 1988 by Dr Wallace Abbott. Abbott employs approximately 65,000 people working across 120 operating sites in 60 countries. Operating sites comprise sales, manufacturing, research and development, and distribution facilities for the Abbott customer base spanning some 130 countries. Sales revenue amounted to \$22 billion USD in 2006.

The company is devoted to discovering new medicines, new technologies and new ways to manage health. Products span the continuum of care, from nutritional products and laboratory diagnostics through medical devices and pharmaceutical therapies.

[www.abbott.com](http://www.abbott.com)



## Baxter Healthcare

Baxter is a global pharmaceutical company with 67 manufacturing facilities in 27 countries. Its customer base spans 110 countries. Baxter's reputation for quality production of medical devices and therapies started 75 years ago.

The company has been committed to Australian manufacturing for over 40 of these years and has had operations in New Zealand for over 30 years. In Australia Baxter has 14 facilities employing 675 employees. Its business portfolio comprises BioScience, Medication Delivery and Renal.

[www.baxter.com](http://www.baxter.com)



## Bristol-Myers Squibb

Bristol-Myers Squibb is a global pharmaceutical manufacturing company based in New York with sales of approximately \$18 billion and a research budget of approximately \$3 billion. The company has existed in various forms for well over 100 years but became Bristol-Myers Squibb in 1989 when its predecessor merged with ER Squibb. Bristol-Myers Squibb operates in over 100 countries and employs 43,000 employees.

Prior to the 1989 merger, the Bristol-Myers Company had operated in Australia since 1930, while ER Squibb & Sons had a presence in Australia since 1955. The Prime Minister, Mr Harold Holt, opened Bristol-Myers Squibb's Australian headquarters in Noble Park, Victoria, in 1967. The annual export sales of Bristol-Myers Squibb Australia is about \$35 million, and 65 per cent of product manufactured in Australia is exported to more than 35 countries.

[www.bms.com](http://www.bms.com)



## CH2

Clifford Hallam Healthcare Pty Ltd (CH2) is Australia's largest wholesaler and distributor of healthcare products and services to healthcare organisations. As a national company with branches in each state, CH2 has been in business for 33 years and carries a comprehensive range of medical and surgical products, pharmaceuticals, general consumable items and healthcare equipment. Their customer base includes public and private hospitals, nursing homes, general practitioners, day surgeries, pathologists as well as a number of federal and state government bodies.

In 2005 CH2 was formed when Hospital Supplies Australia acquired Clifford Hallam Pharmaceuticals. Both supplied the non-retail and hospital sectors with wholesale pharmaceuticals and medical supplies and both were foundation partners of the Monash Pharmacy Project.

[www.ch2.net.au](http://www.ch2.net.au)



## GS1 Australia

GS1's objective is to improve the efficiency of integrated logistics, and to provide added value to all trading partners involved and the end consumer.

GS1 Australia, a not-for-profit organisation, is the local affiliate and Member Organisation of GS1 (formerly EAN International). GS1 Australia is one of 108 GS1 Member Organisations spanning 155 countries.

The mission of GS1 is to take a lead role in the establishment of a global multi-industry system of identification and communication for products, services and locations based on internationally accepted and business-led standards – this is the GS1 System (formerly the EAN•UCC System).

More than 16,000 businesses are GS1 Australia members, and well over one million businesses use the GS1 System globally.

[www.gs1au.org](http://www.gs1au.org)



## Health Purchasing Victoria

Health Purchasing Victoria (HPV) was established as an independent statutory authority by section 129 of the Health Services Act 1988. This organisation is responsible to the Minister for Health and works closely with the Department of Human Services, public hospitals and health services.

HPV exists to improve the collective purchasing power of Victoria to establish 'best value' in the procurement of services, equipment and goods through common use contracts for Victorian Public Hospitals and other health agencies.



## Hospira Australia, formerly Mayne Pharma

Hospira Australia is focused on providing a full range of pharmaceutical solutions to oncologists. Its portfolio has been built around deep scientific and manufacturing expertise in two key pillars of anti-cancer treatments today: taxane-derived pharmaceuticals and platinums.

With this internally developed know-how in core generic oncology medicines and its expansion from a strong base in Australia, Hospira has established valued commercial relationships with the oncologist community in a number of countries around the world.

[www.hospira.com.au](http://www.hospira.com.au)



## Novartis

Novartis Australia is a leading provider of innovative solutions to improve health and well-being.

Our businesses include pharmaceuticals, consumer health, generics, eye care, and animal health, and enable us to help people right around Australia deal with the challenges of conditions as diverse as breast cancer, mental illness, menopause and fungal infections.

Created in 1996 from the merger of Swiss companies, Ciba and Sandoz, Novartis has a history in Australia going back over 50 years.

Novartis employs more than 500 people across Australia, and invests over \$27million annually in local research and related activity. This research not only assures the effectiveness of the company's current range of treatments, but secures the promise of improving health for the future.

[www.novartis.com.au](http://www.novartis.com.au)



## Orion Laboratories

As a privately owned and independent company, Orion has since grown rapidly into one of Australia's few pharmaceutical manufacturers and suppliers particularly focused on hospitals.

Based at Balcatta in Western Australia, Orion has over 20 years experience in the developing, manufacturing and marketing of therapeutic goods, cosmetics, hospital products, veterinary products and hospital and industrial cleaning products. The company also contract manufactures products for a range of companies such as Amcal, Lawley Pharmaceuticals, Michael's Products and BP/Castrol and currently exports to New Zealand, Hong Kong, Singapore, Malaysia and United Arab Emirates.

[www.orion.net.au](http://www.orion.net.au)



## Pfizer

Pfizer is a global company with headquarters in New York, USA. Its revenue is approximately \$48 billion USD and it employs approximately 106,000 people.

Pfizer Australia was founded in 1886 and has grown to become one of the nation's leading healthcare partners, specialising in prescription medicines and animal health products. The company employs more than 1,500 staff and its annual exports from three manufacturing plants have an Australian market value in excess of AU \$100 million. Pfizer Australia's commitment to research and development across its Australian business commands a budget of approximately AU \$40 million in 2007. Pfizer Australia prides itself on keeping some of the nation's leading researchers in Australia.

[www.pfizer.com.au](http://www.pfizer.com.au)



## Symbion Health Limited

Symbion Health Limited is a leading Australian health, diagnostic and wellness company listed on the Australian Stock Exchange. It employs some 10,500 staff and its revenues are almost AU \$4 billion. It provides diagnostic and wellness services through its pathology, diagnostic imaging, medical centres and pharmacy services divisions as well as health-related products through its consumer division.

Symbion Pharmacy Services provides wholesale distribution of pharmaceutical and healthcare product lines to around 3,000 retail pharmacies, as well as public and private hospitals.

[www.symbionhealth.com](http://www.symbionhealth.com)



## Southern Health

Southern Health is the largest metropolitan health service in Victoria and provides comprehensive primary, secondary and tertiary healthcare services to people living in the south-eastern suburbs of metropolitan Melbourne. Southern Health provides public hospital services; aged inpatient, community and home care services; and inpatient and community mental health services to its primary and nearby catchment populations.

Southern Health services are provided from a number of hospitals and community health services:

- Monash Medical Centre (Clayton)
- Monash Medical Centre (Moorabbin)
- Dandenong Hospital
- Casey Hospital
- Kingston Centre
- Cardinia Casey Community Health Service (Berwick, Cranbourne, Doveton, Cockatoo and Pakenham)
- Greater Dandenong Community Health Service (Dandenong and Springvale)
- Primary Care Services
- Mental Health Services

[www.southernhealth.org.au](http://www.southernhealth.org.au)

## Appendix 2 – Glossary

<b>3PL (Third Party Logistics Provider)</b>	Party providing logistics-related services such as transportation management, supply chain management, warehousing, repackaging products, distribution and/or assembly.
<b>Direct Connection</b>	An electronic messaging connection between two trading partners where the assistance of an intermediary (service provider) is not used.
<b>Electronic Messaging Service Provider</b>	A hosted service offering that acts as an intermediary between business partners sharing standards-based or proprietary data via shared business processes. Service providers can communicate GS1 EANCOM and GS1 XML messages as well as providing value-added services such as translation from one message format to another.
<b>ERP (Enterprise Resource Planning)</b>	Systems to integrate all data and processes of an organisation into a unified package. A typical ERP will use multiple components of computer software and hardware to achieve the integration. A key ingredient of most ERP systems is the use of a unified database to store data for the various system modules.
<b>GLN (Global Location Number)</b>	The GS1 Identification Key used to identify physical locations, functional and legal entities.
<b>GS1 System</b>	The supply chain specifications, standards and guidelines administered by GS1.
<b>GS1net</b>	The GS1 Australia data synchronisation platform which 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.
<b>GTIN (Global Trade Item Number)</b>	The GS1 identification key used to identify trade items. Each different packaging level is issued a different GTIN by the product brand owner.
<b>NEHTA (National eHealth Transition Authority)</b>	A not-for-profit company established by the Australian, state and territory governments responsible for the progression of work on the most urgent national information management and information communication technology priorities.
<b>NPC (National Product Catalogue)</b>	Hosted on GS1net. A single repository of product, pricing and healthcare data for all healthcare industry product categories for the purpose of data synchronisation. These categories include pharmaceuticals, medical devices (including orthopedics, implants, dental, imaging, etc.), catering, food services and cleaning products.
<b>PDA (Personal Digital Assistant)</b>	A handheld computer. These were originally designed as personal organisers but became much more versatile over the years.
<b>ROI (Return on Investment)</b>	The return on a past or current investment, or the estimated return on a future investment. ROI is usually given as a percentage rather than a decimal value.
<b>SSCC (Serial Shipping Container Code)</b>	The GS1 Identification Key used to identify logistics units.
<b>Solution Provider</b>	An organisation that provides assistance with implementation of different aspects of electronic commerce. This may include electronic messaging, bar code printing, etc.



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