

**E-commerce within the hospital pharmaceutical
Supply Chain (Monash Project)**

Final Report prepared by EAN Australia

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Executive Summary

Background

The Australian pharmaceutical / health supply chain is still a mainly paper based system with manual processing. At best it sends purchase orders electronically. By comparison, some parts of the Australian retail supply chain are completely electronic from purchase order to remittance. This notable difference may be explained by the presence of dominant players in the retail industry, such as Wal-Mart (USA), Woolworths (Australia) and Coles Myer (Australia). These companies have seen the benefits to be realised from electronic commerce and have driven change. In comparison the pharmaceutical / health supply chain currently lacks dominant players willing to drive change.

Seeing this opportunity, a group of proactive and leading Health sector companies banded together to participate in a project to demonstrate the use of electronic commerce in a tightly defined but manageable project. Monash Medical Centre pharmacy department chose to work with three suppliers, representing small, medium and large sized enterprises (Clifford Hallam Pharmaceuticals, Hospital Supplies of Australia (HSA) and Orion Laboratories) as well as key stakeholders including Health Purchasing Victoria (HPV), National Supply Chain Reform Task Force (NSCRTF), Pharmos Software and the project managers EAN Australia.

The project has been supported by a \$50,000 (exc. GST) grant issued to Clifford Hallam Pharmaceuticals by the Victorian Government's e-Commerce Exhibition Projects Program (ECEPP). ECEPP aims to support clusters of Victorian small to medium enterprises (SMEs) in key sectors of the Victorian economy to develop innovative approaches to B2B e-commerce. This Grant scheme is administered by the Victorian Department of Innovation, Industry & Regional Development.

Predicted Benefits

At commencement of this project, it was anticipated that participating suppliers and hospital would realise the following benefits:

- Reduced cost of order processing
- Reduced cost of picking and packing
- Reduced cost of accounts receivable
- Increased accuracy
- Reduced lead times
- Reduced volume and cost of credits
- Real time information

As a result of the above, it was also predicted that by making foundational changes to enable a more efficient means of managing the supply chain, there would be a long term flow on of benefits to patients.

Scope

The scope of this project was to establish a significant but achievable and demonstrable supply chain between Monash Medical Centre pharmacy department and a group of their suppliers by introducing the concepts of e-commerce using EAN•UCC standards and EANCOM guidelines in the areas of ordering, processing, picking, packing, despatch and receipt of goods.

Aims

The broad aims of this project were:

- To provide a report demonstrating the "as is" processes between Monash Medical Centre pharmacy department and its various suppliers participating in this demonstrable project.
- To compare the "as is" model with the outcomes of the implemented processes.

- To demonstrate the benefits and efficiencies of implementing e-commerce in the hospital pharmaceutical supply chain.
- To have a robust and working e-commerce supply chain demonstration.

These aims were supported by appropriate and agreed key performance indicators (KPIs) spanning the general areas listed below were used to measure the outcomes of this project.

- Process Change
- Accuracy
- Time Frames
- Work Effort

Learnings

Throughout the pre- and post-implementation phases of the demonstration project, a number of learning outcomes were documented, including:

Confidentiality

When competitors are represented on a project team, an agreement to ensure the confidentiality of the discussions held during the project meetings is essential. For this project, the presence of a confidentiality agreement allowed for more frank and open discussion during project meetings and encouraged relationship building within the project team.

Project Proposal

Achieving final sign off by ensuring each stakeholder signed a formal document was an effective way of finalising agreement regarding the content of the project proposal for this project.

Project Budget

The project budget was agreed upon prior to any further project work, as it is essential all project participants understand the portion of project funding allocated to them.

Project Plan

Development and formal sign off of a generic project plan was necessary to ensure all of the project team were aware of and focussed on the deadlines they needed to meet for the project to succeed. Individual companies then developed their own internal project plans based on the timelines contained within the generic document.

Global Trade Item Number (GTIN) File¹

When dealing with health products, difficulties exist when sourcing the GTINs and associated information from suppliers as often companies do not maintain an internal list of the GTINs printed on the products they distribute. To compound this problem, packaging levels higher than the unit of use do not have GTINs allocated at all, thus impacting the efficient handling of goods throughout the supply chain.

Engaging Solution Providers

It was important hardware and software suppliers engaged to assist with this project had a clear understanding of what the project involved, who was participating and the types of equipment required by the group.

¹ As part of this project, a central file listing all the GTINs (bar code numbers) and descriptions allocated to the products traded between Monash Medical Centre and their suppliers was created. This was used to align data between supplier and hospital internal databases.

Testing New Processes

It was essential to ensure all new processes were tested prior to the project going live. For this project testing involved placing a small order (containing one or two stock lines), which was then manually followed through the new process to ensure there were no issues.

Staff Education

All staff using the new processes needed to be trained in detail about the changes and how these affected their current administration processes. It was important to note that on going support was required by the users during the live phase of any project.

IT Engagement

When conducting a project such as this, it was important that all project team members' IT Departments were engaged in full and as early in the process as possible.

Conclusion

Whilst the results of this demonstration indicate that the pharmaceutical suppliers are yet to experience the full benefits of e-commerce implementation, the results must to be considered coupled with an explanation of the reasons for the outcomes. It is clear that a significant amount of work was achieved in bringing the parties to the current stage of the project, and due to the pressures of time, staff resources and budget, most of the parties chose to overlay new technology on existing business processes.

As a result, data gathered by the participants during the period of the demonstration project did not indicate any significant improvements to current manual processes. During the live period of the project, suppliers recorded increased order processing times and minimal changes to accuracy. Whereas the receiver noted distinct increases in the speed and accuracy of goods receipt. This result alone provided the basis for future full-scale adoption of this technology throughout Southern Health.

At the completion of this phase of the initiative, all of the project team understood outcomes of this demonstration as well as its limitations. On this basis, an ongoing commitment to continue to progress this project and to be actively involved in further steps was obtained from the stakeholders.

1. Introduction

The Australian pharmaceutical / health supply chain is still a mainly paper based system with manual processing. At best it sends purchase orders electronically. By comparison, some parts of the Australian retail supply chain are completely electronic from purchase order to remittance. This notable difference may be explained by the presence of dominant players in the retail industry, such as Wal-Mart (USA), Woolworths (Australia) and Coles Myer (Australia). These companies have seen the benefits to be realised from electronic commerce and driven change. In comparison the pharmaceutical / health supply chain currently lacks dominant players willing to drive change.

Monash Medical Centre pharmacy department sees an advantage in having electronic control of inward pharmaceuticals from ordering to final receipt and payment. They want to work with their suppliers to eventually establish a fully electronic supply chain. Successful completion of this project means a large step will have been achieved towards establishing this goal. The critical project outcome is that the process demonstrated must be conveniently transferable to additional hospitals and suppliers.

For the purpose of this project, Monash Medical Centre pharmacy department has chosen to work with three suppliers, representing small, medium and large sized enterprises. With future innovation bringing an inevitable move towards e-commerce, these pro-active suppliers are well placed to benefit from their current and potential customer relationships, increased efficiencies and demonstrable process change achievements.

The project has been supported by a \$50,000 (exc. GST) grant issued from the Victorian Government's e-Commerce Exhibition Projects Program (ECEPP). ECEPP aims to support clusters of Victorian small to medium enterprises (SMEs) in key sectors of the Victorian economy to develop innovative approaches to B2B e-commerce. This Grant scheme is administered by the Victorian Department of Innovation, Industry & Regional Development.

1.1 Predicted Benefits

The Health Industry should gain significant benefits from the development of a fully electronic supply chain similar to models employed by organisations such as Coles Myer and Woolworths in the retail sector. A working demonstration within the industry, illustrating both the processes and benefits, will assist the drive for change. Perhaps government, who indirectly pay most of the industry costs will be influenced by the demonstration and commit to drive change.

At commencement of this project, it was anticipated that participating suppliers and hospital would realise the following benefits:

- Reduced cost of order processing
- Reduced cost of picking and packing
- Reduced cost of accounts receivable
- Increased accuracy
- Reduced lead times
- Reduced volume and cost of credits
- Real time information

As a result of the above, it was also predicted that by making foundational changes to enable a more efficient means of managing the supply chain, there would be a long term flow on of benefits to patients.

2. Project Aims

The broad aims of this project were:

- To provide a report demonstrating the “as is” processes between Monash Medical Centre pharmacy department and its various suppliers participating in this project.
- To compare the “as is” model with the outcomes of the implemented processes.
- To demonstrate the benefits and efficiencies of implementing e-commerce in the hospital pharmaceutical supply chain.
- To have a robust and working e-commerce supply chain demonstration.

3. Project Participants

Public Hospital

Monash Medical Centre (Southern Health) pharmacy department

Suppliers

Clifford Hallam Pharmaceuticals
Hospital Supplies of Australia (HSA)
Orion Laboratories

IT Support

Pharmhos Software Pty Ltd

Industry Support

Health Purchasing Victoria
National Supply Chain Reform Taskforce

Supply Chain Consultants

EAN Australia

4. External Equipment Suppliers

Scan Confirmation Solution used by HSA

Leadtec Systems Australia (owner of Advanced Barcode Solutions Pty Ltd)

Scanner used by Orion

Warp Systems Pty Ltd

5. Project Costs

Table 1 below is a summary of the project costs. To review the project budget in detail, refer to Appendix 1.

Table 1: Project Budget Summary

Cost Element	In Kind (exc. GST)	In Cash (exc. GST)
Project Management	\$31 840.00	\$24 000.00
Software		\$4 000.00
Hardware		\$2 539.00
Interfacing		\$11 960.00
PR / External Communications		\$830.00
Teleconference Costs		\$342.00
Participation Time / Resources	\$53 700.00	
Meetings	\$9 540.00	
Total	\$95 080.00	\$42 771.00

6. Methods

6.1 Project Scope

The scope of this project was to establish a significant but achievable and demonstrable supply chain between Monash Medical Centre pharmacy department and a group of their suppliers by introducing the concepts of e-commerce using EAN•UCC standards and EANCOM guidelines in the areas of ordering, processing, picking, packing, despatch and receipt of goods.

The supplier process included the receipt of the EANCOM purchase order via electronic data interchange (EDI) from the hospital pharmaceutical system, sending a purchase order acknowledgement to confirm order fulfilment ability, scan confirmation of items as they are packed into cartons using the EAN•UCC system, placing the appropriate EAN•UCC number and bar code on the physical shipment and sending an EANCOM despatch advice to the hospital pharmaceutical system.

The pharmacy department process included sending of the purchase order via EDI from the hospital pharmaceutical system (Merlin), receipt of an EANCOM purchase order acknowledgement, receipt of the appropriate despatch advice and scan receipt and/or a validation process of items into the pharmacy via the EAN•UCC logistics label placed on the shipment.

In addition, the scope included:

- The comparison of a fully integrated "pick pack" scenario with a semi-integrated scenario where, for the purpose of this project, goods picked were not be scanned during the pick process rather, the goods were scan 'confirmed' as they were packed for transport.
- The study of the processes required by a small pharmaceutical manufacturer to ensure that goods from unit of use through to shipper level were allocated and marked with the respective Global Trade Item Numbers (GTIN) and required bar codes. It was intended that the supplier will move towards the further implementation of e-commerce through their supply chain at a later date but the steps taken during this project were intended to ensure their wholesalers could trade more effectively.

The items covered in the project were pharmaceutical supplies.

The scope of the project is detailed in Figure 1.

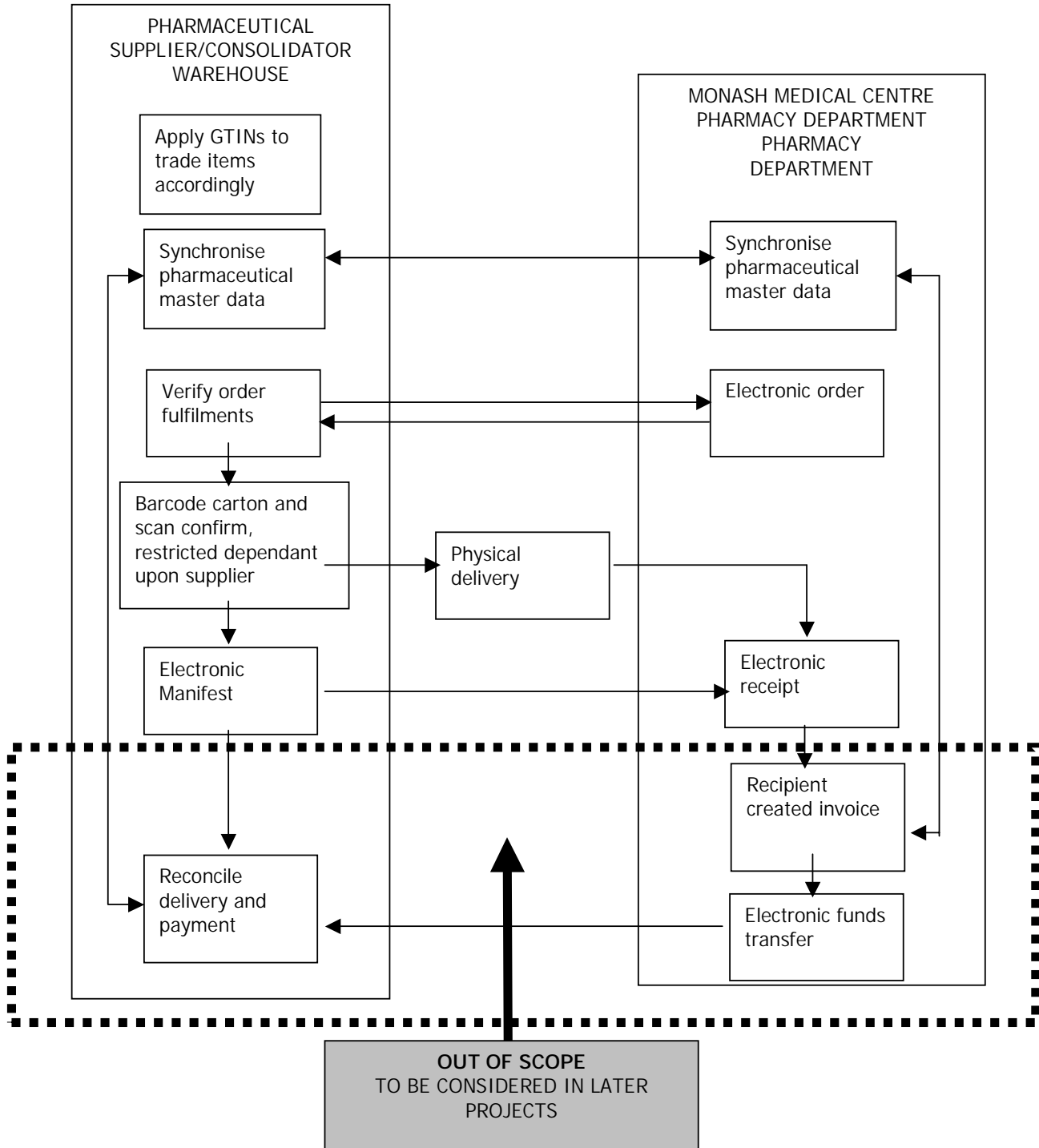


Figure 1: Proposed fully electronic Monash Medical Centre pharmacy department supply chain for inward goods.

6.2 Process Flow Charts

To aid development of the final project process, detailed flow diagrams, outlining both current and intended future processes were completed for Clifford Hallam, HSA and Monash Medical Centre pharmacy department. The supplier processes mapped encompassed the steps from receipt of an order to stock delivery. The Monash Medical Centre pharmacy department processes mapped included the method for order placement and the process for stock receipt.

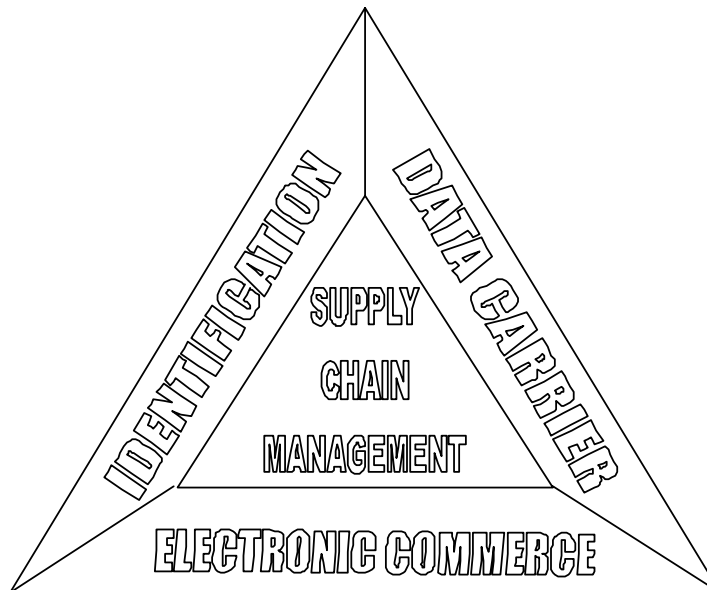
Due to confidentiality issues these supplier and hospital specific flow diagrams cannot be included in this report. However, Appendix 2 contains a generic flow process detailing the current and intended future processes used by the project participants.

6.3 Use of Interoperability Standards

A key requirement of this project was to highlight both the use of EAN•UCC standards for numbering and bar coding and the use of EANCOM guidelines for electronic commerce message formats. As shown in Figure 2 the EAN•UCC standards comprise three core components:

- Identification - Numbers allocated to, for example, trade items (Global Trade Item Numbers or GTINs) and logistics units (Serial Shipping Container Codes or SSCCs)
- Bar Coding (Data Carriers) – Used to encode the EAN•UCC identifiers.
- Electronic Commerce (Electronic Messaging) - Using messages based on EANCOM guidelines

Figure 2: Components of the EAN•UCC System



Further information about the principles of the EAN•UCC system and EANCOM messaging guidelines can be found in the EAN•UCC System brochure, which can be downloaded from the EAN Australia web site.

This project demonstrated the use of all three EAN•UCC System components in the form of:

- GTINs used for item identification and bar coded onto the items;
- SSCCs² allocated and bar coded onto logistics units transported between the trading partners in the project team;
- Electronic messages based on EANCOM 1997 messaging guidelines, which in turn are based on UN/EDIFACT standards.

The EDI messages used in this project were also in line with the Australian Standards AS 5023.1-2003 (Messaging rules and processing logic) and AS 5023.2 -2003 (Datasets). These Australian Standards were developed on behalf of the Department of Health and Ageing Committee IT-014 and its Working Group IT 014-10.

The following messages were transmitted:

- Purchase Order (PO)
- Purchase Order Response/Acknowledgement (POA)
- Dispatch Advise (DESADV or Advanced Shipping Notice)

In addition to the above, a file linking the GTINs allocated and marked on the items purchased by Monash Medical Centre pharmacy department to the appropriate supplier internal product codes and descriptions, was created.

For the purpose of this pilot, a total of 20 items that were regularly ordered by Monash Medical Centre, but did not carry any form of standard identification and bar codes were issued, by EAN Australia, restricted distribution GTINs³.

6.4 Final System Structure

6.4.1 Structure for Communications (Monash Medical Centre Pharmacy Department)

Monash Medical Centre pharmacy department runs the Merlin Pharmacy Software System to manage all of their pharmacy transactions and inventory records. The pharmacy department IT systems consist of three interconnected servers:

1. **Hospital Server 1**
This server connects with the PCs in the purchasing area of the pharmacy. This server does not have Internet access as it is the main patient data repository for the hospital. The Merlin software is also stored on this server.
2. **Hospital Server 2**
This server runs the Merlin software which allows for connection to the Hospital Server 1. As this server has access to the Internet, during this project it was used for the communications to HSA and Clifford Hallam.
3. **Hospital Server 3**
This server holds a shared directory that can be seen from the PC workstations. To allow file transfer to the other hospital servers, the shared directory can be accessed by via file transfer protocol (FTP).

Figure 3, provides a high level overview of the technical aspects the system and the messaging interactions, but not the scan confirmation and scan receipt processes.

² Serial Shipping Container Codes (SSCCs) are used to uniquely identify logistics units. Logistics units are defined as an item composed for transport and/or storage, which needs to be managed throughout the supply chain.

³ Restricted Distribution GTINs should only be used within a pre-defined environment (i.e., within a company or trading relationship) and must not 'escape' this environment as they may cause ambiguity if used elsewhere.

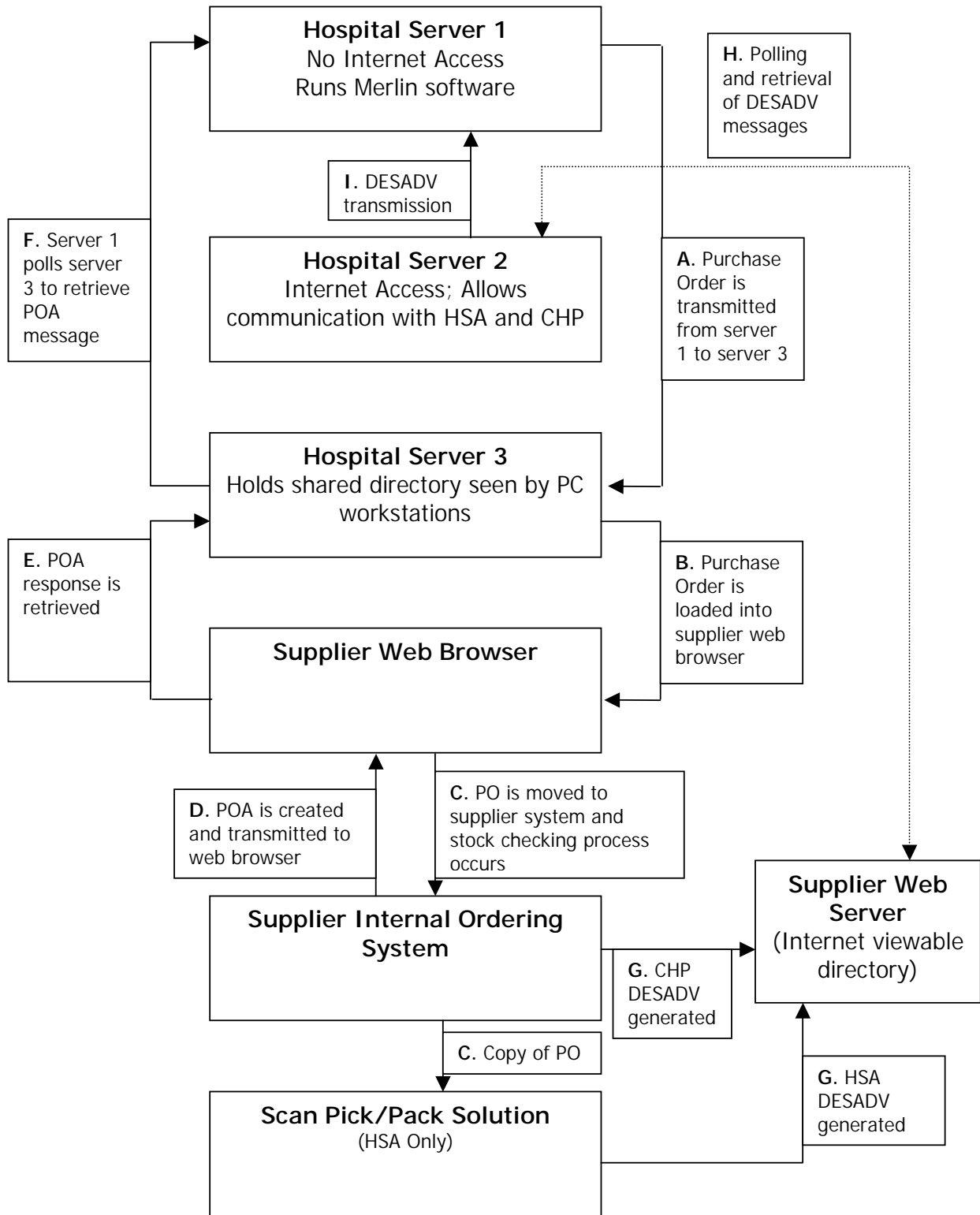


Figure 3: The Monash Project IT Infrastructure.

6.4.2 The Messaging and Goods Flow Processes

Below is an overview of the messaging and goods flow process used in this project.

1. EANCOM Purchase Order (PO) is Created

The PO was created on Hospital Server 1 as an EANCOM message and is transferred using FTP to the Hospital Server 3 shared network directory. The Merlin software queues the purchase order in a tracking screen.

2. Web Browser Based Transfer to Suppliers

On the Purchasing Officer's PC, the web browser is used to access the supplier's web site. Under user control the file on the Hospital Server 3 shared network drive is transferred using the Internet to HSA and Clifford Hallam. The purchase order status is displayed in the Merlin tracking screen.

3. Order Processing Within the Suppliers Systems

The supplier receives the purchase order via the web site then forwards this to their internal systems. A validation process to ensure availability of stock occurs. At the HSA site, a copy of the purchase order is transmitted to the scan confirmation software.

4. Purchase Order Acknowledgement (POA) from Suppliers

Once stock availability is confirmed, an EANCOM purchase order acknowledgement message is generated and is placed onto the supplier web site ready for retrieval by the hospital.

5. Web Browser Based Purchase Order Acknowledgment

From the hospital end, the web browser is used to retrieve the purchase order acknowledgement and under user control it is placed in the shared directory on Hospital Server 3. The files are then moved and stored with the purchase order in Hospital Server 1.

6. Supplier Picking and Packing of Stock

At the time of picking, a pick slip is generated and printed. The stock is picked as per the supplier's existing process and scan confirmed (at HSA). Clifford Hallam pack the stock using their current process. During the scan confirmation process EAN•UCC logistics labels containing Serial Shipping Container Codes (SSCC) are attached to each logistics unit to be shipped to Monash Medical Centre pharmacy department.

7. Generation of the Dispatch Advice (DESADV)

Clifford Hallam generates the EANCOM dispatch advice from their internal systems and places this into an Internet exposed directory on their web server. At HSA, the dispatch advice is generated by the Leadtec/ABS scan confirmation software, and similar to Clifford Hallam, this is also placed on an Internet exposed directory on their web server.

8. Hospital Polls for Dispatch Advice Messages

Merlin software stored on Hospital Server 2 polls the supplier web server directories every 5 minutes for dispatch advice messages. This reduces the security risk to the hospital system by initiating the connection from within the firewall at Monash Medical Centre rather than allowing files to be pushed into the Monash Medical Centre network.

Once retrieved from each supplier, the dispatch advice messages are transferred to the Merlin software on Hospital Server 1, where they are logged against the PO details and the SSCC queued in the tracking screen.

9. Goods Receipt at Monash Medical Centre Pharmacy Department

On arrival of the logistic units at Monash Medical Centre pharmacy department, the SSCCs on the logistics units are scanned into the tracking screen. As a result, the dispatch advice data is processed automatically to update stock on hand and the relevant messaging records are automatically removed from the tracking screen.

6.4.3 Modifications made to the Merlin Pharmacy System

Table 2 outlines the development and modifications made to the Merlin Pharmacy Software as part of this project.

Table 2: Modifications made to the Merlin Software

Prior to Monash Project	Monash Project Processes
GTIN File Maintenance	
<ul style="list-style-type: none"> Merlin contained a field for product GTIN (called 'bar code' field). Data base content was maintained by Pharmhos, but this did not include product GTIN. It was possible to enter products by GTIN into the Merlin system. Product GTIN was not referenced in the Purchase Order. 	<ul style="list-style-type: none"> Functionality behind the GTIN field enhanced to allow validation and to allow for product look up by GTIN. GTIN list sourced and added to the Merlin database by Pharmhos. This GTIN file included additions from MMC and HSA. GTINs referenced in the purchase order messages.
Purchase Order	
<ul style="list-style-type: none"> Purchase orders based on ANSI-X12⁴ message formats. Transfer of purchase orders to HSA is via a modem connection between Monash Medical Centre and SOS⁵. Transfer of purchase orders to Clifford Hallam is via a web browser. 	<ul style="list-style-type: none"> Purchase order messages based on EANCOM guidelines. In order to maintain the security of the Merlin server (Hospital Server 1), Hospital Server 2 is for communications outside the Monash Medical Centre firewall. Transfer of purchase orders to HSA is via a web browser. Transfer of purchase orders to Clifford Hallam is via a web browser.
Purchase Order Acknowledgment	
<ul style="list-style-type: none"> Purchase order acknowledgment received from HSA via EDI. Purchase order acknowledgement via email advice to the user. 	<ul style="list-style-type: none"> EANCOM purchase order acknowledgement received from both HSA and CHP and this is used to validate the purchase order details. Programming was required to process the POA messages.
Dispatch Advice	
<ul style="list-style-type: none"> No dispatch advice message received. 	<ul style="list-style-type: none"> Merlin developed to enable polling of the supplier web servers for the dispatch advice messages.

⁴ ANSI-X12 is a US based standard for exchange of data via EDI (electronic data interchange).

⁵ SOS (Simple Ordering System) is the HSA customer ordering system.

Merlin Tracking Screen	
<ul style="list-style-type: none"> • There is no screen available to allow tracking of all messages relating to a purchase. 	<ul style="list-style-type: none"> • The Merlin tracking screen displays the date and time of the purchasing events. The entries are updated as the purchase order is raised, when it is transmitted to the suppliers, when the purchase order acknowledgment is received, when the dispatch advice is received and when the goods are received. • A dispatch advice is received for each goods delivery sent by the supplier with a line entry for each logistics unit (identified by SSCC) to be received.
Goods Receipt Processing	
<ul style="list-style-type: none"> • Merlin is able to process received goods as a batch without needing to receive each line into the system individually. Receipt of goods is via key entry. • Purchase order details were retrieved by look-up of the purchase order number. 	<ul style="list-style-type: none"> • The SSCCs are scanned into the Merlin tracking screen. Merlin links the SSCCs to the manifest in the dispatch advice message. This allows goods receipt transactions to occur. • The display on the tracking screen is updated as goods are received.

7. Results

7.1 Key Performance Indicators Used to Measure Project Outcomes

Key performance indicators (KPIs) spanning the general areas listed below were used to measure the outcomes of this project.

- Process Change
- Accuracy
- Time Frames
- Work Effort

Appendix 3 lists the KPI measures applicable to each project team member, the definition of what the KPI is measuring and the methods used to measure the each of these indicators.

KPI measurement for the pre-implementation phase occurred in April 2004 and post-implementation (or 'go live') measures were recorded in May 2004.

7.2 Clifford Hallam

7.2.1 KPI Measurements

Table 3 contains the KPI measurement results collected by Clifford Hallam during both the pre and post-implementation phases. Where appropriate, the figures quoted are weighted to allow meaningful comparison between the two data sets.

Table 3: Clifford Hallam KPI Measurement Results

#	KPI Category	KPI Definition	Pre-implementation	Post-implementation	Overall Change
A	Process Changes	Comparison of pre and post-implementation process mapping to identify changes. (Scope: order receipt to stock delivery process)	N/A	3 steps had a changed format; 4 additional steps (sending dispatch advice); 1 duplicated step. See Section 8.2.1 for further details.	N/A
E	Timeframes	Need to determine if there is a difference in the time taken to label cartons pre and post-implementation.	1 minute 55 seconds	2 minutes 13 seconds	Increase by 18 seconds
H	Accuracy	Need to keep track of the number of claims/queries to customer service for the MMC orders during measurement period.	6	1	Reduced by 5

#	KPI Category	KPI Definition	Pre-implementation	Post-implementation	Overall Change
I	Work Effort	Compare pre and post-implementation staffing levels required to label stock for delivery.	N/A	N/A	No change in staffing levels occurred
Q	Accuracy	Ensure the relationship between the GTIN and the product remain as 1:1.	N/A	N/A as Clifford Hallam did not scan confirm and therefore did not check GTIN validity	N/A

7.2.2 Sample EAN•UCC Logistics Label

Figure 4 shows an example of an EAN•UCC logistics label produced by Clifford Hallam and used during the project process. This label carries an SSCC. (Note, for demonstration purposes, this picture is shown at less than the required size).

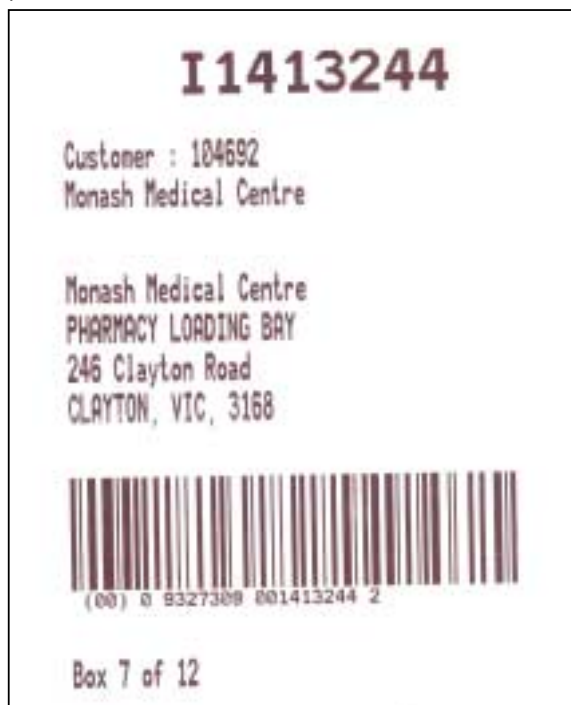


Figure 4: Example Clifford Hallam Logistics Label

7.2.3 EANCOM Messages

As part of this project, Clifford Hallam developed the ability to receive EANCOM purchase order messages, and send EANCOM purchase order acknowledgements and dispatch advice messages.

For reference, Appendix 4 contains a sample purchase order acknowledgement message generated by Clifford Hallam.

7.3 Hospital Supplies of Australia (HSA)

7.3.1 KPI Data

Table 4 contains the KPI measurement results collected by HSA during both the pre and post-implementation phases. Where appropriate, the figures quoted are weighted to allow meaningful comparison between the two data sets.

Table 4: HSA KPI Measurement Results

#	KPI Category	KPI Definition	Pre-implementation	Post-implementation	Overall Change
A	Process Changes	Comparison of pre and post-implementation process mapping to identify changes. (Scope: order receipt to stock delivery process)	N/A	2 new steps introduced (sending dispatch advice); 6 steps duplicated (scan confirming in parallel with old processes). For more information see Section 8.2.2	N/A
E	Timeframes	Need to determine if there is a difference in the time taken to label cartons pre and post-implementation.	30 seconds	1 minute 20 seconds	Increase by 50 seconds
H	Accuracy	Need to keep track of the number of claims/queries to customer service for the MMC orders during measurement period.	2	2	No change
J	Accuracy	Measure number of errors identified at the time of scan confirmation of the stock	6	30 (20 orders x avg of 1.5 errors per order)	Increase by 24
K	Work Effort	Compare pre and post-implementation staffing levels required to pick, pack and label stock for delivery.	One staff member required	One staff member required, with help from a second on 9 occasions.	Increase by 1 staff member on 9 occasions
L	Timeframes	Comparison of time taken to pick and pack stock pre and post-implementation.	1 hour, 51 minutes	2 hours, 58 minutes	Increase by 1 hour 9 minutes
Q	Accuracy	Ensure the relationship between the GTIN and the product remain as 1:1.	N/A	See Section 7.3.4 below	N/A

7.3.2 Sample EAN•UCC Logistics Label

Figure 5 below shows an example of an EAN•UCC logistics label produced by HSA and used during the project process. This label carries an SSCC as well as other attribute information. This other attribute information is not required for this project but was provided by default by the scan pack software provider. (Note, for demonstration purposes, this picture is shown at less than the required size).



Figure 5: Example HSA Logistics Label

7.3.3 EANCOM Messages

As part of this project HSA developed the ability to receive EANCOM purchase order messages, and send EANCOM purchase order acknowledgements and dispatch advice messages.

For reference Appendix 5 contains a sample dispatch advice message generated by HSA.

7.3.4 GTIN/Data Quality Issues

HSA, via the scan confirmation process, identified a number of products for which the GTINs listed in the original file were either incorrect or missing. A full list of these products, the correct GTINs, and the source of the discrepancy is contained in Appendix 6, however a summary of the issues and the number of errors due to each issue is shown below.

Reason for Error	Number of Occurrences
No GTIN on the actual product but a GTIN recorded in the data file	2
Incorrect GTIN recorded in the data file	6
No GTIN recorded in the data file	8
Total Errors	14

7.4 Monash Medical Centre Pharmacy Department KPI Data

7.4.1 KPI Data

Table 5 contains the KPI measurement results collected by Monash Medical Centre pharmacy department during both the pre and post-implementation phases. Where appropriate, the figures quoted are weighted to allow meaningful comparison between the two data sets.

Table 5: Monash Medical Centre pharmacy department KPI Measurement Results

#	Category	Definition	Pre-implementation	Post-implementation	Overall Change
A	Process Changes	Comparison of pre and post-implementation process mapping to identify changes. (Scope: order placement process and Receipt of goods process)	N/A	Order placement: 1 step had a changed format. Receipt of Goods Process: 1 new step (receipt of dispatch advice message); 4 changed steps due to new processes. For further information refer to Section 8.2.3.	N/A
B	Timeframes	Has the time taken from order being placed to delivery received changed post-implementation?	N/A	N/A	No time change
D	Timeframes	Number of times products are received, but there is no Dispatch Advice in Merlin	N/A	Nil	Nil
G	Accuracy	A measure of the accuracy of the GTIN/SSCC references ⁶	8	3.75	Decrease by 4.25
M	Timeframes	Compare time taken to receive stock pre and post-implementation.	51 minutes	40 minutes	Decrease by 11 minutes

⁶ This measure looks at the accuracy of all deliveries to Monash Medical Centre pharmacy department by measuring delivered items against the original order.

#	Category	Definition	Pre-implementation	Post-implementation	Overall Change
N	Work Effort	Number of staff required to receive stock pre and post-implementation.	2.2 staff members required	2.2 staff members required	No change
Q	Accuracy	Ensure the relationship between the GTIN and the product remain as 1:1.	N/A	See Section 7.3.4	N/A

7.4.2 EANCOM Messages

As part of this project the Merlin software at Monash Medical Centre pharmacy department was modified to allow generation of EANCOM purchase order messages, and receipt of EANCOM purchase order acknowledgements and dispatch advice messages.

For reference Appendix 7 contains a sample purchase order message generated by Monash Medical Centre pharmacy department.

7.5 Orion Laboratories

Within the context of this project, Orion Laboratories did not participate directly in e-commerce activity with Clifford Hallam, HSA or Monash Medical Centre pharmacy department but evaluated the issues and obstacles that needed to be addressed internally for this to occur in the future. During the project period, Orion identified the suitable EAN•UCC numbers and bar codes to be applied to all inner and carton level packages for the top 15 products sold to Monash Medical Centre pharmacy department. At the same time, Orion reviewed their unit level packaging to determine if this was compliant, i.e., carried EAN•UCC bar codes.

During the project term, Orion:

- Determined which of their products already carried EAN•UCC numbers and bar codes at unit level and at other packaging levels.
RESULT: 14 of the top 15 products ordered by Monash Medical Centre pharmacy department carried EAN•UCC bar codes at unit level, but none were compliant at inner or carton level.
- Ensured the labels that were re-designed and were in line with the Orion corporate label design guide.
- Determined which of the EAN•UCC bar codes was most appropriate for use on inner and carton level packaging within the Orion business.
RESULT: The UCC/EAN-128 symbology was chosen as this caters for addition of attribute information such as batch number and expiry date, provision of which may become a requirement for traceability in the health industry in the future.
- Determined hardware requirements for printing and verification of bar codes for the inner and carton level packaging.
- Ensured that an internal process was in place to incorporate a bar code into the artwork of the item level packaging for the one product that currently does not carry a bar code as well as any future products.
- Reviewed the current methods for 'in process checking' of bar code readability for packaging pre-printed with bar codes.
- Reviewed manufacturing batch documentation systems and the impact of proposed changes to the documentation as a result of including bar codes on the inner and carton unit packaging. That is, would any of the changes have an impact on legal requirements for labelling pharmaceutical products?

8. Discussion

8.1 Learnings from the Project Process

Below are listed key learnings documented during the pre and post-implementation phases of the project.

(a) Project Proposal

It was very important that the scope of this project was clearly defined prior to any further steps forward. This is not an insignificant process as each company represented must be able to give their input into the scope and agree with the content of the resulting project proposal document. Achieving final sign off by ensuring each stakeholder signs a formal document is an effective way of finalising agreement regarding the content of the project proposal.

(b) Confidentiality

When competitors are represented on a project team, an agreement to ensure the confidentiality of the discussions held during the project meetings is essential. Most companies have existing confidentiality agreements used for similar purposes, so the development of this document does not need to be a long, involved process. The presence of a confidentiality agreement will allow for more frank and open discussion during project meetings and will encourage relationship building within the project team.

(c) Project Budget

Similar to the project scope the budget is also an essential part of the project process linked to the project plan. This should be agreed upon prior to any further project work, as it is essential all project participants understand the portion of project funding allocated to them.

It is difficult to definitively measure the in kind contributions of each of the companies represented on the project team. These contributions will vary between companies by wage rates and other internal considerations. Including in kind values in the project budget should not be seen as a means of determining and comparing each project team member's individual commitment to the project, or determining a company's maturity or e-commerce readiness. For the above reason, when completing the budget for this project, the in kind contributions were specified as being the same for all of the project team members.

(d) Process Documentation

It is important the 'as is' processes of the participating companies are documented in detail. These documented processes can then be used during completion of other project tasks, such as development of key performance indicators (KPIs) or documentation of 'should be' processes. Also, the presence of detailed 'as is' process documents aid the project manager's understanding of the project team's processes which further benefits the project as a whole.

Should be process documentation should be developed for each of the project team. Even if these documents are not used later in the project, it is important to complete this step so all understand, in detail, the final processes they need to work towards and the deliverables expected.

(e) Project Plan

Development of a generic project plan is necessary to ensure all of the project team are aware of and focussed on the deadlines they must meet for the project to succeed. Individual companies to develop their own internal project plans can then use the generic project plan.

A formal sign off process should be used to finalise the group's commitment to the project plan deadlines (with the agreement that any changes would be approved by the group as a

whole). This will finalise the issue of the project plan and allow project development work to commence.

(f) Key Performance Indicators

Key Performance Indicators (KPIs) need to be developed to ensure the group agrees regarding measurement of the project outcomes, both pre and post-implementation. All of the project team need to be involved in the process, as each company has different process and system limitations that will impact their ability to measure the KPIs.

When defining the KPIs it is useful to use a generic flow process as a reference to understand which parts of the project process are being measured by each of the KPIs. Also, the National Supply Chain Reform Task Force Performance Management Working Party KPIs provided a good basis for KPI development for this project.

To ensure consistency in the methods being used to take the KPI measurements, it is important for the project manager to physically observe the measurement processes, both pre and post-project implementation at each of the project team locations.

(g) Global Trade Item Number (GTIN) File

Within the health industry, each organisation uses their own internal codes to identify the products they stock. This means that Clifford Hallam would identify a product in a different manner to HSA and to the Monash Medical Centre pharmacy department. Difficulties exist when sourcing GTINs and associated information from suppliers as often companies do not maintain an internal list of the GTINs printed on the products they distribute.

There is no standard for product descriptions in health, so users cannot link the same product (known by different identification numbers) using the descriptions stored in their databases.

As part of this project, it was identified that greater than 93% of unit level products stocked by Monash Medical Centre pharmacy department were identified with GTINs. A file listing these GTINs was developed using data sourced from various companies. Development and maintenance of this data file was a significant effort as at this time there is no one single source of accurate pharmaceutical data.

The presence of errors in the GTIN files used during the live phase of the project caused issues at the time of scan confirmation where a product was unable to be scanned as an incorrect GTIN was listed in the supplier system (see section 8.2.2). As such, manual data base changes were required to be made by both the suppliers and the hospital.

The Australian Catalogue of Medicines (ACOM), currently being developed by the Department of Health and Ageing, will enable the reliable transmission of product details between health industry trading partners and as such alleviate the data issues that arose during this project. It is envisaged that the ACOM will be a central source of information on Australian pharmaceutical and complementary health products.

(h) Lack of GTIN Allocation and Bar Coding

Issues arise when a product (at any packaging level) does not have a GTIN allocated – there is no global traceability of that product. To ensure readiness for further e-commerce development within the health industry, there will need to be an industry-based drive to promote the need for GTIN allocation and physical bar coding on all levels of the product packaging. It should also be noted that at this point, the majority of GTIN allocation and bar coding occurs at unit packaging level, with few inner and shipper level packs bar coded.

Some suppliers to Monash Medical Centre pharmacy department can only order stock and receive it into their warehouses based on the individual unit, not cartons or inner packs. As a result, only unit level GTINs were used for all processes involved in this project. Future use

of the GTINs allocated to inner and traded units will function to simplify the supply chain processes in health operations.

(i) Engaging Solution Providers

It is important hardware and software suppliers engaged to assist with a project have a clear understanding of what the project involves, who is participating and the types of equipment required by the group. When engaging the EAN Alliance Partners for this project, the group asked each company to present their solutions at a team meeting, for a maximum of 10 minutes. This was not long enough for the group to gain a full appreciation of the solutions offered by each company and in hindsight, a longer presentation time should have been offered to each of the EAN Alliance Partners.

(j) Message Implementation Guidelines

All electronic messaging used during this project was EANCOM compliant. Prior to developing the message implementation guidelines (MIGs) for a project, it is important to determine if there are industry standards for the message or data set in question. For example in health, the supply chain messaging standards AS 5023.1-2003 (Messaging rules and processing logic) and AS 5023.2 -2003 (Datasets) are available.

If EANCOM messaging is not in use in the industry, MIGs need to be developed for the project. MIGs from other industries cannot be adopted and used as these contain industry specific requirements.

Once the messaging capabilities are developed by each of the project team, and sample messages can be generated, it is important these are validated by EAN Australia to ensure compliance to the original MIGs.

(k) Initial Press Release

The development of an initial press release detailing the project background, methodology and expected deliverables is advisable. The background information in the project proposal can be used to develop this document. It is important that all of the project team have input into the press release and provide sign off.

In the context of this project, the initial press release had two aims:

- (1) To communicate to industry peers regarding the project, and;
- (2) To provide information to industry publications. (This was considered a secondary aim.)

(l) Testing New Processes

It is essential to ensure all new processes are tested prior to a project going live. For this project, testing encompassed Monash Medical Centre pharmacy department placing a small order (containing one or two stock lines), which was then manually followed through the new process to ensure there were no issues. Once this was completed the remainder of stock required for this day was ordered and the larger order followed manually to ensure there were no scalability issues with the new process. Such testing was completed between Monash Medical Centre pharmacy department and both suppliers.

(m) Staff Education

All staff using the new processes need to be trained in detail about the changes and how these affected their current administration processes. In the case of this project, training was essential as this not only ensured the steps in the new processes were conducted correctly but that the KPI data that was being collected to measure the project outcomes was accurate and consistent.

It is important to note that ongoing support will be required by the users during the live phase of any project.

(n) IT Engagement

When conducting a project such as this, it is important that all project team members' IT departments are engaged in the process. This will ensure the relevant IT representatives are aware of the project requirements so there are no maintenance or development processes that inadvertently affect the project IT infrastructure. To facilitate this, it is recommended representatives from each company's IT department are encouraged to be part of the project team.

(o) Technology Issues

During the live phase, it is important that there is ongoing monitoring of the movement of the messages being exchanged between the project participants. This ensures any problems are identified quickly and resolved. As the process continues, monitoring does not have to be so stringent, rather it can be via an email warning if there is an issue. As part of this project, initial monitoring (for the first few weeks of the project live phase) was via a tracking screen set up at Pharmhos Pty Ltd, but ongoing monitoring will be by email notification.

When issues occur, for example technology faults, it is important that these are communicated to all relevant parties in the project team as well as the project manager so he or she can keep track of technology down time in the live phase.

(p) Drugs of Addiction

Drugs of addiction (e.g., narcotics) are handled with a higher level of security than other products due to the potential for these to be abused. As such, processing of these items at the same scan confirmation station as other less strictly controlled drugs is not feasible. This means that for a pharmaceutical supplier to scan confirm all stock, there needs to be a separate scan confirmation station at the drugs of addiction packing site.

(q) Reduced Space Symbology and Batch Number & Use By Date Traceability

One of the main health traceability issues is the ability of users to identify the specific pharmaceuticals being provided to individual patients at unit of dose level. At the moment, only manual traceability processes facilitate this. Reduced Space Symbology (RSS) bar codes will enable identification of individual unit of dose pharmaceuticals and hence traceability to the patient to whom they were administered. RSS bar codes have the ability to not only encode a GTIN, but also batch number and expiry date in a very small space – essential traceability information.

Traceability of inner and carton units can be achieved using UCC/EAN-128 bar codes, that like RSS bar codes, encode not only the unit GTIN, but also batch number and used by date information. This technology is currently available, however as the majority of pharmaceutical suppliers currently do not allocate GTINs to their inner and carton level packaging, there is no ability to bar code the attribute information to allow traceability. Once GTINs have been allocated to inner and carton units and systems updated to cater for these GTINs, the development to include attribute data can occur.

(r) Project Live Phase

It is important the live phase of the project is long enough to allow collection of accurate and representative KPI data. Due to time constraints, the live phase of this project was only one month in duration. Technical issues and teething problems similar to those expected to be seen at the commencement of any project, prevented scan confirmation occurring on some days during the live phase. Due to the above, it has been recognised that a longer live phase should be used in for future projects.

8.2 Interpretation of Key Performance Data

8.2.1 Clifford Hallam

During this project, Clifford Hallam did not scan confirm items into the cartons in which they were shipped and were consequently unable to allocate a separate SSCC to each different logistics unit. While this is not in strict adherence with the EAN•UCC standards, this procedure was within the project scope.

Review of the Clifford Hallam process maps indicated that introduction of the new processes resulted in inclusion of 4 new steps in the order receipt to stock delivery process. These all resulted from the development and sending of the dispatch advice message, a process that was not in place prior to this project. Previously, there was no electronic confirmation of the actual stock sent to Monash Medical Centre pharmacy department, rather this was done via a manual invoice accompanying the goods.

Introduction of the new project processes resulted in duplication of the logistics unit labeling step in the Clifford Hallam process. Post-implementation, Clifford Hallam was labeling stock with both the proprietary label for their transport provider and the SSCC label for Monash Medical Centre pharmacy department. It was also noted in the KPIs that the labeling time increased by an average of 18 seconds post-implementation, however staffing levels did not change. This could be attributed to the duplication of process. This duplication would be removed if the transport provider was able to use the labels attached to the logistics units.

During the measurement period, KPI data was collected to determine the number of inaccurate deliveries supplied to Monash Medical Centre pharmacy department by Clifford Hallam. Prior to implementation of the new process, 6 inaccurate deliveries were supplied, however following introduction of the new process, there was only one inaccurate delivery. As Clifford Hallam was not scan confirming the stock delivered, this increased accuracy cannot be attributed to the scan confirmation process. Rather this increase would be due to the fact the new project processes had increased the attention paid to Monash Medical Centre pharmacy department orders and increased the accuracy by default. In addition, electronic lodging of orders with Clifford Hallam reduced human intervention into this process and as a result would have improved the accuracy of order fulfillment.

8.2.2 Hospital Supplies of Australia (HSA)

As HSA was scan confirming stock as part of this project, the KPI data collected by this company was slightly different to that collected by Clifford Hallam. In order to assist Monash Medical Centre Pharmacy Department with this project, HSA added the functionality to scan confirm the Monash Medical Centre orders as an add on to their existing processes. The equipment required to facilitate this including a scanner, label printer and software was leased from Leadtec/ABs.

Comparison of the pre and post-implementation flow charts identified the addition of 2 new steps involved in sending the dispatch advice message. These additional steps were to be expected as prior to this project, there was no electronic confirmation sent to Monash Medical Centre pharmacy department identifying the goods being delivered.

Process map comparison also identified 6 steps that were duplicated as a result of HSA running their existing pick process and then scan confirming the stock picked at a different location. In addition, where goods were not numbered and bar coded, the existing process had to be used.

The labeling process was also duplicated, as during the new project process, HSA were applying both their internal labels and the EAN•UCC logistics label. This was because the

existing HSA process is that the run code printed on the internal label is used by the HSA driver to ensure the correct logistics units are being collected. Due to the project timeframe, redesign of the EAN•UCC logistics label to include this information was not possible, so both labels were applied. This duplication of effort is reflected in the KPI data collected for the time taken to apply logistics unit labels pre and post-implementation, where an increase of 50 seconds occurred post-implementation.

KPI measures for the number of staff required to prepare the stock for delivery and the time taken to do this, both increased. These increases cannot be attributed to the duplication in processes referred to above, as HSA either scan confirmed or used their manual confirmation process for each order, and did not combine the two processes for the one order. Rather these increases may be attributed to HSA being required to process orders outside their existing business processes and these existing business processes do not cater for the use of scan confirmation or alternatively inaccuracies in the GTIN file causing delays in the scan confirmation process.

Below are listed the issues that were identified during the project post-implementation process and their subsequent impact on the KPI measures discussed above.

- **Only the first copy of the purchase order generated flowed through to the HSA scan confirmation solution.**

In the initial set up of the HSA scan confirmation solution, the decision was made that the first iteration of the purchase order generated by Monash Medical Centre pharmacy department would be forwarded to the scan confirmation software. This did not take into account any changes that could be made to the order by the Monash Medical Centre pharmacy department purchasing staff once the purchase order acknowledgement was received. For example, if a purchase order was placed, but one item was out of stock (as advised in the purchase order acknowledgment), the Monash Medical Centre pharmacy department purchasing staff may choose not to leave that item in the order. This would then generate an amended order that would be passed into the HSA internal system, but not into the scan confirmation solution. Hence, the pick slip (generated from the internal system) would contain different data to that in the scan confirmation record.

Significant time was taken initially to understand that the above was occurring and to reconcile the pick slips with the scan confirmation solution when this did occur, hence impacting the KPI data collected. Manual communication to the Monash Medical Centre pharmacy department purchasing staff about the problem increased the work effort and time taken to scan confirm. The fix for this issue does not involve significant development, so should the project continue, this will be put in place.

- **Inaccuracies in the GTIN file.**

Section 7.3.4 lists the number of inaccuracies detected in the file originally used to synchronise GTIN data between Monash Medical Centre pharmacy department and the suppliers in this project. When each of the listed scenarios occurred, this impacted the scan confirmation process as the user was required to work around the inaccuracy. For example, where the GTIN in the scan confirmation solution did not match the GTIN on the product, the product could then not be scan confirmed. This product would then need to be included in the shipment of stock to Monash Medical Centre pharmacy department and the hospital manually advised of the inclusion. This process was time consuming and increased the time and work effort in completing the scan confirmation process. A data synchronisation process, as identified in Section 8.1, would alleviate much of this workload.

- **The scan confirmation process involved scanning of unit of use or item GTINs with no facility to scan inner or traded unit level items.**

The time and work effort involved in completing the scan confirmation process was increased by the fact there was only a facility to scan unit of use level GTINs. Where this

data was available, the task of collecting this information would have extended the project end date, perhaps past the end date of the grant. As such, where bulk orders (for example, 300 of the same item) were placed, the user was required to scan 300 individual items. It was estimated it took 3-4 minutes to scan one item 300 times. Whilst the time impact of this process was not significant, this was still a cause of the increase in the KPI values collected. In the instances where products are ordered in bulk, the stock dispatched is usually packed into inner or shipper level unit packs that may or may not be bar coded with GTINs. By HSA staff being able to scan confirm the inner or shipper level unit, the time spent to fulfil a bulk order would be much reduced.

It is also important to note that the presence of a second person at the scan confirmation station during the project live phase was partially to ensure there was someone on hand to help with any technical issues or process issues that may have resulted.

A further KPI identified any increase or decrease in order fulfillment accuracy as a result of the introduction of the new process. Data collected indicated there was in fact a decrease in the accuracy of the orders provided to Monash Medical Centre pharmacy department during the 'live' project phase. Two errors were detected during the month of May. Below are the explanations for the presence of these errors.

- **Incorrect stock was supplied.**

At the time of placing the order, there was an incorrect GTIN referenced in the Merlin system and as a result the HSA system. This GTIN referenced a different product to that ordered. At HSA, as the GTIN referenced in the scan confirmation system matched the product picked so the incorrect product was successfully scan confirmed and sent to Monash Medical Centre pharmacy department. Upon receipt at Monash Medical Centre pharmacy department the incorrect stock was detected and the issue amended.

- **Item was short supplied.**

Monash Medical Centre pharmacy department ordered 60 of an item and only 57 were supplied. The scan confirmation process used by HSA to satisfy bulk orders involved scanning one item a number of times until the number of scans registered equaled the number of items to be supplied to Monash Medical Centre pharmacy department as it was not feasible to break down bulk items into individual units for the purpose of scanning. This is not the technically correct scan confirmation process, but was necessary within the scope of the project. Ideally the process should involve scanning each individual item as it is packed into the logistics unit. Undoubtedly, using the HSA process, there is room for error when the picker doesn't accurately count the number of items picked and the packer simply scans one, multiple times, and packs the items picked.

Hence, improved data quality facilitated by ongoing data synchronisation and use of the technically correct scan confirmation process may have prevented the two errors occurring. It is important to note that during this project, HSA was scan confirming the stock already manually picked. As a result, accuracy issues that would have been detected at the time of picking using a scan picking process were instead detected at the packing stage, meaning the staff member completing the scan confirmation had to identify the inaccuracy then go to the picking bay to retrieve the correct stock.

During the live period of the project, an average of 1.5 errors per order (total of 30 errors) were detected as opposed to a total of 6 for the previous month. The HSA deliveries during the pre-implementation period were not inaccurate. This means it is not possible that during the pre-implementation phase the pickers were making errors that were not detected at packing, causing inaccurate orders to be sent to Monash Medical Centre pharmacy department. It is more likely that during the live period of the project, the pickers knew their work was being double-checked and as a result were not as conscientious as in the previous month.

It is also important to realise that the time taken by the scan confirmation staff to source the correct items when an incorrect pick was made was included in the KPI data collected to measure the total time for the scan confirmation process to occur (Section 7.3.1) thus increasing the total time measured.

Representatives from HSA have stated that full electronic processing, using technology such as scan picking, picking to voice and picking to light would increase the accuracy of order fulfillment. In addition, inaccuracy in order fulfillment would be detected at the time of picking rather than the later stage at which order fulfillment inaccuracies are currently detected. Certainly, use of these technologies will only be truly effective when all major manufacturers/suppliers within the industry are using a standardised form of bar coding on all products.

HSA will have access to the functionality referred to above when a new ERP system is implemented for this company and may use a combination of the above technologies to cater for idiosyncrasies found in the Health industry, such as the variation in item size.

8.2.3 Monash Medical Centre Pharmacy Department

The KPI data collected by Monash Medical Centre pharmacy department was more extensive than that collected by either of HSA or Clifford Hallam as the hospital had the ability to review the accuracy and timeliness of the orders being delivered into their stores area. Review of the process maps for Monash Medical Centre pharmacy department identified that there were a couple of changes to the order placement process being:

- (1) The change in format of the order being placed, and;
- (2) Development by Clifford Hallam to allow orders to be placed via their web site rather than by phone.

Upon review of the receipt of goods process, it was noted that one new step was introduced as a result of Monash Medical Centre pharmacy department receiving the dispatch advice message, and four steps had changed formats due to the new process introduction. None of the changes to this process or the order placement process resulted in introduction of additional tasks for the Monash Medical Centre pharmacy department staff.

The new process was found not to impact the number of staff required to place orders or receive stock, nor was there any impact on the time taken for orders to be delivered to the hospital. There were no instances where the dispatch advice was not transmitted to the hospital, so stock was received without the dispatch advice being available.

Notably, the new processes resulted in a decrease by 11 minutes in the time taken to receive stock into the pharmacy stores. The decrease in stock receipt time can be explained as the new process removed the need of the purchasing staff at Monash Medical Centre pharmacy department to manually check the stock received against the invoice and the Merlin system.

There was a reduction by 4.25 occurrences in the number of incorrect deliveries that were sent to the Monash Medical Centre pharmacy department during the live phase of the project. This would have been a direct result of either the scan confirmation process used by HSA to confirm the correct stock was supplied or the increased attention (by default of the project) paid to the orders being provided by Clifford Hallam to Monash Medical Centre pharmacy department.

8.3 Outcomes from User Interviews

As part of the final analysis of this project, the project manager interviewed purchasing staff at the Monash Medical Centre pharmacy department site to gain their feedback about the new processes. The staff saw benefits in the new process, especially the dispatch advice and scan receipt phase as this enabled them to update the Merlin system simply, quickly and accurately. The need for manual data entry into the system was removed.

It was recognised that due to the introduction of the new process some technical issues resulted. These encroached on the time of the purchasing staff as they caused delays in the order placement process as well as taking staff time to fix any problems using telephone based technical assistance. Hence, the staff workload increased during the project live phase.

During the interview a number of process issues, that would be improvements or slight modifications to the system, but would streamline the current processes were highlighted. These included:

- The ability for suppliers to reference the invoice number for the stock being delivered in the dispatch advice message. This was provided by one supplier, but was unable to be provided by the other. For the second supplier the data field was filled with their order number. At the moment, the invoice number is manually keyed into the Merlin system at Monash Medical Centre pharmacy department for suppliers (external to the project) who are not sending a dispatch advice, but the field cannot be manually overridden if populated via a dispatch advice.

The feasibility of the above will need to be considered as the supplier process may encompass packing the stock and sending the dispatch advice prior to generating the paper invoice that then accompanies the stock. Implementing electronic invoicing would alleviate this problem as this electronic invoice, similar to the dispatch advice would reference the original purchase order number, hence allowing linkage of all the messages to the stock delivered.

- Monash Medical Centre pharmacy department to develop the ability to order based on the inner or shipper GTIN and suppliers to develop the capability to scan confirm based on these (See section 8.1). This would mean that when the supplier sends a pallet of stock to Monash Medical Centre pharmacy department, a single EAN•UCC logistics label would be able to be applied to the pallet, rather than one EAN•UCC logistics label to each carton as was the process for a pallet of stock delivered during the project live phase.
- Development of the Merlin system to ensure that only one GTIN can be associated with each uniquely branded product irrespective of the supplier provider that product to Monash Medical Centre pharmacy department. The current software flexibility allows a given product, supplied by multiple companies, to be referenced against one supplier record with GTIN A, but the same product to be referenced against another supplier record with a different GTIN, GTIN B. GTIN B is an incorrect reference as the GTIN bar coded onto the product is GTIN A. This then results in confusion.
- Upon receipt of stock at Monash Medical Centre pharmacy department a GRN, an internal Merlin reference number, is allocated to each logistics unit in a one to one relationship with the SSCC allocated to that unit, but the same delivery number is allocated with all logistics units communicated in the same dispatch advice. As such when return of stock occurs, the purchasing staff are able to identify the delivery, but then need to search through multiple GRNs to determine the logistics unit in which the

return stock was shipped. To do this, the user needs to access each GRN record individually, which is a time consuming process.

It has been suggested the Merlin system be updated to allow display of all items shipped for one delivery number (or dispatch advice) irrespective of the number of GRNs listed for that delivery.

The Monash Medical Centre pharmacy department purchasing staff also recommended some future developments that could be considered during the next phase of the project. These suggestions included:

- Amending the system to allow for the suggestions listed at the start of this section.
- Development of supplier capabilities to allow scan pick processes rather than the scan confirmation processes used in this project.
- Development of data synchronisation capabilities to ensure the correct data is in all trading partner systems and in Merlin this automatically updates to all relevant data base areas.

9. Press Exposure

During the period of the project, a number of press articles were written about the Monash Project. Listed below are the publications and the titles of the articles. The complete articles are shown in Appendix 8.

- Southern Health Newsletter (May 2004), title: *'Southern Health leads Health Industry in e-commerce initiative'*.
- Society of Hospital Pharmacists of Australia – Victorian Branch Newsletter (No. 2 April 2004), title: *'Monash Medical Centre Leads Health Industry E-commerce Initiative'*.
- Society of Hospital Pharmacists of Australia Bulletin (May 2004), title: *'E-commerce supply chain project at Monash Medical Centre (MMC)'*.
- Rust Report (March 12, 2004), title: *'Vic project puts e-commerce in health.'*

In addition, a case study about the project was submitted as a paper to the National Supply Chain Reform Task Force Summit conducted in June, 2004.

10. Conclusion

Whilst the results of this demonstration indicate that the pharmaceutical suppliers are yet to experience the full benefits of e-commerce implementation, the results must to be considered coupled with an explanation of the reasons for the outcomes. It is clear that a significant amount of work was achieved in bringing the parties to the current stage of the project, and due to the pressures of time, staff resources and budget, most of the parties chose to overlay new technology on existing business processes.

As a result, data gathered by the suppliers during the period of the demonstration project did not indicate any significant improvements to current manual processes. During the live period of the project, suppliers recorded increased order processing times and minimal changes to accuracy.

In contrast, the receiver noted distinct increases in the speed and accuracy of goods receipt. The above result alone indicated the benefits to be realised and provided the basis for commitment further adoption of this technology.

At the completion of this phase of the initiative, all of the project team understood outcomes of this demonstration as well as its limitations. On this basis, an ongoing commitment to continue to progress this project and to be actively involved in further steps was obtained

from the stakeholders.

11. Next Steps

The initial implementation of this project involved a few key suppliers to the Monash Medical Centre Pharmacy Department. This enabled Monash to develop a manageable demonstrable process.

This was successful, so the Monash Medical Centre pharmacy department project team will seek approval to extend the demonstrated functionality to become a higher velocity e-enabled process for end-to-end supply chain management. Additional funding will be sought to help facilitate these next steps and consideration will be given regarding how to extend and reinforce the demonstration during this immediate next phase. Options may include some or a combination of those listed below:

- Furthering functionality and abilities within the same project team;
- Engaging further pharmaceutical manufacturers or suppliers to participate;
- Engaging other hospitals;

In order to gain this funding and additional participant interest, promotion of the outcomes of this phase of this project will need to occur. The project team has committed to promoting the project at the following conferences and seminars:

- Victorian Directors of Pharmacy Conference
- Society of Hospital Pharmacists Conference

The project team also intends to run a specific 'Monash Project' seminar at the Innovation Centre to share the lessons learned with the industry and also develop a written case study to be made available to interested parties. Development of such a case study will help with both promotion and education about work done so far.

Eventually it is anticipated the project will develop to encompass processes from dispensing to payment with a view to the functionality becoming available to all hospitals within Victorian Health. Furthermore, this demonstration may be seen as a viable model for all Victorian Hospitals / Health Services. As such much work is yet to be done, and the project team is committed to seeing this project progress into the future.

12. Project Contacts

All of the project team is committed to the promotion of this project and its outcomes. As such, any member of the team is happy to discuss the project with interested parties. The contact details for the project team members are listed below.

Organisation	Person	Phone
Monash Medical Centre pharmacy department (Southern Health)	Ian Larmour Allan Manser	(03) 9594 2596
Clifford Hallam	Richard Brennan	(03) 8795 2276
Orion Laboratories	Merryn Wallace	(03) 9502 8318
Hospital Supplies of Australia (H.S.A)	Helen Mourtzios Darryn Hudson	(03) 9213 9400
Pharmhos	Brian Donaldson	(03) 9645 6300
EAN Australia	Sue Schmid Tania Snioch	(03) 9558 9559
Health Purchasing Victoria	Dennis O'Keefe	(03) 9276 6782
National Supply Chain Reform Taskforce	Jane Dooley	(03) 9616 7008

13. Appendices

Appendix 1 – Project Budget

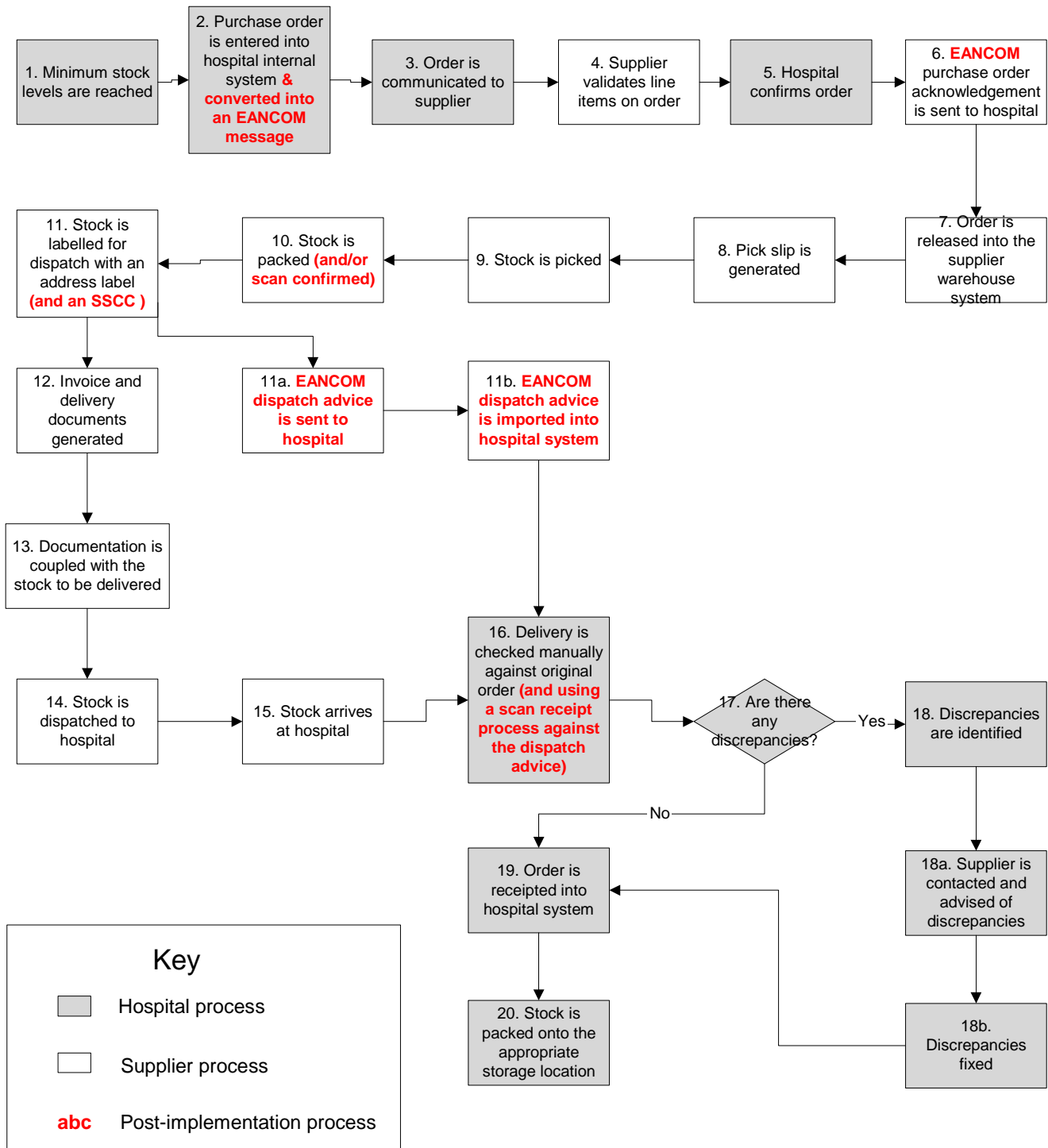
PROJECT BUDGET - SUMMARY

	IN KIND						IN CASH						Overall Total
	M.M.C	Clifford Hallam	H.S.A	Orion	EAN Australia	Total	M.M.C.	Clifford Hallam	H.S.A.	Orion	EAN Australia	Total	
Hardware						\$0	\$960	\$990		\$589		\$2,539	\$2,539
Software						\$0			\$4,000			\$4,000	\$4,000
Interfacing						\$0	\$11,960					\$11,960	\$11,960
Participant Time	\$13,425	\$13,425	\$13,425	\$13,425		\$53,700						\$0	\$53,700
Project Management					\$31,840	\$31,840					\$24,000	\$24,000	\$55,840
Meetings					\$9,540	\$9,540						\$0	\$9,540
PR/External Communication						\$0					\$1,141	\$1,141	\$1,141
Total Ex GST	\$13,425	\$13,425	\$13,425	\$13,425	\$41,380	\$95,080	\$12,920	\$990	\$4,000	\$589	\$25,141	\$43,640	\$138,720

SUMMARY OF INCOME

	In kind	In Cash	Total
ECEPP		\$50,000	\$50,000
Monash Medical Centre	\$13,425		\$13,425
H.S.A.	\$13,425		\$13,425
Clifford Hallam	\$13,425		\$13,425
Orion	\$13,425		\$13,425
EAN Australia	\$41,380		\$41,380
Total (Exc GST)	\$95,080	\$50,000	\$145,080
GST	\$9,508	\$5,000	\$14,508
TOTAL (Inc GST)	\$104,588	\$55,000	\$159,588

Appendix 2 – Generic Flow Process



Appendix 3 – KPI Measures Used

#	Category	Title	Definition	Measurement Timeframe	Flow Chart Steps	Measurement Method	Measured By	Comments
A	Process Changes	Define pre and post-implementation processes.	Comparison of pre and post- implementation process mapping to identify changes.		All	Comparisons between pre-implementation and post-implementation maps.	EAN on behalf of Clifford Hallam, HSA and MMC	Signed off pre-implementation maps exist for all companies. Post implementation project maps will be completed at the end of the project.
B	Timeframes	Delivery of stock	Has the time taken from order being placed to delivery received changed post-implementation?		5 to 15	Manual log for confirmation and receipt/delivery of goods	MMC	Review Merlin date/time log points for possible automation of measurement.
D	Timeframes	Sending dispatch advice	Number of times products are received, but there is no Dispatch Advice in Merlin.	Post Only	11a, 11b and 16	Log of failures will be kept electronically. This should list date, time and order number.	MMC	This is a measure of anomalies where MMC receives a delivery prior to the Dispatch Advice being available for scan receipt.
E	Timeframes	Labeling cartons for delivery	Need to determine if there is a difference in the time taken to label cartons pre and post-implementation.		11	This will include the time for obtaining requirements from the computer system, producing the labels and applying these to the cartons. A manual log will be kept.	Clifford Hallam, HSA	Labels are produced at the time of producing the pick slips at HSA, but not at Clifford Hallam.
G	Accuracy	Dispatch advice SSCC:GTIN reference vs. stock packed in each SSCC for delivery	A measure of the accuracy of the GTIN/SSCC references.	Post Only	16 to 19	Measure the number of times the SSCC does not match the GTIN listed.	MMC	In the short term, this may require a physical match based on the description of the product.
H	Accuracy	Order fulfillment accuracy (measured by number of claims)	Need to keep track of the number of claims/queries to customer service for the MMC orders during measurement period.		17, 18, 18a, 18b	Can be determined via the internal computer system. There is an existing internal data base.	Clifford Hallam, HSA	Need to record claims by reason or error codes.
I	Work Effort	Labeling stock	Compare pre and post-implementation staffing levels required to label stock for delivery.			Staff to keep a log by timeframe. Will look at the percentage of a person added/deleted.	Clifford Hallam	No change expected.

#	Category	Title	Definition	Measurement Timeframe	Flow Chart Steps	Measurement Method	Measured By	Comments
J	Accuracy	Order fulfillment accuracy (live pre-identification of error)	Measure number of errors identified at the time of scan confirming the stock			Via a manual or potentially system based log.	HSA	Will be determined by software chosen.
K	Work Effort	Picking, packing and labeling stock	Compare pre and post-implementation staffing levels required to pick, pack and label stock for delivery.		10 and 11	As per I, but taking into account steps 10 and 11.	HSA	
L	Timeframes	Picking and packing of stock	Comparison of time taken to pick and pack stock pre and post-implementation.			Reconcile against number of orders, lines and time taken. This will be a manual process. Data subset to be used.	HSA	No differences to picking of stock. It is anticipated that packing of stock will take longer.
M	Timeframes	Receiving stock	Compare time taken to receive stock pre-implementation and post-implementation.		15 to 19	Measure the number of lines, number of orders and time taken. May look at a subset of the data. Manual process - average by order and by line.	MMC	Accuracy is the main focus, not timeframes.
N	Work Effort	Receiving stock	Number of staff required to receive stock pre and post-implementation.		15 to 19	Similar to I and K	MMC	
P	Accuracy	Bar code scanning efficiency	Measure bar code scanning efficiency to ensure this stays at 100%.	Post Only		Measured by: (1) An initial bar code scanning report or verification by EAN Australia and (2) checking of scanning efficiency for each bunch of bar codes produced.	Orion	
Q	Accuracy	Data vs. bar code accuracy	Ensure the relationship between the GTIN and the product remain as 1:1.	Post Only		To be measured upon receipt of products and or purchase order.	All	This was previously assigned to Orion only, but is now considered appropriate to All. Needs to be measured ongoing.

Appendix 4 – Clifford Hallam Purchase Order Acknowledgement

UNB+UNOA:3+9377778951331:14+9377778951348:14+040504:1336+301P'
UNH+301P+ORDRSP:D:96A:UN:EAN005'
BGM+231+301P.1+4'
DTM+137:040504:102'
RFF+ON:301P'
NAD+BY+104692::91'
NAD+ST+9377778951348::9'
NAD+SU+9377778951331::9'
LIN+1+3+9313212100859:EN'
QTY+21:7'
PRI+AAA:100.00'
RFF+LI::1'
LIN+2+3+9313212100873:EN'
QTY+21:8'
QVR+-8:21+BP'
PRI+AAA:75.20'
RFF+LI::2'
LIN+3+3+9313212100330:EN'
QTY+21:9'
QVR+-9:21+BP'
PRI+AAA:14.95'
RFF+LI::3'
LIN+4+7+9310312000362:EN'
QTY+21:0'
QVR+0:21+TW'
RFF+LI::4'
LIN+5+5+9317935002018:EN'
QTY+21:6'
PRI+AAA:12.58'
RFF+LI::5'
LIN+6+5+9417133075101:EN'
QTY+21:11'
PRI+AAA:4.38'
RFF+LI::6'
LIN+7+3+9310341025107:EN'
QTY+21:12'
QVR+-12:21+BP'
PRI+AAA:4.27'
RFF+LI::7'
LIN+8+3+93425322:EN'
QTY+21:13'
PRI+AAA:3.12'
RFF+LI::8'
UNS+S'
CNT+2:8'
UNT+45+301P'
UNZ+1+301P'

Appendix 5 – Hospital Supplies of Australia (H.S.A) Dispatch Advice

UNB+UNOA:3+9377778951355:ZZ+9377778951348:ZZ+040505:1534+14++++1'
UNH+1+DESADV:D:96A:UN:EAN005'
BGM+351+5+9'
DTM+137:20040505:102'
DTM+11:20040505:102'
DTM+17:20040505:102'
ALI+++X7+164'
RFF+ON:303P'
DTM+171:20040505:102'
RFF+CN:35234525'
NAD+BY+1818181::92'
NAD+SU+75502::92'
NAD+ST+1::92'
CPS+1++1E'
PAC+1++CT'
CPS+2+1+1'
PAC+1++CT'
PCI+33E'
GIN+BJ+393152830000001296'
LIN+1++9323610002709:EN'
QTY+12:10'
LIN+2++9310266653201:EN'
QTY+12:10'
LIN+3++9315850010026:EN'
QTY+12:10'
CNT+2:3'
UNT+26+1'
UNZ+1+14'

Appendix 6 – Hospital Supplies of Australia H.S.A. GTIN Issues

H.S.A. CODE	DESCRIPTION	UOM	COMMENTS
1332078	DAIVONEX OINTMENT 30G	EA	Had no barcode on actual product but a barcode in the system: 9317109002578
1331364	BREVIBLOC VIAL 100MG 10ML	B5	No barcode on actual product but a barcode no. existed in the system: 93711715
1272824	SODIUM CHLORIDE POLYAMP	B50	Wrong barcode in system for this product: 9322882001052
1332103	FORTHANE	B6	No barcode on outer of 6 barcode on the EACH only
1365731	INSULIN HUMALOG VIAL10ML	EA	EAN should be: 9323829001494 NOT 9323828000252
1081045	LANOXIN ELIXIR 60ML PAEDIATRIC 50MCG/ML	EA	EAN should be 9316626102037 NOT 9300670325146
1099671	OROXINE TAB 100MCG 200	EA	9316626602186
1030209	CEPACAINE ORAL SOLN 200ML	EA	9310041901428
1542349	DOLOXENE PULVULES 100MG 10	EA	9331134000378
1268060	POVIDONE IODINE OINTMENT 1.5G SACHET	B250	Barcode for this product needed deleting as it is the correct barcode for this product: 1275687, POTASSIUM CHLORIDE CONC INJ STERILUER 0.75G 10ML is : 9316795000639
1032629	CITANEST PLAIN 0.5% VIAL 50ML NO PRESERVATIVE S/USE	EA	93449069
1273596	OROXINE TAB 50MCG 200	EA	Barcode in the system was : 9300670303175 the correct code on the product is : 9316626602179
1581003	ZOMETA 4MG VIAL 1's	EA	No internal GTIN needed: 9319099316710
1575868	CHLORHEXIDINE MOUTHWASH 200ML	EA	No internal GTIN needed: 9319912016209
1367771	SANDOCAL TAB 1000MG 10 EFFERVESCENT	EA	No internal GTIN needed: 9310130031210
1007038	AUSTRAPEN INJECTION VIAL 1G	B5	No internal GTIN needed: 9317109000505

Appendix 7 – Monash Medical Centre Pharmacy Department (Purchase Order)

UNB+UNOA:3+9377778951348:14+9377778951355:14+040505:1100+303P'
UNH+303P+ORDERS:D:96A:UN:EAN008'
BGM+220+303P+9'
DTM+137:20040505:102'
NAD+BY+1818181::92'
NAD+ST+1::92'
NAD+SU+75502::92'
LIN+1++9323610002709:EN'
QTY+21:10'
PRI+AAA:142.21'
LIN+2++9310266653201:EN'
QTY+21:10'
PRI+AAA:20.99'
LIN+3++9315850010026:EN'
QTY+21:10'
PRI+AAA:15.26'
UNS+S'
MOA+128:1784.64'
CNT+2:3'
UNT+19+303P'
UNZ+1+303P'

Appendix 8 – Project Press Exposure

1. Southern Health Newsletter (May 2004)

Southern Health leads Health Industry e-commerce initiative

3

Southern Health's Pharmacy Department at Monash Medical Centre has commenced an innovative e-commerce supply chain project known as the 'Monash E-Store project'.

The project aims to demonstrate that e-commerce will create efficiencies in ordering and distribution of pharmaceuticals in the health care industry. Other industries like the retail sector are highly developed with electronic ordering right through the supply chain from manufacturer to retailer. Currently the supply chain for pharmaceuticals to hospitals is mainly paper based, with manual processing.

Supported by the Victorian Government's e-Commerce Exhibition Projects Program (ECEPP), Health Purchasing Victoria (Project Chairman) and EAN Australia (Project Manager), the project aims to have a model developed by July 2004, with project results reported by October 2004.

"We are pleased to be involved in this important initiative as it offers great potential for improving our systems," says Ian Larmour, Southern Health's Director of Pharmacy. "Historically the pharmaceutical industry has been slow to embrace e-commerce technology. Errors in stock deliveries cause inefficiencies and this kind of technology has the potential to reduce delivery errors to almost zero."

Marsha Thomson, Victoria's Minister for Small Business and Information and Communication Technology, said: "The project highlights the enormous benefit e-commerce offers in helping reduce costs, save time, open new markets and build better business relationships."

"Through initiatives such as the ECEPP, the Victorian Government is showing its ongoing commitment to ensuring that local businesses and industries are able to share the benefits of e-commerce."

"We expect that hospitals will benefit from lower administration costs in processing/receiving orders, reducing inventory and reduced lead times," said Mr Larmour. "This project will also be a building block on which other health care services and other pharmaceutical manufacturers and wholesalers can use to further develop these systems."

The Monash E-Store Project is being conducted in conjunction with Clifford Hallam, Hospital Supplies of Australia (HSA) and Orion Laboratories.



Karen Martin and Trevor Ireland working with the new system

2. Society of Hospital Pharmacists of Australia – Victorian Branch Newsletter (No. 2 April 2004)

Australia Post, Print Post Publication - No. PP329113/00005



Correspondence to:
The Secretary
SHPA (Victorian Branch)
PO Box 1233L, GPO
Melbourne, Vic 3001

No. 2 April 2004
Next deadline 31 May 2004

SHPA Branch Committee

Chairman

James Dwyer
The Royal Melbourne Hospital
9342 7204

Vice Chairman

Jim Siderov
Austin Hospital
9496 5000 Pager 2433

Treasurer

Rohan Elliott
Austin Hospital
9903 9047

Secretary

Christine Kemp
Royal Children's Hospital
9345 5995

Assistant Secretary

Sally Yeung
Royal Children's Hospital
9345 5208

Assistant Secretary/ Newsletter Editor

Pam Nieman
9568 8582

Committee Members

Ron Nightingale
Central Gippsland Health Service
5143 8611

David Lau
Royal Vic Eye & Ear Hospital
9929 8209

Megan Middleton
Northern Hospital
8405 8571

Emma Dean
Western Hospital
8345 6435

Federal Councillors

Helen Matthews, 9288 4172
Sue Kiers, 9496 5251
Paul Mair, 5226 7556

SHPA Victoria Government Liaison Officer

Many of you will be aware that the SHPA Victoria Government Liaison Officer, Suzanne Kainey, is finishing in this position in early April to have a baby. This is about 8 months earlier than the completion of her three-year contract. The Department of Human Services agreed with a proposal put to them by the GLO Steering Group and SHPA Victoria Branch Committee to use the remaining funds to replace the GLO position with a part time Pharmacist Project Officer (PPO). This position was advertised in early March.

Karen O'Leary has been appointed as the SHPA Victoria Pharmacist Project Officer. She will commence on 26 April 2004.

Karen will be based at the SHPA Federal Office. As was the case with the GLO, Karen's tasks will be focused on recruitment and retention of pharmacists in the hospital workforce and will include the role of Pharmacy Pre-registrant Placement Coordinator.

Congratulations to Karen on her appointment.

Note from Suzanne Kainey, GLO

I would like to thank everyone who has assisted me in my role as the GLO over the past two and a half years. Without the support from all of those who have completed the numerous questionnaires I have sent, assisted my projects by participating in working groups and committees and provided feedback, direction and encouragement, very little would have been achieved.

I would also like to thank SHPA Victoria for giving me the opportunity to work in such a challenging and important role and SHPA Federal Secretariat for their support of me and this position.



The Society of Hospital Pharmacists of Australia - Victorian Branch

<http://www.shpa.org.au/branches/vic.htm>

1

Monash Medical Centre Leads Health Industry E-commerce Initiative

South Health's pharmacy department at Monash Medical Centre, in conjunction with Clifford Hallam, Hospital Supplies of Australia and Orion Laboratories will embark on an innovative e-commerce supply chain project known as the MMC Project. The project will demonstrate to the health industry the improving trading efficiencies and cost savings that can be achieved through electronic data interchange (EDI) and improved supply chain management. Supported by the Victorian Government's e-commerce Exhibition Projects Program, Health Purchasing Victoria Project Chairman and EAN Australia (Project Manager), the MMC Project aims to have a demonstrable model developed by July 2004 with project results reported by October 2004.

Simply stated by Ian Larmour, Southern Health's Director of Pharmacy, "The most critical outcome is that this process can be duplicated by other hospitals and their suppliers. The key benefit of hospital budgetary savings can be passed on to improve the level of patient care within Australia's hospital and healthcare systems, whilst at the same time improving the profitability of Australia's health industry suppliers". Marcia Thomson, Victoria's Minister for Small Business and Information and Communication and Technology said "the MMC Project highlights the enormous benefit e-commerce offers in helping to reduce costs, save time and open new markets and build better business relationships". "Through initiatives such as the e-commerce Exhibition Projects Program, the Victorian Government is showing its ongoing commitment to ensure that local businesses and industries are able to share the benefits of e-commerce".

The press release issued by EAN Australia went on to describe the current situation and further outlined the MMC Project scope which was noted as "to establish a live supply chain demonstration site between MMC project members by using an e-commerce solution using EAN.UCC standards in supply chain process of ordering, processing, packing, despatch and receipt of goods. The supplier process will include receiving the purchase order via EDI, scan packing items into cartons using EAN.UCC system, placing the EAN.UCC number and barcode on the physical shipment, sending an EDI despatch advice to the Merlin pharmacy system. The hospital process will include sending the purchase order via EDI from the Merlin pharmacy system, receipting a purchase order acknowledgment, receipting the appropriate despatch advice and scan

receipt/validation of goods via the EAN.UCC label."

Expected Results

Pharmaceutical health suppliers, especially SMEs, will benefit from reduced cost of order processing, increased accuracy and reduced volume costs of credits. Hospitals will benefit from lower administration costs in processing receiving orders, minimal stockouts and reduced lead times. For more information please contact Sue Schmid, of EAN Australia on 1300 366 033 or e-mail sschmid@ean.com.au

Barcode

Members will be aware that the introduction of barcode scanners into the dispensary process is proposed for 1 July 2004. Many pharmacists have been using barcode scanners in their dispensing process for some time now and quite correctly identify one problem as that of erroneous barcodes. There is a system for addressing such things and for all members please make note that you can pass on incorrect barcodes to jane.jones@health.gov.au and if you supply the number, the product, the manufacturer and what you believe to be wrong, action can be taken to amend the problem.

One pharmacist using a barcode scanner recently commented in a chat line that the pharmacy profession can drive the move to standardisation by dealing only with wholesalers who use the national standard (rather than trying to tie you into their proprietary system - barcode handcuffs). Just like the wholesalers can then put pressure on the pharmaceutical industry to put their product information on an EAN database.

SHPA Practice Standards


The revised draft of these practice standards is currently out for comment.

Safe Handling of Cytotoxic Drugs in Pharmacy Departments. Jim Siderov, on the Branch committee, is co-ordinating comments and these are due to the Federal Office by 10 May. Any member wishing to have a look at these revised practice standards should speak with Jim Siderov at Austin Health.

Similarly the **Clinical Pharmacy Standards of Practice**, comments on these are due by 3 May 2004. Anna Caio in the Federal Office can assist members with a copy of these if they wish to comment.




3. Society of Hospital Pharmacists of Australia Bulletin (May 2004)



Bulletin

MAY 2004



THE SOCIETY OF HOSPITAL PHARMACISTS OF AUSTRALIA

2 INSIDE

New Fellows for the Society

SHPA Clinical Pharmacy Award 2004

Introduce a new member by 30 June 2004 and reap the rewards

"HOSPITAL PHARMACY - A WORLD OF POSSIBILITIES" Update

National Health Workforce Strategic Framework

National Institute of Clinical Studies (NICS) Pain Project - Update

SHPA membership survey 2004 - have your say online

3

Making sense of national Australian e-health initiatives... can you keep up to date?

Thanks to the ONCOLOGY COPP as it moves from VIC to QLD

Your Continuing Professional Development (CPD) status to be on your SHPA membership card

Interested in clinical interventions? Test Your Clinical Skills. Win \$1000...

Did you know that SHPA is a member of the Health Professions Council of Australia (HPCA)?

4

News in brief...

Key Dates and Events in 2004

SUITE 3,
27-33 PAGLAN STREET,
SOUTH MELBOURNE,
VICTORIA 3205,
AUSTRALIA

Publication of the Clinical Pharmacy Intervention Study is good news for pharmacists

The recent publication of the SHPA Clinical Pharmacy Intervention Study (CPIIS) has highlighted the crucial part played by pharmacists in hospitals.

The study widely reported in the print and electronic media, is now being followed up by SHPA with Health Ministers across Australia.

As Federal President Helen Matthews says, "The study shows emphatically that pharmacists save lives, improve patient care and reduce the length of stay for many patients, thus assisting hospitals to treat more patients. We shall use it to promote the SHPA message as vigorously as we can."

"A prospective multicentre study of pharmacist initiated changes to drug therapy and patient management in acute care government funded hospitals" focused on **only one** clinical pharmacy activity when a pharmacist proposes to a doctor a change to a patient's medicine management. The services that were studied are typical of hospital pharmacy services throughout Australia conducted as part of a multidisciplinary approach with a pharmacist working alongside doctors and nurses in the wards of our hospitals.

Key findings of the study included:

- Clinical pharmacists improve patient care and help hospitals to treat more patients.
- 1,399 changes to medicines or patient management followed suggestions from pharmacists during the 24866 inpatient episodes at the eight hospitals over the average one month study period.
- 15 of those interventions were deemed by an independent clinical panel to be life saving.
- 25% prevented or addressed a very serious medicine related problem.
- 88 pharmacy interventions were deemed to have reduced the length of patient stay in hospital.
- 156 interventions were deemed to have reduced the potential for the patient to be readmitted to hospital.
- Improving patient care was the clear focus of the majority of pharmacist interventions.
- In financial terms, every dollar spent on a pharmacist for an intervention in medication management, saved the hospital \$23.
- When annualised, the savings resulting from the interventions quantified at the eight hospitals was \$4,444,794.

The study also underpinned the Australian Safety and Quality Council's view that the provision of clinical pharmacy services is a key strategy to reduce medication incidents in hospitals.

Helen Matthews said "We are well aware that errors can occur in medicine prescribing, dispensing and administering systems in hospitals. Safe and effective medicine use is the core business of hospital pharmacists. This study is among the first published evidence that clinical pharmacy services do provide a check and balance against adverse drug events, if they are available."

"With the focus on individual patients, comprehensive and accountable clinical pharmacy services are an essential component of contemporary healthcare practice. By working to ensure that medicine therapy is optimum, safe and cost-effective, the provision of clinical pharmacy services serves the interests of individual patients and also the wider community" she said.

The study was conducted at the Austin and Repatriation Medical Centre and Geelong Hospital (Victoria), St Vincent's Hospital Sydney and Royal North Shore Hospital (New South Wales), Royal Brisbane Hospital (Queensland), Fremantle Hospital and Royal Perth Hospital (Western Australia) and Royal Hobart Hospital (Tasmania).

SHPA funding supported the CPIIS as a key research initiative. The study was authored by SHPA members Michael J Dooley, Karen M Allen, Christopher J Doezler, Kirsten J Galbraith, George R Taylor, Jennifer Bright, Dianne L Carey and appeared in The British journal of Clinical Pharmacology Vol. 57 Issue 4 Page 513 April 2004.

The authors acknowledged the work of all study hospitals and input from Mark Becknell, John Elkerton, Meredith Freeman, Wayne Gregg, Karen Harby, Anna McCuen, Mark Barnes, Thorza Tazhen, Sylvia Cueli, Garth Benbery, Martin Hoesel, Kent Garrett, Helen Leather, Kim Susic, Donna Taylor, Meredith Verge, Greg Weiss, Julie Wilkes, Chris Alderman, Susan Poole, Brita Pelansky and all participating pharmacists and members of the independent clinical review panels who worked on the CPIIS project.

Net links: www.shpa.org.au/documents/shpa_cpiis.pdf
www.shpa.org.au/interested_admin/cpiis_ministers.pdf

STOP PRESS

Health Ministers agree to improve patient safety in public hospitals via clinical pharmaceutical review

www.shpa.org.au/interested_admin/cpiis_ministers.pdf
www.safetyandqualitycouncil.org.au/clinical-pharmacy-review
www.safetyandqualitycouncil.org

News in brief...

SHPA representative on Pharmacy Working Group of National Prescribing Service

Thanks go to Paula Doberty (John Hunter Hospital, Newcastle) who recently retired from the NPS group for family reasons. Michelle Jenkins who has extensive community pharmacy experience and is currently Assistant Director of Pharmacy Clinical Services at John Hunter Hospital, has kindly agreed to step in and represent SHPA.

SHPA Research and Development Grants News

- Bristol Myers Squibb Clinical Pharmacy Research Grant - \$15,000 closing date 30 June
- DBL Development Fund 2nd Round closing date 30 June

• Support for 4th Biennial SHPA Clinical Conference at the Newotel Brighton Sydney 29-31 October will be provided from the DBL Development Fund. Members may apply for assistance to attend the Clinical Conference - Closing date 14 August 2004. Application forms can be downloaded from the website under 'Latest SHPA Grant News'.
Net link: www.shpa.org.au/4th.htm

www.shpa.org.au/4th.htm

E-commerce supply chain project at Monash Medical Centre (MMC)

The MMC pharmacy department is conducting an innovative e-commerce supply chain project to demonstrate the improved trading efficiencies and cost savings that can be achieved through Electronic Data Interchange (EDI) and improved supply chain management. Supported by the Victorian Government's Commerce Initiative Project Program, Health Purchasing/Victoria and EAH Australia, it aims to have a demonstrable model developed by July 2004, with project results reported by October 2004.

Director of Pharmacy Ian Lamour said "The most critical outcome is that the process can be duplicated by other hospitals and their suppliers. The key benefit of hospital budgetary savings can then be passed on to improve the level of patient care within Australia's health system, while also improving the profitability of Australia's health industry supply". Interested members can share information with Ian via email ilamour@qoufhem.health.vic.gov.au

Need information about blood products, immunoglobulins?

Recently the availability of immunoglobulins has been of concern. Members may find useful information on the Red Cross website, especially the Clinical Information section and the MedLink Newsletter. Most health departments also post up to date information - an example net link from Victoria is below.
Net link: www.vicredcross.org.au

www.redcross.org.au/Products/immunoglobulins.htm

KEY DATES AND EVENTS IN 2004

SHPA Clinical Seminar Series program for 2004

DETAILED EVENTS WILL BE PLACED ON THE EVENTS SECTION OF THE WEBSITE AS SOON AS DETAILS ARE COMPLETE. REGISTER EARLY TO AVOID DISAPPOINTMENT!
Net link: www.shpa.org.au/sem.htm

Laboratory Tests Seminar

19, 20 June, Apollo Old Melbourne Hotel, North Melbourne

Net link: www.shpa.org.au/2004/sem04_lab_test.htm

THIS SEMINAR IS ALREADY HEAVILY BOOKED

SHPA QLD BRANCH CONFERENCE

"BRIDGING THE GREAT DIVIDE"

16, 17 & 18 July Queensland, Cathedral Centre, Toowoomba

EARLYBIRD registration until 11 June

Sessions will include PharmErgonomics, Pharmacist Presenting, Dependent, Infection, Current presentation of papers and posters bridging the divide between health professionals, rural and metropolitan practice, research and clinical practice.

Speakers include Professor Jo Anne Brew, Professor Nick Shaw, Michael Charles Professor Chris Dell Mac, Professor Dorey Higgins, Dr Lisa Nestler, Dr Peter Nielsen and Dr David Crumpton.

Net link: www.shpa.org.au/2004/sem04_qld.htm

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Geriatric Medicines Seminar

7, 8 August, Hotel Grand Chancellor Brisbane

Net link: www.shpa.org.au/2004/sem04_geriatric.htm

Rural Clinical Pharmacy Seminar

18, 19 August, Newotel Hotel Brisbane

Net link: www.shpa.org.au/2004/sem04_rural.htm

SHPA WA BRANCH CONFERENCE

1, 4 & 5 September, Wisman Australia

Joondalup Resort, Joondalup

SHPA ACT BRANCH CONFERENCE

18 September 2004

Email: info@www.kblm.gov.au

4th BIENNIAL SHPA CLINICAL CONFERENCE

(Combined with SHPA NSW BRANCH CONFERENCE)

29, 30 & 31 October, New South Wales

Newotel Hotel, Brighton Beach, Sydney

The preliminary program and call for abstracts has been mailed to all members and is available on the website. Conference Convenor Rosemary Burke, is keen to ensure a focus on a strong clinical program with a wealth of applicable clinical education available to interest all pharmacist practitioners. A full day

indicated technician program will take place on the Saturday

Key Themes - Anticoagulants, Infectious Diseases - SARS and Infective Diseases, Acute Pain, Communicating with patients and written

Conference sessions include:

- Talk from the future - poster boards to facilitate face-to-face discussion with presenters
- Round table networking breakfast
- Contributed papers - Case Histories, Clinical activities, Patient education

Net link: www.shpa.org.au/2004/4th.htm

Clinical Pharmacy for Community Pharmacists Seminar (tentative)

6, 7 November, Melbourne

SHPA SA & NT BRANCH CONFERENCE

12, 13 November Adelaide, South Australia

University of South Australia, Magill Campus

Email: jenny.coomes@shpa.org.au

SHPA VIC BRANCH CONFERENCE

19, 20 & 21 November Victoria

The Continental Hotel, Flinders Ward

Great program soon on website.

Themes: Quality Safety Research Funding Key speakers include:

Prof Lloyd Sampson, Prof. Ian Day, Prof Roger Nelson, Dr Danielle Stawcjan and Ian Coombes



Other conferences of interest

ANCS Annual Scientific Congress

7-9 June 2004 Sydney Convention Centre Darling Harbour

Net link: www.ancs.com.au/understand/ANCS_Briefing_VJ.pdf

National Medicines Symposium

28-30 July 2004 Brisbane Convention Centre

Email: chul@news.com.au

8th World Congress on Clinical Pharmacology & Therapeutics

1-6 August 2004, Brisbane

Email: 1307204@news.com.au Net link: www.wcpt2004.com

The National SANMAH Conference - for rural and remote allied health professionals

26-28 August 2004 Alice Springs Convention Centre

Email: conferences@health.vic.gov.au Net link: www.sanmah.org.au

4th Congress of IFP 2004

4-9 September 2004, New Orleans, USA

Email: congress@ifp.org Net link: www.ifp.org

NZIPA 2004 Conference

10-12 September 2004, New Plymouth, New Zealand

Net link: www.nzipa.org.nz or www.shpa.org.au

SHPA FEDERAL COUNCILLORS - working for you

Sue Alexander, Catherine Drake, Vaughn Eaton, Neil Keen, Sue Kira, Christine Madson, Helen Matthews, Anna McClure, Rebekah Miles, Paul Muir, Penny Thornton

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Rust Report

News and views of the action in Australasia's IT sector this week

March 12, 2004

THE RUST BUZZ

Growing smart

IT IS A LEVER for change in Australia, but turning Australia's IT industries into internationally competitive forces is no easy task. It has previously been the subject of many conferences and papers and requires the awakening of a nation.

The Pacific Innovation Corridor is the Gold Coast City Council's signature economic development project to transform Gold Coast City into a globally-connected innovation and knowledge "hotspot". Through the clustering of related firms and industry sectors within specific precincts it aims to enhance the availability and intensity of knowledge, as well as R&D.

As a case in point, Eracom, a company that pioneered electronic security for customers around the world from its Gold Coast base, will this year celebrate its 25th anniversary. Eracom is now an undisputed international company with direct operations in nine countries, sales representation in more than 40 countries, and customers spanning some 60 countries. More than 50 per cent of Eracom's current revenue comes from exports.

In the space of 18 months Bond Wireless has developed three innovative applications for mobile wireless technology and taken out the Asia Pacific Information & Communications Technology Award for Best Communications Technology. Despite lures from overseas, the company is keen to stay on the Gold Coast where it appreciates the helping hand given by the Gold Coast City Council, and a Commercialising Emerging Technologies Program (COMET) grant from AusIndustry.

BCV Wireless was one of the first companies in the world to see the potential in Bluetooth Wireless technology. Its BlueMod product was the world's first single board computer, shrunk to the size of a credit card, that acted as a transceiver for information from a range of mobile devices. Exports are now BCV's main business.

Teachers will never be replaced but they will be assisted like never before, thanks to virtual education being delivered into schools across Australia and overseas by Gold Coast education software developer Edus. Because the software works using both skill level-based exercises and curriculum-specific exercises, the system is being sold internationally.

"The Gold Coast Council supports innovative companies, individuals, and organisations, they are crucial to the City's future economic prosperity and to achieving our goal of diversifying and growing our dynamic economy and providing employment for future generations," commented Mayor Gary Baldon.

For further information on business opportunities on Gold Coast City Council's Economic Development and Major Projects Directorate, contact havel@goldcoast.com.au or visit www.goldcoastcity.com.au/business.

— Len Rust, Rust@bigpond.com.au

ISYS search technology picks up Scotland Yard

Australian developer ISYS has been selected to provide its search and retrieval technology to the largest police force in the UK, the Metropolitan Police, more commonly known as Scotland Yard.

The software will be used to help find information in a range of different reports, databases, and other law enforcement resources, noted Ian Davies, managing director of ISYS. It is also used during court proceedings to help prosecutors check facts and transcripts quickly while a trial is under way.

Davies said that ISYS scored its first sale to a UK police force in June 2003, when it signed up Hertfordshire Police HQ as a user. It has since signed up a further 20 forces, and with the Scotland Yard deal under its belt is used by 45 per cent of UK Police organisations, Davies claimed. www.isys.com.au

• ISYS has also been selected to provide a desktop version of its search and retrieval system to US company Ward & Brown Insurance Administrators. The software will reduce the time staff spend searching and retrieving information from a number of internal data repositories.

Eden reverts to True Blue origins

Software company Eden Technology has reverted to Australian ownership following its acquisition from US company Space Mark International by a consortium of former owners Katrina Doring and Peter Roberts, and chairman Rick Anstey.

"While the business did well and expanded internationally as part of the Space Mark group, we realised that we would prefer to operate as owners rather than managers," said CEO Doring. "We are well positioned and intend to expand our business further both here in Australia and overseas."

Space Mark will continue to market Eden's logistics tools in the US, Doring noted. www.eden.com.au

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• Who's in work and whose jobs they get

INSIDER EDITION

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iSoft wins Sydney health body

British software developer iSoft has won a contract to provide software to replace the patient care and hospital administration systems of the South Eastern Sydney Area Health Service. The software, which will run on Intel-based IBM servers, will provide patient care information for 10 hospitals and 6000 clinical staff. The system will replace a 20-year old patient administration system that was supported by DEC Alpha servers.

Vic project puts e-commerce in health

A project to demonstrate the improved trading efficiencies and cost savings that the health industry can extract from electronic data interchange (EDI) has been launched in Victoria under the government's e-Commerce Exhibition Projects Program.

The project involves Southern Health's Pharmacy Department at Monash Medical Centre; Clifford Hallam Pharmaceuticals; Hospital Supplies of Australia; and Orion Laboratories. A demonstrable model is scheduled for July 2004, with project results reported by October 2004. Details of the ECEPP are online at www.moniv.vic.gov.au/ecedp

Asia Netcomm completes DFAT net

Asia Netcomm has completed the roll-out of a private data communications network for the Federal Department of Foreign Affairs and Trade. The contract, which caused some controversy when first let, now links 40 Australian embassies, consulates, and high commissions with 128/256K frame relay or 512K-bits/sec ATM service connections.

Departments call for tenders

- The Federal Department of Communications, IT, and the Arts, has called for tenders for the provision of payroll and personnel services. Details from the department's contact officer, Angela Bright at HRTender@dcita.gov.au
- The Australian Communications Authority has called for tenders for the monitoring of quality of service experiences of residential and small business users of telecommunications data services. Details from www.aca.gov.au/aca_home/tenders/tenders.htm

TelstraClear wins Kiwi jails

TelstraClear has won a \$A25 million deal to provide fully managed, converged telecommunications services to the New Zealand Department of Corrections.

And a CEO told me

Industry identity Michael Bosch explains his immediate plans for IronPort, a newcomer to Australia (www.ironport.com)

RUST: Can we begin with an introduction and overview of IronPort?

BOSCH: Our three year-old company is in the Internet messaging gateway business with appliances dedicated to that function. We've shown that one IronPort appliance can replace 10 conventional e-mail servers and drive e-mail traffic by up to 20 times faster - plus protect against spam, virus attacks, and other security threats.

RUST: How do you want to see the next 12 months?

BOSCH: More than 80 per cent of businesses say e-mail is more important to them than the telephone and while e-mail volume is growing very rapidly, the volume of e-mail problems - spam, viruses, security leaks - is growing even faster. We are very bullish about Australia and expect revenues to exceed \$A3 million in our first year here.

RUST: Are you able to give an assessment of the potential market opportunity?

BOSCH: It is truly huge. We address anti-spam, anti-virus, mail gateway, and policy management issues so the global market is in the billions of dollars US, but I don't have a figure for the Australian share of this.

RUST: Can you describe the competitive landscape?

BOSCH: First - the mail gateway (MTA) space is more than 98 per cent served by open source software and this space is under heightened focus due to the problems I have mentioned. Today's MTA space is analogous to the WAN space in the late-1990s before companies like Cisco introduced appliances for routing. Nearly all our competitors run inferior solutions on Unix, Linux, or Windows, with nowhere near the performance of a purpose-built appliance. Second, of the hundreds of anti-spam and anti-virus offerings, IronPort incorporates Brightmail and Sophos because of their market-leading positions but we can readily add other offerings, or change.

RUST: What is it about IronPort that appeals to you at this point?

BOSCH: It suits my style. I was the first regional manager of Sun Microsystems Australia and I launched Network Appliance here, too. Based on those successes, I wanted a pre-IPO startup with good technology, a large and fast-growing market, and top drawer executives and engineers. IronPort has them all. IronPort's founders previously started messaging companies which were sold to Microsoft - so they have a great record.



Get Optimized!

Mercury Interactive Australian User Conference

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12 - 14 May 2004 Grand Hyatt Melbourne **REGISTER NOW!**

Register online today at: www.mercuryinteractive.com.au/uc Secretariat + 61-7-3254-1000

