Document Review

Electronic Medication Management Systems
A Guide to Safe Implementation

Document review compiled in response to an "Expression of Interest from Australian Private hospitals to test and validate the document" issued by The Australian Commission on Safety and Quality in Health Care in March 2011 and contracted in May 2011.

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Executive Summary

Uniting Care Health (UCH) were pleased to receive the opportunity to review the "Electronic Medication Management Systems – A Guide to Safe Implementation" document from the Australian Commission on Safety and Quality in Health Care (referred to from here on as The Guide).

UCH are currently in the initial stage of planning an implementation of Electronic Medication Management within their current Cerner Millennium system as a part of the UCHconnect project. This guide is seen as a vital external resource to assist in ensuring that our planning is comprehensive and that mistakes made elsewhere are not repeated.

Unfortunately in its current format this is not the achieved outcome from reading the guide. Whilst general project management principles outlined within the guide are aligned with the methodology deployed by the UCHconnect project team, a number of areas pertinent to the private sector, integration of clinical systems and interfaces were either excluded or received insufficient coverage. The main reasons for this are outlined below. These comments apply to the whole document. Specific comments for each chapter as they are currently formatted are contained in the remaining sections of this document.

Format

We feel the document would read better and perform its intended purpose if it were divided into three sections:

1. Organisation briefing
2. Project management
3. EMMS specific

The intended use of each section would be as follows

1. The Organisation briefing would be a guide to the general principles overarching a project of this nature and include the considerations that a senior executive in a health care organisation would need to know about embarking on these projects.
   It should include:
   - Resourcing considerations,
   - Senior level support requirements,
   - Considerations about organisational readiness for a project of this nature,
   - Change management requirements especially including engaging medical staff
   - Information Systems technical requirements e.g. networks, access to end user devices etc.
   - General principles about selection of an EMMS including some tendering guidelines.

- Australian government requirements for EMMS e.g. PBS, Electronic signatures

2. The Project management section should contain the information that is already contained within the guide that is specific to project management. This is necessary for those organisations who do not often conduct projects of any nature in order for them to successfully complete their project

3. The EMMS specific section should be laid out within the framework used in the project management section but contain only the information relating to conducting an EMMS project. This will ensure that those facilities that do have an experienced project management framework can target the section of the document that will give them the most benefit.

At present the format of the guide contains most of this information but it is embedded in such a way that it is not easy to extract the information that relevant to the reader.

Language

The language used in the document is not firm enough in many places. The guide seems to have taken the 'politically correct' stance on language rather than a definitive stance.

One of the major reasons that projects of this nature fail in health care organisations is because people are expected to continue to do their current 36 hours/ week day job and then do the project on top of that. A guide such as this will assist in supporting Pharmacy directors and IT directors to produce a business case with realistic resource requirements as long as the document makes firm statements like 'there must be a full time project manager' rather than "it would be desirable to have a full time project manager".

This does not just apply to human resources but to any section of the guide that is trying to ensure that quality is adhered to e.g. 'hospitals must follow the Australian guidelines on …..', and 'The information services department must be consulted on network bandwidth and PC placement … '.

Public vs. Private

Much of the guide in its current form is written with the public hospital in mind. This includes references to tasks completed by Junior Medical officers, hospital formularies and uncertainty about the role of the PBS within the scope of the guide. Junior medical officers and formularies are rare commodities in a private hospital whose whole business is PBS oriented. The guide clearly states that it wants to be a resource for public

and private hospitals so therefore it needs to be able to address the private hospital requirements as a part of its brief.

References

The guide would become an invaluable tool to people wanting to implement EMMS if it contained more references under two different headings

1. Published articles
2. Lessons learnt.

1. Published Articles – the guide does contain some references within the footnotes on each page but a comprehensive appendix containing articles reviewed and recommended by the Commission would make the investigation into preparing business plans and project plans more streamlined for the busy health worker.

2. Lessons learnt – Although these types of implementations have not been conducted in many facilities across Australia, a section, or the insertion within the guide, of practical advice from people who have tried this and been either successful or failed would be invaluable to those following in their footsteps.

Stand Alone vs. Large system implementations

This guide is oriented in its style and advice to the implementation of the EMMS as a stand alone system. This will not always be the case as organisation that have purchased large all encompassing clinical systems roll out the Electronic Medication Management component of these systems. The guide needs to be more generalised where the advice being provided is common to both types of systems e.g. when setting up the PBS rules, and also more specific if the situation applies to a specific situation e.g. when using a stand alone system one of the main issues will be to determine the ‘home’ of the allergies data.

The pages following contain detailed feedback to specific sections of the Guide for consideration of the Commission.

Review of the Document Contents

PREFACE (page ix):

Overall the preface appears fairly well written, and a good introduction to the topic of electronic medication management.

Paragraph 3 of this section comments on a 'number of studies' showing increased medication errors after poor implementation of electronic medication management systems (EMMS), however lacks any references for these studies. Understandably, it may not be appropriate to include a reference list in a preface section, however a mention of where these references are located (if they are available at another point in the document) would certainly afford some assistance to the EMMS Guide (hereafter referred to as the Guide) users. The references to these studies for further exploration if desired could be used as a learning tool of what can go wrong if the system is not implemented correctly, and hence provide hospitals with information of what strategies to avoid in their implementation. A bold statement that the guide is based partly on this information may not be as helpful to hospitals planning on implementing an EMMS as the ability to directly refer to the primary source of the information. Additionally, the Guide users would be in a stronger position to select references that are most suited to local practice.

ACRONYMS AND ABBREVIATIONS (page xi):

Although this section of the Guide contains many of the acronyms and abbreviations located throughout the document, there are some that appear to be missing from the list, particularly from the end of the document in the 'Technical Components- software' section (Chapter 8, Section 8.3, pages 115-123). These missing elements are listed below:

- PRN (when required)
- NIMC (National Inpatient Medication Chart)
- PIR (post implementation review)
- ETP (Electronic Transfer of Prescriptions)
- NPC (National Product Catalogue)
- ISO (International Organization for Standardization)
- NHDD (National Health Data Directory)
- CDA (clinical document architecture)
- XML (Extensible Mark-up Language)
- LOINC (Logical Observation Identifiers Names and Codes)
- HI (Healthcare Identifiers).

CHAPTER 1 "INTRODUCTION" (pages 1-7):

Overall it's a concise and well structured chapter. A couple of comments are listed below for consideration by the Commission:

Specifically from a private hospital perspective, the introduction states that one of the aims of the guide is being "relevant for use in all Australian public and private hospitals and applicable in a software independent manner" (page 6). It appears that the intricacies of private hospital environment are misunderstood or understated. For example, the guide makes a number of references to the drug 'formulary' which is a standard practice in public sector. The use of drug formularies in private sector is very limited or non-existent. As a general rule the range of drugs used in a private hospital is determined by the Visiting Medical Officers' (VMO's) prescribing habits and preferences.

The presence of Junior Medical Officers (JMO's) in private hospitals is extremely variable. Some hospitals may have none or a couple JMO's, other hospitals may employ a larger number of JMO's. At present strategies on a higher level of engagement of Senior Medical Staff is inadequately addressed in the Guide.

Some of the issues found in the introduction from a private hospital viewpoint are stated below:

Figure 1.2 (page 3)
This figure may not be fully reflective of the practices adopted in a private hospital environment. The figure indicates that prescribers are the only clinicians able to record medication history and create the medication chart. Local hospital policy framework extends nursing and pharmacists scope of practice to taking medication histories on admission and in some instances creating medication charts for review and approval by the admitting VMO as prescribers are not always at hand.

Although the decision on discharge medications is made by the treating VMO, discharge scripts fully detailing discharge medications are not very common in private sector. The common practice is, however, for pharmacy staff to create a medication discharge summary directly from the medication chart. A copy of Discharge Medication Summary (list) is given to the patient and another copy is forwarded to the patient's General Practitioner (GP). Discharge scripts may be utilised (if written by VMO's prior to discharge) for simple surgical patient discharges. The doctors will dictate a discharge letter which will also include discharge medications at their earliest convenience, often after patient's separation from the hospital. The statement on page 2, paragraph 2 regarding the roles overlap ("In some instances, roles may overlap within activities"), could be extended/included as a disclaimer in the figure 1.2.

'The medication management process' (chapter 1, section 1.1, page 2)
Additionally, in this section there is a mention of nurse initiated medicines but no mention of pharmacist initiated medications. In some hospitals pharmacists have the ability to initiate medications as per a local pharmacist initiated

medication policy. It would be appropriate to include mention of pharmacist initiated medicines in the medication management process, or acknowledge this may be the case in some hospitals.

‘Scope’ (chapter 1, Section 1.3.2, page 6)

As a general comment, it’s disappointing that a number of critical aspects of EMM were excluded from the implementation process. For example information about interfacing with community pharmacies is important for implementation into emergency departments, and online PBS claiming (or in our case paperless claiming) information would be integral to ensuring the smooth implementation of an EMMS system.

In our opinion the paragraph detailing the excluded elements lacks clarity;

- For instance, the guide notes the exclusion of information about online PBS claiming with reference to community prescribing and dispensing. However it is unclear if this also refers to the paperless PBS claiming in a hospital environment, i.e. claiming PBS reimbursement directly from medication charts with no requirement for a hardcopy prescription to be submitted to Medicare Australia, or in fact the reference relates to claiming reimbursement from Medicare Australia online upon receipt of a hard copy script.
- Subsequently there is reference to interfacing with community pharmacies under ‘Electronic transfer of prescriptions’ (chapter 8, section 8.3.9.0.3, page 121) where it mentions that the Electronic Transfer of Prescription Final Release (from December 2010) may be applicable to an EMM system for transferring discharge medication to community pharmacies.

The exclusions in the document could be more clear and precise, to enable the reader to grasp what information they can and cannot obtain by reading the document. It remains unclear if the paperless PBS claiming capability (not PBS on-line claim) is one of the exclusions. A brief overview of the issues with paper PBS claiming and benefits of a paperless system in private hospitals is detailed below.

PBS claiming in a private hospital environment can be more complicated than in a community setting or public hospital. The PBS which was introduced under the National Health Act in 1953 was at that time designed with the community setting in mind. Changes since then have resulted in the PBS being tweaked and extended to be used in hospitals (both public and private) and aged care residential facilities. However there are still many differences between PBS supply and remuneration in a hospital (particularly private hospital) versus community setting[1]. This is due to several intricacies specific to private hospitals. The situation as it currently stands involves a duplication of effort of medical practitioners working at the hospital, with the writing of the medication required on a hospital chart for administration and recording purposes, and then repeating the process on a prescription to meet PBS requirements. It also involves significantly increased administrative duties on

[1] Ryan, M. Demystifying the PBS. Private Hospital. 2011 June: 56-57.

the hospital pharmacy in regard to following up PBS prescriptions from prescribers to avoid financial loss from medications supplied[2,3].

Due to the often complex and serious nature of medical complaints patients may be suffering from, provision of medications is often an urgent matter (more urgent than many patients in a community setting). This, together with the lack of permanent medical practitioner's onsite leading to telephone orders, can result in the need for dispensing of medications before a valid PBS prescription is received. Although this dispensing is made on the basis that a valid PBS prescription will be obtained from the doctor within 7 days, many factors can contribute to the prescription not being received within this time[2]. This can result in the pharmacy involved taking on a 'PBS policing' role having to follow up prescriptions which does not improve the collaboration between pharmacists and other hospital staff[3].

In addition, authority prescriptions may often be required for supply of medications in a private hospital. This can be due to the fact that some common medications used in hospital require a PBS authority. Another common reason is the maximum quantity allowed on the PBS is often insufficient to cover a patient's duration of therapy, resulting in prescribers either having to write many repetitive prescriptions for the same medication or obtaining an authority for increased quantity[2]. Delays in getting this authority can result in delays in the patient receiving the required medication, and can theoretically result in adverse outcomes for the patient.

Several proposals have been put forward to remedy the situation currently found in private hospitals dealing with PBS prescribing. A major component of proposals so far has been the introduction of 'paperless' or 'prescription-less' system based on the current PBS structure. This would enable the hospital to use the patient's medication chart to also claim reimbursement for PBS listed pharmaceuticals supplied. This would result in a removal of the current duplication of effort asked of medical practitioners and also result in less administrative tasks for the pharmacy itself. Uniting Care Health has previously submitted a proposal to the Department of Health and Ageing for approval for a paperless PBS claiming system, similar to that installed in trial mode in several Victorian private hospitals, but has received the response that this will be looked at as part of the 'Electronic Transfer of Prescription (ETP)' release 1.1.

From our own, as well as a private hospitals perspective, the introduction of a paperless system to claim PBS reimbursement would be of extraordinary value to both improve the workflow of hospital staff in general and in helping to foster support for the introduction of any electronic medication management system. The inclusion of information about paperless claiming in this guide

[2] Healthcare Management Advisors. Review of the existing supply arrangements of PBS medicines in aged care residential facilities and private hospitals consultation framework. Department of Health and Ageing; 2008.
[3] Prado, L, Brandon, I & Ibrahim, V. Response to discussion paper on Review of the existing supply arrangements of PBS medicines in residential aged care facilities. Uniting Care Health, 2009.

would be extremely constructive and would instantly attract hospital executives and Senior Medical Staff support.

CHAPTER 2 "PRINCIPAL STAKEHOLDERS AND KEY USERS" (pages 9-17):

We found this chapter to be fairly comprehensive and well written, and agree with several of the recommendations. For example chapter 2, section 2.1.3, page 12, that pharmacy not assume the role of project sponsor as it would be better to be seen as a whole of hospital project rather than purely a pharmacy project.

We have also taken it upon ourselves to have meetings with several of the stakeholders cited in this section. We held meetings with 7 senior prescribers, a Deputy Director of Medical Services and Directors of Medical Services in order to understand their views on EMMS and of the duties stated of them within this guide. A summary of their feedback is revealed below:

1. **Prescribers (VMO's) (section 2.2.1)**
    - Most had not had any experience with electronic prescribing systems in the past, and those that had expressed mixed views on their usability.
    - All prescribers could see some benefit (at least to the hospital) in introducing electronic medication management, with benefits including increased legibility for all staff, ability to monitor usage/draw statistics, and increased accountability for prescribers.
    - The head of the emergency departments interviewed at 2 of our hospitals appeared interested to have electronic prescribing implemented into their departments. However these prescribers had particular concerns about the relationship with outpatient prescribing and community dispensing (something that is considered an exclusion in the guide- page 6). A head of emergency also expressed concerns for their department with the default dose system recommendation on page 100 (chapter 8, section 2.1) as many patients do not know the dose of a medication that they usually take when they come into the emergency department and it could lead to doctors just prescribing that dose rather than following up properly and finding the actual dose a patient is meant to be on.
    - A small minority of prescribers acknowledged that if it took longer for them to prescribe but saved time downstream it would still be of benefit to the hospital.
    - Concerns were raised about the typing/computer skills of many of the doctors at the hospital (as many are of an older age group).

- The level of clinical decision support provided to the VMO's is going to be a complicated thing to implement, and any chosen path may be difficult to gain the support of all doctors. There was a wide range of feedback when the doctors consulted were asked about alert fatigue and clinical decision support. Some respondents like to have most warnings flash up at them; others only wanted contraindications and allergies. Some respondents thought that the level of clinical decision support should be able to be set by the individual prescriber, while others thought this could be dangerous as some doctors have more wide ranging knowledge about medications than others (and those with only limited information may set it at low levels of clinical decision support which could oppose the whole reason for having it there in the first place).
- Almost all respondents stated the need for many ways to access the system externally (e.g. smartphone/ipad). This is maybe more important in a private hospital due to the lack of junior doctors onsite to make necessary changes to the electronic medication chart.
- Security of the system and of the information stored on it was brought up as a concern by some doctors.

2. Director of Medical Services (DMS)/Deputy Director of Medical Services (Section 2.1.2)

Key messages from the Directors of Medical Services were:

- Senior Medical Staff working in private sector are independent medical practitioners, not employed by the hospital.
- JMO's resources are non-existent or extremely limited.
- There are fundamental differences in medical staff reporting structure and governance framework between public and private sector.
- Engagement of VMO's would be possible through Medical Advisory Committees, Specialty advisory committees and craft groups.
- VMO's availability for one on one training would be a major challenge
- When attempting to engage and obtain support from Senior Medical Officers, although the safety aspects of implementing an EMM system are important, this will probably not be enough to obtain support for such a system. Additionally selling points such as the hospitals ability to have adequate infrastructure (hardware, wireless), robustness and user-friendliness of the system (should be as easy to use as an i-phone), and the EMM's integration with other clinical and patient systems are more likely to have an effect.
- That access to the system will have to be via a swipe card system, as password and username input every time you try to access a system would take too much additional time and deter users.

CHAPTER 3 "STAGE 1- PROJECT INITIATION" (pages 19-40):

The local programme manager provided the following comments on the document:

"While in principle I agree with the fact that the safe implementation of an EMMS involves good project management principles, I do not think this document requires a detailed lesson is project management principles.

As an experienced project manager the frustration was that I had to read through all of the information that I already knew in order to find the information that I wanted to know – the specifics around EMMS. The EMMS information is embedded into the project management sections. What I wanted from this document was succinct information about the risks and issues facing a project team when implementing EMMS. This is just not achievable within the current format."

Alternatively UCH recognises that not all facilities wanting to implement an EMMS would have project management experience, this document could be divided into an EMMS section and a project management section.

The problem with trying to define the project management section of the document is that each organisation will require a project of this nature to use the agreed local methodology and that may not be PRINCE 2. This chapter is very PRINCE 2 in its orientation. There are other methodologies available that will ensure as successful an implementation as PRINCE 2.

An assumption has been made that the EMMS is being bought as a stand alone product with a stand alone project associated. The drive towards clinical systems encompassing all aspects of clinical care means these systems may very well be purchased as a part of a larger tender – or a project with a larger scope of work. This is the case at Uniting Care Health. This needs to be addressed or mentioned within this document as well as the stand alone version. The two approaches can be very different.

In box 3.1 a statement is made "EMM project team members should ideally commit full time to the project, but in most cases they will have to balance the EMM project work with competing interests of their usual 'day jobs'". The language in the document is not strong enough in many places, this being one. A SUCCESSFUL EMMS implementation is one where team members are full time and encouraging people to try to balance their other roles will not achieve this. The people on the ground in hospitals will want to use the information in this guide to support their business cases, to make sure that they have covered all of the important considerations and to support their proposals to senior management. They need to have this document support the 'right' way to do the project as a source from an acknowledged and respected entity with senior hospital managers. The second paragraph

following box 3.1 also needs to be rewritten in more definite language. It also needs to be reviewed for repetition of the contents of box 3.1.

Section 3.5 discusses the role of the project management office (PMO) within a large organisation. What is not discussed is how the same activities are achieved in an organisation without a PMO– either large or small. Many of the infrastructure activities listed are required for the project so some guidance may be useful.

The use of the boxes seems inconsistent – sometimes the information is specific to the EMMS – like box 3.2 and then other times very similar information is not in a box for e.g. Examples of project issues above section 3.5.5.

CHAPTER 4 "STAGE 2- IMPLEMENTATION PLANNING" (pages 41-66):

The following is the feedback submitted in reference to chapter 4 of the Guide:

Box 4.1 page 41
This is great information but too early in the document for this box.

'The implementation planning study' (chapter 4, section 4.1, page 41)
Replace "The IPS is likely.." with 'The IPS should be conducted comprehensively and not be glossed over as it will reveal critical information that will need to be considered as part of the project. A checklist of items to include is shown in Box 4.2'. Other items that could be included in Box 4.2 are Go live support and SLA's with the vendor and help desk.

'Business process mapping and redesign' (chapter 4, section 4.2 , pages 43-44)
It would be appropriate to switch the first 2 bullet points under "The Benefits of process mapping include…", as the second bullet point ("a clear, concise, visual method of describing the current and future EMM processes that support multidisciplinary review") would be the main reason for undertaking business process mapping and redesign and as such should be prioritised in the list.

- 4.2.1 'Current state process maps' - The process maps should contain an excerpt describing each process. The issues and risks of the process should be identified so the future process can resolve them. This process will help identify weakness areas where the organisation could improve. The new system may provide the mechanism for the improvement.
- 4.2.2 'Future state process maps'- Another bullet point could be added at the end of this list reminding the Guide users to highlight any areas where the process will change.

‘Policy Development’ (chapter 4, section 4.3, page 44-45)

- All Policies that are developed must be endorsed by the CEO/project sponsor and adhered to by all staff for the implementation to be successful.
- In reference to Box 4.4 (page 45) some examples of other policies would be good in an appendix, to allow readers to understand the range and complexity of policies that must be developed in order to ensure successful implementation of an EMMS.

‘Implementation sequence planning’ (chapter 4, section 4.4, pages 46-47)

A table showing the strengths and weaknesses of the lead implementation vs. the big bang approach would be helpful to further allow hospitals to decide which approach to take (and would be clearer than just briefly listing some of this information in a paragraph). The Emergency Department comment should be in an information box (as similar tips throughout the document appear to be in box form).

‘Change management planning’ (chapter 4, section 4.5, pages 47-53)

The content of this section is basically fine. However it would have been useful if there were more examples of change management strategies. In addition, box 4.8 appears to be lacking information on how the senior medical champions were engaged in order to get their buy in to the project. This needs to be done so they can go on to get the buy in of other medical staff. It would also be useful to provide information on what previous hospitals who have implemented EMM systems have done to engage the interest of their medical staff.

‘Benefits management planning’ (chapter 4, section 4.7, pages 59-60)

It could be useful to include a ‘What’s in it for me?’ document or diagram for each of the types of users. This way the project team can clearly articulate and communicate the benefits to users and how they relate to their particular role.

‘Education and training’ (chapter 4, section 4.8, pages 60-64)

It is important to ensure that all staff at their hospital orientation sessions that staff are provided with new user training information to familiarise them with the EMM system used in the hospital.

- 4.8.1 ‘Education planning and materials’ - An extra bullet point talking about the organisations EMMS vision would be of use.
- 4.8.2 ‘ Training and materials’- Basic computer competencies for all staff must also be ensured before even attempting to train staff on the particular EMM system that is to be implemented.
- Consider using an “information” or “drop in” room where staff can practice and ask questions.
- This section also requires examples of how senior medical staff were engaged and how they were enticed to actually attend training sessions. In the public sector there may be around 100

Senior Medical Officers, whereas at The Wesley Hospital alone we have 800 Senior Medical Officers with admitting or on-call rights at the hospital. The need for strategies targeted at these staff is integral for implementation into a private hospital. If this has been done successfully at other sites this information would be of great value to include in the Guide.

'Project communications' (chapter 4, section 4.9, pages 64-66)

- 4.9.2 'Communication tools'- Other communication tools to be considered to include are email and personal letters.

CHAPTER 5 "STAGE 3 - EMM SYSTEM BUILD AND CONFIGURATION" (page 69-76):

The following is feedback provided for chapter 5 of the Guide:

'Acquiring technical infrastructure and planning business continuity management' (chapter 5, section 5.1, page 69)

Other points to consider in this list would include logons, NT accounts and automatic logouts, as these would help to streamline business processes.

'Software development' (chapter 5, section 5.2 , page 70)

An ideal situation is where the software is completely developed and only configuration changes are required to customise the system to the organisations needs. It may be worthwhile to include a box such as that below as information as how an organisation has handled this.

An organisation has a policy to firstly buy software solutions and secondly build them.

1. Buy
2. Build

If software is built, the organisation must have the resources to maintain it.

'Non-functional testing' (chapter 5, section 5.4, pages 70-71)

When referring to EMM system performance, the organisations infrastructure and existing usage will also need to be taken into consideration.

'Configuration of EMM system management' (chapter 5, section 5.5, page 71)

The configuration may require the input of the EMMS system vendor, depending on the complexity of the software. However, the configuration should be conducted based on the requirements of the end users. Once again in table 5.1 it mentions 'configuration of the local formulary', our organisation does not have a formulary.

‘Developing interfaces to key support systems’ (chapter 5, section 5.6, page 72)
The need to do this would depend on whether the EMMS chosen is a fully integrated system or a standalone system requiring interfaces. Also it would be useful to have a bullet point to cover allergy / drug interaction checking.

‘User acceptance testing’ (chapter 5, section 5.7, pages 72-76)
We believe the testers should be a different group of people from those building or configuring the EMMS. The following comments are also submitted for consideration about this section:

- 5.7.2 ‘Informal user acceptance testing’ - This process is often performed when configuring and building the software.
- 5.7.5 ‘End to end testing’ - Also may need to test that alerts for drug interactions/ allergies are accurately triggered and displayed.
- 5.7.6 ‘Traceability matrix’ - An example of a traceability matrix would be good especially with EMMS examples.

Other important information which could be put in this section involves that fact that some requirements of a system are more important than others. A failed test may have a high impact on the use of the system, while others may have a low impact. This should be taken into account for any failed tests. There are issues that will be show stoppers, while others may not impact the users significantly and have a work around while they are fixed.

Often in projects the go live date creeps up very quickly and the system may not be 100% ready. A call needs to be made as to whether it will go live or be delayed. This will be dependent on the severity of any outstanding issue or failed test.

CHAPTER 6 “STAGE 4: IMPLEMENTATION AND GO LIVE ACTIVITIES” (page 77-81):

The following feedback is provided for chapter 6 of the Guide:

‘The project control centre’ (chapter 6, section 6.2, page 79)
It would be of use to recommend that the control centre should be located as close as possible to the area’s where the go live is occurring, as this would help to enable both easy access for users and project control staff and also potentially allow faster resolution of issues raised.

‘Pre and post-go-live tasks’ (chapter 6, section 6.4, page 79)
An important task that could be mentioned under this section would also be to ensure that users know their username and password (otherwise they will not be able to log on and use the system once go-live occurs).

‘**Managing the transition in a staged implementation’ (chapter 6, section 6.6, page 80)**

Real life examples of how organisations have managed the transition in a staged implementation would be invaluable to users of the Guide.

Other things to consider and would be constructive to discuss in this chapter would be:

- 24 hour support
- A system for logging incidents at the go live
- Support staff hand over at end of shifts. Discuss common issues and solutions.
- Communications
    - Clinical Managers and Users
    - Support phone number or process for obtaining help
    - Educate staff on the ongoing support process
    - Go live information with end users

CHAPTER 7 “STAGE 5 : ONGOING OPERATIONS” (pages 83-88):

This chapter is fairly short and generalised, yet provides the Guide user with broad information about maintaining an EMM system. Importantly, the chapter makes strong emphasis on continual training and refreshers for staff. Useful information included the examples of ongoing maintenance of EMM system databases (table 7.2, page 85), and the mention of a multidisciplinary team required to monitor ongoing operations - otherwise an organisation would run the risk of it just being put in the hands of one specialty (e.g. pharmacy or ICT), which could be more difficult to manage.

‘Post implementation review’ (chapter 7, section 7.1, page 83)

This section lacks adequate information about what should be included in the post implementation review (PIR) as a number of areas could be subjected to PIR:

- Effectiveness of planning and implementation process
- Evaluation of communication, training and education
- Assessment of EMM utilisation by users
- Users feedback on specific factors – drug alerts, order sentences etc should be looked at in the post implementation review, would be useful in this section.

It is noted that Section 4.6.6, pages 57-58, makes some generic references to PIR however it would be of benefit to expand on this information under section 7.1 or in the very least a reference that some suggestions on PIR are available in Section 4.6.6. may be of assistance to the Guide user. Samples of EMMS implementation PIR (international or national) or even examples of de-identified PIR’s conducted by the early EMMS implementers could become an

instrumental guide to future EMMS implementers. Hence, our recommendation is to:

- Include de-identified PIRs of the early EMMS implementers
- Include references on EMMS specific PIR (international or national)

CHAPTER 8 "FUNCTIONAL AND TECHNICAL SPECIFICATIONS" (pages 89-127):

We found this chapter included a great deal of constructive information of what needs to be included in an EMM system that would be implemented into the hospital (for example the inclusion of references for further reading on page 89 is useful in this section as allows further detailed investigation by hospitals implementing these systems).

However, once again during this chapter of the guide there does appear to be a slant towards implementation in a public hospital. Some examples of this include the following:

There are quite a few referrals to formulary and non-formulary items (e.g. chapter 8, section 2.3, page 103), in our hospital there is no such thing as a formulary. It would be helpful if it was acknowledged that not all hospitals have a formulary set up and information given specifically about what occurs in hospitals that do not have a formulary (also see feedback in introductory section in reference to private hospitals and formulary).

Throughout the whole document, and in chapter 8, there appears to be an assumption that a junior doctor will be around and available to amend the electronic medication chart. This is not always the case with private hospitals due to the fact that the majority of our prescribers are visiting medical officers (VMO's), who often have admission rights at several hospitals. Although the argument could be put through that they could log on externally this may not always be possible (e.g. if they are in-transit from one hospital to another).

Again in private hospitals, due to VMO's not always being on the premises, pharmacists and nurses may take on a larger role than they do in public hospitals. For example, as mentioned previously, in our hospital recording of medications on admission may often be done by nurses or pharmacists and not by doctors. Relying on the doctor to input 'on admission' medications would not be feasible if the patient is admitted in the evening and the VMO does not get to do their review until the next morning (as there may not be any JMO's on site to input this data). More specifically for pharmacists, the scope of a pharmacists work in chapter 8 appears to be quite narrow. For example there are a few mentions of nurse initiated medicines and what to do, however no mention of pharmacist initiated medicines (as discussed above in the feedback for the introduction section).

Also, similar to the feedback about references in the preface section, the guide states that it is partially based on the experiences of sites that have already implemented EMMS. From our review of the content of the guide, we found that is would have been useful to have a lessons learnt/issues faced summary section at the end highlighting the major problems encountered by pilot sites, and possibly how they overcame these problems. The boxes throughout the document detailing some of this information were useful but a section at the end bringing this information together would be useful to refer to (rather than having to flip through and find the boxes throughout the document).

With regard to the current information boxes located throughout the guide, there needs to be a consistency in the type of information displayed in the information boxes and the content inside them. An icon to distinguish between the different types of information would alert the reader to what the content is.

For example:

Icon	Key
	Warning
	Tips
	Info
	Experience
	Risk

The content contained in these information boxes should be numbered and repeated in an Appendix where the reader can read all of the Warnings, Tips, Info, Experience, or Risks. This would be another option rather than having a specific section at the end as mentioned above.

Other comments on this chapter for consideration of the commission are discussed below. General feedback included:

“Timely access to medication order data” (chapter 8, section 1.0.3, page 95)
It may be beneficial to also put in this section that the system needs to be fast, reliable and accessible from many places for this to occur.

“Onscreen display of medicine information” (chapter 8, section 1.0.7, page 96)
In addition it may be useful to have a diagram under this section, rather than just a paragraph, as it could improve clarity of what is required. There is also a

reference to ‘Tallman lettering’ in this section, but no example of what this entails. Feedback has been that an example would be useful for those using the guide from a non-clinical background, who may not be familiar with the concept (however it is acknowledged a reference is provided).

Potential clinical issues we envisaged arising from implementation of an EMMS from the current content in the guide include:

‘Entry of medicine name, form, frequency, route, strength and dosage’ (chapter 8, section 2.1.1, pg 100)

This section mentions a lock out dose function (should prevent ordering or administering of a medication) when you reach the maximum doses for one day. However it possibly should also point out something of an override option for this function as there may be cases where higher doses are used (e.g. palliative care). Another situation where this may be an issue is when the doctor specifies a maximum dose for the day, but then after contact with the nurse, may agree to raise the original defined maximum dose - in these cases an override system can be required. Even if this is restricted to prescribers it would still be useful.

‘Patient information present on every screen’ (chapter 8, section 1.0.14, page 99)

There is a suggestion of using home address as an additional method of identifying a patient, if the patient has the identical name as another patient. It may be more appropriate to suggest something fixed such as date of birth (as home address may change).

With regard to the latter (technical) components of chapter 8, the following is our feedback:

‘Technical components-software’ (Chapter 8, section 8.0.3, pages 118-119)

It would be a good idea to include a section (or comment box) detailing the possible options of using an integrated system or a standalone EMM system. It would also be helpful to list the strengths and weaknesses of each option. This will help in the planning phase to determine what system is going to be chosen.

E.g. (very generalised and system dependant)

	Integrated system	Standalone EMM system
Strengths	Less CIS support required Better drug/allergy checking	Potential for more specific functions
Weaknesses	Possibly less customisable	Interfaces required. Higher CIS support required

In addition, there are lots of standards and references. People may not read all the referenced text. It would be good to summarise it for the reader.

‘EMM system interface requirements’ (chapter 8.3, section 10.0.1, page 121)
The ability to interface with other systems is critical. This is the other reason why a fully integrated system should be considered. The real issue is the decision support benefits that can be gained from having all the information and performing intelligent checks (for example allergies and drug reactions).

‘Technical components- hardware’ (chapter 8, section 8.4, pages 123-127)

- Section 11.0.3 Development environment is also required.
- Section 12.0 Devices section is very thorough and useful.

‘Technical components- business continuity management’ (chapter 8, section 8.5, pages 127-131)
If the system is not consistently available for use the disruption to the business will be significant, so adequate BCM must be considered to ensure the system is consistently available for use.
Various options to discuss should be:

- Downtime procedures
- Backup
- Failover
- Vendor SLA’s

CHAPTER 9 “FUTURE CONSIDERATIONS” (page 133):

It would be useful to have information about how an EMMS system will tie in with current other information technology projects such as:

- PCEHR (Personally controlled electronic health records)
- National ID (Healthcare Identifiers- HI)
- Other projects by NEHTA (National E-Health Transition Authority)

Will the EMMS system implemented need to have the capacity to access and store this new information, or is this something that will have to be upgraded in the near future if an EMMS system is implemented now?. This kind of information would be useful to include in the guide for people considering implementing an EMMS system into their hospitals. Several of our visiting medical practitioners raised questions of this nature and to whether the installation of an EMMS system may be redundant if these other electronic healthcare advances are going ahead.

Conclusion

This document has been written in collaboration with a number of different people performing various roles. This is because UCH wanted to ensure that the feedback provided was comprehensive across the various disciplines that would be involved in a project of this nature.

We have conducted the review involving Pharmacists, Project managers, IT consultants and interviews with leading stakeholders within the organisation particularly the medical staff.

We hope that the information provided is useful to the Australian Quality and Safety commission for the review of this important area of health care information management. We are happy to participate in any further processes to ensure that this meets the requirements of the private hospital sector.