Executive Summary
This summary contains the key information from the complete resource which is published separately.

For more information on the good practice guide or if you have any questions or feedback, please do not hesitate to contact the medicines team, Healthcare Improvement Scotland on 0131 623 4300.
Background

The clinical risks associated with an inadequate system or poor implementation was highlighted as one of the key barriers to implementing electronic prescribing and medicines administration in a scoping exercise undertaken by the Scottish Government in NHSScotland in 2012.

The Scottish Government subsequently funded a commission, led by Healthcare Improvement Scotland, to develop a resource to support the consistent and safe implementation of electronic prescribing and medicines administration systems in NHSScotland. The work of this commission is complementary to that of another Scottish Government commission, ‘Improving the electronic exchange of patient information between primary and secondary care’ (Closing the Loop).

Healthcare Improvement Scotland worked with a consortium of NHS boards to produce the Implementing an Electronic Prescribing and Medicines Administration System: a Good Practice Guide. In March – June 2013, multidisciplinary interviews and focus groups were conducted with 87 participants to identify lessons learned and best practice on the implementation of electronic prescribing and medicines administration systems in NHSScotland (including chemotherapy electronic systems). The qualitative data from the interviews and focus groups were triangulated with the published literature and local evaluations to generate the recommendations included in the guide.

The material prepared was peer reviewed by the commission’s project board, reference group and academic advisers to determine their practicality and usefulness.

The guide provides information and tools for a wide multidisciplinary audience to support the consistent and safe implementation of electronic prescribing and medicines administration systems in Scotland. The guide contains:

- **key messages** – high level statements describing the three key areas identified as being critical to a safe and successful implementation of an electronic prescribing and medicines administration system:
  1. governance and risk management
  2. leadership and organisational change
  3. technology

- **recommendations, self-assessment checklists and action planning tools** for the three key areas

- **five case studies** from within NHSScotland which illustrate different NHS board approaches and experiences to business planning and/or implementing electronic prescribing and medicines administration systems, and

- **benefits realisation** - an exploration of the challenges associated with determining the benefits and cost-effectiveness of electronic prescribing and medicines administration systems.
Strategic context

Medicines represent the most frequent healthcare intervention – treatment with medicines save lives, controls and cures diseases and provides symptom control. The majority of medicines used in hospitals are prescribed and administered using a traditional paper-based chart system.

However, we know that the safe and effective prescribing and administration of medicines is challenging. The published literature describes the nature and extent of the problem of medication-related incidents. Examples include:

- 1 in 10 patients experience a medication error while in hospital\(^1\)\(^2\)
- approximately 7% of hospital admissions are due to medicine-related adverse events\(^3\), and
- as patients move between different care settings, there is an 18-60% discrepancy in medication on admission to hospital and an 11% discrepancy in discharge medication\(^2\)

There is significant multidisciplinary enthusiasm for the development of hospital electronic prescribing and medicines administration both nationally and globally. NHSScotland Quality\(^4\) and eHealth\(^5\) strategies share the common ambition of delivering safe, effective person-centred care. Recently in Prescription for Excellence, the Scottish Government has endorsed the implementation of electronic prescribing and medicines administration in secondary care to allow for electronic capture of prescribing data and sharing of information for the development of pharmaceutical care.\(^6\) Furthermore in Scotland, the Scottish Patient Safety Programme includes work to reduce the risks associated with high risk medicines and medicine reconciliation in acute adult, primary care, mental health and the maternity and children’s quality improvement collaborative (incorporating maternity care, paediatric care and neonatal care). These programmes have highlighted the need for safe and effective recording and transfer of information on patients’ medicines within and between care settings.

In Scotland, electronic prescribing and medicines administration will be key to delivering these strategies through managing the avoidance of harm and a substantial area of NHS spending. Electronic prescribing and medicines administration systems have the potential to enhance patient safety through:

- reducing the number of transcription, prescribing and administration errors
- providing a sustainable hospital solution to contribute to accurate and efficient medicine reconciliation and communication of medicines information at all points of patient transfer, including on admission and discharge
- greater consistency in clinical practice
- strengthened information governance by providing a robust audit trail
- being a key component of the electronic patient record, and
- the provision of rich patient identifiable data on medicines use in secondary care which can be utilised to manage medicine effectiveness, monitor prescribing patterns, improve clinical practice and patient safety and support clinical research.
The electronic prescribing and medicines administration system (like paper systems) will underpin how medicines governance is delivered within an organisation. Consequently, the directors of pharmacy and area drug and therapeutics committees are crucial in supporting the implementation, maintenance and optimisation of these electronic prescribing and medicines administration systems.

To deliver on the eHealth strategic aim of “improving the safety of patients taking medicines and their effective use”,3 the vision is for a single, shared medication record that moves with the patient and is kept up to date by the current prescriber. As described in the eHealth strategy 2011-2017, the future state will be where all NHS boards have implemented electronic prescribing and medicines administration systems with integral clinical decision support interfaced with other clinical eHealth systems, including laboratory systems and primary care.

Scotland has strategically committed to the need for electronic prescribing and medicines administration systems which must be as safe as the current paper-based system whilst providing a foundation for improving the safe and effective use of medicines. Therefore, where implemented, hospital electronic prescribing and medicines administration systems need to, as a minimum, safely replace the paper prescribing and administration record currently in use in the majority of hospitals across NHSScotland.

An incremental approach to achieving the vision is described in Figure 1. Safely transferring from paper to electronic medicines prescribing and medicines administration is the first step in a continuous journey of planning, implementation, development and optimisation.7 The incremental approach thereafter can be discretionary and linked to individual NHS board needs and eHealth priorities. National standards for hospital electronic prescribing and medicines administration systems are included in the complete resource.
Figure 1: An incremental approach to hospital electronic prescribing and medicines administration

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<thead>
<tr>
<th>Stage 1 – Replace paper chart</th>
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<td>Safely move from paper prescribing and administration charts to an electronic prescribing and medicines administration system</td>
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<th>Stage 2 – Add decision support and eDischarge</th>
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<td>Activate automatic decision support (allergies, drug interactions, therapeutic duplicates)</td>
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<th>Stage 3 – Integrate with other clinical applications and EPR</th>
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<tr>
<td>Implement rules based decision support linking laboratory and other data</td>
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Key messages

The key messages from the work of the commission are presented as:

- the three essential elements identified as being critical to the safe and effective implementation of an electronic prescribing and medicines administration system:
  1. Governance and risk management
  2. Leadership and organisational change
  3. Technology
- benefits realisation.

The key messages are underpinned by more detailed supporting information and checklists contained within the complete resource and are based on published evidence and NHSScotland experience.
Governance and risk management

An electronic prescribing and medicines administration system may only be procured and implemented in NHSScotland if it has been:

- successfully tested against the national operational requirements and associated test scripts and
- meets the required safety requirements associated with moving from a paper-based to an electronic system.

The implementation, maintenance and optimisation of electronic prescribing and medicines administration systems is underpinned by robust medicines governance arrangements which are similar to and managed in accordance with medicines governance for non-electronic prescribing and medicines administration and local eHealth governance arrangements.

Leadership from the NHS board’s medical, pharmacy and nursing directors is essential.

Engagement and ownership by the area drug and therapeutics committee is essential.

Formal risk management procedures are in place to identify, report, document and investigate all incidents in relation to electronic prescribing and medicines administration, including the potential risks associated with operating a dual (paper and electronic) system.
The biggest challenge for the implementation of electronic prescribing and medicines administration system is not the system itself, it is managing behavioural change and helping people adapt to new ways of working.

The implementation of an electronic prescribing and medicines administration system requires organisational ownership and is best effected through multi-professional and clinical leadership from medical, nursing and pharmacy directors, support from a dedicated project management resource, and a project plan. The project plan supports all phases of the implementation and the important transition to ongoing maintenance (business as usual) and improvement and development.

Training for all grades of healthcare professionals required to use the electronic prescribing and medicines administration system is mandatory both before go live date and on an ongoing basis. Organisation-wide support for training is essential and the resource required to organise and deliver training is significant. An agreed training plan is developed which identifies and mitigates the potential risks associated with training. The training plan also outlines who requires training, when and how training will be delivered, and what training materials will be developed.

Effective communication is critical to the success of the implementation of an electronic prescribing and medicines administration system. The project is supported with strong communication based on a communication plan. Managing expectations is part of the communications strategy and engaging and involving all wards and departments and clinical groups and committees is essential. The timing of engagement is critical and starts when the project is being strategically considered.

Significant human resource is required to support users of the electronic prescribing and medicines administration system. This is key for a safe and successful implementation. Of equal importance is the resource allocation to allow ongoing maintenance and development of the system. Continuous clinical, technical and supplier support is required during the initial implementation and also ongoing. This support must be available both in and out of hours 24/7/365, with queries dealt with appropriately to avoid potential risk to patient safety through delay.
Technology

An electronic prescribing and medicines administration system may only be procured and implemented in NHSScotland if it has been:

- successfully tested against the national operational requirements and associated test scripts and
- meets the required safety requirements associated with moving from a paper-based to an electronic system.

The NHS board’s IT infrastructure is invested in, maintained and developed to ensure it is sufficiently robust, reliable, accessible and responsive to support the clinical need associated with a real-time electronic prescribing and medicine administration system.

Electronic prescribing and medicines administration systems must have robust IT infrastructure and support:

- a scalable and sustainable deployment of the electronic prescribing and medicines administration system
- carefully planned integration of the electronic prescribing and medicines administration system with other clinical applications and systems - as a minimum real-time patient admission to the electronic prescribing system is an absolute dependency
- an agreed testing, implementation and maintenance plan
- security arrangements in accordance with local policy, including anti-virus software and firewalls
- each user having a unique username and password which will not be shared (as defined in Statutory Instrument 2008, number 1692 which defines the requirements for prescriptions in electronic form), and
- clinical (medical, nursing and pharmacy) and eHealth teams to work collaboratively to determine the requirements for equipment to ensure there is adequate availability and accessibility to support standardised but variable clinical processes.

Electronic prescribing and medicines administration is included in hospital business continuity plans and the NHS board view it as a priority to prevent service disruption.
Benefits realisation

NHSScotland experience to date indicates that hospital electronic prescribing and medicines administration systems provide an important foundation for improving the safe and effective use of medicines thereby providing an opportunity to enhance patient safety in both acute and primary care settings.

However, as yet, there is relatively limited published evidence on the benefits of electronic prescribing and medicines administration in improving outcomes for patients. In addition evaluating the impact of electronic prescribing and medicines administration systems is complex and internationally there is agreement that costs cannot at present be readily ascribed to the benefits of these electronic systems.

NHSScotland supports the approach to benefits realisation that is focused on the broader strategic and quality benefits of electronic prescribing and medicines administration systems linked to NHSScotland policy and strategy. It is expected that this will ultimately accrue financial benefits. NHS board business cases should be based primarily on the safe and effective use of medicines, whilst recognising the potential indirect financial benefits arising from patient, quality and strategic benefits (for example a reduction in medication errors and potential efficiencies in nurse time spent administering medicines).

Considering how progress with implementation will be monitored and evaluated to ensure the benefits are realised and unforeseen or unanticipated consequences are identified is recommended. This will help inform decision-making not only in local NHS boards and across NHSScotland, but also internationally.

While the commission has provided clarity on current evidence and expert opinion on benefits realisation, it will be important to review emerging learning as experience of implementing electronic prescribing and medicines administration systems in NHSScotland grows. It is considered that investment in long term resources for improving electronic prescribing and medicine administration systems will be necessary to realise the anticipated benefits.
Conclusions

Electronic prescribing and medicines administration systems have the potential to enhance patient safety. In Scotland electronic prescribing and medicines administration will be key to delivering the Quality and eHealth strategies through managing the avoidance of harm and a substantial area of NHS spending. These systems (like paper systems) will also underpin how medicines governance is delivered within an organisation.

However, electronic prescribing and medicines administration systems present significant risk to patient safety if not implemented safely. Hospital electronic prescribing and medicines administration systems need to, as a minimum, safely replace the paper prescribing and administration record currently in use in the majority of hospitals across NHSScotland. *Implementing an Electronic Prescribing and Medicines Administration System: a Good Practice Guide* contains information and tools to support NHS boards in Scotland to safely, effectively and consistently implement these electronic systems.

An electronic prescribing and medicines administration system may only be procured and implemented in NHSScotland if it has been successfully tested against the national operational requirements and associated test scripts and must meet the required safety requirements associated with moving from a paper-based to an electronic system.²

Transferring from paper to electronic prescribing and medicines administration systems is the first step in a journey towards achieving the NHSScotland ambition where all NHS boards have implemented electronic prescribing and medicines administration interfaced with other eHealth clinical systems, including primary care.
References


