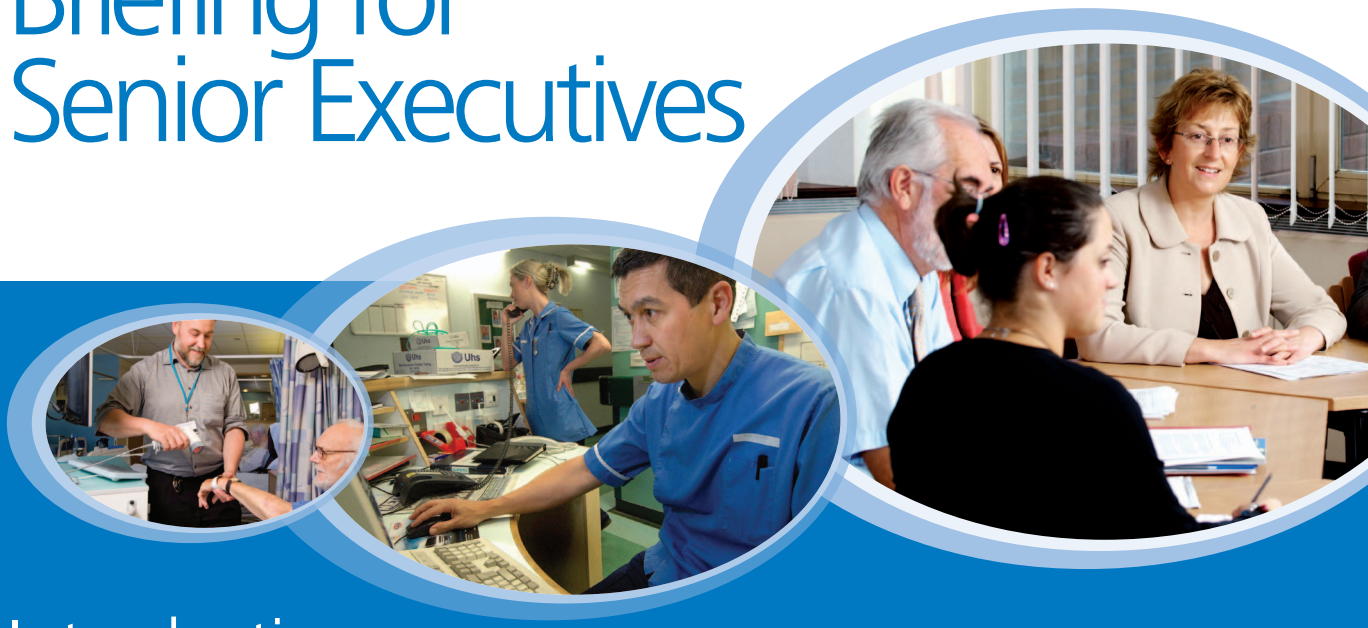
NHS
Connecting for Health

Electronic Prescribing:

Briefing for Senior Executives



Introduction

Electronic prescribing (ePrescribing) systems can help improve the safety and efficiency of healthcare by aiding the choice, prescribing, administration and supply of medicines.

The safety and effectiveness of ePrescribing systems depends on all staff groups being actively engaged in their development and use.

Benefits of ePrescribing include:

- Prescribers accurately and clearly enter complete medication orders.
- As they do this the system can provide relevant patient information, for example on allergies, as well as details about drugs. ePrescribing systems can also offer advice or warnings as prescribing takes place.
- Prescription data can be stored securely and communicated to other members of the healthcare team without the risk of paper records being lost.
- Pharmacists can access drug orders remotely using the computer, and check and amend as required.
- Nurses who administer medicines have clear and legible medication orders. The system may help them to prepare for drug rounds, confirm the identity of patients, and record administration.
- Medication records can be accessed remotely by healthcare professionals.

Not all ePrescribing systems fully support all these aspects of medicines use, but most do to some degree.

ePrescribing systems provide a full audit trail and the data they hold allow many innovative uses that can help in medicines management and support a culture of reflective practice.

ePrescribing is a powerful and important innovation for the whole care team. When ePrescribing projects are being planned it is important that all healthcare professional groups are involved and that they remain involved as the system comes into use.

A successful initial implementation is the start, not the end, of running a successful system.

Gateway ref: 11896

Electronic prescribing: a commitment to change

To commit to the implementation of an ePrescribing system, certainly a trust-wide one, is a big decision. It represents a commitment to a substantial expenditure but, more significantly, a commitment to substantial hospital-wide change. The decision to spend money can be made by senior managers on the basis of a strategic judgement that includes careful evaluation of costs and benefits, but the commitment to change can only be made and sustained by the whole trust.

So the first step in approaching ePrescribing is to explore the driving motivations to embark on the project and to assess the level of commitment across the trust.

ePrescribing can offer a trust a number of strategic benefits around quality, safety and efficiency. These systems help to monitor and control the cost-effective use of medicines from patient to ward to trust level. They also provide a reliable audit trail of who has done what and when, providing the basis for audit and the development of improved medicines management and use. For example, the infection control team can gain detailed antibiotic use data, more accurate and comprehensive than that available from a paper-based prescribing system. ePrescribing can also support accurate costing of the medication for specific patients or patient groups.

ePrescribing systems also have an important place in wider strategies for the implementation of an electronic patient record and the NHS Care Records Service. They can also be important in improving processes of care. For example, significant improvements in patient discharge procedures can be built upon ePrescribing.

Strategic reasons for undertaking an ePrescribing implementation may be varied, as set out above, but at the centre of most projects is a commitment to reduce medication errors and adverse drug events.

We know that these errors occur. For example, UK studies[1] show that:

- Prescribing errors occur in 1.5-9.2% of medication orders written for hospital inpatients.
- Dispensing errors are identified in 0.02% of dispensed items.
- Medication administration errors occur in 3-8% of non-intravenous doses and about 50% of all intravenous doses.

Given these figures, and the general understanding that medication errors are one of the major preventable sources of harm in healthcare, it is not surprising that computerisation of prescribing and administration processes is often advocated as a way to reduce these errors[2-4].

Indeed, there is some evidence that ePrescribing systems can help. Research undertaken in the USA has shown that computerised provider order entry (CPOE) systems that include ePrescribing can be remarkably effective. For example, in one study they reduced error rates by 55% and serious medication errors by 88%[5, 6].

These improvements are largely attributed to the use of structured orders and checks as well as more extensive decision support by prescribers. Other studies have shown length of stay reducing by nearly a day following implementation of CPOE[7]. It has been asserted that introducing CPOE into US hospitals could prevent between 570,000 and 907,000 serious medication errors each year[8].

However, these studies, and their findings, must be carefully assessed. They come from a few early adopter sites in the USA, which has a very different health system and uses very different ways of prescribing and administering medication. These sites also usually use software designed specifically for them and developed over many years. It is not clear if, how rapidly, or to what degree, these benefits might be seen in the UK.

Given the distinct and different context of UK hospitals, prescribing practices, clinical pharmacy monitoring and the use of commercial packaged software, we should treat this evidence cautiously. It can certainly point to areas in which benefits might hope to be seen, and it can help implementers to collect appropriate base-line data so that they can monitor outcomes. What it cannot do is set sensible benchmarks for expected benefits soon after implementing a system. Rather, benefits are most likely to accrue from continued development of such a system once it is installed and as it is integrated into processes of care together with other clinical information systems.

ePrescribing systems can trap many types of simple prescribing error, but by no means all. In practice, the decision support that systems offer to prescribers is usually limited – certainly in the initial phases of use. Thus, ePrescribing will not mean that pharmacists no longer need to screen (check) new prescriptions, although it may allow a more effective use of the 'ward pharmacy' workforce, particularly in hospitals with wards spread out over a large campus.

Finally, senior managers need to strongly promote the idea that the data contained in ePrescribing systems must be accessible as a resource for both management and clinical audit purposes. Easy report writing facilities are essential and this valuable data must not remain inaccessible in the system.

Clinical Decision Support

ePrescribing systems provide various degrees of clinical decision support (CDS) to help prescribing and administration of medicines. CDS ranges from the very basic - access to a drug dictionary – to the more complex, such as checking medication orders against patients' laboratory results.

CDS can be roughly divided into two areas: decision constraint, stopping people doing daft things, and decision support, guiding and informing users.

Initial ePrescribing implementations will usually have limited decision support – focused mostly on constraints – but, with experience, more active support, warnings and context-specific guidance can be added.

Leading the move to ePrescribing

Trust senior managers have a pivotal role in ePrescribing, authorising expenditure on hardware and software, and approving the establishment of additional staff posts. Among the key areas they must be engaged in are:

- Establishing the overall vision of ePrescribing, and its place in the wider strategy of the trust, including in relation to electronic medical records.
- Communicating that vision and keeping all senior staff committed throughout the project.
- Providing visible endorsement of the project, supporting the ePrescribing team through the inevitable ups and downs.
- Supporting baseline audits of key factors or issues where it is anticipated ePrescribing will drive change or address poor practice.
- Supporting appropriate budgets for a safe and appropriately staffed project that can continue into the necessary support service (staff and equipment) throughout the life of the system.
- Helping to maintain the project timeline by coordinating funding and procurement activities.
- Celebrating success when it comes.

ePrescribing systems can contribute to better healthcare

Reduction in the risk of medication errors as a result of:

- More legible prescriptions.
- The requirement for complete medication orders.
- Alerts for contra-indications, allergic reactions and drug interactions.
- Useful guidance for both inexperienced and experienced prescribers.

Process improvements as a result of:

- Improved communication between different departments and care settings.
- Reduction in paperwork-related problems - fewer unavailable or illegible drug charts.
- Clearer, and more complete, audit trails of medication administration.
- Data made available for analysis, including audit and research.

Leading the move to ePrescribing

ePrescribing projects vary in their scale and ambition. They range from introducing systems that embody the whole medicines use process on the scale of a whole hospital, through to systems intended to support a specific clinical specialty, or systems that are just focused on one part of the medicines use process such as prescribing, administration or discharge. Systems can also be more or less integrated with other clinical applications. A 'whole hospital' project is different in scope and scale to smaller pilots, but might in some ways be easier to manage and safer too – fewer handovers or multiple systems in use. Put another way, integration of ePrescribing with the overall clinical work flow, as well as with other clinical information systems, is a challenge, but is also the basis of its many benefits.

The wider scale (whole hospital) and wider scope (whole medicines use process) is certainly desirable in order to exploit the possibilities for improved and safer care. The benefits of ePrescribing for a hospital or trust come from wide-spread use in joined-up care giving. Fragmented or partial use, and lack of continuity of care, at best dilute the benefits and probably lead to new risks.

Limited approaches may also undermine the economies of scale in the support and infrastructure needed for ePrescribing – for example in justifying the required training and technical development resources. Experience suggests that systems that only serve one part of the medicines use process, for example handling discharge

A 'whole hospital' project is different in scope and scale to smaller pilots, but might in some ways be easier to manage and safer too

prescriptions, while offering an 'easy' entry into ePrescribing, represent a potential dead end that may offer no strategic way forward to integrate ePrescribing with other systems and work practices.

Having a vision of a whole hospital, whole medicines use process system is important, but that is not to say that everything can be achieved all at once, or that there may not be good reasons to make specific alterations, adaptations or refinements to reflect a particular context. For example, in some areas

of care (e.g. critical care, oncology) there may be sound reasons to choose and use specialist systems that are different from those designed for more general implementation. Nevertheless, these kinds of development need equally to be seen as part of this vision.

References

[1]Vincent C, Barber N, Franklin BD, Burnett S. The contribution of pharmacy to making Britain a safer place to take medicines. Royal Pharmaceutical Society of Great Britain: London; 2009.

[2]Audit Commission. A Spoonful of Sugar: Medicines Management in NHS Hospitals. The Audit Commission, London, 2001.

[3]Healthcare Commission. The Best Medicine. Management of Medicines in Acute and Specialist Trusts. Commission for Healthcare Audit and Inspection, London, 2007.

[4]Anon. Electronic prescribing needed in hospitals to monitor use of antibiotics. British Medical Journal 2007;334:712.

[5]Bates DW, Leape LL, Cullen DJ, Laird N, et al. Effect of computerized physician order entry and a team intervention on prevention of serious medication errors. JAMA. 1998;280:1311-6.

[6]Bates DW, Teich JM, Lee J, Seger D, Kuperman GJ, Ma'Luf N, Boyle D, Leape L. The impact of computerized physician order entry on medication error prevention. JAMIA. 1999;6:313-21.

[7]Tierney WM, Miller ME, Overhage JM, McDonald CJ. Physician inpatient order writing on microcomputer workstations: Effects on resource utilization. JAMA. 1993;269:379-383.

[8]Birkmeyer JD, Dimick JB. Leapfrog safety standards: potential benefits of universal adoption. The Leapfrog Group. Washington, DC: 2004.

ePrescribing in hospitals

This briefing is one of the outputs of a project commissioned by NHS Connecting for Health (NHS CFH). The project involved gathering experiences and opinions from people in a number of hospitals in England who had been part of the implementation of ePrescribing systems. The ideas presented here are based on the actual experiences of NHS staff who have worked on ePrescribing implementations.

A copy of the full report and briefings aimed at other staff groups can be found at: www.connectingforhealth.nhs.uk/eprescribing

Any comments or queries about the briefings or report should be directed to the ePrescribing programme at NHS CFH at eprescribing@nhs.net

Ref: 4464