

Electronic prescribing

— developing the solution

By Bob Hammond

This article describes progress with NHS Connecting for Health's electronic prescribing programme. It outlines the draft functional requirements for electronic prescribing and describes pharmacy involvement in its development



NIKOLAI SOROKIN/DREAMSTIME

Potential benefits of electronic prescribing (ePrescribing) in reducing medication errors and improving communication are widely recognised by hospital pharmacists, as described in the first article of this feature (p217).

The ePrescribing programme within NHS Connecting for Health (NHS CfH) reached an important milestone in February when the ePrescribing functional specification was published. The specification sets out the functionality identified by clinician as being required in ePrescribing systems and will play a key role in guiding software development by NHS CfH's suppliers, the local service providers (LSPs).

Most acute and mental health trusts in England will deliver ePrescribing via LSP software, so the development of the specification is important for hospital pharmacists, doctors, nurses, midwives and allied health professionals.

Background

Evidence suggests that hospital pharmacists already recognise the potential value of ePrescribing. A recent survey indicated that senior pharmacists regard it as the most useful measure (among a range of options) offered for reducing medication errors

Bob Hammond is stakeholder and communications manager, ePrescribing programme, at NHS Connecting for Health

during both prescribing and administration, although it was also perceived to be the most difficult to implement of the measures listed.¹

More recently, the Healthcare Commission's annual medicines management report indicated that many acute trusts were keenly awaiting the arrival of a national ePrescribing solution in England.²

ePrescribing is expected to have a major role to play in the NHS's efforts to reduce medication errors and adverse drug reactions.

What is ePrescribing?

The ePrescribing programme's definition of ePrescribing appears in Panel 1.

Broadly, ePrescribing systems will involve:

- Computerised entry and management of prescriptions
- Decision support, aiding the choice of medicine and other therapies
- Support for the administration of medicines
- Knowledge support, giving users immediate access to up-to-date drug information (eg, the British National Formulary) and local information such as procedures and protocols
- Electronic links between hospital wards/departments and pharmacies
- A robust audit trail for the entire medicines use process
- Ultimately, links to other elements of patients' individual care records

- The ability to work with pharmacy systems, such as stock control
- An element of customisation to take local processes and priorities into account (eg, in local formularies and clinical protocols)

ePrescribing will therefore support health care professionals at all stages of the medicines use process.

dm+d ePrescribing systems will be underpinned by the dictionary of medicines and devices (dm+d), a dictionary containing agreed unique identifiers and associated descriptions for medicines and medical devices.

This will help make ePrescribing systems work with other NHS IT systems, enabling safe and reliable exchanges of information and effective decision support.

Panel 1: Definition of ePrescribing

The ePrescribing programme defines ePrescribing as "the utilisation of electronic systems to facilitate and enhance the communication of a prescription or medicine order, aiding the choice, administration and supply of a medicine through knowledge and decision support and providing a robust audit trail for the entire medicines use process".

Panel 2: What is in the ePrescribing functional specification?

The functional specification has been written in such a way as to be accessible to health care professionals and other stakeholders, in addition to IT professionals responsible for software development.

General system requirements

The document begins by outlining general system requirements (those which encompass all clinical specialties) under the following headings: overarching principles, assessment, prescribing, parenteral medicines, prescription modification, formulary and order sets, reporting, administration, discharge, outpatient medicines, medicines management and "drug reference file". Examples from some of these categories include:

Overarching principles

- The system must provide comprehensive facilities to support electronic prescribing, medicines administration and dispensing, or links to activities including dispensing worksheets, treatment/patient labels, dispensing and storage details
- Access to the system by any user must be password protected

Medicines management

- Two-way links/integration with the appropriate pharmacy system must be in place to facilitate the supply of medicines for all situations using standard NHS message standards. Information should be transferred automatically so that rekeying of data is not required (ie, patient demographics and medicines details with associated dose directions)

Drug reference file

- Use of generic drug names must be the primary mode of display within the system unless there are defined reasons to use a proprietary name (eg, modified release, combination products or insulins)

Administration

- The system must link decision support to administration together with any local information available to ensure that all warnings and notes are available at the time the medicine is to be given

Outpatient medicines

- The system should default to outpatient mode if the prescriber is accessing a record for outpatients

Specialty-specific requirements

The specification then outlines requirements specific to clinical specialties, reflecting the reality that different clinical specialties will often require different things from ePrescribing. Anaesthetics and critical care are good examples. In these specialties:

- Medicines are often administered by the prescriber, thus prescribing and administration may be required as one action
- Monitoring may be required to inform actual medicines or doses to be administered. Prescribing can be extremely complex involving many different combinations of medicines
- The recording of variable dosing/changes to other agents will be required
- Routes of administration may be complex, with the use of multi-lumen lines, for example
- Patients may not be conscious

These differences in prescribing and administration practice are reflected in the separate requirements listed for specialties, which include accident and emergency, dermatology, elderly medicine, rheumatology, oncology and mental health.

The specification acknowledges that in some cases specialty-specific requirements may be pertinent to more than one clinical specialty and should therefore be viewed as being available for use in other clinical specialties if required.

Decision support

Decision support forms the last section of the ePrescribing functional specification and several requirements are listed. The specification acknowledges that decision support will, for the most part, be similar in all specialties although there will be specific contextual rules that need to be developed for specific circumstances. There is a subsection covering the issues associated with paediatric decision support.

It is important to emphasise that the ePrescribing programme is separate from another NHS CfH programme, the electronic prescription service, which provides for the transmission of prescriptions between prescribers and dispensers in primary care. Both programmes share the common goal of reducing medication errors but differ in terms of functionality and users.

Who will be affected?

ePrescribing will impact on and require the support of everyone who prescribes, supplies or administers medicines. In addition to doctors and hospital pharmacists this will include nurses, midwives and allied health professionals such as radiographers and physiotherapists.

Many other NHS employees will also have an interest in the implementation of ePrescribing — from senior management teams within trusts to the information technology teams which will provide local support to the systems.

The programme

The objectives of the ePrescribing programme are to:

- Ensure that relevant specifications and standards are in place against which ePrescribing systems can be developed in a consistent way
- Work with strategic health authorities (SHAs), NHS trusts and LSPs to ensure the delivery of fit-for-purpose ePrescribing systems across all care settings in the NHS in England, supporting the delivery of improved health outcomes
- Work with all stakeholders to ensure that the benefits of ePrescribing are fully maximised (this will only happen if systems are accompanied by cultural changes and new ways of working. The programme will work with SHAs to highlight appropriate change management processes to support the introduction of ePrescribing systems)

The programme is making progress against these objectives. Publication of the ePrescribing functional specification followed nine months of extensive stakeholder engagement. Given the wide range of users and the high level of interaction they will have with ePrescribing systems, the programme recognised that engagement with practising health care professionals and their professional bodies would be crucial. Experience dictates that user acceptance is essential to the success of ePrescribing systems, and system failure is usually associated with inadequate involvement of users and poor systems design.³

The engagement process was initiated during May and June 2006, when a series of 13 clinical engagement workshops were held. The workshops enabled input from front line NHS staff across various clinical specialties and health care professions. Senior managers in acute and mental health trusts were invited to nominate delegates and, in total, 472 people attended the workshops.

Delegates' input was used to develop the functional specification, which was published in draft form on the ePrescribing website in October 2006, with stakeholders then being invited to comment further. More than 100 organisations and individuals submitted feedback, much of it very detailed, and this was used to refine the specification.

Hospital pharmacy's contribution was significant, with 132 hospital pharmacists taking part in the workshops. Pharmacists contributed the largest proportion of responses on the draft functional specification. The Royal Pharmaceutical Society and the UK Clinical Pharmacy Association together with the Guild of Healthcare Pharmacists gave feedback on the draft.

Other stakeholders, including acute and mental health trusts, the Department of Health and the National Patient Safety Agency, are also being consulted.

— The specification

The functional specification builds on, and clarifies, the requirements originally outlined in the national specification for the NHS Care Record Service in 2003. It outlines immediate, medium-term and long-term requirements for ePrescribing systems, reflecting the views of those who gave input. The requirements are prioritised as 1 (essential), 2 (desirable and would be anticipated as being available in the near future) or 3 (desirable in the longer term).

The functions required are divided into general and specialist categories, as described in Panel 2 (p222). One of the specialist sections focuses on clinical pharmacy. The general principles are:

- Support for the monitoring and identification of patient-specific parameters to optimise the outcome of medicines
- Confirmation of clinical checking of prescriptions
- Recording of the contributions made to care
- Communication of ongoing pharmaceutical care requirements for all care settings

Examples from the clinical pharmacy section appear in Panel 3.

The specification does not address technical requirements, testing needs or system

Further information

The functional specification can be viewed at www.connectingforhealth.nhs.uk/eprescribing. Questions and feedback can be submitted by e-mail to eprescribing@nhs.net.

Panel 3: Clinical pharmacy requirements for ePrescribing

Following are examples of ePrescribing functional requirements in the clinical pharmacy category, which have been assigned priority 1 (essential).

- The system must support the verification of prescriptions by pharmacists. The act of verification should be used as part of the control process for requiring a medicine supply to be made. Once verification has been completed the request, where a supply is required, should be forwarded to the relevant stock control system function.
- It must be possible to record interventions or contributions made by pharmacy staff. These should be incorporated in the entry generated as part of the care record outlined below and feed into the local incident reporting system.
- The system should support the input of pharmacy notes.
- The system must allow the structured capture of pharmacy care records.*
- It should be possible for local access controls to allow pharmacy staff to request drug levels for certain drugs from within the pharmacy specific work areas. Where local access policies allow pharmacists to request levels directly an order should be generated. Where they do not, a direct request should be forwarded to the team responsible for the patient asking for the test be undertaken.
- Alerts that have been generated for drug interactions or other medicine-related issues must be available to pharmacists to view as part of the verification process and generally so that they can see which ones have been overridden or accepted.
- It must be possible to add patient-specific management notes that are highlighted as the defined time during a patient's stay, eg, outlining that there should be no benzodiazepines prescribed or supplied on discharge.
- It should be possible for ongoing pharmaceutical care requirements to be added to discharge information being sent to primary care. It must be possible to add these on an ongoing basis and to edit them at the point of discharge.

This list is not exhaustive (refer to the ePrescribing functional specification for more information).

*The ePrescribing functional specification details what records should contain, and other issues such as access.

roll-out requirements. The document will be regularly updated to reflect changes in policy and practice (eg, legislative changes, evolving clinical practice), following further engagement with health care professionals.

— Delivery

LSPs are contracted to deliver the ePrescribing functions between 2008 and 2010. Within this period elements of functionality will be delivered and implemented in stages. The introduction of ePrescribing will therefore be an evolutionary process, with users being introduced to the functions gradually, in line with local circumstances and priorities.

The functional specification is currently being discussed with each of the three LSPs so that appropriate timescales for delivery can be developed and communicated. The programme will be working closely with

the LSPs at every stage of the design, development, testing and implementation of ePrescribing systems to ensure that user needs are identified and addressed.

— Support

The ePrescribing programme is not just about delivering technology. Among other things, the programme will also be looking to develop best practice guidance for implementation, and to support trusts in managing the transition from paper-based systems to IT systems. The programme will also be investigating how the benefits of ePrescribing can be fully maximised.

— References

1. Miller J, Cross M, Gerrett D, Webb D. A prioritisation of the most effective interventions for reducing medication errors in UK hospitals as perceived by senior pharmacists. *European Journal of Hospital Pharmacy Science* 2006;12:23-8.
2. Healthcare Commission. *The best medicine*. London: Commission for Healthcare Audit and Inspection; 2007.
3. Lee F, Teich JM, Spurr CD, and Bates DW. Implementation of physician order entry: user satisfaction and self-reported usage patterns. *Journal of the American Medical Informatics Association* 1996;3:42-55.

Suggestions for future special features

If you would like to suggest a topic for a future special feature in *Hospital Pharmacist*, or if you are a specialist clinical pharmacist interested in writing about your area of practice, please contact Hannah Pike (e-mail hannah.pike@pharmj.org.uk, telephone 020 7572 2425).