

# Electronic prescribing

## — implications for hospital pharmacy

By **Ann Slee**, MSc, MRPharmS, **Keith Farrar**, MPharm, MRPharmS, **Don Hughes** MSc, MRPharmS, and **Sue Ashwell** MSc, MCPP

Evidence shows that there is much to be gained from electronic prescribing, but there are also risks involved. This article describes the benefits and challenges to hospital pharmacists of the introduction of this technology



**E**lectronic prescribing (ePrescribing) has been heralded as bringing major benefits to patients by reducing the incidence of medication errors and improving communication about medicines.<sup>1</sup> It will also support clinical activity by interacting with knowledge sources and providing decision support at the point of prescribing or administration.

While it is clear that there is much to gain from ePrescribing,<sup>2</sup> there are also cautionary tales of instances where such systems have actually increased error rates<sup>3-5</sup> and have needed to be removed.<sup>6</sup>

The introduction of ePrescribing should be seen as an enabler supporting the development of new ways of working, not as an all-powerful technology that dictates how work should be undertaken. It should facilitate and support change, not require that practice be altered to allow system use.

**Ann Slee** is clinical lead, ePrescribing programme, at NHS Connecting for Health. **Keith Farrar** is clinical lead, ePrescribing, Computer Sciences Corporation. **Don Hughes** is director of pharmacy, Conwy and Denbigshire NHS Trust and **Sue Ashwell** is chief pharmacist and assistant director of commissioning, Cambridgeshire Primary Care Trust. Correspondence to ann.slee@nhs.net

All too frequently, the implementation of technology fails to deliver benefit because the system does not meet needs, or has not been viewed as a way of supporting development. Equally a lack of clinical engagement and leadership within an organisation and a failure to manage the cultural changes required may contribute to less than optimal gain from systems.

The introduction of ePrescribing has implications for hospital pharmacy. This article examines these, looking at the benefits and challenges of implementing this technology. Issues such as how the introduction of ePrescribing is likely to alter current medicines management practice in the UK, what underpinning work will be required and how the profession can avoid falling into the trap of having practice dictated by technology are considered.

### — ePrescribing plans

ePrescribing is one element within the national programme for information technology, delivered by NHS Connecting for Health. The programme aims to provide an electronic care record for the NHS in England that links all areas of care, from primary to tertiary, with access to an electronic record of the relevant care activities for each individual patient.

Within this strategy, electronic prescribing has a major role in supporting a patient's treatment with medicines. It provides information about that treatment to whoever needs that information, whenever they need it, provided they have a legitimate right to access that information.

The system will provide online access, at the point of need, to relevant knowledge and to clinical decision support systems. Features that ePrescribing systems are to possess that will release staff time are set out in Panel 1, p218.

### — Benefits

ePrescribing has a number of documented benefits, including reducing risk by making legible prescriptions available to other members of the health care team and by providing decision support at the point of prescribing using alerts and reminders.

A number of US studies have demonstrated reductions in serious medication errors following the introduction of "computerised physician order entry" (ePrescribing),<sup>8</sup> of up to 86 per cent. Work in the UK has shown how the use of structured prescribing pathways can be customised for different specialties, improving workflow and reducing the risk of error.<sup>10</sup> Further work has

## Panel 1: Staff releasing features of electronic prescribing systems

- Access to prescriptions in multiple locations by multiple system users
- Automatic or semi-automatic stock control
- Legible prescription production
- Medication record availability
- Reminders and alerts, including those relating to formulary choice, to support prescribers at the point of prescribing
- Support for medicines administration
- Note-making facilities to support communication between all health care workers caring for a patient

demonstrated how UK clinicians have benefited from the introduction of decision support alerts.<sup>11</sup>

Electronic prescribing can also be used to facilitate both formulary compliance and cost reduction strategies. In one study, formulary changes were implemented quickly and effectively and the change in prescribing patterns were sustained over a considerable period following changes to prescribing pathways.<sup>12</sup>

Immediate access to a patient's prescription from any networked computer to any authorised user is a feature of ePrescribing systems. There is no longer a need for prescriptions to be sent to a pharmacy department or for a member of pharmacy staff to visit a ward simply to arrange a supply of medicines. Using electronic transmission is not only a quicker way to supply medicines but is also cheaper — supplying medicines this way costs 36 per cent of the price of using traditional methods.<sup>13</sup>

Electronic transfer of information on admission should ultimately allow drug histories to be imported directly into the ePrescribing system. The electronic prescription service (another CfH programme, see p222) will potentially allow dispensing records to become available through the national care records service. Furthermore,

information feeds from other systems, such as direct feeds from community pharmacy systems, may be available in the future. This would streamline the documentation of medication history on admission.

Drug interaction checking, checks on contraindications and dose range checking are all likely to feature within electronic prescribing systems. Electronic capture of drug administration (eg, by the scanning of barcodes on packs) may in the longer term facilitate automatic bedside stock control.

Opportunities for changes to workflow and greater involvement in clinical care are also offered, with one study showing that pharmacists were able to spend 70 per cent of their time on clinical activities in a hospital with electronic patient records compared with around 20 per cent in other hospitals.<sup>14</sup>

### — Implications for pharmacy

The introduction of ePrescribing provides a stimulus for process change within the health care sector. The implications for pharmacy vary depending on what pharmacy staff perceive as their department's role. Whether this requirement for change offers an opportunity or a threat to pharmacy staff depends largely on their ability and willingness to adopt new and different ways of working.

It could be argued that, despite the development of clinical pharmacy, many services remain more focused on products and processes than on patients. This is illustrated by independent reviews of hospital pharmacy services. For example, although the Audit Commission's report, "A spoonful of sugar", clearly identified pharmacy as a "clinical profession" and promoted the role of pharmacists as providers of clinical care, the associated report, "Medicines management — review of national findings (2002)", identified that much of pharmacists' time was spent on activities that did not make the best use of their skills or time. The amount of pharmacists' time spent on dispensing and supply was estimated as equivalent to 846 whole time equivalents.

The recently published follow-up to this report, "The best medicine — a review of

medicines management within acute and specialist trusts", highlights this as an area that requires development. Although there have been increases in the number of staff available at ward level, the focus of their work seems to be on the effective management of revised supply systems (44 per cent of the contributions made by pharmacy staff on wards were related to the supply of medicines for either inpatients or discharge). Comprehensive medication reviews involving patients — which may be considered as a proxy for optimising care of individual patients as outlined in 2002 — are still not being achieved across the board. The latest report states that the involvement of patients in comprehensive medication review is low.

### — Potential threats

Perhaps the most significant threats posed by the introduction of ePrescribing systems stem from the question: what are pharmacy staff doing now that IT can do better? (see Panel 1). If current pharmacy practice is based on processes such as checking prescriptions for drug interactions or dosing, initiating the supply of medicines (without the prescription leaving the patient's bedside), annotating prescriptions and perhaps taking medication histories, these are tasks that electronic prescribing will streamline. But are these processes the main remit of pharmacy?

The perception among other health care professionals of what pharmacists do is a problem that may be highlighted by ePrescribing systems. The misconception that pharmacists are simply concerned with drug supply and costs may lead doctors to believe that a significant proportion of pharmacy services could easily be replaced by IT. In the current financial climate, replacing pharmacy staff with IT systems may seem an attractive proposition, since pharmacy staff are relatively expensive.

Electronic stock control management and reporting of medicines management issues can certainly help the efficient supply of medicines. Although this may seem a threat to pharmacy jobs it creates the opportunity

## Panel 2: Pharmacy activities before and after implementing ePrescribing

Medication process	Traditional pharmacy role	Patient-centered role facilitated by ePrescribing
<ul style="list-style-type: none"> <li>■ Taking a drug history</li> <li>■ Prescription checking</li> </ul>	<ul style="list-style-type: none"> <li>■ Identification of supply needs</li> <li>■ Check safety of prescription (dose, interactions etc)</li> </ul>	<ul style="list-style-type: none"> <li>■ Medication review and optimisation</li> <li>■ Review of patient response and optimisation of treatment changes</li> </ul>
<ul style="list-style-type: none"> <li>■ Facilitating administration</li> <li>■ Checking changes in prescriptions based on patient response</li> </ul>	<ul style="list-style-type: none"> <li>■ Meet supply needs</li> <li>■ Review changes</li> </ul>	<ul style="list-style-type: none"> <li>■ Facilitate ready-to-administer dosage forms</li> <li>■ Patient education and involvement in their treatment plan</li> </ul>
<ul style="list-style-type: none"> <li>■ Facilitating discharge</li> </ul>	<ul style="list-style-type: none"> <li>■ Supply discharge prescription</li> </ul>	<ul style="list-style-type: none"> <li>■ Optimisation of medicines on discharge and communication of ongoing pharmaceutical care needs</li> </ul>

to deploy pharmacy staff to greater clinical involvement.

Remote access to information may also be problematic because it will potentially allow staff to remain in the "comfort zone" of the dispensary. One UK trust found that following the introduction of ePrescribing staff were routinely reviewing prescription records from the pharmacy rather than engaging with patients at ward level.<sup>18</sup>

## — Opportunities

Electronic prescribing brings the opportunity for pharmacy staff to redesign their services around improving patient care, rather than providing services focused on products or processes. Panel 2 (p218) illustrates how ePrescribing will help pharmacists contribute to the clinical care of patients rather than concentrating on supply issues.

As identified earlier, hospital pharmacists are not universally engaging with patients when conducting medication reviews. While electronic data feeds can provide information about what has been prescribed (or even dispensed) for a patient, only dialogue with the patient will establish what they are actually taking. Pharmacists' skill and judgement are needed to decide which variations between what is prescribed and what is taken are significant. Published studies have shown that what has been prescribed for a patient does not always represent the best treatment for them.<sup>19</sup>

Clinical decision support (interaction checking, etc) can be a useful tool but it should not be seen as a replacement for clinical pharmacy. Several warnings and alerts may be given at the point of prescribing and judgement will be required to interpret the clinical significance of these for individual patients.

**Records** The nature of electronic systems is that they record the contribution made by each user. This has the potential to demonstrate more visibly our status as a clinical profession by identifying when a pharmacist makes a contribution to the patient record.

Clinical checking will be carried out online with clear information as to who verified the prescription. There will be the opportunity to generate structured pharmaceutical care records within an individual patient record which can incorporate contributions made to care. This will improve communication between staff both in individual locations and across care settings. As yet there is no agreed guidance for the structure of these records — this is an opportunity for pharmacists to identify record requirements to support the development of a standardised pharmaceutical care framework. Without this, unstructured locally developed information will continue, which will ultimately not support the fur-

ther development of clinical roles for the profession and will not be used by other care professionals.

**New roles** The introduction of ePrescribing will require new roles in health/pharmacy informatics to support the continued development of systems based on feedback. There will be changes to practice and evidence generated that will enhance medicines management, risk reduction, patient safety and quality improvement in a variety of ways. These need to be recognised now so that the pharmacy profession can ensure it is involved in the discussions about how system development is going to be managed both nationally and at trust or network level. It is reassuring to know that decimal points will be in the right place and formularies will be better managed, but practice development must also be incorporated.

We should not forget that traditional supply processes will also need to be transformed. While prescribing and drug administration will be completely electronic, have we thought about the changes required to prevent dispensing from continuing to require a paper copy of the prescription?

Systems will facilitate the supply of medicines through links to stock control and automation. Time released from "traditional" activities will need to be redirected to clinical activities and used to promote optimised treatment for individual patients. These changes will affect pharmacists, technicians and support staff. The profession must think about how skill mix changes will be affected by the widespread introduction of technology.

Identification of, and training for, these new roles needs to be undertaken now. Pharmacists across all sectors must develop the skills and understanding to take responsibility for individual patient requirements before the role is claimed wholly by other professions.

Importantly, realising the opportunities provided by ePrescribing requires leadership. A vision of how pharmacy services need to be configured once ePrescribing and other IT developments are in place needs to be developed and shared across the profession at all levels.

## — Conclusion

Implementation of ePrescribing has wide-reaching implications for pharmacists. A move from process- or product-based working to patient-based working will be needed to ensure that the work of pharmacists continues to be relevant and necessary. The opportunity to develop services with a true clinical focus has never been greater — prescribing rights have come just at the right time.

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