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Pharmacy and Health IT

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A patient walks into a European pharmacy. She hands a paper prescription to the pharmacist. The pharmacist is unfamiliar with the prescriber, and struggles at first with the handwriting, but after a call to the physician, the medicine and its dosage are clarified. The medicine might possibly interact dangerously with others, but the patient cannot remember exactly what she is taking (she is an elderly citizen, and takes nine prescription medicines during the course of each day, as well a non- prescription medicine from time to time). Again there is a call to the physician, but when the pharmacist finally gets through, the doctor is unsure what he has prescribed recently and he does not have the time to go through his records. Besides, the patient was recently hospitalised, and prescribed additional medication during her hospital stay. The doctor does not know what these medicines were. But, it transpires, the patient will not get the medicine prescribed in any event. Just in time, the pharmacist remembers the fax sent earlier that morning recalling that medication, due to discovery of a quality problem.

An unrealistic scenario? No. In Europe, the majority of prescriptions are still scribbled on paper. Examples of coordinated electronic medication records are thin on the ground. Systematic reconciliation of medicines prescribed in secondary and primary care is rare. And in terms of recall efficiency, the pharmaceutical sector often lags behind other sectors, particularly given the potential impact of substandard medicines on patients. It is to be hoped that in my scenario, the patient does not join the hundreds of thousands each year in Europe who suffer illness, injury or death through avoidable adverse drug reactions. Happily, change is coming.

Electronic Medication Records

We are all familiar with the challenge posed to European societies and health systems by demographic change. Medication use is one of these challenges. Cases of patients taking nine prescription medicines (or more) concurrently, ('polypharmacy' is the technical term) are already common, and will become more so. We face the prospect of an increasingly medicated society. Given the known susceptibility of the elderly to medication related problems, we cannot afford to tolerate systems of prescription and dispensing which, despite the best efforts of stakeholders, are often imprecise and badly informed.

The use of electronic prescribing in Europe has increased significantly in recent years. While e-prescribing is well established in Nordic countries such as Denmark and Sweden and in some regions of Spain, systems have also recently been implemented on a national scale in Estonia, Romania and Greece.

There is significant evidence that e-prescribing reduces prescription and dispensing errors, not only in terms of eliminating illegibility, but also by allowing prescribers to make better medication selections. E-prescribing can also help streamline dispensing processes, leaving more time for pharmacists to engage with patients. It also increases the transparency of the prescribing system, a useful asset for those governments trying to control pharmaceutical budgets. Although procurement of e-prescribing systems can be slow, (notably, none of the EU's four larger members, Germany, France, Italy or the UK, has a fully operating national system in place), it is reasonable to expect that electronic prescriptions will become the norm in Europe in the next decade.

But e-prescribing is perhaps a necessary, but not a sufficient, step in making our prescribing and dispensing practices safer. The real added value of e prescription, at least in public health terms, arises from the potential to integrate prescriptions into electronic health or medication records.

Pharmacists have the skills, experience and knowledge to help ensure medication use is safe and effective. But they do not always have the tools. Without a comprehensive understanding of an individual patient's medicine use, the potential for adverse drug events is never far away.

In France, the pharmacists have developed a pharmacy based medication record (the Dossier Pharmaceutique, or 'DP'), which records the patient's medication use of both prescription and non-prescription medicines, for the previous four months. The DP is available in any pharmacy upon presentation of the patient's health insurance card – so a patient on holiday in Nice can access the record if his or her local pharmacy is in Paris.

The results show the benefits are real. The DP increases communication between pharmacists and physicians, and leads to alterations in

prescriptions in on average 10% of the cases where the prescriber has been contacted.

Now the Dossier Pharmaceutique will be extended to hospitals, bolstered by evidence that two thirds of medication records in French hospitals contain incorrect information, and that the hospital/community interface (when a patient is admitted or discharged from hospital) is the point at which nearly half of all prescription errors occur.

Similar systems are planned in several European countries, including Belgium and Austria. But the main challenge to the development of pharmacy accessed electronic medication records are not technical or legal (data protection is of course a key issue – see below), but cultural. There is often resistance to the inclusion of pharmacists in the scope of medication records programmes, sometimes caused by the sort of silo thinking that inhibits more systematic collaboration between health professionals. But exchange of information is at the heart of collaboration, and without collaboration, I would suggest, health systems will fall short of properly addressing the challenges they face.

Medicine Serialisation

Prompted by concerns over the growing threat of counterfeit medicines in the legal supply chain (falsified medicines from illegal internet source are already a disagreeable reality), the European Union recently adopted legislation which will require most prescription medicines to carry an individual serial number, embodied in a bar code. The legislation envisages that pharmacists and other supply chain actors verify the authenticity of a medicines package by scanning the bar code and comparing the serial number to one uploaded onto a database, much in the same way as credit cards are verified. The European Commission is currently designing the technical framework of the verification system, and it is expected to become a reality in EU Member States in 2017.

The immediate aim of the system is to detect and deter counterfeits. But the scope for utilising bar codes for a broader range of health related interventions is huge. For example, in Belgium, where such a system is already in place in more than 60% of pharmacies, pharmacists are able to receive messages and support information related to the scanned product at the point of dispensing. In the UK, a European Commission funded project is examining how scanned bar codes can link to video tutorials on medicines use.

More basically, the system will ensure that expired medicines are not dispensed since the serial number will incorporate the medicine expiry date. And the days of recalling substandard medicines through the only partially reliable means of telephone, fax and email will be over – it will not be possible to dispense recalled medicines, and the whereabouts of relevant packs will be easily identified.

Data

The use of data (and its potential abuse) is of course an issue that goes hand in hand with the rise of internet use and of electronic information systems. The issue is particularly sensitive in healthcare, because of the highly personal nature of health information, and the existing ethical framework governing patient and health professional relationships.

The European Parliament is currently considering a reform of the European rules on data protection. Under the proposed legislation, health data will be considered as a special category of data for the first time, reflecting the fact that the scope for generating such data is growing rapidly.

Experience suggests that patients are willing to submit data to medication records systems if adequate safeguards are in place, and if the overall benefit of such records is clear. For example, the Dossier Pharmaceutique is based on patient's explicit consent – but only a small minority of patients say no.

The advent of medicines verification and e prescription will generate a wealth of data on prescribing habits and patient use of medicines. We perhaps need to think constructively about how the new world of pharmacy related data, which is coming upon us, can be used to tackle persistent problems such as poor adherence and unnecessary polypharmacy.

Back to the Future

A patient walks into a European pharmacy, following a remote consultation with his physician that morning. He hands the pharmacist his health insurance card, and the pharmacist downloads the prescription from a server. While the medicine is being retrieved by the pharmacy robotics system, the pharmacist inspects the patients electronic patient record, noting that a previous suggestion from the pharmacist entered on the record that the dosage be lowered (the patient had been complaining of side effects) has been acted upon. Moreover, the physician has switched the patient’s medication to a similar product more compatible with another medicine prescribed during a recent hospital stay. The pharmacist scans the product, and is advised that the product is subject to special monitoring by the National Medicines Agency. The pharmacist enters the national Medicines Agency Portal directly through the verification system, and reports the patient’s side effects.

It’s time to make this a reality.

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