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Electronic prescribing and dispensing of drugs



Electronic prescribing and dispensing of drugs will bring significant benefits to patients, medical professionals and to the health system as a whole. These benefits will not only have a bearing on quality aspects, but they will also have an effect on productivity and its economic impact is highlighted by an achievable return of investment.

Drug prescription is one of the most common therapeutic activities in medical practice, as it is given in remarkable abundance throughout the whole health environment. Being one of the most widespread practices, it is also the one which brings about higher costs in health systems. The continual appearance of new drugs, the ageing population, new diseases or their chronicity, only make this situation worse.

In view of this, health organisations are looking for ways to contain the drugs bill. The use of prescribing by active ingredient and the fixing of maximum prices per drug contribute to reducing drug spending.

For its part, the establishing of a computerised system of electronic prescribing which embraces the whole drug prescribing and dispensing cycle creates enormous advantages. These advantages basically arise from the elimination of non-value activities in the traditional drug prescribing and dispensing process and the potential that this system has to rationalise health costs at the point of providing the service (clinics and pharmacies).

The time and financial savings arising from the use of the electronic prescription are notable. Also, together with other measures, such as prescribing by active ingredient, using electronic prescribing produces truly spectacular results.



The traditional prescribing-dispensing cycle

Few health systems have completely automated the prescribing and dispensing cycle. Often data are recorded in paper form being significant the use of resources and time dedicated to these tasks.

Also, consultations that we could call “administrative”, (those destined to the continuation of treatment), take up a great amount of time in the health system and of the patient.

These types of visits are not well perceived by the doctors, since they do not involve real medical activity.

In reality it is a non-value obligation for the doctors, who readily prefer to increase the time dedicated to their patient consultations.

Similarly, these visits do not add value to the health organisations. Instead, they take up time and resources that could be used in those activities that really improve the health care of the population.

For their part, the patient population also perceives these visits with reluctance, due to the drawbacks of going to a clinic just to renew prescriptions: travelling, absence from work, and the feeling of being a waste of time.

The traditional prescription in paper form, although it accomplishes the task of being an accredited prescription document with information of the assigned treatment, has several disadvantages, such as, loss of the prescription, illegibility of the doctor’s writing, the risk of fraud, or difficulty in analysing the data.





The role of information systems

In the setting of prescribing and dispensing activities, information systems play an important role in improving health efficiency and act as catalysts in the control of health spending.

This control of spending arises from the impact of the electronic system in reducing the number of visits due to prescription renewal. The possibility of controlling and following up prescriptions also makes it a lot easier to introduce measures to reduce drug spending.

In the electronic prescription system, the prescribing and dispensing cycle is fully computerised. The doctors in the clinics have a prescribing module available, while the pharmacies have a dispensing module. Both are perfectly integrated and share the relevant information.

With the prescribing module, the doctors have the tools that enable them to make out all the drugs prescription of a complete treatment at once, thus overcoming the limitations imposed by the traditional formats based on paper support. The doctors, following their therapeutic criteria, prescribe for much longer periods and make out the prescription of the complete treatment in only one action. This avoids patients making repeat visits to health centres with the single reason of continuing the treatment that they have been prescribed.

At the time of dispensing, the pharmacies access the prescription made out by the doctor in real time, visualising the dispensing of that treatment and handing over the medication to the patient following the prescribed treatment. In this way, the patients go directly to the pharmacy to withdraw the drugs, instead of first requiring a new prescription from their doctor.

Thus, continuous patient visits to the doctor to renew prescriptions are avoided. This particularly happens in the treatment of chronic diseases, since they continually have to go to the clinic for prescription renewals.

Incidentally, the reduction in administrative tasks allows the doctors to concentrate on added value tasks and free clinic hours so that they can be used in clinical activity. All this leads to higher productivity in the whole health system and greater work satisfaction for the professionals.

One function of the electronic prescribing system, which contributes to a direct saving of drugs, is the ease in which the system supplies the prescription by active ingredient and, in case the physician opts for prescribing a commercial brand, viewing the reference prices of each drug. Thus, in the clinics, the doctor is preferentially presented with the drugs prescription by active ingredient, with the subsequent savings it produces. From an organisational point of view, this prescribing module has to be encouraged by the setting of objectives of prescribing active ingredients by the centre and by the doctor. In summary, this procedure aims at separating the act of prescribing –a clinical activity- of the selection of a commercial brand –an act with





economic implications. Thus, prescribing active ingredients, physicians do not make decisions on the brands to be dispensed, so that that part of the cost management can be made outside the consultation, with agreements on prices of reference, for example.

As regards pharmacists, they will go from having a “quasi-passive” role, acting as a mere provider of pharmaceutical products, to developing an active role in the health of the population. Thus, the electronic prescribing system efficiently integrates the pharmacist in the process of drugs provision and, also increasing their involvement in the health system.

For this, the system provides a communication mechanism between the pharmacist and the doctor, so that the pharmacist, in the event of identifying incompatibilities or any other risk factor in the prescriptions, can communicate this to the doctor.

As an additional safety measure, the system also allows precautionary cancellations of prescriptions to be made in cases where the pharmacist may consider it advisable, generating the corresponding warning to the doctor and requesting confirmation of the cancellation.

Added values of the electronic prescribing system

Other added values provided by the electronic prescribing system, are the following:

Use of the electronic prescribing system may prevent some cases of iatrogenesis that can be caused by medical practice. The electronic prescribing system can prevent adverse effects due to drug allergies or interactions between them. This is achieved by connecting the electronic prescribing system with the health record of the patient and generating the relevant warnings.

Besides, the electronic prescribing system has a series of aids available, such as clinical and drug guides.

As regards the dispensing process in the system, this is integrated with point of sales management systems, so that stock updating in the pharmacy is performed automatically and transparent to the pharmacist.



Electronic prescribing system modules

The electronic prescribing system of the Andalusian Health Service, Prescription XXI, is made up of the following modules:

Prescribing module

This module is installed in the clinic and through this the doctors make out the drug prescriptions. One of the characteristics of this module is the prescription by either active ingredient or commercial brand, of the complete patient treatment.

The module has specific functions for carrying out a follow up of the drugs dispensed, view prescriptions, consult BNF and pharmaceutical guides. Similarly, it provides the prescribed drug history of the patient and the possibility of including alarms if there are incompatibilities or risks from a particular drug in the prescriptions.



This module is also integrated with pharmacy point of sale management systems to make dispensing the drug itself easier. This characteristic is of particular interest in those health systems where the pharmacists have their own management tools from the point of sale.

Cost control and invoicing module

This module collates the data received from the pharmacists through their Associations with that stored in the information systems, so that the correct payments are made for drugs dispensed in pharmacist, thus reducing the margin of error and speeding up the payment itself.

Pharmacy control panel

This module is responsible for the analysis of the information on pharmaceutical activity that is, exploring the data from the dispensing module.

To do this, it collects and relates information on prescriptions, drug dispensing, drug consumption, pharmacies, health centres, hospitals, doctors and pharmacists, names directories, etc. and provides managers with detailed statistical information and analysis of pharmacy activity, pharmaceutical spending, consumption by brand, prescriptions per doctor or centre, possible fraud, etc.

Dispensing module

This module is accessed by the pharmacists, making it easier for the pharmacist to view the prescriptions the doctor has made out and register the drugs dispensed throughout the treatment.

Among the most important characteristics are, the possibility of changing the drug make of a prescription, make precautionary prescription cancellations or facilitate the communication electronically with the doctor who has prescribed the treatment.



Main figures

The electronic prescription system established in the Andalusian Health Service, Prescription XXI, currently covers 72% of the population, with 3,016 pharmacies and 428 connected health centres, having dispensed more than 26 million medicines to date. The benefits produced by this electronic prescribing and dispensing system can be summed up as 145 million Euros saved in a 5 year period (September 2001 to September 2006), due to prescribing by active ingredient, currently covering 70% of prescriptions, and a 13.35% reduction in primary care clinic visits (data as of July 2007).



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