

# Measures to reduce pharmaceutical costs in Spanish nursing homes

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## ABSTRACT

**Study objectives:** People over the age of 65 are responsible for high costs, in terms of medicines, to the Spanish national health system. The region of Castilla La Mancha, taking other regions as a reference, has initiated measures to contain pharmaceutical costs and to assure the quality of care in nursing homes for the elderly.

**Methods:** In May 2004, it was decided to carry out a pharmaceutical care programme in public nursing homes for the elderly in the province of Guadalajara. The programme focused on reducing costs related to prescriptions dispensed in community pharmacies (which are free for pensioners) by replacing them with prescriptions dispensed in the hospital pharmacy and promoting the rational use of drugs.

**Results:** One year after we started the pharmaceutical care programme, a decrease of 40% of the direct cost of the purchased drugs was achieved, as well as a decrease of 93% in the number of prescriptions for which pensioners do not pay. During the next two years, the reduction in pharmaceutical costs reached 53%. In addition, a new prescribing system has been introduced for all patients through a drug-administration chart. The system has also been computerised using the Unidose software program in two of these nursing homes, covering up to 60% of patients. This computer program enables the pharmacist to access details of patients' drug treatments automatically and is therefore able to detect and solve promptly any problems related to drug therapy.

**Conclusion:** The introduction of a pharmaceutical care programme in these nursing homes has achieved a significant reduction in pharmaceutical costs, as well as a dramatic decrease in the number of free prescriptions. This has been possible because of the new drug acquisition system.

## KEYWORDS

Hospital pharmacy department, nursing homes, pharmaceutical care programme, pharmaceutical cost, rational use of drugs

## INTRODUCTION

People over 65 years-of-age represent almost 18% of the Spanish population and 70% of the drug budget is spent on them [1]. This causes high pharmaceutical costs, because the Sistema Nacional de Salud (SNS—Spanish national health system) finances all drug treatments for the elderly, who are exempt from prescription charges.

Furthermore, it is likely that this cost will increase in the future, as people are living longer and there will be an ever-increasing number of elderly people [2]. Ageing involves physical and socioeconomic changes and elderly patients often present with multiple pathologies, something which tends to be associated with polypharmacy. These factors are going to create the possibility of more problems related to medication such as interactions or adverse reactions.

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In addition, elderly patients present difficulties because of lack of understanding of their treatments; this can entail a lack of compliance and the need for strict supervision by health professionals. At present, 2.8% of the Spanish population aged over 65 years live in nursing homes compared with an average of 5.5% in the rest of Europe; the tendency for the next few years will be that Spain will increase this percentage compared with other European countries [3].

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Generally, in these institutions, the acquisition of medicines is made through a prescription, for which pensioners do not pay. The cost is covered entirely by the SNS. This process of drug acquisition means that the doctor prescribes each drug that every single patient needs, in a separate

prescription. The community pharmacy then dispenses the required medicines to the nursing home. Community pharmacies do not usually keep a complete drug history of every patient and hence pharmacists cannot monitor patients appropriately and detect pharmaceutical problems such as adverse effects, duplicate prescriptions or interactions.

By this method of acquisition, the cost of the drug is increased compared with the manufacturer's cost price because profits are added on by both the drug wholesalers and community pharmacies.

Another existing issue in these institutions is the appropriate stock level and storage conditions of medicines. Because there is no assigned pharmacist in the homes, the ideal conditions for drug storage are not always met.

The present legislation regarding medicines in Spain [4] has, as a primary target, the promotion of rational use of medicines. Following this trend, some Spanish regions such as Valencia, Galicia and Navarra [2, 3] have developed their own legislation, promoting the introduction of pharmaceutical care programmes in nursing homes, in order to guarantee good quality medical assistance and improve the rational use of medicines with minimum associated costs. In these programmes, the hospital pharmacist plays a key role developing certain tasks such as:

- Participating in the selection of medicines based on efficacy and safety criteria (choice of medicines with a better safety profile, more convenient dosage and use of pharmaceutical forms adapted to the elderly population).
- Promoting appropriate treatments (reducing polypharmacy, implementing educational programmes, improving drug identification).
- Informing care staff about the use of medicines.
- Detecting and resolving problems related to medicines.
- Ensuring appropriate conditions for storage of medicines.

In these areas, pharmaceutical care in nursing homes has turned out to be a practical and effective tool in diminishing the cost and to guarantee the rational use of medicines. Taking these regions as a reference, Castilla La Mancha has initiated similar measures to contain pharmaceutical costs and to assure the quality of care in nursing homes [5].

#### **OBJECTIVES**

Our main goal was to introduce pharmaceutical care programmes in nursing homes in Castilla La Mancha by creating medicine stocks that were the responsibility of a specialist pharmacist in the hospital pharmacy department.

The introduction of this pharmaceutical care programme had the following purposes:

1. To reduce costs associated with prescriptions for elderly patients (who are exempt from prescription charges).
2. To replace these free prescriptions with an alternative prescription and dispensing system and to promote the correct use of drugs, ensuring the highest quality of care for elderly patients, according to the criteria of efficacy and safety, with minimum associated costs.

#### **METHODS**

In May 2004, in accordance with Castilla La Mancha legislation, it was decided to carry out a pharmaceutical care programme in nursing homes in the province of Guadalajara (which is one of the five provinces in this region). This programme involved making some changes in the homes, apart from reorganising the scheme of work in the nursing home and in the hospital pharmacy department in charge of the programme.

The development of the programme was achieved through the steps shown below.

#### **Introduction of drug stocks into nursing homes**

The pharmacist in charge of the nursing home liaised with the nursing staff involved with drug administration (managers, doctors and nurses) and wrote a standard operational procedure.

In this procedure, the different activities to be performed in the homes were described and planned. In addition, responsibilities and a scheme of work were established in order to guarantee the highest quality of care for the elderly patients, with minimum associated costs.

The area for drug storage had to fulfil certain conditions to ensure safety and correct storage of the medicines. These conditions were also described in the operational procedure. The management departments of these nursing homes were given reports of these conditions to guarantee the quality of drugs stocked in them.

In the homes involved, there were already stockrooms where certain drugs were kept and therefore, the pharmacist contacted the staff in charge of the home and supervised the changes that had to be made to guarantee correct identification, adequate stock control and storage.

After going through the drugs commonly prescribed for the residents in the nursing home and liaising with the nursing staff, a number of medicines were chosen for the nursing

home's stock list. The maximum stock of drugs needed was calculated in order to avoid running out of stock and to guarantee good stock rotation. The pharmacist played a key role in this task, because he participated in the choice of drugs, in order to get the maximum adherence to the hospital medicine formulary; he also calculated the maximum stock needed.

### Acquisition of drugs through direct purchase from pharmaceutical manufacturers

In hospital pharmacy departments, drugs included in the hospital medicines formulary are bought directly from different manufacturers, who sell their drugs free of tax. In addition to this, through negotiation, pharmacists can obtain significant discounts from these manufacturers. The introduction of the pharmaceutical care programme into nursing homes did not mean a significant change to the acquisition of drugs in the hospital pharmacy department. It basically increased the medicine stock included in both the hospital formulary and the drug stock lists in the nursing homes involved. The programme also involved the introduction of a parallel acquisition system through direct purchases from manufacturers or wholesalers for items that are not included in the hospital medicines formulary, but are necessary in nursing homes, because they are specific to certain elderly care conditions.

### Introduction of a system dispensing from stock and an alternative prescribing system to replace prescriptions exempt from charge

Once the drug stock list had been created, a dispensing system was introduced from the hospital pharmacy department, using a weekly stock top-up. The day of stock top-up was negotiated with the nursing home involved. Medicines were sent from the hospital pharmacy department to the care home.

The system involved the pharmacist preparing and validating the stock order for every single home. The order was picked and checked by pharmacy technicians in the department and then collected by couriers employed by the nursing home. Once the delivery arrived at the nursing home, it was the responsibility of its staff to check and put the stock away in the drug stockroom.

A drug chart was designed, on which all individual medicines and enteral feeds would be prescribed; it would also be used to record the administration of medication by the nursing staff. Therefore, practitioners could stop using prescriptions from community pharmacies and start prescribing all medicines on drug charts that pharmacists could then check and validate, in order to monitor patients more closely and detect drug-related problems. To perform this

clinical pharmacy validation, it was absolutely necessary for pharmacists to have daily access to the patients' drug histories as well as prescriptions. In this scenario, where the pharmacist is not present in nursing homes every day, it was decided to install the hospital Unidose computer software in the homes in order to have direct online access; by doing so, pharmacists could access any profile at any time. The software also enabled the pharmacist to know the different stock needs for every nursing home and it would be a useful tool for dispensing medicines.

In those nursing homes with no available software, the stock order was to be made by the nursing home staff, according to the minimum and maximum permitted stock levels of every item. This stock order, as well as the patient drug therapy charts would be sent, on a weekly basis, to the hospital pharmacy department, where they would be validated by the pharmacist and dispensed by the technician team.

### RESULTS

The pharmaceutical care programme has been introduced and developed gradually. In the province of Guadalajara, for the development and progress of the programme, a specialist pharmacist was employed, who was to spend 80% of his/her working hours on the pharmaceutical care programme for nursing homes. The programme was first introduced in a home with an average of 120 residents. During the first year, the adaptation of stock rooms, the introduction of stock levels and an initial decrease of prescriptions from community pharmacies, as well as a weekly stock top-up, were achieved. This decrease in the number of prescriptions, exempt from charges, led to a significant decrease in pharmaceutical costs.

Table 1: First phase results			
Nursing home 1			
	Year 2004	Year 2005	Year 2006
Euros/resident/month	151.99	83.51	90.04
Exempt prescriptions/month	1,014	31	15
Exempt prescriptions/resident/month	8.63	0.23	0.13
Nursing home 2			
Euros/resident/month	-	150.91	149.49
Exempt prescriptions/month	-	135.92	25.42
Exempt prescriptions/resident/month	-	2.26	0.41
Nursing home 3			
Euros/resident/month	110.52	92.52	81.39
Exempt prescriptions/month	692.5	304.92	18.25
Exempt prescriptions/resident/month	5.82	2.47	0.15

After the first year, a decrease of 40% in the direct cost of purchase of drugs was achieved, compared with the cost associated with prescriptions that are free of charge to the elderly patients. A decrease of 93% was also achieved in the number of these free prescriptions (Table 1).

Later on, in 2005, the programme was extended to three nursing homes, with a total of 300 residents. During this year and 2006, the reduction in pharmaceutical costs had reached 53%, once the programme had been completed in the three nursing homes involved (Figures 1, 2, 3). It is to be noted that the reduction of pharmacy costs only reflects a decrease in the cost of acquisition of drugs.

If the cost of employing the new pharmacist (who works on the project for 80% of his/her time) is taken into account, the savings would be less. However, they would still be quite significant. These savings, according to data from 2005 alone, were approximately 47%.

The achievement in pharmaceutical cost savings in the past few years is because of acquisition directly from manufacturers and/or wholesalers for almost 100% of the medicines; the number of exempt prescriptions dispensed by community pharmacies has been reduced to a minimum.

Furthermore, a 71% adherence to the hospital formulary has been achieved, leading to a higher standardisation in drug therapy. A prescribing system using a drug-administration chart has been introduced for all patients. Nevertheless, the Unidose software has been introduced in two nursing homes, which house 60% of patients. This software, apart from allowing the pharmacist online access to drug therapies, gives optimisation of the quantity of drugs that need to be dispensed weekly, because the pharmacist orders medicines according to the exact needs of the patients.

Figure 1: First phase results from nursing home 1

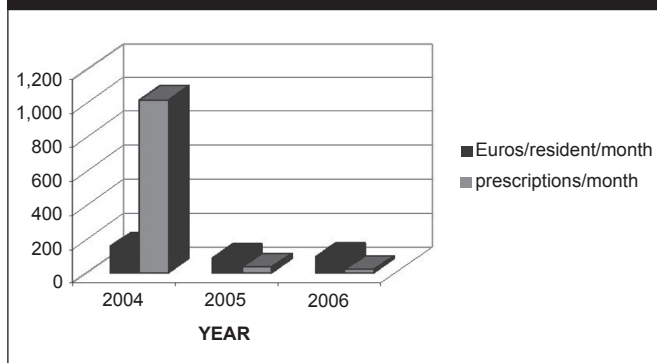
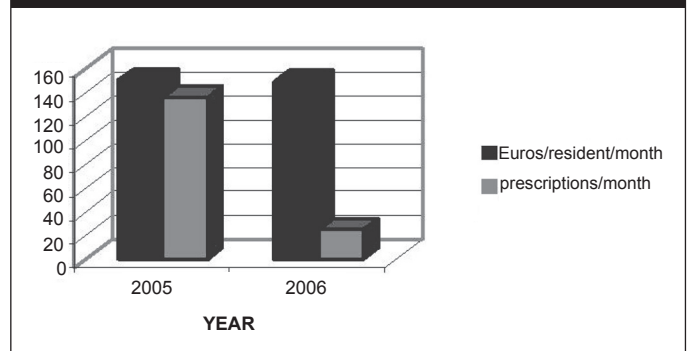


Figure 2: First phase results from nursing home 2



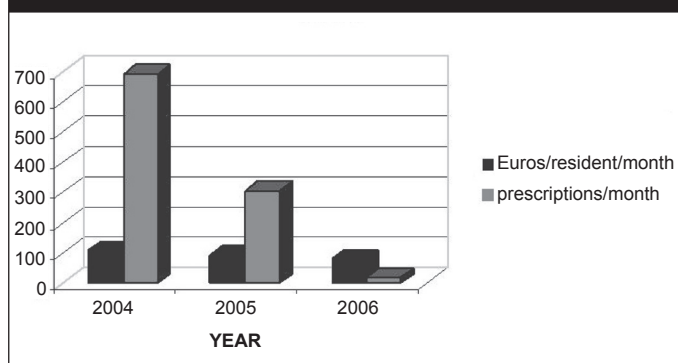
### DISCUSSION

The introduction of a pharmaceutical care programme in these nursing homes has achieved a significant reduction in pharmaceutical costs, as well as a dramatic decrease in the number of prescriptions that were free of charge. This has made significant savings for Castilla La Mancha and optimised its limited resources. The main savings were achieved because prescriptions were no longer dispensed at community pharmacies. Further savings were because of the better deals that hospital pharmacies were able to obtain from pharmaceutical manufacturers and drug wholesalers.

The expenses associated with the new system were the cost of employing a specialist pharmacist and that of the introduction of the new system into the nursing homes. However, as far as the costs associated with the homes were concerned, the new investment was minimal. There were existing stock rooms and only the distribution system was changed, to improve identification, stock and expiry-date control, and better drug storage. The Unidose software was installed by hospital engineers, using existing hardware in the homes and hence the only cost was that of introducing broadband to optimise online connection to the hospital. Investment in drug collection was also minimal because the homes had their own couriers who were responsible for the transport of patients and specimens to the hospital. Introducing the programme involved agreement with the couriers to transport the medicines from the hospital pharmacy department on a fixed day.

Apart from the wages of the pharmacist responsible for the programme, the rest of the investment has been made in the first year of the introduction of the programme, so the cost will decrease over the following years. The decrease of 40% to 53% of costs (see results section) only refers to the savings because of the change in acquisition and dispensing of medicines. If we take into account the pharmacist's salary, the savings will stay at about 47%, from the second year of introduction of the programme.

Figure 3: First phase results from nursing home 3



Through the SNS, patients can normally obtain their medicines in community pharmacies with single prescriptions signed by general practitioners. In elderly patients, the cost of these prescriptions is completely covered by the public health system. This costs the SNS more than that of direct acquisition of medicines by hospital pharmacy departments from pharmaceutical manufacturers.

Another factor is that a clinical pharmacist is completely dedicated to the programme and becomes a fully integrated member of the clinical team in the nursing home. The residents therefore enjoy a high quality of care. It is remarkable that the main savings are achieved by the change made to the dispensing system for this population. It would be interesting to know whether or not this programme would give the same results if it was exported to other European countries, given that drug funding and dispensing systems can be completely different elsewhere.

The pharmacist in charge of the nursing homes will continue to promote adherence to the hospital formulary. As previously mentioned, an adherence of 71% to the formulary has been achieved. It is assumed, however, that the percentage of formulary adherence will never be 100%, because there are certain medicines, used only rarely, related to specific

elderly conditions, which cannot be covered by the hospital formulary. In such circumstances, the pharmacist and the medical team at the home will agree on the most appropriate drugs, according to safety and efficacy criteria. Promoting the maximum adherence to the formulary makes it possible to use drugs rationally in such institutions.

Once the programme has been completed and prescriptions dispensed for pensioners by community pharmacies has almost been withdrawn, work will continue as usual from the hospital pharmacy and other departments in the hospital to promote the rational use of medicines and control pharmaceutical costs. To achieve this objective, it is essential to keep selecting the appropriate medicines according to their efficacy and safety, as well as consideration of the cost and economical impact on the health system.

The results obtained in the region of Castilla La Mancha are very similar to those in other Spanish regions such as Valencia or Galicia, where such pharmaceutical care programmes are more developed and where a significant improvement in the welfare of patients has been observed [2, 3].

It is hoped that such pharmaceutical care programmes progress from a project in some nursing homes to its introduction and development in the vast majority of homes across Spain. In order to achieve this goal, health authorities should develop the current legislation and provide staff and resources to ensure good pharmaceutical care in nursing homes and therefore, improve welfare of patients with minimum associated costs.

## CONCLUSION

After the involvement of a hospital pharmacist in drug management in nursing homes, a significant decrease in pharmaceutical costs has been achieved, because of a drug acquisition system that is more economical than obtaining medicines from community pharmacies through prescriptions that are exempt from charges.

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