The Journal of Emergency Medicine, Vol. 48, No. 4, pp. 416–423, 2015

0736-4679/$ - see front matter

http://dx.doi.org/10.1016/j.jemermed.2014.06.063

Original Contributions

MEDICATION LIST ASSESSMENT IN SPANISH HOSPITAL EMERGENCY DEPARTMENTS

Maria Isabel Baena Parejo, PHD,* Ana Maria Juanes Borrego, BSC,† Joan Altimiras Ruiz, BSC,‡ Mar Crespí Monjó, BSC,§ Milagros García-Peláez, BSC,|| Beatriz Calderón Hernanz, PHD,¶ Miguel Ángel Calleja Hernández, PHD,** María Isabel Chinchilla Fernández, PHD,** Margarita Prats Riera, BSC,†† Raquel García Sánchez, BSC,‡‡ Laura García Sánchez, BSC,§§ Cristina Vázquez López, BSC,|||| Maria Dolores Mauleon Echeverria, BSC,¶¶ and Patricio Mas Serrano, BSC***

*Provincial Delegate of the Ministry of Health, Cordoba, Spain, †Pharmacy Department, Hospital Santa Creu i sant Pau, Barcelona, Spain, ‡Fundació Sant Hospital, La Seu d' Urgell, Spain, §Pharmacy Department, Hospital Son Espases, Palma de Mallorca, Spain, ||Pharmacy Department, Corporació Sanitària Parc Taulí, Sabadell, Spain, ¶Pharmacy Department, Hospital Son Llàtzer Palma Mallorca, Spain, **Pharmacy Department, Universitary Hospital Virgen de las Nieves, Granada, Spain, ††Pharmacy Department, Hospital de Formentera and Hospital Can Misses, Ibiza, Spain, ‡‡Pharmacy Department, Universitary Hospital Gregorio Marañon, Madrid, Spain, §§Pharmacy Department, Badalona Serveis Assitencials, Badalona, Spain, ||||Pharmacy Department, Universitary Hospital Meixoeiro, Vigo, Spain, ¶¶Pharmacy Department, Universitary Hospital Donostia, Donostia, Spain, and ***Pharmacy Department, Universitary Hospital Alicante, Spain

Reprint Address: Milagros García-Peláez, Pharmacy Department, Corporació Sanitària Parc Taulí, Parc Taulí 1, Sabadell 08208, Spain

☐ **Abstract—Background: Medication errors lead to morbidity and mortality among emergency department (ED) patients. An inaccurate medication history is one of the underlying causes of these errors. Objectives: This study was performed to determine the prevalence of patients with discrepancies between the medical list information contained in the clinical history compiled on admission to the ED and the list of medications patients are actually taking, to characterize the discrepancies found, and to analyze whether certain factors are associated with the risk of discrepancies. Methods: We conducted a cross-sectional, descriptive, observational, multicenter study with an analytic component in the EDs of 11 hospitals in Spain. We compared pharmacist-obtained medication lists (PML) with ED-obtained medication lists (EDML). Discrepancy was defined as one or more differences (in drug or dosage or route of administration) between the EDML and PML. The endpoints were the proportion of patients with discrepancies in their home medical lists, and the prevalence of certain factors among patients with discrepancies and those without. Results: We detected 1476 discrepancies in 387 patients; no discrepancies were found in 20.7%. The most frequent discrepancies involved incomplete information (44.2%) and omission (41.8%). In the bivariate analysis, age, number of medications, and Charlson comorbidity score were significantly associated with discrepancy. In the multivariate analysis, number of medications and hospital were the variables associated with discrepancy. Conclusions: The EDML differed from the list of medications patients were actually taking in 79.3% of cases. Incomplete information and omission were the most frequent discrepancies. Age, number of medications, and comorbidities were related to the risk of discrepancies.** © 2015 Elsevier Inc.

☐ **Keywords—emergency department; pharmacy; medication list; medication records; pharmaceutical care**

INTRODUCTION

Patient safety strategies are essential to ensure quality of care (1). The World Alliance for Patient Safety recommends ensuring the accuracy of information about

RECEIVED: 5 November 2013; FINAL SUBMISSION RECEIVED: 22 May 2014;
ACCEPTED: 30 June 2014

medication during transitions in care (1). Half of medication errors occur in the processes of transition of care (2). The Joint Commission on Accreditation of Health Care Organizations stresses that medication reconciliation at the various points in the health care process when attending staff change is the key to reducing the number of adverse drug effects (3).

Medication reconciliation is a formal process to obtain a complete current list of a patient's medications at points where patient care is transferred to ensure correct prescription after transfer. Errors in medication reconciliation result in unintentional discrepancies between medication prior to and after the transfer of care (4). The main step in the medication reconciliation process is to draw up a complete, reliable list of the patient's home medications to prevent medication errors.

Studies in the United States, Canada, and the United Kingdom report rates of medication reconciliation errors ranging from 26.9% to 65% (5–7). In a systematic review of 22 studies involving a total of 3755 patients, Tam et al. found that 27–54% of patients had at least one medication history error and that 19–75% of the discrepancies were unintentional (8). A previous study in Spain reported 167 medical reconciliation errors in 76 patients (45.5%); 69% of these errors occurred at admission (9). Other studies show that clinical histories taken in different areas of the hospital do not thoroughly record information about patients' medications (10–12). Incomplete information can lead to ineffective or unsafe drug treatment.

Obtaining a complete medication history in the emergency department (ED) would help avoid medication errors. However, the urgent nature of ED treatment and the need to make decisions quickly make it difficult to obtain a thorough medication history. Nevertheless, the unavailability of a complete medication history increases the risk of medication errors (e.g., omissions, duplications) both in the ED and after transfer of care.

In a Spanish study, Gutierrez et al. reviewed ED prescriptions for 177 patients and found 141 prescribing errors in 50 patients (13). Assessing physicians considered the potential impact of the errors very significant in 12% of cases and significant in 52% of cases. Iniesta Navalón et al. found 2928 discrepancies involving 95.1% of patients over 65 years of age who were assessed on admission (24–48 h) to their ED (14).

In the present study, we aimed to determine the prevalence of patients with discrepancies between the medications they were actually taking prior to admission to the ED and the information about these medications recorded in the clinical history taken on admission to the ED at 11 hospitals in Spain, characterize the discrepancies found, and explore the factors associated with discrepancies.

MATERIALS AND METHODS

We conducted a cross-sectional, descriptive, observational, multicenter study with an analytic component in the EDs of 11 hospitals in Spain. Each hospital conducted the study during a 1-month period between November 2009 and February 2010. All the participating hospitals were General Hospitals, which are hospitals where patients with many different ailments are given care, and which offer medical, surgical, obstetric, gynecological, and pediatric services (15). Hospitals are also considered to be general if they do not focus on any of these particular areas of care, even if they do not provide one or more of these areas at all or do so very little. We included consecutive patients ages > 18 years admitted to the Observation Area of the ED. We excluded patients admitted for gynecological or psychiatric emergencies or for scheduled interventions or procedures. This is because gynecological emergencies are treated at maternity hospitals at other locations, and efforts are made to ensure that psychiatric patients spend as little time as possible in the ED.

We calculated that a sample of 387 patients would be necessary to estimate a prevalence of discrepancies of 50%, based on 5% precision for a 95% normal asymptotic confidence interval. We stratified the sample according to the size of the hospital. The sampling procedure used was the consecutive inclusion of patients who met the inclusion criteria until the sample size used in each hospital was reached. This was stratified by the number of patients treated.

All patients were informed that their medication data would be used for a study, and they gave consent for that data to be processed. The pharmacist–patient interview was common practice in the hospitals that participated in the study. Each center obtained ethical review board approval for this multicenter study and gave consent. The medication interview conducted by the pharmacist was routinely used in the hospitals that participated in the study.

A pharmacist at each hospital conducted a structured clinical interview with the patient or caregiver within 24 h of admission. Patients were given the opportunity to show the pharmacist the medications they were taking, and pharmacists had access to the information from previous clinical reports, the ED clinical history, and patients' family doctors (through information systems or direct communication).

The pharmacists conducting the interviews all underwent the same training to learn to apply the FASTER interview method (www.fasterweb.es), which explicitly