

# Compliance with good prescribing practices in hospitalized patients

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## ABSTRACT

**Objective:** This study was conducted to determine and identify deficiencies in the compliance with good prescribing practices, in prescriptions for patients hospitalized in the *Clinica Internacional*, based in Lima. **Materials and Methods:** Retrospective and descriptive study of prescriptions for hospitalized patients, measured according to the General Health Law No. 26842, Article 26, and the guide of good practices in prescribing of the Ministry of Health of Peru. **Results:** 100% of prescriptions (4,644) from April and June 2013 were analyzed, finding that 1% of these ones (53) met all the characteristics analyzed, and 99% of them (4,591) did not meet one or more analyzed characteristics. **Conclusions:** Failure to comply with standards of good prescribing in a high percentage of prescriptions. This demonstrates there is a problem that must be corrected since the beginning of the act of prescribing, to avoid future errors that could potentially endanger the health of patients.

**Key words:** Concentration. International Non-proprietary Name (INN). Dose. Pharmaceutical form. Dosage. Prescription.

1. Servicio de Farmacia. Clínica Internacional. Lima, Perú.

## INTRODUCTION

Making a good prescription requires the observance of a series of standards regulating selection and proper use of medicines. In turn, the misuse of these ones could have serious impact on the individual and society, with consequences on health and economy. Prescribing a drug is not an isolated event; it is a part of the medical act and relates the prescribing doctor with other health professionals. Therefore, to avoid errors when prescribing medicine, it is essential to know why it is produced<sup>1-5</sup>.

According to the World Health Organization (WHO), a prescription is the instruction given by a prescribing doctor that is addressed to a dispenser. This one, in turn, must be legible and must indicate precisely what to deliver. Doctors are legally obliged to write legibly and to meet each of the standards mentioned in the rule, since an error in the sequence following a prescription could lead to serious situations, or even the death of patient. As an example we can mention a case in the UK, when a doctor prescribed Amoxil® (amoxicillin) tablets and the pharmacist misread the prescription and dispensed Daonil® (Glibenclamide). Not being diabetic, the patient suffered permanent brain damage as a consequence of the drug<sup>2</sup>. Another outstanding example occurred in a hospital based in Denver (USA) in 1996, when a newborn died due to the intravenously administration of a dose of benzathine penicillin<sup>6</sup> ten times higher than that one prescribed. When analyzing to discover the cause of the error, 12 system errors were found, including: unnecessary medication, illegible medical order, among others<sup>2,6</sup>.

Some organizations use these errors as quality indicators, such as the Health Care Financing Administration (HCFA), which established that the limit of medication error rate should not exceed 5%. If case, the institution would not be qualified to be included in the Medicare financing program. *The Joint Commission on Accreditation of Healthcare Organizations* (JCAHO) states that medication errors should be notified immediately by written procedures. Policies and procedures for reporting incidents should be established in hospitals and clinics, as well as it

should be implemented a plan for education and intervention programs in order to avoid possible future mistakes throughout prescription and medication system.

The purpose of this study is to demonstrate the compliance with the Guide of good prescribing practice<sup>1</sup>. It indicates this act must be properly done by the physician, surgeon dentist or obstetrician. It also includes the correct way of prescribing, which involves placing doctor's name, address, phone number and membership number, as well as the date of issue and expiry of the prescription. This, in order to maximize the effectiveness of medicines, minimizing risks for the patient who uses a drug, and to minimize costs in health care<sup>1,2</sup>.

The objective of this research is to demonstrate the compliance with the Guide of good prescribing practice in each of the studied prescriptions.

## MATERIALS AND METHODS

Descriptive, retrospective, observational study of prescriptions for patients hospitalized in the Clinica Internacional, based in Lima, between April and June 2013. All prescriptions given on sheets of pharmacological evolution for patients in operating room were excluded. All prescriptions of hospitalized patients, who were the study population, were included.

The six items set out in the Guide of good prescribing practices, specifically in Articles 26 and 35<sup>1</sup>, which refer to the appropriate use of seal, signature, international nonproprietary name (INN), dose, frequency, dosage form, concentration, legible writing and date of issue, were extracted. They were compared to the indicators used in the area of unit dose and it was determined to add two indicators more, which would be: correct marking of directions printed on the prescription and the denomination of prescription of the previous day. At the end, there were a total of 11 indicators that were copied in tables from Excel XP program, used to obtain the results.

Data collection was done manually reviewing each prescription individually, then the indicators were filled and the ones already copied in Excel XP program were measured using a table, which allowed us to obtain the results.

## RESULTS

From a total of 4,644 prescriptions filed in hospital pharmacy, 137 were excluded because they were in blank (patients who were delivered to Operating Room) and did not have any prescription. Only 4,507 prescriptions were analyzed, which were sampled.

**Table 1.** Compliance with good prescribing practices.

	n	%
<b>Seal</b>	3,919	86.95
<b>Signature</b>	4,418	98.03
<b>Pharmaceutical Form</b>	3,854	85.51
<b>Concentration</b>	3,013	66.85
<b>Dose</b>	3,548	78.72
<b>Frequency</b>	4,203	93.25
<b>INN*</b>	2,821	62.59
<b>Legible writing</b>	1,503	33.35
<b>Correct marking</b>	3,497	77.59
<b>Date of issue</b>	3,497	77.59
<b>Same prescription</b>	4,378	97.14

total = 4,507

\*INN: International non-proprietary name.

## DISCUSSION

The results showed that many errors are made when prescribing, such as: omission of the INN, of drug concentration and dosage; and, the most important, prescribing doctor writes illegibly. These errors cause problems to the patient (directly in treatment), and the hospital pharmacy service, delaying the dispensation of pharmaceutical products.

About the indicator of omission of prescribing doctor's signature, Tornero and Valdez, reported in their study 6.9%<sup>5</sup> of noncompliance; the percentage obtained in our study was lower (2%), probably because the prescriptions analyzed are subjected to a daily assessment by the area of unit dose, and a

monthly one in the Pharmacological Committee, with the name of the prescribing doctor responsible for such failure in order to correct this in the future.

In another similar study we found results of types of medication errors recorded in the MedMARX® in 1999, where 1.8% was detected for wrong dosage form, and 1.3% for wrong route of administration<sup>7</sup>. These studies are a bit distant from our results, since the percentage of noncompliance obtained in our study was higher. This may be possible because when writing the prescription, the prescribing doctor considers the information of route of administration is enough. In pharmacotherapy there is a wide range of pharmacy forms, and the omission of their registration could generate a number of prescription errors<sup>8</sup>.

Tornero and Valdez found in their study, that in 28.6% of cases medicine concentration<sup>5</sup>; was omitted; this result is similar to that one obtained in our study. Prescribing doctors only put the dose in the prescription, but not drug concentration.

Tornero and Valdez also reported that in 8.3% of cases the dose of the active substance was omitted<sup>5</sup>. Our study concluded that 79% of prescriptions did not have such information; this large difference between the results of both studies could be due to the perception of the prescribing doctor, who would consider enough to put drug concentration when this is the same as the dose to be administered, e. g. < ceftriaxone 1g every 12 hours>, information which omits the dose. In pediatric patients who require lower doses due to their weight and age, an error like this one would generate serious problems of overdose, as seen in a study registered in MedMARX® in 1999, where a frequency of 21% of cases with incorrect dose<sup>6</sup>; was detected; another study is the types of medication errors reported by the working group Ruiz y Jarabo 2000<sup>9</sup> where 28% of errors were reported when registering incorrect dose. It also reported a frequency of wrong administration of 7%, caused either by the lack of information or incorrect frequency of drug administration, according to the active substance, and other factors. The last two studies have similar results to our study.

Tornero and Valdez concluded in their research, that the omission of the INN<sup>5</sup> occurred in 7.1% of cases, a bit distant from our results as we got a higher percentage.

The indicator of legible writing shows a higher percentage in non-compliance. It is important to note that it may cause serious errors, that could even result in the death of patient<sup>10</sup>, as occurred in our institution, where there was a prescription received by the area of unit dose, in which it could not be differentiated whether the prescription was cephalothin or cefazolin. In several studies done to identify major medication errors, it was found that low readability in prescriptions causes system failures that can lead to death<sup>6,8,10</sup>. Another study referring to this indicator is that one done in the Pharmacy area of External Consultation in a high-complexity hospital, where the result is that 10.9% out of 100% of prescriptions analyzed had illegible writing<sup>5</sup>.

The indicator of correct marking of the directions printed on the prescription obtained a higher percentage of compliance, but the noncompliance had 22%, which can still lead to increased confusion at the time of copying the prescription, as well as validating it and administering the drug.

In conclusion, it is not observed the compliance with the standards of good prescribing in a high percentage of prescriptions. This shows that there is a problem that must be corrected since the beginning of the act of prescribing in order to prevent future errors affecting the patient, even endangering his/her health. It also generates a problem to the area of Hospital Pharmacy, delaying the dispensation of pharmaceutical products.

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#### CONFLICTS OF INTEREST

The authors report no conflict of interest regarding this manuscript.

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