

# Compliance with good practice in prescription writing at outpatient clinics in Saudi Arabia

Y.M. Irshaid,<sup>1</sup> M. Al Homrany,<sup>2</sup> A.A. Hamdi,<sup>1</sup> K.K. Adjepon-Yamoah<sup>1,4</sup> and A.A. Mahfouz<sup>3</sup>

الالتزام بالممارسة الجيدة في كتابة الوصفات الدوائية في العيادات الخارجية، بالمملكة العربية السعودية  
يعقوب محمد ارشيد، محمد الحمراي، أنور حمدي، كينيث أديجون - يامواه، أحمد محفوظ

**الخلاصة:** تم على مدى عام، تحليل عينة من وصفات الأدوية التي وردت من أقسام العيادات الخارجية إلى الصيدلية في أحد المستشفيات في منطقة عسير، بالمملكة العربية السعودية، وذلك للتحقق من وجود العناصر الأساسية الواجب توافرها في الوصفة الدوائية. وكان اسم واصف الأدوية مذكوراً في 83.3% من الوصفات، وعنوانه في 9.6% منها، وتوقيعه في 81.9% منها. وكان اسم المريض مذكوراً في 94.6% من الوصفات، وعمره مذكوراً في 77.3% منها، وجنسه مذكوراً في 51.3% منها. ولم تشتمل أي من الوصفات على عنوان المريض ووزنه. وتم استخدام الأسماء الجينية generic للأدوية في 15.1% فقط من الوصفات، وذكر تركيز الدواء ووحدة الجرعة في 26.6% و55.6% منها، ولم يُشر في معظم الوصفات (94%) إلى الكمية، كما تضمنت 90.7% من الوصفات تعليمات جزئية فقط عن كيفية استخدام المريض للدواء. وقد ذكر التشخيص في حوالي ثلثي عدد الوصفات. وكان الخط الذي كتبت به الوصفات غير واضح في 64.3% منها. ويقترح الباحثون بعض الإجراءات من أجل تحسين هذا الوضع.

**ABSTRACT** A sample of prescription orders received from outpatient departments by a hospital pharmacy in Asir, Saudi Arabia, were analysed over 1 year for the essential elements of prescriptions. The prescriber's name, address and signature were on 83.3%, 9.6% and 81.9% of prescriptions respectively. The patient's name, age and sex were on 94.6%, 77.3% and 51.3%. No prescription contained the patient's address and weight. Generic drug names were used in only 15.1% and strength of medication and dose units were included in 26.6% and 55.6% of prescriptions. Most prescriptions (94.0%) had no quantity indicated and had only partial instructions for patient use (90.7%); the diagnosis was included in about two-thirds. The prescriber's handwriting was illegible in 64.3% of prescriptions. Measures to improve the situation are suggested.

## Respect des bonnes pratiques de rédaction des ordonnances dans les services de consultations externes en Arabie saoudite

**RÉSUMÉ** Un échantillon d'ordonnances reçues en provenance des services de consultations externes par une pharmacie hospitalière à Asir (Arabie saoudite) a été analysé sur une période d'un an en ce qui concerne les éléments essentiels des ordonnances. Le nom, l'adresse et la signature du prescripteur se trouvaient sur 83,3 %, 9,6 % et 81,9 % des ordonnances respectivement. Le nom, l'âge et le sexe du patient figuraient sur 94,6 %, 77,3 % et 51,3 %. Aucune ordonnance ne comportait l'adresse et le poids du patient. Les noms de génériques n'étaient utilisés que dans 15,1 % des ordonnances et la concentration des médicaments et les unités de prise n'étaient mentionnées que dans 26,6 % et 55,6 % des ordonnances. La plupart des ordonnances (94,0 %) n'avaient pas d'indications de quantité et ne comportaient que des instructions partielles en ce qui concerne l'utilisation par le patient (90,7 %) ; le diagnostic était inclus dans environ deux tiers des ordonnances. L'écriture du prescripteur était illisible dans 64,3 % des ordonnances. Des mesures sont suggérées pour améliorer la situation.

<sup>1</sup>Department of Clinical Pharmacology; <sup>2</sup>Department of Internal Medicine; <sup>3</sup>Department of Family and Community Medicine, College of Medicine, King Khalid University, Abha, Saudi Arabia (Correspondence to Y. Irshaid: yacoubmf@yahoo.com).

<sup>4</sup>Centre for Tropical Clinical Pharmacology and Therapeutics, University of Ghana Medical School, Accra, Ghana.

Received: 15/09/03; accepted: 14/06/04

## Introduction

A drug prescription is often the endpoint of a patient's visit to a medical practitioner. As an instruction from a prescriber to a dispenser, it is considered to be a medicolegal document that should be written legibly, accurately and completely [1,2]. Prescribing physicians as well as those involved in the execution of the prescription hold legal responsibility for the prescription [1-4].

Although the prescription format may vary slightly from one country to another, most countries agree on the core elements that should be included in the prescription order [1-4]. These are: prescriber's name, address, telephone number and signature; patient's name, address, age and weight (important at the extremes of age); prescription date; drug name (preferably generic), formulation, strength, dose, frequency of administration, quantity prescribed, reason for prescribing and instructions for use [1-4]. In Saudi Arabia, all of these requirements are recommended and are available in local regulations. In addition, the physician is required to stamp the prescription. The stamp usually contains the name, title and address of the physician.

As good quality prescriptions are extremely important for minimizing errors in the dispensing of medications, physicians should adhere to the guidelines for prescription writing for the benefit of the patient [5]. Proper documentation of prescribing practice allows the identification of acceptable and non-acceptable prescribing habits. Such information is needed to set up continuous medical education programmes to encourage rational prescribing among physicians. It also helps in setting up monitoring systems to ensure good pre-scribing habits and to maintain them. Health professionals may also utilize this information to develop guidelines for safe and cost-effective prescribing.

The purpose of this study was to screen drug prescriptions written by physicians in outpatient clinics of Asir Central Hospital for the essential elements of prescriptions mentioned above. The results would be used by health officials for health care planning and monitoring at the institution.

## Methods

Outpatient prescriptions kept by the pharmacy department at Asir Central Hospital during the period 8 April 2000 until 7 April 2001 were analysed retrospectively. This period was divided into 4 seasons: spring, summer, autumn and winter. Asir Central Hospital is located in Abha city and is the main referral hospital in Asir Region, which has a population of 1.2 million people. It is utilized by the College of Medicine, King Khalid University for training of medical students.

The target of the study was all outpatient prescriptions from within the hospital, irrespective of the clinic of origin, received by and kept in the pharmacy. In each season prescriptions from one week (5 working days) were sampled systemically by taking every other prescription.

Prescriptions were analysed for the essential elements to be included in the prescription order [1-4] and the data were recorded using a coding key. Compliance with these elements was the degree to which the physician had met the obligation of including all the elements of a prescription in the prescription order. The information written within the prescription was judged "unclear" if one word or the dose unit was not written clearly and "unreadable" if none of the 3 investigators present during the screening session could read it.

Physicians did not know about the study but the local ethics committee at Asir Central Hospital gave approval.

Simple descriptive statistics were generated by the *SPSS* program version 9.

## Results

The number of prescriptions sampled was 3796, about 7.7% of the total prescriptions during the 1-year period. The number of drugs prescribed ranged between 1 and 7 and 90.8% of prescriptions included 3 or less drugs. The department of origin of the prescriptions was not provided in 61.5% of prescriptions; general practitioners and emergency room doctors (who are also general practitioners) wrote 6.7% and 17.3% respectively.

None of the prescriptions included the telephone number of the prescriber or the address and weight of the patient. Only 9.6% of prescriptions included the address of the prescriber. The name and signature of the prescriber were included in 83.3% and 81.9% of prescriptions, respectively (Table 1). Both the name and signature of the prescriber were included in 71.7% of prescriptions. The name of the patient was present on 94.6% of prescriptions, whereas the

patient's age and sex were present in only 77.2% and 51.3% respectively (Table 1). Of prescriptions that included the patient's age, 6.2% were for patients < 1 year, 13.4% for those aged 1–5 years and 1.8% for those aged > 60 years of age.

The date of the prescription was provided in only 35.7% of prescriptions. The handwriting of the prescriber was not clear in 64.3% of prescriptions. The generic drug name was used in 15.1% and the brand name in 50.1% of prescriptions, while both were used on the same prescription in 28.3% of cases. In the rest (6.5% of prescriptions), the drug names were unreadable (Table 2).

With regard to the strength of medication, it was included in about one-quarter of the prescriptions (26.6%) and was included for some drugs within the prescription in 20.7%. In the rest of prescriptions (52.8%), the strength of medication was missing. The dose units were not mentioned in almost one-fifth (19.4%) of prescriptions and mentioned for some drugs within the prescription in one-quarter of cases (25.0%). The units were mentioned for all drugs in 55.6% of prescriptions. Most of the prescriptions (94.0%) did not contain the quantity that the pharmacist should dispense. The directions for patient use were complete in only 2.3% of prescriptions, while in the majority of cases (90.7%) prescriptions contained partial instructions either among the drugs prescribed or for certain drugs. The space provided for the diagnosis within the prescription was filled clearly in 66.0%, filled unclearly in 18.9% and unfilled in 15.1% of prescriptions (Table 2).

## Discussion

The study was performed to identify the degree to which physicians conform to guidelines for prescription writing during their

**Table 1 Review of 3796 prescriptions issued at Asir Central Hospital: analysis of prescriber and patient information present on prescriptions**

Information present	No.	%
<i>Prescriber</i>		
Name	3162	83.3
Address	364	9.6
Telephone number	0	0
Signature	3109	81.9
<i>Patient</i>		
Name	3591	94.6
Address	0	0
Age	2929	77.2
Sex	1947	51.3
Weight	0	0

**Table 2 Review of 3796 prescriptions issued at Asir Central Hospital: analysis of information present on prescriptions**

Element	No.	%
<i>Date of prescription</i>		
Not provided	2441	64.3
<i>Drug names</i>		
Generic	573	15.1
Brand	1902	50.1
Mixed	1074	28.3
Not readable	245	6.5
<i>Strength of medications</i>		
Included for all drugs	1010	26.6
Included for some drugs	786	20.7
Not included for all drugs	2004	52.8
<i>Dose units</i>		
Included for all drugs	2111	55.6
Included for some drugs	949	25.0
Not included for all drugs	736	19.4
<i>Quantity of medications</i>		
Included for all drugs	125	3.3
Included for some drugs	103	2.7
Not included for all drugs	3568	94.0
<i>Instructions for patient use</i>		
Included for all drugs	87	2.3
Included for some drugs or partial instructions	3443	90.7
Missing for all drugs	270	7.1
<i>Diagnosis</i>		
Not clear	717	18.9
Missing	573	15.1
<i>Prescriber's handwriting</i>		
Not clear	2441	64.3

clinical practice. A total of 3796 outpatient prescriptions from a teaching hospital in south-western Saudi Arabia were screened for the essential elements of prescriptions according to published guidelines [1-4]. This is the third study reviewing prescriptions from hospital outpatient clinics in Saudi Arabia.

Our observations showed that prescriptions were deficient. None of the prescrip-

tions contained the telephone number of the prescriber and only 9.6% had the prescriber address. These elements should be included according to WHO [1]. However, the hospital does not require that the telephone number and address of the prescriber be included in the prescription. The pharmacy department fills prescriptions coming from within the hospital, where the physician can be reached through the telephone directory or the hospital pager system. Also, in this case, the address might not be relevant because physicians are required to stamp the prescription. The stamp usually contains the name, title and address of physicians. Unfortunately in many cases, the stamp was unclear. Our findings of 16.7% of prescriptions deficient in the prescriber name and 18.1% deficient in the prescriber signature are somewhat similar to results from other hospitals in Saudi Arabia. Balbaid and Al-Dawood [6] reported that prescriptions from some Ministry of Health hospitals in Jeddah city were deficient in physician's name and signature in 14% and 16.3% of cases, respectively. Meyer [5] from a hospital and clinic in Texas mentioned that a survey of outside provider pharmacies requesting information on problems related to prescriptions indicated that 96% of responders believed that failure to print the prescriber name was one of the main problems. Our finding that the prescriber was identified by both name and signature in 71.7% of prescriptions is in contrast to the 7.5% figure reported by Francois et al. [7] from a university hospital in France. Blatt et al. [8] have shown that 20%-30% of prescriptions from a central hospital in Yaounde, Cameroon, did not include the name and the function of the prescriber. Anderson and Beurling [9] from Copenhagen University Hospital reported that among the most frequent errors of omission in prescriptions was inadequate identifica-

tion of the physician. These deficiencies indicate how things are made difficult for the dispensing pharmacist to contact the prescriber in case of any clarification.

Concerning patient information, our finding that prescriptions were deficient in patient's name, age and sex in 5.4%, 22.7% and 48.7% of prescriptions, respectively, are in contrast with the results of Balbaid and Al-Dawood [6]. Their corresponding figures were 14.5%, 10% and 4.1% respectively. However, Bawazir [10], in a large study from 22 major hospitals from all health regions within Saudi Arabia, reported that patient age was missing in 18.6% of prescriptions, while patient name and sex were missing in 0.2% of prescriptions. Our results are somewhat similar to what is reported by Makonnen et al. [11] about the quality of prescriptions at a tertiary care pharmacy in Addis Ababa, Ethiopia, where 50% of prescriptions did not contain the sex and age of the patient. Francois et al. [7] reported that complete patient information was provided in only 35.3% of prescriptions. None of the prescriptions we reviewed contained the address and weight of the patient. The address of the patient is among the elements that should be included in the prescription according to WHO [1], while inclusion of weight is recommended for patients at the extremes of age [1-4] because of the implication it has on drug pharmacokinetics and pharmacodynamics. Omission of patient address from prescriptions is a serious deficiency when problems in the prescription are discovered and the patient needs to be contacted to correct the problem. This is even more serious when the name of the patient is also omitted.

Our finding that almost two-thirds (64.3%) of prescriptions were not dated contrasts with Balbaid and Al-Dawood [6] and Francois et al. [7], who found that only

8.7% and 4.5% of prescriptions were not dated, respectively.

Our finding that 50.1%, 15.1% and 28.3% of prescriptions contained brand names, generic names and both generic and brand names, respectively, is peculiar in the sense that some physicians prescribed drugs within the same prescription utilizing both generic and brand names. Blatt et al. [8] reported that 16% of outpatient clinic prescriptions and 73% of emergency room prescriptions contained brand names. We did not find striking differences between prescriptions from emergency room and all other outpatient clinics in this regard. Using generic names in prescriptions gives flexibility to the dispensing pharmacist and may be of economic benefit to the patient. However, use of brand names may be acceptable when problems of drug bioavailability are expected [1,3].

The medication information provided in prescriptions was worse than those reported previously. Balbaid and Al-Dawood [6] reported that the dose, frequency and duration of medications were deficient in 7.6%, 6.9% and 10.2% of prescriptions, respectively. Bawazir [10] reported that the dose of the drug was missing in 4% of prescriptions. We found that more than half (52.8%) of prescriptions did not include the strength of medication, the dose units were not included in 19.4% and the quantity of medications was not included in 94.0% of prescriptions. Apparently, these parameters are left to the pharmacist to decide upon and the implications for the duration of therapy will be dependent on the individual pharmacist. The strength of medication is particularly needed when the pharmaceutical product exists in more than one strength. We did not look at the proportion of drugs which are available in only one strength. Francois et al. [7] reported that medication information was complete in only 24% of

cases, whereas Blatt et al. [8] recorded that medication information was stated in 85% of outpatient and 50% of emergency room prescriptions. We did not find significant differences between outpatient and emergency room prescriptions on this matter.

We also found that the prescriptions were seriously deficient in instructions for patient use and the majority (90.7%) contained only partial instructions, a finding that certainly will affect the adequacy of therapy. Bawazir [10] reported that instructions for use were missing in 4% of prescriptions. Our finding that the diagnosis was missing or unreadable in one-third (34.0%) of prescriptions is in contrast with what was found by Balbaid and Al-Dawood [6] who found the diagnosis missing in only 6.8% of prescriptions, and Bawazir [10] who found that the diagnosis was missing in 9.8% of prescriptions. Anderson and Beurling [9] reported that omitting the indication for use was among the most frequent errors in prescriptions. Also our finding that almost two-thirds (64.3%) of prescriptions suffered from poor handwriting is in contrast with what was found by Balbaid and Al-Dawood [6] who reported illegible handwriting in only 7.2% of prescriptions. The high percentage of poor handwriting we found could be due to the fact we considered the presence even of a single unclear word or a dose unit as poor handwriting for the whole prescription. Poor handwriting is a serious

problem that might lead to dispensing the wrong medication to the patient with serious or even fatal results [12]. Meyer [5] found that 15% of prescriptions studied had illegible handwriting. Furthermore, in a survey of outside provider pharmacies, 69% of responders stated that illegible handwriting was one of the main problems they encountered. Makonnen et al. [11] also reported illegible prescriptions in 15% of cases.

In conclusion, the prescriptions we reviewed suffered from serious deficiencies and were not properly written. The need for physician education on appropriate prescription writing is obvious and follow-up on the matter is needed for newly qualified physicians. Furthermore, inclusion of tutorials about prescription writing in the final clinical year curriculum of medical students before graduation is necessary. Administrative monitoring of the prescription habits of physicians is needed both to improve the process and to maintain the improvement.

## Acknowledgements

The authors greatly appreciate the cooperation of the staff of the Pharmacy Department at Asir Central Hospital during the review of prescription, Mr Andy Rolex for entering the data into SPSS and Mr Riyad Alessa for helping revise the data entry.

## References

1. De Vries TP et al., eds. *Guide to good prescribing: a practical manual*. Geneva, World Health Organization, 1995:51–5 (WHO/DAP/94.11).
2. Lofholm PW, Katzung BG. Rational prescribing and prescription writing. In: Katzung BG, ed. *Basic and clinical pharmacology*, 8th ed. New York, McGraw Hill, 2001:1104–12.
3. Prescription writing. In: *British national formulary, No. 41*. London, British Medical Association & Royal Pharmaceutical Society of Great Britain, 2000:4–5.

4. Safe writing. In: Lacy CF et al., eds. *Drug information handbook*, 9th ed. Cleveland, Ohio, Lexi-Comp, 2001:12.
5. Meyer TA. Improving the quality of the order-writing process for inpatient orders and outpatient prescriptions. *American journal of health-system pharmacy*, 2000, 57(Suppl. 4):S18-2.
6. Balbaid OM, Al-Dawood KM. Assessment of physician's prescribing practices at Ministry of Health Hospitals in Jeddah City, Saudi Arabia. *Saudi medical journal*, 1998, 19:28-35.
7. Francois P et al. Evaluation of prescription-writing quality in a French university hospital. *Clinical performance and quality health care*, 1997, 5:111-5.
8. Blatt A, Chambon R, Lemardeley P. Forme legale et cout des prescriptions a l'Hopital Central de Yaounde, Cameroun. [Legal format and costs of prescriptions at the Central Hospital in Yaounde, Cameroon.] *Medecine tropicale: revue du Corps de sante colonial*, 1997, 57:37-40.
9. Andersen SO, Beurling C. Recepter, receptfejl og patientsikkerhed. [Prescriptions, prescription-writing errors and patient safety.] *Ugeskrift for laeger*, 1997, 159:1454-8.
10. Bawazir S. Prescribing pattern of ambulatory care physicians in Saudi Arabia. *Annals of Saudi medicine*, 1993, 13(2): 172-7.
11. Makonnen E, Yoseph M, Berhane Y. Quality of prescription at a tertiary care pharmacy in Addis Ababa. *Ethiopian medical journal*, 2002, 40:233-9.
12. Charatan F. Family compensated for death after illegible prescription. *British medical journal*, 1999, 319:1456.