

# How Good are Doctors as Drug Prescribers?

A R A Rahman, MRCP\*

A R Noor, MMed Sci\*\*

Y Hassan, PharmD\*\*\*

\* *Department of Pharmacology and Medicine,  
School of Medical Sciences, Hospital USM, 16150 Kubang Kerian, Kelantan*

\*\* *Department of Pharmacology,  
School of Medical Sciences, Hospital USM, 16150 Kubang Kerian, Kelantan*

\*\*\* *Clinical Pharmacy Programme,  
School of Pharmaceutical Sciences, Hospital USM, 16150 Kubang Kerian, Kelantan*

## Summary

The training of doctors in therapeutics has created interesting discussions internationally. A survey of senior hospital pharmacists currently practising throughout West Malaysia was embarked on during a recent postgraduate seminar. About sixty per cent said prescribing errors were common amongst doctors. Sixteen per cent of the prescribing errors were potentially serious. Most of the time errors were due to carelessness, lack of knowledge on drug action or a combination of both. Nearly 35% of prescribing errors were not acknowledged by doctors. Most doctors did not give reasons for not acknowledging pharmacists' intervention. About half (46.5%) of the respondents thought that doctors were not adequately trained in the use of drugs.

**Key Words:** Therapeutics, Prescribing errors, Drugs

## Introduction

The training of doctors has undergone changes over the last two decades. Medical schools now put more emphasis on the teaching of clinically relevant subjects to the undergraduates. This has led to the concept of integration in medical education, bringing basic and clinical disciplines closer together. Students are exposed to patients earlier as compared to the traditional form of teaching. A sizeable portion of the pre-clinical curriculum has been shelved with some medical educators claiming that it produces better doctors<sup>1</sup>.

The bottom line in medical training at the undergraduate level is to produce safe medical practitioners. To be safe, a doctor must be able to diagnose common diseases and handle medical emergencies. After diagnosing, a doctor must be able to institute treatment, which includes reassuring patients, surgical intervention or the prescribing of drugs. Medical schools differ in their approach in

teaching students the art of prescribing. Knowledge of drugs is taught by the Department of Pharmacology as a pre-clinical subject. During their clinical years, the art of prescribing or therapeutics is usually not taught in a structured manner. So, how good are doctors as prescribers? In order to answer this question we embarked on a survey of hospital pharmacists in Malaysia. We chose hospital pharmacists because they are the group of health professionals with in-depth knowledge of drugs and have the task of screening doctors' prescriptions. This puts them in a unique position to comment on doctors prescribing habits.

## Method

Participants at a recent Post-Graduate Seminar on Clinical Pharmacy Practice held in Hospital Universiti Sains Malaysia were surveyed. It was an international meeting with 140 participants from Malaysia, Singapore, Thailand, Indonesia and invited speakers

from the United States. Since the study was targeted at the practice in Malaysia, only Malaysian based pharmacists were surveyed. Participants were given a questionnaire to fill in during the first day of the seminar.

## Results

Sixty per cent (43 out of 72) of the Malaysian participants responded to the questionnaire. Seventy-four per cent of the respondents were female. The mean age of respondents was 33 years (25-41) and average years of working experience was nine years (3-17). All of the respondents were hospital pharmacists with all states in West Malaysia being represented. Most (63%) were working in General Hospital, while the rest were either working in University Hospitals (21%) or District Hospitals (16%).

### Prescribing Error

All participants had encountered prescribing errors by doctors. The majority (60.4%) said that prescribing errors amongst doctors were common, while only 11.6% said it was very common. Four point six per cent said it was very seldom and 23.3% said it was seldom encountered. Of the prescribing errors encountered, 16% said they were potentially serious. Almost 30% of respondents thought that errors were solely due to carelessness in prescribing, 25.6% thought it was due to a combination of carelessness and lack of knowledge on drug action (Table I). Sixty-five per cent of the time, when pharmacists detected a prescribing error, and highlighted it to the prescribers, the errors were acknowledged. Of the doctors who did not acknowledge their prescribing errors, the majority were senior medical officers/registrars (62.8%) followed by consultants/specialists (48.8%), junior medical officers (32.6%) and housemen (23.3%) (Table II).

When prescribing errors picked up by pharmacists were not acknowledged, the commonest reason given was that doctors prescribed based on their experience (27.9%) (Table III). However, most doctors did not give any reason (44.2%). Only 2.3% of doctors did it because of evidence obtained from other sources of reference. Based on their experience working with doctors, 46.5% of pharmacists thought doctors were

not adequately trained in the prescribing of drugs, and only 16.3% thought they were. The rest (37.2%) did not know whether doctors were or were not adequately trained in drugs. When asked whether they thought doctors appreciate their expertise and professionalism, the respondents were uncertain; 37.2% thought the answer was yes, 30.2% said no and 32.6% did not know.

**Table I**  
**Reasons why prescribing errors occur**

Reasons	No.	%
Lack of knowledge of drug action	23/43	53.5
Lack of knowledge of side effect profile	5/43	11.6
Lack of knowledge of drug interaction (drug-disease)	4/43	9.3
Lack of knowledge of drug interaction (drug-patient)	6/43	14.0
Lack of knowledge of drug-drug interaction	11/43	25.6
Carelessness in prescribing	31/43	72.1

NB: Total responses cited 80 by 43 respondents, 20 gave more than one response.

**Table II**  
**Category of doctors refusing to acknowledge advice given**

Category of Doctor	No.	%
Intern/House Officer	10/43	23.3
Junior Medical Officer	14/43	32.6
Senior Medical Officer/Registrar	27/43	62.8
Consultant/Specialist	21/43	48.8

NB: Total responses cited 72 by 43 respondents, 13 respondents gave more than one answer.

**Table III**  
**Why were prescribing errors not acknowledged?**

Reasons given	No.	%
None	19/43	44.2
Based on experience	12/43	27.9
Patient seems to be responding	6/43	14.0
Follow seniors	2/43	4.7
Patient's request	1/43	2.3
"I'm managing the patient - I know what I am doing"	1/43	2.3
Based on reference	1/43	2.3
Patient on drug trial	1/43	2.3

### Discussion

As far as we know, this is the first survey of its kind in Malaysia. Even looking through the world English literature, no survey has been done by doctors on their own prescribing habit as viewed by pharmacists. There has been a lot of work on the perception of doctors on the service offered by pharmacists<sup>2,3,4</sup> but not vice-versa. A possible explanation is that whilst the doctors' views and recognition of pharmacists' expertise are essential for pharmacists to make an impact in health care<sup>5,6</sup>, pharmacists' view of doctors' expertise is not yet seen as essential. This is despite the fact that most of the work which detected doctors' prescribing errors or misadventures were done by pharmacists. Many of these studies were published in leading journals of hospital or clinical pharmacy with a few in major medical journals<sup>7,8</sup>.

In this study a response rate of 60% was obtained. The response rate for questionnaire surveys especially by health professionals varies from 30-70%<sup>2</sup>. Since this is the first survey of its kind, we could not compare our response rate with others. Participants were told at the beginning of the seminar that questionnaires will be circulated. Further reminders for them to fill the questionnaire were made by the organising committee. Hence attempts were made to keep non response to a minimum.

How common are prescribing errors in hospital care? The answer does depend on how one defines prescribing errors. These range from omission error, wrong timing, improper drug dosage, wrong dosage form, wrong drug preparation and wrong route of administration. Since we did not specify in our questionnaire which type of prescribing error we meant, respondents most probably combined them all together. This may explain why the majority of the respondents considered prescribing errors as common. It would be difficult to ask them on the different types of prescribing error for the questionnaire would have to be more complicated. Furthermore, respondents may not recollect the degree of each type of error. What is of concern was that 16% of the prescription errors were thought to be potentially serious. In a large series from Harvard which reviewed all adverse events in hospitalised patients, 19% of adverse events were due to drug complications<sup>9</sup>.

Another indicator of common prescribing error is the rate of hospital admissions resulting from drug treatment. This obviously is only the tip of the iceberg as patients with only serious side effects associated with prescribing ever get hospitalised. The rate of drug-related hospitalisations varies from 2.4% to 19%<sup>10,11</sup>. Adverse drug reactions alone have contributed to 1.1 to 5.7% of total patient hospitalisations<sup>12,13</sup>. Obviously our data cannot be extrapolated to predict the rate of drug-related hospitalisation in Malaysia or to predict the percentage of adverse events in hospitalised patients due to drugs. We are currently designing a prospective survey in our hospital to obtain these data.

What causes prescribing errors and who is to be blamed? Errors occur from lack of knowledge, substandard performance and mental lapses of doctors or defects and failures in the health care systems<sup>14,15</sup>. Indeed our survey showed that carelessness, and lack of knowledge were the usual causes. Two groups of health professionals should act as safeguards against drug related problems namely doctors and pharmacists. Nurses do have a role, albeit, very limited. The nurse's role is to check with doctors if drugs are prescribed "out of ordinary practice". However, nurses are not trained to give an expert opinion on drugs and therapeutics. While pharmacists have taken it upon themselves to curb drug related problems, they need

the assistance of the prescribers (doctors) and the health care system. If doctors are well trained in the knowledge of drugs and in the art of prescribing and if the health care system has a safety net to detect errors, then we believe drug related problems will be kept to a minimum. It may not be possible to eradicate all drug related problems because of the occurrence of idiosyncratic adverse drug reactions, which will defy any vigilance.

Whereas to err is human and prescribing errors may be committed by both experienced and inexperienced staff, we must not leave room for complacency and must work towards keeping errors to the minimum as far as humanly possible. This is where adequate training of doctors in prescribing is important.

### How good are doctors as drug prescribers?

Almost half of our respondents thought doctors were not adequately trained in the knowledge of drugs. The amount of training doctors get in pharmacology and therapeutics differ from country to country. None of the medical schools in Malaysia examine students in therapeutics as a separate subject in the final year. In United Kingdom, out of the 20 odd medical schools, only the Scottish (3 out of 4) Universities and a few English Universities do have a separate paper on therapeutics in the final examinations. Indeed over the last few years, interest has been intense amongst the medical educators in the United States and Europe to improve the training of doctors in therapeutics<sup>16,17,18</sup>. In a recent Asian Conference on Clinical Pharmacology and Therapeutics a few papers on the subject were presented<sup>19,20,21</sup>. They created interesting debates amongst participants resulting in an ad hoc committee being formed to look into this matter.

In 1985 the World Health Organization (WHO) gathered experts from around the world to address the question of rational use of drugs especially with the developing countries in mind. Among the recommendations made were for governments, universities and non-governmental organisations – both national and international to reconsider their responsibility for improving the training of different categories of health workers in the rational use of

drugs<sup>22</sup>. University medical schools should play the leading role for they are responsible for producing doctors who are the prime prescribers of drugs. Seven years later WHO discovered that the teaching of clinical pharmacology and therapeutics in the developing countries was still very unsatisfactory<sup>23,24</sup>.

It must be stressed that pharmacists in this country especially clinical pharmacists, are keen to play a more effective role in helping doctors to become better prescribers. There are however a few challenges before them<sup>25</sup>. Until and unless doctors acknowledge and respond to the expertise pharmacists have to offer, the effectiveness of pharmacists will be limited<sup>5,6</sup>. It is reassuring from our survey to know that two-third of doctors acknowledged advice given by pharmacists on their prescribing errors. There are however a sizeable proportion who did not accept and did not give any reason for not accepting the advice. Doctors should try to develop a professional relationship with pharmacists. If advice from pharmacists is deemed unnecessary, there should be constructive discussion and flow of ideas between them. Our survey showed that only a very small number of doctors who disagree with pharmacists quoted evidence from literature, with most quoting personal experience. Whilst personal experience is important in medicine, one should be willing to change one's practice based on sound existing evidence. In fact it is disheartening to note that despite a plethora of good and well conducted clinical trials, some doctors are still reluctant to change their practice<sup>26</sup>. This may sometimes be to the detriment of patients.

In conclusion, our survey showed that prescribing errors amongst doctors were common with a sizeable proportion being potentially serious. Also, hospital doctors as a whole were not thought to be adequately trained in the knowledge of drugs by the hospital pharmacists based on their (pharmacists) experience in working with doctors and screening their prescriptions. Further studies to quantify the problem in Malaysia are needed. Doctors should appreciate and utilise the expertise pharmacists have to offer. Medical schools should work towards producing competent doctors who can handle drugs rationally, in line with WHO's observations and recommendations.

## Acknowledgements

We would like to acknowledge all respondents to this survey. We also would like to thank Mrs Memi Abdul

Hamid for typing the manuscript and Mr Wan Zainal Azman W Abdullah for doing the tables.

## References

- George CF. The new medical education and the teaching of therapeutics. In *Current Controversies in Therapeutics*. Seminar held at Royal College of Physician London, Jan 92.
- Clifford RM, Jessop JB, Lake JM. Evaluation of clinical pharmacy services: a survey of doctors' opinions. *Aust J Hosp Pharm* 1993;23 : 11-6.
- Haxby DG, Weart CW, Goodman BW Jr. Family practice physicians' perception of the usefulness of drug therapy recommendations from clinical pharmacists. *Am J Hosp Pharm* 1988;45(4) : 824-7.
- Rauch TM. The perceptions of army physicians and nurses on the relative importance of clinical pharmacy services. *Mil Med* 1982;147(5) : 391-2.
- Araujo OE, DeSantis DA, Doering PL. Survey of the professional inter-relations between dermatologist and pharmacist. *Drug Intell Clin Pharm* 1986;20(11) : 876-80.
- McKenney JM, Wyant SL, Atkins D, Davis L, Corasiti ME. Drug therapy assessments by pharmacists. *Am J Hosp Pharm* 1980;37(6) : 824-8.
- Brennan TA, Leape LL, Laird NM, Hebert L, Localio AR *et al*. Incidence of adverse events and negligence in hospitalised patients. *N Engl J Med* 1991 7;324(6) : 370-6.
- Dubois RW, Brook RH. Preventable deaths: who, how often and why? *Annals of Internal Medicine* 1988 1;109(7) : 582-9.
- Leape LL, Brennan TA, Laird N, Lawthers AG, Localio AR *et al*. The nature of adverse events in hospitalized patients. Result of the Harvard Medical Practice Study 11. *N Engl J Med* 1991 7;324(6) : 377-84.
- Larmour I. A prospective study of hospital admissions due to drug reactions. *Aust J Hosp Pharm* 1991;21 : 90-4.
- Grymonpre RE. Drug-associated hospital admissions in older medical patients. *J Am Geriatric Soc* 1988;36(12) : 1092-8.
- Ibanez L. Adverse drug reactions leading to hospital admission. *Drug safety* 1991;6(6) : 450-9.
- Levy M. Hospital admissions due to adverse drug reactions: a comparative study from Jerusalem and Berlin. *Eur J Clin Pharmacol* 1980;17(1) : 25-31.
- Davis NM, Cohen MR. Medication errors: causes and prevention. Huntingdon Valley, PA: Neil M. Davis Associates; 1981.
- Zellmer WA. Preventing medication errors (editorial). *Am J Hosp Pharm* 1990;47(8) : 1755-6.
- De Vries TPGM. Presenting clinical pharmacology and therapeutics: the course in pharmacotherapeutics. *Br J Clin Pharmacol* 1993;35 : 587-90.
- Nirenberg DW. Teaching clinical pharmacology: A process of "Lifelong Learning". *J Clin Pharmacol* 1993;33(4) : 311-5.
- European Network of Therapeutic Teachers. Inaugural meeting of European network of therapeutics teachers. *Br J Clin Pharmacol* 1993;36 : 375 (meeting report).
- Noor AR, Jaafar R, Sulaiman SA. Teaching of clinical pharmacology in an integrated undergraduate medical curriculum (Abstract). Asian Conference on clinical pharmacology and therapeutics. Indonesia Nov 1993;S-08.03.
- Kolopaking EP, Gardjito W. Implementation trial on rational drug management and use: An Indonesian experience (Abstract). Asian Conference on clinical pharmacology and therapeutics. Indonesia Nov 1993;S-04.02.
- Hogerzeil HV. Training in rational prescribing. (Abstract). Asian Conference on clinical pharmacology and therapeutics. Indonesia Nov 1993;S-04.05.
- Conference of Experts on the rational use of drugs. Nairobi, Kenya Nov 1985. World Health Organization Publication; 299-310.23.
- Survey of pharmacology and clinical pharmacology teaching in developing countries. International Union of Pharmacology (IUPHAR) Newsletter. 1992;39 : 5.
- Jarrott B. Future of clinical pharmacology as an academic discipline. International Union of Pharmacology (IUPHAR) Newsletter. 1994;13-5.
- Yahya H. Challenge to clinical pharmacy practice in Malaysia. *Ann Pharmacother* 1993;27 : 1134-8.
- Editorial. Clinical trials and clinical practice. *Lancet* 1993;342(8876) : 877-8.