Research Reports

Potential savings from generic prescribing and generic substitution in South Africa

SS ABDOOL KARIM,1 G PILLAI,2 TT ZIQUBU-PAGE,1 MH CASSIMJEE3 AND MS MORAR1

1Centre for Epidemiological Research in Southern Africa, Medical Research Council, Durban, South Africa, 2Department of Pharmacology, University of Durban-Westville, Durban, South Africa, and 3Department of Family Medicine, University of Natal, Durban, South Africa

Generic prescribing and generic substitution are mechanisms for reducing the cost of drugs. The purpose of this study was to assess the extent to which generic prescribing by private medical practitioners and generic substitution by private pharmacists is practised in South Africa and to estimate the potential savings from these two practices. Prescriptions from 10 pharmacists were collected on four randomly selected days. Computer printouts of all the prescriptions dispensed on these four days together with the original doctor's prescription were priced using a commercially available pharmacy dispensing computer package. A total of 1570 prescriptions with a total number of 4086 items were reviewed. Of the total prescriptions, 45.7% had at least one item for which there was a generic equivalent. Of the 961 drugs which had generic equivalents, 202 (21%) were prescribed using the generic name of the drug. Only 0.3% of prescribes prohibited generic substitution. The cost of the prescription as dispensed was 1.4% (mean cost: R116.19 vs R117.84) below that of the original doctor's prescription, indicating the marginal benefit from the current low substitution rate of 13.9% by pharmacists. About 6.8% of the cost of the original doctor's prescriptions (mean cost: R117.84) could have been saved if total generic substitution (mean cost: R109.65) was practised. The cost of the prescriptions with only brand name items (mean cost: R120.49) would have been 9.9% higher than if generic drugs were used. Current restrictive prescribing and dispensing practices result in marginal cost savings from generic prescribing and generic substitution. Both these practices have a potential to reduce drug costs, if actively encouraged and practised to maximum capacity. It is noteworthy, however, that the potential savings from generic prescribing and substitution are at most 9.9% in the absence of any changes in types of drugs prescribed.

Introduction

Escalation in the cost of health care is due, in part, to the rapidly escalating costs of drugs. Various mechanisms have been investigated in an attempt to make drugs affordable. Generic prescribing and generic substitution have been targeted as possible mechanisms for cost containment in South Africa.

There is considerable disparity in the cost of drugs in the private and public sector in South Africa. Although 70% of the country's medicines are prescribed and consumed in state and provincial hospitals, it is reported that the private sector pays 80% of the country's drug bill.1 In the public sector, procurement costs are lowered by the state tender schemes, under which the state may purchase in bulk at fixed prices (at least for a period of 6 months), and may realise stipulated discounts of up to 80% in some instances.1 Medical aid schemes have also contributed to the high drug cost in the private sector in South Africa. These third-party payment schemes have led to over-utilization of health care facilities, over-prescription and inappropriate use of expensive drugs which, in turn, result in cost increases.1

In November 1984, the South African Pharmacy Council (SAPC), (the then South African Pharmacy Board) amended one of its ethical rules, permitting pharmacists to practice generic substitution without prior consultation with the prescriber. However, this
sparked off such intense controversy that it was subsequently withdrawn.\textsuperscript{2,3} At present, pharmacists may not legally substitute one drug for another without prior consultation with the prescriber.

In 1985, the Pharmaceutical Society of South Africa (PSSA) sought to reduce drug costs by introducing Maximum Medical Aid Price (MMAP) in the private sector; a payment system whereby medical aid schemes were contracted to pay only a specified maximum price for generically equivalent drugs.\textsuperscript{4} This system encourages the use of generic drugs. Drugs marketed under their generic names are usually cheaper, and the potential savings may be of benefit to the consumer, as shown in numerous studies.\textsuperscript{4-7} MMAP has an additional outcome, that of making general practitioners more aware of their prescribing practices. In some countries such as the United States of America (USA), this has encouraged a rational approach to drug use.\textsuperscript{8-10}

The purpose of this study was to determine the extent to which generic prescribing and generic substitution is practised in the private health sector in Durban and Pietermaritzburg, the two largest cities in the province of KwaZulu/Natal in South Africa. This served as a basis for calculating the potential savings from both these practices.

**Methods**

Ten pharmacists were selected through snowball sampling. A pharmacist known to one of us (SSAK) served as the starting point for the sampling procedure in each city. Each pharmacist provided the names of two other pharmacists who could be approached. One of the two suggested pharmacists was selected randomly and approached to participate in the study; the other suggested pharmacist was only approached if the first one refused to participate. Only one pharmacist refused to participate in the study; the reason forwarded being that the pharmacy was about to be closed permanently. A workshop was held with the pharmacists at the end of February 1992 to explain the study. In this workshop, the objectives of the study were explained in detail. The pharmacists, five each from Durban and Pietermaritzburg, were asked to provide, for selected days, the prescriptions they received, together with a computer printout of the drugs dispensed per prescription. Four days, two in February 1992 and two in March 1992, were randomly selected. The request for prescriptions dispensed in February, prior to the workshop, as well as March (subsequent to the workshop) was intended to assess whether participation in this study influenced substitution practices.

The prescriptions were scrutinised by two of the researchers (GP and TTZP) to ascertain whether they were telephonic, and whether doctors actively promoted (prescriptions endorsed 'or equivalent') or discouraged (prescriptions endorsed 'no substitution') generic substitution by the pharmacist. Furthermore, the prescriptions were reviewed to assess how many of the drugs were prescribed as generic drugs by the medical practitioner, how many items were substituted for generic equivalents by the pharmacist, and the actual and potential savings from the current extent of both practices.

Each prescription was priced using a commercially available pharmacy dispensing computer software package and the following costs were determined:

- original price – the value of the prescription as prescribed;
- brand name price – the value of the prescription assuming that all items on the prescription had been dispensed as brand name products even if they were prescribed as generic drugs;
- generic price – the value of the prescription assuming that all items on the prescription had been dispensed as their cheapest generic equivalents even if they were prescribed as brand name products;
- dispensed price – the value of the prescription as dispensed by the pharmacist.

Prices have been calculated in South African Rands (R3.50 = US$1). Prices represent recommended retail prices plus dispensing fee and value added tax (as at November 1992).

In determining the available generic drugs and brand name preparations, the MMAP list that is programmed into the computer software was used as a guide. In addition, reference was made to the Monthly Index of Medical Specialities (MIMS),\textsuperscript{11} as the more comprehensive source of medicinal products available in South Africa.

Data from the original prescriptions and computer printouts were transcribed onto data collection sheets, and subsequently captured into EpiInfo Version 5.00 (Centers for Disease Control Epidemiology Program, Atlanta, Georgia) by two independent operators, for purposes of cross checking for accuracy of input. In the interests of confidentiality, only two pharmacists
involved in this study (GP and TTZP) had access to the prescriptions. The pharmacy was identified by a code number only, and no information regarding the identity of the prescriber or patient was recorded on the data collection sheets.

Results
A total number of 1570 prescriptions with a total number of 4086 drugs, and an average of 2.6 drugs per prescription were reviewed. Only 7.6% of the prescriptions had five or more drugs per prescription; 22.4% had one drug, 29.9% had two drugs, 23.0% had three drugs, and 17.0% had four drugs per prescription.

Telephonic prescriptions comprised 5.8% of all prescriptions. Of the total number of prescriptions reviewed, 45.7% had at least one drug for which a generic equivalent was available, not necessarily prescribed. Only one prescriber (0.1%) stipulated 'or equivalent', and five (0.3%) prohibited generic substitution by writing 'no substitution' on the prescription.

Of the 961 (23.5%) drugs which had generic equivalents (out of a total number of 4086 drugs), 202 (21.0%) were prescribed as generic drugs. This is reflected in the cost analysis in that the original price was 6.8% higher than the generic price and only 2.2% lower than the brand name price. Although only five (0.3%) prescribers actively discouraged generic substitution, prescribers do appear to favour the use of brand name products in their prescriptions.

A noteworthy finding in this study was that brand name price was only 9.9% higher than generic price. However, depending on the item involved, cost savings from generic prescribing and generic substitution can range from 9.9% to 59.7% (mean 41.1%), as shown by Boyce and Bartlett. The finding that 76.5% of the drugs prescribed had no generic equivalents contributed to the relatively low level (9.9%) of savings that could be achieved through the use of generic drugs. Drugs without generic equivalents comprised a disproportionately large fraction of the total drug bill as they were the newer more

| Table 1. Price of prescriptions (in Rands) received by 10 pharmacists on 4 selected days |
|---------------------------------|---------------------------------|-----------------|
|                                 | Price of all 1570 prescriptions | Mean price      | Standard deviation |
| Original price                  | 184 894.37                      | 117.84          | 96.65             |
| Brand name price                | 189 042.56                      | 120.49          | 97.73             |
| Generic price                   | 172 038.68                      | 109.65          | 92.89             |
| Dispensed price                 | 182 305.40                      | 116.19          | 96.60             |

* original price – the value of the prescription as prescribed
brand name price – the value of the prescription assuming that all items on the prescription had been dispensed as brand name products even if they were prescribed as generic drugs
generic price – the value of the prescription assuming that all items on the prescription had been dispensed as their cheapest generic equivalents even if they were prescribed as brand name products
dispensed price – the value of the prescription as dispensed by the pharmacist

Discussion
Only 23.5% (961/4086) of the drugs prescribed had generic equivalents. Of these only 21.0% (202/961) were prescribed as generic drugs. This is reflected in the cost analysis in that the original price was 6.8% higher than the generic price and only 2.2% lower than the brand name price. Although only five (0.3%) prescribers actively discouraged generic substitution, prescribers do appear to favour the use of brand name products in their prescriptions.

A noteworthy finding in this study was that brand name price was only 9.9% higher than generic price. However, depending on the item involved, cost savings from generic prescribing and generic substitution can range from 9.9% to 59.7% (mean 41.1%), as shown by Boyce and Bartlett. The finding that 76.5% of the drugs prescribed had no generic equivalents contributed to the relatively low level (9.9%) of savings that could be achieved through the use of generic drugs. Drugs without generic equivalents comprised a disproportionately large fraction of the total drug bill as they were the newer more
expensive drugs. This highlights the need to also focus on doctors’ prescribing habits if more substantial savings are to be achieved.

A low rate of generic substitution (13.9%) was observed. It is not surprising therefore that the dispensed price was calculated to be only 1.4% lower than the original price. In South Africa at present, a pharmacist may not legally substitute an item on a prescription without the prescriber’s authorization. In the majority of cases when pharmacists did substitute, this was influenced by the MMAP scheme. Telephonic prescriptions did not have a higher generic substitution rate, suggesting that pharmacists are not using the opportunity of dialogue with the prescriber to suggest generic substitution.

While this study showed an indifference of prescribers to either actively promote or discourage generic substitution, a recent market research survey conducted by Markinor in the Johannesburg area reported that 74% of general practitioners do not support legalization of generic substitution by pharmacists. They felt that pharmacists, despite their training in pharmacology and therapeutics, were not competent in making appropriate clinical judgements to override the initial medical practitioner’s prescription. Generic substitution has been seen as a ‘usurpation of the doctor’s prerogative’ to prescribe freely and an unacceptable intrusion on professional freedom. Private medical practitioners in South Africa have long prided themselves on their freedom to prescribe any drug of their choice, whilst their colleagues in the public sector were restricted by hospital formularies, code lists or antibiotic policies as laid down by the Pharmacy and Therapeutics Committees. In addition, the ethical question, in terms of liability after substitution, remains a thorny and unresolved issue.

A word of caution should be noted since these findings may not be widely generalizable. The pharmacists may not be representative of all pharmacists in South Africa since they are from the two largest towns in one province of South Africa. Snowball sampling was used in selection of pharmacists, as it was anticipated that simple random sampling would have produced a poor response rate since many pharmacists would not have consented to participation in this study.

As was anticipated, pharmacists altered their substitution rate in March when they knew that their substitution practices were going to be observed. Since the reduction in the substitution rate was not substantial (17.8% vs 10.2%) and retrospective data were also included, this effect will not materially affect the conclusions.

In conclusion, generic prescribing and substitution have the potential to reduce drug costs by nearly 10% if they are encouraged and practised to their maximum capacity. Current restrictive prescribing and dispensing practices result in marginal cost savings from generic prescribing and substitution. At present, with doctors prescribing close to brand name price, generic substitution can reduce the drug costs by approximately 6.8% in South Africa. It is recommended that generic prescribing be encouraged through continuing medical education programmes for private medical practitioners in South Africa. The latter will only have an effect of reducing drug costs in the medium- to long-term. To achieve a reduction in drug costs in the short-term, the elimination of legal barriers to substitution by pharmacists and campaigns to counter the adverse publicity surrounding generic medicines is required. Concerns about the quality and effectiveness of generic substitutes will have to be allayed.

Elimination of legal barriers to generic substitution may not have the desired effect while pharmacists are dependent on a profit margin on the total price of drugs sold. Substituting the fixed percentage ‘profit on drugs’ mechanism with a professional fee so that there is no financial incentive to pharmacists to sell more expensive drugs would be an important additional policy change to encourage generic substitution. Attempts to reduce drug costs beyond the 9.9% level of potential savings through generic prescribing and substitution would need to investigate prescribing patterns in terms of types and appropriateness of the drugs prescribed.

References
Acknowledgements

Our gratitude to the pharmacists who participated in this study (Y Choshia, A Govindsamy, J Hansraj, R Hassan, MIE Hassim, VB Jogessar, G Naidoo, P Naidoo, R Naidu, L Odayar) and Eagle Computer Services for supply of the Pharmacy Dispensing Programme.

Biographies

Salim S Abdool Karim is the Director of the Centre for Epidemiological Research in Southern Africa and is an Honorary Lecturer at the University of Durban-Westville, University of Natal, Medical University of South Africa and Columbia University in the City of New York.

G Pillai is a Senior Lecturer in the Department of Pharmacology at the University of Durban-Westville.

Thandi T Ziququ-Page is a Senior Scientist in the Centre for Epidemiological Research in Southern Africa.

Mohamed H Cassimjee is Head of the Section of Family Medicine at the University of Natal.

Neetha Morar is a junior researcher in the Centre for Epidemiological Research in Southern Africa.

Correspondence: Dr SS Abdool Karim, Director, CERSA, MRC (Transvaal), Private Bag X385, Pretoria 0001, South Africa.

Sales practices of patent medicine sellers in Nigeria

M U ADIKWU

Department of Pharmaceutics, Faculty of Pharmaceutical Sciences, University of Nigeria, Nsukka, Nigeria

A survey was carried out among patent medicine dealers to evaluate their practices that militate against laws governing prescription-only medicines in Nigeria. Questionnaires were distributed to 46 patent medicine dealers and later collected from them on appointment. Analysis of the results showed that all the patent medicine dealers were aware of the law governing the sale of prescription drugs in Nigeria. Seventy-five per cent of them stock such drugs. Patent medicine dealers obtain their drugs largely from sales representatives of pharmaceutical companies as well as from industries. Inappropriate use of sales boys and girls in patent medicine stores and defective government policies were all investigated.

Introduction

In many developing countries, manpower shortage has led to people with no training in pharmacy being employed in the procurement, storage and distribution of drugs. In some developing countries, the ratio of pharmacists to the population is relatively high in urban areas but extremely low in rural areas.

This lack of personnel causes serious problems in the correct usage of drugs, especially where quacks are involved in drug distribution. In most cases, the drugs