# The Cost-effectiveness of Managed Care Regarding Chronic Medicine Prescriptions in a selected Medical Scheme

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## SUMMARY

The purpose of the study was to examine the cost-effectiveness of managed care interventions with respect to prescriptions for chronic illness sufferers enrolled with a specific medical scheme.
The illnesses included, were epilepsy, hypertension, diabetes and asthma.
The managed care interventions applied were a primary discount; the use of preferred provider pharmacies, and drug utilization review.
It was concluded that the managed care interventions resulted in some real cost savings.

## OPSOMMING

Die doel van die studie was om die koste-effektiwiteit van bestuurde sorg-tussentredes vir die voorskrifte van pasiënte, wat aan kroniese siektes ly en aan 'n spesifieke mediese skema behoort, te ondersoek. Die siektes ingesluit was epilepsie, hipertensie, diabetes mellitus en asma.
Die bestuurde sorg-tussentredes wat toegepas is, was 'n primêre afslag, die gebruik van voorgeskrewe apteke, en 'n oorsig van voorskrifte vir medisyne-verbruik. Daar is bevind dat die bestuurde sorg-tussentredes inderdaad tot ware kostebesparings bygedra het.

## INTRODUCTION

**Escalating health care costs are especially a problem in the treatment of those who suffer from chronic illnesses.**

Escalating health care costs are especially a problem in the treatment of those who suffer from chronic illnesses. For the health insurer the annual expenditure on acute and chronic medicines amounts to 30% of the total annual claims (Magennis:1996). Medicines accounted for 8,5% of the South African gross national product in 1992 to 1993 (McIntyre, Bloom, Doherty and Brijlal 1995:16). This is higher than for other countries, with an equivalent gross national product.

Approximately 75% of pharmaceutical products are sold in South Africa according to a tender system, where the price of medication is reduced to below cost in any case (Opie & Steyn 1995:1330). This means that the opportunity to make a profit on medication is shifted to the private sector, and the insured patient thus subsidises the government patient, by paying an exorbitant price for medication (Opie & Steyn 1995:1330; Walters 1991:33).

Currently, managed care, is used to describe a network of providers who have been given the responsibility of co-ordinating cost-effective health care, without compromising quality (Managed Care Information, Definition and Contract Considerations 1993:271; Ceslowitz 1993:366).

The following managed care principles need to be applied in addressing the excessive costs of pharmaceutical treatment of chronic illnesses among privately insured patients:

- Networking. This means that a preferred provider supplies medication to the patient in collaboration with the health insurer/medical aid, on the basis of a contract that specifies, amongst other things, the level of service to be rendered and price agreements.

- Price negotiation. The preferred provider supplies the medication according to an agreed discount structure.

- Drug utilization review. A review is done by the pharmacy on the prescription in order to control the cost thereof. It is an effort to reduce poly-pharmacy, a term used to describe a prescription which is so bulky that it becomes difficult for the patient to manage. (Hamdy, Moore,

*Research*

Whalen, Donelly, Compton, Testerman, Haulsee and Hughes 1995:535). Drug utilization review should not be done in isolation from the patients' diagnosis and other health care needs (Soumerai & Lipton 1995:1641).

- Formularies. A formulary is a concatenated list of essential drugs that is used to narrow the margin of choice when prescribing, and therefore reducing the overall cost of prescriptions (McGahan 1994:120). The list is comprehensive and dynamic and is aimed to promote doctors to prescribe in a cost-effective manner (Kongstvedt 1993:152). There are four types of formularies ranging from an open one, to a very tightly managed one (Guiaquinta 1994:31).

# REASONS FOR THE STUDY

## Purpose of the study

The purpose of the study was to examine the cost-containment effect of managed health care on the overall cost of medication taken to treat patients suffering from four chronic illnesses in a specific medical insurance company:

- epilepsy
- hypertension
- diabetes
- asthma

The mechanisms used to contain costs were:

- A discount on the price of medicines was negotiated.
- A single preferred provider for the supply of the medication was selected
- Drug utilization review on all new prescriptions was performed to search for opportunities to reduce the overall cost of prescriptions.

Drug prices are rising higher than other health care prices and in 1991 rose two to three times higher than consumer inflation (Taylor 1993:33). Not only are the prices rising, but the consumption of medicines is also increasing (Giaquinta 1994:31).

There is a limitation on the available funds to pay for uncontrolled health care costs. Medical aids are folding because of this burden and should the costs of health care remain uncontrolled, the health insurer will suffer the same fate.

Managed health care regarding medication control of patients suffering from chronic illnesses, needs to be assessed for what it really is.

# RESEARCH QUESTIONS

The following questions were asked to establish whether care interventions are effective in containing the costs of chronic medication prescriptions for asthma, epilepsy, hypertension and diabetes.

**1.** How does the utilization of preferred providers influence the cost of chronic medication prescriptions? Do agreements between third party payers and preferred providers regarding the discount available on chronic medicines effectively reduce the cost of chronic medicines?

**2.** Advocates of drug utilization review promote the concept of large savings that can be made on chronic prescriptions. What is the size of these savings?

**3.** Does the effort involved in drug utilization review reduce the cost of chronic medication prescriptions significantly?

**4.** Is managed care aimed at savings of medication costs, as well as the improvement in the quality of health care rendered?

**5.** Does the quality of the service rendered by the preferred providers influence the cost of these prescriptions?

# METHODOLOGY

A survey was used to examine the costs of long-term medication for the treatment of patients suffering from hypertension, epilepsy, diabetes and asthma.

Three managed care tools were implemented, namely a primary discount, drug utilization review, and the use of a preferred provider. The survey was used to describe the effect of the implementation of these managed care tools on the costs of the medication for the above-mentioned illnesses.

The costs of the medicines for the months January to June 1995, were compared with those of the second half, of the same year. The managed care interventions were implemented as follows:

- In the first half of the year, a primary discount, ranging between 16% and 35% was implemented in an attempt to reduce costs. For this purpose, one contract was introduced and another was in place with two postal pharmacies, Pharmacies A & B. The contracts with these two pharmacies was terminated on 30 June 1995. These two pharmacies were chosen as preferred providers of medicines for those members who had access to the *Chronic Illness Benefit* which covered medicines for specific chronic illnesses.

- From July to December another postal pharmacy, (Pharmacy C), was used as the preferred provider. In addition to performing drug utilization reviews on all prescriptions, this pharmacy also offered a discount of 35%.

- A comparison was made between the cost of medicines purchased at retail pharmacies and those bought from the preferred providers. This was done to see if the implementation of a discount coupled with drug utilization review significantly reduced the cost of long-term medication.

**Sample:**

The sample sizes for the different illnesses were as follows:

- Asthma: 1415 claimants
- Epilepsy: 494 claimants
- Hypertension: 3010 claimants
- Diabetes: 812 claimants

# RESEARCH INSTRUMENT

The research instrument was a questionnaire designed by the researcher in order to keep track of the expenditure relating to the Chronic Illness Benefit. It was used to produce two computer reports, namely the *Chronic Benefit Expenditure Report*, and the *Network Utilization Report.* A computer programmer discussed the researchers' specifications and questions to be asked in depth, prior to writing the programmes for the two reports.

The Chronic Benefit Expenditure Report was designed by the researcher to monitor the utilization of the Chronic Illness Benefit on a monthly basis. When the report was first tested, it was found to be unstable because of its bulkiness. It was refined and tested a second time. The report was printed twice for the data of one month, to check its stability.

The Network Utilization Report was used to track the utilization of the preferred provider pharmacies. This report was also printed twice for the same month, to check the stability of the programme and its reliability.

# RELIABILITY

The data used for the study were captured from pharmacy claims. These claims are produced by a standardised computer programme used by pharmacists in South Africa. Data capturing is done by claims assessors who have been through a standard training programme where they are trained on how to capture the relevant data.

# VALIDITY

Did the reports accurately measure the effects of managed care on the cost of

medicines for the four chronic illnesses in the study? Confounding factors were dealt with as follows:

- Inflation. The prices of medicines increase in an erratic and unpredictable manner. For the purpose of the study, it was assumed that these weekly changes would not significantly influence the cost of the chronic medicines, within the period of study, which was one year..

- New medicines on the market. This was accounted for by identifying the medicines that were brought out during the year of study.

- New generic medicines released on the market. This was accounted for by identifying them and their potential influence on the average cost of medicines per illness, per member.

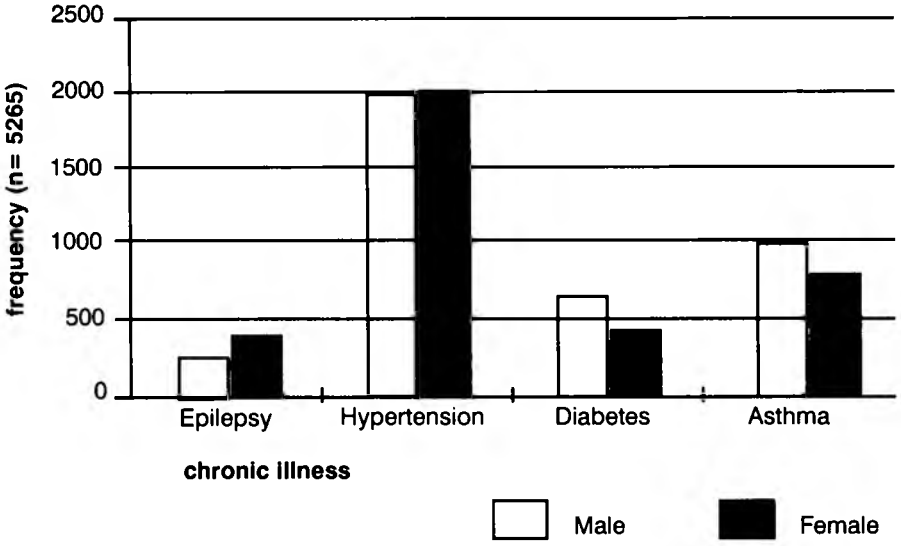
- Changes in illness severity. This was particularly a problem with asthmatics and was accounted for by random examining of the medicines claimed for by asthmatics during the labile period.

# FINDINGS

## Gender profile

Figure 1 shows the gender distribution of the members who had access to the Chronic Illness Benefit with regard to the illnesses included in the study.
As can be seen, there appears to be little difference between male and female members with hypertension. Conversely, Figure 1, reflects a higher prevalence of female sufferers of epilepsy, and a higher prevalence of male sufferers of diabetes and asthma.

**Figure 1: Bar graph depicting the gender profile of the members who had access to the Chronic Illness Benefit for the four illnesses studied.**




## EPILEPSY

The data in Figure 2 show the patterns of savings made in relation to the costs of the two types of providers. Since the costs for the first half of the year were erratic, the savings were equally erratic. The savings averaged R146 per member per month for the first six months of 1995. This savings average increased to R220 per member per month for the second half of 1995, after the introduction of tighter control of medication ordering and drug utilisation review.

## HYPERTENSION

This figure depicts the savings made from the discounts and drug utilisation review in relation to the costs per member per month for hypertensive medication.
The average monthly saving by the preferred provider for 1995 on medication for the treatment of hypertension was R109. This amounted to approximately half the average retail cost for the medicines that averaged at R223 per person per month.

## DIABETES

This figure demonstrates the patterns of expenditure and savings that were made on the cost of diabetic medication.
The savings that were made as a result of discounts and drug utilisation review were erratic. The smallest savings were made in June and August. The savings became more consistent as drug utilisation review was done more

**Figure 2: Bar graph depicting the savings on epilepsy prescriptions and the costs of the preferred provider and the retail pharmacy.**

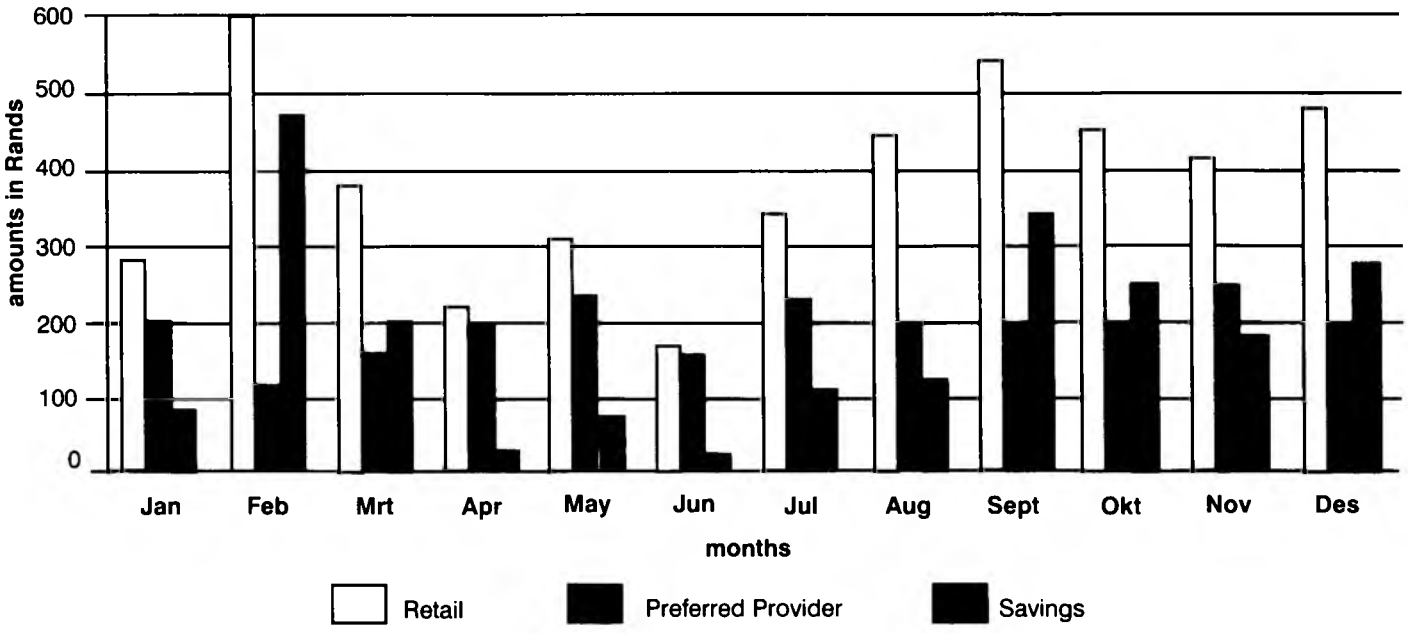
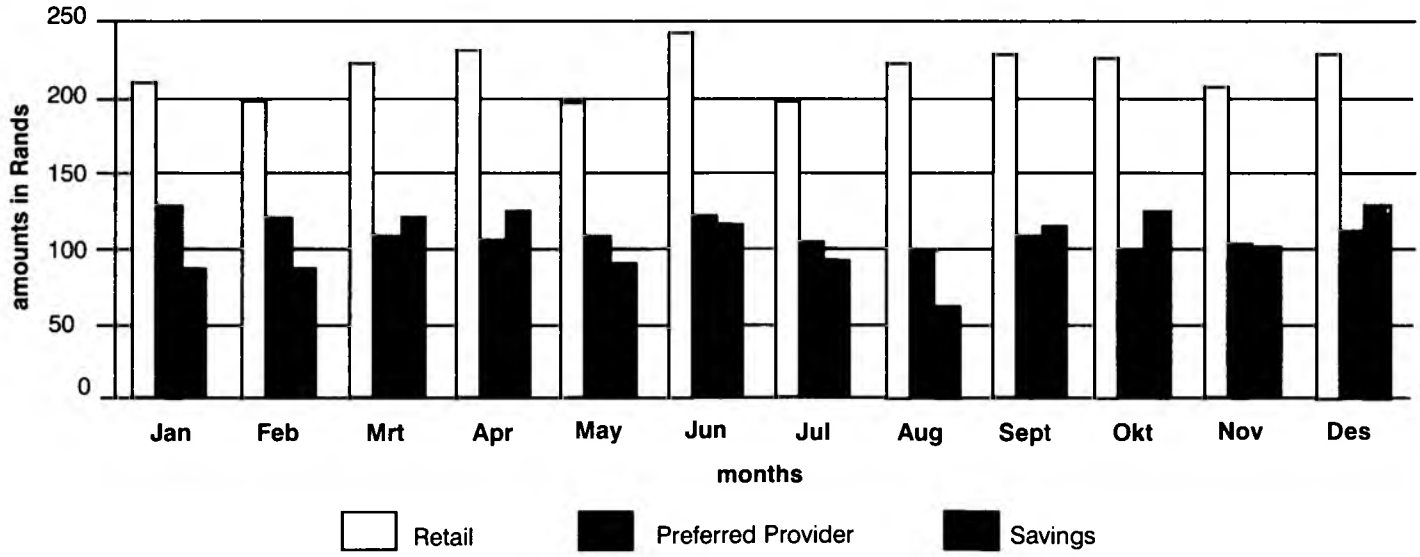


**Figure 3: Bar graph depicting the savings on hypertension prescriptions and the costs of the preferred provider and the retail pharmacy.**




stringently towards the end of the year. The smallest saving that was made was R7 in June and the largest saving was R483 for December. The average monthly saving was R142 which was 40% of the retail average monthly cost of R352.

## ASTHMA

This figure shows the asthmatic costs and savings for July to December 1995.
The average cost per month per member for the preferred provider was R216 and for the retail pharmacy it was R276.
The savings made by using a preferred provider were not high. They did not differ much from one half of the year to the other. It is possible to assume that drug utilisation review did not have an impact on the cost of these medicines. Perhaps the period of intervention was too short for any dramatic results to emerge.

## FINDINGS RELATED TO THE QUALITY OF SERVICE RENDERED BY THE PREFERRED PROVIDERS

The quality of the services rendered by the three preferred providers was audited by way of random informal checking of claims; by a formal audit done by an assistant pharmacist who had experience of drug utilization review and by monitoring and following up of complaints about the preferred providers. The following were found:

- A number of administrative errors were found, such as incorrect membership numbers, wrong dates, wrong delivery addresses, wrong patient, incorrect charging. (Although these errors did not directly influence the cost of medicines, because they were corrected prior to payment, they did result in dissatisfaction among the patients who now had to interact unnecessarily with the pharmacy).
- A few prescriptions were found where an opportunity for drug utilization review was missed, but the number of these was insignificant.
- There were a few incidences of over-supply of medication.
- Six incidents of dispensing errors were picked up.
- Service problems which were experienced, were the following:

* late delivery of medication

**Figure 4: Bar graph depicting the savings on diabetic prescriptions and the costs of the preferred provider and the retail pharmacy.**

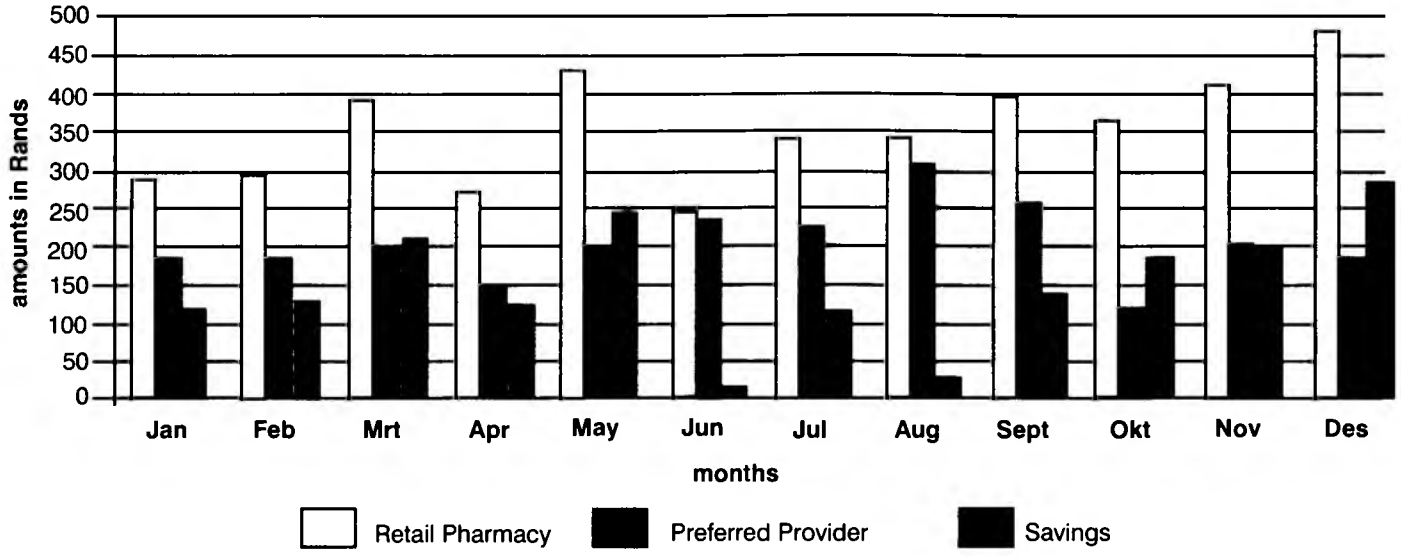
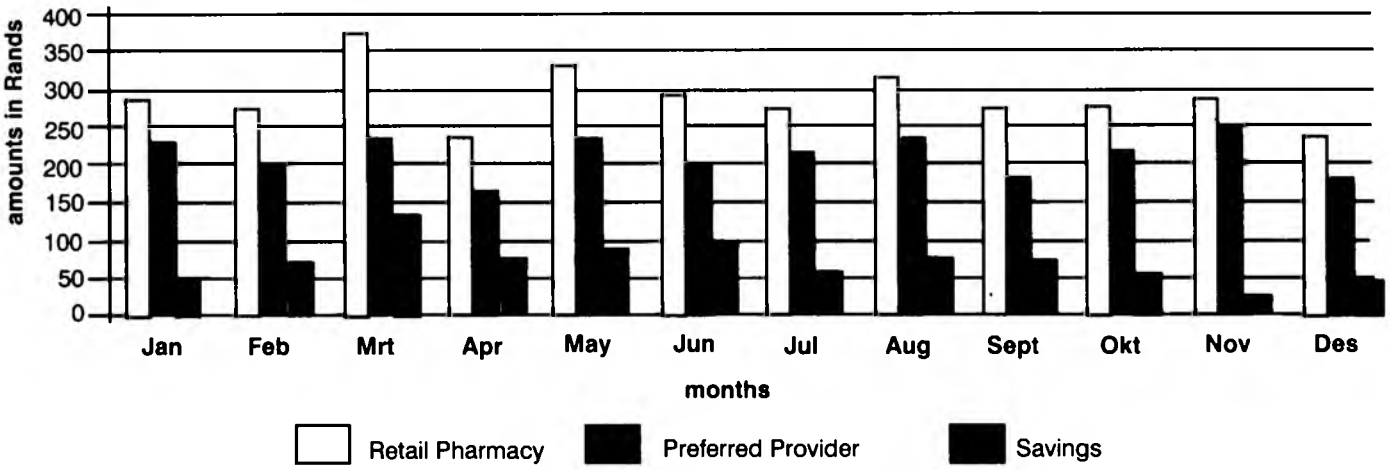


**Figure 5: Bar graph depicting the savings on asthma prescriptions and the costs of the preferred provider and the retail pharmacy.**




* dispensing errors
* members ordered their medicines for delivery on a specific date and were kept waiting after the delivery date without notification.

The price the medical aid had to pay for the poor service by the provider, was calculated according to

- the costs of the salary of the staff member who took the call and the time spent solving the problem
- the price of the telephone call to the provider to ascertain what went wrong and to organize for it to be corrected, and
- the cost of the stationary used to document the problem.

The cost of R41.10 per day that was spent on complaints did not significantly influence the savings made as a result of using the preferred provider for the supply of medicines. Where no real change occurred in the cost of the medicines as a result of the drug utilization review the 30% to 35% discount appeared to absorb the cost of the complaints.

## CONCLUSIONS

Table 1demonstrates the savings made during the fist half of 1995 as a result of managed care interventions.

**TABLE 1**

| Chronic illness | Preferred Provider cost | Retail Pharmacy cost | The difference between the two pharmacy costs | The percentage difference between the two pharmacies |
|---|---|---|---|---|
| Epilepsy | R180 | R326 | R146 | 44% |
| Hypertension | R116 | R222 | R106 | 47% |
| Diabetes | R190 | R259 | R69 | 27% |
| Asthma | R213 | R301 | R88 | 29% |

**TABLE 2**

| Chronic illness | Preferred Provider cost | Retail Pharmacy cost | The difference between the two pharmacy costs | The percentage difference between the two pharmacies |
|---|---|---|---|---|
| Epilepsy | R211 | R449 | R230 | 51% |
| Hypertension | R110 | R223 | R113 | 39% |
| Diabetes | R230 | R379 | R149 | 39% |
| Asthma | R216 | R276 | R60 | 22% |

Table 2 demonstrates the savings made during the second half of 1995 as a result of managed care interventions.

## SAVINGS RESULTING FROM THE APPLICATION OF A PREFERRED PROVIDER AND DISCOUNT

- In the case of epilepsy and hypertension, a saving of 44% and 47% respectively was demonstrated per member per month. This was greater than the primary discount that had been agreed upon between the preferred providers and the medical aid.

- Conversely, the saving made on diabetes and asthma was 27% and 29% respectively. This was less than the primary discount that was applied.

- In general terms savings were made as a result of the application of a primary discount, with two illnesses showing a lower saving than was expected, while the other two illnesses demonstrated a saving that was higher than was expected.

## SAVINGS RESULTING FROM THE APPLICATION OF DRUG UTILISATION REVIEW ON CHRONIC PRESCRIPTIONS

An expected saving of 11% was achieved for epilepsy. Drug utilisation did not significantly affect the cost of hypertensive medicines. A significant saving was made on the cost of diabetic medicines. Savings were lost on the

asthmatic medicines after the application of drug utilisation review from a saving of 29% to 22%.

## THE EFFECT OF THE QUALITY OF SERVICE ON THE COST OF CHRONIC PRESCRIPTIONS

Most of the service problems that were experienced did not significantly affect the savings that were made by the application of the primary discount and the drug utilisation review. However, the over-supply of medicines and the cost of dealing with complaints did influence the degree of savings that were made.

The research questions that were asked at the beginning of the study were addressed in the following manner:

1. Drug utilisation review reduces the cost of the prescriptions for epilepsy, hypertension and diabetes as discussed in the objectives above. It negatively affected the cost of prescriptions for asthmatics in that the savings for the second half of the year were smaller than for the first six months, where only a primary discount was applied.
2. The size of the savings resulting from drug utilisation review were 7% for epilepsy, 12% for diabetes, 4% for hypertension and -7% for asthma (refer to Tables 1 and 2).

3. Since more than 53% of the members used the preferred provider the effect of drug utilisation review and a primary discount was maximised.

4. Contracts between the payer of health services, such as medical aids, and preferred providers do reduce the cost of medicines in reality.

## CONCLUDING REMARKS

The degree of savings as a result of applying managed care principles on the supply of chronic medicines varied according to each illness. The savings ranged between 22% and 51%.

In terms of the purpose of the study, the effect of applying managed care principles in a medical aid in respect of the cost of chronic medicines did reduce the average cost of the prescriptions for those who suffer from epilepsy, diabetes and hypertension. The effect was limited in the case of asthma.

The study set out to examine the effectiveness of implementing elements of managed health care in controlling the costs of medicines for chronic illnesses. In general terms, it can be said that this implementation was indeed effective.

## REFERENCES


**Ceslowitz, SB. 1993.** Managed care: controlling costs and changing practice. *MEDSURG Nursing: Official Journal of the Academy of Medical-Surgical Nurses*. 2(5): 359-66.

**Glaquinta, D. 1994.** Session II: Drug formularies - Good or Evil? A view from a managed care provider. *Cardiology*. 85(Suppl 1): 30-35.

**Hamdy, RC, Moore, SW, Whalen, K, Donnelley, JP, Compton, R, Testerman, F, Haulsee, P and Hughes, J. 1995.** Reducing polypharmacy in extended care. *Southern Medical Journal*. 88(5): 534-8.

**Kongstvedt, PR. 1993.** *The Managed Health Care Handbook*. Maryland: Aspen.

**Magennis, R. 1996.** International trends in managed care. *Conference Proceedings. Medical Advisors Conference.*

**Managed Care Information, Definitions and Contract Considerations. 1993.** *Journal of Arkansas Medical Society*. 90(6): 271-5.

**McGahan, AM. 1994.** Industry Structure and Competitive Advantage. *Harvard Business Review*. Volume and number unknown. Pages 115-124.

**McIntyre, D, Bloom, G, Doherty, J, Brijlal, P. 1995.** *Health Expenditure and Finance in South Africa*. South Africa: Health Systems Trust, World Bank.

**Opie, LH and Steyn, K. 1995.** Rationale for the hypertension guidelines for primary care in South Africa. *South African Medical Journal*. 85(12):1325-1338.

**Soumerai, SB and Lipton, HL. 1995.** Computer-based drug-utilization review - risk, benefit, or boondoggle? *New England Journal of Medicine*. 332 (24):1641-5.

**Taylor, K. 1993.** A Dose of Pharmaco-economics. *Hospitals & Health Networks.* 67(13):33-6.

**Walters, L. 1991.** The rational use of medicines in primary health care. *Nursing RSA Verpleging*. 6(8): 33-37.