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About the study:

The research presented in this paper was conducted by Nicola Foster in partial fulfilment of the requirements for a MPH (health economics) from the University of Cape Town. Prof Di McIntyre supervised the study.

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HEU Policy Briefs present summarised research findings and key policy recommendations on important health care policy issues in Sub-Saharan Africa.

Different models of pharmaceutical care in South Africa

What is the cost and impact on patients' access to antiretroviral therapy?

Key points

- South Africa is committed to providing antiretroviral treatment (ART) to all South Africans who need it. There are insufficient pharmacists working in public sector facilities to dispense ART to all these patients, and so dispensing tasks must be shifted to pharmacists assistants and/or nurses ('task-shifting').
- The pharmacists assistant pharmaceutical care model has the lowest cost to the health system and would support a more integrated primary health care service.
- Patients getting their ART by attending pharmacists assistant model and nurse model facilities experienced relatively better geographic access to facilities and lower transport costs, compared to those attending more central facilities that employ pharmacists.
- Patients prefer a nurse to dispense their ARTs as this reduces the risk of being identified by other patients as being HIV-positive.
- The pharmacists assistant model can be made more acceptable to patients by ensuring that there are no differences between patient folders (e.g. those on ART should not have different coloured folders) and dispensing all medication (not only ARTs) in brown paper bags.

Introduction

Given the large number of patients who need antiretroviral treatment (ART) in South Africa, it is necessary to decentralise ART services and integrate them into the primary health care system. This will require pharmacy services to be scaled-up, including pharmaceutical supply systems, infrastructure and staff to dispense ARTs. At the same time, it is important to ensure that the pharmaceutical service is safe and efficient. All of this must be achieved within the context of a scarcity of health care professionals.

Task-shifting has been shown to be an effective and safe way of addressing the problem of insufficient professional staff. Task-shifting refers to the delegation of tasks from highly skilled workers to those

with either less training or training in undertaking specific tasks. In South Africa, the shortage of pharmacists in the public sector has led to the use of Pharmacists Assistants (PA) and nurses to support the expansion of the ART programme (see Box 1).

Objectives

The objective of the research reported here was to critically evaluate the two different task-shifting models and the pharmacist model for dispensing ART. The costs and impact on access to ART services for patients of each model were compared. The infrastructure costs of introducing the ISPA model were also calculated to assist in planning for accessible ART services.

Box 1: What are the models of pharmaceutical care for ART?

- ◆ **Pharmacist model (the standard of care):** where medication is dispensed directly to patients by a pharmacist.
- ◆ **Indirectly supervised pharmacists assistant (ISPA) model:** where a PA, working under the indirect supervision of a pharmacist based in another facility, dispenses medication directly to patients and is responsible for stock control.
- ◆ **Nurse model:** where prescriptions are sent to a nearby hospital pharmacy, where they are prepared before the patient's expected appointment date and delivered to the primary health care clinic in patient-ready packs. The nurse then provides the patient with medication, reviews the patient's progress, and returns uncollected medication to the pharmacy.

Methods

The study was conducted in a peri-urban district in the Western Cape of South Africa, where all three models of pharmaceutical care exist. Six health facilities were sampled; two facilities were selected for each of the three models of pharmaceutical care. A total of 224 patient exit interviews were conducted to explore patients' access to ART services, and staff time spent on pharmacy-related tasks was observed.

Information on staff salaries was obtained to calculate the cost of staff time for each model. The main difference in cost between the pharmaceutical care models relates to staff costs; the cost of diagnostic and monitoring tests and medication are the same across models. For this reason, the focus was on comparing staff costs across the three models.

Results

Costs of dispensing ARTs: comparing the three models

Table 1 summarises the staff cost per patient treated for the three pharmaceutical care models. The annual staff costs per patient treated are lowest for the pharmacist model. This is mainly because there are fewer visits by each patient per year in this model. These services have been running for longer, patients are more stable on treatment and are therefore receiving their medication every two months rather than monthly. It is also important to recognise that it is not possible to scale-up a pharmacist-driven service given the scarcity of pharmacists in the public sector.

However, the pharmacists assistant model has the lowest cost per patient visit of all three models. Also, it has a far lower cost (per visit and per year) than the other task-shifting model (the nurse-driven model). This is mainly due to the value of nurses' time; it is therefore important to consider whether dispensing medication is an efficient use of nurses' time.

Given the scarcity of pharmacists in the public health sector, the many demands on nurses' time and the lower cost of the pharmacists assistant model, the indirectly supervised pharmacists assistant model appears to be the most

Table 1: Staff cost of ART service use, compared between different service models

Level of service	Average number of visits per patient per year	Average staff cost to provider per visit	Average annual staff cost per patient treated
Full-time pharmacist	7.78	R 50.78	R 395.07
Pharmacists assistant under indirect supervision	10.74	R 44.76	R 480.72
Nurse-driven dispensing	9.78	R 79.26	R 775.16



feasible option for scaling-up ART services. It also has the advantage of strengthening primary health care services more broadly, as pharmacist assistants can dispense medication for other chronic and acute conditions treated in the health facility.

However, implementing the ISPA model requires the development of a dispensary registered with the South African Pharmacy Council. Smaller primary health care clinics often only have a medicine room, designed for the bulk storage of patient-ready packs. The medicine room is often not big enough to support the dispensing of products directly to patients. An estimate of the cost of the infrastructure upgrade is given in Table 2.

Table 2: The cost of upgrading a medicine room to a dispensary

Description	Cost (Rand)
The modification and enlargement of medicine room to dispensary	R 18 737.00
Security	R 8 500.00
Equipment	
Shelving	R 8 874.64
Signage	R 85.00
Electronic & electrical	R 42 617.00
Reference sources	R 1 297.50
Dispensing equipment	R 6 296.57
General	R 3 135.34
Total	R 89 543.05

Data sources: Lizette Monteith, Keth'Impilo; Lindsay Wilson, PGWC HIV directorate and Margaret von Zeil, City of Cape Town



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Patients' access to ART services

The costs of providing health care services should not be the only consideration when choosing between the different models of pharmaceutical care. Ensuring that patients have good access to health care is also of importance. There are a number of different aspects of access to health care (see Box 2), each of which is briefly considered here.

Box 2: What are the different aspects of health care access?

- ◆ **Availability:** Sometimes referred to as physical access, this includes issues such as the distance to facilities, the opening hours of the facility and whether the correct staff, equipment and medicines are available to treat patients appropriately.
- ◆ **Affordability:** Sometimes called financial access, this refers to the costs of using health care relative to patients' ability to pay for these costs.
- ◆ **Acceptability:** This refers to staff attitudes towards and expectations of patients and *vice versa*.

Availability

More patients lived within walking distance of the facilities where ART was dispensed by ISPAs (95%) and nurses (87%) than those attending pharmacist model facilities (28%). However, in spite of the greater geographic accessibility of the facilities where dispensing is undertaken by ISPAs and nurses, patients attending these facilities did not always receive their ARTs. This was because drug stock-outs were experienced at two facilities (one a nurse and the other an ISPA model facility):

- ◆ 30% of respondents at the ISPA clinic and 42% at the nurse clinic said that they did not always receive medication and had to return another day to collect medication due to them.
- ◆ Drug stock-outs arose due to difficulties in stock management.
- ◆ Under the nurse-based clinic model, medicines are prepared at a hospital into individual labelled packages for each patient, and sent to the nurse. At the clinic experiencing medicine stock problems, patients did not always arrive on their appointment dates or sometimes their prescriptions needed to be changed. In order to facilitate continued care, the nurse would give some medicine prepared for another patient. This resulted in a cycle of insufficient drug supply and was concerning for patients. As one patient noted:

“They give you ‘bietjie bietjie’ [little, little] tablets with other people’s names on it. It confuses us.”

- ◆ At the ISPA facility, the main reason why some patients did not receive their ARTs was that there were insufficient doctors at the facility to renew prescriptions. Without up-to-date prescriptions, pharmacists assistant were not legally able to dispense medication to patients.

Affordability

Patients incurred considerable costs in attending ART services, amounting to an average of R37.18 per visit by patients attending a pharmacist clinic, compared to R16.03 at a nurse-based clinic and R12.60 per visit at an ISPA clinic (see Box 3). Patients who were employed said that they forfeited an average of approximately R100 per day in missed wages.

Box 3: What costs incurred by patients were included in the analysis?

The direct costs incurred by patients included the cost of transport, any facility fees, the cost of employing someone to take over tasks (such as childminding), accommodation if sleeping over, and the cost of food and telecommunication while waiting at the facility.

These costs are multiplied when patients have to return to collect ARTs due to the unavailability of medicines on the first visit. This could impact on patient adherence to ART.

Acceptability

In spite of the challenges regarding medicine availability in the nurse-based model, the majority of patients indicated that they would prefer receiving medication from the nurse as opposed to at the pharmacy. While this was partly due to patients feeling that there would be shorter waiting times, the most common reason for preferring nurse-based dispensing was that their HIV-positive status would remain confidential, as explained by the following patient:

“The people ask us so many questions that are not pleasant. I don’t find it easy to collect them at the pharmacy ‘cause it is like automatic disclosure of my status to everyone.”

Respondents at one of the ISPA facilities explained that different coloured folders are used for patients in the ART program than those used for the patients accessing other services at that facility.

“People say things about us because we have different folders, so if they can change the folder maybe it would be fine to take treatment at the pharmacy”

Policy recommendations

The study highlighted that the ISPA pharmaceutical care model is cost-saving both for the health system and for patients when compared to the nurse model. It also frees up the time of nurses to undertake other clinical tasks and supports the integration of ART into primary health care services.

The ISPA model should therefore be scaled-up in resource-limited setting. However, it is important to address patients’ concerns around confidentiality and stigma.

Possible approaches would be to:

- ◆ Remove any ART service identifiers from patient folders by ensuring that all patients accessing the facility have the same colour and type of folder; and
- ◆ Improve patient confidentiality in the pharmacy by putting up screens next to the dispensing window, limiting the view from the waiting area, and dispensing all medication (not just ARTs) in brown paper bags.

References: For a full list of references, please contact the author.

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