

## RESEARCH BRIEF

By 2030, it is estimated that non-communicable diseases (NCDs) will account for more than 50% of the mortality in low-income countries, surpassing communicable diseases.<sup>1</sup> Evidence shows that HIV treatment is associated with the development of diabetes, hypertension and metabolic syndrome.<sup>2,3,4</sup> HIV patients are also living longer. This increase in life expectancy, and the interaction between HIV treatment and the development of diabetes and hypertension, will contribute to large projected increases in NCDs in the coming years.<sup>5</sup>

### Why our study?

One of the key strategies to reduce the global impact of NCDs is investment in the technology, processes and structures to identify, diagnose and treat these conditions as early as possible. There is currently poor investment for this in sub-Saharan African countries. The aim of our study was to investigate the feasibility and outcomes of an integrated, affordable screening programme for risk factors associated with diabetes and hypertension in a busy HIV clinic in rural Swaziland. Swaziland has the highest estimated prevalence of HIV infection in the world.<sup>6</sup>

### Study setting and methods

The study took place in a busy hospital-based HIV treatment clinic in the rural province of Lubombo in Swaziland. The clinic has nearly 6,000 registered patients who are seen in the clinic at least once every 3 months.

We screened 5,821 patients. Of these, 400 (6.9%) screened positive for at least one risk factor associated with diabetes and hypertension.

The 2-stage screening process aimed to identify patients at the highest risk of hypertension or diabetes, while minimising disruption to patient flows at clinic and minimising the time and costs associated with using glucometer tests.

### Key messages



It is feasible to integrate non-communicable disease (NCD) screening programmes into HIV services in low-resource, sub-Saharan African settings.



Confirmatory tests and diagnosis should be carried out in the hospital-based HIV service instead of sending patients for repeat testing at community health centres where attendance and follow-up rates were low.



Prevalence data for diabetes and hypertension is highly variable across sub-Saharan African countries. Health risk factors for specific in-country patient populations need to be fully understood to inform screening programme design and implementation decisions.



More research is needed to assess the cost-effectiveness of carrying out NCD screening and confirmatory testing in the HIV unit, as well as the cost-effectiveness of screening other populations, eg in the hospital outpatient department.

- **Stage 1:** All patients attending the HIV treatment clinic had measurements taken by a nurse or healthcare assistant for a) blood pressure (BP) using an automated BP machine and b) weight and height, to calculate body mass index (BMI). They were also asked if they had a first degree relative who is diabetic.
- **Stage 2:** Patients who screened positive for at least 1 risk factor at stage 1 were given a manual BP check to confirm the automated reading, and a blood glucose (BG) check using a glucometer.

All patients who were identified as having a high BP or high BG reading were referred to their local health centre for retesting and diagnosis. This comprised 1 further BG and/or 2 further BP readings.

## Our findings

1. It is feasible, with a relatively small investment, to screen a large population of patients attending a HIV clinic in a resource-constrained setting. However, we found relatively few people with high BG and high BP in comparison to the estimated prevalence for the country.<sup>7</sup>

BMI was the most common risk factor identified. 5.5% of those we screened had a BMI indicative of being overweight or obese, which is substantially lower than the estimated national prevalence of almost 20%.<sup>7</sup> 3% of those we screened had a high BP reading, which is substantially lower than estimated national prevalence of 33%.<sup>7</sup>

2. Our screening protocol was able to identify key NCD risk factors in a high-HIV prevalence, low-resource setting. However, it appeared to be ineffective in delivering timely follow-up diagnostic tests in the community. There were problems with patients' attendance and information flow to and from the community health facilities.

Only 3.7% of patients with high BP, and 23% of patients with high BG, were known to have had full follow-up diagnostic tests in the community health centres. Only 1 patient was confirmed to have diabetes mellitus, and 6 patients were confirmed to be hypertensive.

## Influencing factors

- The low rates of high BP and BG could be a reflection of our study population demographics, who had a mean age of less than 45 years old.
- There may also be issues with the use of BMI as a risk factor to predict poorer cardiovascular outcomes. While waist circumference is a stronger predictor of high BG and high BP<sup>8</sup>, we chose BMI as clinic staff felt more confident measuring and interpreting this.

These low numbers could be due to:

- poor communication of test results between community health centres and the hospital HIV unit
- poor travel infrastructure to community health centres where patients were sent for confirmatory tests
- high cost of using public transport to reach health centres
- poor awareness among patients of the potential seriousness of diabetes and hypertension
- lack of capacity and skills at health centres for diagnosing and treating hypertension and diabetes.

## Lessons to share

- The large disparity between high BG and high BP prevalence rates in our study and the national population suggests there are significant population data information gaps. It is important that population health risk factors are better understood to support screening programme implementation decisions.
- The high cost and poor provision of public transport can be a substantial barrier for patients with limited financial resources. It may have been more effective if follow-up confirmatory tests had also been performed at the hospital-based HIV unit as part of the patient's normal treatment package.

## Read more:

- **Journal paper:** McConalogue D, Nxumalo B, Busawala F, Sharp A, Walley J. (2017) Implementation of a non-communicable disease screening programme in a rural African HIV clinic. *HIV/AIDS Research and Treatment Open Journal*. 4(1): 32-39 [doi.org/10.17140/HARTOJ-4-125](https://doi.org/10.17140/HARTOJ-4-125)
- **Policy brief:** [Decentralising non-communicable disease care in the Kingdom of Eswatini](#)

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