# Voluntary Medical Male Circumcision as a Platform for Non-Communicable Disease Case Finding in Namibia

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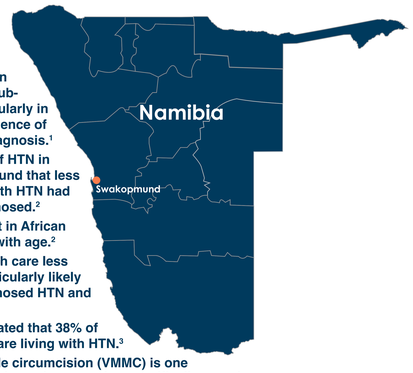
## Background




- The burden of non-communicable diseases (NCDs), including hypertension (HTN), is growing in sub-Saharan Africa, particularly in urban areas, with evidence of considerable underdiagnosis.[1]
- A systematic review of HTN in sub-Saharan Africa found that less than 40% of people with HTN had been previously diagnosed.[2]
- HTN is more prevalent in African males and increases with age.[2]
- Males, who seek health care less than females, are particularly likely to suffer from undiagnosed HTN and other NCDs.
- In Namibia, it is estimated that 38% of the urban population are living with HTN.[3]
- Voluntary medical male circumcision (VMMC) is one of few preventive health services catering specifically to males.
- Optimal VMMC service delivery infrastructures provide ideal health screening opportunities, including NCD screening.
- The Namibian Ministry of Health and Social Services and Jhpiego launched high-volume, nurse-led VMMC services at Swakopmund State Hospital in Erongo Region, Namibia, in May 2016.
- Over 90% of the clients served through July 31, 2016, were aged 20 years or older, in contrast to VMMC clients across eastern and southern Africa, the majority of whom have been aged between 10 and 19 years.[4]

## HTN Screening

- All clients received full physical screening prior to VMMC services, including preoperative screening for HTN, diabetes, bleeding disorders, and TB.
- Blood pressure (BP) was measured using the appropriate cuff size and taken at the level of the heart.
- Clients presenting with BP at or above 140/90 mm Hg were remeasured after progressively widening intervals of rest (1, 15, and 30 minutes), as needed.
- If BP remained elevated after four measurements, clients were referred to the Outpatient Department for review and management, and surgery was deferred.

## Methods

- Jhpiego abstracted data from client records for males registered for VMMC services between May 13 and July 31, 2016, including preoperative physical screening data, to characterize the proportion of clients with BP at or above 140/90 mmHg.
- A random sample of 28 suspected hypertensive clients were contacted post hoc to determine whether they had been previously diagnosed.

## Classification of HTN

### Table 1. HTN classification according to elevated systolic or diastolic BP (mmHg)

| Classification | Systolic BP (mmHg) | Diastolic BP (mmHg) |
|---|---|---|
| Normal to high normal (pre) HTN | 120–139 | 80–89 |
| Mild HTN—stage 1 | 140–159 | 90–99 |
| Moderate to severe HTN—stage 2 | > 160 | > 100 |

Source: Ministry of Health and Social Services [Namibia]. 2011. *Namibia Standard Treatment Guidelines.* http://apps.who.int/medicinedocs/documents/s19260en/s19260en.pdf.

## Classification of Isolated Systolic Hypertension (ISH)

### Table 2. ISH classification according to elevated systolic

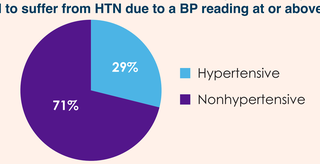
| Classification | Systolic BP (mmHg) | Diastolic BP (mmHg) |
|---|---|---|
| Stage 1 | 140–159 | < 90 |
| Stage 2 | 160–179 | < 90 |
| Stage 3 | > 180 | < 90 |

Source: Whitworth JA; World Health Organization, International Society of Hypertension Writing Group. 2003. 2003 World Health Organization (WHO)/International Society of Hypertension (ISH) statement on management of hypertension. *J Hypertens.* 21(11):1983–1992. doi: 10.1097/01.hjh.0000084751.37215.d2.

## Results

### Figure 1. Screened Clients

- Of the 1,266 males screened for VMMC between May 13 and July 31, 2016, 367 (29%) were suspected to suffer from HTN due to a BP reading at or above 140/90 mmHg.

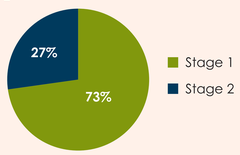



### Table 3. Age and HTN screening outcome of 1,266 VMMC clients screened May 13–July 31, 2016

| | Age in Years | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | 15–19 | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | 45–49 | 50+ | |
| Number of clients with normal BP | 54 | 243 | 252 | 162 | 90 | 63 | 18 | 17 | 899 |
| Number of HTN suspects | 15 | 73 | 93 | 71 | 41 | 40 | 14 | 20 | 367 |
| Total number screened | 69 | 316 | 345 | 233 | 131 | 103 | 32 | 37 | 1,266 |
| Percentage of clients that were HTN suspects | 22 | 23 | 27 | 30 | 31 | 39 | 44 | 54 | 29 |

### Figure 2. Hypertensive

- Classification of clients suspected to have HTN according to average BP measurements (n = 367)
  - 269 (73%) stage 1
  - 98 (27%) stage 2



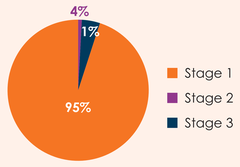

### Table 4. Age and classification of VMMC clients screened and suspected to suffer from HTN (n = 367)

- 95% of clients suspected to suffer from HTN (n = 367) were aged 15–49 years (young adults < 50 years of age)

| | Age in Years | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | 15–19 | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | 45–49 | 50+ | |
| Stage 1 | 11 | 62 | 75 | 49 | 30 | 26 | 7 | 9 | 269 |
| Stage 2 | 4 | 11 | 18 | 22 | 11 | 14 | 7 | 11 | 98 |
| Total | 15 | 73 | 93 | 71 | 41 | 40 | 14 | 20 | 367 |

### Figure 3. Isolated Systolic Hypertension

- Classification of clients suspected to have ISH (> 140/< 90 mmHg) according to average BP measurements (n = 142)
  - 135 (95%) stage 1
  - 6 (4%) stage 2
  - 1 (1%) stage 3




### Table 5. Age breakdown of random sample (n = 28) contacted to determine HTN status prior to VMMC screening

Of the random sample of 28 suspected hypertensive clients contacted post hoc:

- 13 (46%) had been diagnosed with HTN prior to VMMC
- 15 (54%) were newly diagnosed with HTN as result of VMMC screening
- 14 (93%) of those newly diagnosed were aged < 50 years

| | Age in Years | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | 15–19 | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | 45–49 | 50+ | |
| Number (%) known | 0 | 0 | 2 (7) | 0 | 2 (7) | 1 (4) | 4 (14) | 4 (14) | 13 (46) |
| Number (%) unknown | 1 (4) | 0 | 4 (14) | 7 (25) | 1 (4) | 1 (4) | 0 | 1 (4) | 15 (54) |
| Total | 1 | 0 | 6 | 7 | 3 | 2 | 4 | 5 | 28 |

## Conclusions

- VMMC screening represents an important opportunity for HTN and other non-communicable disease (NCD) case finding, particularly in programs serving male clients aged 15–49 in geographic areas where considerable underdiagnosis is evident.
- Individuals suffering from HTN at an early age are at risk for developing various health problems, including hardening of the arteries, stroke, brain hemorrhage, kidney malfunction, and blindness. In addition to being at increased risk, they also experience higher rates of death from stroke and kidney disease than the general population. Increased early HTN diagnosis is shown to improve males' management of their cardiovascular health, thus case finding in VMMC services has the potential to contribute to reduced morbidity and reduced burden to the health care system from advanced cardiovascular disease and treatment.
- VMMC programs seeking to attract a greater proportion of males aged 15–29 should prioritize careful preoperative physical screening, as well as a systematic approach to deferrals and active referrals for clients diagnosed with HTN.
- Service delivery models integrated/co-located with primary care may help reduce loss to follow-up for males newly diagnosed with HTN. Research is needed to better understand the full NCD disease burden in VMMC clients within and outside of Namibia.

## References

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