

Quarterly Research Digest
on Voluntary Medical Male Circumcision for HIV Prevention

1. Bochner, A. F., et al. **Adverse event profile of a mature voluntary medical male circumcision programme performing PrePex and surgical procedures in Zimbabwe.** *J Int AIDS Soc* 2017;19(1): 1-6.

INTRODUCTION: The frequency of adverse events (AEs) is a widely used indicator of voluntary medical male circumcision (VMMC) programme quality. Though over 11.7 million male circumcisions (MCs) have been performed, little published data exists on the profile of AEs from mature, large-scale programmes. No published data exists on routine implementation of PrePex, a device-based MC method.

METHODS: The ZAZIC Consortium began implementing VMMC in Zimbabwe in 2013, supporting services at 36 facilities. Aggregate data on VMMC outputs are collected monthly from each facility. Detailed forms are completed describing the profile of each moderate and severe AE. Bivariate and multivariable analyses were conducted using log-binomial regression models.

RESULTS: From October 2014 through September 2015, 44,868 clients were circumcised with 156 clients experiencing a moderate or severe AE. 96.2% of clients had a follow-up visit within 14 days of their procedure. AEs were uncommon, with 0.3% (116/41,416) of surgical and 1.2% (40/3,452) of PrePex clients experiencing a moderate or severe AE. After adjusting for VMMC site, we found that PrePex was associated with a 3.29-fold (95% CI: 1.78-6.06) increased risk of experiencing an AE compared to surgical procedures. Device displacements, when the PrePex device is intentionally or accidentally dislodged during the 7-day placement period, accounted for 70% of PrePex AEs. The majority of device displacements were intentional self-removals. Overall, infection was the most common AE among VMMC clients. Compared to clients aged 20 and above, clients aged 10-14 were 3.07-fold (95% CI: 1.36-6.91) more likely to experience an infection and clients aged 15-19 were 1.80-fold (95% CI: 0.82-3.92) more likely to experience an infection, adjusted for site.

CONCLUSION: This exploratory analysis found that clients receiving PrePex were more likely to experience an AE than surgical circumcision clients. This is largely

attributable to the occurrence of device displacements, which require prompt access to corrective surgical MC procedures as part of their clinical management. Most device displacements were self-removals which are preventable if client behaviour could be modified through counselling interventions. We also found that infection after MC is more common among younger clients, who may benefit from additional counselling or increased parental involvement.

2. Westercamp, M., et al. **Changes in male circumcision prevalence and risk compensation in the Kisumu, Kenya population, 2008-2013.** *J Acquir Immune Defic Syndr* 2017;74(2): e30-e37.

BACKGROUND: Three randomized controlled trials showed that voluntary medical male circumcision (VMMC) reduces the risk of female-to-male HIV transmission by approximately 60%. However, data from communities where VMMC programs have been implemented are needed to assess changes in circumcision prevalence and whether men and women compensate for perceived reductions in risk by increasing their HIV risk behaviors.

METHODS: Scale-up of free VMMC began in Kisumu, Kenya in 2008. Between 2009 and 2013, a sequence of 3 unlinked cross-sectional surveys were conducted. All individuals 15-49 years of age residing in randomly selected households were interviewed and offered HIV testing. Male circumcision status was confirmed by examination. Design-adjusted bivariate comparisons and multivariable analyses were used for statistical inference.

RESULTS: The prevalence of male circumcision increased from 32% (95% CI: 26% to 38%) in 2009 to 60% (95% CI: 56% to 63%) in 2013. The adjusted prevalence ratio of HIV and genital ulcer disease in circumcised compared with uncircumcised men was 0.48 (95% CI: 0.36 to 0.66) and 0.51 (95% CI: 0.37 to 0.69), respectively. There was no association between circumcision status and sexual behaviors, HIV knowledge, or indicators of risk perception.

CONCLUSIONS: The conditions necessary for the VMMC program to have a significant public health impact are present in Kisumu, Kenya. Between 2009 and 2013, circumcision prevalence increased from 30% to 60%; HIV prevalence in circumcised men was half that of uncircumcised men, and there was no or minimal sexual risk compensation.

3. Ma, Q., et al. **Chinese Shang Ring male circumcision: a review.** *Urol Int* 2017 Mar 10. [Epub ahead of print]
Online at: <https://www.karger.com/Article/FullText/464449>

Chinese Shang Ring adult male circumcision (SC) is a safe and effective procedure which is easy to learn and to perform. By a specially designed small device, male circumcision (MC) can be performed in 5 min. Compared with conventional adult MC (CC), SC has shorter operation time, less blood loss, less pain score, higher appearance satisfaction rate, and lower complication rate. SC was first developed in China. As recent studies have demonstrated that MC reduced the risk of acquiring human immunodeficiency virus (HIV) infection via vaginal intercourse in African countries, SC was introduced into Africa to fight HIV. Other sexually transmitted diseases such as human papillomavirus infection may also be prevented by SC. In conclusion, Chinese Shang Ring, a small device, provides an easy, quick, safe, and effective method to perform adult MC.

4. Golomski, C., et al. **Christians' cut: popular religion and the global health campaign for medical male circumcision in Swaziland.** *Cult Health Sex* 2017 Jan 11: 1-15. [Epub ahead of print]
Online at: <http://www.tandfonline.com/doi/full/10.1080/13691058.2016.1267409>

Swaziland faces one of the worst HIV epidemics in the world and is a site for the current global health campaign in sub-Saharan Africa to medically circumcise the majority of the male population. Given that Swaziland is also majority Christian, how does the most popular religion influence acceptance, rejection or understandings of medical male circumcision? This article considers interpretive differences by Christians across the Kingdom's three ecumenical organisations, showing how a diverse group people singly glossed as 'Christian' in most public health acceptability studies critically rejected the procedure in unity, but not uniformly. Participants saw medical male circumcision's promotion and messaging as offensive and circumspect, and medical male circumcision as confounding gendered expectations and sexualised ideas of the body in Swazi Culture. Pentecostal-charismatic churches were seen as more likely to accept medical male circumcision, while traditionalist African Independent Churches rejected the operation. The procedure was widely understood to be a personal choice, in line with New Testament-inspired commitments to metaphorical circumcision as a way of receiving God's grace.

5. Schwartz, S. R., et al. **Client uptake of safer conception strategies: implementation outcomes from the Sakh'umndeni Safer Conception Clinic in South Africa.** *J Int AIDS Soc* 2017;20(Suppl 1): 43-51.

INTRODUCTION: Implementation of safer conception services for HIV-affected couples within primary healthcare clinics in resource-limited settings remains limited. We review service utilization and safer conception strategy uptake during the first three years of Sakh'umndeni, which is a safer conception clinic in South Africa.

METHODS: Sakh'umndeni is located at Witkoppen Health and Welfare Centre, a high-volume primary healthcare clinic in northern Johannesburg. Men and women desiring to conceive in less than or equal to six months and in relationships in which one or both partners are living with HIV are eligible for safer conception services. Clients receive a baseline health assessment and counselling around periconception HIV risk reduction strategies and choose which strategies they plan to use. Clients are followed-up monthly. We describe client service utilization and uptake and continuation of safer conception methods. Factors associated with male partner attendance are assessed using robust Poisson regression.

RESULTS: Overall 440 individuals utilized the service including 157 couples in which both partners attended (55%) and 126 unaccompanied female partners. Over half of the couples (55%) represented were in serodiscordant/unknown status relationships. Higher economic status and HIV-negative status of the women increased male partner involvement, while HIV-negative status of the men decreased male involvement. Regarding safer conception strategies, uptake of antiretroviral therapy initiation (90%), vaginal self-insemination among partnerships with HIV-negative men (75%) and timed condomless intercourse strategies (48%) were variable, but generally high. Overall uptake of pre-exposure prophylaxis (PrEP) was 23% and was lower among HIV-negative men than women (7% vs. 44%, $p < 0.001$). Male medical circumcision (MMC) was used by 28% of HIV-negative men. Over 80% of clients took up at least one recommended safer conception strategy. Continuation of selected strategies over attempted conception attempts was >60%.

CONCLUSIONS: Safer conception strategies are generally used by clients per recommendations. High uptake of strategies suggests that the proposed combination prevention methods are acceptable to clients and appropriate for scale-up; however, low uptake of PrEP and MMC among HIV-negative men needs

improvement. Targeted community-based efforts to reach men unlinked to safer conception services are needed, alongside streamlined approaches for service scale-up within existing HIV and non-HIV service delivery platforms.

6. Awad, S. F., et al. **Could circumcision of HIV-positive males benefit voluntary medical male circumcision programs in Africa? Mathematical modeling analysis.** *PLoS One* 2017;12(1): e0170641.

Online at:

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0170641>

BACKGROUND: The epidemiological and programmatic implications of inclusivity of HIV-positive males in voluntary medical male circumcision (VMMC) programs are uncertain. We modeled these implications using Zambia as an illustrative example.

METHODS AND FINDINGS: We used the Age-Structured Mathematical (ASM) model to evaluate, over an intermediate horizon (2010-2025), the effectiveness (number of VMCMs needed to avert one HIV infection) of VMMC scale-up scenarios with varying proportions of HIV-positive males. The model was calibrated by fitting to HIV prevalence time trend data from 1990 to 2014. We assumed that inclusivity of HIV-positive males may benefit VMMC programs by increasing VMMC uptake among higher risk males, or by circumcision reducing HIV male-to-female transmission risk. All analyses were generated assuming no further antiretroviral therapy (ART) scale-up. The number of VMCMs needed to avert one HIV infection was projected to increase from 12.2 VMCMs per HIV infection averted, in a program that circumcises only HIV-negative males, to 14.0, in a program that includes HIV-positive males. The proportion of HIV-positive males was based on their representation in the population (e.g. 12.6% of those circumcised in 2010 would be HIV-positive based on HIV prevalence among males of 12.6% in 2010). However, if a program that only reaches out to HIV-negative males is associated with 20% lower uptake among higher-risk males, the effectiveness would be 13.2 VMCMs per infection averted. If improved inclusivity of HIV-positive males is associated with 20% higher uptake among higher-risk males, the effectiveness would be 12.4. As the assumed VMMC efficacy against male-to-female HIV transmission was increased from 0% to 20% and 46%, the effectiveness of circumcising regardless of HIV status improved from 14.0 to 11.5 and 9.1, respectively. The reduction in the HIV incidence rate among females increased accordingly, from 24.7% to 34.8% and 50.4%, respectively.

CONCLUSION: Improving inclusivity of males in VMMC programs regardless of HIV status increases VMMC effectiveness, if there is moderate increase in VMMC uptake among higher-risk males and/or if there is moderate efficacy for VMMC against male-to-female transmission. In these circumstances, VMMC programs can reduce the HIV incidence rate in males by nearly as much as expected by some ART programs, and additionally, females can benefit from the intervention nearly as much as males.

7. Chiu, C., et al. **Designing an optimal HIV programme for South Africa: Does the optimal package change when diminishing returns are considered?** *BMC Public Health* 2017;17(1): 143.
Online at: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-017-4023-3>

BACKGROUND: South Africa has a large domestically funded HIV programme with highly saturated coverage levels for most prevention and treatment interventions. To further optimise its allocative efficiency, we designed a novel optimisation method and examined whether the optimal package of interventions changes when interaction and non-linear scale-up effects are incorporated into cost-effectiveness analysis.

METHODS: The conventional league table method in cost-effectiveness analysis relies on the assumption of independence between interventions. We added methodology that allowed the simultaneous consideration of a large number of HIV interventions and their potentially diminishing marginal returns to scale. We analysed the incremental cost effectiveness ratio (ICER) of 16 HIV interventions based on a well-calibrated epidemiological model that accounted for interaction and non-linear scale-up effects, a custom cost model, and an optimisation routine that iteratively added the most cost-effective intervention onto a rolling baseline before evaluating all remaining options. We compared our results with those based on a league table.

RESULTS: The rank order of interventions did not differ substantially between the two methods- in each, increasing condom availability and male medical circumcision were found to be most cost-effective, followed by anti-retroviral therapy at current guidelines. However, interventions were less cost-effective throughout when evaluated under the optimisation method, indicating substantial diminishing marginal returns, with ICERs being on average 437% higher under our optimisation routine.

CONCLUSIONS: Conventional league tables may exaggerate the cost-effectiveness of interventions when programmes are implemented at scale. Accounting for interaction and non-linear scale-up effects provides more realistic estimates in highly saturated real-world settings.

8. Gyan, T., et al. **Determinants of morbidity associated with infant male circumcision: community-level population-based study in rural Ghana.** *Trop Med Int Health* 2017;22(3): 312-322.

OBJECTIVE: Male circumcision services have expanded throughout Africa as part of a long-term HIV prevention strategy. We assessed the effect of type of service provider (formal and informal) and hygiene practices on circumcision-related morbidities in rural Ghana.

METHODS: Population-based, cross-sectional study conducted between May and December 2012 involving 2850 circumcised infant males aged under 12 weeks. Multivariable logistic regression models were adjusted for maternal age, maternal education, income, birthweight and site of circumcision.

RESULTS: A total of 2850 (90.7%) infant males were circumcised. Overall, the risk of experiencing a morbidity (defined as complications occurring during or after the circumcision procedure as reported by the primary caregiver) was 8.1% (230). Risk was not significantly increased if the circumcision was performed by informal providers (121, 7.2%) vs. formal health service providers (109, 9.8%) [adjusted odds ratio (aOR) 1.11, 95% CI 0.80-1.47, P = 0.456]. Poor hygiene practices were associated with significantly increased risk of morbidity: no handwashing [148 (11.7%)] (aOR 1.78, 95% CI 1.27-2.52, P = 0.001); not cleaning circumcision instruments [174 (10.6%)] (aOR 1.80, 95% CI 1.27-2.54, P = 0.001); and uncleaned penile area [190 (10.0%)] (aOR 1.84, 95% CI 1.25-2.70, P = 0.002).

CONCLUSION: The risk of morbidity after infant male circumcision in rural Ghana is high, chiefly due to poor hygiene practices. Governmental and non-governmental organisations need to improve training of circumcision providers in hygiene practices in sub-Saharan Africa.

9. Rudrum, S., et al. **Discourses of masculinity, femininity and sexuality in Uganda's Stand Proud, Get Circumcised campaign.** *Cult Health Sex* 2017;19(2): 225-239.

This paper analyses discourses of masculinity, femininity and sexuality in Stand Proud, Get Circumcised, a public health campaign promoting circumcision as an HIV-prevention strategy in Uganda. The campaign includes posters highlighting the positive reactions of women to circumcised men, and is intended to support the national rollout of voluntary medical male circumcision. We offer a critical discourse analysis of representations of masculinity, femininity and sexuality in relation to HIV prevention. The campaign materials have a playful feel and, in contrast to ABC (Abstain, Be faithful, Use condoms) campaigns, acknowledge the potential for pre-marital and extra-marital sex. However, these posters exploit male anxieties about appearance and performance, drawing on hegemonic masculinity to promote circumcision as an idealised body aesthetic. Positioning women as the campaign's face reasserts a message that women are the custodians of family health and simultaneously perpetuates a norm of estrangement between men and their health. The wives' slogan, 'we have less chance of getting HIV', is misleading, because circumcision only directly prevents female-to-male HIV transmission. Reaffirming hegemonic notions of appearance- and performance-based heterosexual masculinity reproduces existing unsafe norms about masculinity, femininity and sexuality. In selling male circumcision, the posters fail to promote an overall HIV-prevention message.

10. Downs, J. A., et al. **Educating religious leaders to promote uptake of male circumcision in Tanzania: a cluster randomised trial.** *Lancet* 2017;389(10074): 1124-1132.
Online at: [http://thelancet.com/journals/lancet/article/PIIS0140-6736\(16\)32055-4/abstract](http://thelancet.com/journals/lancet/article/PIIS0140-6736(16)32055-4/abstract)

BACKGROUND: Male circumcision is being widely deployed as an HIV prevention strategy in countries with high HIV incidence, but its uptake in sub-Saharan Africa has been below targets. We did a study to establish whether educating religious leaders about male circumcision would increase uptake in their village.

METHODS: In this cluster randomised trial in northwest Tanzania, eligible villages were paired by proximity (<60 km) and the time that a free male circumcision outreach campaign from the Tanzanian Ministry of Health became available in their village. All villages received the standard male circumcision outreach

activities provided by the Ministry of Health. Within the village pairs, villages were randomly assigned by coin toss to receive either additional education for Christian church leaders on scientific, religious, and cultural aspects of male circumcision (intervention group), or standard outreach only (control group). Church leaders or their congregations were not masked to random assignment. The educational intervention consisted of a 1-day seminar co-taught by a Tanzanian pastor and a Tanzanian clinician who worked with the Ministry of Health, and meetings with the study team every 2 weeks thereafter, for the duration of the circumcision campaign. The primary outcome was the proportion of male individuals in a village who were circumcised during the campaign, using an intention-to-treat analysis that included all men in the village. This trial is registered with ClinicalTrials.gov, number NCT 02167776.

FINDINGS: Between June 15, 2014, and Dec 10, 2015, we provided education for church leaders in eight intervention villages and compared the outcomes with those in eight control villages. In the intervention villages, 52.8% (30 889 of 58 536) of men were circumcised compared with 29.5% (25 484 of 86 492) of men in the eight control villages (odds ratio 3.2 [95% CI, 1.4-7.3]; p=0.006).

INTERPRETATION: Education of religious leaders had a substantial effect on uptake of male circumcision, and should be considered as part of male circumcision programmes in other sub-Saharan African countries. This study was conducted in one region in Tanzania; however, we believe that our intervention is generalisable. We equipped church leaders with knowledge and tools, and ultimately each leader established the most culturally-appropriate way to promote male circumcision. Therefore, we think that the process of working through religious leaders can serve as an innovative model to promote healthy behaviour, leading to HIV prevention and other clinically relevant outcomes, in a variety of settings.

FUNDING: Bill & Melinda Gates Foundation, National Institutes of Health, and the Mulago Foundation.

11. Firestone, R., et al. **The effectiveness of social marketing in global health: a systematic review.** *Health Policy Plan* 2017;32(1): 110-124. Online at: <https://academic.oup.com/heapol/article-lookup/doi/10.1093/heapol/czw088>

Social marketing is a commonly used strategy in global health. Social marketing programmes may sell subsidized products through commercial sector outlets,

distribute appropriately priced products, deliver health services through social franchises and promote behaviours not dependent upon a product or service. We aimed to review evidence of the effectiveness of social marketing in low- and middle-income countries, focusing on major areas of investment in global health: HIV, reproductive health, child survival, malaria and tuberculosis. We searched PubMed, PsycInfo and ProQuest, using search terms linking social marketing and health outcomes for studies published from 1995 to 2013. Eligible studies used experimental or quasi-experimental designs to measure outcomes of behavioural factors, health behaviours and/or health outcomes in each health area. Studies were analysed by effect estimates and for application of social marketing benchmark criteria. After reviewing 18 974 records, 125 studies met inclusion criteria. Across health areas, 81 studies reported on changes in behavioural factors, 97 studies reported on changes in behaviour and 42 studies reported on health outcomes. The greatest number of studies focused on HIV outcomes (n = 45) and took place in sub-Saharan Africa (n = 67). Most studies used quasi-experimental designs and reported mixed results. Child survival had proportionately the greatest number of studies using experimental designs, reporting health outcomes, and reporting positive, statistically significant results. Most programmes used a range of methods to promote behaviour change. Programmes with positive, statistically significant findings were more likely to apply audience insights and cost-benefit analyses to motivate behaviour change. Key evidence gaps were found in voluntary medical male circumcision and childhood pneumonia. Social marketing can influence health behaviours and health outcomes in global health; however, evaluations assessing health outcomes remain comparatively limited. Global health investments are needed to (i) fill evidence gaps, (ii) strengthen evaluation rigour and (iii) expand effective social marketing approaches.

12. Van Howe, R. S. **Expertise or ideology? A response to Morris et al. 2016, 'Circumcision is a primary preventive against HIV infection: Critique of a contrary meta-regression analysis by Van Howe'**. *Glob Public Health* 2017 Jan 10: 1-19. [Epub ahead of print]

13. Kibira, S. P., et al. **Exploring drivers for safe male circumcision: Experiences with health education and understanding of partial HIV protection among newly circumcised men in Wakiso, Uganda.** *PLoS One* 2017;12(3): e0175228. Online at: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0175228>

INTRODUCTION: About 2.5 million men have voluntarily been circumcised since Uganda started implementing the WHO recommendation to scale up safe male circumcision to reduce HIV transmission. This study sought to understand what influences men's circumcision decisions, their experiences with health education at health facilities and their knowledge of partial HIV risk reduction in Wakiso district.

METHODS: Data were collected in May and June 2015 at five public health facilities in Wakiso District. Twenty-five in-depth interviews were held with adult safe male circumcision clients. Data were analysed using thematic network analysis.

FINDINGS: Safe male circumcision decisions were mainly influenced by sexual partners, a perceived need to reduce the risk of HIV/STIs, community pressure and other benefits like hygiene. Sexual partners directly requested men to circumcise or indirectly influenced them in varied ways. Health education at facilities mainly focused on the surgical procedure, circumcision benefits especially HIV risk reduction, wound care and time to resumption of sex, with less focus on post-circumcision sexual behaviour. Five men reported no health education. All men reported that circumcision only reduces and does not eliminate HIV risk, and could mention ways it protects, although some extended the benefit to direct protection for women and prevention of other STIs. Five men thought social marketing messages were 'misleading' and feared risk compensation within the community.

CONCLUSIONS: Participants reported positive community perception about safe male circumcision campaigns, influencing men to seek services and enabling female partners to impact this decision-making process. However, there seemed to be gaps in safe male circumcision health education, although all participants correctly understood that circumcision offers only partial protection from HIV. Standard health education procedures, if followed at health facilities offering safe male circumcision, would ensure all clients are well informed, especially about post-circumcision sexual behaviour that is key to prevention of risk compensation.

14. Buttolph, J., et al. **Gender-specific combination HIV prevention for youth in high-burden settings: the MP3 Youth Observational Pilot Study Protocol.** *JMIR Res Protoc* 2017;6(3): e22.
Online at: <http://www.researchprotocols.org/2017/3/e22/>

BACKGROUND: Nearly three decades into the epidemic, sub-Saharan Africa (SSA) remains the region most heavily affected by human immunodeficiency virus (HIV), with nearly 70% of the 34 million people living with HIV globally residing in the region. In SSA, female and male youth (15 to 24 years) are at a disproportionately high risk of HIV infection compared to adults. As such, there is a need to target HIV prevention strategies to youth and to tailor them to a gender-specific context. This protocol describes the process for the multi-staged approach in the design of the MP3 Youth pilot study, a gender-specific, combination, HIV prevention intervention for youth in Kenya.

OBJECTIVE: The objective of this multi-method protocol is to outline a rigorous and replicable methodology for a gender-specific combination HIV prevention pilot study for youth in high-burden settings, illustrating the triangulated methods undertaken to ensure that age, sex, and context are integral in the design of the intervention.

METHODS: The mixed-methods, cross-sectional, longitudinal cohort pilot study protocol was developed by first conducting a systematic review of the literature, which shaped focus group discussions around prevention package and delivery options, and that also informed age- and sex- stratified mathematical modeling. The review, qualitative data, and mathematical modeling created a triangulated evidence base of interventions to be included in the pilot study protocol. To design the pilot study protocol, we convened an expert panel to select HIV prevention interventions effective for youth in SSA, which will be offered in a mobile health setting. The goal of the pilot study implementation and evaluation is to apply lessons learned to more effective HIV prevention evidence and programming.

RESULTS: The combination HIV prevention package in this protocol includes (1) offering HIV testing and counseling for all youth; (2) voluntary medical circumcision and condoms for males; (3) pre-exposure prophylaxis (PrEP), conditional cash transfer (CCT), and contraceptives for females; and (4) referrals for HIV care among those identified as HIV-positive. The combination package platform selected is mobile health teams in an integrated services delivery model. A cross-sectional analysis will be conducted to determine the uptake of the

interventions. To determine long-term impact, the protocol outlines enrolling selected participants in mutually exclusive longitudinal cohorts (HIV-positive, PrEP, CCT, and HIV-negative) followed by using mobile phone text messages (short message service, SMS) and in-person surveys to prospectively assess prevention method uptake, adherence, and risk compensation behaviors. Cross-sectional and sub-cohort analyses will be conducted to determine intervention packages uptake.

CONCLUSIONS: The literature review, focus groups, and modeling indicate that offering age- and gender- specific combination HIV prevention interventions that include biomedical, behavioral, and structural interventions can have an impact on HIV risk reduction. Implementing this protocol will show the feasibility of delivering these services at scale. The MP3 Youth study is one of the few combination HIV prevention intervention protocols incorporating youth- and gender-specific interventions in one delivery setting. Lessons learned from the design of the protocol can be incorporated into the national guidance for combination HIV prevention for youth in Kenya and other high-burden SSA settings.

TRIAL REGISTRATION: ClinicalTrials.gov NCT01571128;
<http://clinicaltrials.gov/ct2/show/NCT01571128?term=MP3+youth&rank=1>
(Archived by WebCite at <http://www.webcitation.org/6nmioPd54>).

15. Raghavendran, A., et al. **Genital human papillomavirus infection in Indian HIV-seropositive men who have sex with men.** *Sex Transm Dis* 2017;44(3): 173-180.

BACKGROUND: The incidence of penile cancer in Indian men is high. Little is known about genital human papillomavirus (HPV) infection in Indian HIV-seropositive men who have sex with men (MSM), a population that may be at particularly high risk for genital HPV infection and, potentially, penile cancer. In this study, we assessed the prevalence and risk factors for genital HPV infection in this population.

DESIGN AND METHODS: Three hundred HIV-seropositive MSM were recruited from 2 clinical sites in India. They were tested for genital HPV infection using L1 HPV DNA polymerase chain reaction with probes specific for 29 types and a mixture of 10 additional types. Participants received an interviewer-administered questionnaire that included questions on demographics and behaviors.

RESULTS: Human papillomavirus data were available from 299 participants. The prevalence of any HPV type in the penis and scrotum was 55% and 54%, respectively. Human papillomavirus type 35 was the most common oncogenic HPV type followed by HPV-16. In multivariate analysis, being the insertive partner with 100+ male partners increased the odds of any penile HPV infection compared with not being insertive with any partners (odds ratio, 2.5; 95% confidence interval, 1.3-5.1). Circumcision was protective against penile HPV infection (odds ratio, 0.39; 95% confidence interval, 0.19-0.76)

CONCLUSIONS: The prevalence of penile and scrotal HPV infection was high among Indian HIV-seropositive MSM. The most common oncogenic HPV type in this population, HPV-35, is not included in any currently available HPV vaccines. Insertive anal sex with men and lack of circumcision were the primary risk factors for penile HPV infection in this population.

16. Akullian, A., et al. **Geographic coverage of male circumcision in western Kenya.** *Medicine (Baltimore)* 2017;6(2): e5885.
Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5266192/>

Voluntary Medical Male Circumcision (VMMC) for human immunodeficiency virus (HIV) prevention has scaled up rapidly among young men in western Kenya since 2008. Whether the program has successfully reached uncircumcised men evenly across the region is largely unknown. Using data from two cluster randomized surveys from the 2008 and 2014 Kenyan Demographic Health Survey (KDHS), we mapped the continuous spatial distribution of circumcised men by age group across former Nyanza Province to identify geographic areas where local circumcision prevalence is lower than the overall, regional prevalence. The prevalence of self-reported circumcision among men 15 to 49 across six counties in former Nyanza Province increased from 45.6% (95% CI = 33.2-58.0%) in 2008 to 71.4% (95% CI = 67.4-75.0%) in 2014, with the greatest increase in men 15 to 24 years of age, from 40.4% (95% CI = 27.7-55.0%) in 2008 to 81.6% (95% CI = 77.2-85.0%) in 2014. Despite the dramatic scale-up of VMMC in western Kenya, circumcision coverage in parts of Kisumu, Siaya, and Homa Bay counties was lower than expected ($P < 0.05$), with up to 50% of men aged 15 to 24 still uncircumcised by 2014 in some areas. The VMMC program has proven successful in reaching a large population of uncircumcised men in western Kenya, but as of 2014, pockets of low circumcision coverage still existed. Closing regional gaps in VMMC prevalence to reach 80% coverage may require targeting specific areas where VMMC prevalence is lower than expected.

17. Fleming, P. J., et al. **"I feel like more of a man": a mixed methods study of masculinity, sexual performance, and circumcision for HIV prevention.** *J Sex Res* 2017;54(1): 42-54.

Ethnographic studies from numerous societies have documented the central role of male circumcision in conferring masculinity and preparing boys for adult male sexuality. Despite this link between masculinity, sexuality, and circumcision, there has been little research on these dynamics among men who have been circumcised for HIV prevention. We employed a mixed methods approach with data collected from recently circumcised men in the Dominican Republic (DR) to explore this link. We analyzed survey data collected six to 12 months post-circumcision (N = 293) as well as in-depth interviews conducted with a subsample of those men (n = 30). We found that 42% of men felt more masculine post-circumcision. In multivariate analysis, feeling more masculine was associated with greater concern about being perceived as masculine (OR = 1.70, 95% CI: 1.25-2.32), feeling more potent erections post-circumcision (OR = 2.25, 95% CI: 1.26-4.03), and reporting increased ability to satisfy their partners post-circumcision (OR = 2.30, 95% CI: 1.11-4.77). In qualitative interviews, these factors were all related to masculine norms of sexually satisfying one's partner, and men's experiences of circumcision were shaped by social norms of masculinity. This study highlights that circumcision is not simply a biomedical intervention and that circumcision programs need to incorporate considerations of masculine norms and male sexuality into their programming.

18. Kasprzyk, D., et al. **Identification of key beliefs explaining male circumcision motivation among adolescent boys in Zimbabwe: targets for behavior change communication.** *AIDS Behav* 2017 Jan 12. [Epub ahead of print]

Male circumcision (MC) significantly reduces HIV acquisition among men, leading WHO/UNAIDS to recommend high HIV and low MC prevalence countries circumcise 80% of adolescents and men age 15-49. Despite significant investment to increase MC capacity only 27% of the goal has been achieved in Zimbabwe. To increase adoption, research to create evidence-based messages is greatly needed. The Integrated Behavioral Model (IBM) was used to investigate factors affecting MC motivation among adolescents. Based on qualitative elicitation study results a survey was designed and administered to a representative sample of 802 adolescent boys aged 13-17 in two urban and two rural areas in Zimbabwe. Multiple regression analysis found all six IBM constructs (2 attitude, 2 social influence, 2 personal agency) significantly explained MC intention (R² = 0.55). Stepwise regression analysis of beliefs underlying each IBM

belief-based construct found 9 behavioral, 6 injunctive norm, 2 descriptive norm, 5 efficacy, and 8 control beliefs significantly explained MC intention. A final stepwise regression of all the significant IBM construct beliefs identified 12 key beliefs best explaining intention. Similar analyses were carried out with subgroups of adolescents by urban-rural and age. Different sets of behavioral, normative, efficacy, and control beliefs were significant for each sub-group. This study demonstrates the application of theory-driven research to identify evidence-based targets for the design of effective MC messages for interventions to increase adolescents' motivation. Incorporating these findings into communication campaigns is likely to improve demand for MC.

19. Lunsford, S. S., et al. **Improving voluntary medical male circumcision standards adherence and post-procedure follow-up in Uganda: A mixed methods study.** *Afr J AIDS Res* 2017;16(1): 39-46.

Voluntary medical male circumcision (VMMC) has been demonstrated to reduce the transmission of HIV by 60%. Scaling up VMMC services requires that they be of high quality, socially accepted, and effective. We evaluated an intervention aimed at improving VMMC standards adherence and patient follow-up rates in nine facilities in Uganda. We also qualitatively explored why some men return for follow-up care and others do not. The completeness and quality of clinical documentation was poor at baseline, but significantly improved at endline. We observed significant improvements in management systems; supplies, equipment, and environment; and monitoring and evaluation. Due to the volume of missing data, results were less clear for registration, group education, and information, education and communication; individual counselling and HIV testing; and infection prevention. Significant improvements were also observed in follow-up rates at 48 hours and 7 days, and 6 weeks. Interviews revealed the importance of peers, including female partners, in deciding to get circumcised and in seeking follow-up care. Among the men who did not return for follow-up services, most reported they had no problems and did not see it as necessary. For those who did have mild or moderate adverse events, follow-up care was often sought at a facility closer to the patients' home rather than the circumcising facility. However, information systems were unable to capture this. Applying improvement approaches to VMMC services can promote improved standards adherence and follow-up rates and should be integrated into scale-up plans.

20. Wambura, M., et al. **Increasing voluntary medical male circumcision (VMMC) uptake among adult men in Tanzania: A randomised controlled trial.** *AIDS* 2017 Mar 28. [Epub ahead of print]
Online at:
http://journals.lww.com/aidsonline/fulltext/2017/04240/Increasing_voluntary_medical_male_circumcision.14.aspx

OBJECTIVE: We evaluated a demand creation intervention to increase voluntary medical male circumcision (VMMC) uptake among men aged 20-34 years in Tanzania, to maximise short-term impact on HIV incidence.

METHODS: A cluster-randomised controlled trial stratified by region was conducted in 20 outreach sites in Njombe and Tabora regions. The sites were randomised 1:1 to receive either a demand-creation intervention package in addition to standard VMMC outreach, or standard VMMC outreach alone. The intervention package included i) enhanced public address messages ii) peer promotion by recently circumcised men iii) facility set-up to increase privacy and iv) engagement of female partners in demand creation. The primary outcome was the proportion of VMMC clients aged 20-34 years.

FINDINGS: Overall, 6251 and 3968 VMMC clients were enrolled in intervention and control clusters respectively. The proportion of clients aged 20-34 years was slightly greater in the intervention than control arm (17.7% vs 13.0%; PR=1.36; 95%CI:0.9-2.0). In Njombe region, the proportion of clients aged 20-34 years was similar between arms but a significant two-fold difference was seen in Tabora region (p-value for effect modification=0.006). The mean number of men aged 20-34 years (mean difference per cluster=97; 95%CI:40-154), and of all ages (mean difference per cluster=227, 95%CI:33-420) were greater in the intervention than control arm.

CONCLUSION: The intervention was associated with a significant increase in the proportion of clients aged 20-34 years in Tabora but not in Njombe. The intervention may be sensitive to regional factors in VMMC programme scale-up, including saturation.

21. Pintye, J., et al. **Male partner circumcision associated with lower *Trichomonas vaginalis* incidence among pregnant and postpartum Kenyan women: a prospective cohort study.** *Sex Transm Infect* 2017;93(2): 137-143.

OBJECTIVE: *Trichomonas vaginalis* is the world's most common curable STI and has implications for reproductive health in women. We determined incidence and correlates of *T. vaginalis* in an HIV-uninfected peripartum cohort.

METHODS: Women participating in a prospective study of peripartum HIV acquisition in Western Kenya were enrolled during pregnancy and followed until 9 months post partum. *T. vaginalis* was assessed every 1-3 months using wet mount microscopy. Correlates of incident *T. vaginalis* were determined using Cox proportional hazards models.

RESULTS: Among 1271 women enrolled, median age was 22 years (IQR 19-27) and gestational age was 22 weeks (IQR 18-26); most (78%) were married and had uncircumcised male partners (69%). Prevalent *T. vaginalis* was detected in 81 women (6%) at enrolment. Among women without *T. vaginalis* at enrolment, 112 had *T. vaginalis* detected during 1079 person-years of follow-up (10.4 per 100 person-years). After adjustment for socio-economic factors, male partner circumcision status, pregnancy status and other STIs, *T. vaginalis* incidence was higher during pregnancy than post partum (22.3 vs 7.7 per 100 person-years, adjusted HR (aHR) 3.68, 95% CI 1.90 to 7.15, $p < 0.001$). Women with circumcised male partners had a 58% lower risk of incident *T. vaginalis* compared with women with uncircumcised partners (aHR 0.42, 95% CI 0.23 to 0.76, $p = 0.004$). Employed women had lower risk of incident *T. vaginalis* than unemployed women (aHR 0.49, 95% CI 0.31 to 0.79, $p = 0.003$); recent STI was associated with increased *T. vaginalis* risk (aHR 2.97, 95% CI 1.49 to 5.94, $p = 0.002$).

CONCLUSIONS: *T. vaginalis* was relatively common in this peripartum cohort. Male circumcision may confer benefits in preventing *T. vaginalis*.

22. Kong, X., et al. **Medical male circumcision coverage in Rakai, Uganda.** *AIDS* 2017;31(5): 735-737.

We assessed medical male circumcision (MMC) scale-up in Rakai, Uganda using population-based surveys during 2007-2014. MMC coverage increased from 28.5 to 52.0%. Coverage was initially lower in 15-19-year-olds but increased in 2014, was higher in married men and in trading communities, and lowest in the sexually inactive. Coverage did not vary by self-perceived risk of HIV or HIV serostatus.

Increasing generalized coverage suggested that MMC became normative, but coverage falls short of WHO/Joint United Nations Programme on HIV and AIDS (UNAIDS) 80% targets, indicating the need for demand generation.

23. Lilleston, P. S., et al. **Multilevel influences on acceptance of medical male circumcision in Rakai District, Uganda.** *AIDS Care* 2017 Mar 1: 1-7. [Epub ahead of print]

Despite access to safe medical male circumcision (MMC) and proven effectiveness of the procedure in reducing acquisition of HIV and other sexually transmitted infections, uptake remains suboptimal in many settings in sub-Saharan Africa, including Rakai District, Uganda. This study explored multilevel barriers and facilitators to MMC in focus group discussions (FGDs) (n = 35 groups) in Rakai. Focus groups were conducted from May through July 2012 with adolescent and adult males, with a range of HIV risk and reproductive health service use profiles, and with adolescent and adult females. Data were analyzed using Atlas.ti and an inductive approach. Participants' discussions produced several key themes representing multilevel influences that may facilitate or create barriers to uptake of MMC. These include availability of MMC services, economic costs, masculine ideals, religion, and social influence. Understanding how males and females view MMC is a crucial step towards increasing uptake of the procedure and reducing disease transmission.

24. Kohler, P. K., et al. **A national evaluation using standardised patient actors to assess STI services in public sector clinical sentinel surveillance facilities in South Africa.** *Sex Transm Infect* 2017 Jan 27. pii: sextrans-2016-052930. [Epub ahead of print]

OBJECTIVES: Quality concerns in STI service delivery and missed opportunities for integration with HIV testing and prevention services in South Africa have been well documented. This national evaluation aimed to evaluate current utilisation and adherence to national STI guidelines, including partner notification and integration with HIV services, for diagnosis and management of STIs.

METHODS: Facility surveys assessed infrastructure and resource availability, and standardised patient (SP) assessments evaluated quality of STI care in 50 public clinics in nine provinces in South Africa. The primary outcome was the proportion of SPs receiving essential STI care, defined as: offered an HIV test, condoms, partner notification counselling and correct syndromic treatment. Weighted

proportions were generated, and SP findings were compared by gender using chi2 tests with Rao-Scott correction.

RESULTS: More than 80% of facilities reported medications in stock, with the exceptions of oral cefixime (48.3%), oral erythromycin (75.1%) and paediatric syrups. Among 195 SP encounters, 18.7% (95% CI 10.7% to 30.5%) received all hypothesised essential STI services: offered HIV test (67.1%), offered condoms (31.4%), partner notification counselling (70.2%) and recommended syndromic treatment (60.7%). Men were more likely than women to be offered all services (25.1% vs 12.3%, $p=0.023$), recommended treatment (70.7% vs 50.9%, $p=0.013$) and partner notification counselling (79.9% vs 60.6%, $p=0.020$). Only 6.3% of providers discussed male circumcision with male SPs, and 26.3% discussed family planning with female SPs.

CONCLUSIONS: This evaluation of STI services across South Africa found gaps in the availability of medications, adherence to STI guidelines, condom provision and prevention messaging. Limited integration with HIV services for this high-risk population was a missed opportunity. Quality of STI care should continue to be monitored, and interventions to improve quality should be prioritised as part of national strategic HIV and primary healthcare agendas.

25. Marshall, E., et al. **Obtaining a male circumcision prevalence rate of 80% among adults in a short time: An observational prospective intervention study in the Orange Farm township of South Africa.** *Medicine (Baltimore)* 2017;96(4): e5328.
Online at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5287938/>

World Health Organization recommends a target for the male circumcision prevalence rate of 80%. This rate will have a substantial impact on the human immunodeficiency virus-acquired immunodeficiency syndrome epidemic in Eastern and Southern Africa. The objective of the study was to assess whether an innovative intervention can lead to an increased voluntary male medical circumcision (VMMC) uptake among adults in a short time. This prospective observational study of a demand generation intervention was conducted in the township of Orange Farm (South Africa) in August to November 2015. In this community male circumcision prevalence rate among adults was stable between 2010 and 2015 at 55% and 57%, despite regular VMMC campaigns at community level and the presence of a VMMC clinic that offered free VMMC. The intervention took place in a random sample of 981 households where 522 men aged 18 to 49 years accepted to participate in the study. Among the 226

uncircumcised men, 212 accepted to be enrolled in the intervention study. A personal male circumcision adviser trained in interpersonal communication skills was assigned to each uncircumcised participant. The male circumcision advisers were trained to explain the risks and benefits of VMMC, and to discuss 24 possible reasons given by men for not being circumcised. Participants were then followed for 9 weeks. Each participant had a maximum of 3 motivational interviews at home. Participants who decided to be circumcised received financial compensation for their time equivalent to 2.5 days of work at the minimum South African salary rate. Among the 212 uncircumcised men enrolled in the intervention, 69.8% (148/212; 95% confidence interval [CI]; 63.4%-75.7%) agreed to be circumcised, which defines the uptake of the intervention. The male circumcision prevalence rate of the sample increased from 56.7% (296/522) to 81.4% (425/522; 77.9%-84.6%), $P < 0.001$, corresponding to a relative increase of 43.6% (95% CI: 35.4%-53.7%). The reported reasons for accepting circumcision were motivational interviews with the male circumcision adviser (83.1%), and time compensation (39.4%). Increased uptake of VMMC uptake can be obtained in a short time among adult males but requires an intense intervention centered on uncircumcised men at an individual level and time compensation.

26. Patel, E. U., et al. **Penile immune activation and risk of HIV shedding: a prospective cohort study.** *Clin Infect Dis* 2017;64(6): 776-784.

BACKGROUND: Genital immune activation is suspected to modulate local human immunodeficiency virus (HIV) RNA levels and the risk of sexual HIV transmission.

METHODS: A prospective, observational cohort study of 221 HIV-infected men undergoing male circumcision (MC) was conducted in Rakai, Uganda. Penile lavage samples collected from the coronal sulcus at baseline and 4 weekly visits after MC were assayed for pro-inflammatory cytokines and HIV RNA. The main analysis was limited to 175 men with detectable HIV plasma viral load (VL > 400 copies/mL; n = 808 visits). The primary exposures of interest were individual and total cytokine detection at the previous postoperative visit. Adjusted prevalence risk ratios (adjPRR) of detectable HIV shedding (VL > 40 copies/mL) were estimated by Poisson regression models with generalized estimating equations and robust variance estimators and included adjustment for plasma HIV VL.

FINDINGS: Among men with a detectable plasma VL, penile HIV shedding was detected at 136 visits (16.8%). Detectable interleukin (IL)-1beta (adjPRR = 2.14; 95% confidence interval (CI) = 1.02-4.48), IL-6 (adjPRR = 2.24; 95% CI = 1.28-

3.90), IL-8 (adjPRR = 2.42; 95% CI = 1.15-5.08), IL-10 (adjPRR = 2.51; 95% CI = 1.67-3.80), and IL-13 (adjPRR = 1.87; 95% CI = 1.15-3.03) were associated with penile HIV shedding at the subsequent visit. Men with 2-4 (adjPRR = 2.36; 95% CI = 1.08-5.14) and 5-7 (adjPRR = 3.00; 95% CI = 1.28-7.01) detectable cytokines had a greater likelihood of detectable penile HIV shedding at the subsequent visit, compared to men with ≤ 1 detectable cytokine. The total number of detectable cytokines was also associated with a higher penile log₁₀ HIV VL at the subsequent visit among HIV shedders.

INTERPRETATION: Pro-inflammatory cytokine production had a dose-dependent and temporal association with penile HIV shedding, suggesting that genital immune activation may increase the risk of sexual HIV transmission by driving local HIV replication.

27. Hudson, F. P., et al. **Prevalence and predictors of uncircumcised, Kenyan men's desire for circumcision for their infant sons.** *AIDS Behav* 2017 Jan 18. [Epub ahead of print]

Men are key decision makers for their son's circumcision, so understanding their beliefs is important for the uptake of early infant male circumcision in countries in sub-Saharan Africa that have high HIV prevalence. We analyzed men's preferences for circumcising their sons using data from a population-representative survey of 1501 uncircumcised men aged 25-49 years in western Kenya. Most men (59%) reported they would "definitely" want their son circumcised if a son was born to them within the next year. However, only 25% intended to become circumcised themselves. In multivariable Poisson regression models to estimate prevalence ratios, key predictors of the desire to circumcise their sons included knowledge that circumcision reduces HIV acquisition, having a supportive partner, discussing circumcision with the partner, altruism, and intention to be circumcised himself. Focusing on partner dynamics may have the greatest capacity to increase demand since 55% had not talked to their partner about circumcision.

28. Oddo, A. R., et al. **Prevalence of preoperative penile abnormalities among voluntary male medical circumcision patients in Swaziland.** *J Pediatr Surg* 2017 Jan 3. pii: S0022-3468(16)30701-1. [Epub ahead of print]

BACKGROUND: Circumcision has been found to be an effective strategy for lowering the transmission of HIV in Africa. The Luke Commission, a mobile hospital outreach program, has used this information to decrease the rate of HIV

in Swaziland by performing voluntary male medical circumcisions throughout the country. During many of these circumcisions, genital medical conditions and penile abnormalities are simultaneously discovered and corrected.

PURPOSE: The goal of our study was to evaluate the prevalence of penile abnormalities discovered and treated during voluntary male medical circumcisions performed by The Luke Commission (TLC) throughout rural Swaziland.

BASIC PROCEDURES: We completed a retrospective analysis of all male patients who underwent voluntary male medical circumcision performed by TLC during a period from June-August, 2014. The penile abnormalities included: phimosis, paraphimosis, epispadias, hypospadias, ulcers, balanitis, torsion, and foreskin adherent to the glans.

MAIN FINDINGS: Of 929 total circumcisions, 771 (83%) patients had at least one pre-existing penile abnormality identified during their examinations and procedures, totaling 1110 abnormalities. Three specific abnormalities were detected - phimosis, adherent foreskin, and hypospadias. The 6-12 and 13-19 age groups had adequate sample sizes to yield precise estimates of prevalence (age group 6-12: 87% (95% confidence interval [CI]=84-90%; age group 13-19: 79% (95% CI=74-84%).

PRINCIPLE CONCLUSIONS: The Luke Commission is improving the lives of children and adults with limited access to healthcare through regular preoperative evaluations during male circumcision, and the organization is setting an example for other international healthcare groups.

LEVEL OF EVIDENCE: Type of Study: Prognostic Study, Level II.

29. Olesen, T. B., et al. **Risk factors for genital human papillomavirus among men in Tanzania.** *J Med Virol* 2017;89(2): 345-351.

The objective of the study was to assess risk factors for Human Papillomavirus (HPV) among men in Tanzania, both overall and in relation to HIV status. In a cross-sectional study conducted among 1,813 men in Tanzania, penile swabs were tested for HPV using Hybrid Capture 2 (HC2). Study participants were offered HIV testing. Risk factors for HPV (HC2 high-risk and/or low-risk positivity) were assessed using logistic regression with adjustment for age, lifetime number of sexual partners, and HIV status. Altogether, 372 men (20.5%) were HPV-

positive. Among men tested for HIV (n = 1,483), the HIV prevalence was 9.4%. The odds ratio (OR) of HPV increased with increasing age. HIV-positivity was associated with an increased odds ratio of HPV (OR = 1.91; 95%CI: 1.30-2.82), whereas the odds of HPV tended to be lower in circumcised men than in uncircumcised men (OR = 0.77; 95%CI: 0.54-1.09). When stratifying by HIV status, we found lower odds of HPV in overweight HIV-positive men (BMI > 25) than in normal weight HIV-positive men (OR = 0.25; 95%CI: 0.08-0.78). This did not apply to HIV-negative men. Circumcision tended to decrease the odds of HPV both in HIV-positive men and in HIV-negative men, although not being statistically significant. In conclusion, HIV is a strong risk factor for HPV among men in Tanzania. Additionally, in HIV-positive men a high BMI seems to be associated with a lower risk of HPV. Finally, we observed a tendency toward a lower risk of HPV both among HIV-positive and HIV-negative circumcised men compared to their uncircumcised counterparts. *J. Med. Virol.* 89:345-351, 2017. (c) 2016 Wiley Periodicals, Inc.

30. Brito, M. O., et al. **Sexual pleasure and function, coital trauma, and sex behaviors after voluntary medical male circumcision among men in the Dominican Republic.** *J Sex Med* 2017;14(4): 526-534.

BACKGROUND: Voluntary medical male circumcision (VMMC) is effective in decreasing the risk of HIV acquisition. As men resume sexual activity after circumcision, it will be important to study their satisfaction with the procedure, sexual pleasure and function, coital trauma, and risk compensation (RC), which can hamper or facilitate the long-term success of VMMC programs.

AIM: To assess men's satisfaction with VMMC, sexual pleasure and function, coital trauma, and RC after VMMC.

METHODS: This is a cohort study of circumcised men who presented for follow-up 6 to 24 months after VMMC. Logarithmic binomial regression was performed to explore factors associated with any increase in the number of sex partners after VMMC as a measurement of RC.

MAIN OUTCOME MEASURES: (i) Men's satisfaction with their VMMC; (ii) sexual pleasure and function after VMMC; (iii) coital trauma; and (iv) RC.

RESULTS: Of 454 circumcised men, 362 (80%) returned for a follow-up visit 6 to 24 months after VMMC. Almost all (98%) were satisfied with the outcome of their VMMC; most (95%) reported that their female partners were satisfied with their

circumcision. Two thirds (67%) reported enjoying sex more after VMMC and most were very satisfied or somewhat satisfied (94%) with sexual intercourse after VMMC. Sexual function improved and reported sex-induced coital injuries decreased significantly in most men after VMMC. There was an increase in the proportion of men who reported at least two sexual partners after VMMC compared with baseline. In multivariate analysis, having sex with a woman they met the same day (adjusted relative risk = 1.7, 95% CI = 1.2-2.4) and having at least two sexual partners at baseline (adjusted relative risk = 0.5, 95% CI = 0.3-0.8) were associated with the outcome of any increase in the number of partners after VMMC.

CLINICAL IMPLICATIONS: VMMC can be offered to Dominican men for HIV prevention without adversely affecting sexual pleasure or function. The procedure substantially reduces coital trauma.

STRENGTHS & LIMITATIONS: This is the first report of long-term overall satisfaction, sexual pleasure/function and sex behaviors in the context of VMMC outside of Africa. Limitations of the study included the reliance on self-reported sex behaviors, the lack of physiologic measurement of penile sensitivity and the lack of follow up data beyond 24 months, which precludes the assessment of longer term RC.

CONCLUSION: The study confirmed men's long-term satisfaction with the outcome of their VMMC. VMMC improved sexual pleasure and function for most men and significantly decreased coital injuries. There was mixed evidence of RC.

31. Tomita, A., et al. **Social disequilibrium and the risk of HIV acquisition: A multilevel study in rural KwaZulu-Natal Province, South Africa.** *J Acquir Immune Defic Syndr* 2017 Mar 10. [Epub ahead of print]

BACKGROUND: Few population-based multilevel studies have quantified the risks that social context poses in rural communities with high HIV incidence across South Africa. We investigated the individual, social and community challenges to HIV acquisition risk in areas with high and low incidence of HIV infection (hotspots/coldspots).

METHODS: The cohort (N=17,376) included all HIV-negative adults enrolled in a population-based HIV surveillance study from 2004-2015 in a rural South African community with a large labor migrancy. Multilevel survival models were fitted to examine the social determinants (i.e. neighborhood migration intensity),

community traits (i.e. HIV prevalence), and individual determinants of HIV acquisition risk in identified hotspots/coldspots.

RESULTS: The HIV acquisition risk (aHR=1.05, 95% CI:1.01-1.09) was greater in hotspots with a higher neighborhood migration intensity amongst men. In women, higher neighborhood migration intensity (aHR=1.02, 95% CI:1.01-1.02) was associated with a greater HIV acquisition risk, irrespective of whether they lived in hotspot/coldspot communities. HIV acquisition risk was greater in communities with a higher prevalence of HIV in both men (aHR=1.07, 95% CI:1.03-1.12) and women (aHR=1.03, 95% CI:1.01-1.05), irrespective of hotspot/coldspot locations.

CONCLUSION: HIV acquisition risk was strongly influenced by gender (i.e. young women), behavior (i.e. sexual debut, contraception, circumcision) and social determinants. Certain challenges (i.e. community disease prevalence) for HIV acquisition risk impacted both sexes, regardless of residence in hotspot/coldspot communities, while social determinants (i.e. neighborhood migration intensity) were pronounced in hotspots among men. Future intervention scale-up requires addressing the social context that contributes to HIV acquisition risk in rural areas with high migration.

32. Schaefer, R., et al. **Spatial patterns of HIV prevalence and service use in East Zimbabwe: implications for future targeting of interventions.** *J Int AIDS Soc* 2017;20(1): 1-10.

INTRODUCTION: Focusing resources for HIV control on geographic areas of greatest need in countries with generalized epidemics has been recommended to increase cost-effectiveness. However, socioeconomic inequalities between areas of high and low prevalence could raise equity concerns and have been largely overlooked. We describe spatial patterns in HIV prevalence in east Zimbabwe and test for inequalities in accessibility and uptake of HIV services prior to the introduction of spatially-targeted programmes.

METHODS: 8092 participants in an open-cohort study were geo-located to 110 locations. HIV prevalence and HIV testing and counselling (HTC) uptake were mapped with ordinary kriging. Clusters of high or low HIV prevalence were detected with Kulldorff statistics, and the socioeconomic characteristics and sexual risk behaviours of their populations, and levels of local HIV service availability (measured in travel distance) and uptake were compared. Kulldorff

statistics were also determined for HTC, antiretroviral therapy (ART), and voluntary medical male circumcision (VMMC) uptake.

RESULTS: One large and one small high HIV prevalence cluster (relative risk [RR] = 1.78, 95% confidence interval [CI] = 1.53-2.07; RR = 2.50, 95% CI = 2.08-3.01) and one low-prevalence cluster (RR = 0.70, 95% CI = 0.60-0.82) were detected. The larger high-prevalence cluster was urban with a wealthier population and more high-risk sexual behaviour than outside the cluster. Despite better access to HIV services, there was lower HTC uptake in the high-prevalence cluster (odds ratio [OR] of HTC in past three years: OR = 0.80, 95% CI = 0.66-0.97). The low-prevalence cluster was predominantly rural with a poorer population and longer travel distances to HIV services; however, uptake of HIV services was not reduced.

CONCLUSION: High-prevalence clusters can be identified to which HIV control resources could be targeted. To date, poorer access to HIV services in the poorer low-prevalence areas has not resulted in lower service uptake, whilst there is significantly lower uptake of HTC in the high-prevalence cluster where health service access is better. Given the high levels of risky sexual behaviour and lower uptake of HTC services, targeting high-prevalence clusters may be cost-effective in this setting. If spatial targeting is introduced, inequalities in HIV service uptake may be avoided through mobile service provision for lower prevalence areas.

33. Mavhu, W., et al. **Unpacking early infant male circumcision decision-making using qualitative findings from Zimbabwe.** *BMC Int Health Hum Rights* 2017;7(1): 2.
Online at:
<https://bmcinthealthumrights.biomedcentral.com/articles/10.1186/s12914-016-0111-1>

BACKGROUND: Early infant male circumcision (EIMC) has been identified as a key HIV prevention intervention. Exploring the decision-making process for adoption of EIMC for HIV prevention among parents and other key stakeholders is critical for designing effective demand creation interventions to maximize uptake, roll out and impact in preventing HIV. This paper describes key players, decisions and actions involved in the EIMC decision-making process.

METHODS: Two complementary qualitative studies explored hypothetical and actual acceptability of EIMC in Zimbabwe. The first study (conducted 2010) explored hypothetical acceptability of EIMC among parents and wider family through focus group discussions (FGDs, n = 24). The follow-up study (conducted

2013) explored actual acceptability of EIMC among parents through twelve in-depth interviews (IDIs), four FGDs and short telephone interviews with additional parents (n = 95). Short statements from the telephone interviews were handwritten. FGDs and IDIs were audio-recorded, transcribed and translated into English. All data were thematically coded.

RESULTS: Study findings suggested that EIMC decision-making involved a discussion between the infant's parents. Male and female participants of all age groups acknowledged that the father had the final say. However, discussions around EIMC uptake suggested that the infant's mother could sometimes covertly influence the father's decision in the direction she favoured. Discussions also suggested that fathers who had undergone voluntary medical male circumcision were more likely to adopt EIMC for their sons, compared to their uncircumcised counterparts. Mothers-in-law/grandparents were reported to have considerable influence. Based on study findings, we describe key EIMC decision makers and attempt to illustrate alternative outcomes of their key actions and decisions around EIMC within the Zimbabwean context.

CONCLUSIONS: These complementary studies identified critical players, decisions and actions involved in the EIMC decision-making process. Findings on who influences decisions regarding EIMC in the Zimbabwean context highlighted the need for EIMC demand generation interventions to target fathers, mothers, grandmothers, other family members and the wider community.

34. Campaign, N. J., et al. **Use of a simulated model to teach male adult circumcision in sub-Saharan Africa.** *World J Surg* 2017;41(1): 10-13.

Male adult circumcision (MC) has been shown to reduce the risk of HIV transmission in men by 50-60 %. An upscaling in the training of providers to perform circumcision is necessary to meet demand since MC is a key component of essential surgery in the context of universal health coverage. We piloted a low-cost, high-fidelity model for training adult circumcision. Multi-centre, multinational data were collected on 74 trainees and clinicians (trainers) in sub-Saharan Africa. Both trainers and trainees gave excellent feedback for the model (content and face validity). The simulated model enables a safe and realistic simulation experience to perform MC. The model is quick to set up and easily transportable to multiple teaching sites.

35. Bailey, R. C., et al. **What device would be best for early infant male circumcision in east and southern Africa? Provider experiences and opinions with three different devices in Kenya.** *PLoS One* 2017;12(2): e0171445.

Online at:

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0171445>

Voluntary medical male circumcision (VMMC) reduces risk of HIV acquisition in heterosexual men by approximately 60%. As some countries approach targets for proportions of adolescents and adults circumcised, some are considering early infant male circumcision (EIMC) as a means to achieve sustainability of VMMC for long term reduction of HIV incidence. Evaluations of specialized devices for EIMC are important to provide programs with information required to make informed decisions about how to design safe, effective EIMC programs. We provide assessments by 11 providers with experience in Kenya employing all three of the devices most likely to be considered by various EIMC programs in east and Southern Africa. There was no one device that was seen to be clearly superior to the others. Each had its own advantages and disadvantages. Provider preferences were situation-specific. Most preferred the Mogen Clamp if they themselves were performing the procedure. However, most were concerned that not everyone will have the skills necessary for optimal safety. If someone else were circumcising their son, most would opt for the AccuCirc because of the risk of severing the glans when using the Mogen. A minority preferred the PrePex, but only if the baby received local anesthesia, not EMLA cream (a eutectic mixture of lidocaine 2.5% and prilocaine 2.5%), as presently prescribed by the manufacturer. In the context of a national EIMC program, all participants agreed that AccuCirc would be the device they would recommend due to protection of the glans from laceration and to the provision of a pre-assembled sterile kit that overcomes the need for additional supplies or autoclaving. All agreed that scaling up EIMC, integrating it with existing maternal child health services, will face significant challenges, not least of which is persuading already over-burdened providers to take on additional workload. These results will be useful to programmers considering introduction of EIMC services in sub-Saharan African settings.

36. Maraux, B., et al. **Women's knowledge and perception of male circumcision before and after its roll-out in the South African township of Orange Farm from community-based cross-sectional surveys.** *PLoS One* 2017;12(3):

e0173595.

Online at:

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0173595>

The roll-out of medical male circumcision (MC) is progressing in Southern and Eastern Africa. Little is known about the effect of this roll-out on women. The objective of this study was to assess the knowledge and perceptions of women regarding MC in a setting before and after the roll-out. This study was conducted in the South African township of Orange Farm where MC prevalence among men increased from 17% to 53% in the period 2008-2010. Data from three community-based cross sectional surveys conducted in 2007, 2010 and 2012 among 1258, 1197 and 2583 adult women, respectively were studied. In 2012, among 2583 women, 73.7% reported a preference for circumcised partners, and 87.9% knew that circumcised men could become infected with HIV. A total of 95.8% preferred to have their male children circumcised. These three proportions increased significantly during the roll-out. In 2007, the corresponding values were 64.4%, 82.9% and 80.4%, respectively. Among 2581 women having had sexual intercourse with circumcised and uncircumcised men, a majority (55.8%, 1440/2581) agreed that it was easier for a circumcised man to use a condom, 20.5% (530/2581) disagreed; and 23.07 (611/2581) did not know. However, some women incorrectly stated that they were fully (32/2579; 1.2%; 95%CI: 0.9% to 1.7%) or partially (233/2579; 9.0%; 95%CI: 8.0% to 10.2%) protected when having unprotected sex with a circumcised HIV-positive partner. This study shows that the favorable perception of women and relatively correct knowledge regarding VMMC had increased during the roll-out of VMMC. When possible, women should participate in the promotion of VMMC although further effort should be made to improve their knowledge.