

## Quarterly Research Digest

### On Voluntary Medical Male Circumcision for HIV Prevention

1. Alsallaq, R. A., et al. **The potential impact and cost of focusing HIV prevention on young women and men: A modeling analysis in western Kenya.** *PLoS One* 2017;12(4): e0175447. Online at: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0175447>

**OBJECTIVE:** We compared the impact and costs of HIV prevention strategies focusing on youth (15-24 year-old persons) versus on adults (15+ year-old persons), in a high-HIV burden context of a large generalized epidemic.

**DESIGN:** Compartmental age-structured mathematical model of HIV transmission in Nyanza, Kenya.

**INTERVENTIONS:** The interventions focused on youth were high coverage HIV testing (80% of youth), treatment at diagnosis (TasP, i.e., immediate start of antiretroviral therapy [ART]) and 10% increased condom usage for HIV-positive diagnosed youth, male circumcision for HIV-negative young men, pre-exposure prophylaxis (PrEP) for high-risk HIV-negative females (ages 20-24 years), and cash transfer for in-school HIV-negative girls (ages 15-19 years). Permutations of these were compared to adult-focused HIV testing coverage with condoms and TasP.

**RESULTS:** The youth-focused strategy with ART treatment at diagnosis and condom use without adding interventions for HIV-negative youth performed better than the adult-focused strategy with adult testing reaching 50-60% coverage and TasP/condoms. Over the long term, the youth-focused strategy approached the performance of 70% adult testing and TasP/condoms. When high coverage male circumcision also is added to the youth-focused strategy, the combined intervention outperformed the adult-focused strategy with 70% testing, for at least 35 years by averting 94,000 more infections, averting 5.0 million more disability-adjusted life years (DALYs), and saving US\$46.0 million over this period. The addition of prevention interventions beyond circumcision to the youth-focused strategy would be more beneficial if HIV care costs are high, or when program delivery costs are relatively high for programs encompassing HIV testing coverage exceeding 70%, TasP and condoms to HIV-infected adults compared to combination prevention programs among youth.

**CONCLUSION:** For at least the next three decades, focusing in high burden settings on high coverage HIV testing, ART treatment upon diagnosis, condoms and male circumcision among youth may outperform adult-focused ART treatment upon diagnosis programs, unless the adult testing coverage in these programs reaches very high levels (>70% of all adults reached) at similar program costs. Our results indicate the potential importance of age-targeting for HIV prevention in the current era of 'test and start, ending AIDS' goals to ameliorate the HIV epidemic globally.

2. Asfaw, E., et al. **Underutilisation of routinely collected data in the HIV programme in Zambia: a review of quantitatively analysed peer-reviewed articles.** *PLoS One* 2017;15(1): 51. Online at: <https://health-policy-systems.biomedcentral.com/articles/10.1186/s12961-017-0221-9>

**BACKGROUND:** The extent to which routinely collected HIV data from Zambia has been used in peer-reviewed published articles remains unexplored. This paper is an analysis of peer-reviewed articles that utilised routinely collected HIV data from Zambia within six programme areas from 2004 to 2014.

**METHODS:** Articles on HIV, published in English, listed in the Directory of open access journals, African Journals Online, Google scholar, and PubMed were reviewed. Only articles from peer-reviewed journals, that utilised routinely collected data and included quantitative data analysis methods were included. Multi-country studies involving Zambia and another country, where the specific results for Zambia were not reported, as well as clinical trials and intervention studies that did not take place under routine care conditions were excluded, although community trials which referred patients to the routine clinics were included. Independent extraction was conducted using a predesigned data collection form. Pooled analysis was not possible due to diversity in topics reviewed.

**RESULTS:** A total of 69 articles were extracted for review. Of these, 7 were excluded. From the 62 articles reviewed, 39 focused on HIV treatment and retention in care, 15 addressed prevention of mother-to-child transmission, 4 assessed social behavioural change, and 4 reported on voluntary counselling and testing. In our search, no articles were found on condom programming or voluntary male medical circumcision. The most common outcome measures reported were CD4+ count, clinical failure or mortality. The population analysed was children in 13 articles, women in 16 articles, and both adult men and women in 33 articles.

**CONCLUSION:** During the 10-year period of review, only 62 articles were published analysing routinely collected HIV data in Zambia. Serious consideration needs to be made to maximise the utility of routinely collected data, and to benefit from the funds and efforts to collect these data. This could be achieved with government support of operational research and publication of findings based on routinely collected Zambian HIV data.

3. Bochner, A. F., et al. **A cross-sectional analysis of *Trichomonas vaginalis* infection among heterosexual HIV-1 serodiscordant African couples.** *Sex Transm Infect* 2017 Apr 4. pii: sextrans-2016-053034. [Epub ahead of print]

**OBJECTIVES:** *Trichomonas vaginalis* is the most prevalent curable STI worldwide and has been associated with adverse health outcomes and increased HIV-1 transmission risk. We conducted a cross-sectional analysis among couples to assess how characteristics of both individuals in sexual partnerships are associated with the prevalence of male and female *T. vaginalis* infection.

**METHODS:** African HIV-1 serodiscordant heterosexual couples were concurrently tested for trichomoniasis at enrolment into two clinical trials. *T. vaginalis* testing was by nucleic acid amplification or culture methods. Using Poisson regression with robust standard errors, we identified characteristics associated with trichomoniasis.

**RESULTS:** Among 7531 couples tested for trichomoniasis, 981 (13%) couples contained at least one infected partner. The prevalence was 11% (n=857) among women and 4% (n=319) among men, and most infected individuals did not experience signs or symptoms of *T. vaginalis*. Exploring concordance of *T. vaginalis* status within sexual partnerships, we observed that 61%

(195/319) of *T. vaginalis*-positive men and 23% (195/857) of *T. vaginalis*-positive women had a concurrently infected partner. In multivariable analysis, having a *T. vaginalis*-positive partner was the strongest predictor of infection for women (relative risk (RR) 4.70, 95% CI 4.10 to 5.38) and men (RR 10.09, 95% CI 7.92 to 12.85). For women, having outside sex partners, gonorrhoea, and intermediate or high Nugent scores for bacterial vaginosis were associated with increased risk of trichomoniasis, whereas age 45 years and above, being married, having children and injectable contraceptive use were associated with reduced trichomoniasis risk. Additionally, women whose male partners were circumcised, had more education or earned income had lower risk of trichomoniasis.

**CONCLUSIONS:** We found that within African HIV-1 serodiscordant heterosexual couples, the prevalence of trichomoniasis was high among partners of *T. vaginalis*-infected individuals, suggesting that partner services could play an important role identifying additional cases and preventing reinfection. Our results also suggest that male circumcision may reduce the risk of male-to-female *T. vaginalis* transmission.

4. Boyee, D., et al. **What messages are adolescent voluntary medical male circumcision (VMMC) clients getting and how? Findings from an observational study in Tanzania.** *AIDS Behav* 2017;21(5): 1383-1393.

Online at: <https://link.springer.com/article/10.1007%2Fs10461-016-1515-6>

Uncircumcised adolescent males in sub-Saharan Africa are an important group to reach with voluntary medical male circumcision (VMMC) services due to high HIV burden occurring among this age group. Appropriateness of the content and delivery of sexual health and HIV prevention messages to adolescent VMMC clients has not been extensively described. A study was conducted in Tanzania to examine quality, delivery and content of messages provided to adolescent (aged 15-19) and adult (aged 20+) VMMC clients (n = 320). Results show that counseling of mixed age groups during group education lacked selected key messages, compared to more age-homogeneous groups. Additionally, adolescents received more comprehensive information in individual counseling compared to group education. We recommend that health care providers are provided with skills and job aides to assist them to segment VMMC clients by age; provide age-appropriate messages; and increase use of individual counseling as a means to communicate with adolescent clients.

5. Carrasco, M. A., et al. **Correlates of condom use and procedure knowledge among men accessing voluntary medical male circumcision in Malawi.** *Int J Behav Med* 2017;24(2): 305-311.

**PURPOSE:** This study examined correlates of condom use (CU) and voluntary medical male circumcision (VMMC) knowledge among men accessing VMMC services in Malawi.

**METHODS:** Two hundred sixty-nine men ages 16 or older accessing VMMC were recruited at service sites. Bivariate and multivariate logistic regressions were used to determine associations, and the relative odds of CU at last sex with VMMC knowledge. Correlates included the following: education, age, location, religion, marital status, ever tested for HIV, having casual/concurrent sexual partners, and alcohol use before sex.

**RESULTS:** The multivariate analysis revealed CU was associated with having a casual/concurrent partner in the previous 3 months and negatively associated with being age 27 or older and

single, with participants who had casual/concurrent partners being more likely to use condoms than counterparts who did not have casual/concurrent partners, and those who were over age 27 and single being less likely to do so. VMMC knowledge was associated with education and location, with men with higher education and living in urban areas more likely to know that VMMC partially protects against HIV.

**CONCLUSION:** Results highlight the need to ensure information about VMMC is appropriate for rural men with lower education. Further research is needed to understand the risk profile of men accessing VMMC and the reasons why men who do not know VMMC partially protects against HIV are seeking the service.

6. Chilimampungu, C., et al. **Acceptability and feasibility of early infant male circumcision for HIV prevention in Malawi.** *PLoS One* 2017;12(4): e0175873.  
Online at: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0175873>

**BACKGROUND:** Voluntary medical male circumcision (VMMC) has been successfully implemented in 14 countries as an additional HIV prevention intervention. As VMMC programs mature in most countries, the focus is now on how to sustain the HIV prevention gains realised from VMMC. As part of preparations for the sustainability phase, countries are either piloting or preparing to pilot early infant male circumcision (EIMC). This qualitative study explored the acceptability and feasibility of EIMC in Malawi in order to inform pilot implementation.

**METHODS:** In 2016, 23 focus group discussions were held across Malawi with participants from several ethnicities and religions/faiths. Additionally, 21 key informant interviews were held with traditional and religious leaders, traditional circumcisers (ngalibas), policy-makers, programme managers and health-care workers. Audio recordings were transcribed, translated into English (where necessary), and thematically coded using NVivo 10.

**RESULTS:** Discussions highlighted the socio-cultural significance of MC in Malawi. Knowledge or experience of EIMC was poor although acceptability was high among most ethnic/religious groups and key informants. Participants identified EIMC's comparative HIV benefits although a few health-care workers expressed scepticism. All participants said EIMC should be offered within a clinical setting. In addition to fathers, maternal uncles and traditional leaders were deemed key decision-makers. Potential barriers to EIMC included concerns about procedure safety as well as cultural considerations. Key informants felt it was feasible to offer EIMC in Malawi. Participants' recommendations, including phased implementation, engagement of traditional leaders, use of external mobilisers and initially reaching out to influential parents, will be taken into account when designing a pilot EIMC program.

**CONCLUSIONS:** EIMC is potentially an acceptable and feasible HIV prevention intervention for most ethnic/religious groups in Malawi if wide-ranging, culturally appropriate demand-creation activities are developed, piloted, evaluated and appropriately implemented.

7. Friedrich, M. J. **Educating religious leaders increases male circumcision rates in Tanzania.** *JAMA* 2017;317(15): 1517.

8. George, G., et al. **The cost of demand creation activities and voluntary medical male circumcision targeting school-going adolescents in KwaZulu-Natal, South Africa.** *PLoS One* 2017;12(6): e0179854.  
Online at: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0179854>

**BACKGROUND:** Voluntary medical male circumcision is an integral part of the South African government's response to the HIV and AIDS epidemic. However, there remains a limited body of economic analysis on the cost of VMMC programming, and the demand creation activities used to mobilize males, especially among adolescent boys in school. This study addresses this gap by presenting the costs of a VMMC program which adopted two demand creation strategies targeting school-going males in South Africa.

**METHODS:** Cost data was collected from a VMMC program in the KwaZulu-Natal province of South Africa. A retrospective, micro-costing ingredient approach was applied to identify, measure and value resources of two demand creation strategies targeting young males.

**RESULTS:** The program circumcised 4987 young males between May 2011 and February 2013, at a cost of \$127.68 per circumcision. Demand creation activities accounted for 32% of the total cost, HCT contributing 10% with the medical circumcision procedure accounting for 58% of the total cost. Using the first demand creation strategy, 2168 circumcisions were performed at a cost of \$149.57 per circumcision. Following this first strategy, a second demand creation strategy was adopted which saw the cost fall to \$110.85 per circumcision. More young males were recruited following the second strategy with clinic services more efficiently utilized. Whilst the cost per circumcision of demand activities rose slightly between the first (\$39.94) and second (\$41.65) strategy, there was a substantial reduction in the cost of the circumcision procedure; \$90.01 under the first strategy falling to \$60.60 following the adoption of the second demand creation strategy.

**CONCLUSION:** Ensuring the optimal use of clinic facilities was the primary driver in reducing the cost per circumcision. This VMMC program has illustrated the value of evaluating progress and instituting changes to attain better cost efficiencies. This adjustment resulted in a substantial reduction in the cost per circumcision.

9. Grillo, M. P., et al. **Voluntary medical male circumcision among Rwanda Defense Force members.** *Curr HIV Res* 2017;15(2):109-115.

**INTRODUCTION:** Strong scientific evidence supports voluntary medical male circumcision as part of an overall HIV prevention strategy, but self-report information on circumcision status may be inaccurate. The study objectives were to obtain estimates of male circumcision within the Rwanda Defense Force (RDF), to assess the ability of soldiers to correctly report their own circumcision status, and to document the uptake of voluntary medical male circumcision (VMMC) in the RDF.

**METHODS:** Data were collected from members of the Rwandan military during their annual physical examination. A self-administered questionnaire collected demographic and circumcision characteristics. Self-reported circumcision status was compared with the medical exam evaluation.

**RESULTS:** Using questionnaires with complete data (n = 579), 69% of the study participants were circumcised by physical examination and there was a strong agreement with self-reported circumcision status (kappa = 0.97). Almost half (44%) of all circumcisions had been performed within the past 2 years.

**DISCUSSION:** These results suggest that self-report is an appropriate method to collect information on circumcision status in the Rwandan military. Many of the circumcisions occurred within the last 2 years, possibly as an effect of the successful scale-up of voluntary medical male circumcision in the Rwandan military utilizing effective messaging, demand creation, and positive news reported by the media.

10. Grillo, M. P., et al. **Global HIV prevention, testing, and counseling in military populations.** *Curr HIV Res* 2017;15(2):95-101

**BACKGROUND:** Compared with the general population in low- and middle-income countries, military members tend to be male, young, travel more frequently away from their main sexual partners, drink more alcohol and have a consistent source of income. All of these factors may lead to an increased risk of contracting HIV.

**OBJECTIVE:** In response, the Department of Defense HIV/AIDS Prevention Program advocates for the integration of HIV prevention "building blocks" into military health services to reduce the risk of acquiring HIV among foreign uniformed services.

**METHOD:** The building blocks include basic HIV education including outreach, condom promotion, enabling HIV policies, HIV testing services, screening for sexually transmitted infections, voluntary medical male circumcision where appropriate, prevention of mother-to-child transmission, and other supportive services.

**CONCLUSION:** The Department of Defense HIV/AIDS Prevention Programs supports implementation of these building blocks through partnerships with foreign militaries. This comprehensive prevention package, when closely linked with HIV treatment services, is the cornerstone of creating an HIV-free generation in military and surrounding communities worldwide.

11. Kankaka, E. N., et al. **Efficacy of knowledge and competence-based training of non-physicians in the provision of early infant male circumcision using the Mogen clamp in Rakai, Uganda.** *BJU Int* 2017;119(4): 631-637.

**OBJECTIVE:** To assess acquisition of knowledge and competence in performing Early Infant Male Circumcision (EIMC) by non-physicians trained using a structured curriculum.

**SUBJECTS AND METHODS:** Training in provision of EIMC using the Mogen clamp was conducted for 10 Clinical Officers (COs) and 10 Registered Nurse Midwives (RNMWs), in Rakai, Uganda. Healthy infants whose mothers consented to study participation were assigned to the trainees, each of whom performed at least 10 EIMCs. Ongoing assessment and feedback for competency were done, and safety assessed by adverse events.

**RESULTS:** Despite similar baseline knowledge, COs acquired more didactic knowledge than RNMWs ( $P = 0.043$ ). In all, 100 EIMCs were assessed for gain in competency. The greatest improvement in competency was between the first and third procedures, and all trainees achieved 80% competency and retention of skills by the seventh procedure. The median (interquartile range) time to complete a procedure was 14.5 (10-47) min for the COs, and 15 (10-50) min for the RNMWs ( $P = 0.180$ ). The procedure times declined by 2.2 min for each subsequent EIMC ( $P = 0.005$ ), and rates of improvement were similar for COs and RNMWs. Adverse events were comparable between providers (3.5%), of which 1% were of moderate severity.

**CONCLUSION:** Competence-based training of non-physicians improved knowledge and competency in EIMC performed by COs and RNMWs in Uganda.

12. Kibira, S. P. S., et al. "**Now that you are circumcised, you cannot have first sex with your wife**": post circumcision sexual behaviours and beliefs among men in Wakiso district, Uganda. *J Int AIDS Soc* 2017;20(1): 1-9.

**INTRODUCTION:** Safe male circumcision is an important biomedical intervention in the comprehensive HIV prevention programmes implemented in 14 sub-Saharan African countries with high HIV prevalence. To sustain its partial protective benefit, it is important that perceived reduced HIV risk does not lead to behavioural risk compensation among circumcised men and their sexual partners. This study explored beliefs that may influence post circumcision sexual behaviours among circumcised men in a programme setting.

**METHODS:** Forty-eight in-depth interviews were conducted with newly circumcised men in Wakiso district, central Uganda. Twenty-five men seeking circumcision services at public health facilities in the district were recruited from May to June 2015 and, interviewed at baseline and after 6 months. Participants' beliefs and sexual behaviours were compared just after circumcision and at follow up to explore changes. Data were managed using atlas.ti7 and analysed following a thematic network analysis framework.

**RESULTS:** Four themes following safe male circumcision emerged from this study. Beliefs related to: (1) sexual cleansing, (2) healing, (3) post SMC sexual capabilities and (4) continued HIV transmission risk. Most men maintained or adopted safer sexual behaviour; being faithful to their partner after circumcision or using condoms with extramarital partners following the knowledge that there was continued HIV risk post circumcision. The most prevalent risky belief was regarding sexual cleansing post circumcision, and as a result of this belief, some men had one off condom-less sexual intercourse with a casual partner. Some resumed sex before the recommended period due to misunderstanding of what comprised healing.

**CONCLUSIONS:** Although most men maintained or adopted safer sexual behaviour, there were instances of risky sexual behaviour resulting from beliefs regarding the first sexual intercourse after circumcision or misunderstandings of what comprised wound healing. If not addressed, these may attenuate the safe male circumcision benefits of risk reduction for HIV.

13. Kratz, M., et al. **Development and implementation of the DHAPP Military eHealth Information Network System.** *Curr HIV Res* 2017; 15(2):102-108.

As the Joint United Nations Programme on HIV/AIDS, the Global Fund, and the US President's Emergency Plan for AIDS Relief focus on reaching 90-90-90 goals, military health systems are scaling up to meet the data demands of these ambitious objectives. Since 2008, the US Department of Defense HIV/AIDS Prevention Program (DHAPP) has been working with military partners in 14 countries on implementation and adoption of a Military eHealth Information Network (MeHIN). Each country implementation plan followed a structured process using international eHealth standards. DHAPP worked with the private sector to develop a commercial-off-the-shelf (COTS) electronic medical record (EMR) for the collection of data, including patient demographic information, clinical notes for general medical care, HIV encounters, voluntary medical male circumcision, and tuberculosis screening information. The COTS software approach provided a zero-dollar software license and focused on sharing a single version of the EMR across countries, so that all countries could benefit from software enhancements and new features over time. DHAPP also worked with the public sector to modify open source disease surveillance tools and open access of HIV training materials. Important lessons highlight challenges to eHealth implementation, including a paucity of technology infrastructure, military leadership rotations, and the need for basic computer skills building. While not simple, eHealth systems can be built and maintained with requisite security, flexibility, and reporting capabilities that provide critical information to improve the health of individuals and organizations.

14. Maffioli, E. M. **Is traditional male circumcision effective as an HIV prevention strategy? Evidence from Lesotho.** *PLoS One* 2017;12(5): e0177076.  
Online at: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0177076>

In many developing countries, male circumcision has been promoted as an effective HIV prevention strategy, and medical randomized controlled trials have indeed shown a causal link. However, there is limited empirical evidence to support this conclusion in countries where individuals can voluntarily opt for different types of circumcision. The present study considers male circumcision in Lesotho, where HIV prevalence is among the highest in the world (23%). Here, men can opt for one of two types of circumcision: traditional male circumcision in initiation schools, or the medical option in health clinics. This paper investigates whether the former has medical effects on individual HIV status that are as beneficial as those shown for the latter. Controlling for the potential individual behavioral response after the operation, it was found that circumcision performed in initiation schools wholly offset the medical benefits of the surgical procedure. This supports anecdotal evidence that the operation performed by traditional circumcisers does not have the same protective effect against HIV transmission as the medical operation. No evidence of "disinhibition" behavior among circumcised men was found, nor differential risky sexual behavior among men circumcised, traditionally or medically. Considering that, in Lesotho, traditional male circumcision is undertaken by more than 90% of circumcised men, the findings highlight the need for further research into how the operation in initiation schools is performed and its medical benefits.

15. Mangombe, K., et al. **Predictors of male circumcision among men aged 15-35 years in Harare, Zimbabwe.** *J Biosoc Sci* 2017 May 9: 1-19. [Epub ahead of print]

Medical male circumcision has been recommended by the World Health Organization as part of a comprehensive approach to HIV prevention. Zimbabwe is one of the fourteen sub-Saharan countries that embarked on the Medical Male Circumcision (MMC) programme. However, the



country has not yet met male circumcision targets. This paper examines the predictors of male circumcision in Zimbabwe. A cross-sectional survey was conducted on 784 men aged 15-35 years in Harare, Zimbabwe. Negative log-log logistic regression analysis was used to determine the predictors of male circumcision. The main predictors of circumcision were age, employment status, ever tested for HIV, approval of HIV testing prior to circumcision, knowledge about male circumcision and attitudes towards male circumcision. By and large, participants had good knowledge about male circumcision and viewed HIV prevention with a reasonably positive attitude. The identification of these predictors can be used to scale up the demand for male circumcision in Zimbabwe.

16. Matthews, L. T., et al. **Consensus statement: Supporting Safer Conception and Pregnancy For Men And Women Living with and Affected by HIV.** *AIDS Behav* 2017 May 13. [Epub ahead of print]  
Online at: <https://link.springer.com/article/10.1007%2Fs10461-017-1777-7>

Safer conception interventions reduce HIV incidence while supporting the reproductive goals of people living with or affected by HIV. We developed a consensus statement to address demand, summarize science, identify information gaps, outline research and policy priorities, and advocate for safer conception services. This statement emerged from a process incorporating consultation from meetings, literature, and key stakeholders. Three co-authors developed an outline which was discussed and modified with co-authors, working group members, and additional clinical, policy, and community experts in safer conception, HIV, and fertility. Co-authors and working group members developed and approved the final manuscript. Consensus across themes of demand, safer conception strategies, and implementation were identified. There is demand for safer conception services. Access is limited by stigma towards PLWH having children and limits to provider knowledge. Efficacy, effectiveness, safety, and acceptability data support a range of safer conception strategies including ART, PrEP, limiting condomless sex to peak fertility, home insemination, male circumcision, STI treatment, couples-based HIV testing, semen processing, and fertility care. Lack of guidelines and training limit implementation. Key outstanding questions within each theme are identified. Consumer demand, scientific data, and global goals to reduce HIV incidence support safer conception service implementation. We recommend that providers offer services to HIV-affected men and women, and program administrators integrate safer conception care into HIV and reproductive health programs. Answers to outstanding questions will refine services but should not hinder steps to empower people to adopt safer conception strategies to meet reproductive goals.

17. Montano, D. E., et al. **Evidence-based identification of key beliefs explaining infant male circumcision motivation among expectant parents in Zimbabwe: targets for behavior change messaging.** *AIDS Behav* 2017 May 20. [Epub ahead of print]

Slow adult male circumcision uptake is one factor leading some to recommend increased priority for infant male circumcision (IMC) in sub-Saharan African countries. This research, guided by the integrated behavioral model (IBM), was carried out to identify key beliefs that best explain Zimbabwean parents' motivation to have their infant sons circumcised. A quantitative survey, designed from qualitative elicitation study results, was administered to independent representative samples of 800 expectant mothers and 795 expectant fathers in two urban and two rural areas in Zimbabwe. Multiple regression analyses found IMC motivation among fathers was explained by instrumental attitude, descriptive norm and self-efficacy; while

motivation among mothers was explained by instrumental attitude, injunctive norm, descriptive norm, self-efficacy, and perceived control. Regression analyses of beliefs underlying IBM constructs found some overlap but many differences in key beliefs explaining IMC motivation among mothers and fathers. We found differences in key beliefs among urban and rural parents. Urban fathers' IMC motivation was explained best by behavioral beliefs, while rural fathers' motivation was explained by both behavioral and efficacy beliefs. Urban mothers' IMC motivation was explained primarily by behavioral and normative beliefs, while rural mothers' motivation was explained mostly by behavioral beliefs. The key beliefs we identified should serve as targets for developing messages to improve demand and maximize parent uptake as IMC programs are rolled out. These targets need to be different among urban and rural expectant mothers and fathers.

18. Morris, B. J., et al. **Penile inflammatory skin disorders and the preventive role of circumcision.** *Int J Prev Med* 2017 May 4;8: 32.  
Online at: [http://www.ijpvmjournal.net/temp/IntJPrevMed8132-858462\\_235046.pdf](http://www.ijpvmjournal.net/temp/IntJPrevMed8132-858462_235046.pdf)

Penile inflammatory skin conditions such as balanitis and posthitis are common, especially in uncircumcised males, and feature prominently in medical consultations. We conducted a systematic review of the medical literature on PubMed, EMBASE, and Cochrane databases using keywords "balanitis," "posthitis," "balanoposthitis," "lichen sclerosus," "penile inflammation," and "inflammation penis," along with "circumcision," "circumcised," and "uncircumcised." Balanitis is the most common inflammatory disease of the penis. The accumulation of yeasts and other microorganisms under the foreskin contributes to inflammation of the surrounding penile tissue. The clinical presentation of inflammatory penile conditions includes itching, tenderness, and pain. Penile inflammation is responsible for significant morbidity, including acquired phimosis, balanoposthitis, and lichen sclerosus. Medical treatment can be challenging and a cost burden to the health system. Reducing prevalence is therefore important. While topical antifungal creams can be used, usually accompanied by advice on hygiene, the definitive treatment is circumcision. Data from meta-analyses showed that circumcised males have a 68% lower prevalence of balanitis than uncircumcised males and that balanitis is accompanied by a 3.8-fold increase in risk of penile cancer. Because of the high prevalence and morbidity of penile inflammation, especially in immunocompromised and diabetic patients, circumcision should be more widely adopted globally and is best performed early in infancy.

19. Nordstrom, M. P., et al. **Medical male circumcision is associated with improvements in pain during intercourse and sexual satisfaction in Kenya.** *J Sex Med* 2017;14(4): 601-612.  
Online at: [http://www.jsm.jsexmed.org/article/S1743-6095\(17\)30120-0/fulltext](http://www.jsm.jsexmed.org/article/S1743-6095(17)30120-0/fulltext)

**BACKGROUND:** Two cohort studies using data from randomized controlled trials in Africa offer the best evidence to date on the effects of voluntary medical male circumcision (VMMC) on male sexual function and satisfaction, suggesting no significant impairments in sexual function or satisfaction and some improvements in sexual function after male circumcision. **AIM:** To assess the effects of VMMC on sexual function and satisfaction in a large population-based cohort of men circumcised as adults and uncircumcised controls in Kenya.

**METHODS:** Sexual function and satisfaction of young (median age = 20 years) sexually active men (1,509 newly circumcised men and 1,524 age-matched uncircumcised controls after 5% loss to follow-up) were assessed at baseline and 6, 12, 18, and 24 months, with data collected in

2008 to 2012. Self-reported data on lack of sexual interest or pleasure, difficulty getting or maintaining erections, orgasm difficulties, premature ejaculation, pain during intercourse, and satisfaction with sexual intercourse were analyzed with mixed-effect models to detect differences between circumcised and uncircumcised men and changes over time.

**OUTCOMES:** Changes over time in sexual interest, desire and pleasure, erectile and ejaculatory function, and pain during intercourse (dyspareunia) in circumcised and uncircumcised men; group differences in time trends; satisfaction with sexual performance; and enjoyment of sex before and after circumcision.

**RESULTS:** Sexual dysfunctions decreased in the two study groups from 17% to 54% at baseline to 11% to 44% at 24 months ( $P < .001$ ), except dyspareunia, which decreased only in circumcised men ( $P < .001$ ). Sexual satisfaction outcomes increased in the two study groups from 34% to 82% at baseline to 66% to 93% at 24 months ( $P < .001$ ), with greater improvements in circumcised men ( $P < .001$ ). On average, 97% of circumcised men were satisfied with sexual intercourse and 92% rated sex as more enjoyable or no different after circumcision compared with before circumcision.

**CLINICAL TRANSLATION:** Results are applicable to VMMC programs seeking to increase the acceptability of male circumcision as part of comprehensive HIV prevention.

**STRENGTHS AND LIMITATIONS:** Large-scale population-based longitudinal data restricted to sexually active individuals and adjusted for differences in baseline levels of outcomes and potential confounders are used. The questionnaire used, although not a standardized survey instrument, includes all major domains of male sexual function and satisfaction used in the most common standardized tools.

**CONCLUSIONS:** Results are consistent with large cohort studies of VMMC using data from randomized controlled trials and indicate that VMMC has no significant detrimental effect or might have beneficial effects on male sexual function and satisfaction for the great majority of men circumcised as adults.

20. Shi, C. F., et al. **Evidence that promotion of male circumcision did not lead to sexual risk compensation in prioritized Sub-Saharan countries.** *PLoS One* 2017;12(4): e0175928. Online at: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0175928>

**BACKGROUND:** WHO and UNAIDS prioritized 14 eastern and southern African countries with high HIV and low male circumcision prevalence for a voluntary medical male circumcision (VMMC) scale-up in 2007. Because circumcision provides only partial protection against HIV infection to men, the issue of possible risk compensation in response to VMMC campaigns is of particular concern. In this study, we looked at population-level survey data from the countries prioritized by WHO for a VMMC scale-up. We compared the difference in sexual risk behaviours (SRB) between circumcised and uncircumcised men before and after the WHO's official VMMC promotion.

**MATERIALS AND METHODS:** Ten countries (Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, Tanzania, Uganda, Zambia and Zimbabwe) participating in the WHO's VMMC scale-up had available data from the Demographic and Health Surveys (DHS). We used cumulative-link

mixed models to investigate interactions between survey period and circumcision status in predicting SRB, in order to evaluate whether the difference between the behavior of the two groups changed before and after the scale-up, while controlling for socio-demographic and knowledge-related covariates. The main responses were condom use at last sex and number of non-cohabiting sexual partners, both in the last 12 months.

**RESULTS:** There was little change in condom use by circumcised men relative to uncircumcised men from before the VMMC scale up to after the scale up. The relative odds ratio is 1.06 (95% CI, 0.95-1.18; interaction P = 0.310). Similarly, there was little change in the number of non-cohabiting partners in circumcised men (relative to uncircumcised men): the relative odds ratio of increasing the number of partners is 0.95 (95% CI, 0.86-1.05; interaction P = 0.319). Age, religion, education, job, marital status, media use and HIV knowledge also showed statistically significant association with the studied risk behaviours. We also found significant differences among countries, while controlling for covariates.

**CONCLUSIONS:** Overall, we find no evidence of sexual risk compensation in response to VMMC campaigns in countries prioritized by WHO. Changes in relative partner behaviour and the relative odds of condom use were small (and of uncertain sign). In fact, our estimates, though not significant, both suggest slightly less risky behavior. We conclude that sexual risk compensation in response to VMMC campaigns has not been a serious problem to date, but urge continued attention to local context, and to promulgating accurate messages about circumcision within and beyond the VMMC context.

21. Vallely, A. J., et al. **Dorsal longitudinal foreskin cut is associated with reduced risk of HIV, syphilis and genital herpes in men: a cross-sectional study in Papua New Guinea.** *PLoS One* 2017 20(1): 1-11.

**INTRODUCTION:** Various forms of penile foreskin cutting are practised in Papua New Guinea. In the context of an ecological association observed between HIV infection and the dorsal longitudinal foreskin cut, we undertook an investigation of this relationship at the individual level.

**METHODS:** We conducted a cross-sectional study among men attending voluntary confidential HIV counselling and testing clinics. Following informed consent, participants had a face-to-face interview and an examination to categorize foreskin status. HIV testing was conducted on site and relevant specimens collected for laboratory-based Herpes simplex type-2 (HSV-2), syphilis, Chlamydia trachomatis (CT), Neisseria gonorrhoeae (NG), and Trichomonas vaginalis (TV) testing.

**RESULTS:** Overall, 1073 men were enrolled: 646 (60.2%) were uncut; 339 (31.6%) had a full dorsal longitudinal cut; 72 (6.7%) a partial dorsal longitudinal cut; and 14 (1.3%) were circumcised. Overall, the prevalence of HIV was 12.3%; HSV-2, 33.6%; active syphilis, 12.1%; CT, 13.4%; NG, 14.1%; and TV 7.6%. Compared with uncut men, men with a full dorsal longitudinal cut were significantly less likely to have HIV (adjusted odds ratio [adjOR] 0.25, 95%CI: 0.12, 0.51); HSV-2 (adjOR 0.60, 95%CI: 0.41, 0.87); or active syphilis (adjOR 0.55, 95%CI: 0.31, 0.96). This apparent protective effect was restricted to men cut prior to sexual debut. There was no difference between cut and uncut men for CT, NG or TV.

**CONCLUSION:** In this large cross-sectional study, men with a dorsal longitudinal foreskin cut were significantly less likely to have HIV, HSV-2 and syphilis compared with uncut men, despite still having a complete (albeit morphologically altered) foreskin. The protective effect of the dorsal cut suggests that the mechanism by which male circumcision works is not simply due to the removal of the inner foreskin and its more easily accessible HIV target cells. Exposure of the penile glans and inner foreskin appear to be key mechanisms by which male circumcision confers protection. Further research in this unique setting will help improve our understanding of the fundamental immunohistologic mechanisms by which male circumcision provides protection, and may lead to new biomedical prevention strategies at the mucosal level.

22. Yang, Y., et al. **Circumcision does not have effect on premature ejaculation: A systematic review and meta-analysis.** *Andrologia* 2017 Jun 27. [Epub ahead of print]

We attempted to evaluate whether circumcision has an effect on premature ejaculation. We searched three databases: PubMed, EMBASE and Google scholar on 1 May 2016 for eligible studies that referred to male sexual function after circumcision. No language restrictions were imposed. The Cochrane Collaboration's RevMan 5.2 software was employed for data analysis, and the fixed or the random-effect model was selected depending on the heterogeneity. Twelve studies were included in the meta-analysis, containing a total of 10019 circumcised and 11570 uncircumcised men. All studies were divided into five subgroups by types of study design to evaluate the effect of circumcision on premature ejaculation (PE). Intravaginal ejaculation latency time (IELT), difficulty of orgasm, erectile dysfunction (ED) and pain during intercourse were also assessed because PE was usually discussed along with these subjects. There were no significant differences in PE (odds ratio [OR], 0.90; 95% confidence interval (CI), 0.72-1.13;  $p = .37$ ) and orgasm (OR, 1.04; 95% CI, 0.89-1.21;  $p = .65$ ) between circumcised and uncircumcised group. However, IELT (OR, 0.72; 95% CI, 0.60-0.83;  $p < .00001$ ), ED (OR, 0.42; 95% CI, 0.22-0.78;  $p = .40$ ) and pain during intercourse (OR, 0.36; 95% CI, 0.17-0.76;  $p = .007$ ) favoured circumcised group. Based on these findings, circumcision does not have effect on PE.