

**Quarterly Research Digest  
on Voluntary Medical Male Circumcision for HIV Prevention**

The Clearinghouse on Male Circumcision for HIV Prevention publishes this quarterly research digest, providing abstracts of articles from the peer-reviewed literature on male circumcision, with a focus on voluntary medical male circumcision for HIV prevention. Links are provided to the full text of articles that are open access. This issue of the digest includes articles published from 1 October 2015 to 8 January 2016.

**Abstracts**

1. Kibira, S., et al. **"A comparison of sexual risk behaviours and HIV seroprevalence among circumcised and uncircumcised men before and after implementation of the safe male circumcision programme in Uganda."** *BMC Public Health* 2016; **16**(1): 7. doi: 10.1186/s12889-015-2668-3.

Online at: <http://link.springer.com/article/10.1186/s12889-015-2668-3/fulltext.html>

**BACKGROUND:** Although male circumcision reduces the heterosexual HIV transmission risk, its effect may be attenuated if circumcised men increase sexual risk behaviours (SRB) due to perceived low risk. In Uganda information about the protective effects of circumcision has been publicly disseminated since 2007. If increased awareness of the protection increases SRB among circumcised men, it is likely that differences in prevalence of SRB among circumcised versus uncircumcised men will change over time. This study aimed at comparing SRBs and HIV sero-status of circumcised and uncircumcised men before and after the launch of the safe male circumcision programme. **METHODS:** Data from the 2004 and 2011 Uganda AIDS Indicator Surveys (UAIS) were used. The analyses were based on generalized linear models, obtaining prevalence ratios (PR) as measures of association between circumcision status and multiple sexual partners, transactional sex, sex with non-marital partners, condom use at last non-marital sex, and HIV infection. In addition we conducted multivariate analyses adjusted for sociodemographic characteristics, and the multivariate models for HIV status were also adjusted for SRB. **RESULTS:** Twenty six percent of men were circumcised in 2004 and 28 % in 2011. Prevalence of SRB was higher among circumcised men in both surveys. In the unadjusted analysis, circumcision was associated with having multiple sexual partners and non-marital partners. Condom use was not associated with circumcision in 2004, but in 2011 circumcised men were less likely to report condom use with the last non-marital partner. The associations between the other sexual risk behaviours and circumcision status were stable across the two surveys." In both surveys, circumcised men were less likely to be HIV positive (Adj PR 0.55; CI: 0.41-0.73 in 2004 and Adj PR 0.64; CI: 0.49-0.83 in 2011). **CONCLUSIONS:** There was higher prevalence of SRBs among circumcised men in both surveys, but the only significant change from 2004 to 2011 was a lower prevalence of condom use among the circumcised. Nevertheless, HIV prevalence was lower among circumcised men. Targeted messages for circumcised men and their sexual partners to continue using condoms even after circumcision should be enhanced to avoid risk compensation.

2. Awad, S. F., et al. **"A reevaluation of the voluntary medical male circumcision scale-up plan in Zimbabwe."** *PLoS One* 2015; **10**(11): e0140818. doi: 10.1371/journal.pone.0140818.

Online at: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0140818>

**BACKGROUND:** The voluntary medical male circumcision (VMMC) program in Zimbabwe aims to circumcise 80% of males aged 13-29 by 2017. We assessed the impact of actual VMMC scale-up to date and evaluated the impact of potential alterations to the program to enhance program efficiency, through prioritization of subpopulations. **METHODS AND FINDINGS:** We implemented a recently developed analytical approach: the age-structured mathematical (ASM) model and accompanying three-level conceptual framework to assess the impact of VMMC as an intervention. By September 2014, 364,185 males were circumcised, an initiative that is estimated to avert 40,301 HIV infections by 2025. Through age-group prioritization, the number of VMMCs needed to avert one infection (effectiveness) ranged between ten (20-24 age-group) and 53 (45-49 age-group). The cost per infection averted ranged between \$811 (20-24 age-group) and \$5,518 (45-49 age-group). By 2025, the largest reductions in HIV incidence rate (up to 27%) were achieved by prioritizing 10-14, 15-19, or 20-24 year old. The greatest program efficiency was achieved by prioritizing 15-24, 15-29, or 15-34 year old. Prioritizing males 13-29 year old was programmatically efficient, but slightly inferior to the 15-24, 15-29, or 15-34 age groups. Through geographic prioritization, effectiveness varied from 9-12 VMMCs per infection averted across provinces. Through risk-group prioritization, effectiveness ranged from one (highest sexual risk-group) to 60 (lowest sexual risk-group) VMMCs per infection averted. **CONCLUSION:** The current VMMC program plan in Zimbabwe is targeting an efficient and impactful age bracket (13-29 year old), but program efficiency can be improved by prioritizing a subset of males for demand creation and service availability. The greatest program efficiency can be attained by prioritizing young sexually active males and males whose sexual behavior puts them at higher risk for acquiring HIV.

3. Awad, S. F. **“Investigating voluntary medical male circumcision program efficiency gains through subpopulation prioritization: insights from application to Zambia.”** *PLoS One* 2015; **10**(12): e0145729. doi: 10.1371/journal.pone.0145729  
Online at: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0145729>

**BACKGROUND:** Countries in sub-Saharan Africa are scaling-up voluntary male medical circumcision (VMMC) as an HIV intervention. Emerging challenges in these programs call for increased focus on program efficiency (optimizing program impact while minimizing cost). A novel analytic approach was developed to determine how subpopulation prioritization can increase program efficiency using an illustrative application for Zambia. **METHODS AND FINDINGS:** A population-level mathematical model was constructed describing the heterosexual HIV epidemic and impact of VMMC programs (age-structured mathematical (ASM) model). The model stratified the population according to sex, circumcision status, age group, sexual-risk behavior, HIV status, and stage of infection. A three-level conceptual framework was also developed to determine maximum epidemic impact and program efficiency through subpopulation prioritization, based on age, geography, and risk profile. In the baseline scenario, achieving 80% VMMC coverage by 2017 among males 15-49 year old, 12 VMMCs were needed per HIV infection averted (effectiveness). The cost per infection averted (cost-effectiveness) was USD \$1,089 and 306,000 infections were averted. Through age-group prioritization, effectiveness ranged from 11 (20-24 age-group) to 36 (45-49 age-group); cost-effectiveness ranged from \$888 (20-24 age-group) to \$3,300 (45-49 age-group). Circumcising 10-14, 15-19, or 20-24 year old achieved the largest incidence rate reduction; prioritizing 15-24, 15-29, or 15-34 year old achieved the greatest program efficiency. Through geographic prioritization, effectiveness ranged from 9-12. Prioritizing Lusaka achieved the highest effectiveness. Through risk-group prioritization, prioritizing the highest risk group achieved the highest effectiveness, with only one VMMC needed per infection averted; the lowest risk group required 80 times more VMMCs. **CONCLUSION:** Epidemic impact and efficiency of VMMC programs can be improved by prioritizing young males (sexually active or just before

sexual debut), geographic areas with higher HIV prevalence than the national, and high sexual-risk groups.

4. Bossio, J. A., et al. **“Examining penile sensitivity in neonatally circumcised and intact men using quantitative sensory testing.”** *J Urol* 2015. doi: 10.1016/j.juro.2015.12.080. [Epub ahead of print]

**PURPOSE:** Little is known about the long-term implications of neonatal circumcision on the penile sensitivity of adult men, despite recent public policy endorsing the procedure in the United States. The current study assessed penile sensitivity in adult men by comparing peripheral nerve function of the penis across circumcision status. **MATERIALS AND METHODS:** Sixty-two men (18-37y, M = 24.1, SD = 5.1) completed study procedures (30 circumcised, 32 intact). Quantitative Sensory Testing (QST) protocols assessed touch and pain thresholds (modified von Frey filaments) and warmth detection and heat pain thresholds (a thermal analyzer) at a control site (forearm) and 3-4 penile sites (glans penis, midline shaft, proximal to midline shaft, and foreskin, if present). **RESULTS:** Penile sensitivity did not differ across circumcision status for any stimulus type or penile site. The foreskin of intact men was more sensitive to tactile stimulation than the other penile sites, but this finding did not extend to any other stimuli (where foreskin sensitivity was comparable to the other sites tested). **CONCLUSIONS:** Findings suggest that minimal long-term implications to penile sensitivity exist as a result of the surgical excision of the foreskin during neonatal circumcision. Additionally, this study challenges past research suggesting that the foreskin is the most sensitive part of the adult penis. Future research should consider the direct link between penile sensitivity and the perception of pleasure/sensation. Results are relevant to policy makers, parents of male children, as well as the general public.

5. Ekenze, S. O., et al. **“Evaluation of neonatal circumcision training for resident doctors in a developing country.”** *J Pediatr Urol* 2015; **11**(5): 263.e1-6. doi: 10.1016/j.jpuro.2015.03.017.

**BACKGROUND:** There is a high prevalence of neonatal circumcision (NC) in Sub-Saharan Africa. However, when providers do not have adequate training on the procedure, neonatal circumcision can result in complications. There are indications that the reported high complication rate of NC in the current setting might be a reflection of inadequate training of the providers. In order to establish a framework for better training of providers of NC, it may be necessary to evaluate the providers' opinions of their training and competence of the procedure. **OBJECTIVE:** The opinions of surgical, paediatric, and obstetrics-gynaecology resident doctors were evaluated for their exposure to, training on and perceived competence of neonatal circumcision. **STUDY DESIGN:** The resident doctors in surgery, paediatrics and obstetrics-gynaecology (OBGYN) at two teaching hospitals in southeastern Nigeria were surveyed using a self-developed questionnaire. The self-assessment survey evaluated the residents' exposure and training on NC, and their perceived competence of the procedure. The responses from the different specialties were compared. Data were analysed using Statistical package for Social Sciences (SPSS). **RESULTS:** The summary of findings is shown in Table below: The confidence in the ability to perform the NC did not significantly differ between the sexes (male 53/87 vs female 6/15; P = 0.22) and the level of training (SHO, Senior house officer 7/17, Registrar 24/42, senior registrar 28/43; P = 0.24). **DISCUSSION:** A substantial proportion of residents who encountered neonatal circumcision considered their training in NC to be sub-optimal, despite their perceived exposure to the procedure. Notwithstanding this deficiency of training, the majority of the residents planned to perform NC and this presaged an expectedly higher rate of complications. Well-thought-out and structured training, comprising lectures, workshops and hands-on training, for the resident doctors and the other providers of NC might address these shortcomings and minimise complications. This may further be strengthened with a government policy on circumcision. The limitations of the study included: (1) It was a self-assessment survey and this

introduced bias in the assessment of competency; (2) There were no outcome measures in the survey for those who had practical exposure vs those who did not. CONCLUSION: The resident doctors perceived that their exposure, training and competence in NC might be sub-optimal. Curriculum modification that incorporates appropriate hands-on training in NC might address these deficiencies.

6. Ekwunife, O. H., et al. "**Parental circumcision preferences and early outcome of plastibell circumcision in a Nigerian tertiary hospital.**" *Afr J Paediatr Surg* 2015; **12**(4): 251-6. doi: 10.4103/0189-6725.172565.

Online at: <http://www.afrijaedsurg.org/article.asp?issn=0189-6725;year=2015;volume=12;issue=4;spage=251;epage=256;aulast=Ekwunife>

BACKGROUND: Parents are central in decisions and choices concerning circumcision of their male children and plastibell circumcision is a widely practiced technique. This study determined parental preferences for male neonatal and infant circumcisions and evaluate the early outcomes of plastibell circumcisions in a tertiary centre. PATIENTS AND METHODS: This is a prospective study on consecutive male neonates and infants who were brought for circumcisions at Nnamdi Azikiwe University Teaching Hospital Nnewi, South-East Nigeria and their respective parents between January 2012 and December 2012. Data on demography, parental choices and early outcome of plastibell circumcision were obtained and analysed. RESULTS: A total of 337 requests for circumcisions were made for boys with age range of 2-140 days. Culture and religion were the most common reasons for circumcision requests in 200 (59.3%) and 122 (36.2%), respectively, other reasons were medical, cosmetic, to reduce promiscuity and just to follow the norm. Most parents, 249 (73.9%) preferred the procedure to be performed on the 8th day and 88.7% would like the doctors to perform the procedure while 84.6% preferred the plastibell method. Among those who had circumcision, 114 complied with follow-up schedules and there were complications in 22 (19.3%) patients. Parents assessed the early outcome as excellent, very good, good and poor in 30.7%, 45.6%, 18.4% and 5.3% of the patients, respectively. CONCLUSION: Parents request for male circumcision in our environment is largely for cultural and religious reasons; and prefer the procedure to be performed by a physician. Plastibell method is well known and preferred and its outcome is acceptable by most parents.

7. Grabowski, M. K., et al. "**Herpes simplex virus type 2 shedding from male circumcision wounds in Rakai, Uganda.**" *J Infect Dis* 2015; **212**(10): 1613-7. doi: 10.1093/infdis/jiv259.

A prospective observational study of 176 men coinfectd with human immunodeficiency virus and herpes simplex virus type 2 (HSV-2) was conducted to assess whether their sexual partners may be at an increased risk of HSV-2 from male circumcision (MC) wounds. Preoperative and weekly penile lavage samples were tested for penile HSV-2 shedding. Prevalence risk ratios (PRRs) were estimated using Poisson regression. Detectable penile HSV-2 shedding was present in 9.7% of men (17 of 176) before MC, compared with 12.9% (22 of 170) at 1 week (PRR, 1.33; 95% confidence interval [CI], .74-2.38) and 14.8% (23 of 155) at 2 weeks (PRR, 1.50; 95% CI, .86-2.62) after MC. HSV-2 shedding was lower among men with healed MC wounds (adjusted PRR, 0.62; 95% CI, .35-1.08). Men undergoing MC should be counseled on sexual abstinence and condom use.

8. Grabowski, M. K., et al. "**Partner human papillomavirus viral load and incident human papillomavirus detection in heterosexual couples.**" *J Infect Dis* 2015. doi: 10.1093/infdis/jiv541 [Epub ahead of print]

**BACKGROUND:** The association between partner human papillomavirus (HPV) viral load and incident HPV detection in heterosexual couples is unknown. **METHODS:** HPV genotypes were detected in 632 human immunodeficiency virus (HIV)-negative couples followed for 2 years in a male circumcision trial in Rakai, Uganda, using the Roche HPV Linear Array. This assay detects 37 genotypes and provides a semiquantitative measure of viral load based on the intensity (graded 1-4) of the genotype-specific band; a band intensity of 1 indicates a low genotype-specific HPV load, whereas an intensity of 4 indicates a high load. Using Poisson regression with generalized estimating equations, we measured the association between partner's genotype-specific viral load and detection of that genotype in the HPV-discordant partner 1 year later. **RESULTS:** Incident detection of HPV genotypes was 10.6% among men (54 of 508 genotype-specific visit intervals) and 9.0% among women (55 of 611 genotype-specific visit intervals). Use of male partners with a baseline genotype-specific band intensity of 1 as a reference yielded adjusted relative risks (aRRs) of 1.14 (95% confidence interval [CI], .58-2.27) for incident detection of that genotype among women whose male partner had a baseline band intensity of 2, 1.75 (95% CI, .97-3.17) among those whose partner had an intensity of 3, and 2.52 (95% CI, 1.40-4.54) among those whose partner had an intensity of 4. Use of female partners with a baseline genotype-specific band intensity of 1 as a reference yielded an aRR of 2.83 (95% CI, 1.50-5.33) for incident detection of that genotype among men whose female partner had a baseline band intensity of 4. These associations were similar for high-risk and low-risk genotypes. Male circumcision also was associated with significant reductions in incident HPV detection in men (aRR, 0.53 [95% CI, .30-.95]) and women (aRR, 0.42 [95% CI, .23-.76]). **CONCLUSIONS:** In heterosexual couples, the genotype-specific HPV load in one partner is associated with the risk of new detection of that genotype in the other partner. Interventions that reduce the HPV load may reduce the incidence of HPV transmission.

9. Gumbe, A., E. McLellan-Lemal, et al. **“Correlates of prevalent HIV infection among adults and adolescents in the Kisumu incidence cohort study, Kisumu, Kenya.”** *Int J STD AIDS* 2015; **26**(13): 929-40. doi: 10.1177/0956462414563625

We estimated HIV prevalence and identified correlates of HIV infection among 1106 men and women aged 16-34 years residing in Kisumu, Kenya. Demographic, sexual, and other behavioural data were collected using audio computer-assisted self-interview in conjunction with a medical examination, real-time parallel rapid HIV testing, and laboratory testing for pregnancy, gonorrhoea, chlamydia, syphilis, and herpes simplex virus type 2. Multivariate logistic regression was used to identify variables associated with prevalent HIV infection by gender. Overall HIV prevalence was 12.1%. HIV prevalence among women (17.1%) was approximately two-and-one-half times the prevalence among men (6.6%). Odds of HIV infection in men increased with age (aOR associated with one-year increase in age = 1.21, CI = 1.07-1.35) and were greater among those who were uncircumcised (aOR = 4.42, CI = 1.41-13.89) and those who had an herpes simplex virus type 2-positive (aOR = 3.13, CI = 1.12-8.73) test result. Odds of prevalent HIV infection among women also increased with age (aOR associated with one-year increase in age = 1.16, CI = 1.04-1.29). Women who tested herpes simplex virus type 2 positive had more than three times the odds (aOR = 3.85, CI = 1.38-10.46) of prevalent HIV infection compared with those who tested herpes simplex virus type 2 negative. Tailored sexual health interventions and programs may help mitigate HIV age and gender disparities.

10. Heaton, L. M., **“Estimating the impact of the US President's Emergency Plan for AIDS Relief on HIV treatment and prevention programmes in Africa.”** *Sex Transm Infect* 2015; **91**(8): 615-20. doi: 10.1136/sextrans-2014-051991

**BACKGROUND:** Since 2004, the US President's Emergency Plan for AIDS Relief (PEPFAR) has supported the tremendous scale-up of HIV prevention, care and treatment services, primarily in sub-Saharan Africa. We evaluate the impact of antiretroviral treatment (ART), prevention of mother-to-child transmission (PMTCT) and voluntary medical male circumcision (VMMC) programmes on survival, mortality, new infections and the number of orphans from 2004 to 2013 in 16 PEPFAR countries in Africa. **METHODS:** PEPFAR indicators tracking the number of persons receiving ART for their own health, ART regimens for PMTCT and biomedical prevention of HIV through VMMC were collected across 16 PEPFAR countries. To estimate the impact of PEPFAR programmes for ART, PMTCT and VMMC, we compared the current scenario of PEPFAR-supported interventions to a counterfactual scenario without PEPFAR, and assessed the number of life years gained (LYG), number of orphans averted and HIV infections averted. Mathematical modelling was conducted using the SPECTRUM modelling suite V.5.03. **RESULTS:** From 2004 to 2013, PEPFAR programmes provided support for a cumulative number of 24 565 127 adults and children on ART, 4 154 878 medical male circumcisions, and ART for PMTCT among 4 154 478 pregnant women in 16 PEPFAR countries. Based on findings from the model, these efforts have helped avert 2.9 million HIV infections in the same period. During 2004-2013, PEPFAR ART programmes alone helped avert almost 9 million orphans in 16 PEPFAR countries and resulted in 11.6 million LYG. **CONCLUSIONS:** Modelling results suggest that the rapid scale-up of PEPFAR-funded ART, PMTCT and VMMC programmes in Africa during 2004-2013 led to substantially fewer new HIV infections and orphaned children during that time and longer lives among people living with HIV. Our estimates do not account for the impact of the PEPFAR-funded non-biomedical interventions such as behavioural and structural interventions included in the comprehensive HIV prevention, care and treatment strategy used by PEPFAR countries. Therefore, the number of HIV infections and orphans averted and LYG may be underestimated by these models.

11. Kenyon, C. R., A. Tsoumanis, et al. **"HIV prevalence correlates with high-risk sexual behavior in Ethiopia's regions."** *PLoS One* 2015; **10**(10): e0140835. doi: 10.1371/journal.pone.0140835. Online at: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0140835>

**BACKGROUND:** HIV prevalence varies between 0.9 and 6.5% in Ethiopia's eleven regions. Little has been published examining the reasons for this variation. **METHODS:** We evaluated the relationship between HIV prevalence by region and a range of risk factors in the 2005 and 2011 Ethiopian Demographic Health Surveys. Pearson's correlation was used to assess the relationship between HIV prevalence and each variable. **RESULTS:** There was a strong association between HIV prevalence and three markers of sexual risk: mean lifetime number of partners (men:  $r = 0.87$ ;  $P < 0.001$ ; women:  $r = 0.60$ ;  $P = 0.05$ ); reporting sex with a non-married, non-cohabiting partner (men:  $r = 0.92$ ;  $P < 0.001$ , women  $r = 0.93$ ;  $P < 0.001$ ); and premarital sex. Condom usage and HIV testing were positively associated with HIV prevalence, while the prevalence of circumcision, polygamy, age at sexual debut and male migration were not associated with HIV prevalence. **CONCLUSION:** Variation in sexual behavior may contribute to the large variations in HIV prevalence by region in Ethiopia. Population-level interventions to reduce risky sexual behavior in high HIV incidence regions should be considered.

12. Kibira, S. P., et al. **"Sexual risk behaviours and willingness to be circumcised among uncircumcised adult men in Uganda."** *PLoS One* 2015; **10**(12): e0144843. doi: 10.1371/journal.pone.0144843. Online at: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0144843>

**BACKGROUND:** There has been substantial demand for safe male circumcision (SMC) in Uganda in the early programme scale-up phase. Research indicates that early adopters of new interventions often differ from later adopters in relation to a range of behaviours. However, there is limited knowledge

about the risk profile of men who were willing to be circumcised at the time of launching the SMC programme, i.e., potential early adopters, compared to those who were reluctant. The aim of this study was to address this gap to provide indications on whether it is likely that potential early adopters of male circumcision were more in need of this new prevention measure than others. METHODS: Data were from the 2011 Uganda AIDS Indicator Survey (UAIS), with a nationally representative sample of men 15 to 59 years. The analysis was based on generalized linear models, obtaining prevalence risk ratios (PRR) with 95% confidence intervals (CI) as measures of association between willingness to be circumcised and multiple sexual partners, transactional sex, non-marital sex and non-use of condoms at last non-marital sex. RESULTS: Of the 5,776 men in the survey, 44% expressed willingness to be circumcised. Willingness to be circumcised was higher among the younger, urban and educated men. In the unadjusted analyses, all the sexual risk behaviours were associated with willingness to be circumcised, while in the adjusted analysis, non-marital sex (Adj PRR 1.27; CI: 1.16-1.40) and non-use of condoms at last such sex (Adj PRR 1.18; CI: 1.07-1.29) were associated with higher willingness to be circumcised. CONCLUSION: Willingness to be circumcised was relatively high at the launch of the SMC programme and was more common among uncircumcised men reporting sexual risk behaviours. This indicates that the early adopters of SMC were likely to be in particular need of such additional HIV protective measures.

13. Kim, H. Y., et al. **“Evaluating the cost of adult voluntary medical male circumcision in a mixed (surgical and PrePex) site compared to a hypothetical PrePex-only site in South Africa.”** *Glob Health Action* 2015; **8**: 29116. doi: 10.3402/gha.v8.29116.  
Online at: <http://www.globalhealthaction.net/index.php/gha/article/view/29116>

BACKGROUND: Several circumcision devices have been evaluated for a safe and simplified male circumcision among adults. The PrePex device was prequalified for voluntary male medical circumcision (VMMC) in May 2013 by the World Health Organization and is expected to simplify the procedure safely while reducing cost. South Africa is scaling up VMMC. OBJECTIVE: To evaluate the overall unit cost of VMMC at a mixed site vs. a hypothetical PrePex-only site in South Africa. DESIGN: We evaluated the overall unit cost of VMMC at a mixed site where PrePex VMMC procedure was added to routine forceps-guided scalpel-based VMMC in Soweto, South Africa. We abstracted costs and then modeled these costs for a hypothetical PrePex-only site, at which 9,600 PrePex circumcisions per year could be done. We examined cost drivers and modeled costs, varying the price of the PrePex device. The healthcare system perspective was used. RESULTS: In both sites, the main contributors of cost were personnel and consumables. If 10% of all VMMC were by PrePex at the mixed site, the overall costs of the surgical method and PrePex were similar - US\$59.62 and \$59.53, respectively. At the hypothetical PrePex-only site, the unit cost was US\$51.10 with PrePex circumcisions having markedly lower personnel and biohazardous waste management costs. In sensitivity analysis with the cost of PrePex kit reduced to US\$10 and \$2, the cost of VMMC was further reduced. CONCLUSIONS: Adding PrePex to an existing site did not necessarily reduce the overall costs of VMMC. However, starting a new PrePex-only site is feasible and may significantly reduce the overall cost by lowering both personnel and capital costs, thus being cost-effective in the long term. Achieving a lower cost for PrePex will be an important contributor to the scale-up of VMMC.

14. Korenromp, E. L., et al. **“Impact and cost of the HIV/AIDS National Strategic Plan for Mozambique, 2015-2019 projections with the Spectrum/Goals Model.”** *PLoS One* 2015; **10**(11): e0142908. doi: 10.1371/journal.pone.0142908.  
Online at: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0142908>

**INTRODUCTION:** Mozambique continues to face a severe HIV epidemic and high cost for its control, largely born by international donors. We assessed feasible targets, likely impact and costs for the 2015-2019 national strategic HIV/AIDS plan (NSP). **METHODS:** The HIV epidemic and response was modelled in the Spectrum/Goals/Resource Needs dynamical simulation model, separately for North/Center/South regions, fitted to antenatal clinic surveillance data, household and key risk group surveys, program statistics, and financial records. Intervention targets were defined in collaboration with the National AIDS Council, Ministry of Health, technical partners and implementing NGOs, considering existing commitments. **RESULTS:** Implementing the NSP to meet existing coverage targets would reduce annual new infections among all ages from 105,000 in 2014 to 78,000 in 2019, and reduce annual HIV/AIDS-related deaths from 80,000 to 56,000. Additional scale-up of prevention interventions targeting high-risk groups, with improved patient retention on ART, could further reduce burden to 65,000 new infections and 51,000 HIV-related deaths in 2019. Program cost would increase from US\$ 273 million in 2014, to US\$ 433 million in 2019 for 'Current targets', or US\$ 495 million in 2019 for 'Accelerated scale-up'. The 'Accelerated scale-up' would lower cost per infection averted, due to an enhanced focus on behavioural prevention for high-risk groups. Cost and mortality impact are driven by ART, which accounts for 53% of resource needs in 2019. Infections averted are driven by scale-up of interventions targeting sex work (North, rising epidemic) and voluntary male circumcision (Center & South, generalized epidemics). **CONCLUSION:** The NSP could aim to reduce annual new HIV infections and deaths by 2019 by 30% and 40%, respectively, from 2014 levels. Achieving incidence and mortality reductions corresponding to UNAIDS' 'Fast track' targets will require increased ART coverage and additional behavioural prevention targeting key risk groups.

15. Lei, J. H., et al. **"Circumcision with 'no-flip Shang Ring' and 'Dorsal Slit' methods for adult males: a single-centered, prospective, clinical study."** *Asian J Androl* 2015. doi: 10.4103/1008-682X.157544. Online at: <http://www.ajandrology.com/preprintarticle.asp?id=157544>

This paper was aimed to compare the clinical effectiveness and safety of adult male circumcision using the Shang Ring (SR) with the no-flip technique compared with Dorsal Slit (DS) surgical method. A single-centered, prospective study was conducted at the West China Hospital, where patients were circumcised using the no-flip SR (n = 408) or the DS (n = 94) procedure. The adverse events (AEs) and satisfaction were recorded for both groups, and ring-removal time and percentage of delayed removals were recorded for the SR group. Finally, complete follow-up data were collected for 76.1% of patients (SR: n = 306; DS: n = 76). The average ring-removal time for the SR group was 17.62 +/- 6.30 days. The operation time (P < 0.001), pain scores during the procedure (P < 0.001) and at 24 h postoperatively (P < 0.001), bleeding (P = 0.001), infection (P = 0.034), and satisfaction with penile appearance (P < 0.001) in the SR group were superior to those in the DS group. After two postoperative weeks, the percentage of patients with edema in the SR group (P = 0.029) was higher but no differences were found at 4 weeks (P = 0.185) between the two groups. In conclusions, the no-flip SR method was found to be superior to the DS method for its short operation time (<5 min), involving less pain, bleeding, infection, and resulting in a satisfactory appearance. However, the time for recovery from edema took longer, and patients may wear device for 2-3 weeks after the procedure.

16. MacLaren, D. J., et al. **"HIV prevalence is strongly associated with geographical variations in male circumcision and foreskin cutting in Papua New Guinea: an ecological study."** *Sex Transm Infect* 2015; **91**(7): 502-5. doi: 10.1136/sextrans-2014-051970. Online at: <http://sti.bmj.com/content/91/7/502.long>



**OBJECTIVE:** To examine the correlation between HIV prevalence and male circumcision and other foreskin cutting practices across the four regions of Papua New Guinea (PNG). **DESIGN:** An ecological substudy using unique data from an interdisciplinary research programme to evaluate the acceptability, sociocultural context and public health impact of male circumcision for HIV prevention in PNG. **METHODS:** Published data describing (a) self-reported circumcision status by region from the 'Acceptability and Feasibility of Male Circumcision for HIV prevention in PNG' study and (b) HIV prevalence by region from PNG National Department of Health were used to correlate male circumcision and other foreskin cutting practices and HIV prevalence. Maps were constructed to visually represent variations across the four regions of PNG. **RESULTS:** Regions of PNG with the highest HIV prevalence had the lowest prevalence of male circumcision and other forms of foreskin cutting and vice versa. Male circumcision and dorsal longitudinal cuts were strongly associated with HIV prevalence and able to explain 99% of the observed geographical variability in HIV prevalence in PNG ( $p < 0.01$ ). **CONCLUSIONS:** The regional prevalence of HIV infection in PNG appears to be closely correlated with the regional distribution of male circumcision and dorsal longitudinal foreskin cuts. Further research is warranted to investigate causality of this correlation as well as the potential of dorsal longitudinal cuts to confer protection against HIV acquisition in heterosexual men.

17. Matthews, L. T., et al. **"Periconception HIV risk behavior among men and women reporting HIV-serodiscordant partners in KwaZulu-Natal, South Africa."** *AIDS Behav* 2015; **19**(12): 2291-303. doi: 10.1007/s10461-015-1050-x.

HIV-infected men and women who choose to conceive risk infecting their partners. To inform safer conception programs we surveyed HIV risk behavior prior to recent pregnancy amongst South African, HIV-infected women (N = 209) and men (N = 82) recruited from antenatal and antiretroviral clinics, respectively, and reporting an uninfected or unknown-HIV-serostatus pregnancy partner. All participants knew their HIV-positive serostatus prior to the referent pregnancy. Only 11 % of women and 5 % of men had planned the pregnancy; 40 % of women and 27 % of men reported serostatus disclosure to their partner before conception. Knowledge of safer conception strategies was low. Around two-thirds reported consistent condom use, 41 % of women and 88 % of men reported antiretroviral therapy, and a third of women reported male partner circumcision prior to the referent pregnancy. Seven women (3 %) and two men (2 %) reported limiting sex without condoms to peak fertility. None reported sperm washing or manual insemination. Safer conception behaviors including HIV-serostatus disclosure, condom use, and ART at the time of conception were not associated with desired pregnancy. In light of low pregnancy planning and HIV-serostatus disclosure, interventions to improve understandings of serodiscordance and motivate mutual HIV-serostatus disclosure and pregnancy planning are necessary first steps before couples or individuals can implement specific safer conception strategies.

18. Morris, B. J. **"Commentary: Do the benefits of male circumcision outweigh the risks? A critique of the proposed CDC guidelines."** *Front Pediatr* 2015; **3**: 88. doi: 10.3389/fped.2015.00088. Online at: <http://journal.frontiersin.org/article/10.3389/fped.2015.00088/full>
19. Morris, B. J., et al. **"Male circumcision to prevent syphilis in 1855 and HIV in 1986 is supported by the accumulated scientific evidence to 2015: response to Darby."** *Glob Public Health* 2015: 1-19. doi: 10.1080/17441692.2015.1104371.

An article by Darby disparaging male circumcision (MC) for syphilis prevention in Victorian times (1837-1901) and voluntary medical MC programs for HIV prevention in recent times ignores contemporary scientific evidence. It is one-sided and cites outlier studies as well as claims by MC opponents that

support the author's thesis, but ignores high quality randomised controlled trials and meta-analyses. While we agree with Darby that risky behaviours contribute to syphilis and HIV epidemics, there is now compelling evidence that MC helps reduce both syphilis and HIV infections. Although some motivations for MC in Victorian times were misguided, others, such as protection against syphilis, penile cancer, phimosis, balanitis and poor hygiene have stood the test of time. In the absence of a cure or effective prophylactic vaccine for HIV, MC should help lower heterosexually acquired HIV, especially when coupled with other interventions such as condoms and behaviour. This should save lives, as well as reducing costs and suffering. In contrast to Darby, our evaluation of the evidence leads us to conclude that MC would likely have helped reduce syphilis in Victorian times and, in the current era, will help lower both syphilis and HIV, so improving global public health.

20. Mutombo, N., et al. **“Male circumcision and HIV infection among sexually active men in Malawi.”** *BMC Public Health* 2015; **15**: 1051. doi: 10.1186/s12889-015-2384-z.  
Online at: <http://bmcpublihealth.biomedcentral.com/articles/10.1186/s12889-015-2384-z>

**BACKGROUND:** The HIV epidemic remains a major health challenge all over the world. In 2013, an estimated 35 million people were living with HIV globally. Male circumcision is increasingly being adopted as a method of HIV prevention. WHO and UNAIDS have advised that male circumcision be added to current HIV interventions. Malawi is one of the countries hardest hit by HIV/AIDS with a prevalence rate of 11 % and male circumcision prevalence of 21.6 % in 2010. Prior to 2011, traditional male circumcision in Malawi was the dominant form of male circumcision, mainly for cultural and religious reasons. This paper looks at male circumcision as a prevention method against HIV by examining the relationship between male circumcision and HIV status among Malawian men. **METHODS:** The data used were collected as part of the 2010 Malawi Demographic and Health Survey. The methodology used in the 2010 MDHS has been comprehensively described by the National Statistical Office of Malawi and ICF Macro. Our analysis is based on men aged 15-54 years who were tested for HIV and responded to questions on circumcision during the survey. Sixty one percent of the 7175 men interviewed in the MDHS, qualified for this analysis. The sample was weighted to ensure representativeness. Frequencies, cross-tabulations, univariate and multivariate logistic regressions were conducted. Differences in the prevalence of HIV infection among circumcised and uncircumcised men were determined with Chi-squared tests. **RESULTS:** There is no significant difference in HIV prevalence between circumcised (12 %) and uncircumcised men (10 %). Among circumcised men, age and number of lifetime partners are the dominant correlates of HIV status. Additionally, circumcised men who have had ritual sex are two times more likely (OR = 2.399) to be HIV+ compared to circumcised men who have never had ritual sex. **CONCLUSION:** This study has demonstrated that traditional male circumcision was not associated with HIV infection in pre-2010 Malawi. Among circumcised men, age and number of lifetime partners are correlates to HIV status while circumcised men who have had ritual sex are more likely to be diagnosed with HIV than circumcised men who have not had ritual sex.

21. Nevin, P. E., et al. **“Perceptions of HIV and safe male circumcision in high HIV prevalence fishing communities on Lake Victoria, Uganda.”** *PLoS One* 2015; **10**(12): e0145543.  
Online at: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0145543>

**BACKGROUND:** In 2010, the Uganda Ministry of Health introduced its Safe Male Circumcision (SMC) strategy for HIV prevention with the goal of providing 4.2 million voluntary medical male circumcisions by 2015. Fishing communities, where HIV prevalence is approximately 3-5 times higher than the national average, have been identified as a key population needing targeted HIV prevention services by the National HIV Prevention Strategy. This study aimed to understand perceptions of HIV and identify

potential barriers and facilitators to SMC in fishing communities along Lake Victoria. METHODS: We conducted 8 focus group discussions, stratified by sex and age, with 67 purposefully sampled participants in 4 communities in Kalangala District, Uganda. RESULTS: There was universal knowledge of the availability of SMC services, but males reported high uptake in the community while females indicated that it is low. Improved hygiene, disease prevention, and improved sexual performance and desirability were reported facilitators. Barriers included a perceived increase in SMC recipients' physiological libido, post-surgical abstinence, lost income during convalescence, and lengthier recovery due to occupational hazards. Both males and females reported concerns about spousal fidelity during post-SMC abstinence. Reported misconceptions and community-held cultural beliefs include fear that foreskins are sold after their removal, the belief that a SMC recipient's first sexual partner after the procedure should not be his spouse, and the belief that vaginal fluids aid circumcision wound healing. CONCLUSIONS: Previous outreach efforts have effectively reached these remote communities, where availability and health benefits of SMC are widely understood. However, community-specific intervention strategies are needed to address the barriers identified in this study. We recommend the development of targeted counseling, outreach, and communication strategies to address barriers, misconceptions, and community-held beliefs. Interventions should also incorporate female partners into the SMC decision-making process and develop compensation strategies to address lost income during SMC recovery.

22. Odoyo-June, E., et al. **“Unexpected complications following adult medical male circumcision using the PrePex device.”** *Urol Int* 2015 Dec 19. [Epub ahead of print]

INTRODUCTION: In this study, we describe and depict unexpected sequelae of adult medical male circumcision (MMC) using the PrePex device. MATERIALS AND METHODS: The PrePex system is an elastic compression device for adult MMC. The device is well studied, has been pre-qualified by the World Health Organization (WHO), and its use is being scaled-up in African countries targeted by WHO. We conducted a PrePex implementation study in routine service delivery among 427 men in the age range of 18-49 in western Kenya. We captured penile photographs to create a record of adverse events (AEs) and to monitor healing. Several unexpected AEs ensued, including some that have not been reported in other PrePex studies. We describe and depict those unexpected complications and resulting treatments to alert circumcision providers in the relevant areas. RESULTS: We observed 5 device displacements (1.2%); 3 cases of early sloughing of foreskin tissue (0.7%) among men with long foreskins; 2 cases of a long foreskin obstructing urine flow, as it became dry and necrotic (0.5%); and 2 cases of insufficient foreskin removal caused by invagination for which surgical completion was necessary (0.5%). All of the participants healed completely by day 42 post-circumcision or shortly thereafter. CONCLUSION: The potential for these complications should be incorporated into PrePex training programs. Integration of devices into MMC programs in medically underserved areas requires the availability of prompt surgical intervention for some sequelae, particularly displacement events.

23. Redding, C. A., et al. **“Stages of change for voluntary medical male circumcision and sexual risk behavior in uncircumcised Zambian men: The Spear and Shield Project.”** *Int J Behav Med* 2015; **22**(6): 799-806. doi: 10.1007/s12529-015-9485-z.

BACKGROUND: Dissemination and scale up of voluntary medical male circumcision (VMMC) programs is well supported by evidence that VMMC reduces HIV risk in populations with high HIV prevalence and low rates of circumcision, as is the case in Zambia. PURPOSE: At both individual and population levels, it is important to understand what stages of change for VMMC are associated with, especially across cultures. This study evaluated VMMC knowledge, misinformation, and stages of change for VMMC of

uncircumcised men and boys (over 18 years), as well as the concurrent relationship between VMMC stages of change and sexual risk behaviors. **METHOD:** Uncircumcised (N = 800) adult men and boys (over 18) were screened and recruited from urban community health centers in Lusaka, Zambia, where they then completed baseline surveys assessing knowledge, attitudes, HIV risk behaviors, and stages of change for VMMC. A series of analyses explored cross-sectional relationships among these variables. **RESULTS:** VMMC was culturally acceptable in half of the sample; younger, unmarried, and more educated men were more ready to undergo VMMC. Stage of change for VMMC was also related to knowledge, and those at greater HIV risk reported greater readiness to undergo VMMC. **CONCLUSIONS:** Efforts to increase VMMC uptake should address the role of perceived HIV risk, risk behaviors, readiness, accurate knowledge, cultural acceptance, and understanding of the significant degree of HIV protection conferred as part of the VMMC decision making process. These results support incorporating comprehensive HIV risk reduction in VMMC promotion programs.

24. Remme, M., et al. **“Secondary schooling might be as good an HIV investment as male circumcision.”** *Lancet Glob Health* 2015; **3**(10): e591. doi: 10.1016/S2214-109X(15)00167-9. Online at: [http://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(15\)00167-9/fulltext](http://www.thelancet.com/journals/langlo/article/PIIS2214-109X(15)00167-9/fulltext)
25. Srithanaviboonchai, K., et al. **“Thai health care provider knowledge of neonatal male circumcision in reducing transmission of HIV and other STIs.”** *BMC Health Serv Res* 2015; **15**(1): 520. doi: 10.1186/s12913-015-1182-8. Online at: <http://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-015-1182-8>

**BACKGROUND:** Male circumcision (MC) reduces the risk of female-to-male transmission of HIV and other sexually transmitted infections (STIs). MC has not been practiced as a disease prevention measure in Thailand probably because of low recognition of its benefits among stakeholders. Neonatal male circumcision (NMC) is simpler, safer and cheaper than adult MC. This study aimed to assess Thai health care provider knowledge of benefits implementing NMC in Thailand. **METHODS:** Multi-stage sampling identified 16 government hospitals to represent various hospital sizes and regions of the country. Researchers administered a fixed choice questionnaire, developed by the research team based on a previous study, to physician administrators, practicing physicians, and nurses whose jobs involved NMC clinical procedures or oversight. The participants reviewed printed educational materials on the benefits of NMC during questionnaire completion. Data were analyzed using descriptive statistics, chi square tests, odds ratios, and logistic regression. **RESULTS:** One hundred thirty-three individuals participated in this quantitative study. Only 38 % of the participants agreed that NMC reduced the risk of sexual transmission of HIV while 65 % indicated that they knew that NMC prevented STIs. Most participants recognized the benefits of NMC on hygiene (96 %) as well as cancer prevention (74 %). Major concerns raised were potential trauma to the child, child rights and safety of NMC. After reviewing written information about the benefits of NMC, 59 % of the participants agreed that NMC should be offered in their hospital. Physicians and nurses who had previous experience with circumcising patients of all ages were more reluctant to have NMC performed in their hospital. **CONCLUSIONS:** A clear policy advocating NMC, thorough preparation of health facilities, and staff training are needed before NMC could be used in Thailand as prevention strategy for HIV and other STIs.

26. Tobian, A. A., et al. **“Voluntary medical male circumcision in resource-constrained settings.”** *Nat Rev Urol* 2015; **12**(12): 661-70. doi: 10.1038/nrurol.2015.253.

Throughout East and Southern Africa, the WHO recommends voluntary medical male circumcision (VMMC) to reduce heterosexual HIV acquisition. Evidence has informed policy and the implementation of VMMC programmes in these countries. VMMC has been incorporated into the HIV prevention portfolio and more than 9 million VMMCs have been performed. Conventional surgical procedures consist of forceps-guided, dorsal slit or sleeve resection techniques. Devices are also becoming available that might help to accelerate the scale-up of adult VMMC. The ideal device should make VMMC easier, safer, faster, sutureless, inexpensive, less painful, require less infrastructure, be more acceptable to patients and should not require follow-up visits. Elastic collar compression devices cause vascular obstruction and necrosis of foreskin tissue and do not require sutures or injectable anaesthesia. Collar clamp devices compress the proximal part of the foreskin to reach haemostasis; the distal foreskin is removed, but the device remains and therefore no sutures are required. Newer techniques and designs, such as tissue adhesives and a circular cutter with stapled anastomosis, are improvements, but none of these methods have achieved all desirable characteristics. Further research, design and development are needed to address this gap to enable the expansion of the already successful VMMC programmes for HIV prevention.

27. Voznesensky, M., et al. **“Pediatric sutureless circumcision: an effective and cost efficient alternative.”** *Can J Urol* 2015; **22**(5): 7995-9. doi: 10.1038/nrurol.2015.253.

**INTRODUCTION:** Circumcision is the most commonly performed surgical procedures in male children. Maine is one of 18 states in the United States which does not pay for neonatal circumcisions. The aim of this study was to perform outcomes and cost analysis of a sutureless circumcision technique versus circumcision using sutures. Specifically, we evaluated Dermaflex (2-octyl cyanoacrylate, 2-OCA) surgical glue circumcision as a cost effective, faster, and safe alternative to traditional suture circumcision. **MATERIALS AND METHODS:** Our study was a non-randomized series. We collected the operative details prospectively, abstracted clinical outcomes retrospectively, and performed data analysis retrospectively. One hundred and twenty-six circumcisions were performed by two pediatric urologists over a 1 year period. Suture circumcisions were performed exclusively during the first 6 months, and 2-OCA glue circumcisions were performed during the second 6 months. Billing charges were analyzed to extrapolate variable costs between the two surgical procedures. The technique used to perform the sutureless circumcision was a modification of the standard sleeve technique, with the use of monopolar diathermy instead of scalpel, and application of 2-OCA glue to approximate tissue edges. **RESULTS:** From Jan 2013 to Jan 2014, 72 patients underwent circumcision with suture, and 54 patients underwent circumcision with 2-OCA glue. Mean age in the glue group was 61 months (range 8-202 months), and 50 months in the suture group (range 5-215 months),  $p = 0.19$ . All cases were performed under general anesthesia, as outpatient surgery. Mean operative cut time was 18.4 min for the glue group, and 28.6 min for the suture group ( $p < 0.01$ ). The 10.2 min operative time difference translated to a \$378 cost savings per glue circumcision case. Complication rates were not statistically significant between the two groups. **CONCLUSION:** The use of 2-OCA tissue adhesive for sutureless circumcision is an alternative to the standard technique. It results in faster operative times, with a significant cost savings, while maintaining comparable complication rates to the standard suture technique. This is a viable, less expensive surgical option for patients whose circumcisions are not covered by Medicaid.

28. Wandei, S., et al. **“Ability and willingness to pay for voluntary medical male circumcision: a cross-sectional survey in Kisumu County, Kenya.”** *AIDS Care* 2015: 1-4.

Voluntary medical male circumcision is one of the most effective measures in preventing male acquisition of HIV during heterosexual intercourse. In Kenya, the voluntary medical male circumcision

programme was launched in the year 2008 as part of a comprehensive national HIV prevention strategy. With the global challenge of funding HIV intervention programs, the sustainability of the programme beyond the donor periods need to be assessed. The purpose of this study was to determine the household ability and willingness to pay for voluntary medical male circumcision as an alternative method of funding the programme. The findings show that 62.2% of the households were "able" to pay for medical circumcision. However, 60.4% of them were not "willing" to pay for the service regardless of the cost. The findings indicate that ability to pay is not a significant predictor of willingness to pay for voluntary medical male circumcision within Kisumu County. Knowledge on the role of medical circumcision is a more important factor in determining willingness to pay for the service.

29. Zamawe, C. O., et al. **"What are the social and individual factors that are associated with undergoing male circumcision as an HIV prevention strategy? A mixed methods study in Malawi."** *Int Health* 2015. doi: 10.1093/inthealth/ihv061.  
Online at: <http://inthealth.oxfordjournals.org/content/early/2015/10/25/inthealth.ihv061.long>

**BACKGROUND:** There is compelling evidence that medical male circumcision (MMC) decreases transmission of HIV. Nevertheless, the uptake of MMC is generally very low. Understanding the characteristics of individuals who choose MMC could inform future strategies for scaling-up MMC. The main objective of this study was to explore the social and individual characteristics of men that are associated with the uptake of circumcision as an HIV prevention strategy. **METHODS:** A mixed-methods study, comprising a cross-sectional survey and an exploratory qualitative study, was conducted in Malawi. A total number of 1644 men, of at least 18 years old, participated in this study. A multistage sampling approach was used in the survey while convenience sampling was adopted in the qualitative study. Descriptive statistics, bivariate analyses and multivariable logistic regression were performed to analyze the cross-sectional data and thematic content approach to analyze the qualitative data. **RESULTS:** Individuals who chose MMC were more likely to be unemployed (AOR=1.65; 95% CI 1.30-2.11), to be married (AOR=3.16; 95% CI 2.21-4.52) and to have had exposure to MMC promotions (AOR=1.81; 95% CI 1.41-2.33). They were also more likely to reside in rural areas (AOR=1.85; 95% CI 1.44-2.38), to perceive themselves as more vulnerable to HIV (AOR=1.60; 95% CI 1.19-2.15) and to be more knowledgeable about the benefits of MMC (AOR=1.51; 95% CI 1.16-1.97). **CONCLUSIONS:** The findings suggest that men who had certain social and individual characteristics (for example better knowledge of the benefits of MMC, greater perceived vulnerability to HIV, married and unemployed) were more likely to choose circumcision as a prevention strategy for HIV than those who lacked those characteristics. Strategies for increasing MMC take-up should recognize the current social/individual landscape of MMC uptake and ensure that deliberate efforts targeting marginalized categories of men are available.

30. Zulu, R., et al. **"Sexual satisfaction, performance, and partner response following voluntary medical male circumcision in Zambia: The Spear and Shield Project."** *Glob Health Sci Pract* 2015; **3**(4): 606-18. doi: 10.9745/GHSP-D-15-00163.  
Online at: <http://www.ghspjournal.org/content/3/4/606.long>

**BACKGROUND:** Voluntary medical male circumcision (VMMC) is an important HIV prevention strategy, particularly in regions with high HIV incidence and low rates of male circumcision. However, 88% of the Zambian male population remain uncircumcised, and of these 80% of men surveyed expressed little interest in undergoing VMMC. **METHODS:** The Spear and Shield study (consisting of 4 weekly, 90-minute sexual risk reduction/VMMC promotion sessions) recruited and enrolled men (N = 800) who self-identified as at risk of HIV by seeking HIV testing and counseling at community health centers. Eligible men tested HIV-negative, were uncircumcised, and expressed no interest in VMMC. Participants were

encouraged (but not required) to invite their female partners (N = 668) to participate in the program in a gender-concordant intervention matched to their partners'. Men completed assessments at baseline, post-intervention (about 2 months after baseline), and 6 and 12 months post-intervention; women completed assessments at baseline and post-intervention. For those men who underwent VMMC and for their partners, an additional assessment was conducted 3 months following the VMMC. The ancillary analysis in this article compared the pre- and post-VMMC responses of the 257 Zambian men who underwent circumcision during or following study participation, using growth curve analyses, as well as of the 159 female partners. RESULTS: Men were satisfied overall with the procedure (mean satisfaction score, 8.4 out of 10), and nearly all men (96%) and women (94%) stated they would recommend VMMC to others. Approximately half of the men reported an increase or no change in erections, orgasms, and time to achieve orgasms from pre-VMMC, while one-third indicated fewer erections and orgasms and decreased time to achieve orgasms post-VMMC. Nearly half (42%) of the men, and a greater proportion (63%) of the female partners, said their sexual pleasure increased while 22% of the men reported less sexual pleasure post-VMMC. Growth curve analysis of changes in sexual functioning and satisfaction over time revealed no changes in erectile functioning or intercourse satisfaction, but there were increases in orgasm functioning, overall sexual satisfaction, and sexual desire. The majority (61% to 70%) of men and women thought penile cleanliness and appearance had improved post-VMMC. Of the 69% of men who reported having sexual intercourse at least once between having the procedure and their 3-month post-VMMC assessment, the large majority (76%) waited at least 6 weeks before resuming sex. Sexual intercourse prior to the 6-week healing period was associated with adverse events and lower levels of post-VMMC sexual satisfaction. CONCLUSION: Both men and their partners can generally expect equal or improved sexual satisfaction and penile hygiene following VMMC. Future studies should consider innovative strategies to assist men in their efforts to abstain from sexual activities prior to complete healing.