

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

1. Afonso, L. A., et al. **High risk human papillomavirus infection of the foreskin in asymptomatic men and patients with phimosis.** *J Urol* 2016 Jan 18. pii: S0022-5347(16)00040-9. [Epub ahead of print]

**PURPOSE:** There has been increasing interest in understanding the natural history of HPV and the diseases that it causes in men. HPV infection is strongly associated with penile cancer, lack of neonatal circumcision and phimosis. We investigated the incidence of HPV infection in asymptomatic men and patients with phimosis.

**MATERIALS AND METHODS:** We assessed 110 asymptomatic men and 30 patients who underwent circumcision due to phimosis. DNA was extracted from swabbed samples collected from asymptomatic men and from foreskin samples collected at circumcision. Polymerase chain reaction using consensus primers for detecting HPV-MY09/11 was performed to detect generic HPV DNA. HPV genotyping was done by polymerase chain reaction amplification with primers for the E6 gene DNA sequences HPV6, HPV11, HPV16, HPV18, HPV31, HPV33, HPV35, HPV45 and HPV58.

**RESULTS:** HPV was present in 46.66% of patients with phimosis, of whom 50% had high-risk HPV genotypes. Of asymptomatic cases 16.36% were HPV positive but only 1 sample showed high risk HPV. We detected a significantly high rate of HPV genital infection in patients presenting with phimosis compared with asymptomatic men ( $p = 0.00167$ ). The prevalence of high-risk HPV genotypes in patients with phimosis was also statistically significant ( $p = 0.0004$ ).

**CONCLUSIONS:** We found a robust association between phimosis and the genital HPV prevalence in men and a significant frequency of high risk HPV. Other studies are needed to investigate the occurrence of factors that can increase the incidence of penile carcinoma and determine its impact on female genital infection in cervical cancer.

2. Douglas, M., et al. **The consideration of socioeconomic determinants in prevention of traditional male circumcision deaths and complications.** *Am J Mens Health* 2016 Mar 18. pii: 1557988316638157. [Epub ahead of print]

The responsiveness to socioeconomic determinants is perceived as highly crucial in preventing the high mortality and morbidity rates of traditional male circumcision initiates in the Eastern Cape, a province in South Africa. The study sought to describe social determinants and explore economic determinants related to traditional circumcision of boys from 12 to 18 years of age in Libode rural communities in Eastern Cape Province. From the results of a descriptive cross-sectional survey ( $n = 1,036$ ), 956

(92.2%) boys preferred traditional male circumcision because of associated social determinants which included the variables for the attainment of social manhood values and benefits; 403 (38.9%) wanted to attain community respect; 347 (33.5%) wanted the accepted traditional male circumcision for hygienic purposes. The findings from the exploratory focus group discussions were revolving around variables associated with poverty, unemployment, and illegal actions to gain money. The three negative economic determinants were yielded as themes: (a) commercialization and profitmaking, (b) poverty and unemployment, (c) taking health risk for cheaper practices, and the last theme was the (d) actions suggested to prevent the problem. The study concluded with discussion and recommendations based on a developed strategic circumcision health promotion program which is considerate of socioeconomic determinants.

3. Douglas, M., et al. **Traditional male circumcision: ways to prevent deaths due to dehydration.** *Am J Mens Health* 2016 Feb 1. pii: 1557988316628545. [Epub ahead of print]

Deaths of initiates occurring in the circumcision initiation schools are preventable. Current studies list dehydration as one of the underlying causes of deaths among traditional male circumcision initiates in the Eastern Cape, a province in South Africa, but ways to prevent dehydration in the initiation schools have not been adequately explored. The goals of this study were to (a) explore the underlying determinants of dehydration among initiates aged from 12 to 18 years in the traditional male circumcision initiation schools and (b) determine knowledge of participants on the actions to be taken to prevent dehydration. The study was conducted at Libode, a rural area falling under Nyandeni municipality. A simple random sampling was used to select three focus group discussions with 36 circumcised boys. A purposive sampling was used to select 10 key informants who were matured and experienced people with knowledge of traditional practices and responsible positions in the communities. The research findings indicate that the practice has been neglected to inexperienced, unskillful, and abusive traditional attendants. The overall themes collated included traditional reasons for water restriction, imbalanced food nutrients given to initiates, poor environmental conditions in the initiation hut, and actions that should be taken to prevent dehydration. This article concludes with discussion and recommendation of ways to prevent dehydration of initiates in the form of a comprehensive circumcision health promotion program.

4. Fenner, A. **Male circumcision: circumcision does not affect sensitivity.** *Nat Rev Urol* 2016;13(2):66.

Neonatal circumcision has minimal effects on penile sensitivity, according to a recent study, which challenges long-held beliefs about the sequelae of the procedure.

5. Fleming, P. J., et al. **"I feel like more of a man": a mixed methods study of masculinity, sexual performance, and circumcision for HIV prevention.** *J Sex Res* 2016 Mar 4: 1-13. [Epub ahead of print]

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

6. Grabowski, M. K., et al. **Partner human papillomavirus viral load and incident human papillomavirus detection in heterosexual couples.** *J Infect Dis* 2016;213(6):948-56.

**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.

7. Grund, J. M., et al. **Notes from the field: tetanus cases after voluntary medical male circumcision for HIV prevention – eastern and southern Africa, 2012-2015.** *MMWR Morb Mortal Wkly Rep* 2016;65(2):36-7.  
Online at: <http://www.cdc.gov/mmwr/volumes/65/wr/mm6502a5.htm>

Voluntary medical male circumcision (VMMC) decreases the risk for female-to-male HIV transmission by approximately 60%, and the President's Emergency Plan for AIDS Relief (PEPFAR) is supporting the scale-up of VMMC for adolescent and adult males in countries with high prevalence of human immunodeficiency virus (HIV) and low coverage of male circumcision. As of September 2015, PEPFAR has supported approximately 8.9 million VMMCs.

8. Gyan, T., et al. **Health service provider education and/or training in infant male circumcision to improve short- and long-term morbidity outcomes: protocol for systematic review.** *Syst Rev* 2016;5(1): 41.

**BACKGROUND:** There has been an expansion of circumcision services in Africa as part of a long-term HIV prevention strategy. However, the effect of infant male circumcision on morbidity and mortality still remains unclear. Acute morbidities associated with circumcision include pain, bleeding, swelling, infection, tetanus or inadequate skin removal. Scale-up of circumcision services could lead to a rise in these associated morbidities that could have significant impact on health service delivery and the safety of infants. Multidisciplinary training programmes have been developed to improve skills of health service providers, but very little is known about the effectiveness of health service provider education and/or training for infant male circumcision on short- and long-term morbidity outcomes. This review aims to evaluate the effectiveness of health service provider education and/or training for infant male circumcision on short- and long-term morbidity outcomes.

**METHODS/DESIGN:** The review will include studies comparing health service providers who have received education and/or training to improve their skills for infant male

circumcision with those who have not received education and/or training. Randomised controlled trials (RCTs) and cluster RCTs will be included. The outcomes of interest are short-term morbidities of the male infant including pain, infection, tetanus, bleeding, excess skin removal, glans amputation and fistula. Long-term morbidities include urinary tract infection (UTI), HIV infection and abnormalities of urination. Databases such as MEDLINE (OVID), PsycINFO (OVID), EMBASE (OVID), CINAHL, Cochrane Library (including CENTRAL and DARE), WHO databases and reference list of papers will be searched for relevant articles. Study selection, data extraction and synthesis and risk of bias assessment using the Cochrane risk of bias assessment tool will be conducted. We will calculate the pooled estimates of the difference in means and risk ratios using random effects models. If insufficient data are available, we will present results descriptively.

**DISCUSSION:** This review appears to be the first to be conducted in this area. The findings will have important implications for infant male circumcision programmes and policy. SYSTEMATIC REVIEW REGISTRATION: PROSPERO CRD42015029345.

Online at:

<http://systematicreviewsjournal.biomedcentral.com/articles/10.1186/s13643-016-0216-6>

9. Haberland, N., et al. **Women's perceptions and misperceptions of male circumcision: a mixed methods study in Zambia.** *PLoS One* 2016;11(3):e0149517.

Women's perceptions of male circumcision (MC) have implications for behavioral risk compensation, demand, and the impact of MC programs on women's health. This mixed methods study combines data from the first two rounds of a longitudinal study (n = 934) and in-depth interviews with a subsample of respondents (n = 45) between rounds. Most women correctly reported that MC reduces men's risk of HIV (64% R1, 82% R2). However, 30% of women at R1, and significantly more (41%) at R2, incorrectly believed MC is fully protective for men against HIV. Women also greatly overestimated the protection MC offers against STIs. The proportion of women who believed MC reduces a woman's HIV risk if she has sex with a man who is circumcised increased significantly (50% to 70%). Qualitative data elaborate women's misperception regarding MC. Programs should address women's informational needs and continue to emphasize that condoms remain critical, regardless of male partner's circumcision status.

Online at: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0149517>

10. Harper, K. **No changes in sexual behavior after voluntary medical male circumcision in the Dominican Republic.** *AIDS* 2016 Mar 21. [Epub ahead of print]

At ID Week 2015, Maximo Brito of the University of Illinois College of Medicine and colleagues presented data from a study conducted in the Dominican Republic. This study involved 454 men who underwent VMMC...

11. Kasprzyk, D., et al. **Psychosocial results from a Phase I trial of a nonsurgical circumcision device for adult men in Zimbabwe.** *AIDS Patient Care STDS* 2016;30(1):25-33.

Male circumcision (MC), an effective HIV prevention tool, has been added to Zimbabwe's Ministry of Health and Child Care HIV/AIDS Prevention Program. A Phase I safety trial of a nonsurgical male circumcision device was conducted and extensive psychosocial variables were assessed. Fifty-three men (18 and older) were recruited for the device procedure; 13 follow-up clinical visits were completed. Interviews conducted three times (before the procedure, at 2 weeks and 90 days post-procedure) assessed: Satisfaction; expectations; actual experience; activities of daily living; sexual behavior; and HIV risk perception. Using the Integrated Behavioral Model, attitudes towards MC, sex, and condoms, and sources of social influence and support were also assessed. Men (mean age 32.5, range 18-50; mean years of education = 13.6; 55% employed) were satisfied with device circumcision results. Men understand that MC is only partially protective against HIV acquisition. Most (94.7%) agreed that they will continue to use condoms to protect themselves from HIV. Pain ratings were surprisingly negative for a procedure billed as painless. Men talked to many social networks members about their MC experience; post-procedure (mean of 14 individuals). Minimal impact on activities of daily living and absenteeism indicate possible cost savings of device circumcisions. Spontaneous erections occurred frequently post-procedure. The results had important implications for changes in the pre-procedure clinical counseling protocol. Clear-cut counseling to manage pain and erection expectations should result in improved psychosocial outcomes in future roll-out of device circumcisions. Men's expectations must be managed through evidence-based counseling, as they share their experiences broadly among their social networks.

12. Kaufman, M. R., et al. **Adolescent sexual and reproductive health services and implications for the provision of voluntary medical male circumcision: results of a systematic literature review.** *PLoS One* 2016;11(3):e0149892.

**BACKGROUND:** Voluntary medical male circumcision (VMMC) is a critical HIV prevention tool. Since 2007, sub-Saharan African countries with the highest prevalence of HIV have been mobilizing resources to make VMMC available. While implementers initially targeted adult men, demand has been highest for boys under age 18. It is important to understand how male adolescents can best be served by quality VMMC services.

**METHODS AND FINDINGS:** A systematic literature review was performed to synthesize the evidence on best practices in adolescent health service delivery specific to males in sub-Saharan Africa. PubMed, Scopus, and JSTOR databases were searched for literature published between January 1990 and March 2014. The review revealed a general absence of health services addressing the specific needs of male adolescents, resulting in knowledge gaps that could diminish the benefits of VMMC programming for this population. Articles focused specifically on VMMC contained little information on the

adolescent subgroup. The review revealed barriers to and gaps in sexual and reproductive health and VMMC service provision to adolescents, including structural factors, imposed feelings of shame, endorsement of traditional gender roles, negative interactions with providers, violations of privacy, fear of pain associated with the VMMC procedure, and a desire for elements of traditional non-medical circumcision methods to be integrated into medical procedures. Factors linked to effective adolescent-focused services included the engagement of parents and the community, an adolescent-friendly service environment, and VMMC counseling messages sufficiently understood by young males.

**CONCLUSIONS:** VMMC presents an opportune time for early involvement of male adolescents in HIV prevention and sexual and reproductive health programming. However, more research is needed to determine how to align VMMC services with the unique needs of this population.

Online at: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0149892>

13. Kibira, S. P., 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.

**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.

Online at:

<http://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-015-2668-3>

14. Kohler, P. K., et al. **Classification and rates of adverse events in a Malawi male circumcision program: impact of quality improvement training.** *BMC Health Serv Res* 2016;16(1):61.

**BACKGROUND:** Assessing safety outcomes is critical to inform optimal scale-up of voluntary medical male circumcision (VMMC) programs. Clinical trials demonstrated adverse event (AE) rates from 1.5 to 8 %, but we have limited data on AEs from VMMC programs.

**METHODS:** A group problem-solving, quality improvement (QI) project involving retrospective chart audits, case-conference AE classification, and provider training was conducted at a VMMC clinic in Malawi. For each identified potential AE, the timing, assessment, treatment, and resolution was recorded, then a clinical team classified each event for type and severity. During group discussions, VMMC providers were queried regarding lessons learned and challenges in providing care. After baseline evaluation, clinicians and managers initiated a QI plan to improve AE assessment and management. A repeat audit 6 months later used similar methods to assess the proportions and severity of AEs after the QI intervention.

**RESULTS:** Baseline audits of 3000 charts identified 418 possible AEs (13.9 %), including 152 (5.1 %) excluded after determination of provider misclassification. Of the 266 remaining AEs, the team concluded that 257 were procedure-related (8.6 AEs per 100 VMMC procedures), including 6 (0.2 %) classified as mild, 218 (7.3 %) moderate, and 33 (1.1 %) severe. Structural factors found to contribute to AE rates and misclassification included: provider management of post-operative inflammation was consistent with national guidelines for urethral discharge; available antibiotics were from the STI formulary; providers felt well-trained in surgical skills but insecure in post-operative assessment and care. After implementation of the QI plan, a repeat process evaluating 2540 cases identified 115 procedure-related AEs (4.5 AEs per 100 VMMC procedures), including 67 (2.6 %) classified as mild, 28 (1.1 %) moderate, and 20 (0.8 %) severe. Reports of AEs decreased by 48 % (from 8.6 to 4.5 per 100 VMMC procedures,  $p <$

0.001). Reports of moderate-plus-severe (program-reportable) AEs decreased by 75 % (from 8.4 to 1.9 per 100 VMMC procedures,  $p < 0.001$ ).

**CONCLUSIONS:** AE rates from our VMMC program implementation site were within the range of clinical trial experiences. A group problem-solving QI intervention improved post-operative assessment, clinical management, and AE reporting. Our QI process significantly improved clinical outcomes and led to more accurate reporting of overall and program-reportable AEs.

Online at:

<http://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-016-1305-x>

15. MacKellar, D. A., et al. **Enrollment in HIV care two years after HIV diagnosis in the Kingdom of Swaziland: an evaluation of a national program of new linkage procedures.** *PLoS One* 2016;11(2):e0150086.

To improve early enrollment in HIV care, the Swaziland Ministry of Health implemented new linkage procedures for persons HIV diagnosed during the Soka Uncobe male circumcision campaign (SOKA, 2011-2012) and the Swaziland HIV Incidence Measurement Survey (SHIMS, 2011). Abstraction of clinical records and telephone interviews of a retrospective cohort of HIV-diagnosed SOKA and SHIMS clients were conducted in 2013-2014 to evaluate compliance with new linkage procedures and enrollment in HIV care at 92 facilities throughout Swaziland. Of 1,105 clients evaluated, within 3, 12, and 24 months of diagnosis, an estimated 14.0%, 24.3%, and 37.0% enrolled in HIV care, respectively, after adjusting for lost to follow-up and non-response. Kaplan-Meier functions indicated lower enrollment probability among clients 14-24 ( $P = 0.0001$ ) and 25-29 ( $P = 0.001$ ) years of age compared with clients  $>35$  years of age. At 69 facilities to which clients were referred for HIV care, compliance with new linkage procedures was low: referral forms were located for less than half (46.8%) of the clients, and few (9.6%) were recorded in the appointment register or called either before (0.3%) or after (4.9%) their appointment. Of over one thousand clients newly HIV diagnosed in Swaziland in 2011 and 2012, few received linkage services in accordance with national procedures and most had not enrolled in HIV care two years after their diagnosis. Our findings are a call to action to improve linkage services and early enrollment in HIV care in Swaziland.

Online at: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0150086>

16. Milford, C., et al. **Healthcare providers' knowledge, attitudes and practices towards medical male circumcision and their understandings of its partial efficacy in HIV prevention: Qualitative research in KwaZulu-Natal, South Africa.** *Int J Nurs Stud* 2016;53:182-9.

**BACKGROUND:** Medical male circumcision has been shown to reduce HIV transmission to an uninfected male partner. In South Africa, medical male circumcision programs

were rolled-out in 2010. **OBJECTIVES:** Prior to roll-out, we explored healthcare providers' knowledge, attitudes and practices about medical male circumcision and their understandings of partial efficacy for HIV prevention. **DESIGN:** We conducted qualitative research, using in-depth interviews.

**SETTING:** Participants were from three rural and three urban primary healthcare clinics, randomly selected in eThekweni District, KwaZulu-Natal.

**PARTICIPANTS:** 25 healthcare providers (including nurse managers, nurses and counselors) were purposively selected from the clinics.

**METHODS:** In-depth interviews were recorded, transcribed and translated. Independent researchers reviewed the transcripts and developed a codebook based on emergent themes, using thematic analysis. NVivo 8 was used to facilitate data management, coding and analysis.

**RESULTS:** Although most providers had heard that medical male circumcision can reduce risk of HIV acquisition in men, most did not have accurate scientific understandings of this. Some providers had misperceptions about the limited/partial protection medical male circumcision offers. Many had concerns that their communities would misunderstand it, causing increased risky sexual behavior.

**CONCLUSIONS:** These data provide a baseline of providers' understandings of medical male circumcision prior to roll-out, and can be used to compare current data and ensure accurate messaging to clients. Healthcare provider messaging should build client understandings of the meaning of partially efficacious technologies.

Online at:

[http://www.journalofnursingstudies.com/article/S0020-7489\(15\)00233-3/fulltext](http://www.journalofnursingstudies.com/article/S0020-7489(15)00233-3/fulltext)

17. Morris, B. J., et al. **Estimation of country-specific and global prevalence of male circumcision.** *Popul Health Metr* 2016;14:4.

Online at:

<http://pophealthmetrics.biomedcentral.com/articles/10.1186/s12963-016-0073-5>

**BACKGROUND:** Male circumcision (MC) status and genital infection risk are interlinked and MC is now part of HIV prevention programs worldwide. Current MC prevalence is not known for all countries globally. Our aim was to provide estimates for country-specific and global MC prevalence.

**METHODS:** MC prevalence data were obtained by searches in PubMed, Demographic and Health Surveys, AIDS Indicator Surveys, and Behavioural Surveillance Surveys. Male age was  $\geq 15$  years in most surveys. Where no data were available, the population proportion whose religious faith or culture requires MC was used. The total number of

circumcised males in each country and territory was calculated using figures for total males from (i) 2015 US Central Intelligence Agency (CIA) data for sex ratio and total population in all 237 countries and territories globally and (ii) 2015 United Nations (UN) figures for males aged 15-64 years.

**RESULTS:** The estimated percentage of circumcised males in each country and territory varies considerably. Based on (i) and (ii) above, global MC prevalence was 38.7 % (95 % confidence interval [CI]: 33.4, 43.9) and 36.7 % (95 % CI: 31.4, 42.0). Approximately half of circumcisions were for religious and cultural reasons. For countries lacking data we assumed 99.9 % of Muslims and Jews were circumcised. If actual prevalence in religious groups was lower, then MC prevalence in those countries would be lower. On the other hand, we assumed a minimum prevalence of 0.1 % related to MC for medical reasons. This may be too low, thereby underestimating MC prevalence in some countries.

**CONCLUSIONS:** The present study provides the most accurate estimate to date of MC prevalence in each country and territory in the world. We estimate that 37-39 % of men globally are circumcised. Considering the health benefits of MC, these data may help guide efforts aimed at the use of voluntary, safe medical MC in disease prevention programs in various countries.

18. Naimer, S. A., et al. **Anatomy of the cutaneous surface of the male genitalia, with elaboration upon the inner preputial coronal-shaft junction.** *J Pediatr Urol* 2016;12(1):53.e1-5.

**INTRODUCTION:** Descriptions of the penile prepuce in anatomical and clinical texts either omit details or contain a small, yet potentially serious, error with regard to the manner of its attachment to the penis.

**OBJECTIVE:** This study sought to cast light on a ubiquitous but poorly understood and under-appreciated structure, while correcting a long-standing mistake in the medical literature.

**STUDY DESIGN:** The foreskins of five male stillborn babies were dissected and carefully examined. Tissue from the apposing surfaces of the various regions of the inner and outer prepuce surfaces and the transition zone itself were collected, embedded in paraffin, sectioned, stained, examined and photographed under microscopy.

**RESULTS:** Contradicting the prevailing descriptions in the literature that the inner prepuce is a single, uniform sheath, this study's observations and histological findings demonstrated that it actually splits into separate laminae that connect distally to the shaft at the base of the corona and proximally with the shaft fascia, respectively (Figure).

**DISCUSSION:** The penile prepuce is a discrete and deceptively complex part of the male

anatomy, yet key details of its interposing surfaces are inaccurately described or entirely omitted in the literature. Understanding the normal anatomy of the prepuce is critically relevant, particularly for urologists and others involved in the performance of circumcision. For example, avoiding potentially catastrophic avulsion of the inner preputial remnant beyond the coronal sulcus during circumcision and accurate assessment of tissue positioning prior to penile reconstruction in cases of hypospadias.

**CONCLUSION:** The findings of this study correct a misunderstanding in the anatomy of the prepuce.

Online at: [http://www.jpurology.com/article/S1477-5131\(15\)00345-9/fulltext](http://www.jpurology.com/article/S1477-5131(15)00345-9/fulltext)

19. Odoyo-June, E et al. **Unexpected complications following adult medical male circumcision using the PrePex device.** *Urol Int* 2016;96(2):188-93.

**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.

20. Ozveren, B. **Defining the pathways of parental decision-making and satisfaction levels about newborn circumcision in a setting where traditional male circumcision is prevalent: an online survey study.** *Urology* 2016 Jan 19. pii: S0090-4295(15)01178-4.

**OBJECTIVE:** To investigate the decision-making attitudes, course of informed consent, and satisfaction levels of parents who opted for newborn circumcision (NC) in a societal setting where the timing of circumcision is generally determined by tradition.

**METHODS:** Online questionnaire was sent to 1235 parents of boys who had NC.

**RESULTS:** The response rate was 50.4%. The final decision of newborn circumcision depended on the mother in 51.47%. Nearly 75% of circumcisions were performed before hospital discharge. The most common (70.65%) reported reason for parents' choice was medical/hygienic. When evaluating their decision, 93.05% refused any feelings of regret and 96.26% stated they would decide the same if they had another son. The source of information on newborn circumcision was mostly physicians (39.27%), followed by friends and family (31.2%). Parental preference, having nonreligious motives, and being previously informed about the procedure by experienced peers appeared as significant factors on the decision regarding timing of NC. In total, 79.90% ranked their satisfaction level as "very satisfied" on a Likert scale. The mean rate of satisfaction was significantly higher in parents who acquired previous information from healthcare providers and who acknowledged sufficient preprocedural counseling before giving consent.

**CONCLUSION:** In a society where the timing of circumcision is usually determined by faiths and traditions, parental decision-making on newborn circumcision is greatly influenced by personal choices of parents, based on timely, accurate, and adequate information received from peers and healthcare providers. Medical providers play an important role on the informed decision of parents and impact on satisfaction with prior decision and outcomes of newborn circumcision.

21. Wachtel, M. S., et al. **Countries with high circumcision prevalence have lower prostate cancer mortality.** *Asian J Androl* 2016;18(1):39-42.

The present study determined the relationship of male circumcision (MC) prevalence with prostatic carcinoma mortality rate in the 85 countries globally for which data on each were available. MC prevalence in different countries were obtained from a WHO report and allocated to WHO categories of 81%-100%, 20%-80%, and 0%-19%. Prostatic carcinoma mortality data were from Globoscan, gross national income per capita as well as male life expectancy were from a World Bank report, and percentages of Jews and Muslims by country were from the Pew Research Institute and the North American Jewish Data Bank. Negative binomial regression was used to estimate prostatic carcinoma mortality rate ratios. Compared to countries with 81%-100% MC prevalence, prostatic carcinoma mortality rate was higher in those with MC prevalence of 0%-19% (adjusted OR [adjOR] =1.82; 95% CI 1.14, 2.91) and 20%-80% (adjOR = 1.80; 95% CI, 1.16, 2.78). Higher Muslim percentage (adjOR = 0.92 [95% CI 0.87, 0.98] for each 10% increase) and longer life expectancy (adjOR = 0.82 [95% CI 0.72, 0.93] for each 5 additional years) were associated with lower prostatic carcinoma mortality. Higher gross

national income per capita (adjOR = 1.10 [95% CI 1.01, 1.20] for double this parameter) correlated with higher mortality. Compared with American countries, prostatic carcinoma mortality rate was similar in Eastern Mediterranean countries (adjOR = 1.02; 95% CI 0.58, 1.76), but was lower in European (adjOR = 0.60; 95% CI 0.50, 0.74) and Western Pacific countries (adjOR = 0.54, 95% CI 0.37, 0.78). Thus, prostate cancer mortality is significantly lower in countries in which MC prevalence exceeds 80%.

Online at:

<http://www.ajandrology.com/article.asp?issn=1008-682X;year=2016;volume=18;issue=1;spage=39;epage=42;aulast=Wachtel>

22. Wang, Z., et al. **Acceptability of voluntary medical male circumcision (VMMC) among male sexually transmitted diseases patients (MSTDP) in China.** *PLoS One* 2016;11(2):e0149801.

Voluntary Medical Male circumcision (VMMC) is an evidence-based, yet under-utilized biomedical HIV intervention in China. No study has investigated acceptability of VMMC among male sexually transmitted diseases patients (MSTDP) who are at high risk of HIV transmission. A cross-sectional survey interviewed 350 HIV negative heterosexual MSTDP in Shenzhen, China; 12.0% (n = 42) of them were circumcised at the time of survey. When the uncircumcised participants (n = 308) were informed that VMMC could reduce the risk of HIV infection via heterosexual intercourse by 50%, the prevalence of acceptability of VMMC in the next six months was 46.1%. Adjusted for significant background variables, significant factors of acceptability of VMMC included: 1) emotional variables: the Emotional Representation Subscale (adjusted odds ratios, AOR = 1.13, 95%CI: 1.06-1.18), 2) cognitive variables derived from Health Belief Model (HBM): perceived some chance of having sex with HIV positive women in the next 12 months (AOR = 2.48, 95%CI: 1.15-5.33) (perceived susceptibility), perceived severity of STD infection (AOR = 1.06, 95%CI: 1.02-1.10), perceived benefit of VMMC in risk reduction (AOR = 1.29, 95%CI: 1.16-1.42) and sexual performance (AOR = 1.45, 95%CI: 1.26-1.71), perceived barriers against taking up VMMC (AOR = 0.88, 95%CI: 0.81-0.95), and perceived cue to action (AOR = 1.41, 95%CI: 1.23-1.61) and self-efficacy (AOR = 1.38, 95%CI: 1.26-1.35) related to taking up VMMC. The association between perceived severity of STD infection and acceptability was fully mediated by emotional representation of STD infection. The relatively low prevalence of circumcision and high acceptability suggested that the situation was favorable for implementing VMMC as a means of HIV intervention among MSTDP in China. HBM is a potential suitable framework to guide the design of future VMMC promotion. Future implementation programs should be conducted in STD clinic settings, taking the important findings of this study into account.

Online at: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0149801>

23. Wirth, K. E., et al. **Triggering the decision to undergo medical male circumcision: a qualitative study of adult men in Botswana.** *AIDS Care* 2016:1-6.

In 2007, the World Health Organization endorsed voluntary medical male circumcision (VMMC) as part of comprehensive HIV-prevention strategies. A major challenge facing VMMC programs in sub-Saharan Africa remains demand creation; there is urgent need for data on key elements needed to trigger the decision among eligible men to seek VMMC. Using qualitative methods, we sought to better understand the circumcision decision-making process in Botswana related to VMMC. From July to November 2013, we conducted 27 focus group discussions in four purposively selected communities in Botswana with men (stratified by circumcision status and age), women (stratified by age) and community leaders. All discussions were facilitated by a trained same-sex interviewer, audio recorded, transcribed and translated to English, and analyzed for key themes using an inductive content analytic approach. Improved hygiene was frequently cited as a major benefit of circumcision and many participants believed that cleanliness was directly responsible for the protective effect of VMMC on HIV infection. While protection against HIV was frequently noted as a benefit of VMMC, the data indicate that increased sexual pleasure and perceived attractiveness, not fear of HIV infection, was an underlying reason why men sought VMMC. Data from this qualitative study suggest that more immediate benefits of VMMC, such as improved hygiene and sexual pleasure, play a larger role in the circumcision decision compared with protection from potential HIV infection. These findings have immediate implications for targeted demand creation and mobilization activities for increasing uptake of VMMC among adult men in Botswana.

24. Young, M. R., et al. **Factors associated with preference for early infant male circumcision among a representative sample of parents in Homa Bay County, Western Kenya.** *AIDS Behav* 2016 January 18. [Epub ahead of print]

Several countries scaling-up adult medical male circumcision (MMC) for HIV prevention intend to introduce early infant male circumcision (EIMC). To assess preference for EIMC in a community with a mature adult MMC program, we conducted a cross-sectional survey of a representative sample of mothers (n = 613) and fathers (n = 430) of baby boys ("index son") at 16 health facilities in western Kenya. Most (59 %) were for EIMC, generally. Just 29 % were for circumcising the index son. Pain and protection from HIV were the most frequently cited barrier and facilitator to EIMC, respectively. In multivariable logistic regression, ever talking with the partner about EIMC and positive serostatus were associated with preference for EIMC for the index son. Attitudes towards EIMC are favorable. Willingness to circumcise an infant son is modest. To facilitate EIMC uptake, education about EIMC pain management and encouraging discussion between parents about EIMC during pregnancy should be integrated into programs.

25. Zeng, M., et al. **Factors associated with knowledge of and willingness for adult male circumcision in Changsha, China.** *PLoS One* 2016;11(2):e0148832.

**BACKGROUND:** Male circumcision (MC) has been shown to reduce the risk of male genital diseases. MC is not commonly practiced among Chinese males and little is known about the factors associated with their knowledge of and willingness for MC. This study was to explore the knowledge regarding the foreskin among Chinese males and to identify factors associated with their willingness to undergo circumcision.

**METHODS:** A total of 237 patients with redundant prepuce/phimosis were interviewed through face-to-face interviews. The items on the questionnaire included: demographics, an objective scale assessing knowledge about the foreskin, willingness to have MC, the attitudes of sexual partners and doctors toward redundant prepuce/phimosis, and the approaches that patients used to acquire knowledge regarding the prepuce. Univariate analysis and multiple logistic regression analysis were performed to identify factors that are associated with willingness to be circumcised (WTC).

**RESULTS:** A total of 212 patients completed the interview. Multivariable logistic regression showed that three factors were significantly associated with WTC: being married (OR = 0.43), perceiving redundant prepuce/phimosis as a disease (OR = 1.93), and if a patient's partner supported MC (OR = 1.39). 58% (n = 122) had received information about the foreskin from another party: 18% (n = 37) from school, 8% (n = 17) from family, 17% (n = 36) from friends, 27% (n = 57) from health care providers. About 4% (n = 8) believed that their partners disliked their redundant prepuce/phimosis. 20% (n = 42) had received doctors' advice to undergo circumcision.

**CONCLUSION:** Knowledge about the foreskin was low among Chinese males. Our study elucidates the factors associated with WTC and suggests that more education of the population about the foreskin can help improve the recognition of a correctible abnormality and help patients assess the potential role of MC in their health.

Online at: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0148832>

26. Zhu, Y. P., et al. **Relationship between circumcision and human papillomavirus infection: a systematic review and meta-analysis.** *Asian J Androl* 2016 March 8. [Epub ahead of print]

Male circumcision (MC) is reported to reduce human papillomavirus (HPV) prevalence in men. However, the efficacy remains imprecise. The aim of this study was to conduct a systematic review and meta-analysis to assess the relationship between MC and genital HPV infection and genital warts. PUBMED, EMBASE, and Web of Science were searched from inception to March 22, 2015. We identified 30 papers, including a total of 12149 circumcised and 12252 uncircumcised men who were evaluated for the association of circumcision with genital HPV or genital warts. Compared with men who were not circumcised, circumcised men may have had significantly reduced odds of genital HPV prevalence (odds ratio [OR]: 0.68; 95% confidence interval [95% CI]: 0.56-0.82). There was no significant association between MC and genital HPV acquisition of new infections

(OR: 0.99; 95% CI: 0.62-1.60), genital HPV clearance (OR: 1.38; 95% CI: 0.96-1.97), and prevalence of genital warts (OR: 1.17; 95% CI: 0.63-2.17). This meta-analysis suggests that circumcision reduces the prevalence of genital HPV infections. However, no clear evidence was found that circumcision was associated with decreased HPV acquisition, increased HPV clearance, or decreased the prevalence of genital warts. More studies are required to evaluate adequately the effect of MC on the acquisition and clearance of HPV infections and prevalence of genital warts.

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