

Critical evaluation of unscientific arguments disparaging affirmative infant male circumcision policy

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Abstract

We evaluate recent claims opposing infant male circum-

mcision, a procedure now supported by the evidence-based policy of the American Academy of Pediatrics. We find those criticisms depend on speculative claims about the foreskin and obfuscation of the strong scientific evidence supporting pediatric policy development. An argument that circumcision should be delayed to allow a boy to make up his own mind as an adult fails to appreciate the psychological, scheduling and financial burdens later circumcision entails, so reducing the likelihood that it will occur. In contrast, early infant circumcision is convenient, safer, quicker, lower risk, healing is faster, cosmetic outcome is routinely good and the lifetime benefits accrue immediately. Benefits include reduction in urinary tract infections, inflammatory skin conditions, foreskin problems, and, when older, substantial protection against sexually transmitted infections and genital cancers in the male and his female sexual partners. Some authorities regard the failure to offer parents early infant circumcision as unethical, just as it would be unethical to fail to encourage the vaccination of children. In conclusion, the criticisms of evidence-based infant male circumcision policy are seriously flawed and should be dismissed as unhelpful to evidence-based development and implementation of pediatric policy intended to improve public health and individual wellbeing.

Key words: Male circumcision; Policy; American Academy of Pediatrics; Newborn; Foreskin

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Core tip: This article critically assesses an extensive compendium of detailed arguments criticizing the American Academy of Pediatrics policy in support of infant male circumcision. The article we assess is by an historian, Robert Darby, who is opposed to infant circumcision. It should be recognized that the American Academy of Pediatrics policy on infant male circumcision was developed on the basis of the latest scientific evidence. The policy reported that benefits exceed

risks and recommended unbiased education of parents and providers, as well as facilitation of access and improvement in affordability by increased third party insurance coverage. We present the scientific evidence undermining Darby's arguments. Our evaluation leads us to conclude that the criticisms by Darby should be dismissed as unreliable.

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INTRODUCTION

We evaluate very extensive criticisms^[1] of the American Academy of Pediatrics (AAP) infant male circumcision (IMC) policy that found benefits of IMC substantially outweigh the risks^[2]. The 34-page article asserts that, "the AAP's conclusion is untenable", because no consideration was given to broader risks than surgical complications. In essence, it argues that IMC is unethical because of: (1) supposed long-term risks resulting from loss of the foreskin; (2) that only the owner of the foreskin should decide whether he wishes to be circumcised; and (3) a claim that since the foreskin is, "erotogenic", circumcision diminishes sexual pleasure for the man.

In the interests of medical decision-making, public health policy and the rights of parents to receive accurate information to facilitate decision-making about the circumcision of a baby boy, the numerous criticisms of the AAP's policy deserve an appropriate critical response.

CENTRAL ARGUMENTS

The fundamental thesis underlying the criticisms is the statement that, "we can be confident that the average individual would be far more relaxed about losing his tonsils or appendix than an erotogenic feature of his genitals". That generalization is not supported by current medical or biological evidence.

The article cites previous criticisms of the AAP's policy^[3,4], without noting detailed responses by the AAP^[5] and academic experts^[6] disputing those criticisms.

OTHER POLICY STATEMENTS

Outdated, non-evidence-based, IMC policy statements are cited. One, by the Royal Australasian College of Physicians^[7], was found to contain fundamental flaws and failed to accurately review the literature^[8].

Besides the AAP policy, evidence-based policy statements have been produced by the Centers for Disease

Control and Prevention (CDC)^[9] and the Circumcision Academy of Australia (CAA)^[10]. Each found that benefits of IMC greatly exceed risks.

FORESKIN ANATOMY AND FUNCTION

Opponents are concerned about, "the anatomy or functions of the foreskin"^[11]. Leaving speculation aside, survey evidence suggests a foreskin may make it easier for a woman to bring a man to orgasm manually, but little else^[11]. A prepuce may be "healthy" and "visible", but whether it is "functional" depends on what use it is put to (discussed later). Rather than being, "of great significance to most males", strong scientific evidence indicates the foreskin poses a health risk from minor and major conditions, including genital cancers, urinary tract infections (UTI), human immunodeficiency virus (HIV) infection and other sexually transmitted infections (STIs)^[2,9,12].

Foreskin removal by circumcision is referred to in the article as, "amputation"^[11]. Since the medical definition of amputation is the removal of a limb, digit or the entire penis, that term is misused and inaccurate.

The article claims, "recent research", shows that the foreskin, "contains one of the densest concentrations of nerve endings in the body", citing 16-19 year-old publications^[1]. In fact, current research shows that sensory nerve endings in the foreskin are actually lower in number and smaller in size than those in other glabrous (hairless) tissues^[13]. The article further claims, "the foreskin is an ingenious piece of biological engineering, the functions of which are primarily erotic", that, "its specialized web of nerve endings convey fine touch sensations" and that its, "mechanical action in sliding back and forth stimulates and lubricates the glans, thus facilitating sexual activity of all kinds". Instead of citing experimental evidence from the peer-reviewed literature, it cites a book written to discredit circumcision^[14].

A 300 year-old book is cited in claiming the importance of the foreskin was well understood up until the late nineteenth century. The article argues that subsequent Victorian "mistakes" about the foreskin, "have been corrected by recent research". However, two of the three publications used as support^[15,16] contain serious flaws^[17,18] undermining their conclusions. The third, a small telephone survey of 109 men \geq 3 mo after circumcision^[19], was too small to make accurate conclusions about sexual dysfunction, these apparently being related to diabetes or older age. Owing to phimosis, which is common in uncircumcised men, 50% of the men experienced pain during intercourse prior to circumcision, falling to 6.5% after circumcision.

SEXUAL PLEASURE INVOLVES THE GLANS

The claim that special sensory receptors in the foreskin

make it, “the principal sensory platform of the penis”^[1] is no longer tenable. A recent systematic review of all histological and anatomical data on sensory receptors in the penis, including changes during puberty, concluded that, contrary to the article’s claim, the foreskin has no role in sexual sensation^[20]. Nerve endings involved in sexual pleasure reside in the glans, the underside being particularly sensitive. Stimulation of the exposed glans is the source of sexual sensations during sexual activity^[20]. In support, a detailed systematic literature review^[21], a meta-analysis of sexual dysfunction in men^[22], two randomized controlled trials (RCTs)^[23,24] and a large United Kingdom study^[25] found male circumcision has no adverse effect on sexual function, sensitivity or sensation. Recent sensitivity testing of different penile sites dismissed the claim that the foreskin is the most sensitive part of the penis^[26].

OTHER CLAIMS

The article maintains that the foreskin serves as a valve to, “let urine out” while, “blocking the entry of dirt”, that it provides lubrication, that it protects the glans, the latter apparently being, “an internal organ” that is, “easily irritated” and, “eventually desensitized, if it is exposed to the abrasion of clothes, *etc.*”, and that the foreskin is a, “slack tissue” somehow needed for erection^[1]. Anecdotes and the author’s own highly criticized^[27] monograph disputing Victorian ideas^[28] are used as “evidence”. Scientific support for these claims is lacking.

HIGH STAKES IN THE HARM QUESTION

The statement, “if it were proved that one value of the foreskin was to enhance genital sensation and function (foreskin removal) would undoubtedly be counted as a harm”^[1] has been disproved by multiple studies^[20-26]. Overall, sexual function, sensation and pleasure are either the same or better after circumcision^[20-26]. Instead of scientific studies, support is drawn from historical anecdotes, outmoded opinion pieces by opponents, and discredited or weak publications considered above. There may be some (not “many”), “circumcised men who resent their condition”. Apart from very rare cases of damage to the penis from an inexperienced operator, any resentment is likely a result of some men with sexual dysfunctions believing claims by circumcision opponents attributing these to their IMC. Other men may read the claims and think they might be missing out on something important by lacking a foreskin.

Rather than ask why, “most men throughout the world have neither been circumcised as children nor elected the operation for themselves as adults”, the article should have considered why many men are circumcised. A recent study that determined circumcision prevalence in all 237 countries and territories in the world estimated a global circumcision prevalence of 38%^[29], which is high for an elective procedure. Of

these, 62% were for religious reasons. Barriers to getting circumcised at a later age are substantial^[30], as discussed later.

The article calls for, “advocates to prove that circumcision is both necessary and harmless”. That has been accomplished. Extensive reviews of the medical literature, by the AAP^[2], CDC^[9], and CAA^[10], have established that benefits of IMC greatly exceed risks. A CDC study of 1.4 million circumcisions in the United States found the adverse event frequency was 0.4% for IMC, but was 10-20 times higher in older children and men^[31]. The vast majority of adverse events were minor and easily treatable with complete resolution.

LEGAL CHALLENGES

The article refers to, “several judgments” by “courts in Europe”^[1]. There was only one such judgment. That decision, by a regional court in Cologne, was overturned by legislation enacted by the German Federal Parliament^[32]. The German ethics council lent its support to circumcision of boys^[33]. The article then cites a, “law reform report from Australia” that calls for, “strict regulation and partial prohibition”. That report was written by a graduate student and placed on the Tasmanian Law Reform Institute website in 2012. A critical evaluation of the report by a lawyer, ethicist and medical experts found it had no basis in law, ethics or medicine^[34]. The report appears to have been ignored by the Tasmanian Government.

IS CIRCUMCISION REALLY A MEDICAL ANOMALY?

Another claim is that circumcision, “requires special rules”. The article did not consider the favorable risk: benefit to be sufficient reason to advocate prophylactic circumcision. It considered vaccination not to be a reasonable comparison, “because the nature, extent, risks and costs of the protection gained or claimed are quite different” and, “vaccination does not entail surgical removal of a significant body part”^[1]. While vaccinations protect against many infectious diseases and cancers, IMC is a one-time intervention that provides life-long protection against a wide array of adverse medical conditions, many unrelated to infectious agents. The number of children who need to be vaccinated to prevent one infection^[35] is greater than the number of boys who need to be circumcised to prevent adverse medical conditions resulting from failure to circumcise^[12].

The article overstates the risks of circumcision. Apart from invoking the disproven belief that, “the foreskin has sexual functions”, it suggests “many people” value the foreskin for various, “personal reasons”. It cites a sexually explicit website that promotes foreskin use in sexual activities such as “docking”, engaged in by some men who have sex with men. The article also cites posts

on, "Internet dating sites" and, "the distress many men feel" at having been circumcised when young. Neither represents scientific evidence.

In contradiction to a 2002 paper by circumcision opponents listing criteria that should be met before childhood circumcision would be permissible, the AAP policy states the, "best interests" of the individual and "public health justifications" are served by ensuring a baby boy is circumcised^[2]. The position that circumcision is, "impermissible because it was performed on a minor without consent" does not acknowledge that the same applies to childhood vaccinations.

The claim that, "the human rights cost to the individual exceed the proven public health benefit; and the diseases from which circumcision might provide protection could be avoided through appropriate behavioral choices or otherwise managed without surgery" is not supported by evidence.

For example, circumcision is the only way to prevent balanoposthitis, which only occurs in uncircumcised males, and to reduce balanitis, which is twice as common in the uncircumcised^[12].

Condoms, when used correctly and consistently, provide only partial protection against STIs, *e.g.*, 80% against HIV in a Cochrane meta-analysis^[36]. However, seven RCTs (two in the United States, one in England and four in sub-Saharan African countries) found, "little clinical evidence of real-world effectiveness of interventions promoting condom use for dual protection" against HIV, but 42% effectiveness in syphilis reduction^[37]. It should be noted that, unlike condoms, circumcision is a one-time intervention that provides a lifetime of protection. Condom use should nevertheless be encouraged. Together each confer greater protection than either alone.

Phimosis can be managed using steroid creams, but this requires twice-daily administration for many weeks, the creams are effective for only a portion of cases, have side-effects and, unlike circumcision, do not protect against STIs^[38,39] and UTIs^[40].

While circumcision does remove, "a genital feature", absence of a foreskin is preferred by most women^[11,41-47]. Reasons included esthetics, better hygiene, reduced risk of infection, easier and less traumatic vaginal (or anal) penetration during intercourse, and greater overall sexual pleasure^[11,44,45,48]. A large clinical trial found far more men reported an improvement in their sexual experience after having been circumcised, with few stating sex was worse^[24]. A possible explanation might be that after circumcision the shaft of the penis makes closer contact with the walls of the vagina during intercourse.

The three studies cited in the article to support a premise that, "circumcision is not ordinary medical treatment"^[1] were selective citations of reports by circumcision opponents. The one by Frisch *et al.*^[49] has been severely criticized^[21,50]. The one by O'Hara *et al.*^[51] was a "preliminary" survey by lay anti-circumcision activists

of women, "recruited through ... an announcement in an anti-circumcision newsletter". Those authors acknowledged this was a "shortcoming". They stated, "this study has some obvious methodological flaws" and that, "it is important that these findings be confirmed by a prospective study of a randomly selected population of women". Since then a RCT has been conducted^[45], and most of the female participants reported a better sexual experience after their male partner had been circumcised.

The claim that the foreskin is as important as the female breast is implausible. The breast is a highly visible female accouterment providing, through its milk, critical nutrition and immune protection for the newborn. In contrast, the foreskin may only be seen when a male exposes his penis. In comparing penile cancer and breast cancer prevalence, the article misleadingly cites lifetime risk for breast cancer (1 in 10), but annual incidence of penile cancer (1 in 100000) rather than lifetime risk (approximately 1 in 1000)^[2,9,52].

The article argues that, "it is impossible to identify a single [boy] who died because he had not been circumcised"^[1]. A large CDC study reported higher rate of serious adverse events in boys not circumcised^[31]. Apart from gangrene, a potential consequence of paraphimosis, these included several types of STIs, which can lead to death^[2,9,12,39,52]. UTIs, which is ten times more prevalent in uncircumcised boys^[40], can result in potentially fatal complications such as meningitis and sepsis^[53]. Deaths from circumcision do occur after initiation ceremonies in sub-Saharan Africa involving non-medical operators. But the claim of 117 deaths in the United States per year from circumcision is fanciful. That figure is based on the false assumption by Daniel Bollinger that the well-known sex difference in infant mortality is entirely a consequence of IMC. A similar sex-difference is seen in countries with low circumcision prevalence^[54]. Deaths from medical circumcision in the United States are exceedingly rare^[31].

BIOETHICS AND AUTONOMY

The ethics of IMC has been debated extensively. Scholarly assessments suggest circumcision of male minors is ethical^[34,55-60]. Given the wide-ranging protection against multiple medical conditions and infections, including STIs in boys who become sexually active early, it has been argued that it would be unethical to leave boys uncircumcised^[34,58]. Article 24(3) of the United National Convention on the Rights of the Child has been construed as mandating circumcision, since not circumcising boys should be deemed as prejudicial to their health^[58].

In contrast to the claim about tattooing, piercing and genital cutting of girls^[1], there are sound medical reasons why IMC should be regarded quite differently. While IMC has cosmetic benefits, it is not merely, "a cosmetic procedure". It provides life-long medical

benefits.

A view expressed that, “the experts are unable to agree”^[1], represents obfuscation of the AAP’s advice that, “parents should, weigh health benefits and risks in light of their own religious, cultural, and personal preferences, as the medical benefits alone may not outweigh these other considerations for individual families”^[2]. All evidence-based policy statements support IMC on medical grounds^[2,9,10,61]. As with childhood vaccination, parental consent is required. Moreover, the supposition, “if the risk/benefit equation is only slightly tilted (AAP) or equally balanced”^[55] is not supported by the scientific evidence. Draft CDC recommendations state, “In a comprehensive risk-benefit analysis of [IMC] based on reviews of the literature and meta-analyses, it is estimated that over a lifetime, benefits exceed risks by a factor of 100:1”^[9]. This risk-benefit analysis cited by the CDC found that the foreskin contributes to adverse medical conditions in half of uncircumcised males during their life-time^[12]. Thus the data refute the assertion that a, “situation of uncertainty” exists.

The article rejects parental choice, saying that, “it does not logically follow that parents are the appropriate party to make the proverbial circumcision decision”, because, “from the child’s point of view” a decision made by others, “denies him autonomy and choice in a matter affecting an intimate part of his own body”. An argument that a child has a right to, “bodily integrity” follows the line espoused by circumcision opponents that IMC should be banned, discouraged or at least delayed until the boy is old enough to decide for himself^[62-64]. Ethics authorities have refuted this opinion^[56-60,65,66]. It has been argued that being circumcised boosts autonomy more than constraining it^[67]. The, “circumcision decision” is one of many decisions that a parent must make in the interests of the health of their male child. The AAP recommends that early in a pregnancy the medical practitioner should provide parents with unbiased education about risks and benefits of IMC so they have adequate opportunity to choose what is in the child’s best interests should they have a boy^[2].

THE BEST TIME TO CIRCUMCISE

Cogent arguments favor early parent-approved IMC over delaying circumcision until the male is old enough to decide for himself^[30]. Circumcision in infancy is easier, lower-cost, more convenient, usually involves local anesthesia, healing is quick and cosmetic outcome is good as stitches are not required. In contrast, circumcision of older boys or adults is more difficult technically, poses a higher risk of adverse events^[31], is more expensive, and, although can be done using local anesthesia, some operators prefer that general anesthesia be used, so further adding to cost. It means taking time off work or school, and is associated with psychological issues, including fear of pain, unfounded

concern about diminished sexual pleasure, of having to undergo an operation, peer pressure not to get circumcised, sexual abstinence until healing is complete, which the man and/or his sexual partner may find unacceptable, and, when sutures are used, a cosmetic result that can be inferior to that achieved by IMC, which does not require sutures^[30]. It also means years of not having been protected from adverse medical conditions that affect uncircumcised boys. Taken together, those observations provide a strong case favoring early infancy as being the best time to circumcise^[30]. In light of all of this, the argument that the, “decision should still be left to the owner of the foreskin” is likely to mean circumcision will not occur, even if the older male wants to be circumcised. This probably represents the outcome desired by circumcision opponents.

While children and infants, “lack the power to make rational choices and must therefore be guided by adults”^[1], it is untrue that, “circumcision is not something that has to be done before a person is capable of rational thought”. Although, “children are not sexually active and thus not at risk of disease”^[1], circumcision confers multiple benefits in infancy and childhood that are not related to sexual activity.

Benefits include strong protection against UTIs^[40] that are common in infancy^[68] and can result in permanent kidney damage^[53,69-73]. Early IMC prevents phimosis, which affects 10% of uncircumcised older boys and young men^[74]. Paraphimosis is less common, but can lead to penile gangrene and auto-amputation of the penis^[75]. Circumcision protects against inflammatory skin conditions (balanitis and balanoposthitis) that occur in 10% of uncircumcised boys and men^[30]. Uncircumcised adolescents and men have inferior penile hygiene owing to the proliferation of bacteria and accumulation of smegma under the foreskin^[76-80]. The thin, fragile foreskin is easily torn and trauma due to zipper injuries can occur^[81].

HUMAN PAPILLOMAVIRUS

The article disputes claims that uncircumcised men are more likely to harbor oncogenic human papillomavirus (HPV) types^[1]. In doing so the references cited^[82,83] are misinterpreted, as explained previously^[38]. The article fails to cite extensive evidence contradicting the author’s skepticism. That includes ignoring RCTs that found circumcision strongly protects men against oncogenic HPV acquisition and improves HPV clearance^[84-89]. There is also RCT evidence of reduced low-risk HPV types that cause genital warts^[90].

The claim that, “the development of safe, effective vaccines is rapidly making the question of circumcision irrelevant”, fails to appreciate that the two current HPV vaccines do not target all of the 14 or more prevalent oncogenic HPV types, whereas circumcision offers approximately 50% protection against all oncogenic HPV types. Thus circumcision and vaccination re-

present synergistic approaches to countering the HPV epidemic^[91].

The article skirts the fact that by partially protecting against oncogenic HPV types and various other STIs male circumcision provides a range of benefits to women. Virtually all cases of cervical cancer are caused by oncogenic HPVs. The risk of cervical cancer is much lower in the female sexual partners of circumcised men^[92]. While over 70% of girls in early adolescence have received HPV vaccination in Australia^[93], vaccine uptake in the United States has been much lower^[94].

Policy recommendations of the AAP and CDC recognize cervical cancer prevention as an important benefit of IMC^[2,9]. Yet, the article inaccurately states that circumcision of boys has, “zero benefit” to, “reduce the risk of cervical cancer in future female sexual partners”^[1].

OTHER STI, INCLUDING HIV

Well-designed large RCTs provide the cleanest picture of the risks and benefits of circumcision compared to retrospective or observational studies. This is because confounding and bias are minimized. Three RCTs convincingly demonstrated that MC protects against heterosexual HIV infection in men^[95-97]. The trials went on to demonstrate protection against other STIs such as oncogenic types of HPV^[84-89], genital herpes (HSV-2)^[87,98-100], *Trichomonas vaginalis* (*T. vaginalis*)^[101] and *Mycoplasma genitalium* (*M. genitalium*)^[102]. In addition, RCT data confirms the protective effect of MC in the female partners against oncogenic HPV types^[103-105], HSV-2^[106], *T. vaginalis*^[107], *M. genitalium*^[108], bacterial vaginosis^[78,107] and genital ulceration^[107]. The consistency in efficacy estimates between trials provides increased confidence in the benefits.

The claim that, “the major benefits claimed (reduced risk of STIs, HIV and various cancers) can be obtained in adulthood”^[1] fails to acknowledge that the likelihood an adolescent or adult male will seek a circumcision for himself is low. Thus, parents’ decision to circumcise a newborn son will ensure he has the lifelong benefits circumcision provides. Programs to encourage circumcision have been suggested by the CDC for high-risk population groups in the United States^[9]. The WHO and other bodies have supported the implementation of such programs in sub-Saharan Africa since 2007. Although the article concedes that circumcision, “provides some degree of protection against HIV in certain risk situations and epidemiological environments”, it then states, “there is no proof that it provides any overall protection against other STIs”^[1], citing an article containing a series of meta-analyses^[109]. Those meta-analyses were criticized^[38]. They contained extensive flaws, data manipulation, failed to include numerous studies, including high-quality RCT data, and

used uncommon statistical approaches^[38].

It then states, “most [STIs] are readily curable with antibiotics”, failing to realize that many common STIs (HIV, HPV and HSV-2) are viruses that cannot be cured. That exposes a lack of medical knowledge by the historian author.

WHY IS THERE OPPOSITION TO MALE CIRCUMCISION?

The article refers to a man who suffered the consequences of a botched IMC^[110]. Such occurrences are exceedingly rare in the current era for circumcision performed by experienced medical professionals. The AAP policy recommends provider training to help ensure good outcomes. At the population level the frequency and severity of medical conditions arising from failure to circumcise greatly exceed that of adverse events arising after IMC^[12].

The existence of, “a vigorous, community-based anti-circumcision movement in places where the practice remains common”, as evidence, “circumcision is harmful and thus wrong” can be said of other fringe groups opposed to beneficial public health policies such as vaccination and water fluoridation.

FORESKIN RESTORATION AND PARTIALISM

The article cites dated opinion pieces containing anecdotes and speculation about, “serious psychological dysfunction”, caused by IMC, in claiming, “some [men] resent [their IMC] sufficiently to attempt foreskin restoration”^[1]. Rather than this being, “proof that they believe they have suffered sufficient harm to warrant a complex and laborious project”, these men may have formed a misguided belief, as discussed earlier. Following online instructions about “restoration” of a pseudo-foreskin seems ill-advised. Not only is the process cumbersome and protracted, but has led to genital mutilation^[111]. A recent meta-analysis found that sexual dysfunctions in men are common, irrespective of their circumcision status^[22]. Moreover, a study prompted by reports by proponents of, “foreskin restoration”, stated that there is a, “disparity between the mythology and medical reality of circumcision regarding male sexuality”^[112].

A psychopathology term that fits the sexual obsession with the prepuce is termed “partialism” (see the American Psychiatric Association’s Diagnostic and Statistical Manual 5th Revision (DSM-5)^[113] under “Paraphilia not Otherwise Specified” (ICD-10 code CM F65.9) in the sexual and gender Identity Disorders Section). A diagnosis is made for paraphilia if, “the behavior, sexual urges, or fantasies cause clinically significant distress or impairment in social, occupational,

or other important areas of functioning". The definition of partialism is, "exclusive focus on part of the body"^[114].

After "foreskin restoration", claimed benefits of, "increased sensitivity" in reality are more likely a result of the friction of the foreskin, whether intact or newly created, on the moist or sweaty glans and undersurface of the prepuce in the un-aroused state and would obviously, in the "re-uncircumcised" penis, have nothing to do with an increase in touch receptors, as in most instances nerves tend not to regenerate. Moreover, in RCTs, follow-up of young healthy men after circumcision found they experienced no decrease in sensitivity during sexual intercourse^[23,24].

A detailed professional analysis of psychiatric aspects in eight patients seeking prepuce restoration noted several psychological disorders^[115]. These included narcissistic and exhibitionistic body image, depression, major defects in early mothering and ego pathology. These men had a preoccupation with their absent foreskin and represented a subgroup within the community of men who have sex with men^[115]. Of the 1200 members of one organization devoted to foreskin restoration, 80% were homosexual, 10% were bisexual and 10% were heterosexual. The overall membership comprised 65% who were uncircumcised, 30% who were circumcised and 5% who were partially circumcised. Although many were happy with the result, thus justifying to themselves the decision to undertake this procedure, others disliked their new genital status, even choosing to undergo re-circumcision^[116].

CONCLUSION

Criticisms of the AAP policy statement supporting IMC fail to withstand scrutiny. The Hippocratic Oath states, "I will prevent disease whenever I can, for prevention is preferable to cure"^[117,118]. Disease prevention is central to affirmative IMC policy recommendations. Given the immediate and lifelong protections and very low risk of adverse events, failure to recommend IMC or to suggest circumcision should be delayed seems unethical. We do not think the one-sided arguments opposing IMC are naïve. Rather, they involve deliberate obfuscation in support of an underlying agenda aimed at stopping IMC. We trust that our critical evaluation will set the record straight in the best interest of pediatrics, preventive medicine and individual wellbeing.

REFERENCES

- 1 **Darby R.** Risks, benefits, complications and harms: neglected factors in the current debate on non-therapeutic circumcision. *Kennedy Inst Ethics J* 2015; **25**: 1-34 [PMID: 25843118 DOI: 10.1353/ken.2015.0004]
- 2 Circumcision policy statement. American Academy of Pediatrics. Task Force on Circumcision. *Pediatrics* 1999; **103**: 686-693 [PMID: 10049981 DOI: 10.1542/peds.103.3.686]
- 3 **Frisch M,** Aigrain Y, Barauskas V, Bjarnason R, Boddy SA, Czauderna P, de Gier RP, de Jong TP, Fasching G, Fetter W, Gahr M,

- Graugaard C, Greisen G, Gunnarsdottir A, Hartmann W, Havranek P, Hitchcock R, Huddart S, Janson S, Jaszczak P, Kupferschmid C, Lahdes-Vasama T, Lindahl H, MacDonald N, Markestad T, Mårtson M, Nordhov SM, Pålve H, Petersons A, Quinn F, Qvist N, Rosmundsson T, Saxen H, Söder O, Stehr M, von Loewenich VC, Wallander J, Wijnen R. Cultural bias in the AAP's 2012 Technical Report and Policy Statement on male circumcision. *Pediatrics* 2013; **131**: 796-800 [PMID: 23509170]
- 4 **Svoboda JS,** Van Howe RS. Out of step: fatal flaws in the latest AAP policy report on neonatal circumcision. *J Med Ethics* 2013; **39**: 434-441 [PMID: 23508208 DOI: 10.1136/medethics-2013-101346]
- 5 **Task Force on Circumcision.** Cultural bias and circumcision: the AAP Task Force on circumcision responds. *Pediatrics* 2013; **131**: 801-804 [PMID: 23509171 DOI: 10.1542/peds.2013-0081]
- 6 **Morris BJ,** Tobian AA, Hankins CA, Klausner JD, Banerjee J, Bailis SA, Moses S, Wiswell TE. Veracity and rhetoric in paediatric medicine: a critique of Svoboda and Van Howe's response to the AAP policy on infant male circumcision. *J Med Ethics* 2014; **40**: 463-470 [PMID: 23955288 DOI: 10.1136/medethics-2013-101614]
- 7 **Royal Australasian College of Physicians.** Paediatrics & Child Health Division. Circumcision of infant males. [accessed 2015 May 5]. Available from: URL: <http://www.racp.edu.au/index.cfm?objectid=65118B16-F145-8B74-236C86100E4E3E8E>
- 8 **Morris BJ,** Wodak AD, Mindel A, Schrieber L, Duggan KA, Dilly A, Willcourt RJ, Lowy M, Cooper DA. The 2010 Royal Australasian College of Physicians' policy statement 'Circumcision of infant males' is not evidence based. *Intern Med J* 2012; **42**: 822-828 [PMID: 22805686 DOI: 10.1111/j.1445-5994.2012.02823.x]
- 9 **Centers for Disease Control and Prevention.** Recommendations for Providers Counseling Male Patients and Parents Regarding Male Circumcision and the Prevention of HIV Infection, STIs, and Other Health Outcomes. [accessed 2015 May 5]. Available from: URL: <http://www.regulations.gov/-!documentDetail;D=CDC-2014-0012-0002>
- 10 **Morris BJ,** Wodak AD, Mindel A, Schrieber L, Duggan KA, Dilly A, Willcourt RJ, Cooper DA, Lumbers ER, Russell CT, Leeder SR. Infant male circumcision: An evidence-based policy statement. *Open J Prevent Med* 2012; **2**: 79-82 [DOI: 10.4236/ojpm.2012.21012]
- 11 **Williamson ML,** Williamson PS. Women's preferences for penile circumcision in sexual partners. *J Sex Educ Ther* 1988; **14**: 8-12 [DOI: 10.1080/01614576.1988.11074930]
- 12 **Morris BJ,** Bailis SA, Wiswell TE. Circumcision rates in the United States: rising or falling? What effect might the new affirmative pediatric policy statement have? *Mayo Clin Proc* 2014; **89**: 677-686 [PMID: 24702735 DOI: 10.1016/j.mayocp.2014.01.001]
- 13 **Bhat GH,** Bhat MA, Kour K, Shah BA. Density and structural variations of Meissner's corpuscles at different sites in human glabrous skin. *J Anat Soc India* 2008; **57**: 30-33
- 14 **Fleiss PM,** Hodges FM. What Your Doctor May Not Tell You about Circumcision. New York: Grand Central Publishing, 2002
- 15 **Sorrells ML,** Snyder JL, Reiss MD, Eden C, Milos MF, Wilcox N, Van Howe RS. Fine-touch pressure thresholds in the adult penis. *BJU Int* 2007; **99**: 864-869 [PMID: 17378847 DOI: 10.1111/j.1464-410X.2006.06685.x]
- 16 **Kim D,** Pang MG. The effect of male circumcision on sexuality. *BJU Int* 2007; **99**: 619-622 [PMID: 17155977 DOI: 10.1111/j.1464-410X.2006.06646.x]
- 17 **Waskett JH,** Morris BJ. Fine-touch pressure thresholds in the adult penis. *BJU Int* 2007; **99**: 1551-1552 [PMID: 17537227 DOI: 10.1111/j.1464-410X.2007.06970_6.x]
- 18 **Willcourt R.** The effect of male circumcision on sexuality. *BJU Int* 2007; **99**: 1169-1170 [PMID: 17437447 DOI: 10.1111/j.1464-410X.2007.06895_3.x]
- 19 **Dias J,** Freitas R, Amorim R, Espiridião P, Xambre L, Ferraz L. Adult circumcision and male sexual health: a retrospective analysis. *Andrologia* 2014; **46**: 459-464 [PMID: 23600924 DOI: 10.1111/and.12101]
- 20 **Cox G,** Krieger JN, Morris BJ. Histological correlates of penile sexual sensation: Does circumcision make a difference? *Sex Med*

- 2015; **3**: 76-85 [PMID: 26185672 DOI: 10.1002/sm2.67]
- 21 **Morris BJ**, Krieger JN. Does male circumcision affect sexual function, sensitivity, or satisfaction?--a systematic review. *J Sex Med* 2013; **10**: 2644-2657 [PMID: 23937309 DOI: 10.1111/jsm.12293]
- 22 **Tian Y**, Liu W, Wang JZ, Wazir R, Yue X, Wang KJ. Effects of circumcision on male sexual functions: a systematic review and meta-analysis. *Asian J Androl* 2013; **15**: 662-666 [PMID: 23749001 DOI: 10.1038/aja.2013.47]
- 23 **Kigozi G**, Watya S, Polis CB, Buwembo D, Kiggundu V, Wawer MJ, Serwadda D, Nalugoda F, Kiwanuka N, Bacon MC, Ssempijja V, Makumbi F, Gray RH. The effect of male circumcision on sexual satisfaction and function, results from a randomized trial of male circumcision for human immunodeficiency virus prevention, Rakai, Uganda. *BJU Int* 2008; **101**: 65-70 [PMID: 18086100 DOI: 10.1111/j.1464-410X.2007.07369.x]
- 24 **Krieger JN**, Mehta SD, Bailey RC, Agot K, Ndinya-Achola JO, Parker C, Moses S. Adult male circumcision: effects on sexual function and sexual satisfaction in Kisumu, Kenya. *J Sex Med* 2008; **5**: 2610-2622 [PMID: 18761593 DOI: 10.1111/j.1743-6109.2008.00979.x]
- 25 **Homfray V**, Tanton C, Mitchell KR, Miller RF, Field N, Macdowall W, Wellings K, Sonnenberg P, Johnson AM, Mercer CH. Examining the association between male circumcision and sexual function: evidence from a British probability survey. *AIDS* 2015; **29**: 1411-1416 [PMID: 26091302 DOI: 10.1097/QAD.0000000000000745]
- 26 **Bossio JA**, Pukall CF, Steele SS. Examining penile sensitivity in neonatally circumcised and intact men using quantitative sensory testing. *J Urol* 2016; **195**: 1848-1853 [PMID: 26724395 DOI: 10.1016/j.juro.2015.12.080]
- 27 **Bailis SA**, Halperin D. Review of book 'A Surgical Temptation: The Demonisation of the Foreskin and the Rise of Circumcision in Britain' by Robert Darby. *BMJ* 2006; **332**: 183
- 28 **Darby R**. A Surgical Temptation: The Demonization of the Foreskin and the Rise in Circumcision in Britain. Chicago: University of Chicago Press, 2005
- 29 **Morris BJ**, Wamai RG, Henebeng EB, Tobian AA, Klausner JD, Banerjee J, Hankins CA. Estimation of country-specific and global prevalence of male circumcision. *Popul Health Metr* 2016; **4**: 1-13 [PMID: 26933388 DOI: 10.1186/s12963-016-0073-5]
- 30 **Morris BJ**, Waskett JH, Banerjee J, Wamai RG, Tobian AA, Gray RH, Bailis SA, Bailey RC, Klausner JD, Willcourt RJ, Halperin DT, Wiswell TE, Mindel A. A 'snip' in time: what is the best age to circumcise? *BMC Pediatr* 2012; **12**: 20 [PMID: 22373281 DOI: 10.1186/1471-2431-12-20]
- 31 **El Bcheraoui C**, Zhang X, Cooper CS, Rose CE, Kilmarx PH, Chen RT. Rates of adverse events associated with male circumcision in U.S. medical settings, 2001 to 2010. *JAMA Pediatr* 2014; **168**: 625-634 [PMID: 24820907 DOI: 10.1001/jamapediatrics.2013.5414]
- 32 **Chambers M**. Circumcision ban overturned in Germany. [accessed 2015 Dec 12]. Available from: URL: <http://www.theglobeandmail.com/news/world/circumcision-ban-overturned-in-germany/article6288050/>
- 33 **Stafford N**. German ethics council backs religious circumcision if specific conditions met. *BMJ* 2012; **345**: e5789 [PMID: 22930712 DOI: 10.1136/bmj.e5789]
- 34 **Bates MJ**, Ziegler JB, Kennedy SE, Mindel A, Wodak AD, Zoloth LS, Tobian AA, Morris BJ. Recommendation by a law body to ban infant male circumcision has serious worldwide implications for pediatric practice and human rights. *BMC Pediatr* 2013; **13**: 136 [PMID: 24010685 DOI: 10.1186/1471-2431-13-136]
- 35 **Lewis EN**, Griffin MR, Szilagyi PG, Zhu Y, Edwards KM, Poehling KA. Childhood influenza: number needed to vaccinate to prevent 1 hospitalization or outpatient visit. *Pediatrics* 2007; **120**: 467-472 [PMID: 17766517 DOI: 10.1542/peds.2007-0167]
- 36 **Weller S**, Davis K. Condom effectiveness in reducing heterosexual HIV transmission. *Cochrane Database Syst Rev* 2002; **(1)**: CD003255 [PMID: 11869658]
- 37 **Lopez LM**, Otterness C, Chen M, Steiner M, Gallo MF. Behavioral interventions for improving condom use for dual protection. *Cochrane Database Syst Rev* 2013; **(10)**: CD010662 [PMID: 24163112 DOI: 10.1002/14651858.CD010662.pub2]
- 38 **Morris BJ**, Hankins CA, Tobian AA, Krieger JN, Klausner JD. Does male circumcision protect against sexually transmitted infections? Arguments and meta-analyses to the contrary fail to withstand scrutiny. *ISRN Urol* 2014; **2014**: 684706 [PMID: 24944836 DOI: 10.1155/2014/684706]
- 39 **Tobian AA**, Gray RH. The medical benefits of male circumcision. *JAMA* 2011; **306**: 1479-1480 [PMID: 21972310 DOI: 10.1001/jama.2011.1431]
- 40 **Morris BJ**, Wiswell TE. Circumcision and lifetime risk of urinary tract infection: a systematic review and meta-analysis. *J Urol* 2013; **189**: 2118-2124 [PMID: 23201382 DOI: 10.1016/j.juro.2012.11.114]
- 41 **Badger J**. Circumcision, what you think. *Australian Forum* 1989; **2 (11)**: 10-29
- 42 **Badger J**. The great circumcision report part 2. *Australian Forum* 1989; **2 (11)**: 4-13
- 43 **Bailey RC**, Muga R, Poulussen R, Abicht H. The acceptability of male circumcision to reduce HIV infections in Nyanza Province, Kenya. *AIDS Care* 2002; **14**: 27-40 [PMID: 11798403 DOI: 10.1080/09540120220097919]
- 44 **Cortés-González JR**, Arratia-Maqueo JA, Gómez-Guerra LS. Does circumcision has an effect on female's perception of sexual satisfaction? *Rev Invest Clin* 2008; **60**: 227-230 [PMID: 18807735]
- 45 **Schultheiss D**, Truss MC, Stief CG, Jonas U. Uncircumcision: a historical review of preputial restoration. *Plast Reconstr Surg* 1998; **101**: 1990-1998 [PMID: 9623850]
- 46 **Kigozi G**, Lukabwe I, Kagaayi J, Wawer MJ, Nantume B, Kigozi G, Nalugoda F, Kiwanuka N, Wabwire-Mangen F, Serwadda D, Ridzon R, Buwembo D, Nabukenya D, Watya S, Lutalo T, Nkale J, Gray RH. Sexual satisfaction of women partners of circumcised men in a randomized trial of male circumcision in Rakai, Uganda. *BJU Int* 2009; **104**: 1698-1701 [PMID: 19522862 DOI: 10.1111/j.1464-410X.2009.08683.x]
- 47 **Anonymous**. AdamAndEve.com asks women: Do you prefer a circumcised or uncircumcised penis? [accessed 2014 Feb 20]. Available from: URL: <http://www.prnewswire.com/news-releases/adamandevecom-asks-women-do-you-prefer-a-circumcised-or-uncircumcised-penis-246386151.html>
- 48 **Laumann EO**, Masi CM, Zuckerman EW. Circumcision in the United States. Prevalence, prophylactic effects, and sexual practice. *JAMA* 1997; **277**: 1052-1057 [PMID: 9091693 DOI: 10.1001/jama.1997.03540370042034]
- 49 **Frisch M**, Lindholm M, Grønbaek M. Male circumcision and sexual function in men and women: a survey-based, cross-sectional study in Denmark. *Int J Epidemiol* 2011; **40**: 1367-1381 [PMID: 21672947 DOI: 10.1093/ije/dyr104]
- 50 **Morris BJ**, Waskett JH, Gray RH. Does sexual function survey in Denmark offer any support for male circumcision having an adverse effect? *Int J Epidemiol* 2012; **41**: 310-312; author reply 312-314 [PMID: 22422464 DOI: 10.1093/ije/dyr180]
- 51 **O'Hara K**, O'Hara J. The effect of male circumcision on the sexual enjoyment of the female partner. *BJU Int* 1999; **83** Suppl 1: 79-84 [PMID: 10349418]
- 52 **Morris BJ**, Gray RH, Castellsague X, Bosch FX, Halperin DT, Waskett JH, Hankins CA. The strong protective effect of circumcision against cancer of the penis. *Adv Urol* 2011; **2011**: 812368 [PMID: 21687572 DOI: 10.1155/2011/812368]
- 53 **Elder JS**. Urinary tract infections. In: Kligeman RM, Behrman re, jenson hb, stanton bf. textbook of pediatrics. 18th ed. Philadelphia: Saunders Elsevier, 2007: 2223-2228
- 54 **Morris BJ**, Bailey RC, Klausner JD, Leibowitz A, Wamai RG, Waskett JH, Banerjee J, Halperin DT, Zoloth L, Weiss HA, Hankins CA. Review: a critical evaluation of arguments opposing male circumcision for HIV prevention in developed countries. *AIDS Care*

- 2012; **24**: 1565-1575 [PMID: 22452415 DOI: 10.1080/09540121.2012.661836]
- 55 **Benatar M**, Benatar D. Between prophylaxis and child abuse: the ethics of neonatal male circumcision. *Am J Bioeth* 2003; **3**: 35-48 [PMID: 12859815]
- 56 **Benatar D**, Benatar M. How not to argue about circumcision. *Am J Bioeth* 2003; **3**: W1 [PMID: 14635630]
- 57 **Benatar D**. Evaluations of circumcision should be circumscribed by the evidence. *J Med Ethics* 2013; **39**: 431-432 [PMID: 23728421 DOI: 10.1136/medethics-2013-101519]
- 58 **Jacobs AJ**. The ethics of circumcision of male infants. *Isr Med Assoc J* 2013; **15**: 60-65 [PMID: 23484246]
- 59 **Jacobs AJ**, Arora KS. Ritual male infant circumcision and human rights. *Am J Bioeth* 2015; **15**: 30-39 [PMID: 25674955 DOI: 10.1080/15265161.2014.990162]
- 60 **Bester JC**. Ritual male infant circumcision: the consequences and the principles say yes. *Am J Bioeth* 2015; **15**: 56-58 [PMID: 25674963 DOI: 10.1080/15265161.2014.990164]
- 61 **American Urological Association**. Circumcision. [accessed 2015 Dec 10]. Available from: URL: <http://www.auanet.org/about/policy-statements/circumcision.cfm>
- 62 **Merkel R**, Putzke H. After Cologne: male circumcision and the law. Parental right, religious liberty or criminal assault? *J Med Ethics* 2013; **39**: 444-449 [PMID: 23698890 DOI: 10.1136/medethics-2012-101284]
- 63 **Svoboda JS**. Circumcision of male infants as a human rights violation. *J Med Ethics* 2013; **39**: 469-474 [PMID: 23698885 DOI: 10.1136/medethics-2012-101229]
- 64 **Van Howe RS**. Infant circumcision: the last stand for the dead dogma of parental (sovereign) rights. *J Med Ethics* 2013; **39**: 475-481 [PMID: 23698886 DOI: 10.1136/medethics-2012-101209]
- 65 **Clark PA**, Eisenman J, Zapor S. Mandatory neonatal male circumcision in Sub-Saharan Africa: medical and ethical analysis. *Med Sci Monit* 2007; **13**: RA205-RA213 [PMID: 18049444]
- 66 **Mazor J**. The child's interests and the case for the permissibility of male infant circumcision. *J Med Ethics* 2013; **39**: 421-428 [PMID: 23698892 DOI: 10.1136/medethics-2013-101318]
- 67 **Brusa M**, Barilan YM. Cultural circumcision in EU public hospitals--an ethical discussion. *Bioethics* 2009; **23**: 470-482 [PMID: 19076127 DOI: 10.1111/j.1467-8519.2008.00683.x]
- 68 **Koyle MA**, Barqawi A, Wild J, Passamaneck M, Furness PD. Pediatric urinary tract infections: the role of fluoroquinolones. *Pediatr Infect Dis J* 2003; **22**: 1133-1137 [PMID: 14688587 DOI: 10.1097/01.inf.0000101849.11912.8e]
- 69 **Rushton HG**, Majd M. Pyelonephritis in male infants: how important is the foreskin? *J Urol* 1992; **148**: 733-736; discussion 736-738 [PMID: 1640557]
- 70 **Rushton HG**, Majd M. Dimercaptosuccinic acid renal scintigraphy for the evaluation of pyelonephritis and scarring: a review of experimental and clinical studies. *J Urol* 1992; **148**: 1726-1732 [PMID: 1331545]
- 71 **Rushton HG**. Urinary tract infections in children. Epidemiology, evaluation, and management. *Pediatr Clin North Am* 1997; **44**: 1133-1169 [PMID: 9326956]
- 72 **Hoberman A**, Wald ER, Hickey RW, Baskin M, Charron M, Majd M, Kearney DH, Reynolds EA, Ruley J, Janosky JE. Oral versus initial intravenous therapy for urinary tract infections in young febrile children. *Pediatrics* 1999; **104**: 79-86 [PMID: 10390264]
- 73 **Zorc JJ**, Kiddoo DA, Shaw KN. Diagnosis and management of pediatric urinary tract infections. *Clin Microbiol Rev* 2005; **18**: 417-422 [PMID: 15831830 DOI: 10.1128/CMR.18.2.417-422.2005]
- 74 **Morris BJ**. Why circumcision is a biomedical imperative for the 21st century. *Bioessays* 2007; **29**: 1147-1158 [PMID: 17935209 DOI: 10.1002/bies.20654]
- 75 **Clifford ID**, Craig SS, Nataraja RM, Panabokke G. Paediatric paraphimosis. *Emerg Med Australas* 2016; **28**: 96-99 [PMID: 26781045 DOI: 10.1111/1742-6723.12532]
- 76 **O'Farrell N**, Quigley M, Fox P. Association between the intact foreskin and inferior standards of male genital hygiene behaviour: a cross-sectional study. *Int J STD AIDS* 2005; **16**: 556-559 [PMID: 16105191 DOI: 10.1258/0956462054679151]
- 77 **Liu CM**, Hungate BA, Tobian AA, Serwadda D, Ravel J, Lester R, Kigozi G, Aziz M, Galiwango RM, Nalugoda F, Contente-Cuomo TL, Wawer MJ, Keim P, Gray RH, Price LB. Male circumcision significantly reduces prevalence and load of genital anaerobic bacteria. *MBio* 2013; **4**: e00076 [PMID: 23592260 DOI: 10.1128/mBio.00076-13]
- 78 **Liu CM**, Hungate BA, Tobian AA, Ravel J, Prodder JL, Serwadda D, Kigozi G, Galiwango RM, Nalugoda F, Keim P, Wawer MJ, Price LB, Gray RH. Penile microbiota and female partner bacterial vaginosis in Rakai, Uganda. *MBio* 2015; **6**: e00589 [PMID: 26081632 DOI: 10.1128/mBio.00589-15]
- 79 **Nelson DE**, Dong Q, Van der Pol B, Toh E, Fan B, Katz BP, Mi D, Rong R, Weinstock GM, Sodergren E, Fortenberry JD. Bacterial communities of the coronal sulcus and distal urethra of adolescent males. *PLoS One* 2012; **7**: e36298 [PMID: 22606251 DOI: 10.1371/journal.pone.0036298]
- 80 **Balci M**, Tuncel A, Baran I, Guzel O, Keten T, Aksu N, Atan A. High-risk oncogenic human papilloma virus infection of the foreskin and microbiology of smegma in prepubertal boys. *Urology* 2015; **86**: 368-372 [PMID: 26199167 DOI: 10.1016/j.urol.2015.04.034]
- 81 **Nakagawa T**, Toguri AG. Penile zipper injury. *Med Princ Pract* 2006; **15**: 303-304 [PMID: 16763399 DOI: 10.1159/000092995]
- 82 **Vanbuskirk K**, Winer RL, Hughes JP, Feng Q, Arima Y, Lee SK, Stern ME, O'Reilly SF, Koutsky LA. Circumcision and acquisition of human papillomavirus infection in young men. *Sex Transm Dis* 2011; **38**: 1074-1081 [PMID: 21992987 DOI: 10.1097/OLQ.0b013e31822e60cb]
- 83 **Vardas E**, Giuliano AR, Goldstone S, Palefsky JM, Moreira ED, Penny ME, Aranda C, Jessen H, Moi H, Ferris DG, Liaw KL, Marshall JB, Vuocolo S, Barr E, Haupt RM, Garner EI, Guris D. External genital human papillomavirus prevalence and associated factors among heterosexual men on 5 continents. *J Infect Dis* 2011; **203**: 58-65 [PMID: 21148497 DOI: 10.1093/infdis/jiq015]
- 84 **Backes DM**, Bleeker MC, Meijer CJ, Hudgens MG, Agot K, Bailey RC, Ndinya-Achola JO, Hayombe J, Hogewoning CJ, Moses S, Snijders PJ, Smith JS. Male circumcision is associated with a lower prevalence of human papillomavirus-associated penile lesions among Kenyan men. *Int J Cancer* 2012; **130**: 1888-1897 [PMID: 21618520 DOI: 10.1002/ijc.26196]
- 85 **Gray RH**, Serwadda D, Kong X, Makumbi F, Kigozi G, Gravitt PE, Watya S, Nalugoda F, Ssempiija V, Tobian AA, Kiwanuka N, Moulton LH, Sewankambo NK, Reynolds SJ, Quinn TC, Iga B, Laeyendecker O, Oliver AE, Wawer MJ. Male circumcision decreases acquisition and increases clearance of high-risk human papillomavirus in HIV-negative men: a randomized trial in Rakai, Uganda. *J Infect Dis* 2010; **201**: 1455-1462 [PMID: 20370483 DOI: 10.1086/652184]
- 86 **Senkomago V**, Backes DM, Hudgens MG, Poole C, Agot K, Moses S, Snijders PJ, Meijer CJ, Hesselink AT, Schlecht NF, Bailey RC, Smith JS. Acquisition and persistence of human papillomavirus 16 (HPV-16) and HPV-18 among men with high-HPV viral load infections in a circumcision trial in Kisumu, Kenya. *J Infect Dis* 2015; **211**: 811-820 [PMID: 25261492]
- 87 **Tobian AA**, Serwadda D, Quinn TC, Kigozi G, Gravitt PE, Laeyendecker O, Charvat B, Ssempiija V, Riedesel M, Oliver AE, Nowak RG, Moulton LH, Chen MZ, Reynolds SJ, Wawer MJ, Gray RH. Male circumcision for the prevention of HSV-2 and HPV infections and syphilis. *N Engl J Med* 2009; **360**: 1298-1309 [PMID: 19321868 DOI: 10.1056/NEJMoa0802556]
- 88 **Wilson LE**, Gravitt P, Tobian AA, Kigozi G, Serwadda D, Nalugoda F, Watya S, Wawer MJ, Gray RH. Male circumcision reduces penile high-risk human papillomavirus viral load in a randomised clinical trial in Rakai, Uganda. *Sex Transm Infect* 2013; **89**: 262-266 [PMID:

- 23112341 DOI: 10.1136/sextrans-2012-050633]
- 89 **Auvert B**, Sobngwi-Tambekou J, Cutler E, Nieuwoudt M, Lissouba P, Puren A, Taljaard D. Effect of male circumcision on the prevalence of high-risk human papillomavirus in young men: results of a randomized controlled trial conducted in Orange Farm, South Africa. *J Infect Dis* 2009; **199**: 14-19 [PMID: 19086814 DOI: 10.1086/595566]
 - 90 **Tarnaud C**, Lissouba P, Cutler E, Puren A, Taljaard D, Auvert B. Association of low-risk human papillomavirus infection with male circumcision in young men: results from a longitudinal study conducted in Orange Farm (South Africa). *Infect Dis Obstet Gynecol* 2011; **2011**: 567408 [PMID: 21584275 DOI: 10.1155/2011/567408]
 - 91 **Morris BJ**, Mindel A, Tobian AA, Hankins CA, Gray RH, Bailey RC, Bosch X, Wodak AD. Should male circumcision be advocated for genital cancer prevention? *Asian Pac J Cancer Prev* 2012; **13**: 4839-4842 [PMID: 23167429 DOI: 10.7314/APJCP.2012.13.9.4839]
 - 92 **Castellsagué X**, Bosch FX, Muñoz N, Meijer CJ, Shah KV, de Sanjose S, Eluf-Neto J, Ngelangel CA, Chichareon S, Smith JS, Herrero R, Moreno V, Franceschi S. Male circumcision, penile human papillomavirus infection, and cervical cancer in female partners. *N Engl J Med* 2002; **346**: 1105-1112 [PMID: 11948269 DOI: 10.1056/NEJMoa011688]
 - 93 **Barbaro B**, Brotherton JM. Measuring HPV vaccination coverage in Australia: comparing two alternative population-based denominators. *Aust N Z J Public Health* 2015; **39**: 326-330 [PMID: 26094817 DOI: 10.1111/1753-6405.12372]
 - 94 **Holman DM**, Benard V, Roland KB, Watson M, Liddon N, Stokley S. Barriers to human papillomavirus vaccination among US adolescents: a systematic review of the literature. *JAMA Pediatr* 2014; **168**: 76-82 [PMID: 24276343 DOI: 10.1001/jamapediatrics.2013.2752]
 - 95 **Auvert B**, Taljaard D, Lagarde E, Sobngwi-Tambekou J, Sitta R, Puren A. Randomized, controlled intervention trial of male circumcision for reduction of HIV infection risk: the ANRS 1265 Trial. *PLoS Med* 2005; **2**: e298 [PMID: 16231970 DOI: 10.1371/journal.pmed.0020298]
 - 96 **Bailey RC**, Moses S, Parker CB, Agot K, Maclean I, Krieger JN, Williams CF, Campbell RT, Ndinya-Achola JO. Male circumcision for HIV prevention in young men in Kisumu, Kenya: a randomised controlled trial. *Lancet* 2007; **369**: 643-656 [PMID: 17321310 DOI: 10.1016/S0140-6736(07)60312-2]
 - 97 **Gray RH**, Kigozi G, Serwadda D, Makumbi F, Watya S, Nalugoda F, Kiwanuka N, Moulton LH, Chaudhary MA, Chen MZ, Sewankambo NK, Wabwire-Mangen F, Bacon MC, Williams CF, Opendi P, Reynolds SJ, Laeyendecker O, Quinn TC, Wawer MJ. Male circumcision for HIV prevention in men in Rakai, Uganda: a randomised trial. *Lancet* 2007; **369**: 657-666 [PMID: 17321311 DOI: 10.1016/S0140-6736(07)60313-4]
 - 98 **Sobngwi-Tambekou J**, Taljaard D, Lissouba P, Zarca K, Puren A, Lagarde E, Auvert B. Effect of HSV-2 serostatus on acquisition of HIV by young men: results of a longitudinal study in Orange Farm, South Africa. *J Infect Dis* 2009; **199**: 958-964 [PMID: 19220143 DOI: 10.1086/597208]
 - 99 **Mehta SD**, Moses S, Agot K, Maclean I, Odoyo-June E, Li H, Bailey RC. Medical male circumcision and herpes simplex virus 2 acquisition: posttrial surveillance in Kisumu, Kenya. *J Infect Dis* 2013; **208**: 1869-1876 [PMID: 23901089 DOI: 10.1093/infdis/jit371]
 - 100 **Tobian AA**, Charvat B, Ssempijja V, Kigozi G, Serwadda D, Makumbi F, Iga B, Laeyendecker O, Riedesel M, Oliver A, Chen MZ, Reynolds SJ, Wawer MJ, Gray RH, Quinn TC. Factors associated with the prevalence and incidence of herpes simplex virus type 2 infection among men in Rakai, Uganda. *J Infect Dis* 2009; **199**: 945-949 [PMID: 19220138 DOI: 10.1086/597074]
 - 101 **Sobngwi-Tambekou J**, Taljaard D, Nieuwoudt M, Lissouba P, Puren A, Auvert B. Male circumcision and Neisseria gonorrhoeae, Chlamydia trachomatis and Trichomonas vaginalis: observations after a randomised controlled trial for HIV prevention. *Sex Transm Infect* 2009; **85**: 116-120 [PMID: 19074928 DOI: 10.1136/sti.2008.032334]
 - 102 **Mehta SD**, Gaydos C, Maclean I, Odoyo-June E, Moses S, Agunda L, Quinn N, Bailey RC. The effect of medical male circumcision on urogenital Mycoplasma genitalium among men in Kisumu, Kenya. *Sex Transm Dis* 2012; **39**: 276-280 [PMID: 22421693 DOI: 10.1097/OLQ.0b013e318240189c]
 - 103 **Wawer MJ**, Tobian AA, Kigozi G, Kong X, Gravitt PE, Serwadda D, Nalugoda F, Makumbi F, Ssempijja V, Sewankambo N, Watya S, Eaton KP, Oliver AE, Chen MZ, Reynolds SJ, Quinn TC, Gray RH. Effect of circumcision of HIV-negative men on transmission of human papillomavirus to HIV-negative women: a randomised trial in Rakai, Uganda. *Lancet* 2011; **377**: 209-218 [PMID: 21216000 DOI: 10.1016/S0140-6736(10)61967-8]
 - 104 **Davis MA**, Gray RH, Grabowski MK, Serwadda D, Kigozi G, Gravitt PE, Nalugoda F, Watya S, Wawer MJ, Quinn TC, Tobian AA. Male circumcision decreases high-risk human papillomavirus viral load in female partners: a randomized trial in Rakai, Uganda. *Int J Cancer* 2013; **133**: 1247-1252 [PMID: 23400966 DOI: 10.1002/ijc.28100]
 - 105 **Tobian AA**, Kong X, Wawer MJ, Kigozi G, Gravitt PE, Serwadda D, Eaton KP, Nalugoda F, Quinn TC, Gray RH. Circumcision of HIV-infected men and transmission of human papillomavirus to female partners: analyses of data from a randomised trial in Rakai, Uganda. *Lancet Infect Dis* 2011; **11**: 604-612 [PMID: 21489882]
 - 106 **Tobian AA**, Kigozi G, Redd AD, Serwadda D, Kong X, Oliver A, Nalugoda F, Quinn TC, Gray RH, Wawer MJ. Male circumcision and herpes simplex virus type 2 infection in female partners: a randomized trial in Rakai, Uganda. *J Infect Dis* 2012; **205**: 486-490 [PMID: 22147796 DOI: 10.1093/infdis/jir767]
 - 107 **Gray RH**, Kigozi G, Serwadda D, Makumbi F, Nalugoda F, Watya S, Moulton L, Chen MZ, Sewankambo NK, Kiwanuka N, Sempijja V, Lutalo T, Kagayii J, Wabwire-Mangen F, Ridzon R, Bacon M, Wawer MJ. The effects of male circumcision on female partners' genital tract symptoms and vaginal infections in a randomized trial in Rakai, Uganda. *Am J Obstet Gynecol* 2009; **200**: 42.e1-42.e7 [PMID: 18976733 DOI: 10.1016/j.ajog.2008.07.069]
 - 108 **Tobian AA**, Gaydos C, Gray RH, Kigozi G, Serwadda D, Quinn N, Grabowski MK, Musoke R, Ndyababo A, Nalugoda F, Wawer MJ, Quinn TC. Male circumcision and Mycoplasma genitalium infection in female partners: a randomised trial in Rakai, Uganda. *Sex Transm Infect* 2014; **90**: 150-154 [PMID: 24259189 DOI: 10.1136/sextrans-2013-051293]
 - 109 **Van Howe RS**. Sexually transmitted infections and male circumcision: a systematic review and meta-analysis. *ISRN Urol* 2013; **2013**: 109846 [PMID: 23710368 DOI: 10.1155/2013/109846]
 - 110 **Peterson S**. Assaulted and mutilated: a personal account of circumcision trauma. In: Denniston G, Hodges FM, Milos M, editors. Understanding Circumcision: A Multi-disciplinary Approach to a Multi-dimensional Problem. London and New York: Kluwer Academic and Plenum Press, 2001: 271-290
 - 111 **Walter G**, Streimer J. Genital self-mutilation: attempted foreskin reconstruction. *Br J Psychiatry* 1990; **156**: 125-127 [PMID: 2404537]
 - 112 **Collins S**, Upshaw J, Rutchik S, Ohannessian C, Ortenberg J, Albertsen P. Effects of circumcision on male sexual function: debunking a myth? *J Urol* 2002; **167**: 2111-2112 [PMID: 11956452]
 - 113 **American Psychiatric Association**. Diagnostic & Statistical Manual 5th Revision (DSM-5). 2013. Available from: URL: <http://www.dsm5.org/Pages/Default.aspx>
 - 114 **Kafka MP**. The DSM diagnostic criteria for paraphilia not otherwise specified. *Arch Sex Behav* 2010; **39**: 373-376 [PMID: 19779971 DOI: 10.1007/s10508-009-9552-0]
 - 115 **Mohl PC**, Adams R, Greer DM, Sheley KA. Prepuce restoration seekers: psychiatric aspects. *Arch Sex Behav* 1981; **10**: 383-393 [PMID: 7295020]
 - 116 **Schultheiss D**, Truss MC, Stief CG, Jonas U. Uncircumcision: a historical review of preputial restoration. *Plast Reconstr Surg* 1998; **101**: 1990-1998 [PMID: 9623850]
 - 117 **Kelishadi R**. To the readers. *Int J Prev Med* 2010; **1**: i [PMID:

21677759]

118 **Johns Hopkins University.** Hippocratic Oath, Modern version.

[accessed 2015 Dec 21]. Available from: URL: <http://guides.library.jhu.edu/c.php?g=202502&p=1335759>

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