

**Information for Providers to Share with
Male Patients and Parents Regarding Male Circumcision and
the Prevention of HIV Infection, Sexually Transmitted Infections,
and other Health Outcomes**

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Introduction

This document is intended to assist health care providers in the United States who are sharing information with men and parents of male infants during decision making about male circumcision conducted by health care providers (i.e. medically performed) as it relates to the prevention of human immunodeficiency virus (HIV) infection, sexually transmitted infections (STIs), and other health outcomes. Such decision-making involves not only health considerations, but also social, cultural, ethical, and religious factors. Counseling regarding these issues can be incorporated into routine discussions of sexual, newborn, and child health.

Much of the data related to HIV and STI prevention are from randomized clinical trials conducted among men in sub-Saharan Africa in regions with high rates of heterosexually acquired HIV infection. In the United States, the prevalence of HIV and lifetime risk of HIV infection are generally much lower than that in sub-Saharan Africa. Also, most new HIV infections in the United States are attributed to male-male sexual contact. Pooled data from observational studies¹ in the U.S. and abroad indicate that male circumcision was associated with reduced HIV acquisition among men who have sex with men (MSM) who practiced mainly or exclusively insertive anal sex. However, randomized clinical trials of male circumcision have not included a large enough number of MSM, and many MSM practice both insertive and receptive anal sex. Therefore, although biologically plausible, we are unable to definitively conclude whether male circumcision among MSM practicing mainly or exclusively insertive anal sex reduced the risk of HIV acquisition. While such factors limit the impact of medically performed male circumcision in reducing the overall HIV epidemic in the U.S., 8% of the estimated annual HIV diagnoses in 2014 in the United States were among males with infection attributed to heterosexual contact.² In addition, African-American and Hispanic men have higher risk of HIV infection and lower male circumcision rates than white non-Hispanic males. Similar randomized clinical trials have not been conducted in the United States, but based on evidence from the African trials of the efficacy of male circumcision to prevent HIV transmission, uncircumcised heterosexual men living in areas with high HIV prevalence are likely to experience the most risk-reduction benefit from elective male circumcision.

Methods

A CDC 2-day symposium was held in April 2007 to obtain input on the potential role of male circumcision in preventing transmission of HIV in the United States. A summary of the 2-day symposium, including a list of the participants has been previously published.³ The 2-day symposium helped define key issues for inclusion in this informational document.

The methods used to gather and summarize evidence supporting this information are reported in “Background, Methods, and Synthesis of Scientific Information Used to Inform ‘Information for Providers to Share with Male Patients and Parents regarding Male Circumcision and the Prevention of HIV infection, STIs, and other Health Outcomes.’”

The information provided in this document is based on an evaluation of available evidence on the health risks and benefits associated with medically performed male circumcision and were developed to pertain to male adults, adolescents, children, and newborns, and caregivers of male minors charged in the United States.⁴ In this document, the preventive benefits of male

circumcision are generally expressed as relative-risk reductions (e.g., a 50% reduction from a 2% risk of an STI to a 1% risk), whereas any associated harm is expressed as an absolute risk (e.g., a 2%–4% risk of adverse events). Appropriate denominators are not available in many cases to establish an absolute risk for HIV and other STIs in higher-risk populations (e.g., heterosexual males at increased risk for infection).

The citations associated with the information in this document have been graded by adapting a previously published grading scheme.⁵ The grading scheme and criteria for inclusion of citations and specific considerations for use of the scheme are described in Appendix 1. The specific grade for each citation in this document can be found in Appendix 2.

On December 2, 2014, CDC published a notice in the Federal Register announcing the posting of a draft informational document to obtain public comments (79 FR 71433). CDC received over 3,200 public comments from the public, physicians, and professional organizations. All comments were carefully reviewed and considered in preparation of this final document.

In addition to obtaining public comments on the draft informational document, CDC shared a summary of public comments with external experts who conducted a peer review of the evidence on this topic. Their review included an evaluation of completeness, accuracy, interpretation, and generalizability of the evidence to the United States and whether the evidence was sufficient to support the draft informational document.

Review of Evidence

Clinical trials conducted in Africa during 2005–2010 have demonstrated safety and significant efficacy of voluntary adult male circumcision performed by clinicians for reducing the risk of acquisition of HIV by males during penile-vaginal sex (“heterosexual sex”). Three randomized clinical trials showed that adult male circumcision significantly reduced the risk for HIV acquisition among heterosexual males by 51%–60% (95% confidence interval 16%–76%) over time.^{6–8} These trials also found that medically performed adult circumcision significantly reduced the risk of men acquiring two common sexually transmitted infections (STIs), including genital ulcer disease (GUD) prevalence by 47% and incidence by 48%⁹ and high-risk (i.e. oncogenic) types of human papilloma virus (HR-HPV) prevalence by 23%–47%.^{10–12} In a prospective cohort study nested in a large randomized clinical trial of HIV preexposure prophylaxis in Kenyan and Ugandan HIV-serodiscordant heterosexual couples, male circumcision was associated with a percentage reduction in the incidence of syphilis (42% in men and 59% in women).¹³ Because the foreskin can serve as a portal of entry for STIs (including HIV), it is biologically plausible that circumcision plays a role in preventing STI and HIV acquisition through insertive sexual intercourse. Since the release of these trial data,^{6–8} various organizations have updated their recommendations about adult male¹⁴ and infant male circumcision.^{15,16}

Information to Share

1. Consideration of factors associated with decision making

Health benefits and risks of elective neonatal, adolescent, or adult medically performed male circumcision should be considered in consultation with medical providers while taking into

account factors associated with decision-making around male circumcision, including religion, societal norms and social customs, hygiene, aesthetic preference, and ethical considerations.

2. Providing information to sexually active adolescent and adult males regardless of circumcision status

All sexually active adolescent and adult males should consider using other proven HIV and STI risk-reduction strategies such as reducing the number of partners, correct and consistent use of male latex condoms, and HIV preexposure or postexposure prophylaxis.^a

3. Providing information to uncircumcised sexually active adolescent and adult males

Prior to sharing information about medically performed male circumcision, uncircumcised sexually active adolescent and adult males should be assessed to determine their HIV risk behaviors, HIV infection status, and the gender of their sexual partner(s).¹⁷ The results of these assessments will inform the discussion with men about the risks and benefits of medically performed male circumcision.

3A. Providing information to uncircumcised adolescent and adult males who are heterosexually and bisexually active (i.e., men who have sex with women)

3A-1. An assessment of the patient's risk of acquiring HIV through heterosexual sex should be conducted:

- *Providers should review the patient's HIV risk behavior.*^{18,19}
- *Providers should assess condom use practices, consistency of use, and barriers to use.*
- *Providers should inform heterosexually and bisexually active adolescent and adult males that males at high risk of HIV exposure during heterosexual sex include HIV-uninfected males in sexual relationships with:*
 - *An HIV-infected woman (i.e., in an HIV discordant couple);*
 - *One or more females who are at high risk for HIV (this includes commercial sex workers, females who inject drugs, and females in defined geographic locations with a prevalence of HIV $\geq 1.0\%$);*
 - *Multiple female partners.*

3A-2. Regardless of their assessed risks as assessed in 3A-1, all uncircumcised adolescent and adult males who engage in heterosexual sex should be informed about the significant, but partial, efficacy of male circumcision in reducing the risk of acquiring HIV and some STIs through heterosexual sex, as well as the potential harms of male circumcision.

- *Men and male adolescents being provided information about male circumcision should be told that (see Box 1):*
 - *Male circumcision reduces, but does not eliminate, the risk of acquiring HIV and some STIs during penile-vaginal sex. In clinical trials, medically performed male circumcision reduced the incidence of genital ulcer disease (GUD) by 48% and the*

^a Information about HIV and STI prevention strategies other than medically performed male circumcision can be found at <http://wwwdev.cdc.gov/hiv/basics/prevention.html> and <http://www.cdc.gov/std/prevention/default.htm>.

prevalence by 47%, and reduced the prevalence of HR-HPV by 23%–47% among circumcised men.

- *Male circumcision has not been shown to reduce the risk of HIV during receptive anal sex.*
- *Male circumcision has not been shown to reduce the risk of STIs during anal sex.*
- *The effect of male circumcision on reducing the risk of HIV and STI transmission during oral sex has not been evaluated.*
- *Male circumcision has not been shown to reduce the risk of HIV transmission to female partners. However, in clinical trials, medically performed male circumcision reduced the prevalence of GUD by 22%, HR-HPV by 22%, *T. vaginalis* by 45%, and bacterial vaginosis by 40% among female partners.*
- *Male circumcision has been shown to reduce the risk of urinary tract infections in males aged 0–1 years by 90%, in males aged 1–16 years by 85%, and in males >16 years by 71%.*
- *During adulthood, uncircumcised males are more likely than circumcised males to experience invasive penile cancer.*
- *After circumcision, men should not have sex until their health care provider has documented wound healing.*

3A-3. Uncircumcised, HIV-uninfected men and male adolescents at increased risk for HIV acquisition through heterosexual sex should be provided information about the risk and benefits of male circumcision (See Box 1). When a decision is made to undergo male circumcision, a referral for surgical consultation and access to medically performed male circumcision surgical services should be provided.

3B. Providing information to men who have sex with men (exclusively)

Healthcare providers should explain that the data regarding the relationship between male circumcision and the acquisition of HIV and other STIs among MSM have a number of limitations and results differ based on predominance of insertive or receptive sexual practice. Based on data from heterosexuals, it is biologically plausible that male circumcision could benefit MSM who practice mainly or exclusively insertive anal sex. Pooled data from observational studies of male circumcision among MSM indicated that overall, male circumcision provided partial protection from HIV acquisition for the partner who practiced mainly or exclusively insertive anal sex. However, because clinical trials of male circumcision did not include large enough numbers of MSM and because many MSM practice both insertive and receptive anal sex, definitive statements cannot be made about whether male circumcision can reduce the risk of acquiring HIV and other STIs.¹ In contrast, male circumcision provides no direct biologically plausible risk-reduction benefit for the receptive anal sex partner and receptive anal intercourse carries a substantially higher risk for acquisition of HIV than insertive sex.

3B-1. Men who have sex with men should be informed that:

- *Male circumcision reduces the risk of men acquiring HIV and other STIs during penile-vaginal sex, but no definitive statements can be made about whether male*

circumcision reduces the risk of MSM acquiring HIV and other STIs during penile-anal sex.

- *Results from data pooled across several observational studies indicate that among MSM who practice mainly or exclusively insertive anal sex, circumcision was associated with a decreased risk of acquiring a new HIV infection for the insertive partner; however, clinical trials have not included the numbers of MSM necessary to make a definitive conclusion.*
- *It is biologically plausible that MSM who practice mainly insertive anal sex may experience a reduction in the risk for acquiring HIV and STIs like that among heterosexuals in clinical trials during penile-vaginal sex; among men who practice mainly or exclusively receptive-anal sex, male circumcision does not provide a biologically plausible benefit for a similar reduction in risk.*

4. Providing information to parents of male newborns, children, or adolescents

Health benefits and risks of elective neonatal, pediatric, or adolescent male circumcision should be considered in consultation with medical providers. Ideally, discussions about neonatal circumcision should occur prior to the birth of the child. Ultimately, whether to circumcise a male neonate or child is a decision made by parents or guardians on behalf of their newborn son or dependent child.

When providing information to parents about male circumcision for an adolescent minor, the adolescent should be included in the decision-making process about undergoing elective male circumcision. When providing information to an adolescent inquiring about male circumcision, parents should be engaged in the discussion, unless the adolescent is legally emancipated. Minors may be deemed emancipated, giving them sole authority to make health care decisions on their own behalf under certain circumstances, which vary by state law; for example, if the minor 1) lives independently and is self-supporting, 2) is married, 3) is pregnant or a parent, 4) is in the military, or 5) is declared emancipated by a court as defined in the mature minor section.²⁰

4-A. Parents and guardians should be informed about the medical benefits and risks of neonatal, pediatric, or adolescent medically performed male circumcision (see Box 1):

- *During infancy, circumcised infants are less likely than uncircumcised infants to experience urinary tract infections (UTIs); an estimated 7% of infant males presenting with fever in outpatient clinics and emergency rooms had UTIs, including 20% of uncircumcised febrile infants and 2% of circumcised febrile infants aged younger than 3 months of age.²¹*
- *An estimated 32% of uncircumcised males compared with 9% of circumcised males will experience a UTI in their lifetime, suggesting that circumcision is associated with a 23% absolute decreased lifetime risk of UTI.²²*
- *Although most UTIs are treatable, serious complications may occur when UTIs are not diagnosed, recurrent, difficult to treat, or left untreated. Such complications may include sepsis, pyelonephritis, and renal scarring and have been associated with an increased risk for long-term consequences, including hypertension, build-up of kidney waste products (uremia), and end-stage renal disease.*

- *An estimated 14% of uncircumcised boys compared with 6% of circumcised boys experienced balanitis, irritation, adhesions, phimosis or paraphimosis, suggesting that circumcision is associated with an 8% absolute decreased risk of these conditions.²³*
- *During adulthood, circumcised males were less likely than uncircumcised males to experience penile cancer.*
- *Other anticipated health benefits derive in part from future prevention of HIV and some STIs acquired through heterosexual sex. Eight percent of annual HIV diagnoses in the United States are among persons with infection attributed to heterosexual contact. STIs are very common, with human papilloma virus (HPV) infection of the anus or genitals occurring in many sexually active persons, although HPV vaccination is highly effective against many serotypes. Current risks for either HIV or other non-HIV STIs may not remain constant in the future and the future risk for any individual neonate, child, or adolescent cannot be definitively defined at the time that a circumcision decision is made.*
- *Considerations for the timing of male circumcision:*
 - *Neonatal male circumcision is safer, less expensive, and heals more rapidly than circumcision performed on older boys, adolescent males, and men.*
 - *Most of the health benefits of male circumcision occur after sexual debut (i.e. after becoming sexually active).*
 - *Male circumcision can also be conducted in adulthood when the individual can make the decision for himself. However, male circumcision after sexual debut could result in missed opportunities for:*
 - *HIV and STI prevention during the window period between sexual debut and circumcision*
 - *Prevention of UTIs during infancy.*

- *Complications of medically performed male circumcision in the United States are typically uncommon and easily managed. Severe complications are rare in all age groups and occur in 0.23% of all circumcised males overall.²⁴*
 - *Among newborns and children aged 1–9 years, most frequently reported complications include bleeding and inflammation of the penis or incomplete wound healing or adhesions requiring corrective procedures.^b Complications occur in 0.2% of infants aged ≤ 1 month,²⁵⁻²⁷ 0.4% of infants aged <1 year,²⁴ and approximately 9% in children aged 1–9 years.²⁴*
 - *Among persons aged 10 years and older, the most frequently reported complications include those complications reported in younger children as well as wounds of the penis.^c Complications occur in approximately 5% of persons in this age group.²⁴ There are not specific data about the frequency of complications in the adolescent age group (13–18 years).*
- *The American Academy of Pediatrics Taskforce on Circumcision states that the health benefits of newborn male circumcision outweigh the risks and that the benefits of newborn male circumcision justify access to this procedure for families who choose it.¹⁵*

4-B. Medically performed neonatal, pediatric, or adolescent male circumcision should be done by trained clinicians using appropriate (or standard) infection control, analgesia, and anesthetic practices.¹⁵

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^b Corrective procedures include repair of incomplete circumcision or removal of any attachments, which may form after circumcision between the remaining foreskin and the head of the penis.

^c Any open wound of the penis without additional complications.

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Box 1:**Health Benefits and Risks of Elective Medically Performed Male Circumcision**

- ***Health benefits of elective male circumcision in adults and adolescents:***
 - Male circumcision reduces the risk of acquiring HIV infection through penile-vaginal sex by 50%–60%, as demonstrated in 3 well-conducted clinical trials among adult men living in sub-Saharan Africa.
 - In clinical trials involving heterosexual males living in sub-Saharan Africa, male circumcision reduces the risk of some sexually transmitted infections.
 - Male circumcision reduces the risk of circumcised men acquiring new infections of:
 - Genital ulcer disease (GUD) (by 48%)
 - Herpes simplex virus type-2 (HSV-2) (by 28%–45%)
 - Oncogenic types of human papilloma virus (HPV) (by 24%–47%)
 - Male circumcision reduces the risk of circumcised men having existing infections of:
 - GUD (by 47%)
 - Oncogenic types of HPV (by 25%–47%)
 - *T. vaginalis* (by 53%)
 - *M. genitalium* (by 46%)
 - Male circumcision reduces the risk of the female partners of circumcised men having existing infections of:
 - GUD (by 22%)
 - Oncogenic types of HPV (by 22%)
 - *T. vaginalis* (by 45%)
 - Bacterial vaginosis (by 40%)
 - Male circumcision reduces the risk of penile cancer
- ***Adverse events and risks associated with elective male circumcision of adults:***
 - The rate of adverse events, not including severe adverse events in persons aged 10 years and older is 5%,²⁴ with pain, bleeding, infection and unsatisfactory post-surgical appearance most commonly reported. Severe and/or long-term complications have been reported, but they are so rare that rates of such complications have not been precisely established.
 - On average, adult men who undergo circumcision generally report minimal or no change in sexual satisfaction or function. Those who enjoy the sensation of the foreskin during sexual relations will no longer experience that sensation.
- ***Health benefits of neonatal male circumcision:***
 - The estimated risk of urinary tract infections (UTIs) in uncircumcised males:
 - aged 0–1 years is 1.3% (uncircumcised), 0.3% (circumcised)
 - aged 1–16 years is 2.78% (uncircumcised), 0.4% (circumcised)
 - aged >16 years is 28.2% (uncircumcised), 8.3% (circumcised)
 - over a lifetime is 32.1% (uncircumcised), 8.8% (circumcised)
 - Male circumcision reduces the risk of UTIs in circumcised males:
 - aged 0–1 years by 90%
 - aged 1–16 years by 85%
 - aged >16 years by 71%
 - over a lifetime by 23%

- In the United States, the estimated lifetime risk of penile cancer for males is about 1 in 1,400 (0.07%) and that of prostate cancer is about 15%. Neonatal male circumcision reduces the risk of invasive penile carcinoma by about 77% and may reduce the risk of prostate cancer by 15% compared to men who are uncircumcised or those circumcised after first sexual intercourse.
- ***Adverse events and risks associated with neonatal, infant, and child male circumcision performed by clinicians:***
 - In the United States, during 2001-2010,
 - The rates of reported adverse events, not including severe adverse events,^a were as follows
 - 0.4% in infants aged <12 months
 - 9.1% in children age 1–9 years
 - 5.3% in persons aged 10 years and older
 - Most commonly reported complications among newborns and children aged 1 to 9 years: bleeding and inflammation of the penis or incomplete wound healing or adhesions requiring corrective procedures.^b
 - The incidence of severe adverse events associated with male circumcision performed by clinicians, such as permanent disabilities, disfigurements, and death are rare. Other major complications requiring intervention such as major bleeding, and severe infection, are uncommon.
 - Some men enjoy the sensation of the foreskin during sexual relations, and such a sensation will not be experienced after circumcision; however, the bulk of scientific evidence states that men, on average, do not experience a loss of sexual pleasure or function because of circumcision.

^a Severe adverse events include outcomes such as permanent disabilities, disfigurements, and death

^b Frequently reported corrective procedures include repair of incomplete circumcision, lysis or excision of penile post-circumcision adhesions, and division of penile adhesions.