IN BRIEF

Circumcision

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Circumcision, defined as the removal of foreskin from the penis, is among the most common surgical procedures performed in the United States. In 2010, individuals with penises between the ages of 14 and 59 years in the United States were surveyed. The overall prevalence of circumcision in this cohort was approximately 80%. Most of these circumcisions occurred in the newborn period. There is significant variation in the rate of circumcision in the United States. Non-Hispanic white Americans have a circumcision rate of 91%, higher than non-Hispanic Black Americans (76%) and Mexican Americans (44%). The prevalence of circumcision in other countries of the world varies significantly, from less than 5% to more than 90%. In general, countries with larger Muslim or Jewish populations had higher rates of circumcision.

Most circumcisions are performed in the neonatal period, before 1 month of age. Parents often choose for a circumcision to be performed in the neonatal period rather than later in life because it involves less postprocedure discomfort and emotional trauma. There are no formal indications for a circumcision during this period other than parental preference. Indications for circumcisions beyond infancy include parental preference when a contraindication is present during infancy, such as prematurity, blood dyscrasias, congenital abnormalities (hypospadias, chordee, penoscrotal fusion), or parental refusal of vitamin K at the time of the infant's birth. Other indications after the neonatal period beyond parental preference include the following medical indications: frequent urinary tract infections (UTIs), genital warts, phimosis or paraphimosis, balanitis, penile cancer, and prevention of sexually transmitted infections. Circumcision is recommended by the World Health Organization (WHO) in all countries with high human immunodeficiency virus (HIV) prevalence. Overall, 95% of circumcisions in the United States beyond infancy are performed because of personal preference for cosmetic and social purposes.

The latest policy statement from the American Academy of Pediatrics (AAP) concerning circumcision of individuals with penises was published in 2012. In this statement, the AAP concluded that the health benefits of newborn circumcision outweigh the risks of the procedure, that it is well tolerated, and that complications are infrequent. All of this justified the procedure for families who choose it. The health benefits, however, were not great enough to recommend routine circumcision, and, therefore, it is important for clinicians to inform parents of the benefits and risks in an unbiased and accurate manner, as described further later herein.

The benefits of circumcision include a reduction in the risk of UTIs through age 2 year, reduction of heterosexual acquisition of HIV and transmission of

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Circumcision Policy Statement. American Academy of Pediatrics Task Force on Circumcision. *Pediatrics.* 2012;130(3):585–586

Male Circumcision. Task Force on Circumcision; Blank S, Brady M, Buerk E, et al. *Pediatrics.* 2012;130(3):e756–e785

CDC's Male Circumcision Recommendations Represent a Key Public Health Measure. Morris BJ, Krieger JN, Klausner JD. *Glob Health Sci Pract.* 2017;5(1):15–27

Circumcision of Male Infants and Children as a Public Health Measure in Developed Countries: A Critical Assessment of Recent Evidence. Frisch M, Earp BD. *Glob Public Health.* 2018;13(5):626–641

some sexually transmitted infections, and the prevention of penile cancer. UTIs are more common in uncircumcised infants due to increased periurethral bacterial colonization. In the first year of life, the rate of UTI among circumcised infants is 0.1% to 0.2%, and it is 0.7% to 1.4% among uncircumcised infants. The number of circumcisions needed to prevent 1 UTI is 111; this number is significantly lower for infants with recurrent UTI (n = 11) and vesicoureteral reflux (n = 4). Circumcision also reduces vaginal to penile acquisition of HIV in areas with high prevalence by 40% to 60%. No studies have found this association with men who have sex with men. There are other cross-sectional studies in areas without high HIV prevalence that show uncircumcised men are not at higher risk for HIV acquisition. Circumcision is also associated with a reduction in human papillomavirus infection and is mildly protective against herpes simplex virus-2 transmission. There is no reduction in risk of acquisition with syphilis, gonorrhea, or chlamydia. Penile cancer is rare overall, with 0.58 cases per 100,000 individuals. There is fair evidence indicating an association between circumcision and decreased likelihood of invasive penile cancer. However, this association is attributable to phimosis, as the risk of penile cancer is not significantly higher in uncircumcised individuals who have no history of phimosis.

Newborn circumcisions have an overall complication rate of 0.19% to 0.4%. Acute complications, include bleeding, infection, penile injury (ranging from denuded penile shaft from excess skin removal to penile amputation), and an imperfect amount of tissue removed. Late complications include adhesions, meatal stenosis, penile torsion, insufficient skin for comfortable erection, and an undesired aesthetic appearance. Nonnewborn circumcisions have a higher overall complication rate of 1.2% to 7.4%, a large portion of which are anesthesia related. Acute surgical complications most commonly include bleeding. The most common late complication is dissatisfaction with postoperative appearance, including either the removal of too much or not enough skin.

The issue of sexual adverse effects of circumcision has been raised because the foreskin is a densely innervated tissue and contributes mechanical function during intercourse. Studies evaluating these effects, though, have not been rigorous in design, and few have been conducted in the United States. Overall, there is good to fair evidence that there is no statistically significant difference in sexual satisfaction between circumcised and uncircumcised individuals. However, there is fair evidence that men circumcised as adults demonstrate a higher threshold for light touch sensitivity and have decreased masturbatory pleasure, although it is unclear whether this is permanent.

In evaluation of equity, newborn circumcision costs on average $100 to $800, and circumcision later in life costs on average $5,400. As of 2011, 17 states did not cover newborn circumcision under their Medicaid programs, with some states concerned about the costs of including coverage. Circumcision is more common in states where it is funded and for individuals who are privately insured. There are indications for postneonatal circumcisions covered by all insurances, including phimosis or paraphimosis, recurrent UTI, penile cancer, and pain or bleeding during sex.

Because some families may opt to circumcise as part of religious or traditional practice, discussion should also encompass risks and benefits of having a medical professional perform this procedure in a clinical setting versus having it performed by a religious or traditional provider in a nonmedical environment. The complication rate between medical and nonmedical circumcision practitioners is not well studied. A circumcision beyond the neonatal period also has additional considerations, such as longer healing time, increased risk and expense, and sexual abstinence during healing. Parents who are considering deferring circumcision to be performed by a nonmedical provider or to have it be performed beyond the newborn period should be told about these additional considerations.

There are 3 common neonatal male circumcision devices: the Gomco clamp, the Mogen clamp, and the Plastibell device. For analgesia, a dorsal nerve block is the standard of care, along with oral sucrose as an adjunctive method. Nonpharmacologic techniques (eg, positioning, sucrose pacifiers) alone are insufficient, and topical creams may cause a higher incidence of skin irritation in low birthweight infants. For circumcision performed outside of the newborn period, a Gomco clamp and/or sleeve/dorsal slit techniques are used, and general anesthesia is the standard of care.

Overall, circumcision is common in the United States, most often performed in the newborn period. Pediatricians should be knowledgeable about the procedure, contraindications to neonatal circumcision, indications for circumcision later in life, and risks and benefits of circumcision. The choice of whether to circumcise a child is a deeply personal one for families. As the AAP endorses, pediatricians should be prepared to navigate the discussion of whether to circumcise, and if so, in which setting and at what age, in an unbiased manner, in accordance with the family's and patient's desires/wishes.

Comments: I found it fascinating that the 2012 AAP policy statement on circumcision included the review of more than 1,000 articles, and the Centers for Disease Control and Prevention has released a public policy statement that endorses the findings of the AAP statement. Amazing how much thought and careful review of evidence goes into well-developed statements to guide parents, health-care providers, and the public at large.

Although circumcision remains a decision by parents, studies have noted that most parents have made the decision to perform circumcision before any discussion with health-care providers. To ensure that parents are making the decision with evidence and the most up-to-date information, it is imperative to consider the value of prenatal pediatric visits as a venue for this discussion and also ensure the education regarding benefits and risks of circumcision to those in family medicine and obstetrics who may also have dialogues with families during the pregnancy.

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CORRECTION

In the October 2022 issue of *Pediatrics in Review*, in the Index of Suspicion article Leukocytosis in the Newborn, an incorrect dosage was noted. Patient 2 was given a 2-mL/kg bolus of 10% dextrose in water via umbilical venous catheter, and not a 2-mg/kg bolus, as published. The journal regrets this error.

ANSWER KEY FOR DECEMBER PEDIATRICS IN REVIEW

Pediatric Craniomaxillofacial Trauma: 1. D; 2. A; 3. B; 4. C; 5. B.
Care of the Well Newborn: 1. B; 2. C; 3.D; 4. D; 5. D.
Cough Conundrums: A Guide to Chronic Cough in the Pediatric Patient: 1. A; 2. E; 3. C; 4. E; 5. A.