

## Should newborns be circumcised?

YES

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Compelling published medical evidence, particularly over the past 20 years, has shown that circumcision offers protection against multiple medical conditions.<sup>1</sup> The most important role of primary care physicians, particularly when caring for children, is preventive health care, as exemplified by childhood immunizations. Consider newborn circumcision as a vaccine that has a preventive health role against not one but many disorders. In chronological order from infancy through old age these include severe infant urinary tract infections (UTIs) during the first year of life; local penile infections (balanoposthitis) and mechanical retraction problems (phimosis) in childhood; sexually transmitted diseases, particularly HIV and AIDS, in young adults; and penile and cervical cancer in older adults. Circumcision makes genital hygiene easier throughout life.

### Protective effects and benefits

Most excitement and public awareness has been engendered by 3 recent, separate randomized controlled studies from Africa that have shown that circumcision offers a 60% to 70% protective effect against the heterosexual acquisition of HIV,<sup>2</sup> an effect equivalent to that of many vaccines. The results of these studies were so compelling that the trials had to be stopped early, as it was no longer ethical to put men in the uncircumcised control group. The protective effect of circumcision against HIV has been recognized since the 1980s and was confirmed by more than 30 observational studies before the randomized controlled trials, which are the criterion standard of clinical research. The mechanism whereby the foreskin predisposes to HIV acquisition has been elucidated. It was originally thought that the delicate foreskin tears during intercourse, creating tiny abrasions through which the virus enters, and, indeed, this probably plays a role. But considered more important are studies showing that the virus preferentially attaches to phagocytic cells in the foreskin (Langerhans cells), which cannot kill the virus, and it enters the body. The preventive effect of circumcision against HIV has now officially

been accepted by the World Health Organization, the United Nations, and the National Institutes of Health, and some African countries have begun adult circumcision as a public health measure.

Protection against other sexually transmitted infections is well documented.<sup>3</sup> It has long been known that the presence of a foreskin is a risk factor in acquiring syphilis and chancroid. Within the past decade, a large multinational study has shown that uncircumcised men are 3 times more likely than circumcised men to be carrying the human papillomavirus on the penis,<sup>4</sup> and that antibodies against *Chlamydia* infection are twice as common in women with uncircumcised male partners. Protection against human papillomavirus and *Chlamydia* might be most important in developed countries, where the prevalence of heterosexual HIV infection is low.

Of greatest importance to pediatricians is the role of the foreskin in predisposing infants to severe UTIs during the first year of life.<sup>5,6</sup> It was first recognized in the 1980s that, although UTIs later in childhood are most common in girls, as in women, during the first 12 months of life, severe UTIs (pyelonephritis) predominate in boys. Several studies have proven that during this time period, uncircumcised male infants are about 10 times more likely to develop UTIs than are circumcised infants. These infant UTIs lead to high fever, generalized symptoms, and occasionally to disseminated infection (sepsis, meningitis). Tubular sodium loss can lead to high aldosterone levels. Follow-up studies often find evidence of renal scarring. As with HIV, the mechanism has been described. Uropathic bacteria, usually fimbriated *Escherichia coli*, stick to the moist foreskin (though not to the glans) and ascend up the urinary tract to cause renal infection.

Genital cancer is more common in uncircumcised men and the female partners of uncircumcised men. Penile cancer is seen almost exclusively in uncircumcised men.<sup>7</sup> Although it is an uncommon disease (about 1200 cases in the United States annually), it is a

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The parties in this debate will have the opportunity to refute each other's arguments in Rebuttals to be published in an upcoming issue.

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devastating, invasive disorder, usually requiring penectomy. Cervical cancer has long been known to be less common in ethnic groups that perform circumcision (Jews and Muslims). Having multiple uncircumcised sexual partners beginning at an early age is a strong risk factor for cervical cancer. It has been shown that human papillomavirus is the causative agent for both penile and cervical cancer, and, as noted, this virus is more commonly carried by uncircumcised men.<sup>4</sup>

Anecdotally, some have claimed that the foreskin is important for normal sexual activity and improves sexual sensitivity. Objective published studies over the past decade have shown no substantial difference in sexual function between circumcised and uncircumcised men.<sup>8</sup> Indeed, circumcised men were found to have more varied sexual activity, and a study in Middle America showed that women preferred circumcised penises, mainly for reasons of improved hygiene.<sup>9</sup>

### Age at circumcision

The ideal time for circumcision—the window of opportunity—is when a child is first born. Newborns are extremely resilient and are programmed for stress, having just experienced the trauma of birth. They have high levels of corticosteroids, epinephrine, androgens, thyroxine, and endorphins. They heal quickly, and, when clamps are used (Gomco, Mogen, or Plastibell), the thin foreskin precludes the need for sutures. In the hands of an experienced physician, the complication rate is lower than 0.5%, and complications are usually minor. Local anesthesia should always be used. At older ages circumcision is riskier, more complicated, and about 10 times more expensive.

It is time for the medical establishment to recognize the compelling evidence favouring newborn circumcision<sup>10</sup> and catch up to the public (80% of American males are circumcised). ❁

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### Competing interests

None declared

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### CLOSING ARGUMENTS

- Circumcision results in several important health advantages over the lifetime.
- Benefits include protection against HIV and AIDS, human papillomavirus, other sexually transmitted infections, genital cancer, and severe infant urinary tract infections.
- The many advantages of circumcision far outweigh the surgical risks, which are low (about 0.5%) and usually minor.
- The newborn period is the ideal time because of ease of surgery, high levels of stress- and pain-controlling hormones, and rapid healing. Local anesthesia should always be used.

