

Summary Statement Title:

Male circumcision and risk of syphilis, chancroid, and genital herpes: Evidence and implications for public health

Quality Assessment Rating: 6 (moderate)

Review on which this summary statement is based:

Weiss, H.A., Thomas, S.L., Munabi, S.K., & Hayes, R.J. (2006). **Male circumcision and risk of syphilis, chancroid, and genital herpes: A systematic review and meta-analysis.** *Sexually Transmitted Infections*, 82(2), 101-110.

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This is a summary statement written to condense the work of the authors of this systematic review, referenced above. The intent of this summary is to provide an overview of the findings and implications of the full review. For more information on individual studies included in the review, please see the review itself.

Review content summary

A systematic review of 26 studies (cohort, case-control, and cross sectional) and meta-analysis were performed to determine whether an association exists between male circumcision and infection with ulcerative sexually transmitted infections (STIs), including herpes simplex virus type 2 (HSV-2), *Treponemum pallidum*, and *Haemophilus ducreyi* (the causative agents of syphilis and chancroid respectively). Studies were restricted to those focused on males, with outcomes based on serological evidence of infection, not disease. Authors excluded studies from countries where overall prevalence of circumcision is either extremely high or low, or where more than 99% of the population is Muslim. They also excluded case series of genital ulcer disease patients or HIV positive individuals. Findings suggest that circumcised men are at lower risk of syphilis and chancroid. A lesser association was found with HSV-2.

Comments on this review's methodology

This review is of moderate methodological quality. The authors formed a clearly focused research question, and described the criteria used to select primary studies with the exception of research design. They searched two electronic health databases from 1950 to 2004, and reviewed reference lists of retrieved articles. The search strategy could have been more comprehensive by including more databases, contacting key experts, and searching for unpublished studies. The level of evidence of the primary studies was clearly outlined. The authors failed to assess the methodological quality of primary studies, but did extract data on various quality issues (including study design, sample size, participation rates, loss to follow up, and confounders adjusted for). The transparency of the data extraction was not stated. The authors detected significant heterogeneity among studies, and used random effects models to summarise the data. Lastly, studies were weighted appropriately.

Why is this issue of interest to public health?

STIs are of significant public health concern in Canada.¹ The incidence of STIs is rising, and therefore an increasing proportion of the population is at risk of acquiring or transmitting an STI.¹ Canadian data on HSV-2 prevalence is limited, but it is thought to be highly prevalent.² In the United States, an estimated 1,640,000 HSV-2 seroconversions occur yearly.² In Canada, the rates of syphilis have risen significantly since 1997.³ The overall rate in 2004 more than doubled from 2002 and was over 9-fold higher than in 1997.³ In 2000, chancroid was removed from Canadian surveillance as rates were very low.⁴ The presence of any one of these ulcerative STIs increases one's risk of contracting HIV.¹ For example, individuals who have genital ulcers caused by syphilis are three to five times more likely to contract HIV.³ In addition, the physical, emotional, and social consequences of STIs may present significant challenges for affected individuals.¹ Male circumcision could provide a direct benefit in reducing the risk of ulcerative STIs, as well as an indirect benefit in protecting against HIV.

Evidence and implications

Evidence points are not in order of the strength of the evidence.

What's the evidence?	Implications for practice and policy:
<p>1. HSV-2 seropositivity (10 studies (6 with low risk men, 4 with men at higher risk for STIs), 6492 participants)</p> <p>1.1. In 6 studies that adjusted for age and at least one measure of sexual behaviour, circumcised men had 15% lower risk of HSV-2</p>	<p>1. Male circumcision and HSV-2</p> <p>1.1. Given the protective effect of male circumcision on HSV-2, male circumcision may be introduced as a prevention measure particularly in areas</p>

<p>seropositivity than uncircumcised men. The true risk ranged from 26% to 2% lower risk of HSV-2 seropositivity (RR=0.85, 95% CI 0.74 to 0.98).</p> <p>1.2. Similar results were observed in all 10 studies (regardless of the adjustment for confounders) and in studies where circumcision occurred before first sexual intercourse.</p> <p>1.3. HSV-2 and HIV (6 studies examining the effect of male circumcision on both HIV and HSV-2)</p> <p>1.3.1. Circumcised men were 66% less likely to acquire HIV than uncircumcised men. The true risk of contracting HIV ranged from 82% to 38% lower risk (RR=0.34; 95%CI 0.18 to 0.62).</p>	<p>where prevalence of HIV and ulcerative sexually transmitted infections is high.</p> <p>1.2. Male circumcision appears effective in reducing risk for HIV and therefore should be promoted.</p>
<p>2. Syphilis seropositivity (14 studies 22214 participants)</p> <p>2.1. In studies that adjusted for age and at least one measure of sexual behaviour, circumcised men had 31% lower risk of syphilis seropositivity than uncircumcised men. The true risk ranged from 50% to 6% lower risk of syphilis seropositivity (RR 0.69, 95% CI 0.50 to 0.94).</p> <p>2.2. The most protective effect was observed in men with circumcision before first sexual intercourse, with a 46% lower risk of syphilis seropositivity compared to uncircumcised men, with the true risk ranging from 66% to 17% lower risk (RR=0.54, 95% CI 0.34 to 0.83).</p>	<p>2. Male circumcision and syphilis</p> <p>2.1. Given the protective effect of male circumcision on syphilis, male circumcision may be introduced as a prevention measure particularly in areas where prevalence of HIV and ulcerative sexually transmitted infections is high.</p>
<p>3. Chancroid (7 studies, 5145 participants)</p> <p>3.1. Meta-analysis was not carried out for this outcome because the definition and ascertainment of the outcome varied between studies and the comparison groups varied considerably and some included men with other sexually transmitted infections.</p> <p>3.2. Six of the seven studies found a reduced risk of chancroid among circumcised men, with four of these studies reporting statistically significant results. The one study confirming chancroid serologically found no association with circumcision.</p>	<p>3. Male circumcision and chancroid</p> <p>3.1. While stronger evidence is needed from more rigorous research designs, the best evidence available at this time supports the promotion of male circumcision as a strategy for reducing the risk of chancroid, and should be promoted particularly in areas where prevalence of HIV and ulcerative sexually transmitted infections is high.</p>
<p>4. Methodological issues of included primary studies</p> <p>4.1. Weak study design</p> <p>4.2. Low participation rates</p> <p>4.3. Failure to adjust for Important confounders in the analyses</p> <p>4.4. Failure to use valid outcome measures</p>	<p>4. Methodological issues</p> <p>Additional high quality research is needed in this field, with specific attention paid to</p> <p>4.1. Study design</p> <p>4.1.1. Prospective cohort studies need to be conducted to strengthen the body of literature in this area</p> <p>4.2. Incentives offered to encourage participation</p> <p>4.3. Controlling for important confounders</p> <p>4.4. Valid outcome measurement</p> <p>4.1.2. Circumcision should be confirmed by physical exam</p> <p>4.1.3. Sexually transmitted infections should be laboratory-confirmed</p>
<p>5. Cost benefit or cost-effectiveness information</p> <p>5.1. No cost related information was included in the review.</p>	<p>5. Cost benefit or cost effectiveness information</p> <p>5.1. Future research should address cost benefit information</p>
<p>General Implications</p> <ul style="list-style-type: none"> • There is good evidence suggesting that circumcised men have lower risk of HSV-2 and syphilis compared to uncircumcised men, therefore male circumcision may be introduced as a prevention measure particularly in areas where prevalence of HIV and ulcerative sexually transmitted infections is high. • The evidence is less convincing regarding the impact of male circumcision on the risk of chancroid due to weaker study designs. Additional high quality research should be conducted with particular attention paid to <ul style="list-style-type: none"> ○ Study design ○ Increasing participation rates ○ Controlling for important potentially cofounding variable ○ Valid outcome measures 	

References used to outline issue

1. Public Health Agency of Canada. (2004). *Canadian sexually transmitted infections surveillance report*. Retrieved from http://www.phac-aspc.gc.ca/publicat/ccdr-rmtc/07pdf/33s1_e.pdf
2. Public Health Agency of Canada. (2008.) *Genital herpes simplex virus (HSV) infections*. Retrieved from <http://www.atlantique.phac.gc.ca/std-mts/sti-its/pdf/504genherp-vhs-eng.pdf>
3. Health Canada. (2004). *Syphilis*. Retrieved from <http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/diseases-maladies/syphilis-eng.php>
4. Public Health Agency of Canada. (2006). *Notifiable diseases on-line: Chancroid*. Retrieved from http://dsol-smed.phac-aspc.gc.ca/dsol-smed/ndis/disease2/chan_e.html

Other quality reviews on this topic

- Elwy, A.R., Hart, G.J., Hawkes, S., & Petticrew, M. (2002). Effectiveness of interventions to prevent sexually transmitted infections and human immunodeficiency virus in heterosexual men: A systematic review. *Archives of Internal Medicine*, 162(16), 1818-1830.
- Herbst, J.H., Beeker, C., Mathew, A., McNally, T., Passin, W.F., Kay, L.S., Crepaz, N., Lyles, C.M., Briss, P., Chattopadhyay, S., & Johnson, R.L. (2007). The effectiveness of individual-, group-, and community-level HIV behavioural risk-reduction interventions for adult men who have sex with men: A systematic review. *American Journal of Preventive Medicine*, 32(4 suppl.), S38-S67.

Related links

- Centers for Disease Control and Prevention. Sexually Transmitted Diseases <http://www.cdc.gov/std/default.htm>
- National Collaborating Centre for Infectious Diseases <http://www.nccid.ca/en/home>
- Public Health Agency of Canada. Infectious Diseases. Sexually Transmitted Infections <http://www.phac-aspc.gc.ca/id-mi/az-index-eng.php#st>

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http://www.health-evidence.ca/documents/18758/Weiss_2006_Summary_Statement_-_English.pdf

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