



# circumcision

a lifetime of medical benefits



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## Human Immunodeficiency Virus (HIV) Infection/AIDS: **NEW**

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Uncircumcised men were first shown to be more likely to acquire heterosexual HIV infection over a decade ago, in articles in the leading medical journals "Lancet" and "New England Journal of Medicine". Since then over 40 separate studies have shown that uncircumcised men are more likely to become infected with HIV on heterosexual exposure. The ease with which the foreskin tears during intercourse, leaving mini-abrasions through which the virus enters, can lead to the infections. It has recently been shown that certain specialized cells in the foreskin, Langerhans cells, can trap the HIV virus and promote infection.

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**SIMONSEN, JN ET AL: N ENGL J MED 1986;319:274-8**

**NAIROBI STD CLINICS**

**340 MEN (11.4% HIV ANTIBODY POSTIVE)**

"MEN WHO WERE UNCIRCUMCISED WERE MORE LIKELY TO HAVE HIV (ODDS RATIO 2.7; P=0.003). THE INTACT FORESKIN MAY OPERATE TO INCREASE THE SUSCEPTIBILITY TO HIV."

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**RISK OF HIV-1 SEROCONVERSION 40 WEEKS AFTER SEXUAL EXPOSURE TO PROSTITUTES (85% INFECTED)**

**Cameron DW et al., Lancet. 1999 Aug 19;3(8660):403-7.**

CIRCUMCISED MEN	2.5%
CIRCUMCISED WITH GENITAL ULCER	13.4%
UNCIRCUMCISED	29.0%
UNCIRCUMCISED WITH GENITAL ULCER	52.6%

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## The African AIDS Epidemic

(Caldwell & Caldwell - Scientif Amer Mar 1996, p. 62)

CONCLUSION

"In the AIDS belt, lack of male circumcision in combination with risky sexual behavior, such as having multiple sex partners, engaging in sex with prostitutes and leaving chancroid untreated has led to rampant HIV transmission."

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## The African AIDS Epidemic

(Caldwell & Caldwell - Scientif Amer Mar 1996, p. 62)

- Transmission is by heterosexual intercourse
- Female:male infection rate 1.2
- Most HIV-positive women catch the virus from their spouse, then pass it on vertically to their children

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## Prospective Studies Relating Lack of Circumcision to Heterosexual HiV Transmission

(Moses, S. et al, Sex Transmis Inf 1998; 74:368)

Study	Risk Ratio	Confounders Centralised
1. Cameron (1984) Kenya	8.1	Yes
2. Tyndall (1990) Kenya	4.5	No
3. Teltak (1990) USA	3.5	Yes
4. Mehendale (1993) India	3.0	Yes
5. Kasler (1994) USA	2.9	Yes
6. Lavreys (1993) Kenya	2.3	Yes
7. Kapiga (1993) Tanzania	3.4	Yes
<b>Mean</b>	<b>4.0</b>	

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## Epidemiological Studies Relating Lack of Circumcision to HIV Transmission

(Moses, S. et al, Sex Transm. Inf. 1998;74:368)

- 30 studies - positive statistical correlation
- 5 studies - positive correlation - not statistically significant
- 5 studies - no effect
- 1 study - negative statistical correlation (higher risk in circumcised)
- All 7 prospective studies showed a positive statistical correlation

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## SEXUAL TRANSMISSION OF HIV

Royce et al. NEJ Med 1997, 336:1072

"Male circumcision consistently shows a protective effect against HIV infection"

1. HIV prevalence 1.7-8.2 times as high in uncircumcised
2. Abundance of Langerhans cells in foreskin
3. Receptive HIV environment between foreskin and glans

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## Circumcision : HIV and Other STDs in Kenya Truckers

(Lavreys et al, J Inf Dis 1999; 180:330)

- Uncircumcised status associated with increased risk of acquiring HIV (4x) and genital ulcer disease (2.5x), after controlling for confounders.

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## Circumcision and HIV Infection in Homosexual Men

(Kreiss & Hopkins, *J. Infect. Dis.* 1993;168:1404)

- ◆ 502 homosexual men - Seattle, WA
- ◆ 85% circumcised
- ◆ HIV infection significantly associates with uncircumcised status (Odds ratio, 2.2)

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## Studies Relating Circumcision Status to "Conventional" STDs

(Moses, S. et al, *Sex Transm. Inf.* 1998;74:368)

STD	# Studies Circ Protective	# Studies No Effect	# Studies Circ High Risk
Chancroid/Syphilis	11	0	0
Gonorrhoea	5	2	0
Genital Herpes	2	4	0
Other Urethritis	2	3	3
Genital Warts	1	1	1

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## Male Circumcision and HIV Infection: 10 Years and Counting

(Halperin & Bailey, *Lancet* 1999; 354:1813)

- The evidence of association between lack of male circumcision has been met with fierce resistance, cautious skepticism, or more typically utter silence.
- It is time to offer safe, voluntary male circumcision with pain control in areas of high HIV prevalence. This has been adopted on a trial basis in Western Kenya.

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## Table 1: June 1998/WHO Estimates of HIV Seroprevalence in Selected African Countries

Largely Uncircumcised		Largely Circumcised	
Zimbabwe	25.84	Cameroon	4.89
Botswana	25.10	Nigeria	4.12
Namibia	19.94	Liberia	3.65
Zambia	19.07	Sierra Leone	3.17

[From Halperin D, Bailey R. "Male Circumcision and HIV Infection: Ten Years and Counting." *The Lancet* 1999;354:1813-15]

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## Table 2: June 1998/WHO Estimates of HIV Seroprevalence in Selected Asian Countries

> 80% Uncircumcised		> 80% Circumcised	
Cambodia	2.40	Pakistan	0.09
Thailand	2.23	Philippines	0.06
Myanmar	1.79	Indonesia	0.05
India	0.82	Bangladesh	0.03

[From Halperin D, Bailey R. "Male Circumcision and HIV Infection: Ten Years and Counting." *Lancet* 1999; 354: 1813-15]

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## Heterosexual Transmission of HIV

(Quinn et al. *NEJMed* 2000;342:921-9)

- Rural Uganda (Rakai)
  - 415 HIV serodiscordant couples
    - 228 male positive,
    - 187 female positive, at baseline
- Followed for up to 30 months (median 22.5)

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## Heterosexual Transmission of HIV (cont)

(Quinn et al. NEJMed 2000;342:921-9)

- Viral load chief predictor - transmission rare with < 1500 copies of HIV-IRNA per ml
- Of 187 couples with female positive/male negative - 16.7 conversions per 100 person years in 137 uncircumcised males; **no conversions in 50 circumcised males regardless of viral load (p < 0.001)**

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Wilson, RA - Circumcision & VD, Can MAJ 45:54, 1947

**Gonorrhea** - the foreskin after coitus retains infectious mucus - ideal environment of moisture and warmth - organisms multiply and contaminate urethral mucosa.

**Syphilis** - tears and abrasions of the foreskin are commonly seen on sick parade. Small abrasions of the delicate coronal membrane occur during brothel intercourse. Both provide a portal of entry for the spirochete.

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## HIV in Long Distance Truck Driver - E. Africa

(Bwayo, et al., Arch. Int. Med., 1994;154:139f)

970 truck drivers

"The strongest correlates of HIV seropositivity were uncircumcised status and history of both ulcerative and nonulcerative STDs".

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## How Does Male Circumcision Protect Against HIV?

Szabo R, Short RV. BMJ. 2000 Jun 10;320(7249):1582-4

"The inner surface of the foreskin contains Langerhans' cells with HIV receptors; these cells are likely to be the primary point of viral entry into the penis of an uncircumcised man"

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## Mass Circumcision in Malaysia 2004

- Proposed to promote racial harmony in the country by encouraging mass circumcision.
- Muslims circumcised, growing popularity among non-Muslims who see it as good hygienic practice.

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## AIDS in the United States 2002 (CDC)

- Since the 1980's 886,575 cases
  - Males 718,002 (81%)
  - Females 159,271 (18%)
  - Children 9,300 (1%)
- Cumulative deaths 501,669 (57% of cases)
  - Adults 96,354 (99%)
  - Children 5,315 (1%)

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### Worldwide AIDS in 2003

- 40 million people living with HIV/AIDS  
(2.5 million children)
- 5 million new cases  
(700,000 children)
- 3 million deaths  
(500,000 children)

### Acceptance of Adult Medical Circumcision in Africa (Onyango, T et al -AIDS Mtg, Wash. DC 9/18/02)

Nyanza, Kenya - Luo Tribe (3 mill)-no circumcision  
HIV Prevalence 28-35 %  
Rest of Kenya (circumcized) 15 %

74% of Luo men and 88% of women would circumcize their sons if they could afford it

75% of Luo men and women equate medical circumcision with greater cleanliness and less risk of STDs, particularly HIV

### Circumcision and HIV Infection in India (Pune) (Reynolds et al, Lancet 2004;363:1039)

Prospective study 1993-2000

2298 HIV-negative men from STD clinics

Circumcision was strongly protective against HIV -

Circumcised men 6-7 times less likely to get HIV on exposure.

Conclusion- foreskin important in sexual transmission of HIV

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