**Gender-related effects of expanded adult male circumcision programs in Southern Africa: The impact of power dynamics and potential risk compensation on heterosexual HIV transmission1,2,3**

Background

● Adult male circumcision has been found in three randomized controlled trials conducted in African populations to reduce female-to-male HIV transmission by approximately 60%.

● The potential for post-intervention risk-taking behavior to increase poses a significant threat to the successful use of any partially effective HIV prevention program, including adult male circumcision.

● In the case of male circumcision, risk compensation may be gender-specific and circumcision would confer direct protection only to men. Little is known about whether this has a substantial impact in populations where women are less able to negotiate safe sex.

Methods

●We used a dynamic, compartmental epidemic model for heterosexual HIV transmission and disease progression to simulate the population-level impact of expanded adult male circumcision programs in Southern Africa.4,5

●We incorporated gender-specific negotiation of condom use to capture the dominant role played by the male partner in these decisions.

●We calculated annual rates of movement between population groups defined by gender, disease stage and male circumcision status. We simulated various program scenarios and explored the effects of subsequent changes in sexual risk behavior, using input parameters and estimates for the population of Soweto, South Africa as an example.

●We used the model to predict the number of HIV infections averted over a 20-year period following 5-year expanded male circumcision programs, using varying assumptions regarding changes in post-intervention condom use for circumcised men.

Results

● Assuming present levels of circumcision remain constant, 142,000 male and 102,000 female new HIV infections would occur in Soweto over the next 20 years

● With *no change* in average condom use post-circumcision, a 5-year program with 10% coverage would prevent 22,000 male infections and 11,000 female infections over 20 years. However, with a *25% decrease* in average condom use post-circumcision, the program would instead prevent 9,000 male infections but cause an *additional* 1,000 (net) female infections over 20 years

● With *no change* in average condom use post-circumcision, a 5-year program with 20% coverage would prevent 36,000 male infections and 18,000 female infections over 20 years. However, with a *50% decrease* in average condom use post-circumcision, the program would instead prevent 4,000 male infections but cause an *additional* 12,000 (net) female infections over 20 years

Conclusions

● Programs offering male circumcision in Southern Africa may confer substantial health benefits in terms of HIV infections prevented, even for short-term programs with modest coverage goals.

● However, changes in sexual risk behaviors could greatly impact program outcomes and the consequences may be more severe for women. In certain scenarios, male circumcision programs could even result in increased transmission of HIV for women and men.

● In societies where women have less power to negotiate safe sex, decreased condom use by circumcised men could make women more susceptible to HIV infection. Women do not receive direct protection from male circumcision and they are therefore more vulnerable to risk compensation in men.

● Power in sexual negotiation of condom use may be an important factor when predicting outcomes of HIV prevention programs that do not provide benefits for women.

● As circumcision programs are implemented in Southern Africa, gender-specific risk reduction counseling and female-controlled methods for HIV prevention are urgently needed.