

Meeting the demand for male circumcision: an assessment of what is needed

## Potential male circumcision impact: overview of modelling efforts

by

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## WHO/UNAIDS Technical Consultation Male Circumcision and HIV Prevention: Research Implications for Policy and Programming Montreux, 6- 8 March 2007



# UNAIDS/WHO/SACEMA\*

- November 2005 Geneva: first meeting focused on evidence, data needs, questions, methodologies
- December 2004 Athens: presentation on progress to the UNAIDS Reference Group on Estimates, Modelling and Projections
- November 2007 Stellenbosch: second meeting focused on comparing modelling results and content of the decision-makers' programme planning tool
- March 2008 London: achieving consensus across the field on impact/costs and refining the decision-makers' tool to reflect modelling results

\*South African Centre for Epidemiological Modelling and Analysis

# Issues Discussed

- **Policy:** How can modelling the impact of male circumcision (MC) assist in decision making about policy and programme planning for HIV prevention services?
- **Questions:** What are the key questions that modelling can help us to answer?
- **Data:** What data are currently available and what new data are needed?
- **Approaches:** What kinds of models can we use to answer what kind of questions?

# November 2005

- What is the potential **impact of rolling out MC programming** in sub-Saharan Africa (SSA)? What does it depend on?
- What are the **costs** and **cost-effectiveness** of MC in SSA?
- What is the **most useful age range** to have the biggest impact on the epidemic: neonatal, pre-pubescent, pubescent, 18–24 years old, all males, before sexual debut?
- Effects of **targeting** by occupation or potential impact i.e. super spreaders, mineworkers, truck drivers, high HIV/low MC prevalence communities
- Likely **synergies** or not with other HIV prevention services
- How can MC impact models support refinement/further development of **modelling methods**?

# November 2005

- What are the **benefits to women**, given existing differential HIV prevalence? Direct, indirect, multiplier effects?
- What are the **possible synergies between HIV, HSV-2 and MC** (MC appears to have only a small impact on HSV-2 (OR  $\approx$  0.8–0.9) but the association between HSV-2 and HIV is very strong)?
- What role do **sexual networks** play in determining steady state HIV prevalence and what is the relative impact of MC (and other interventions) in different network contexts?

# November 2005

- What are the **cultural determinants** of current MC practices and how might these affect uptake of services? **How acceptable** is MC in different communities and how likely will it be that males will access services if these are made available?
- Differentiate between **total resources** required, **cost effectiveness** analysis (allows comparison with other prevention interventions), **cost utility** analysis (comparison with other health interventions), **benefit-cost** analysis (comparison with other cost-effective interventions).

# November 2005

- Identify **costs** to individuals, families, communities, governments
- Determine which other programmes are **competing** for the same money, human resources and/or facilities? Cost of different **models of service delivery**
- **Start up** and roll out costs: **marginal costs** with increasing coverage (lower or higher as more difficult-to-reach populations are served)
- **Costs of recruitment** by method used and factors that would influence effectiveness: age, targeting specific groups....
- Potential **synergies with other services**: STI treatment; HIV testing and counselling; gender sensitisation for young men, behavioural counselling and peer support.
- **Infections averted and costs over time** since benefits and costs may not occur in the same year (time of procedure, times of infection averted, time would have started on antiretroviral treatment).





# Stellenbosch November 15-16, 2007



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# 'Making Decisions on Male Circumcision for HIV Risk Reduction: Modelling the Impact and Costs'

Stellenbosch November 2007

- Review progress in modelling the potential impact of male circumcision since the November 2005 meeting
- Review approaches to costing and cost-effectiveness of male circumcision for HIV risk reduction.
- Assess a programme planning spreadsheet tool for decision-makers designed to:
  - show the time frame for impact on country's epidemic
  - calculate the costs of various programming choices for male circumcision, providing budgeting information in format for proposals
  - calculate cost per HIV infection averted by programming option (age at circumcision, provider, coverage, speed of scale up)
- Discuss the implications of the revised UNAIDS/WHO HIV survival estimate parameters for male circumcision modelling and costing

**Making Decisions on Male Circumcision for HIV Risk Reduction:  
Decision Makers' Programme Planning Tool and Consensus Statement  
London, March 2008**

- The benefits of male circumcision are likely to be large in populations with high HIV prevalence, with one HIV infection averted for every 5 to 15 male circumcisions performed.
- Women will benefit because of reduced HIV prevalence in their male partners, although the effect will be less than the direct effect for men and will take longer to materialise.
- Women who are sexual partners of circumcised HIV-negative men have less genital ulcer disease, *Trichomonas vaginalis* infection, and bacterial vaginosis, all of which have been associated with increased risk of HIV acquisition.

## Making Decisions on Male Circumcision for HIV Risk Reduction: Decision Makers' Programme Planning Tool and Consensus Statement London, March 2008

- Circumcision in HIV-positive men provides direct benefit to them of reduced genital ulcer disease, which may make them less likely to transmit both genital ulcer disease and HIV to their female partners.
- Although programmes need to provide good counselling on the dangers of newly circumcised men resuming sex before complete wound healing, any effects of early resumption on additional infections transmitted to the female partners of HIV-positive men will be small since the period of high risk is so short.

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- If risk compensation is confined to circumcised men and their partners, its impact on the projected effects of male circumcision on HIV incidence will be modest. On the other hand, the population level impact could be substantially less if risky behaviours increase across the entire adult population.
- At the population level, the impact of risk compensation on HIV acquisition with circumcision scale-up will be most pronounced in uncircumcised men, intermediate in women, and least in circumcised men. There is therefore a clear need for intensive social change communication campaigns, aimed at the whole population, to prevent increases in risk behaviours.

## Making Decisions on Male Circumcision for HIV Risk Reduction: Decision Makers' Programme Planning Tool and Consensus Statement London, March 2008

### Priorities:

- prioritise initially towards population sub-groups with the highest risk of HIV infection:
  - sexually transmitted disease clinic attendees
  - discordant couples identified during couple counselling
  - adult males 15-34 years old (25-34 highest in some settings).
- Changes in HIV incidence will take longer to emerge if circumcising neonates (lower costs and fewer adverse events) and males before sexual debut.
- Circumcising both adult males and neonates would maximise both short- and long-term effects.

## Making Decisions on Male Circumcision for HIV Risk Reduction: Decision Makers' Programme Planning Tool and Consensus Statement London, March 2008

### Rate of scale-up

- Faster initial rollout is substantially more cost effective than would appear intuitively at first glance. This is because the indirect effects accruing earlier mean more infections averted at lower cost per infection averted.

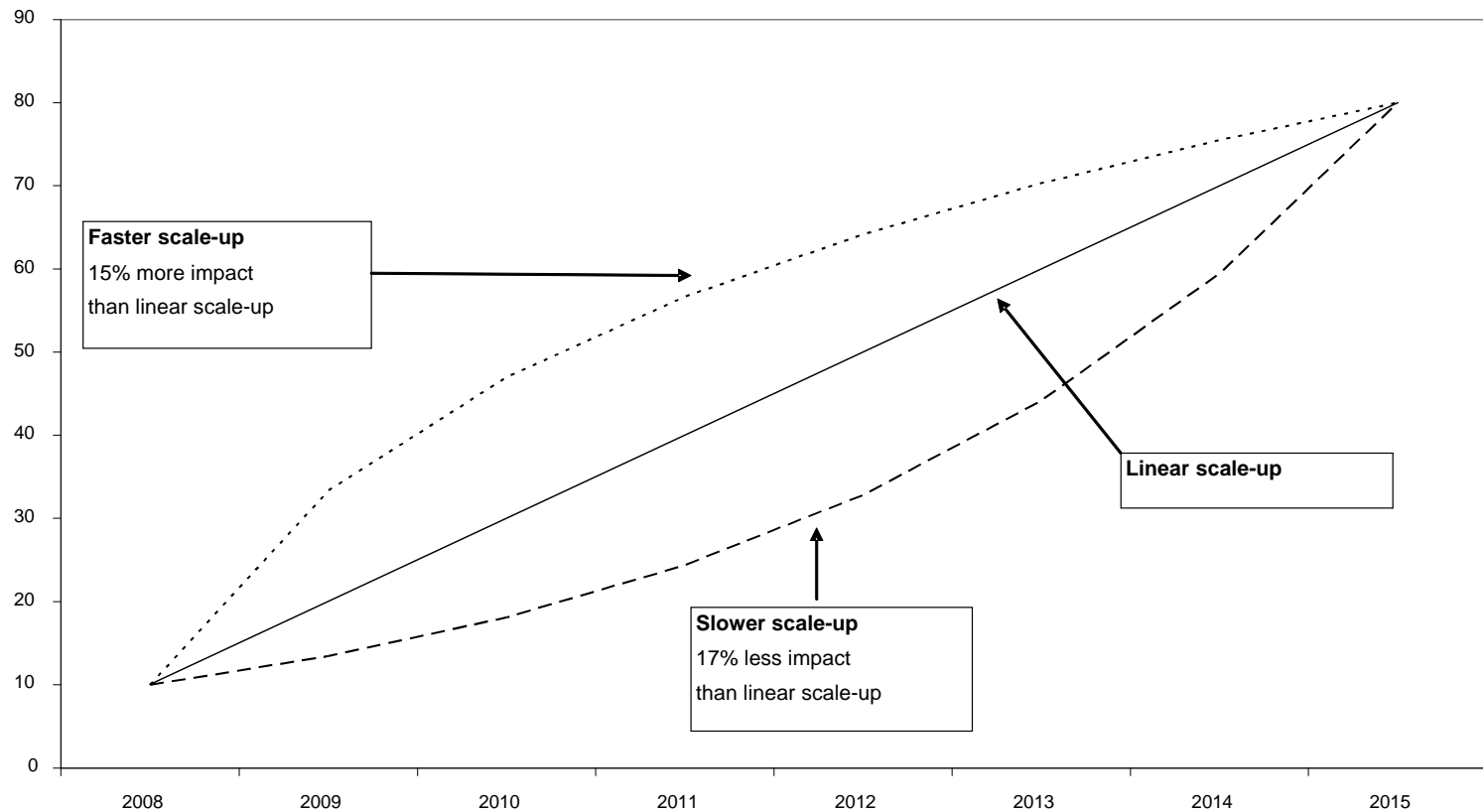
### Cost-effectiveness

- Male circumcision is a very cost-effective approach to preventing new HIV infections; the savings in future antiretroviral treatment costs will greatly exceed the cost of circumcision programmes.

# Impact of rate of scale-up of male circumcision services in Swaziland; Lesotho and Zambia

(Martin, Bollinger, Stover, Futures Institute)

Percent of Male Population Circumcised



Figure



# Summary

- A variety of models have been independently applied to different settings to estimate the overall impact on HIV incidence as male circumcision services are scaled-up, the relative impact among different population groups, cost-effectiveness, and the influence of other factors such as declining HIV incidence, potential changes in risk behaviour, and the effects of other programmes.

# Summary

- The UNAIDS/WHO/SACEMA London meeting (third in a series) of epidemiologists and mathematical modellers:
  - reviewed the work assessing the potential population level effectiveness of male circumcision for HIV risk reduction critically
  - drew general recommendations for the introduction or expansion of safe male circumcision services in high HIV prevalence settings.
  - The strong consensus that emerged will be published in a collaborative statement which includes the implications for programmatic decision-making and further research.
- Piloting of the decision makers' programme planning tool in 1 to 2 countries; training of country counterparts in the use of the tool