The public health impact of microbicides: model projections

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HIV/AIDS: where are we?

- Globally in 2001 5 million new HIV infections
- Greatest burden in sub-Saharan Africa
- Substantial potential for the epidemic to spread rapidly elsewhere:
  - the Indian government estimates that in 2000, 3.85 million infected with HIV
  - by 2010 20 million people in China may be HIV-infected
- For many women current prevention options offer little protection or control

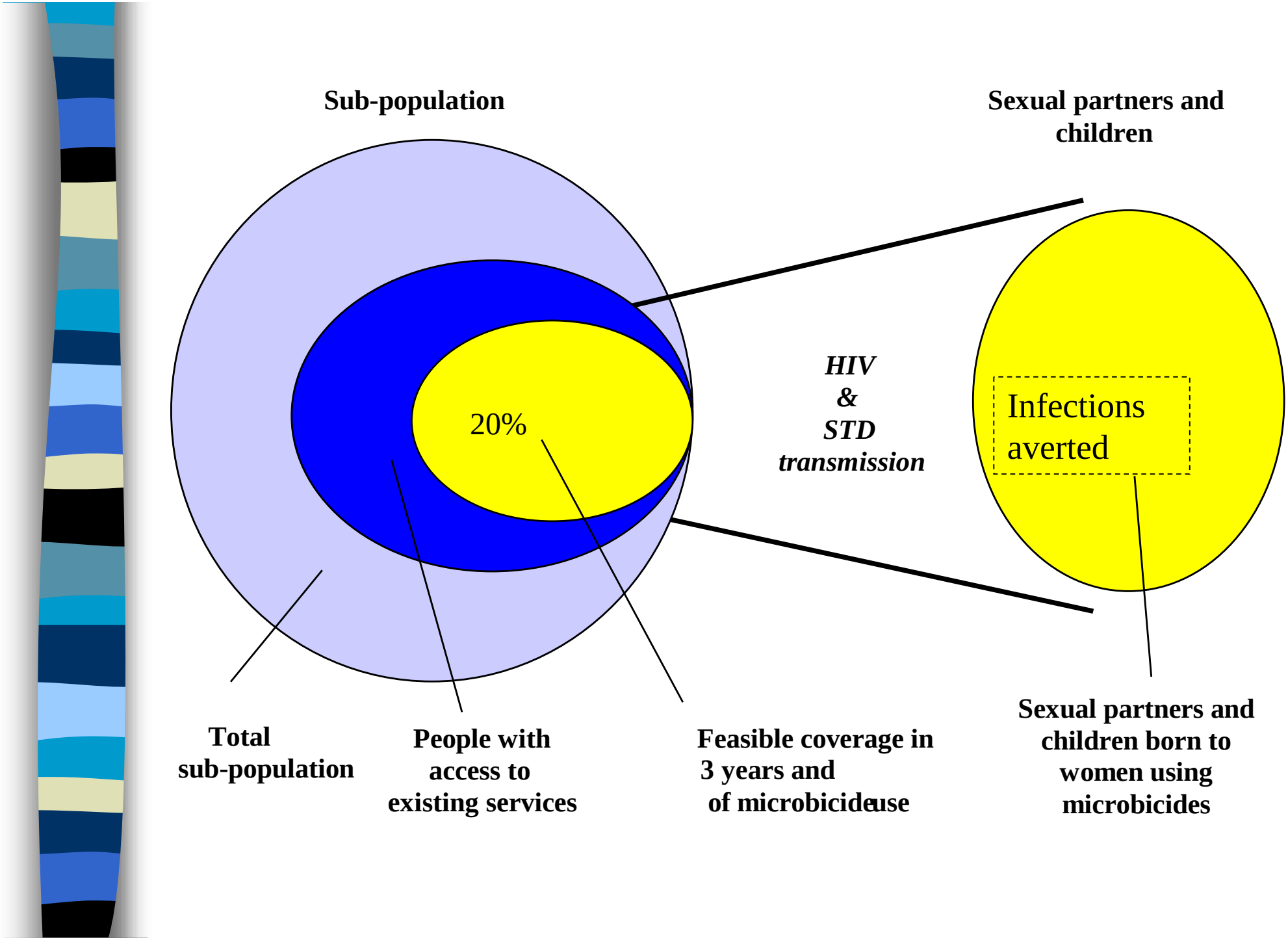
Would an efficacious microbicide make a difference?

Study aims:

- Estimate the potential impact on HIV transmission of widespread microbicide use in lower income countries
- Estimate the financial value of the associated health and productivity gains
- Explore how the projections of impact vary with microbicide coverage

Scope of estimate

- Examines public health impact in 73 lower income countries (countries with GDP < $1200 and all of Sub-Saharan Africa)
- Assumes that a 60% efficacious microbicide is used 50% of the time that a condom is not used by non-condom and inconsistent condom users
- Use 4 dynamic mathematical models to estimate the impact of microbicide use on the chain of HIV transmission in different sexual networks
- Regional estimates built up from country-specific analysis that uses demographic, epidemiological, behavioural and health service data
- Limited by forms of data available, the need to build up estimate from 4 models, and uncertainty over future course of the epidemic in many settings

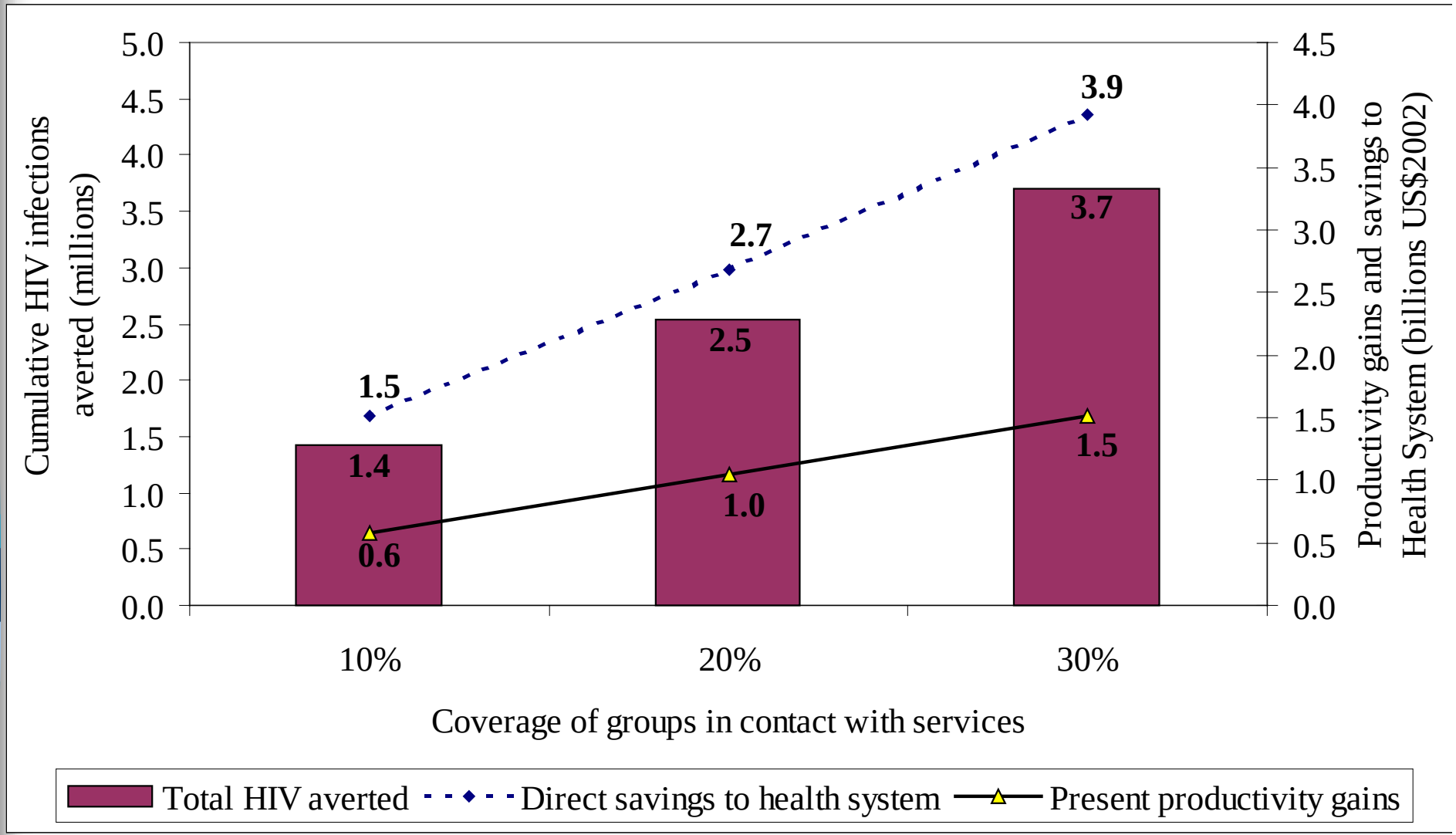

Sub-population
Sexual partners and children
20%
HIV & STD transmission
Infections averted
Total sub-population
People with access to existing services
Feasible coverage in 3 years and of microbicide use
Sexual partners and children born to women using microbicides

Methods to estimate cost savings

- Life-time cost of care associated with HIV (excludes ARTs) estimated using cost data studies and model of HIV progression
- Estimate allows for variation of costs and access to health service by country and low/middle income category
- Productivity losses estimated in terms of likely absences from work and cost of training replacement staff

	Cumulative HIV infections averted 3 years (millions)	Present value of direct cost savings to health system (billions)	Present value of productivity gains (billions),
60% HIV efficacy, 20% coverage of groups in contact with services			
East Asia and Pacific	0.79	1.30	0.43
Eastern Europe and Central Asia	0.13	0.20	0.04
Latin America and the Caribbean	0.05	0.06	0.03
South Asia	0.89	0.65	0.17
Sub-Saharan Africa	0.68	0.48	0.36
Total	2.54	2.69	1.04

Impact is driven by coverage



Summary of findings

- Widespread microbicide use has the potential to yield substantial public health gains
- At 20% coverage, a microbicide of 60% HIV efficacy could avert up to 2.5 million HIV infections over three years
- This impact translates into substantial health savings to already over-stretched economies
- Impact is dependent on coverage - so even a low efficacy microbicide used by a large number of women could have an important impact on HIV

Policy implications

Analysis highlights:

- Public and philanthropic investment in microbicides makes economic sense
- Importance of ensuring that poor women world-wide will have access to microbicides
- Need to plan ahead on how to move from product development to production and distribution
- Requires our commitment and action