

Stigma as a Barrier to the Elimination of New Infant Infections: Model Projections from an Urban PMTCT Program in South Africa

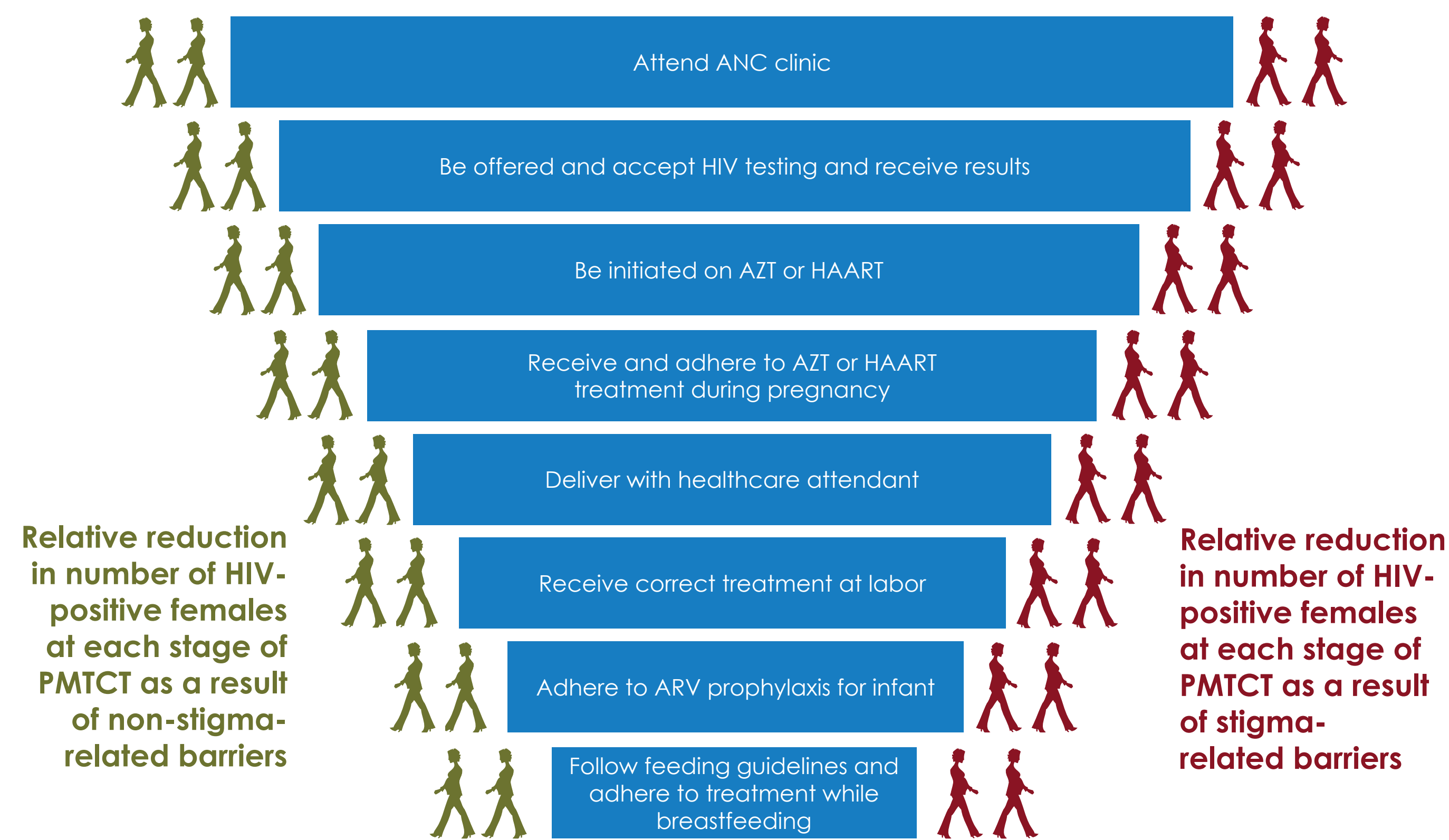
Holly Prudden,¹ Nicole Dzialowy,¹ Anna Foss,¹ Vivian Black,² Heidi Stöckl,¹ Nathan Wallace,³ Philippe Monfiston,³ Cathy Zimmerman,¹ Charlotte Watts,¹ Laura Nyblade⁴

¹London School of Hygiene and Tropical Medicine, ²Wits Reproductive Health and HIV Institute (WRHI), ³Futures Group, ⁴RTI International

Introduction

- Stigma and resulting discrimination, whether experienced or anticipated, have been documented as powerful barriers to uptake and retention in programs providing pregnant women living with HIV with services to prevent child infection and maternal deaths.
- However, the size of the potential impact of stigma and discrimination on numbers of new child infections and therefore on investments in programs to prevent these infections is unclear.
- The aim of this study was to quantify the extent to which mother-to-child transmissions (MTCT) can be attributed to stigma in an urban setting of South Africa.

A schematic representation of the WHO 2009 treatment guidelines for PMTCT, showing different stages of the cascade where women may be lost from the process as a result of stigma or non-stigma-related barriers.



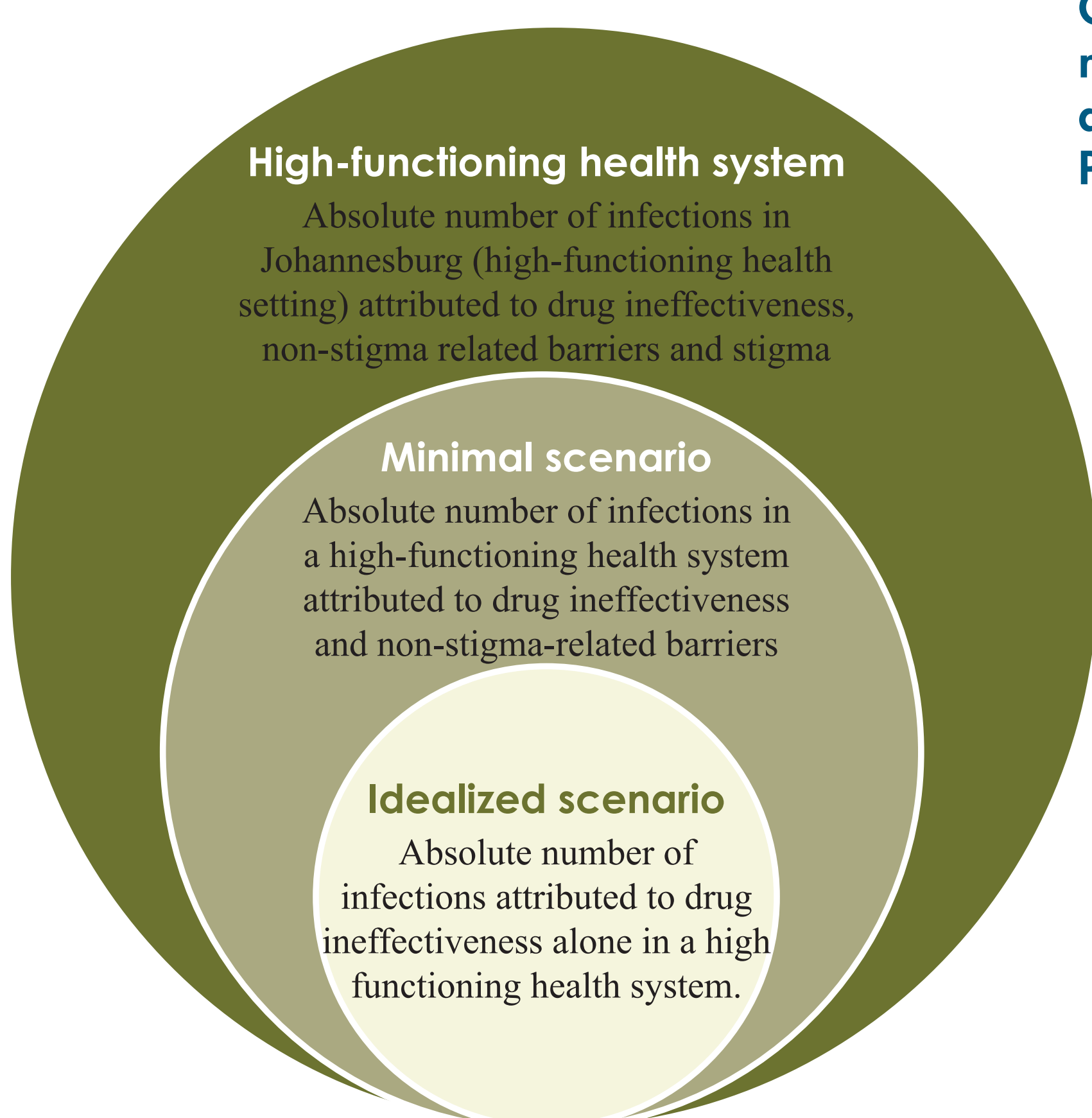
Methods

A static Excel worksheet mathematical model, incorporating the new WHO 2009 treatment guidelines for PMTCT, was developed, and clinical program data from a PMTCT program in Johannesburg were used to parameterize the model and simulate a high-functioning health system, in which women are affected by both stigma and non-stigma-related barriers. Non-stigma-related barriers include, for example, a number of issues such as healthcare system delivery barriers, access to care barriers, and incorrect adherence to treatment.

- A comprehensive literature review identified studies providing quantitative estimates most likely to reflect the number of women lost through PMTCT as a result of non-stigma-related issues, and this was verified through a number of key stakeholder interviews, provided additional evidence for the main non-stigma-related barriers for the setting in Johannesburg.
- From these estimates, a hypothetical “minimal” stigma scenario was created, reflecting only those infections thought to be attributable to non-stigma-related barriers, as well as infections that result from PMTCT drugs not being 100 percent effective.
- An “idealized” scenario estimated the number of transmissions that occur solely because PMTCT drugs [highly active antiretroviral therapy (HAART) only] are less than 100 percent effective.

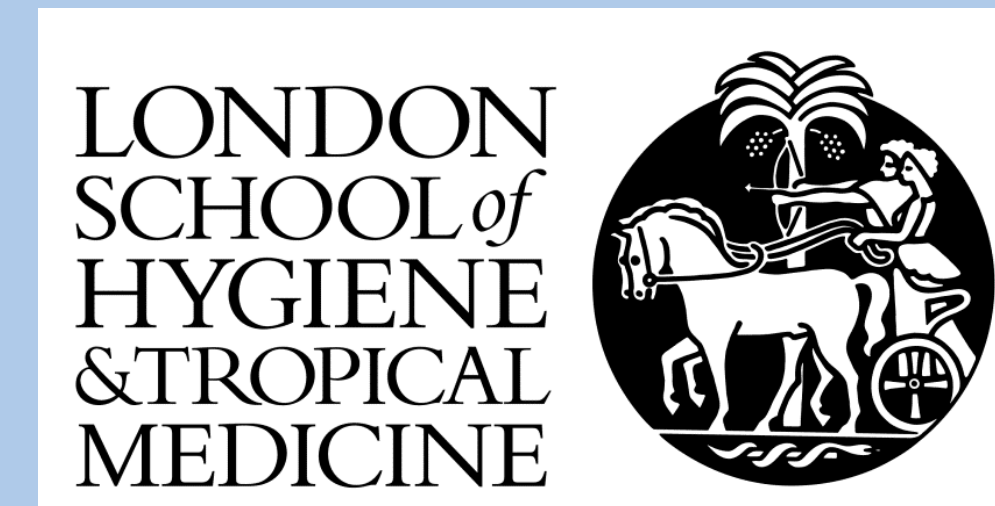
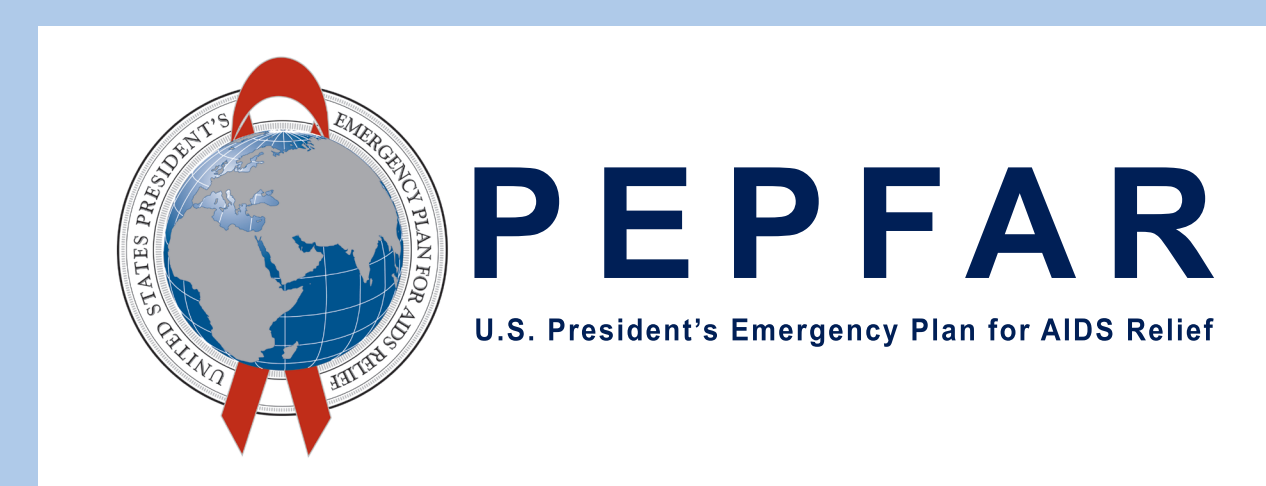
Conceptual diagram representing the number of infections in Johannesburg, attributable to different components of PMTCT failure.

- The Venn diagram illustrates the approach for estimating the relative differences in the number of infections attributable to each component of PMTCT. The difference between the outer circle (high-functioning system) and the middle circle (minimal scenario) provides the relative percentage of infections attributable to stigma alone, while the difference between the middle circle and the innermost circle (idealized circle) provides the relative percentage of infections attributable to non-stigma factors, therefore enabling estimates of the relative percentage of infections attributable to stigma alone to be obtained.



Stigma input parameters showing the absolute percentage of females who are lost from the PMTCT cascade at each stage for the three scenarios that were modeled

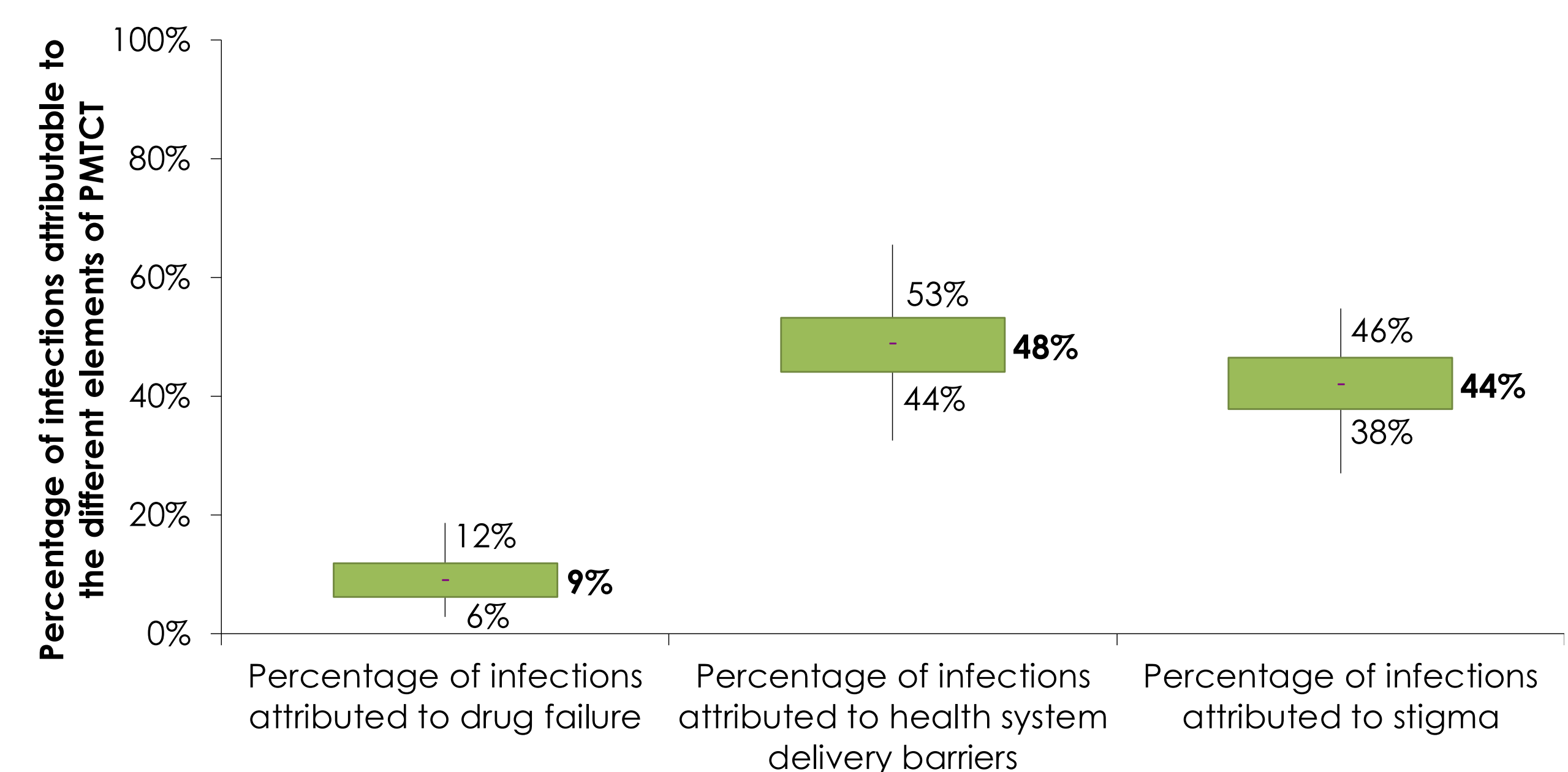
Absolute Percentage of Women Lost at Each Stage in the Cascade				
Stage		Idealized	Minimal Stigma	High Stigma
1	Percent of women accessing ANC	100	99	97.8
2	Percent of women offered and accept HIV test, results	100	99.1	93.2
3a	Percent of eligible women initiated on treatment (AZT)	100	95	92.3
3b	Percent of eligible women initiated on treatment (HAART)	100	80	48
4	Percent of women who adhere to treatment regimen	100	90	65
	Percent of women on AZT who give birth with skilled attendants	100	96	91.2
	Percent of women on AZT who receive proper treatment at delivery	100	90	86
5	Percent of infants who take 6 weeks of NVP	100	94	81
6	Percent of women who exclusively breastfed for 6 months	100	87	50



Results

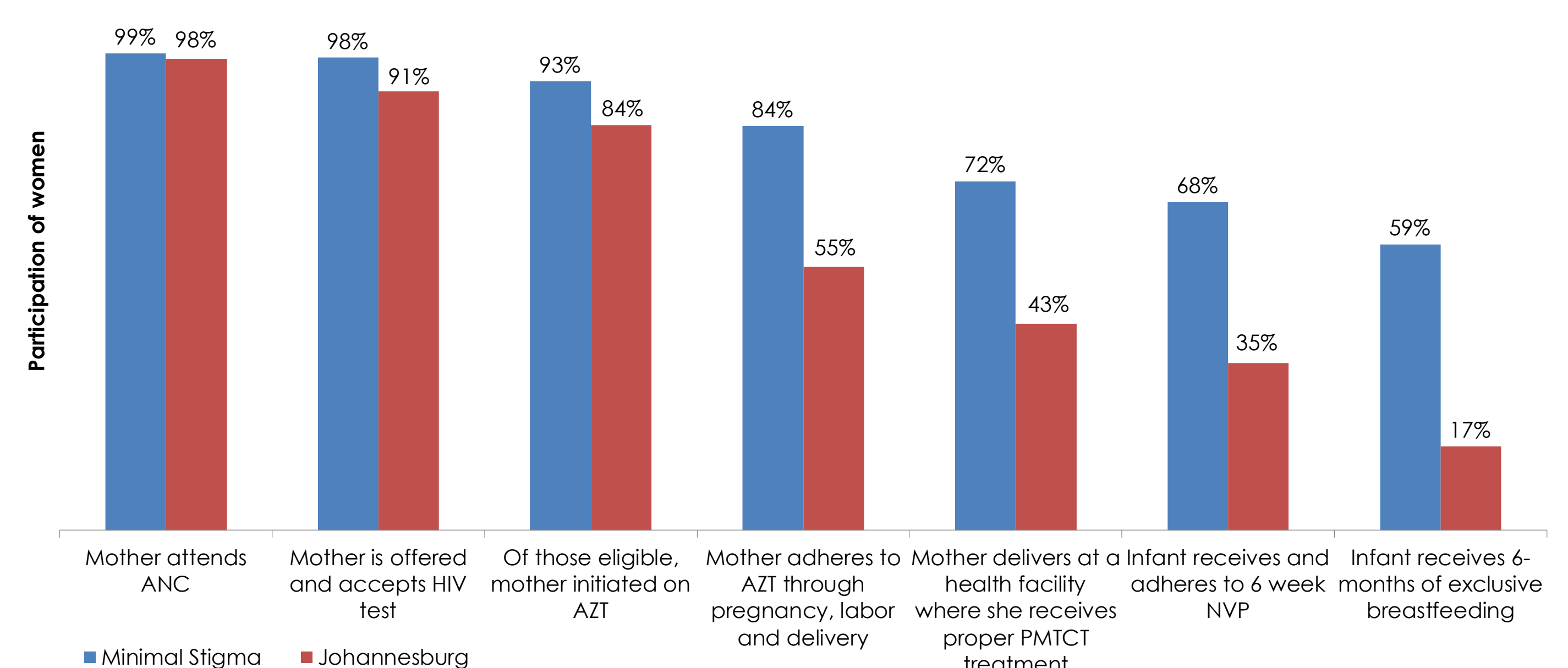
- Model projections show that if stigma could be reduced to “minimal” levels, 44 percent of all vertical transmissions may be averted, with interquartile range (IQR) estimating 38–46 percent.
- In addition, if non-stigma-related barriers could be eradicated, a further 48 percent of infections could be averted, IQR 44–53 percent.
- However, even under ideal circumstances, the model estimates infections would occur, because drug regimens do not provide absolute protection.

Uncertainty analysis showing the full range, interquartile range (IQR) and median values projected across the model simulations for the percentage of infections attributable to each component of the PMTCT programme. Median and IQR values are displayed.



The figure below shows the relative percentage decline in females who exit the PMTCT at different stages for the minimal scenario and the high-functioning health system in Johannesburg.

A modeled PMTCT cascade for pregnant women eligible for AZT treatment showing continuation rates under Johannesburg's current, high stigma setting and a projected minimal stigma setting. A similar cascade exists for women initiated on HAART treatment.



Conclusions

The model projections suggest HIV-related stigma may be an important barrier to the elimination of vertical HIV transmission. Alongside investment to strengthen the health system delivery of PMTCT, interventions to address HIV-related stigma need to be supported.

For more information, please see

Prudden, H., N. Dzialowy, A. Foss, V. Black, N. Wallace, P. Monfiston, C. Watts, and L. Nyblade. Forthcoming. “Modeling the Impact of Stigma on the Prevention of Mother-to-Child HIV Transmission for a Setting in South Africa.” *Working Paper #5*. Washington, DC: Futures Group, Health Policy Project and London School of Hygiene and Tropical Medicine.

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