



Mother-to-child transmission of HIV and South Africa's 'HIV warrior'

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Professor Glenda Gray is the President and CEO of the South African Medical Research Council; Director of International Programmes for HIV Vaccines Trial Network and the Programmes' co-principal investigator; Chairperson of the Board of the Global Alliance for Chronic Diseases; co-founder of the internationally recognised Perinatal HIV Research Unit in Soweto, South Africa; and the former Executive Director of the Perinatal HIV Research Unit, an affiliate of Wits University. Professor Gray is a member of the Institute of Medicine of the US National Academies and also of the Academy of Science of South Africa and she chairs its Standing Committee on Health. Time magazine named her as one of the 100 most influential people in the world in 2017.

HIV/AIDS – a spectrum of conditions caused by infection with the human immunodeficiency virus – is one of the major international infections experienced in the 20th and 21st centuries. Primarily spread by unprotected sex, the virus can also be transmitted from an infected mother to her newly born baby, and it is in this area of extreme risk that Professor Gray, a trained paediatrician, has devoted much of her work – while also playing a critical role in fighting ignorance, evasion and AIDS denialism.

While HIV infections were spreading across the world, the South African apartheid government's response was largely characterised by evasion, and for most of the population, ignorance was the predominant state of affairs. HIV and AIDS were diseases that were not spoken about. This situation was bad enough, and allowed the infection to spread without acknowledgement, but the real problem began under the Presidency of Thabo Mbeki who, along with his Minister of Health, steadfastly denied the existence of HIV and AIDS and undermined work that had been started.

Under these circumstances, Professor Gray's work in fighting ignorance and denialism became critical. She points out that she watched HIV 'explode' in South Africa during the 1990s, with increasing numbers of men, women and children succumbing to the effects of AIDS. She found herself battling the disease on two fronts: the government (which required determination and courage) and the virus (which required research). It was this combination of battles that turned her from being the doctor she had trained to be into a researcher. It was her intention that the research would not only serve to challenge the disease and its progress between and within individuals, but also provide the evidence needed to challenge denialism. It was a time when the wards of hospitals were increasingly filled with women and men; but it was especially with children amongst whom deaths started increasing.

In response to this situation, Professor Gray started, with Dr James McIntyre, a perinatal HIV clinic at Baragwanath Hospital in 1993 – one of the first in South Africa to provide testing and counselling for pregnant women, and to reach out to the surrounding community. In 1996, the clinic became, in addition to its other work, a research unit at Wits. In the same year, and in order to take the research work further, the UNAIDS PETRA (PErinatal TRANsmission) study looked at various durations of AZT/3TC therapy to reduce perinatal transmission. PETRA was a multicentred trial, for which Professor Gray was one of the investigators and she enrolled women for the study at Chris Hani Baragwanath Hospital.

Lives are not compartmentalised: people's activities overlap, and at times they blend. So it is over-simplifying Professor Gray's life to suggest that the years to 1996 were those of a paediatrician and activist researcher – and that those that followed have been the work of a world specialist in mother-to-child transmission research. Mother-to-child transmission had been a driving concern for her from the start. But as her international profile grew, she began to encounter opposition to her ideas. Her research had made it clear that using powdered formula instead of breastfeeding could reduce mother-to-child infection, and she rapidly became the foe of those who promoted breastfeeding and who despised the idea of the formulas. She unhesitatingly took on the challenge and views and opinions began, slowly, to change.

Professor Gray took up the cause of poor rural women after the discovery of AZT; she pointed out that women in developing countries could not afford the 14-week course of treatment or did not learn about AZT until it was too late for them to start the treatment. But promoting the use of formulas for breastfeeding, and pointing out the limitations of AZT for many women who needed treatment, left unanswered the question of what alternatives there might be. So she and her research unit joined a clinical trial to find the most cost-effective treatment at the lowest dose, reasoning that an unaffordable drug might as well not exist for those most in need of it.

Adhering to stringent ethical requirements, the researchers proposed that the clinical trial stage of their work should include a test for the new drug that the research had produced. This part of the study would assess the effectiveness of the drug against a placebo. The editor of the *New England Journal of Medicine* was outraged. So Professor Gray took the proposal to the community identified for the trials and asked for their opinions. They agreed to work with the researchers and the trials of the new drug showed clearly that the drug, using a shorter and less expensive process, was successful.

However, the South African government, under President Mbeki, refused permission for the drug to be used and hospital superintendents followed, for the most part, what they considered to be government policy so that not even important drugs were used. It was not until former President Nelson Mandela endorsed the idea of the treatment that could save lives – in direct contradiction of the views of Mbeki – that the drug became available to South Africans.

Apart from her responsibilities at the Medical Research Council, and her other major commitments, Professor Gray's work now involves assisting in the efforts of other South African scientists who are working on the development of a vaccine.

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