

## Ending AIDS: myth or reality?

In 2014, prompted by the realisation that an expansion of HIV treatment can prevent illness, death, and transmission of infection, the Joint UN Programme on HIV/AIDS announced their 90-90-90 target and goal to end AIDS by 2030.<sup>1</sup> This target and goal were informed by the strategic objective that if at least 90% of people infected with HIV knew their status, and at least 90% of those who knew their status were on antiretroviral therapy, and at least 90% of those who were on antiretroviral therapy were virally suppressed, ending AIDS would be achievable by 2030. When the 90-90-90 target is reached in each country, such that 73% of people living with HIV are on treatment and virally suppressed, the government should not rest on its laurels, but instead continue to expand treatment. In the words of the Joint UN Programme on HIV/AIDS, “the aim in the post-2015 era is nothing less than the end of the AIDS epidemic by 2030”;<sup>1</sup> however, what is meant by the phrase, “the end of AIDS”, is yet to be agreed upon. The working definition states there should be fewer than one new HIV infection and one new AIDS-related death per 1000 people in the population, such that HIV is no longer a major threat to public health.<sup>2,3</sup> Ending AIDS does not mean ending HIV and, if the world does end AIDS by 2030, 35 million people will still live with HIV for the next 30 years or more, and will need ongoing care and support unless, and until, a cure is found.

Globally, between 2010 and 2015, about 2 million people started taking antiretroviral therapy each year, and by mid-2016 an estimated 18 million people were on treatment.<sup>4</sup> An estimated 60% of those infected with HIV know their status, 50% of those who know their status are on antiretroviral therapy, and 90%

of those who are on antiretroviral therapy are virally suppressed.<sup>5</sup> Although much still needs to be done to ensure 27 million people are on treatment by 2020, the global progress has been impressive. The case reproduction number for HIV (ie, the number of secondary cases caused by one primary case in a susceptible population) is around seven in most settings and is dependent on the mode of transmission, but with immediate treatment and good adherence, the treatment of one person with antiretroviral therapy could avert up to seven subsequent infections. A 2016 report<sup>5</sup> suggests the number of new infections in each of the five regions defined by the Joint UN Programme on HIV/AIDS has remained unchanged from 2010 to 2015, except in eastern Europe where the number has risen. Between 2010 and 2015, an estimated US\$20 billion per year—\$100 billion in total—was spent on the global management of the HIV epidemic, with approximately 50% of these resources spent on the expansion of access to treatment.<sup>6</sup> If this massive spending and roll-out of antiretroviral therapy has not significantly reduced the rate of new HIV infections, the prospect of ending AIDS in the foreseeable future is bleak. By contrast, other estimates suggest that the continued expansion of antiretroviral therapy will substantially reduce the rate of new infections and AIDS-related deaths in sub-Saharan Africa and elsewhere,<sup>6-9</sup> the money has been well spent, and further expansion of treatment will reduce costs.<sup>7</sup>

A review of the assumptions used to project the effects of antiretroviral therapy on the rate of new infections and AIDS-related mortality is urgently needed. If the rate of new infections is not falling, and falling rapidly at that, the global strategy for the management and control of the epidemic of HIV must be revised.

If the rate of new HIV infections is falling, then agreement must be reached as to what the effects of expanded treatment and other preventive interventions have been, and are likely to be in the future. These discussions can then be translated into improved prioritisation among testing, treatment, care, and prevention to ensure the most efficient use of the resources available to end AIDS.

We declare no competing interests.

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