

## Bringing new HIV infections to zero – opportunities and challenges offered by antiretroviral-based prevention in Asia, the Pacific and beyond: An overview of this special issue

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**Abstract.** This editorial to the special issue of *Sexual Health* on antiretroviral-based prevention of HIV infection is dedicated to showcasing research and practice in this area. It aims to promote debate regarding the potential of new antiretroviral-based prevention approaches and the challenges encountered in moving prevention innovations into the community. This special issue covers the breadth of innovative HIV prevention research, including that undertaken in the fields of epidemiology, clinical research, social and behavioural science, public health and policy analysis, and with special emphasis on Asia and the Pacific region. Most importantly, it provides an indication of how the region is progressing towards embracing new prevention approaches to combat HIV epidemics across the region.

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Two unprecedented developments in the fields of research and the international response to the HIV epidemic have marked the beginning of the fourth decade since the first description of the disease. A growing body of research evidence now demonstrates that innovative HIV prevention approaches based on the use of antiretroviral (ARV) medications have the potential to impact HIV transmission.<sup>1–5</sup> In 2011, the international community signed the United Nations Political Declaration (UNPD) to fight AIDS. The UNDP set highly ambitious new HIV prevention and treatment targets for the global community, which can only be reached by dramatically scaling up regional and local responses. However, the diversity of local contexts and the nature of HIV epidemics around the world pose different sets of barriers and challenges to scaling up these prevention and treatment programs.<sup>6</sup> The Asia-Pacific region hosts the second largest number of people living with HIV after Sub-Saharan Africa (nearly 5 million in

2011) and is the region that has experienced mixed progress in reducing new HIV infections and AIDS-related deaths, as well as a range of issues related to dealing with stigma and discrimination, providing access to services and addressing the needs of its most vulnerable, key population groups: men who have sex with men (MSM), transgender people, sex workers and people who inject drugs. This special issue of *Sexual Health* aims to promote discussion regarding the potential of new ARV-based prevention approaches to curtail the epidemic, and the challenges that may be anticipated in moving innovative, but potentially complex and costly, interventions into the Asia-Pacific region.

In the first article in this special edition, Bill Whittaker sets the scene by describing how the United Nations General Assembly came to unanimously commit to the 2011 UNPD.<sup>7</sup> The goal of the UNPD is for the global community to eliminate HIV and AIDS by ensuring that every person and population at

risk of HIV has access to essential prevention, treatment and support services. It is remarkable that in the process of endorsing the UNPD, United Nations member states, for the first time in the history of the General Assembly, agreed to name three key populations that are particularly vulnerable to HIV in a United Nations declaration – MSM, people who inject drugs and sex workers – thus acknowledging the needs of these key populations for prevention services, care, and protection from stigma and discrimination. Whittaker also analyses the regional progress in responding to the UNPD made by Australia (the country which played an important role in negotiating the 2011 UNPD) and seven other countries in the Asia-Pacific region.

It is important to acknowledge that Asia and the Pacific is a vast geopolitical region, marked by heterogeneity of climates, economies and cultures. Cassell and colleagues describe how countries in our region also differ with respect to HIV epidemiology, including the intensity and trajectory of the epidemics, the population groups and HIV transmission factors involved.<sup>8</sup> Although the epidemic is stabilising in the region as a whole, the regional indicators may mask important epidemic transmission dynamics across countries. Overall, HIV infections seem to be concentrated in the key population groups, but the relative burden of new infections in specific key populations differs by country, sometimes even within contiguous counties in a limited geographic area (as illustrated among counties in the Mekong subregion). The concentration of HIV transmission in key population groups provides opportunities for the countries in the region to focus their resources strategically. However, country-specific success will require an epidemiological and programmatic focus on local key populations facing the greatest risk of HIV infection. Phuphuakrat and coauthors further explain the complexity of bringing the number of new HIV infections in the region to zero by describing the remarkable differences between the resources available to high-income economies and to low- and middle-income countries in the region.<sup>9</sup> Although the former can provide ARVs to all their citizens in need, the latter group is very diverse. Some low- and middle-income countries have set an example of scaling up ARV availability, but many are still dependent on international assistance. The use of ARVs for prevention purposes in such counties may compromise the sustainability of their treatment programs unless additional help is available.

The paper by Ying Ru-Lo and colleagues presents a thoughtful review of the challenges and barriers to the uptake of ARV-based prevention in the Asia-Pacific region.<sup>10</sup> They use examples from China, Cambodia, Thailand and Vietnam to highlight that maximising the treatment and prevention benefits of ARVs requires high uptake at each step of the HIV treatment cascade. With the exception of Indonesia, Asian countries are focussing on improving the steps of the treatment cascade and have not yet moved beyond ARV-based treatment to extend it for prevention.

De Wit and Adam focus on HIV prevention among MSM and transgender people, and draw attention to the re-emergence of the HIV epidemic among them in many countries.<sup>11</sup> They remind us that evidence of the beneficial effects of ARV-based prevention in this high-risk population group remains limited, particularly as to treatment as prevention (TasP), and review the

modelling studies as to the impact of TasP on HIV infections among MSM and transgender individuals. ARV-based approaches further extend the HIV prevention toolkit, but the beneficial population-level effects of ARV-based prevention can be counterbalanced by the influences of prevention optimism and behaviour. De Wit and Adam suggest that an understanding of these moderating factors will be crucial for the ultimate success of ARV-based prevention among MSM and transgender people. Continuing on the same theme, Jansson *et al.* use mathematical modelling to simulate the impact of increasing testing and treatment rates on the expected incidence of HIV in Australia under varying assumptions of treatment efficacy and risk compensation.<sup>12</sup> Based on the results of their work, it appears that TasP may have the potential to prevent HIV infections, but first, its impact would depend on the real-life effectiveness of this approach among MSM and transgender persons outside clinical trial settings, and second, behavioural risk compensation may have a countervailing effect.

It is now widely understood that the real-life effectiveness of ARV-based prevention would largely depend not only on people accessing ARVs but also on their actual use.<sup>13</sup> Published evidence from clinical trials suggests a wide gap between the average reduction in the HIV risk provided by ARVs and their adherence-adjusted efficacy.<sup>14</sup> This evidence is consistent throughout different population groups, including MSM and transgender people, heterosexual men and women, and people who inject drugs. Amico's paper is an elegant review of the global evidence on the issues affecting the real-life effectiveness of ARV-based prevention strategies.<sup>15</sup> She emphasises the behavioural, social and structural facilitators and barriers to adherence, and discusses their implications specifically for the Asia-Pacific region. This summary of a broad range of approaches to facilitating and supporting adherence should be of great benefit to policy makers and program developers not only in Asia and the Pacific, but worldwide.

Three papers in this special issue focus on awareness about and acceptability of ARV-based prevention approaches among potential clients. Martin Holt presents a review of the acceptability of pre-exposure prophylaxis (PrEP) and TasP among MSM and transgender people.<sup>16</sup> In his view, the existent research suggests that PrEP is reasonably acceptable to MSM and transgender individuals, including in Asia and the Pacific, but few men are likely to perceive the need for it. As to TasP, studies of HIV treatment optimism suggest some scepticism among MSM and transgender people in regard to its implementation. Down and coauthors discuss the preparedness of people recently diagnosed with HIV to engage with therapy for its public health benefit.<sup>17</sup> The paper by Chandhiok and colleagues reviews the acceptability of topical and oral PrEP reported by studies conducted in India.<sup>18</sup> Keeping in context the nature of the local HIV epidemic and the sociocultural norms, this review finds positive attitudes towards the concept of topical microbicides among Indian men and women, but limited evidence concerning the understanding and acceptability of oral PrEP.

Several more papers discuss specific research and programmatic work around HIV-based HIV prevention in the countries of Asia and the Pacific. Thailand has been internationally perceived as a country that has made significant

strides in the management of the HIV/AIDS epidemic and has been acknowledged for its leadership in providing access to ARVs for treatment. The paper by Van Griensven and colleagues offers a unique review of the broad spectrum of research conducted in Thailand, which hosted several completed international Phase II and III HIV prevention trials, as well as four of its own.<sup>19</sup> The reader will also find the description of a model research environment, rigorous research methods and valuable evidence generated in Thailand, which makes its contribution to global ARV-based prevention so exceptional. The commentary by Dallabetta *et al.*<sup>20</sup> provides an example of work conducted in the region, namely the work of the Avahan project in India, in building a broad programmatic base for HIV prevention in six states of the second most populous country in the region. In the current resource-constrained environment, the success of new biomedical prevention approaches will depend on their cost-effectiveness and the use of the existing structures and services for reaching out to the key populations at risk. The Avahan project has already established such a foundation.

As to the implementation of biomedical prevention approaches, there is still important work to be done to make good prevention strategies work. Countries in the region have committed to scaling up treatment and prevention, and are considering the introduction of biomedical prevention approaches in their HIV prevention strategies. However, to address the epidemic better and successfully introduce new prevention strategies, the Asia-Pacific region needs to reassess its HIV response, past and present. Key populations are central to the spread of HIV in the region,<sup>21</sup> and their needs for treatment and prevention should be recognised. Some countries in the region require changes in the social environment to decriminalise homosexuality, drug use and sex work.<sup>22</sup> In many countries, stigma and discrimination impede effective HIV responses, and changes in laws and policies will be required to protect people living with and at high risk for HIV.<sup>23</sup> Many countries have yet to take advantage of interventions that have already been proven effective (for example, structural interventions like harm reduction and opioid substitution therapy for people who use drugs).<sup>24</sup> Overall, more country ownership of the epidemics and their own financing of treatment and prevention programs are imperative for sustained HIV prevention success, as the assistance of international donors is starting to scale down.<sup>25</sup>

Dear reader, whether you live in Asia and the Pacific, are a guest to the region or are a citizen of the global village, we hope that this special issue of *Sexual Health* offers you new insights about the advances in biomedical prevention globally, and provides a stimulating overview of its present and future in the Asia-Pacific region.

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