



Intersecting Pandemics of HIV and SARS-CoV-2: Commentary on the Special Issue

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Abstract

Purpose of Review This editorial introduces this special Global Health Section on the interface of the HIV/AIDS and COVID-19 pandemics.

Recent Findings Authors of articles in this special issue take on a variety of topics that capture how the acute COVID-19 pandemic affected global efforts towards HIV control, and how co-infection, stigma, and social determinants of disease have affected populations on multiple continents.

Summary Two historic pandemics -- HIV/AIDS and COVID-19 -- have affected the world in our lifetimes at a level reminiscent of the 1918-1919 H1N1 influenza pandemic. We have much to learn from both experiences to optimize pandemic disease control, prevention, and management.

Keywords HIV · COVID-19 · Pandemic · Epidemic · SARS-CoV-2 · Social determinants

The major pandemics of our lifetimes have been HIV/AIDS, first recognized in 1981 and now endemic in all the world's populated continents, and COVID-19, emerging in late 2019 as a respiratory viral pandemic. HIV is spread via sexual, parenteral, and perinatal routes; growth in the pandemic has been gradual and steady, disproportionately affecting especially vulnerable subgroups. Clinical AIDS appeared years after HIV infection had occurred. With declining HIV incidence rates in most (but not all) regions of the globe, the pandemic may be considered to have reached an endemic state.

SARS-CoV-2, in contrast, was a respiratory pathogen spread in a world of global travel and high-density urbanized living. Both viral infectious diseases were neglected at policy levels, presented disparities in impact based on social determinants of disease, had prominent political

and even scientific leaders who were hostile towards selected prevention measures, and experienced partisan anti-science, stigma-driven policies. These two defining modern pandemics have major differences and surprising similarities that have inspired this 2022 Global Epidemic issue of *Current HIV/AIDS Reports*. Their origins are both from zoonotic RNA viruses. Emotional and partisan sentiments have inhibited effective control efforts in both cases. Pathogenic processes of both viruses have interesting similarities, as with the complex immune perturbations beyond the cellular infection and replication process itself, even as mechanisms differ. Stigma exists in society for both diseases, but HIV/AIDS is steeped in homophobia and neglect of marginalized persons such as drug users and sex workers, while COVID-19 puts the neglected elderly and the impoverished at greatest risk. In a series of creative and multi-disciplinary articles, the authors of this global epidemic issue of *Current HIV/AIDS Reports* seek to elucidate these contrasts, illustrating how lessons from the HIV/AIDS pandemic might be applied to the current COVID-19 pandemic caused by SARS-CoV-2.

HIV/AIDS emerged in 1981 at a time when its cause and its transmission dynamics were uncertain. Antiviral drug development was nascent, and knowledge of retroviruses

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had grown with discovery of human T-cell lymphotropic virus type 1 (HTLV-I) in humans [1] and research into retroviruses in non-human primates and felines, among others. With an understanding of the sexual and parenteral transmission dynamics, political backlash in the USA and other nations led to harsh assessments of vulnerable and infected persons. This prejudice extended to persons of all gender identities and ages, as the infamous community hostility to the family of Ryan White, a boy living with hemophilia and HIV infection in the USA, demonstrated [2]. Most persons afflicted early in the HIV pandemic were men who had sex with men (MSM), both with or without a same-sex sexual orientation identity; persons who injected drugs (PWID); persons with multiple sexual partners without condom use, and; persons who acquired infection from other sources (e.g., heterosexual, perinatal or breastfeeding, needle-stick, blood and blood products) [3]. Extraordinary progress in antiretroviral drug development turned a once-lethal disease into a chronic, manageable one [4]. Yet, successful prevention has been elusive and today one might view HIV/AIDS as an endemic viral disease that may never be controlled short of a deployable and acceptable vaccine, not yet available after four decades of effort against the many subtypes of the virus [5, 6]. Stigma and discrimination continue to interfere with preventive and clinical care services [7]. While progress against stigma has been made globally, discriminatory laws and policies against same-sex relationships illustrate the immense challenges remaining [8].

COVID-19 emerged in 2019, fully 16 years after the 2003–2004 severe acute respiratory syndrome (SARS) pandemic that announced to the world the lethal potential of bat-origin coronaviruses in humans [9]. While four prior coronaviruses had been identified in humans, they caused a disease like the common cold or mild influenza [10]; none was as serious as the viral respiratory disease caused by a SARS-associated coronavirus (SARS-CoV) that had a 10% case-fatality rate. The Middle East respiratory syndrome (MERS)–related coronavirus (EMC/2012) emerged in 2012 and while less infectious, was even more lethal with an over 32% case-fatality rate [11]. Global spread of the novel coronavirus was facilitated by modern air travel and globalized business relationships [12]. As with other RNA viruses, emerging variants are protean and modified considerably the population dynamics of viral spread, including the efficiency of vaccine protection [13]. Yet again, the specter of discrimination and stigma emerged in many ways, including racial profiling [14, 15]. Persons getting infected and ill might be viewed as a careless or biologically weak. Persons seeking to prevent infection with mask use or vaccination might find conflict with persons not taking such precautions. Public health professionals

might be seen as taking a partisan view weighing individual liberties in favor of societal welfare.

COVID-19 has generated divisive sentiments against selected sub-populations, as did AIDS. The most flagrant example is the sentiment expressed in diverse circles suggesting that higher risk among the elderly was a legitimate price to pay for the rest of society tolerating infections and preserving economic business-as-usual [16, 17]. Ageism was yet a new form of bias in the control of COVID-19, potentially as lethal as the neglect of populations at disproportionate risk for HIV [18]. In some political circles, benign approaches to COVID-19 risk reduction such as masks/face coverings [19] became as controversial as condoms to prevent HIV [20]. Even with the availability of safe and effective coronavirus vaccines in late 2020, anti-science sentiments from burgeoning anti-vaccination movements made partisan the public health efforts towards universal immunization in diverse nations such as the USA or Brazil [21, 22, 23, 24].

Given differences and synergies in experiences across these pandemics, this issue of *Current HIV/AIDS Reports* tackles an amazing array of topics. Biological comparisons and interactions are described [25]. Clinical interactions [26, 27] and service disruptions from COVID-19 lockdowns [28, 29] are addressed. Social and behavior contributors and consequences are reviewed [30, 31]. Global challenges in different continents and regions are presented [32–35]. The use of modeling and forecasting is discussed [36]. Finally, how HIV vaccine research helped us in the search for a SARS-CoV-2 vaccine is revealed [37], building upon the molecular elucidation of the SARS-CoV genome and viral entry into host cells through the spike glycoprotein (S-glycoprotein) interaction with the angiotensin-converting enzyme 2 (ACE2) cellular receptor [38]. Editor-in-Chief Paul Volberding and I feel that this global issue will be of interest to many, particularly investigators and health workers who pivoted from viral control work in other arenas (like HIV/AIDS) to COVID-19 in 2019–2021, seeking to confront the new pandemic threat [39].

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Declarations

Conflict of Interest The author declares no competing interests.

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