Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

How COVID-19 could benefit tuberculosis and HIV services in South Africa

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At the time of writing, more than 17 million people have contracted COVID-19 globally and more than half a million have died.[1] However, the health impact of COVID-19 is likely to be far more substantial and long-lasting in countries with high incidences of tuberculosis and HIV[2] than in those with low incidences. Tuberculosis and HIV each have more than double the mortality rate of COVID-19, as shown in the Western Cape, South Africa.[3]

The biological interactions between tuberculosis, HIV, and COVID-19, as well as health system factors contribute to the impact of COVID-19 on vulnerable populations. Modelling data show that COVID-19 could trigger an excess of 6 million tuberculosis deaths by 2025, with decreased diagnosis, treatment initiation, and successful treatment completion.[4] Similarly, a 6-month disruption in antiretroviral therapy (ART) delivery for HIV could result in up to half a million additional deaths, double mother-to-child transmission in sub-Saharan Africa over one year, and increase mortality by up to 40% over the next 5 years.[5] In addition, disrupted drug supplies could lead to drug resistance, amplifying the costs of managing these entrenched epidemics. Although modelling has limitations, COVID-19 will no doubt have a lasting negative impact on both diseases.

South Africa has had remarkable successes in the management of HIV and tuberculosis in the past 10 years,[6] but these gains are threatened by COVID-19. Médecins Sans Frontières has collaborated with the South African Department of Health for two decades to support community-based, differentiated HIV and drug-resistant tuberculosis service delivery in the periurban township of Khayelitsha in the Western Cape,

Panel: Strategies to decrease the impact of COVID-19 on tuberculosis and HIV

Existing interventions to scale up nationally or internationally

Tuberculosis

- Alternatives to directly observed therapy, such as self-administered therapy, improved treatment literacy
- Community-based treatment initiation for all populations
- Expanded use of all-oral, shorter regimens
- Scaling up adapted, individualised counselling
- Integrated tuberculosis and COVID-19 screening and testing

HIV

- Differentiated models of care for stable HIV
- Extended multimonth antiretroviral therapy (ART) refills (more than 6 months) for stable patients
- Community-based initiation and delivery of ART
- Integrated HIV and COVID-19 testing

Adapted and expanded models

Tuberculosis

- Home-based care
- Medical triage by telephone and individualised counselling and support (for substance use and for people who are not managing well on treatment)
- Home-delivery of medication supplies to patients, as with other chronic diseases

HIV

- Medical triage by telephone and individualised counselling and support, especially for those disengaged from care
- Home delivery of chronic medication for stable patients
- Longer refills (more than 2 months) for patients restarting treatment
- Home-based care for patients with advanced HIV

New opportunities for using COVID-19 interventions for tuberculosis and HIV

Tuberculosis

- Trained and paid community health workers to do active case finding, contact assessments, postexposure management, linkage to care for newly identified cases and those who have been lost to follow-up
- Incorporate tuberculosis into COVID-19 stigma reduction messages

HIV

- Trained and paid community health workers to support self-testing, provision of pre-exposure prophylaxis with nursing support, linkage to care for newly identified cases and those who have been lost to follow-up
- Incorporate HIV into COVID-19 stigma reduction messages

Investment and systematic changes needed

- Address precarious socioeconomic circumstances
- Strengthen health system to improve staffing and reduce stock-outs
- Integrate tuberculosis, HIV, and chronic health services

South Africa.[7,8] Khayelitsha now has one of the highest burdens of COVID-19 in the Western Cape, which in turn accounts for more than half South Africa's known cases.[9]

Although routine activities have required adaptation during the COVID-19 pandemic, disruptions caused by the emergency response highlight potentially unnecessary health system interactions between people with tuberculosis and people with HIV, including facility-based counselling, long clinic waiting times to receive medications, and frequent follow-up, even for patients who are clinically well.

This situation presents an opportunity for positive, long-term, systematic change to transform inefficient, paternalistic policies and practices. For example, clinical or counselling consultations over the telephone support patients (particularly those initiating treatment or re-engaging with services) while reducing contact for both the health-care providers and recipients. The need to reduce clinic attendance to shield the vulnerable and reduce exposure to health-care workers is also an opportunity to build home-based care, strengthen community and self-administered tuberculosis therapy, further decentralise medication pick-up, and extend ART and pre-exposure prophylaxis medication refills.

Interventions developed specifically for COVID-19 could also enhance tuberculosis and HIV services. For example, community networks developed for COVID-19 screening could be repurposed to support tuberculosis and HIV: to expand tuberculosis screening and HIV self-testing, identify individuals who need additional support (eg, social grants), and link new cases or patients lost to follow-up to care. Stigma reduction campaigns for COVID-19 could also embrace positive messages about HIV and tuberculosis.

Conversely, the COVID-19 pandemic has exposed systemic weaknesses, such as reduced medication supply and staff shortages, which will require dedicated health system strengthening and substantial investments to correct. South Africa has a 60 000 strong cadre of community health workers but attempts to build on their community knowledge and access for contact tracing have revealed the poor integration of these workers into the health system—highlighted, for example, by their difficulty in accessing personal protective equipment and training. COVID-19 has also publicised the extreme economic vulnerability of individuals living with tuberculosis and HIV, and a commitment to mitigating the socioeconomic drivers and effects of both diseases must be maintained in the years to come.[10] The panel shows a summary of the potential collateral benefits from the COVID-19 pandemic to tuberculosis and HIV services.

South Africa is valiantly fighting COVID-19; the national response to the pandemic has gained unprecedented political support and mobilised resources that would have been unimaginable a year ago. There has been a massive refocusing of the political agenda on health and the opportunity—yet to be fully realised—to address the underlying social determinants that increase communities' vulnerability and result in differentiated mortality outcomes. The increased solidarity creates the opportunity for broader public participation and for addressing health as a public good, not just for COVID-19 but also for the other major health problems in the country, including HIV and tuberculosis. Though devastating, COVID-19 has offered the opportunity for true service delivery transformation that could result in lasting benefits when it comes to care for people with HIV and tuberculosis.

We declare no competing interests.

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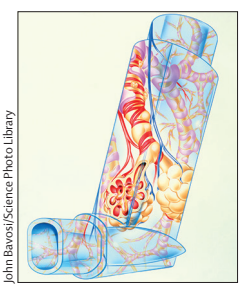
Inhaled corticosteroids in virus pandemics: a treatment for COVID-19?



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Active discussions are ongoing concerning the efficacy of systemic corticosteroids in COVID-19, with evidence to support[1] and advising against[2] their use. Illustratively, a Review[3] of past studies of corticosteroid efficacy on viral pneumonia of other causes—published early on in COVID-19 pandemic—concluded, in line with WHO guidelines[4] (which refer only to systemic corticosteroids) that no extant clinical data point to a benefit derived from corticosteroids for treatment of respiratory syncytial virus, influenza, severe acute respiratory syndrome coronavirus (SARS-CoV), or Middle East Respiratory syndrome coronavirus (MERS-CoV) respiratory infections and therefore that corticosteroids should not be used as a treatment in the COVID-19 pandemic. We agree that, at the time, no evidence existed to support that severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection would benefit from systemic corticosteroids; and consequently treatment with corticosteroids was more likely to be associated with harm.[2] However, in the Review by Russell and colleagues,[3] whether the corticosteroids were inhaled or systemic was not distinguished. More recently, systemic corticosteroids, in the form of dexamethasone, have been shown to reduce mortality in patients with severe COVID-19.[5]

By contrast with clinical trial results, epidemiological data has suggested that corticosteroids might be associated with worse clinical outcomes. An epidemiological study from the OpenSAFELY group suggests that the use of inhaled corticosteroids (ICS) in patients with asthma and chronic obstructive pulmonary disease (COPD) is associated with worse clinical COVID-19 outcomes.[6] These findings might suggest that ICS use is not of benefit in patients with COVID-19, but this conclusion cannot be drawn from these data. First, as the OpenSAFELY authors observe, patients who were given ICS had more comorbidities than did those not given inhaled corticosteroids, a recognised risk factor for adverse COVID-19 outcomes; and second, most of the patients with asthma and COPD in this cohort did not develop or die from COVID-19. Therefore, we argue that the null hypothesis of no benefit from ICS in COVID-19 has yet to be fully explored.

ICS could be a therapeutic intervention for COVID-19 for several reasons. First, ICS use in patients at risk of acute respiratory distress syndrome (ARDS) has been shown to improve physiology and reduce levels of inflammatory markers.[7] A 50% reduction in ARDS was seen in at-risk patients who were using ICS before admission to hospital, even after controlling for age, sex, and chronic respiratory diseases.[8] Moreover, ICS use also appears to improve pulmonary physiology.[9]

Second, in-vitro data suggest a role for ICS in the inhibition of coronavirus replication (including SARS-CoV-2) in infected epithelial cells.[10] Investigation of gene expression of ACE2 and TMPRSS2 in the sputum of patients with asthma has shown reduced expression of these receptors in the presence of ICS[11] and attenuation of ACE2 receptors in human and murine in-vitro and in-vivo models.[12] These findings are highly relevant because SARS-CoV-2 pathology involves TMPRSS2 for spike-protein priming and direct action on the ACE2 receptor, which is highly expressed on epithelial cells in oral mucosa and type 2 alveolar cells. Since evidence exists of accelerated hyperinflammation at the onset of SARS-CoV-2 infection, this hyperinflammation is potentially modifiable by anti-inflammatory treatment. These data suggest a plausible mechanism for efficacy of ICS against COVID-19. We would propose that ICS could have a dual role: first, reducing the inflammatory ARDS-like response affecting a minority of patients with COVID-19; and second, directly inhibiting viral replication (appendix p 1).

Unlike other viral respiratory endemics (eg, influenza), we now know that comorbid chronic respiratory conditions are probably not a major risk factor in patients

See Online for appendix