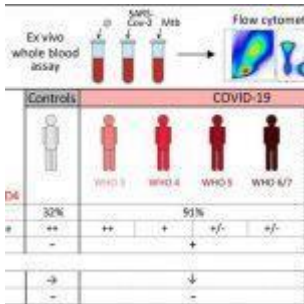


# HIV-1 and TB coinfection skews the SARS-CoV-2 T cell response



SARS-CoV-2 causes COVID-19 disease, it is known that T cells in the control of disease progression, however little is known about antigen-specific T cell response and disease severity.

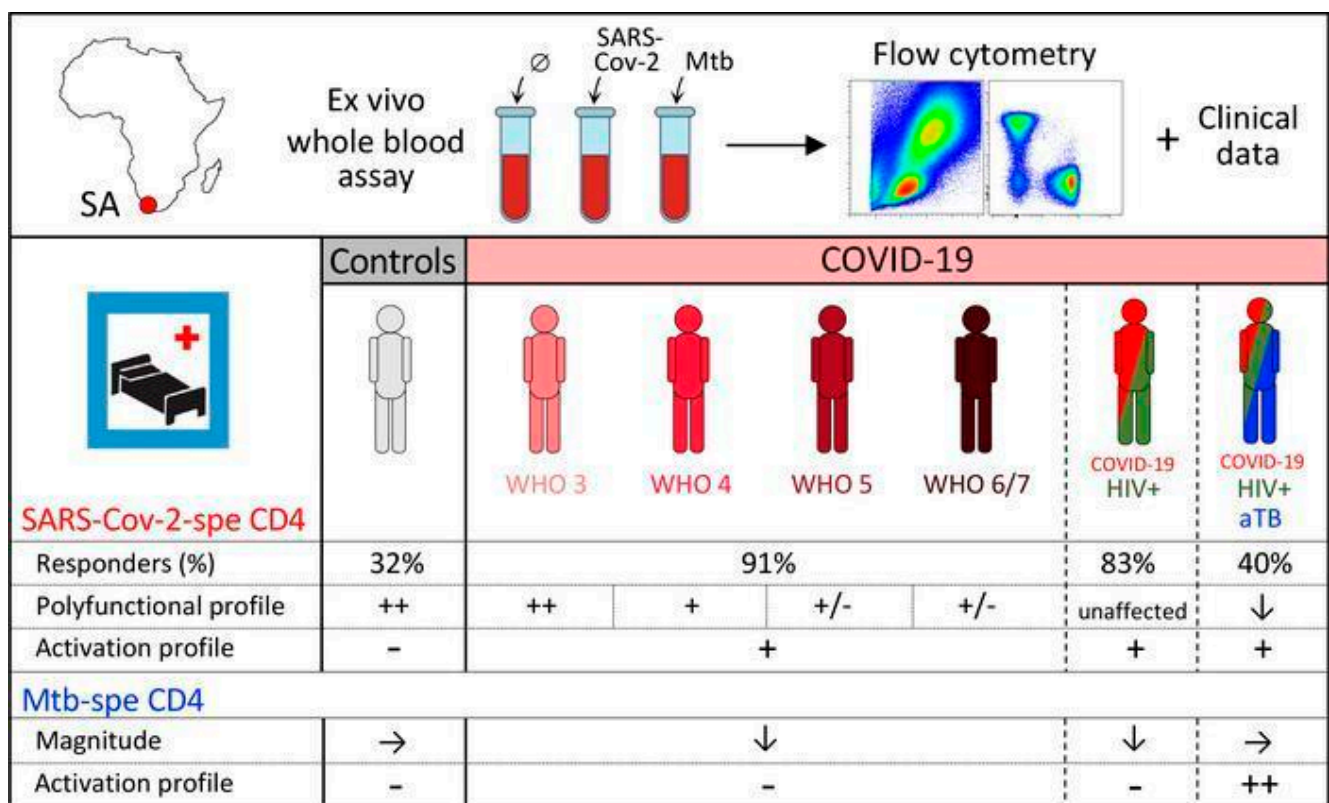
Researchers at the University of Cape Town, South Africa studied 95 hospitalized COVID-19 patients, 38 of which were HIV-1 and/or tuberculosis (TB) coinfecting, and 38 non-COVID-19 patients. They used flow cytometry to “assess the magnitude, function, and phenotype of SARS coronavirus 2-specific (SARS-CoV-2-specific) CD4+ T cells”.

Riou et al, found that SARS-CoV-2-specific CD4+ T cell attributes, not magnitude was associated with severe disease. Severe disease was characterized by “poor polyfunctional potential, reduced proliferation capacity, and enhanced HLA-DR expression”.

HIV-1 and TB co-infection skews the SARS-CoV-2 T cell response. “HIV-1 mediated CD4+ T cell depletion associated with suboptimal T cell and antibody responses to SARS-CoV-2 and a decrease in the polyfunctional capacity of SARS-CoV-2-specific CD4 T cells was observed in COVID-19 patients with active TB”. These results reinforce the crucial role of SARS-CoV-2-specific T cells in COVID-19 disease development and support the concept of altered T cell functions in patients

with severe disease.

The researchers also found that “COVID-19 patients displayed reduced frequency of *Mycobacterium tuberculosis*–specific CD4 T cells”. These results could have implications in TB-endemic countries such as South Africa as concerns have been raised that COVID-19 could reactivate latent TB.



Graphical Abstract – Relationship of SARS-CoV-2–specific CD4 response to COVID-19 severity and impact of HIV-1 and tuberculosis coinfection. (Source: Riou et al, 2021)

Find out more about HIV and TB – [Immunity to HIV](#) & [Immunity to TB](#)

**Journal Article:** Riou et al. 2021 [Relationship of SARS-CoV-2–specific CD4 response to COVID-19 severity and impact of](#)

## HIV-1 and tuberculosis coinfection. J Clin Invest.

*Summary by Bonamy Holtak*

Wh

Animation produced by Simone Richardson., PhD