



CADTH Reference List

# Therapeutic Treatment Options for Persistent COVID-19 Infection

June 2023

**Authors:** Candice Madakadze, Sarah C. McGill

**Contributor:** Camille Santos

**Cite As:** *Therapeutic Treatment Options for Persistent COVID-19 Infection*. (CADTH reference list). Ottawa: CADTH; 2023 Jun.

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**Funding:** CADTH receives funding from Canada's federal, provincial, and territorial governments, with the exception of Quebec.

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## Key Message

We found 43 nonrandomized studies about the clinical effectiveness of various therapeutic treatments for patients who are severely immunocompromized living with persistent COVID-19 infection.

## Research Question

What is the clinical effectiveness of various therapeutic treatments for patients who are severely immunocompromized living with persistent COVID-19 infection?

## Methods

### Literature Search Methods

An information specialist conducted a literature search on key resources including MEDLINE, Embase, the Cochrane Database of Systematic Reviews, the International HTA Database, the websites of Canadian and major international health technology agencies, as well as a focused internet search. The search approach was customized to retrieve a limited set of results, balancing comprehensiveness with relevancy. The search strategy comprised both controlled vocabulary, such as the National Library of Medicine’s MeSH (Medical Subject Headings), and keywords. Search concepts were developed based on the elements of the research questions and selection criteria. The main search concepts were COVID-19 or SARS-COV-2; treatments including remdesivir, Paxlovid, monoclonal antibodies, immunotherapies, or convalescent plasma; and either persistent infection or targeted terms for immunocompromized. No filters were applied to limit the retrieval by study type. Retrieval was limited to humans. The search was completed on May 31, 2023 and limited to English-language documents published since January 1, 2019. Internet links were provided, where available.

### Selection Criteria

One reviewer screened literature search results (titles and abstracts) and selected publications according to the inclusion criteria presented in [Table 1](#). Full texts of study publications were not reviewed.

**Table 1: Selection Criteria**

Criteria	Description
<b>Population</b>	Patients who are severely immunocompromized living with persistent COVID-19 infection (may also be referred to as “protracted COVID-19 infection,” “long persisters,” or “relapsed COVID-19 infection”)
<b>Intervention</b>	Therapeutic treatment including remdesivir, Paxlovid, monoclonal antibodies, immunotherapies (specifically viral specific T cells), and convalescent plasma
<b>Comparator</b>	Any alternative therapeutic treatment; no treatment
<b>Outcomes</b>	Clinical effectiveness (e.g., mortality, safety, rates of adverse events, symptom recovery, test negativity, duration of infection, length of hospital stay, health-related quality of life)

Criteria	Description
Study designs	Health technology assessments, systematic reviews, randomized controlled trials, nonrandomized studies, case reports, case series

## Results

Forty-three nonrandomized studies<sup>1-43</sup> were identified regarding the clinical effectiveness of various therapeutic treatments for patients who are severely immunocompromized living with persistent COVID-19 infection. Of the 43 nonrandomized studies identified, 40 were case reports or series.<sup>4-43</sup> No relevant health technology assessments, systematic reviews, or randomized controlled trials were identified.

Additional references of potential interest that did not meet the inclusion criteria are provided in [Appendix 1](#).

## References

### Health Technology Assessments

No literature identified.

### Systematic Reviews

No literature identified.

### Randomized Controlled Trials

No literature identified.

### Nonrandomized Studies

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### Case Reports and Series

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## Appendix 1: References of Potential Interest

### Nonrandomized Studies

#### Unclear Outcomes

Bermejo-Gomez A, Aguilera-Alonso D, Rincon-Lopez EM, et al. Use of monoclonal antibodies in a pediatric patient with severe combined immunodeficiency and persistent SARS-CoV-2 infection. *Pediatr Infect Dis J*. 2023 Apr 18. [PubMed](#)

#### Unclear Intervention – Therapeutic Agent for COVID-19 Not Specified

Lyzwa E, Sobiecka M, Lewandowska K, et al. Prolonged SARS-CoV-2 infection and organizing pneumonia in a patient with follicular lymphoma, treated with obinutuzumab-challenging recognition and treatment. *Viruses*. 2023; 15(3):693. [PubMed](#)

Maponga TG, Jeffries M, Tegally H, et al. Persistent severe acute respiratory syndrome coronavirus 2 infection with accumulation of mutations in a patient with poorly controlled human immunodeficiency virus infection. *Clin Infect Dis*. 2023; 76(3):e522-e525. [PubMed](#)

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Wada D, Nakamori Y, Maruyama S, et al. Novel treatment combining antiviral and neutralizing antibody-based therapies with monitoring of spike-specific antibody and viral load for immunocompromised patients with persistent COVID-19 infection. *Exp Hematol Oncol*. 2022; 11(1):53. [PubMed](#)

#### Preprints

Brosh-Nissimov T, Ma'aravi N, Leshin-Carmel D, et al. Combination treatment of persistent COVID-19 in immunocompromised patients with remdesivir, nirmaltrevir/ritonavir and tixegavimab/cilgavimab. *medRxiv* [non-peer reviewed preprint]. 2023. <https://www.medrxiv.org/content/10.1101/2023.04.07.23288144v1> Accessed 2023 Jun 13.

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Nussenblatt V, Roder AE, Das S, et al. Year-long COVID-19 infection reveals within-host evolution of SARS-CoV-2 in a patient with B cell depletion. *medRxiv* [non-peer reviewed preprint]. [PubMed](#)

#### Conference Abstracts

Choa J, Lasky JA, Bojanowski CM. Successful use of casirivimab/imdevimab in B-Cell Depletion Associated Prolonged (B-DEAP) COVID-19. Conference abstract presented at: ATS 2022; American Thoracic Society 2022 International Conference; 2023 May 13-18, 2022; San Francisco (CA). *Am J Respir Crit Care Med*. 2022;205:A2625.

Faccioli E, Schiavon M, Pezzuto F, et al. A case of prolonged hospital acquired COVID-19 pneumonia in a lung transplant recipient: management and outcome. Conference abstract presented at: ISHLT 2022; 42nd annual meeting and scientific sessions of the International Society for Heart and Lung Transplantation; 2022 Apr; Boston (MA). *J Heart Lung Transplant*. 2022 Apr;41(4 Suppl):S375. [PubMed](#)

Kang V, Patel A, Freiman JM. If you dig deep enough, you will find your answer: a rare case of diagnosing COVID-19 infection despite multiple negative nasopharyngeal swabs. Conference abstract presented at: ATS 2022; American Thoracic Society 2022 International Conference; 2023 May 13-18, 2022; San Francisco (CA). *Am J Respir Crit Care Med*. 2022;205:A4547.

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