

COMMENTARY ON CORONAVIRUS: ANTIVIRAL OR ANTIBODY TREATMENTS: A RAPID OVERVIEW OF REVIEWS

2/04/2020

Author

Dr Ashley Whitehorn BAppSc BHlthSc (Hons) PhD

This is a commentary on a rapid review commissioned by the Infection Prevention & Control, World Health Organization, Health Emergency Programme through funding from the Canadian Institutes of Health Research (CIHR) through the Strategy for Patient Oriented-Research (SPOR) Evidence Alliance and conducted by the Knowledge Translation Program, Li Ka Shing Knowledge Institute of St. Michael's Hospital, Unity Health Toronto. The full citation and acknowledgement of the researchers who conducted the rapid review are in the Reference section below.

Question

What is the best available evidence regarding the safety and effectiveness of antiviral or antibody treatments for the treatment of coronavirus, specifically COVID-19?

Rapid Review Findings

This rapid review included:

Antiviral medications approved for use in the 2019 novel coronavirus disease (COVID-19) caused by severe acute respiratory syndrome corona virus 2 (SARS-COV-2) or currently in pre-clinical trials (animal studies, excluding in vitro studies) for treating COVID-19; Monoclonal antibodies approved for use in COVID-19 or currently in pre-clinical trials (animal studies, excluding in vitro studies) for treating COVID-19; and antiviral agents used alone or in combination that are currently approved for use in coronavirus treatment or are being examined in clinical trials for use in coronavirus treatment.

Studies which reported lab-confirmed coronavirus infection, hospitalization, intensive care unit (ICU) admission, mortality, and adverse events (e.g., exacerbation of infection) were sought as part of this review. The authors scanned 4,805 articles for relevance and included 54 papers.

COVID-19

- Only three studies including one case report and two case series investigated treatments for patients with COVID-19.
- No animal or human trials investigating monoclonal antibodies for the treatment of COVID-19 were found.
- There are currently four randomized controlled trials underway investigating treatments for COVID-19. Three are investigating antiviral medications (lopinavir/ritonavir, arbidol (umifenovir), darunavir, cobicstat, and, ASC09/ritonavir) and one is investigating a combination of lopinavir/ritonavir with Traditional Chinese Medicines.

CORONAVIRUS

- A total of 33 studies investigated severe acute respiratory syndrome (SARS), 16 investigated Middle East respiratory syndrome (MERS) and two investigated an unspecified coronavirus.
- There was no statistically significant difference in risk of intensive care admission for any comparisons investigated (ribavirin, oseltamivir or lopinavir/ritonavir) for patients with SARS or MERS.
- No treatment comparisons (ribavirin, oseltamivir or lopinavir/ritonavir) were found to effectively reduce mortality for SARS or MERS.
- One included study investigated ribavirin with lopinavir/ritonavir compared to no treatment for the prevention of MERS for highly exposed healthcare workers. The study found a statistically significant reduction in infection risk for the treatment arm compared to no treatment (0 versus 6 people infected with MERS).
- Drug-related adverse events including gastrointestinal symptoms, anemia, and altered liver function in patients receiving ribavirin were reported in 18 studies.

The current evidence for the effectiveness of antiviral therapies for coronavirus is not conclusive and low quality. None of the interventions examined in this review can be recommended or ruled out for use in patients with a coronavirus. Some important safety signals potentially related to ribavirin use were identified (anemia, altered liver function) but also require further study to clarify their relation to the drug.

Characteristics of the Evidence

This evidence summary is based on a rapid literature review that included 54 studies (three controlled trials, 10 cohort, seven retrospective medical record/database and 34 case reports or case series) with sample sizes ranging from one to > 1,000. The majority of studies were conducted in adults (n=52).¹

Risk of Bias (Quality of the Evidence)

Overall the quality of the available evidence is low and at high risk of bias. There was difficulty in assessing the three trials due to inadequate reporting, all were found to be at unclear or high risk of bias. The cohort studies were of fair quality overall and the case studies and series were not assessed for risk of bias.

Future Research Recommendations

- At present there is low level, inconclusive evidence for the effectiveness and safety of antiviral therapies for the treatment of coronavirus.
- Well-designed prospective or observational studies focusing on antiviral therapies other than ribavirin which does not have conclusive evidence of effectiveness but may lead to harmful adverse events is recommended.

References

The intellectual property rights in data and results generated from the work reported in this document are held in joint ownership between the MAGIC team and the named Contributors:

1. Rios P, Radhakrishnan A, Antony J, Thomas SM, Muller M, Straus SE, Tricco AC. Effectiveness and safety of antiviral or antibody treatments for coronavirus. medRxiv. 2020. Available from: <https://www.medrxiv.org/content/10.1101/2020.03.19.20039008v2>

The author declares no conflicts of interest in accordance with International Committee of Medical Journal Editors (ICMJE) standards.

How to cite: Whitehorn, A. Commentary on Coronavirus: Antiviral or Antibody Treatments: A rapid overview of reviews. 2020, JBI, Adelaide.

For details on the method for development see Munn Z, Lockwood C, Moola S. The development and use of evidence summaries for point of care information systems: A streamlined rapid review approach. *Worldviews Evid Based Nurs.* 2015;12(3):131-8.

Note: The information contained in this Evidence Summary must only be used by people who have the appropriate expertise in the field to which the information relates. The applicability of any information must be established before relying on it. While care has been taken to ensure that this Evidence Summary summarizes available research and expert consensus, any loss, damage, cost or expense or liability suffered or incurred as a result of reliance on this information (whether arising in contract, negligence, or otherwise) is, to the extent permitted by law, excluded.

Copyright © 2020 The Joanna Briggs Institute licensed for use by the corporate member during the term of membership.