Background Summary

Remdesivir for COVID-19

What is remdesivir?

Remdesivir is an antiviral drug labelled specifically to treat COVID-19 infection in hospitalized patients. Brand name: Veklury [1]

New in this update (January 3, 2023)

Since the last background summary on remdesivir was completed (October 11, 2022):

- Alberta, BC, and the US updated their remdesivir guidelines
- Manitoba remdesivir guidelines were added
- A new study in Nature Communications was published

Drug approval and guidance

International

- The World Health Organization (WHO) conditionally recommends remdesivir for patients with severe COVID-19 and with non-severe COVID-19 at highest risk of hospitalization; *recommendation updated from weak to conditional on September 16, 2022* [2]
- WHO conditionally recommends **against** remdesivir for patients with critical COVID-19; *recommendation updated from weak to conditional on September 16, 2022* [2]

Canada

Remdesivir has been approved for use in Canada since July 28, 2020 [3]

- Authorized for use in adults and adolescents aged 12 years and older with a body weight of at least 40 kg
- Summary Safety Review (August 18, 2021): possible link between remdesivir and sinus bradycardia [4]

Provincial guidelines:

- *Newly updated* **Alberta**; guidance for healthcare providers (updated November 15, 2022) [5] and patients (updated September 13, 2022) [6];
  - Paxlovid preferred over remdesivir due to administration method (pill vs. IV)
  - Use of remdesivir during pregnancy can be considered when the benefits outweigh the risks
  - No dose adjustment for patients with renal impairment due to the short course of therapy
- *Newly updated* **British Columbia**; government (updated August 9, 2022) [7] and BC Centre for Disease Control (multiple pages/guidelines updated on various dates) [8]
- **Ontario** testing and treatment guidance (published Sep 12, updated Oct 6, 2022) [9]
- *Newly added* **Manitoba**; guidance for healthcare providers (updated October 25, 2022) [10];
  - Although not recommended during pregnancy, treatment with remdesivir should not be withheld if the benefits are determined to be substantial and the individual patient is informed of the risk
  - No dose adjustment for patients with renal impairment due to the short course of therapy
- **Saskatchewan** guidance now says eligibility criteria "has been expanded to include an additional course of therapy for new and distinct COVID-19 infections in eligible patients" (updated August 20, 2022) [11]

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United States

- *Newly updated* Remdesivir treatment guidelines (updated December 1, 2022)[12]

Evidence syntheses

As of January 3, 2023, Epistemonikos identifies 199 systematic reviews related to remdesivir – more systematic reviews than RCTs.

CADTH

Evidence review and critical appraisal (last updated February 19, 2021)[13]; does not reflect changes in WHO guidance or research published since December 2, 2020

Cochrane

Cochrane review of remdesivir for COVID-19 (last updated August 5, 2021 with evidence up to April 16, 2021)[14]

U.S. Department of Veterans Affairs

- Living systematic review of remdesivir for COVID-19 (last updated March 1, 2022)[15]
- Living practice points for physicians (last updated March 1, 2022)[16]

Clinical trials

As of January 3, 2023, Epistemonikos identifies 98 RCTs, 51 of which are reporting data.

ACTT-1 (National Institutes of Health)

Remdesivir for the Treatment of Covid-19 — Final Report (Beigel et al., *NEJM*, Oct 8, 2020)[17]

- A double-blind RCT of remdesivir in adults hospitalized with COVID-19
- Participants received remdesivir as a 200 mg loading dose on day 1, followed by 100 mg daily for up to 9 additional days vs. placebo for up to 10 days
- Conclusions: "Our data show that remdesivir was superior to placebo in shortening the time to recovery in adults who were hospitalized with Covid-19 and had evidence of lower respiratory tract infection."

CATCO (Canadian sub-study of Solidarity)

Remdesivir for the treatment of patients in hospital with COVID-19 in Canada: a randomized controlled trial (Ali et al., *CMAJ*, Feb 22, 2022)[18]

- Results found that in Canadian patients in hospital with COVID-19, remdesivir reduced in-hospital mortality and significantly improved secondary outcomes of need for mechanical ventilation in patients not ventilated at entry

DisCoVeRy

Remdesivir plus standard of care versus standard of care alone for the treatment of patients admitted to hospital with COVID-19 (DisCoVeRy): a phase 3, randomised, controlled, open-label trial (Ader et al., *Lancet Infectious Diseases*, September 14, 2021)[19]

- A phase 3, open-label RCT evaluating the clinical efficacy of remdesivir plus standard of care compared with standard of care alone
- Participants received remdesivir as a 200 mg intravenous infusion on day 1, followed by once daily, 1-h infusions of 100 mg up to 9 days, for a total duration of 10 days
- Conclusions: "In this randomised controlled trial, the use of remdesivir for the treatment of hospitalised patients with COVID-19 was not associated with clinical improvement at day 15 or day 29, nor with a reduction in mortality, nor with a reduction in SARS-CoV-2 RNA."

PINETREE

Early Remdesivir to Prevent Progression to Severe Covid-19 in Outpatients (Gottlieb et al., *NEJM*, December 22, 2021)[20]

- A randomized, double-blind, placebo-controlled trial evaluating the efficacy and safety of a 3-day course of remdesivir in high-risk, nonhospitalized patients with Covid-19
- Participants received placebo or remdesivir intravenously at a dose of 200 mg on day 1 and 100 mg on days 2 and 3
- Conclusions: "Among nonhospitalized patients who were at high risk for Covid-19 progression, a 3-day course of remdesivir had an acceptable safety profile and resulted in an 87% lower risk of hospitalization or death than placebo."

Solidarity (World Health Organization)

Remdesivir and three other drugs for hospitalised patients with COVID-19: final results of the WHO Solidarity randomised trial and updated meta-analyses (WHO Solidarity Trial Consortium, *Lancet*, May 2, 2022)[21]

- Open-label RCT of 4 prospective drugs for COVID-19 (remdesivir, hydroxychloroquine, lopinavir, and interferon beta-1a)
- Participants were randomly allocated to one of the drugs and received 200 mg on day 0 and 100 mg on days 1 through 9; no placebos used
- Conclusions: "Remdesivir has no significant effect on patients with COVID-19 who are already being ventilated. Among other hospitalised patients, it has a small effect against death or progression to ventilation (or both)."

Newly added **Effect of remdesivir post hospitalization for COVID-19 infection from the randomized SOLIDARITY Finland trial** (Nevalainen et al., Nature Communications, October 18, 2022)[22]

- A follow-up to an RCT evaluating the effects of remdesivir on patient outcomes one year after hospitalization due to COVID-19
- Conclusions: "...after a one-year follow-up of hospitalized patients, one in six reported they had not recovered well from COVID-19. Our results provide no convincing evidence of remdesivir benefit, but wide confidence intervals included possible benefit and harm."

Please note: This summary reflects evidence up to and including January 3, 2023 only.

Search Methods

Date searched: 2023-01-03

- Google for news items and clinical trials in progress
- Epistemonikos L-OVE on COVID-19 (manual search)
- Ovid MEDLINE search with built-in COVID-19 filter and major journals filter: (remdesivir or veklury).ti,ab. and (cmaj or jama or n engl j med or lancet or science or nature or bmj or ann intern med or plos one).ja.

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