Parenteral Drug Therapy Manual	IV ROUTES				OTHER ROUTES		GENERIC NAME OF MEDICATION **Remdesivir**
		D	C	I	SC	IM	OTHER NAMES VEKLURY®
	RN		**Y**	**Y**			CLASSIFICATION ASHP **ANTIVIRAL AGENT**
	RPN		**Y**	**Y**			
	MD		**Y**	**Y**			

INDICATIONS

- Treatment can be considered for **moderately ill** hospitalized patients with **laboratory-confirmed COVID-19** as per Ontario Covid-19 Clinical Practice Guidelines (https://covid19-sciencetable.ca/sciencebrief/clinical-practice-guideline-summary-recommended-drugs-and-biologics-in-adult-patients-with-covid-19/); **preference should be given to enrolling patients in eligible clinical trials evaluating remdesivir (CATCO clinical trial currently at TBRHSC)**.
- **Remdesivir is restricted to and may ONLY be ordered by Infectious Diseases or Intensivists (Critical Care) if ordered OUTSIDE of a clinical trial.**
- **Remdesivir to be prepared in pharmacy sterile room during daytime pharmacy hours only at this time.**
- Please note that recommendations in this document are based on best available data and may change as additional data become available.

ADMINISTRATION

Adults and Pediatric Patients Weighing 40 kg or Higher (use in pediatrics is off-label):

Remdesivir for Injection, 100 mg, **Lyophilized Powder**

- Reconstitute each single-dose vial of remdesivir **lyophilized powder** with 19 mL of **SWFI** per vial to make 5mg/mL reconstituted solution (discard the vial if a vacuum does not pull the SWFI into the vial).
    - Immediately shake the vial for 30 seconds.
    - Allow the contents of the vial to settle for 2 to 3 minutes. A clear solution should result.
    - If the contents of the vial are not completely dissolved, repeat this procedure as necessary.
- Dilute immediately after reconstitution as per **Table 1**. Gently invert the bag 20 times to mix.
- Discard any unused portion remaining in the remdesivir vial.
- Administer the diluted solution over a rate of 30 minutes to 120 minutes through **IV infusion only**; (not IM).
- After infusion is complete, flush with at least 30 mL of normal saline.

Table 1 - Recommended Dilution Instructions Using Reconstituted Remdesivir for Injection **Lyophilized Powder** in Adults and Pediatric Patients Weighing 40 kg and Higher (use in pediatrics is off-label)

Remdesivir dose	0.9% sodium chloride infusion bag volume to be used	Step 1: Volume to be withdrawn and discarded from 0.9% sodium chloride infusion bag	Step 2: Required volume of reconstituted remdesivir to be added to infusion bag
200 mg (2 vials)	250 mL	40 mL	40 mL (2 x 20 mL)
	100 mL	40 mL	40 mL (2 x 20 mL)
100 mg (1 vial)	250 mL	20 mL	20 mL
	100 mL	20 mL	20 mL

Note: 100 mL should be reserved for patients with severe fluid restriction

Pediatric Patients Weighing 3.5 kg to Less Than 40 kg (use in pediatrics is off-label):

Remdesivir for Injection, 100 mg, **Lyophilized Powder- use this product ONLY**

- Reconstitute each single-dose vial of remdesivir **lyophilized powder** with 19 mL of **SWFI** per vial to make 5mg/mL reconstituted solution (discard the vial if a vacuum does not pull the SWFI into the vial).

    - Immediately shake the vial for 30 seconds.
    - Allow the contents of the vial to settle for 2 to 3 minutes. A clear solution should result.
    - If the contents of the vial are not completely dissolved, repeat this procedure as necessary.
- Immediately following reconstitution, for pediatric patients weighing 3.5 kg to less than 40 kg, the 100 mg/20 mL (5 mg/mL) **remdesivir concentrate should be further diluted to a fixed concentration of 1.25 mg/mL using 0.9% sodium chloride**.
- The total required infusion volume of the 1.25 mg/mL remdesivir solution for infusion is calculated from the pediatric weight-based dosing regimens of 5 mg/kg for the Loading Dose and 2.5 mg/kg for each Maintenance Dose.
- Small 0.9% sodium chloride infusion bags (e.g., 25, 50, or 100 mL) or an appropriately sized syringe should be used for pediatric dosing. The recommended dose is administered via IV infusion in a total volume dependent on the dose to yield the target remdesivir concentration of 1.25 mg/mL.
- A syringe may be used for delivering volumes less than 50 mL.
- Gently invert the bag or syringe 20 times to mix.
- Discard any unused portion remaining in the remdesivir vial.
- Administer the diluted solution over a rate of 30 minutes to 120 minutes through **IV infusion**.
- After infusion is complete, flush with at least 30 mL of normal saline.

POTENTIAL ADMINISTRATION HAZARDS

- Hypersensitivity Including Infusion-Related and Anaphylactic Reactions:
    - Hypotension, tachycardia, bradycardia, dyspnea, wheezing, angioedema, rash, nausea, vomiting, diaphoresis, and shivering.
    - Slower infusion rates, with a maximum infusion time of up to 120 minutes, can be considered to potentially prevent these signs and symptoms.
- Increased Risk of Transaminase Elevations:
    - Hepatic laboratory testing should be performed in all patients prior to starting remdesivir and daily while receiving remdesivir.
    - Remdesivir should not be used in patients with ALT greater than/equal to 5 times the ULN.
- Risk of Reduced Antiviral Activity:
    - When Coadministered with Chloroquine or Hydroxychloroquine and is not recommended.
- GI: nausea.
- CNS: headache
- Dermatology: rash
- Endocrine and metabolic: hyperglycemia
- Renal: increased creatinine, acute renal failure

DOSAGE

Pediatric and Adult Dosing (use in pediatrics is off-label):
Less than 40 kg: 5 mg/kg IV loading dose; then 2.5mg/kg IV q24h **(remdesivir lyophilized powder is used to limit cyclodextrin exposure)**
Greater than/equal to 40 kg: 200 mg IV x1; then 100 mg IV q24h

Remdesivir should **not** be used in patients with eGFR less than 30 mL/min. No data in renal replacement therapy.

Remdesivir should **not** be used in patients with ALT greater than/equal to 5 times the ULN; or if ALT is increased and is accompanied with signs or symptoms of liver inflammation or increased conjugated bilirubin, alkaline phosphatase or INR.

Duration of Therapy:
For moderately ill patients: 5 days or until discharge (whichever comes first)

COMPATIBILITY, STABILITY, STORAGE

Remdesivir for Injection, 100 mg, **Lyophilized Powder**:

- Unopened vials of the lyophilized formulation should be stored below 30°C.
- Once reconstituted, the drug product should be diluted immediately.
- After reconstitution, the total storage time before administration should not exceed 4 hours at room temperature or 24 hours at refrigerated temperature (2°C to 8°C).
- Remdesivir dose preparation should be performed on the same day as administration.
- Compatible with 0.9% sodium chloride. The prepared diluted solution should not be administered simultaneously with any other IV medication due to unknown compatibility.

- Do not reuse or save unused portions of remdesivir for future use.
- Compatible with PVC and non-PVC IV bags.

MISCELLANEOUS

- Renal and hepatic function should be monitored at baseline and ongoing while on remdesivir.

REFERENCES

Ontario COVID-19 Drugs and Biologics Clinical Practice Guidelines Working Group (on behalf of the Ontario COVID-19 Science Advisory Table) (https://covid19-sciencetable.ca/science-briefs/#infectious-diseases-clinical-care)
Remdesivir Fact Sheet for Health Care Providers (Gilead 2020)
Health Canada Remdesivir (Veklury®) Product Monograph (July 2020)
Ottawa Remdesivir PDTM (accessed December 4, 2020)