



COVID-19 Treatment Guidelines

Interferons

Drug Info

Last Updated: December 16, 2021

Interferons are a family of cytokines with in vitro and in vivo antiviral properties. Interferon beta-1a has been approved by the Food and Drug Administration (FDA) to treat relapsing forms of multiple sclerosis, and it has been evaluated in clinical trials for the treatment of COVID-19. Interferon alfa has been approved to treat hepatitis B and hepatitis C virus infections, and interferon lambda is not currently approved by the FDA for any use. Both interferon alfa and lambda have also been evaluated for the treatment of COVID-19.

Recommendations

- The COVID-19 Treatment Guidelines Panel (the Panel) **recommends against** the use of **systemic interferon beta** for the treatment of hospitalized patients with COVID-19 (**AI**).
- The Panel **recommends against** the use of **interferon alfa** or **lambda** for the treatment of hospitalized patients with COVID-19, except in a clinical trial (**AIIa**).
- The Panel **recommends against** the use of **interferons** for the treatment of nonhospitalized patients with mild or moderate COVID-19, except in a clinical trial (**AIIa**).

Rationale

Many of the early studies that evaluated the use of systemic interferons for the treatment of COVID-19 were conducted in early 2020, before the widespread use of remdesivir and corticosteroids. In addition, these early studies administered interferons with other drugs that have since been shown to have no clinical benefit in people with COVID-19, such as lopinavir/ritonavir and hydroxychloroquine.¹⁻³

More recent studies have not demonstrated efficacy for interferons in the treatment of COVID-19, and some of the trials suggested potential harm in patients with severe disease, such as those who were on high-flow oxygen, noninvasive ventilation, or mechanical ventilation.^{4,5} In a large randomized controlled trial of hospitalized patients with COVID-19, the combination of interferon beta-1a plus remdesivir showed no clinical benefit when compared to remdesivir alone.⁴ Similarly, the World Health Organization Solidarity trial did not show a benefit for interferon beta-1a when this drug was administered to hospitalized patients, approximately 50% of whom were on corticosteroids.⁵

Other interferons, including systemic interferon alfa or lambda and inhaled interferons, have also been evaluated in patients with COVID-19; however, these interferons (with the exception of subcutaneous interferon alfa) are not available in the United States. The trials that have evaluated interferon alfa and interferon lambda have generally been small or moderate in size and have not been adequately powered to assess whether these agents provide a clinical benefit for patients with COVID-19 (see [Table 2c](#)).

Clinical Trials

See [ClinicalTrials.gov](https://clinicaltrials.gov) for a list of clinical trials that are evaluating the use of interferons for the treatment of COVID-19.

Adverse Effects

The most frequent adverse effects of systemic interferon include flu-like symptoms, nausea, fatigue, weight loss, hematological toxicities, elevated transaminases, and psychiatric problems (e.g., depression, suicidal ideation). Interferon beta is better tolerated than interferon alfa, but it can cause similar types of adverse effects.^{6,7}

Drug-Drug Interactions

Additive toxicities may occur when systemic interferons are used concomitantly with other immunomodulators and chemotherapeutic agents.^{6,7}

Considerations in Pregnancy

According to analyses of data from several large pregnancy registries, exposure to interferon beta-1b prior to conception or during pregnancy does not lead to an increased risk of adverse birth outcomes (e.g., spontaneous abortion, congenital anomaly).^{8,9}

Exposure to interferon beta-1b did not influence birth weight, height, or head circumference.¹⁰

Considerations in Children

There are currently not enough data on the use of interferons to treat respiratory viral infections in children to make any recommendations for treating children with COVID-19.

References



www.covid19treatmentguidelines.nih.gov

An official website of the [National Institutes of Health](https://www.nih.gov)