The Leukemia & Lymphoma Society (LLS) hears from blood cancer patients and caregivers each day about the profound effects of the COVID-19 pandemic on their cancer care and daily lives, including questions about how well COVID-19 vaccines, monoclonal antibodies and antivirals work for them.

This fact sheet is designed to give healthcare professionals the most up-to-date information about recommendations for reducing COVID-19 risks in blood cancer patients.

Hematologic malignancy patients generally require one extra primary COVID-19 vaccine dose and earlier boosters

Immunocompromised patients who begin their vaccination series with an mRNA vaccine (Moderna, Pfizer-BioNTech) should receive 5 doses (3 primary, plus 2 boosters). Additional and booster doses of Novavax COVID-19 vaccine are not currently approved. Patients who choose this vaccine should receive only two primary doses regardless of their immune status. FDA has limited use of the Johnson & Johnson COVID-19 vaccine due to an increased risk of thrombosis and thrombocytopenia syndrome.

Which patients are considered “moderately to severely immunocompromised?”

The National Institutes of Health (NIH) COVID-19 expert panel considers the following hematologic malignancy patients to be moderately to severely immunocompromised:

- Anyone receiving active treatment
- Anyone with a hematologic malignancy (e.g., chronic lymphocytic leukemia, non-Hodgkin lymphoma, plasma cell dyscrasias) known to have a poor response to COVID-19 vaccines or an increased risk of severe COVID-19, regardless of treatment status.

### Vaccine dosing in moderately to severely immunocompromised patients only

<table>
<thead>
<tr>
<th>Dose 1 to Dose 2</th>
<th>Dose 2 to Dose 3</th>
<th>Dose 3 to Dose 4</th>
<th>Dose 4 to Dose 5</th>
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<tbody>
<tr>
<td>No. of Primary Doses</td>
<td>No. of Booster Doses</td>
<td>No. of Primary Doses</td>
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<tr>
<td>6 months – 4 years</td>
<td>3</td>
<td>6 months – 17 years</td>
<td>N/A</td>
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<tr>
<td>5–11 years</td>
<td>3</td>
<td>≥ 18 years</td>
<td>N/A</td>
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<tr>
<td>≥ 12 years</td>
<td>3</td>
<td>≥ 18 years</td>
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**Important Notes:** For information on doses and timing of the J&J vaccine, please visit [https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/janssen.html](https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/janssen.html). For immunocompromised patients, Moderna doses 1-3 are full strength. Only the booster doses (doses 4 and 5) are half strength. Booster doses may be “mixed and matched.”
In addition, LLS considers patients who have had CD19-targeted CAR T-therapy to be immunosuppressed for as long as the CAR T is working, regardless of the time since infusion.

LLS strongly encourages all blood cancer patients, regardless of where they are in their treatment, remission or recovery to talk with their oncology treatment team about the status of their immune system and whether Evusheld™ and additional COVID-19 booster doses are right for them.

LLS data: COVID-19 vaccine response varies by malignancy and treatment type

LLS has reported anti-spike antibody response to COVID-19 vaccines from the largest study of blood cancer patients to date. Our first published study in over 1,400 hematologic patients reported that 25% were seronegative after two mRNA vaccine doses. Results varied by type of malignancy and treatment. Patients with B-cell malignancies, including CLL, tended to do worse.

LLS presented additional data at the American Society of Hematology annual meeting in December 2021 showing that most hematology patients benefit from a third COVID-19 vaccine dose. However, a large proportion of hematology patients will remain at risk even with the additional dose. It is important to encourage hematology patients to take additional precautions to avoid infection, such as masking and distancing, and to ensure they have access to the prophylactic monoclonal antibody (Evusheld), as well as monoclonal antibody and antiviral treatments that can reduce their risk of progressing to severe COVID-19.

COVID-19 prevention and treatment guidelines

The NIH convened an expert panel to develop COVID-19 Treatment Guidelines. The guidelines are updated as the pandemic evolves. The guidelines provide an algorithm for pre-exposure prophylaxis, post-exposure-prophylaxis, and treatment of COVID-19 in both hospitalized and non-hospitalized patients.

ANTIBODY RESPONSE* TO THIRD COVID-19 VACCINE BY BLOOD CANCER DIAGNOSIS

- Elevation of existing antibodies
- Seroconverted from no detectable antibodies to detectable antibodies
- Continued to have no detectable antibodies

Source: The LLS National Patient Registry. Data collected from 699 patients who had a third dose of Moderna or Pfizer mRNA vaccine between June and September 2021.

*Response measures anti-spike antibody levels. Most patients received the same vaccine brand for all three doses. There were not enough “mix and match” third doses to draw conclusions about whether mixing doses has an effect on immune response.

Data reported at American Society of Hematology annual meeting, December 13, 2021.
LLS has developed tables for consumers with important information about monoclonal antibodies and antiviral medications available for prophylaxis and treatment in the outpatient setting. LLS makes every effort to rapidly update these tables as recommendations evolve, but suggests that frontline medical professionals stay informed of recent changes by monitoring the NIH “What's New” page often.

Snapshot: COVID-19 Pre-exposure prophylaxis
Tixagevimab co-packaged with cilgavimab (Evusheld) is the only monoclonal antibody authorized for pre-exposure prophylaxis of COVID-19 disease.
- For use in adults and children ≥12 years and weighing ≥40 kg who are moderately to severely immunocompromised due to a medical condition or immune-suppressing treatment, or who cannot be vaccinated with any COVID-19 vaccine according to the approved schedule.
- On February 24, 2022, the FDA doubled the recommended dose of Evusheld to 300 mg of each agent based on decreased neutralization activity against Omicron subvariants BA.1 and BA.1.1. Patients who received the earlier recommended dose of 150 mg of each agent should receive another dose as soon as possible.
- On June 29, 2022, Evusheld was authorized for repeated dosing every 6 months for patients who need ongoing protection.

Snapshot: COVID-19 treatment in the outpatient setting
One monoclonal antibody, bebtelovimab, is authorized to treat COVID-19 in outpatients. Authorizations for other antibody treatments were withdrawn because they are not active against currently circulating variants.
- Treatment of mild-to-moderate COVID-19 in adults and children ≥12 years and weighing ≥40 kg who have tested positive for COVID-19, are not hospitalized or using supplemental oxygen and who are at increased risk of progressing to severe COVID-19.
- Treatment should be initiated as soon after positive COVID-19 test results as possible or within 7 days of symptom onset.

Three antivirals, nirmatrelvir and ritonavir tablets (Paxlovid™), molnupiravir capsules, and remdesivir (Veklury®) IV infusion or injections are authorized to treat COVID-19 in outpatients. (Remdesivir is also approved for use in hospitalized patients.)
- Treatment of mild-to-moderate COVID-19 confirmed by a positive COVID-19 test in non-hospitalized patients who are at high risk of progression to severe infection.
- Molnupiravir is authorized for use in adults ≥18 years.
- Nirmatrelvir and ritonavir is authorized for use in adults ≥18 years and children ≥12 years and weighing ≥40 kg.
- Remdesivir is authorized for use in adults ≥18 years and pediatric patients at least 28 days of age and weighing at least 3 kg.
- Treatment should begin as soon as possible after COVID-19 diagnosis and within 5 days of symptom onset (7 days for remdesivir).
- Oral treatments (molnupiravir, nirmatrelvir and ritonavir) should be taken for no more than 5 consecutive days; remdesivir is a 3-day course of treatment.
- Important note: Nirmatrelvir and ritonavir may impair the efficacy and safety of certain cancer medications.

Snapshot: high-titer COVID-19 convalescent plasma
The FDA has issued an emergency use authorization for the use of high-titer COVID-19 convalescent plasma (CCP) in outpatients who are immunocompromised or receiving immunosuppressive treatment. The NIH panel found insufficient evidence to recommend either for or against its use in this population. Clinicians who administer CCP to their patients should, whenever possible, use high-titer CCP from a vaccinated donor who recently recovered from COVID.

Additional Resources

| LLS COVID-19 Response Program: Resources for Patients and Caregivers |
|-----------------------------|---------------------------------------------------------------|
| https://www.LLS.org/covid-19-resources |

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<td><a href="https://www.covid19treatmentguidelines.nih.gov/">https://www.covid19treatmentguidelines.nih.gov/</a></td>
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References


