Beth Israel Lahey Health

COVID-19 Vaccination Guidelines in Immunosuppressed Populations: Hematology/Oncology and Solid Organ Transplantation v.1.0

This document is designed to assist clinicians in determining the appropriateness and timing of COVID-19 vaccination in patients with cancer, both on and off active treatment, and those who are immunocompromised due to their disease, treatment, or following hematopoietic stem cell transplant (HSCT)/solid organ transplant (SOT). Updates will occur as more data emerge.

As of this review, February 10, 2021, there are currently no FDA approved vaccines for COVID-19. The FDA has given Emergency Use Authorization (EUA) to two mRNA based COVID-19 vaccines (EUA: BNT162b2 - Pfizer/BioNTech | EUA: mRNA-1273 - Moderna) following Phase 3 clinical trials demonstrating > 94% efficacy and low incidence of severe adverse events.

According to the CDC, active cancer and immunodeficiency following transplant are comorbid conditions that confer increased risk for developing severe COVID-19 disease. Phase 2 of the Massachusetts Department of Health Vaccination Plan began in February 2021 and includes: (listed in the order of priority)

- Patients age 75+
- Patients age 65+ and individuals with 2 or more comorbidities (only those conditions listed as *at increased risk* for severe illness)
- Certain Essential Workers
- Patients with one comorbid condition

COVID-19 in Cancer Patients: Patients with cancer demonstrate increased risk of morbidity and mortality secondary to COVID-19 infection. Complications are most pronounced in patients with advanced hematologic malignancies, patients undergoing allogeneic or autologous hematopoietic stem cell transplantation, patients receiving CAR T-cells following lymphodepletion, and patients receiving intensive myelosuppressive or immunosuppressive therapy. As such, providing protection from COVID-19 infection in this patient population is critical.

Patients with cancer were not studied in the clinical trials used to support the EUAs for the current vaccines. As such, the safety and efficacy of COVID-19 vaccination in this setting is uncertain because the immunologic dysfunction that characterizes these populations potentially blunts the capacity to respond to vaccination. The timing of vaccination presents a significant challenge as cancer therapy may interfere with vaccine response, interruption of therapy may pose significant risk, and the malignancy itself may disrupt vaccine response. The relative impact of diverse cancer therapeutics with immunosuppressive and immunomodulatory effects have not been studied.

It is possible that partial protection may arise from suboptimal response to vaccination and potentially mitigate the severity of COVID-19 infection and associated complications.

Recommendation: Despite the limited amount of data available, based on the vaccine mechanism of action, low incidence of severe adverse events, and high rate of transmission of COVID-19 in the community at the present time, the **BILH Pharmacy and Therapeutics Hematology and Oncology Subcommittee recommends the patients with malignancy should receive COVID-19 vaccination** during Phase 2 of the Massachusetts Department of Health Vaccination Plan. This guidance is in accordance with guidelines from national organizations (ASH | ASCO | NCCN) for patients with malignancy who are living in areas of significant COVID-19 prevalence.

Please refer to **Appendix** for more detailed BILH guidance regarding vaccination of immunocompromised hosts including cancer patients.

Patients should be counseled that vaccination may not be protective and precautionary measures including masking and social distancing should be maintained. Vaccination of eligible household contacts and caregivers may provide additional protection.

Providers may elect to delay vaccination or modify ongoing therapy on an individual basis if they feel that the benefit of this modification clearly outweighs the risks. One example might be a patient with transient immune suppression that will shortly recover and for whom a modest delay in vaccination will potentially result in heightened response. Alternatively, the schedule of cancer therapeutics might be adjusted if this does not pose risk for disease progression or treatment outcome. However, given that interruption of therapy may have significant consequences, the period of immune suppression resulting from disease or therapeutic interventions are often lengthy, and there are currently no data to provide additional guidance, the default recommendation has been to provide vaccine when available. As more experience is accumulated in this setting, recommendations may be adjusted.

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APPENDIX: COVID-19 Vaccination Guidelines in Immunosuppressed Populations: Hematology/Oncology and Solid Organ Transplantation		
	Vaccination Recommendation	**Comments**
Hematology/Oncology		
NOT actively being treated	Recommend vaccination	
Active treatment: Immunization is recommended for all patients receiving active therapy, with the understanding that there are limited safety and efficacy data in these patients.		
Cytotoxic Treatment	Recommend vaccination	Response may be blunted but vaccination is still recommended. Per provider discretion, may consider deferring vaccination during period of nadir
Targeted therapy	Recommend vaccination	
Checkpoint inhibitors & other immunotherapy	Recommend vaccination	
Radiation therapy	Recommend vaccination	
Hematopoietic stem cell transplant		
Recent HSCT (autologous, allogeneic)	Recommend vaccination starting after day 30 post-transplant	Response may be blunted, particularly in those patients who have received anti-B-cell agents, but vaccination is still recommended. Note: for patients who are receiving post-transplant immunizations, recommend separating COVID-19 vaccine from other vaccines by at least 2 weeks.
Chronic GVHD treatment	Recommend vaccination	Response may be blunted but vaccination is still recommended. No data regarding flaring GVHD.
CAR-T	Recommend vaccination starting after day 30 post CAR-T products	Response may be blunted but vaccination is still recommended. For those patients on clinical trials, confirm timing per protocol/sponsor
Solid organ transplant (i.e. heart, kidney, liver, pancreas)		
Recent transplant	Recommend vaccination starting after 8 weeks post-transplant AND/OR 8 weeks after use of ATG for acute rejection episode.	Response may be blunted but vaccination is still recommended.

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