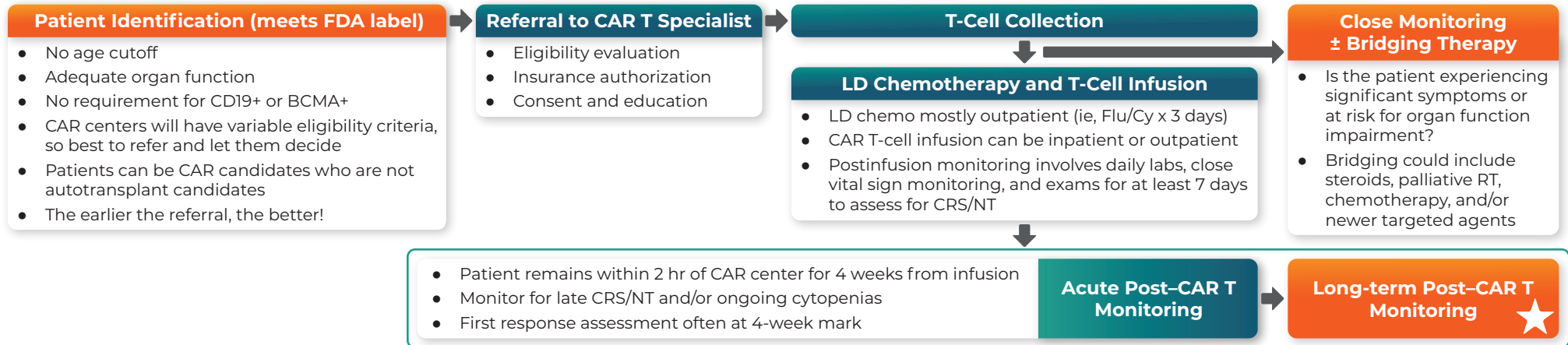


Nursing Management of Long-term Toxicities Related to CAR T-Cell Therapies: A Pocket Guide

CAR T-Cell Therapy Patient Journey



CAR T-Cell Therapies and Current Indications (July 2025)

CAR T-Cell Therapy		Indications		CAR T-Cell Therapy		Indications	
B-Cell Acute Lymphoblastic Leukemia (B-ALL)				Non-Hodgkin Lymphoma (NHL)			
Brexucabtagene autoleucel	Adults with R/R B-cell precursor ALL			Brexucabtagene autoleucel	Adults with R/R mantle cell lymphoma (MCL) and R/R B-ALL		
Obecabtagene autoleucel	Adults with R/R B-cell precursor ALL			Lisocabtagene maraleucel	- Adults with LBCL, including DLBCL NOS (including DLBCL arising from indolent lymphoma), HGBCL, primary mediastinal LBCL, and FL grade 3B, who have: - Refractory disease to first-line chemoimmunotherapy or relapse within 12 months of first-line chemoimmunotherapy; or - Refractory disease to first-line chemoimmunotherapy for whom autologous hematopoietic stem cell transplant is not an option; or - R/R disease after ≥2 lines of systemic therapy - Adults with R/R chronic lymphocytic leukemia (CLL) or small lymphocytic lymphoma (SLL) after ≥2 lines of therapy, including both a BTK inhibitor and a BCL-2 inhibitor - Adults with R/R FL after ≥2 lines of systemic therapy - Adults with R/R MCL after ≥2 lines of systemic therapy, including a BTK inhibitor		
Tisagenlecleucel	Patients up to 25 years of age with B-cell precursor ALL that is refractory or in second or later relapse			Tisagenlecleucel	- Adults with R/R LBCL, including DLBCL NOS, high-grade B-cell lymphoma, and DLBCL arising from FL, after ≥2 of systemic therapy - Adults with R/R FL after ≥2 of systemic therapy		
Multiple Myeloma (MM)							
Idecabtagene vicleucel	Adults with R/R MM after ≥2 prior lines of therapy including an immunomodulatory agent (IMiD), a proteasome inhibitor (PI), and an anti-CD38 monoclonal antibody						
Ciltacabtagene autoleucel	Adults with R/R MM who have received at least 1 prior line of therapy including a PI and an IMiD and are refractory to lenalidomide						
Non-Hodgkin Lymphoma (NHL)							
Axicabtagene ciloleucel	- Adults with large B-cell lymphoma (LBCL), including diffuse large B-cell lymphoma (DLBCL) not otherwise specified (NOS), primary mediastinal LBCL, high-grade B-cell lymphoma, and DLBCL arising from follicular lymphoma (FL) that is refractory to first-line chemoimmunotherapy or that relapses within 12 months of first-line chemoimmunotherapy - Adults with R/R LBCL after ≥2 lines of systemic therapy - Adults with R/R FL after ≥2 lines of systemic therapy						

CAR T-Cell Therapy: Toxicities

Acute Toxicities

- Cytokine-release syndrome
- Immune effector cell-associated neurotoxicity syndrome
- Cytopenias
- Hemophagocytic lymphohistiocytosis/macrophage activation syndrome

Generally managed by treating center HCPs

Delayed Toxicities

- B-cell aplasia/hypogammaglobulinemia
- Prolonged cytopenias
- Late infections
- Long-term neurologic events/movement and neurocognitive treatment-emergent AEs
- Transient cardiac toxicities
- Secondary malignancies?

Generally managed by primary oncologists
(can be treating center or community)

Long-term Monitoring and Toxicities: Weeks to Months From Infusion



Patients should be monitored for:

- ✓ Prolonged cytopenias
- ✓ B-cell aplasia (IgG levels)
- ✓ Infection
- ✓ Late neurotoxicity
- ✓ Relapse
- ✓ Secondary malignancies



Antimicrobial prophylaxis (herpes and PJP)

- ✓ Variable practices; at core faculty's center, continue for ≥6 mo depending on prior history of shingles
- ✓ Measure CD4 count at 6 mo and discontinue only when CD4 count >200



Vaccination

- ✓ Influenza (yearly)
- ✓ Posttransplant vaccines (resume 12 months after therapy)
- ✓ COVID-19 vaccination (3 months from CAR T-cell therapy [unknown])

Managing Long-term CAR-T Cell Toxicities



Consult institutional guidelines for management of the following toxicities and contact CAR T-cell treatment center for special management questions



B-cell aplasia/hypogammaglobulinemia

- Occurred in **up to ~30%** of adults with R/R large B-cell lymphoma, MCL, or ALL who received approved agents; **43%** of pediatric/young adult patients with R/R B-cell ALL who received tisagenlecleucel; and in **21%** of patients who received idecabtagene vicleucel in pivotal trials
- For levels <400 µg/L replete with IVIG



Cytopenias

- Grade ≥3 cytopenias unresolved by Day 30 post treatment occur in a significant proportion of patients; transfusions as indicated, G-CSF as needed
- Growing body of data on safety of G-CSF earlier post CAR T-cell therapy



Infections

- Occurred in **38%-70%** of patients who received approved agents in pivotal trials
- Manage infections in accordance with institutional policies and in consultation with infectious diseases specialist

References

- | | |
|---|--|
| Axicabtagene ciloleucel PI. | Lisocabtagene maraleucel PI. |
| Berdeja. Lancet. 2021;398:314. | Maus. J Immunother Cancer. 2020;8:e001511. |
| Bishop. Semin Oncol. 2024;51:87. | Obecabtagene Autoleucel PI. |
| Brexucabtagene autoleucel PI. | Oluwole. ASCO 2024. Abstr 6531. |
| Chakraborty. Transplant Cell Ther. 2021;27:222. | Roddie. NEJM. 2024;391:2219. |
| Ciltacabtagene autoleucel PI. | Shah. Lancet. 2021;398:491. |
| Cohen. Blood Cancer J. 2022;12:32. | Shah. J Hematol Oncol. 2022;15:170. |
| Idecabtagene vicleucel PI. | Tisagenlecleucel PI. |
| Laetsch. JCO. 2023;41:1664. | |