

## Immunocompromised Individuals

Immunocompromised individuals are unable to mount an adequate immune response. The cause of the altered immunocompetent state can be primary (inherited) or secondary (acquired) and it can be temporary or permanent.

A variety of conditions and treatments can affect the immune system of an individual, making them more vulnerable to a range of communicable diseases. These conditions include:

- Asplenia (functional or anatomic)
- Congenital immunodeficiencies involving any part of the immune system, including B-lymphocyte (humoral) immunity, T-lymphocyte (cell-mediated) immunity, complement system (properdin, or factor D deficiencies), or phagocytic functions
- Hematopoietic stem cell transplantation (HSCT) and Chimeric Antigen Receptor T-cell (CART) Therapy
- Human Immunodeficiency Virus infection (HIV)
- Immunosuppressive therapy including corticosteroids, chemotherapy, radiation therapy, post-organ-transplant therapy, therapeutic monoclonal antibodies, certain anti-rheumatic drugs, and drugs used for the management of inflammatory bowel disease
- Islet cell transplant (candidate or recipient)
- Chronic kidney disease
- Chronic liver disease (including those with chronic hepatitis B infection and those who are anti-hepatitis C virus positive)
- Malignant neoplasms including leukemia and lymphoma
- Solid organ transplant (candidate or recipient)

Individuals with conditions that compromise the effectiveness of their immune system are at particular risk of infection with encapsulated bacteria such as *Streptococcus pneumoniae* (pneumococcal), *Neisseria meningitidis* (meningococcal), and *Haemophilus influenzae* type b (Hib).

In some immunocompromised individuals, even a less than optimal response to vaccine may provide important benefit as they may be at high risk of morbidity and mortality due to vaccine preventable infection.

Only HSCT recipients require re-immunization after treatment, due to the ablation of hematopoietic cells in the bone marrow pre-transplant. This treatment eliminates the patient's immune memory. CART therapy is a novel treatment for hematologic malignancies, which involves reprogramming a patient's own T-cells to identify and eliminate malignant cells and, similarly to HSCT recipients, immune memory may be lost following treatment and require re-immunization following treatment. Other immunocompromised individuals should be immunized according to past immunization history. However, some exceptions may apply as outlined for a specific immunocompromising condition (see [Part 2 – Immunization of Special Populations](#), Specific Immunocompromising Conditions)