# Subcutaneous Immunoglobulin in Oncology Clinical Practice

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The administration of gammaglobulin as replacement therapy to boost immune function in patients with immunodeficiency secondary to malignancy is traditionally given in the IV formulation. A pilot program at a large Canadian cancer center led by an advanced practice nurse (APN) demonstrated that transitioning patients to home-based, self-administered subcutaneous infusions (subcutaneous immunoglobulin [SCIG]) led to savings and benefits for patients and the institution. The implementation of SCIG in oncology by an APN is a novel and innovative patient-centered approach to supportive care.

**At a Glance**

- Replacement therapy of gammaglobulin may be safely administered via slow subcutaneous infusions in the home setting.
- Transitioning patients from IV gammaglobulin to SCIG promotes patient engagement, independence, and autonomy.
- Development, implementation, and evaluation of an SCIG program represents one role an APN can play in oncology clinical care.

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Opportunities exist for advanced practice nurses (APNs) in oncology at all points in the cancer continuum, from cancer prevention and screening, to diagnosis and treatment, to palliation and end-of-life care. When effective in the role, an APN may influence the patient or client sphere, as well as the spheres of nursing and of the organization or system (Oncology Nursing Society, 2008). The development of a subcutaneous immunoglobulin (SCIG) program at CancerCare Manitoba in Winnipeg, Canada, exemplifies an innovative APN-led intervention that challenged the current standard of practice for immunodeficient patients with cancer and led to policy and procedure changes, new treatment options, and improved patient and organizational outcomes.

## Background

The most common chronic immunodeficiency in patients diagnosed with chronic lymphocytic leukemia (CLL) and lymphoproliferative malignancies is hypogammaglobulinemia, with infection being a major cause of death (Hamblin & Hamblin, 2008). The exact mechanism of dysfunction is unclear, but the extent of the hypogammaglobulinemia is associated with disease duration, stage, and previous treatments (Morrison, 2010). Despite lower than normal levels of gammaglobulin, patients may not experience infectious symptoms; in addition, treatment of the underlying CLL does not restore immune function or cause immunoglobulin levels to normalize (Hamblin & Hamblin, 2008).

Acquired hypogammaglobulinemia secondary to malignancy is not unique to lymphoid malignancies. Infection is a major cause of morbidity and mortality in plasma cell dyscrasias, such as multiple myeloma occurring as a complication of the disease and resulting from the cumulative immune suppression of anticancer treatments (Nucci & Anaissie, 2009). Similarly, the immune suppression experienced from post-hematopoietic stem cell transplantation may last months to years as a consequence of the transplantation or subsequent immunosuppressive therapies to manage graft-versus-host disease (Anderson et al., 2007).

A consensus recommendation on the role of gammaglobulin replacement therapy in the treatment of hematopoietic malignancies has not been clearly delineated (Anderson et al., 2007; Lachance et al., 2016). IV gammaglobulin (IVIG) does not provide consistent benefits and does not improve overall survival in patients with multiple myeloma but should be considered on an individual basis (Anderson et al., 2007). In patients with CLL, IVIG has been shown to reduce the incidence of mild to moderate bacterial infections; however, the total number of severe bacterial and nonbacterial infections was not affected, and treatment with replacement gammaglobulin did not affect overall survival (A Randomized, Controlled Clinical Trial Cooperative Group for the Study of Immunoglobulin in Chronic Lymphocytic Leukemia, 1988).