Gastrointestinal stromal tumors (GISTs) are characterized by constitutive activation of the KIT and PDGFR receptors, which result in subsequent cell proliferation and the prevention of apoptosis (programmed cell death) (Fletcher et al., 2002). The observation that most GISTs express KIT or PDGFR makes these gain-of-function mutations lead to the constitutive activation of the KIT receptor tyrosine kinase (TKI) (Joensuu et al., 2002). Imatinib inhibits the constitutive activation of KIT and PDGFRa tyrosine kinase, which inhibits tumor growth and induces tumor regression (Hirota et al., 1998; Rubin et al., 2001).

Most GISTs (85%–95%) are driven by oncogenic mutations in either KIT or platelet-derived growth factor receptor alpha protein (PDGFRα). These gain-of-function mutations lead to the development of the targeted oral therapy imatinib, a tyrosine kinase inhibitor (TKI) (Joensuu et al., 2002). Multidisciplinary management of GISTs currently includes targeted therapy with the oral tyrosine kinase inhibitor imatinib.

Gastrointestinal stromal tumors (GISTs) are a type of soft-tissue sarcoma, with 4,500–6,000 new cases reported per year in the United States. At the time of diagnosis, about 1,500 of these tumors already have metastasized (American Cancer Society, 2010; Nilsson et al., 2005; Tran, Davila, & El-Serag, 2005; Tryggvason, Gislason, Magnusson, & Jonasson, 2005). Median age at diagnosis is about 60 years and risk is slightly higher in men than in women; about 50% of all cases occur in the stomach, another 33% occur in the small intestine, and the remainder are found in the colon, rectum, or esophagus (Joensuu et al., 2002; Nilsson et al., 2005; Perez et al., 2006; Tran et al., 2005; Tryggvason et al., 2005).

At a Glance

- Gastrointestinal stromal tumors (GISTs) are characterized by mutations in the KIT proto-oncogene that lead to abnormal expression of a protein, KIT receptor tyrosine kinase.
- Multidisciplinary management of GISTs currently includes targeted therapy with the oral tyrosine kinase inhibitor imatinib.
- Oncology nurses can help sustain the effectiveness of imatinib therapy by delivering individualized patient education that promotes understanding of the disease and its treatment.