

# Medullary Thyroid Cancer

## Overview and case study of a rare cancer

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**BACKGROUND:** Medullary thyroid cancer (MTC) is a rare cancer that has historically been managed by endocrinologists. In 2011, the first of several multi-targeted tyrosine kinase inhibitors was approved as treatment for MTC. These drugs have changed the management of MTC to teams that include oncologists and oncology nurses.

**OBJECTIVES:** This article illustrates MTC diagnostics, surveillance, management of adverse drug reactions, and disease progression through a case study.

**METHODS:** An overview of MTC is offered, followed by an in-depth case study that examines MTC from the patient's perspective.

**FINDINGS:** Oncology nurses can influence patient outcomes through the provision of patient education, support, and management of disease and treatment complications.

### KEYWORDS

medullary thyroid cancer; tyrosine kinase inhibitor; oncology nurse

### DIGITAL OBJECT IDENTIFIER

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**THIS ARTICLE CHRONICLES THE AUTHOR'S DAUGHTER-IN-LAW'S JOURNEY** with an aggressive form of medullary thyroid cancer (MTC). Karyn was diagnosed in 2011, shortly after the first tyrosine kinase inhibitor (TKI) was approved for the treatment of MTC. Although TKIs have provided hope for many patients with MTC, they have significant health risks. Oncology nurses are now tasked with familiarizing themselves with MTC and its treatments. Despite new advancements in the treatment of this disease, Karyn succumbed to it five and a half years after initial diagnosis. She hoped that her experiences would ultimately help others who are struggling with this rare cancer.

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### Background

There are four types of thyroid cancer: papillary, follicular, medullary, and anaplastic. MTC accounts for only 1%–2% of thyroid cancers, as compared to 84% for papillary, 11% for follicular, and less than 1% for anaplastic (Cabanillas, McFadden, & Durante, 2016; Lim, Devesa, Sosa, Check, & Kitahara, 2017; Wells et al., 2015). However, MTC is responsible for about 13% of all thyroid cancer–related deaths (Gilliland, Hunt, Morris, & Key, 1997; Kebebew, Ituarte, Siperstein, Duh, & Clark, 2000). The number of MTC cases is on the rise, with a 2.3% average annual increase in incidence from 1992–2012 (Lai, 2010; Mao & Xing, 2016; Randle et al., 2017). Affected individuals are usually diagnosed in the fourth decade of life (Hu, Ying, & Jimenez, 2014). Seventy-five percent of cases are sporadic, or random, whereas the remaining cases are familial, or hereditary (Hedayati, Zarif Yeganeh, Sheikholeslami, & Afsari, 2016). Women with sporadic MTC are affected more often than men, at a ratio of 3:2 (Roman, Lin, & Sosa, 2006). Sporadic and familial cases may have similar presentations; therefore, patients with isolated MTC should be offered germline testing (Romei, Ciampi, & Elisei, 2016).

### Pathophysiology

MTC tumors are neuroendocrine tumors; they are derived from neural crest parafollicular cells (C cells) in the thyroid gland (Matias-Guiu & De Lellis, 2014). Their primary function is to secrete a hormone, calcitonin (CTN), which helps to regulate serum calcium homeostasis (Cote, Grubbs, & Hofmann, 2015). CTN levels serve as a useful biomarker for MTC because