

TABLE 3.
CHEMOTHERAPY AND IMMUNOTHERAPY ASSOCIATED WITH MULTIPLE MYELOMA CARDIOVASCULAR TOXICITY

CHEMOTHERAPY CATEGORY	CHEMOTHERAPY DRUGS	CARDIAC TOXICITY	NURSING CONSIDERATIONS
Alkylating agents	Cyclophosphamide	HF, LVD, pericardial effusion, myopericarditis; venous thromboembolism	Baseline MUGA or echocardiogram
	Cisplatin		
Angiogenesis inhibitors	Lenalidomide, pomalidomide	Venous thromboembolism	Prophylaxis with aspirin or LMWH or warfarin is recommended for those with two or more multiple myeloma-related risk factors. Bradycardia is defined as heart rate less than 60 bpm.
	Thalidomide	Venous thromboembolism, bradycardia	
Anthracycline	Doxorubicin	LVD, dilated cardiomyopathy, HF	Baseline MUGA or echocardiogram
Antibody-based tyrosine kinase inhibitors	Bevacizumab, trastuzumab	HF, cardiomyopathy, arterial thrombotic event, HTN, LVD	Baseline MUGA or echocardiogram
Proteasome inhibitor	Bortezomib, carfilzomib	HF, LVD	Baseline MUGA or echocardiogram
Small molecule tyrosine inhibitor	Dasatinib, lapatinib, imatinib mesylate, sunitinib	HF, LVD, myocardial ischemia, HTN	Baseline MUGA or echocardiogram

HF—heart failure; HTN—hypertension; LMWH—low-molecular-weight heparin; LVD—left ventricular dysfunction; MUGA—multigated acquisition scan

Note. Based on information from Hamo & Bloom, 2015; Yeh & Bickford, 2009.

Source: Noonan et al. *Clin J Oncol Nurs*. 2017 Oct 1;21(5):37-46.