Incidence of First-Line and Second-Line Myelodysplastic Syndrome in a US Commercial Claims Database

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Background: The myelodysplastic syndromes (MDS) include a group of malignancies characterized by myeloid stem cell origin and increasing incidence with age. Although treatment is available with hypomethylating agents (HMAs), 80% of patients fail to achieve remission and nearly all patients eventually develop chemoresistant disease. The incidence of MDS 1st-line HMA treatment failures has not been previously reported.

Methods: We examined US commercial health insurance claims data to estimate the annual incidence of MDS and the number of MDS patients potentially eligible for 2nd-line therapy. We conducted a retrospective cohort study of patients with an MDS-associated medical claim (ICD-9-CM diagnosis code 238.7x) in the identification (ID) period (calendar year 2009). The subgroup of newly diagnosed patients had no prior MDS diagnosis in the pre-ID period (calendar year 2008); patients newly treated with HMA had a claim for HMA in the ID but not pre-ID periods. Using expert input, we defined MDS patients as potential candidates for 2nd-line therapy if they used an HMA in the ID period and stopped for ≥2 months, switched to another HMA, or remained on the first HMA for >7 months. MDS incidence rates were stratified by age (≤49, 50-64, 65-74, and ≥75 years) and sex.

Results: We identified 9,209 patients with an MDS-associated claim. There were 4,151 patients newly diagnosed with MDS, yielding an overall MDS incidence of 69.9/100,000 enrollees (**Table**). Incidence was slightly higher among women (75.7/100,000) than men (63.1/100,000). Women between the ages of 50 and 64 years had the highest incidence (111.5/100,000) among all newly diagnosed patients stratified by age and sex.

The incidence of newly treated MDS patients was 2.8/100,000 enrollees. Among this group, incidence was higher among men (3.6/100,000) than women (2.1/100,000), and when stratified by age and sex the incidence was highest among men aged 75 years or older (10.5/100,000). For each 100,000 enrollees, there were 3 new 2nd-line therapy candidates.

Conclusions: The estimated incidence of MDS in the United States was 69.9 per 100,000 insured enrollees in 2009, similar to results found in other epidemiological databases (Cogle et al, Blood 2011; Goldberg et al, J Clin Oncol 2010). The incidence of MDS patients identified as eligible for 2nd-line therapy was 3/100,000. In this commercially insured patient population we estimate that approximately 9,500 people per year in the United States may be candidates for 2nd-line therapy for MDS. These data can be used to inform population-based estimates that would include Medicare patients in addition to those commercially insured of the medical and economic burden of disease faced by MDS patients.

Table: Incidence of MDS Stratified by Age and Gender

Gender	Age Group, years	Newly Diagnosed Patients	Newly Treated Patients	Potential 2nd Line Treatment Candidates
Female	All ages	75.7	2.1	2.0
	≤49	56.6	0.1	0.0
	50-64	111.5	2.1	1.1
	65-74	101.2	4.0	5.3
	≥75	68.5	4.4	4.4
Male	All ages	63.1	3.6	4.1
	≤49	29.6	0.2	0.1
	50-64	86.5	2.5	3.8
	65-74	106.1	8.5	8.5
	≥75	97.1	10.5	11.7
All	All ages	69.9	2.8	3.0

Note: Results are expressed as number of cases per 100,000 enrollees.