

Disease Snapshot: Multiple Myeloma

Feature	Myeloma Characteristics		
Epidemiology (2009)	Incidence: 20,580 Deaths: 10,580	Median age at diagnosis: 65 years	
Etiology	Genetic mutagens	Antecedent hematologic disease Immune disorders	
Stem cell defect	Mature plasma cell		
Chromosomal findings	High-risk cytogenetics: t(4;14), t(14;16), -17p13, -13q		
Additional prognostic factors	Serum albumin < 3 g/dL β_2 microglobulin (β_2 M) > 4 mg/L Creatinine > 2 mg/dL Hypoploidy ISS stage III	Platelet count < 150,000/mm ³ Bone marrow plasma cells (BMPC) > 50% Relapse < 12 months from HSCT or first-line therapy Plasma cell labeling index (PCLI) > 3% ECOG PS 3-4	
Staging	ISS/Durie-Salmon Criteria		
Disease characteristics (all are incurable)	MGUS: no active therapy required in most cases Smoldering: may not require therapy for extended periods Symptomatic myeloma: Elevated monoclonal protein and CRAB criteria or organ damage present—requires treatment Prognosis is variable based on molecular, genetic, and individual factors Risk-adapted treatment selection is recommended		
Clinical presentation	Anemia (73%) Bone pain (58%) Renal insufficiency (19%)	Hypercalcemia (32%) Fatigue (32%) Infections	Lytic lesions (66%) Peripheral neuropathy (5%)
Indication to treat	Symptomatic myeloma: elevated monoclonal protein and CRAB criteria or organ damage present C: Calcium > 10.5 mg/L R: Renal insufficiency (SCr > 2 m/dL) A: Anemia Hgb < 10 g/dL B: Bone lesions or osteoporosis Early treatment for smoldering myeloma is being investigated in clinical trials		
Key concepts for effective treatment	Novel agents have demonstrated significant activity in newly diagnosed relapsed and refractory MM Eligibility for autologous PBSCT should be evaluated at the time of diagnosis Sequential administration of novel therapies can potentially prolong survival Maintenance therapy following APBSCT is being investigated in clinical trials Chromosomal abnormalities have prognostic value Aggressive management of bone disease is central to QOL Concurrent management of disease and treatment-related adverse events is essential to effective therapy		
FDA-approved therapies	Bortezomib Thalidomide Lenalidomide	Melphalan Dexamethasone	Pegylated liposomal doxorubicin
In clinical trials	Carfilzomib	Elotuzumab	Pomalidomide
Key supportive care concerns	Myelosuppression Renal insufficiency	Thromboembolism Infections	Neuropathy Osteopenia

Adapted from Kurtin. Meniscus Educational Institute.
 Kyle et al. *Mayo Clin Proc.* 2003; 78:21.
 Kurtin. *J Adv Pract Oncol.* May, 2010.