



Multiple Myeloma and Hematologic Malignancies: Racial/Ethnic differences in Outcomes

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The Current State

Chronic Lymphocytic Leukemia (CLL)

- Population-based study¹:
 - African-Americans (AA) present at younger age, advanced stage
 - AA have worse overall survival
- Two-center retrospective cohort study²:
 - AA more likely to present with high-risk disease
 - AA likely to have worse event-free and overall survival

Non-Hodgkin Lymphoma (NHL)

- Population-based analysis of CLL, Follicular Lymphoma (FL) and Diffuse Large B-Cell Lymphoma (DLBCL)³:
 - Five-year relative survival rate: non-Hispanic Whites > Hispanics > AA

1. Shenoy PJ, et al. Clin Lymphoma Myeloma Leuk 2011;11(6):498-506. 2. Flowers CR, Pro B. Cancer 2013;119(20):3593-3595. 3. Li Y, et al. Cancer Epidemiol 2015;39(1):8-13.



The Current State

Acute Lymphoblastic Leukemia (ALL)

- Population-based study¹:
 - Risk of death is 45% higher among AA and Hispanics as compared to Whites.

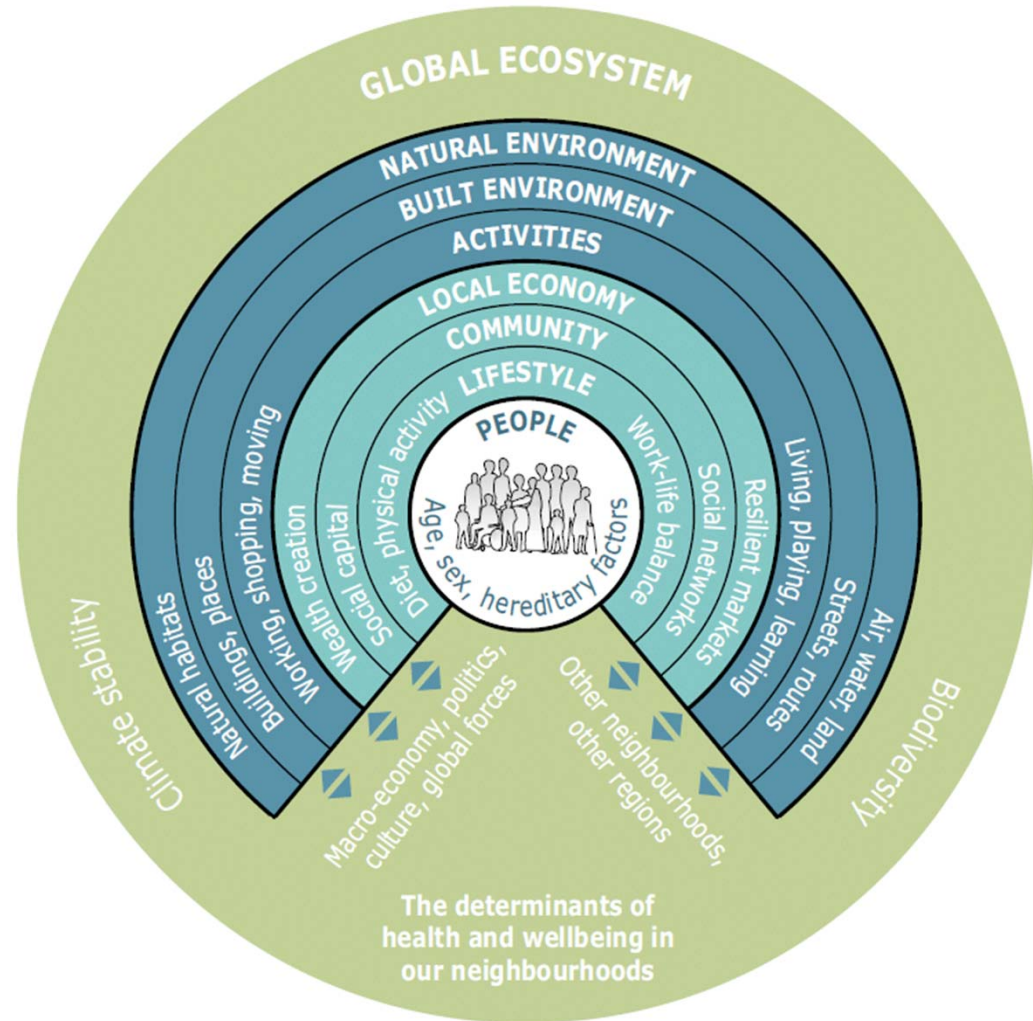
Multiple Myeloma

- Extensively reported disparities in:
 - Access to care
 - Treatment patterns
 - Outcomes

1. Patel MI, et al. Cancer Causes Control 2012;23(11):1831-1837.



Racial Disparities: Healthcare Access and Delivery





Factors Affecting Outcomes: Complex and Inter-related

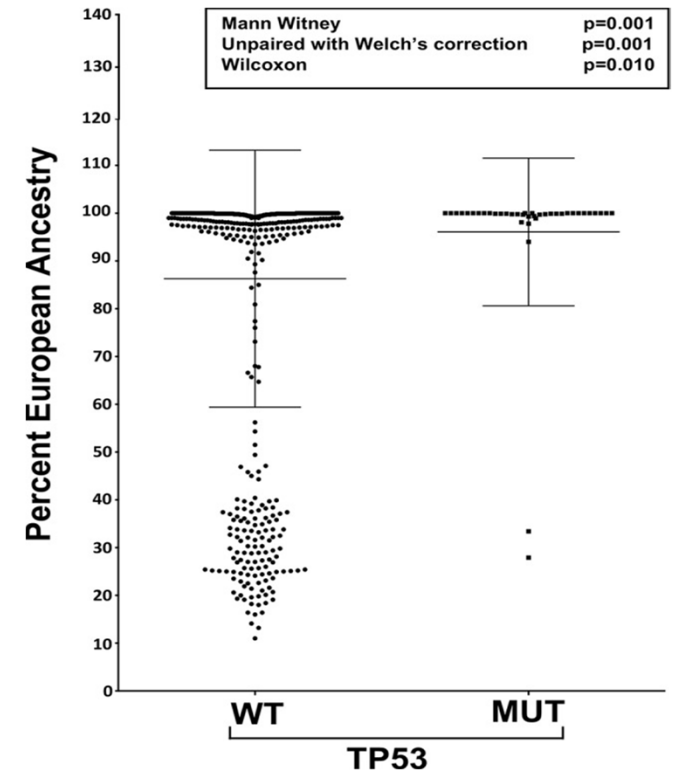
Case Study: Multiple Myeloma



Race and Disease Biology in Multiple Myeloma

Differences in mutation frequency in African and European descent in myeloma

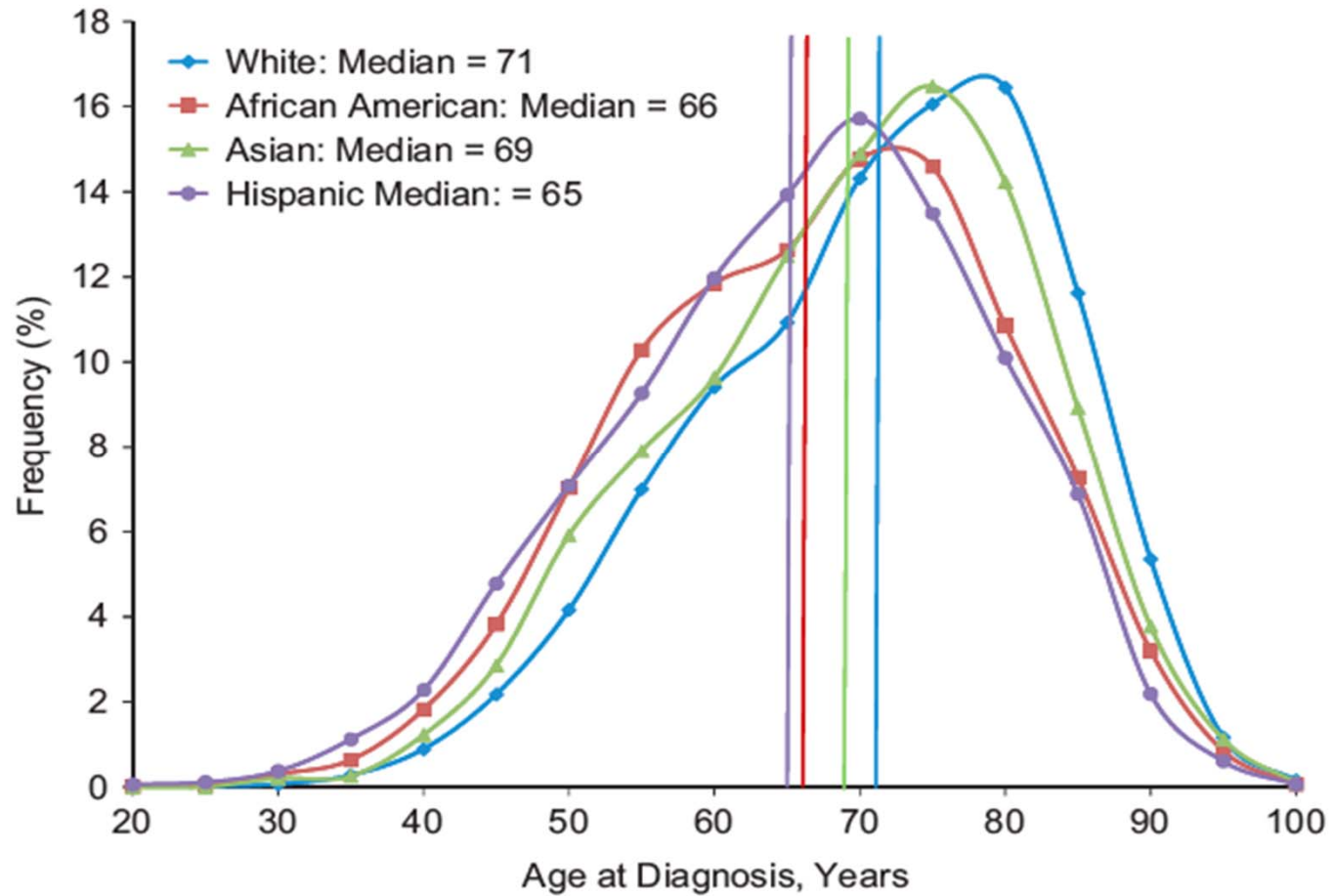
Lower incidence of high-risk mutations in African Americans



Manojlovic Z, et al. PLoS Genet 2017;13(11):e1007087.



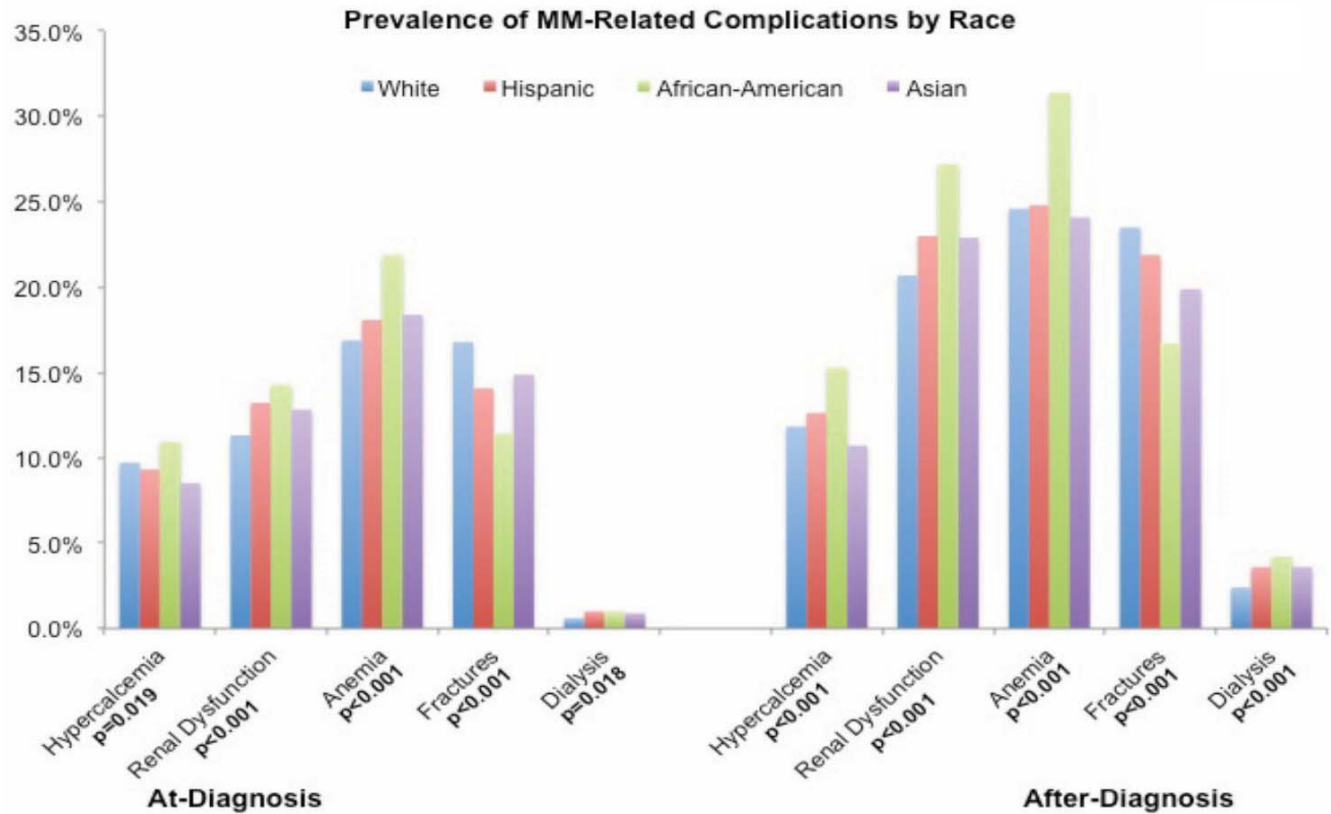
Race and Clinical Presentation in Multiple Myeloma



Ailawadhi S, et al. Br J Haematol 2012;158(1):91-8.



Race and Clinical Presentation in Multiple Myeloma

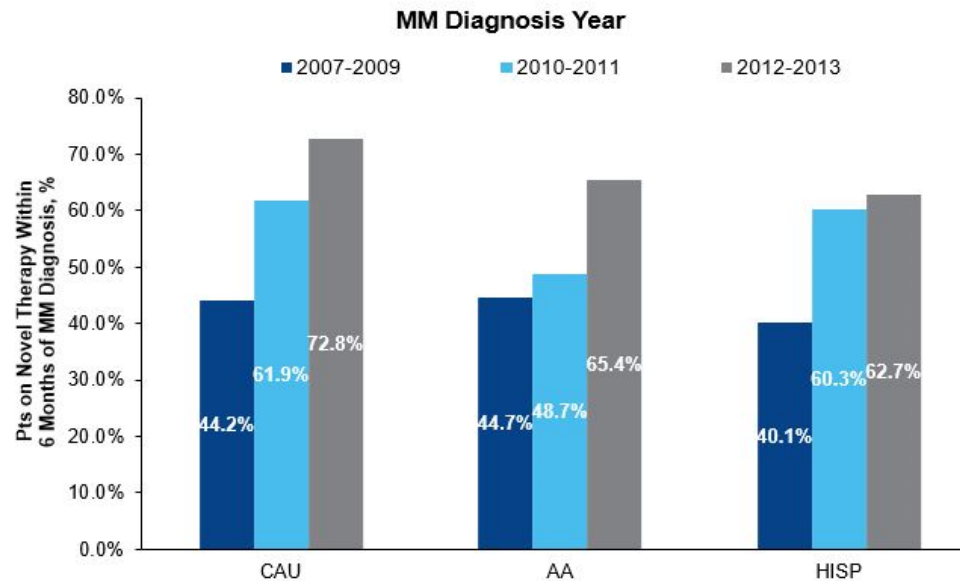
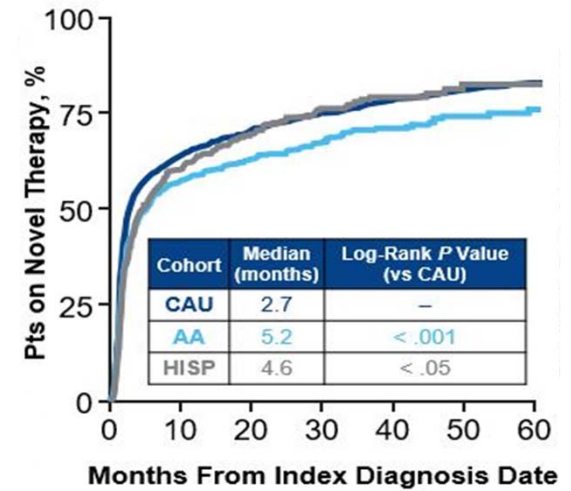


Ailawadhi S, et al. Cancer 2018;124(8):1710-1721.



Racial Disparity in Access to Care: Novel Agents in Multiple Myeloma

Utilization over time:
(2007-2013)

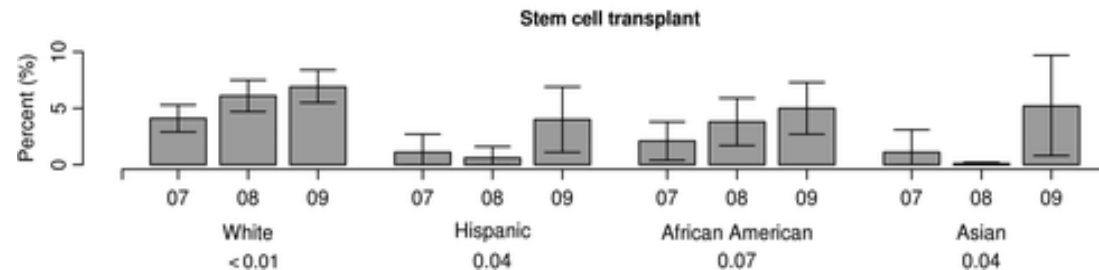


Ailawadhi S, et al. Cancer Med 2017;6(12):5501-5506.



Racial Disparity in Access to Care: Stem Cell transplant (SCT) in Multiple Myeloma

- Age-adjusted odds of receiving SCT for MM significantly higher for Caucasians as compared to AA (OR=1.75; 95% CI, 1.64-1.86; $p < 0.01$).¹
- AA less likely to receive SCT than Whites even after controlling for age, sex, SES, insurance provider and comorbidity score.²
- AA are referred for a SCT significantly later in their disease course than Whites.³
- SCT utilization least in Hispanics, with lowest increase over time³



¹Joshua TV, et al. Cancer. 2010;116(14):3469-3476.

²Fiala MA, et al. Biol Blood Marrow Transplant. 2015;21(7):1153-1154.

³Bhatnagar V, et al. Cancer. 2015;121(7):1064-1070.

⁴Ailawadhi S, et al. Cancer Med. 2017;6(12):5501-5506.



What Does Improved Survival Cost: Financial Toxicity in Multiple Myeloma

Stage	Regimen	Most expensive drugs in regimen	Annual cost to Medicare (M)	Estimated patient medical expenses	Annual cost to Medicare (P)	Annual OOP pharmacy costs (standard Medicare Part D)	Annual cost to Medicare for regimen (M & P)	Annual patient OOP expenses for regimen (M & P)
First line	VRd	Bortezomib (M) Lenalidomide (P)	\$33,523	\$6,705	\$231,397	\$9,719	\$248,496	\$16,424
First line	DRd	Daratumumab SC (M) Lenalidomide (P)	\$183,645	\$36,729	\$231,397	\$9,719	\$368,594	\$46,448
First line	KRd	Carfilzomib (M) Lenalidomide (P)	\$34,667	\$6,933	\$231,397	\$9,719	\$249,412	\$16,652
Second line	DVd	Bortezomib (M) Daratumumab Sc (M)	\$206,681	\$41,336	N/A	N/A	\$165,345	\$41,336
Fifth line	N/A	Ide-cel (M)	\$432,085	\$86,417	N/A	N/A	\$345,668	\$86,417
Stage	Regimen	Most expensive drugs in regimen	Cost to Medicare (based on mDOT)	Estimated medical expenses	Cost to Medicare (P)	OOP pharmacy costs (standard Medicare Part D)	Cumulative cost to Medicare for regimen (M & P)	Cumulative patient OOP expenses for regimen (M & P)
Fifth line	N/A	Belantamab (M)	\$54,658	\$10,932	N/A	N/A	\$43,726	\$10,932
Fifth line	Sd	Selinexor (P)	N/A	N/A	\$110,744	\$9,719	\$110,744	\$9,719

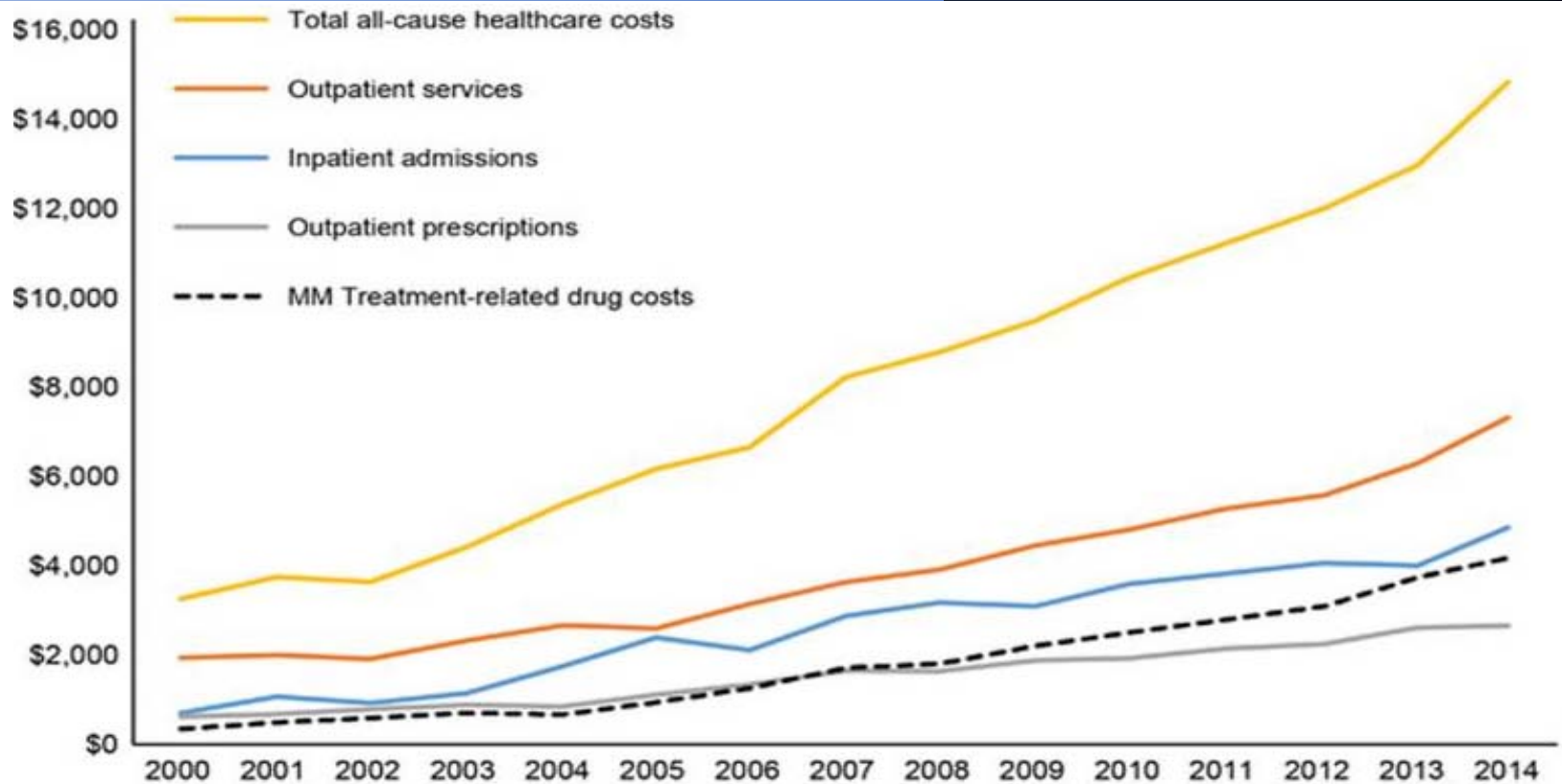
M = medical benefit administered by a health care professional billed to Medicare Part B; P = pharmacy benefit filled at an outpatient pharmacy and billed to Medicare Part D

Jensen, C. J *Manag Care Spec Pharm*, 2021 Sep;27(9):1321-1324.



What Does Improved Survival Cost: It is not All Drugs!

Per Patient per
Month cost by
year of
diagnosis



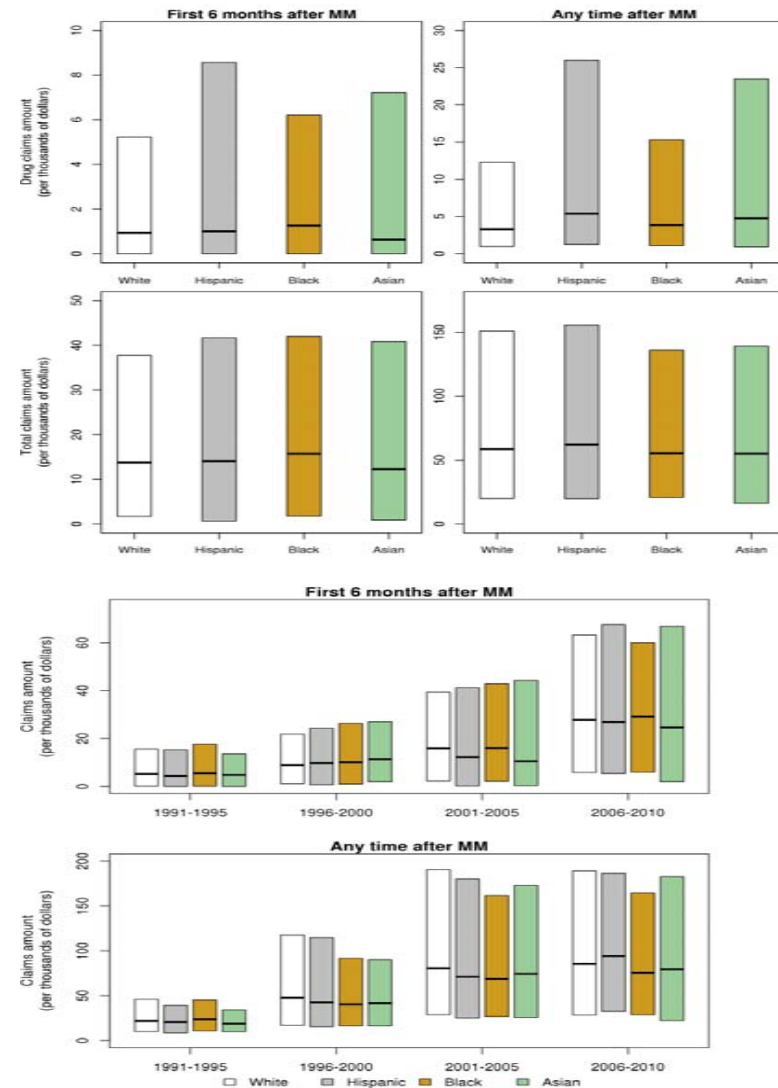
Fonseca R et al. *Leukemia*. 2017;31(9):1915-19112.



Racial Disparity in Cost of Care: Financial Toxicity in Multiple Myeloma

- Drug-only claims and total claims for patients with MM in Medicare by patient race

- Total claims for patients with MM in Medicare by race and year of diagnosis.

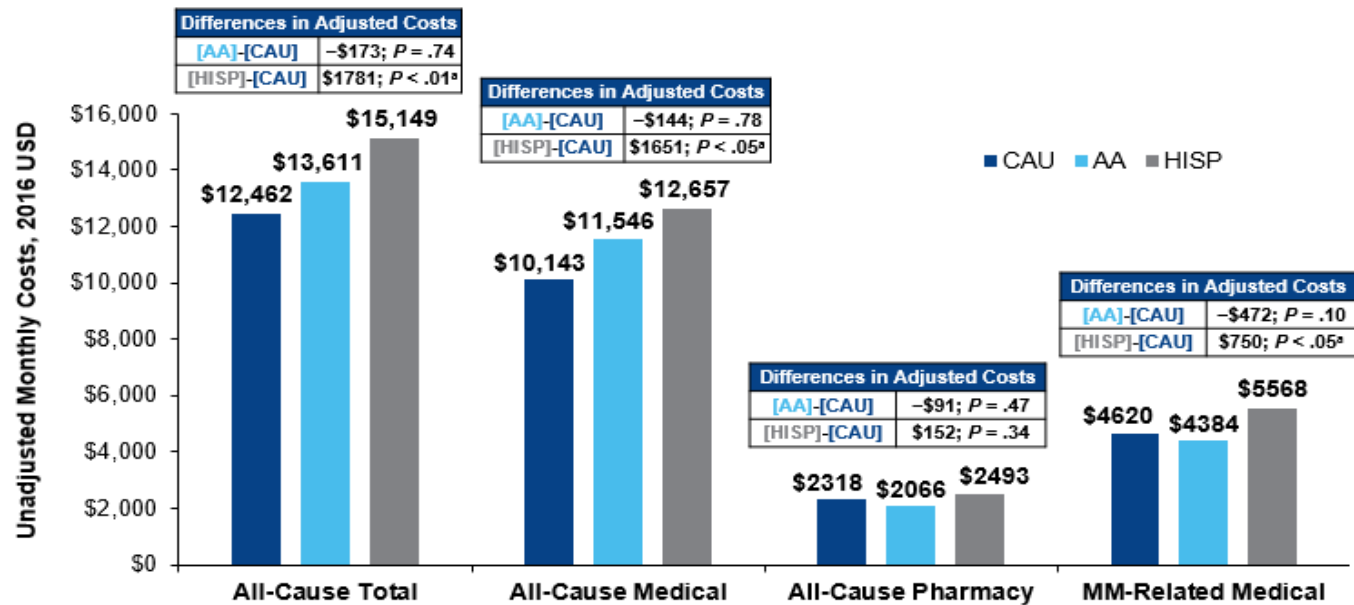


Ailawadhi S, et al. Cancer. 2018;124(8):1710-1721.



Racial Disparity in Cost of Care: Financial Toxicity in Multiple Myeloma

Healthcare cost over time by patient race-ethnicity:



Ailawadhi S, et al. Blood Adv. 2019;3(20):2986-2994.



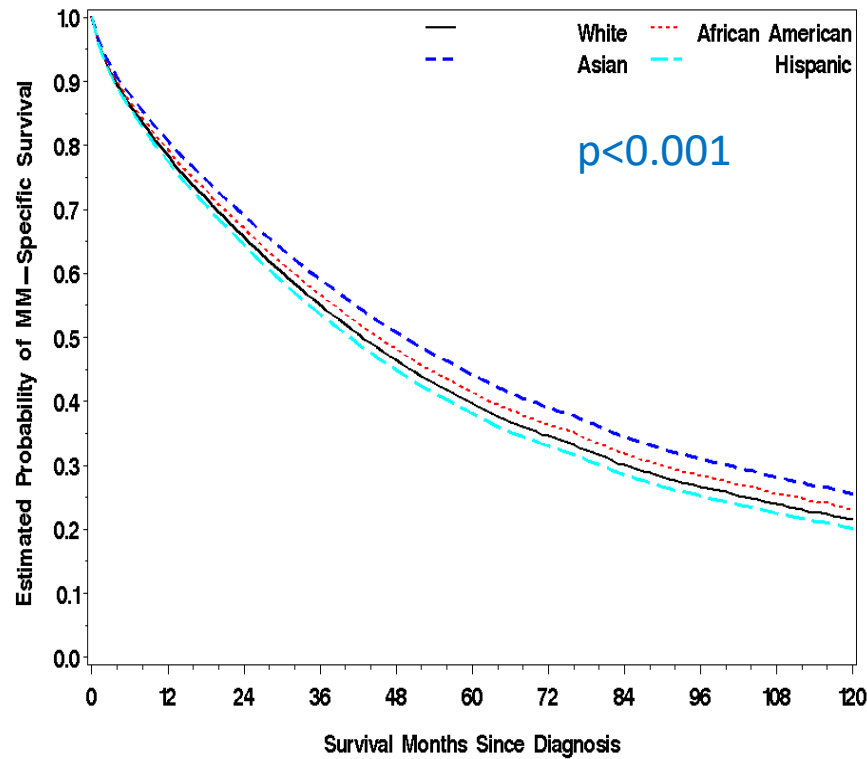
Data on race and Outcomes

Equal Access Settings: Is Biology the only Driver?

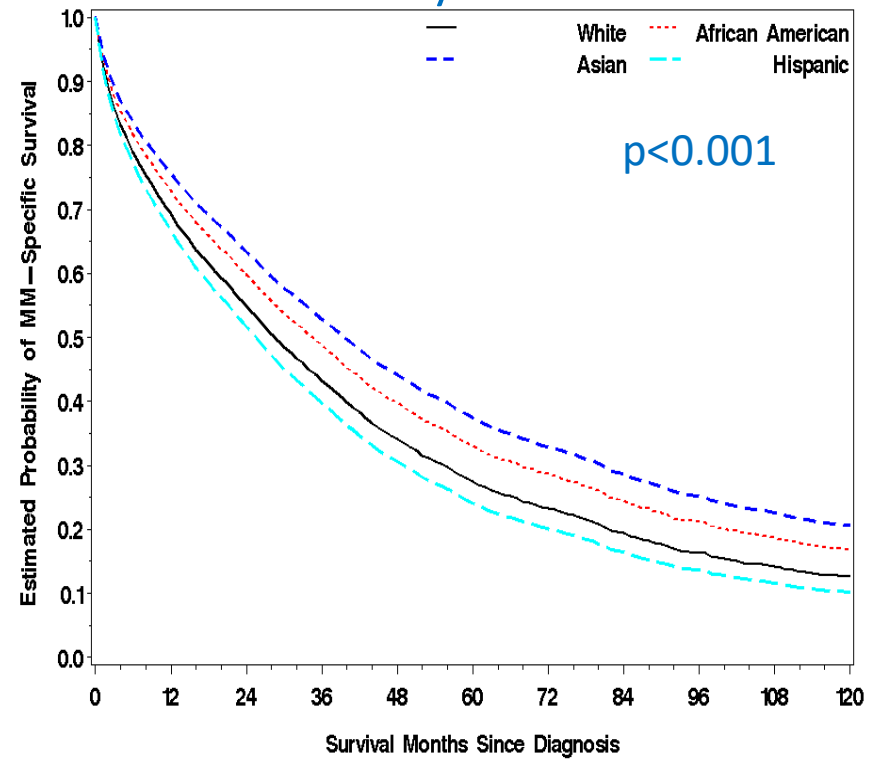


Cooperative Group Trials: Survival was related to clinical characteristics including age, performance status, kidney function, disease stage, **no effect of race/ethnicity on OS or PFS**

All Patients



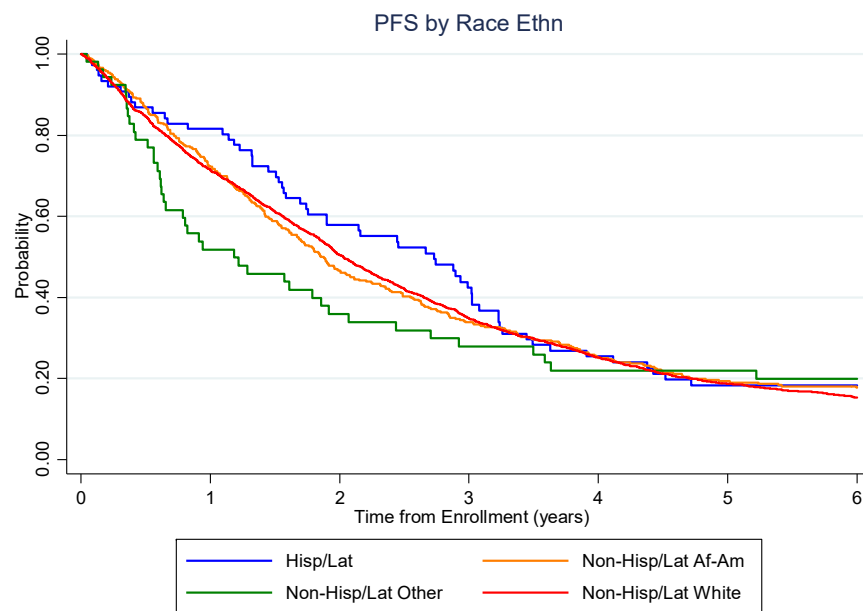
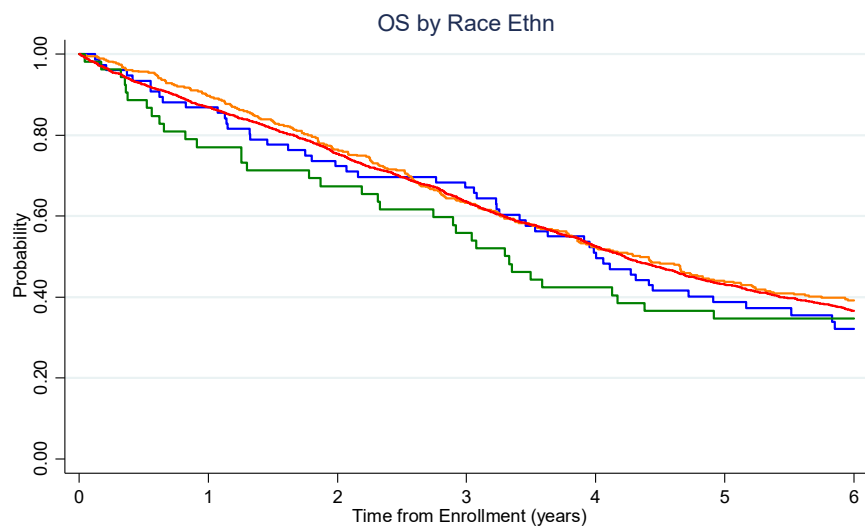
≥ 75 years



Ailawadhi S, et al. Br J Haematol 2012;158(1):91-98.

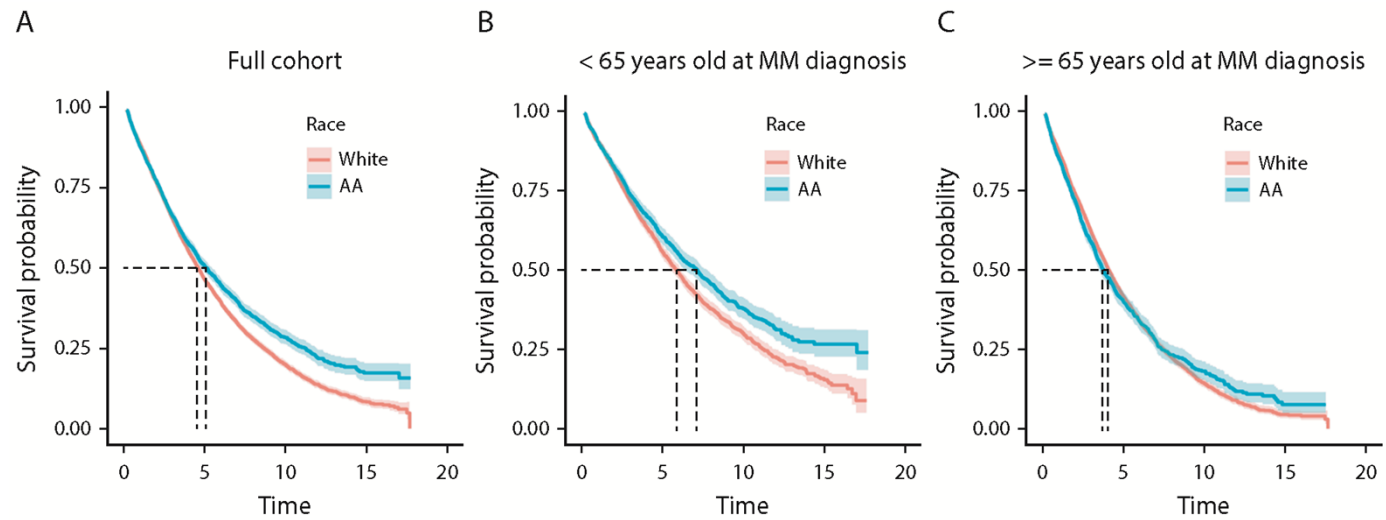


Cooperative Group Trials: Survival was related to clinical characteristics including age, performance status, kidney function, disease stage, **no effect of race/ethnicity on OS or PFS**



Ailawadhi S, et al. Blood Cancer J 2018;8(7):67-74.

Survival in Multiple Myeloma by Race and Ethnicity



MAYO
CLINIC

