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## Psychiatric comorbidities are associated with significantly increased cost of care and healthcare utilization in multiple myeloma (mm) patients

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**Background:** Cost of cancer care is projected to reach \$173 billion by 2020, a 39% increase from 2010. Several factors including psychiatric (psych) comorbidities contribute to this increase. Within the oncology setting, 29-38% of the patients (pts) are reported to have mood disorders and 15% have major depression. Depression alone is associated with increased healthcare utilization in pts with breast, colon, lung and prostate cancers. A 2015 report noted that the presence of at least one psychiatric comorbidity in 300 Leukemia pts was associated with an extra \$55,000 per pt in just one year. Similarly, in pts treated with systemic steroids, the incidence of neuropsychiatric disorders can be as high as 75%. However, no such data is available for MM, where more than 90% of pts are treated with steroids, likely increasing risk for mood problems and impacting treatment cost. As such, the aim of our study was to analyze the SEER-Medicare database for healthcare utilization trends and acute cost of care (cost incurred during 6 months after MM diagnosis) in MM pts with or without psych comorbidities.

**Methods:** Pts diagnosed with MM between 1991-2010 with continuous Medicare coverage (1 year prior to diagnosis-date of death/end of 2012) were included. Pts were categorized as: MM with any psych disorder (MM+P), MM with depression (MM+D) and MM only. Presence of  $\geq 1$  inpatient (ipt) or  $\geq 2$  outpatient (opt) ICD9 diagnosis codes were used to assign pts to the psych categories. Within MM+P and MM+D groups were subdivided by presence of psych or depression diagnosis prior to MM (MM+P PRE or MM+D PRE). Medicare claims adjusted for inflation (2013) within the first 6 months (mth)/total MM care were summed by drug and total charges. Univariate and multivariate logistic regression models (adjusted for age, year, sex, race and the Charlson Comorbidity Index; CCI) were performed to determine associations with ipt, opt and any emergency department (ED) charges after MM diagnosis. Associations between psych conditions prior to MM diagnosis and costs of care after MM diagnosis were assessed using univariate and multivariate proportional odds models.

**Results:** The study population included 36,007 eligible MM pts with a median follow-up of 1.8 years. 15168 (42%) pts had a psych condition at any time (MM+P), while 9355 (26%) were diagnosed prior to MM diagnosis (MM+P PRE). Depression was present in 8421 pts (23%), 4546 (13%) of those occurring prior to MM diagnosis. In comparison to MM pts, MM+P and MM+D pts tend to be female, White and had a higher CCI (all  $p < 0.001$ ). When compared to MM pts, those with MM+P PRE and MM+D PRE had significantly higher incidence of MM-related complications (hypercalcemia, renal dysfunction, anemia, fractures and dialysis) at the time of or after MM diagnosis and also required increased overall care (all  $p < 0.001$ ). Both, MM+P and MM+D had higher odds of ipt visits (OR 1.48 and 1.41, resp.,  $p < 0.001$ ), ED care (OR 1.48 and 1.37, resp.,  $p < 0.001$ ) and opt visits (OR 1.25 and 1.22, resp.,  $p < 0.001$ ) as compared to MM only pts. Cost of care analysis showed that MM+P and MM+D pts had a significantly higher cost of opt (OR 1.36 and 1.39, resp.,  $p < 0.001$ ), ipt (OR 1.49 and 1.54, resp.,  $p < 0.001$ ) and total care (OR 1.52 and 1.55, resp.,  $p < 0.001$ ) as compared to MM only pts during first 6 mth after MM diagnosis (Figure 1). Total costs of care for MM+P and MM+D were also higher than MM only but the differences were less significant. Cost of care differences existed within first 6 mth of MM diagnosis by pt race as well with MM+P among Hispanic and Asian pts being more strongly associated with higher costs than Whites and African-Americans (AA) ( $p < 0.001$ ). MM+D had similar trends but not significant after adjustment for multiple comparisons.

**Conclusion:** Psych comorbidities are associated with significant increase in healthcare utilization and cost of care in MM pts and may contribute to higher MM-related complications. More research is needed to study whether a multidisciplinary approach to identify and manage MM pts with psych conditions may help mitigate these trends.

### Biography

Sikander Ailawadhi has expertise in the field of plasma cell disorders, specifically multiple myeloma and focuses on clinical drug development as well as a special interest in secondary data analysis looking at outcome disparities and healthcare economics. He has accumulated vast experience in the area of disparities in healthcare utilization and outcomes by patient race and ethnicity and how the management, access and effects of therapeutic interventions may be different for various patient subgroups. Several of his research projects focusing on healthcare economics, cost-effectiveness and outcome disparities have been recognized in the form of presentations at national and international meetings as well as peer-reviewed publications.

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