SUPPLEMENTARY APPENDIX

Meaningful changes in end-of-life care among patients with myeloma

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 doi:10.3324/haematol.2018.187609

Received: January 4, 2018.

Accepted: May 3, 2018.

Pre-published: May 10, 2018.

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Supplemental Methods

Data Source

The data source for this study was the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) cancer registry linked to Medicare administrative claims, from 2000 to 2013. The SEER program collects demographic, clinical, and survival data from 18 population-based cancer registries throughout the United States (US), covering approximately 28% of the population.[1] Medicare is a US federal program that provides health insurance for individuals who are 65 years and older. Approximately 93% of persons who are 65 years or older in the SEER registry are matched to their Medicare enrollment and claims files.[1, 2] At the time of this analysis, the SEER-Medicare database included myeloma diagnoses through 2013 and billing claims through 2014.

Cohort Assembly

We identified all patients who were 65 years or older with a primary diagnosis of myeloma or plasmacytoma (histology codes 9731/3, 9732/3, and 9734/3) between 2000 and 2013, who were deceased by December 31, 2013. We chose the lower boundary of the time frame (year 2000) to allow for assessment of end-of-life care patterns pre-dating the use of novel therapies for myeloma (i.e. prior to approval of bortezomib by the Food and Drug Administration in the US in 2003) and the higher boundary (year 2013) as this was the most recent year with myeloma diagnoses available in SEER-Medicare at the time of this analysis. We excluded patients with end-stage renal disease (ESRD) or disability preceding myeloma diagnosis. The small proportion of patients who are eligible for Medicare based on ESRD or disability historically represent a distinct population in comparison to the rest of SEER-Medicare enrollees, and are thus typically excluded from SEER-Medicare analyses.[2, 3] In addition, given that a key

independent variable in our study was dialysis-dependence secondary to myeloma, it was necessary to exclude patients with ESRD preceding myeloma diagnosis to avoid confounding our results.

We excluded patients whose myeloma diagnosis was made by autopsy or by death certificate, as well as patients who died within 30 days of their myeloma diagnosis. The condition of living at least 30 days after diagnosis was required as some of the outcomes of interest were assessed in the last 30 days of life (e.g. emergency department visit, hospital admission, intensive care unit admission). Finally, to ensure complete billing claims history to ascertain end-of-life outcomes of interest for this study, patients had to have been continuously enrolled in Medicare Parts A and B with no health maintenance organization enrollment during the twelve months prior to death. Based on this inclusion and exclusion criteria, our final cohort sample included 12,686 myeloma decedents.

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