

Variations in Hospitalization and Emergency Department/Observation Stays Using the Oncology Care Model

Methodology in Medicare Data

Shuling Li,¹ Yi Peng,¹ Suying Li,¹ Leon Raskin,² Michael A. Kelsh,² Rebecca Zaha,² Prasad L. Gawade,² David Henry³

¹The Chronic Disease Research Group (CDRG), Hennepin Healthcare Research Institute, Minneapolis, MN; ²Center for Observational Research, Amgen Inc., Thousand Oaks, CA; ³Department of Medicine, University of Pennsylvania, Philadelphia, PA

Funded by a grant from Amgen Inc.

For questions and comments, please contact Shuling Li: SLi@cdrg.org.

www.cdrg.org

Introduction

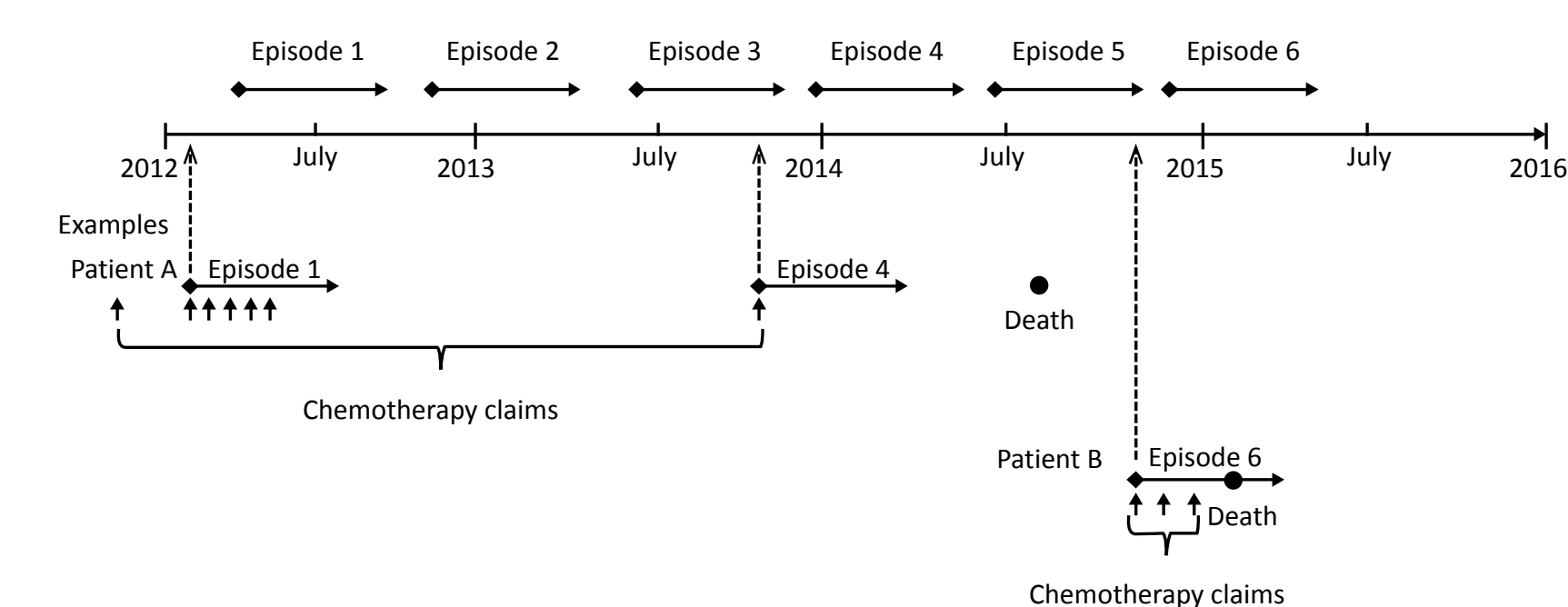
- In 2016, the Centers for Medicare & Medicaid Services (CMS) Innovation Center introduced the Oncology Care Model (OCM) in an attempt to improve oncology care and reduce its cost¹
- OCM is a payment model that combines standardization of oncology care at a practice level and financial incentives for providing quality care to oncology patients and improved outcomes
- Physician practices have entered into payment arrangements under the OCM model that include financial and performance accountability for episodes of care surrounding chemotherapy administration
- Two metrics for care evaluation are all-cause hospitalizations and emergency department/observation (ED/OB) stays not resulting in hospitalization; however, variations in these 2 metrics in the 21 reconciliation-eligible cancer types are not well characterized
- We reconstructed 6-month episodes using OCM methodology in Medicare claims data and analyzed rates of hospitalizations and ED/OB stays by cancer type
 - Reasons for hospitalizations and ED/OB stays as well as discharge destinations in reconstructed Medicare claims are reported in Poster # 113

Objective

- To describe the variations in hospitalizations and ED/OB stays that did not result in hospital admissions by cancer type during the 6-month chemotherapy episode, as defined by the OCM

Methods

Study Design



Each episode was 6 months in duration.

- Retrospective cohort study of Medicare patients with cancer who received chemotherapy between 2012 and 2015
- Up to 6 chemotherapy episodes were created that aligned with the definitions used in the OCM
- Hospitalizations and ED/OB stays were evaluated during each 6-month episode

Data Source

- CMS Medicare 20% random sample data, Part A/B/D (2012–2015)

Key Eligibility Criteria

- Medicare beneficiaries who
 - were enrolled in Medicare Part A and B during a 6-month episode
 - had Medicare as primary payer
 - received chemotherapy treatment for cancer
 - had at least 1 evaluation and management visit with a cancer diagnosis during the 6-month episode
- Medicare beneficiaries were excluded for end-stage renal disease benefit or enrollment in Medicare Advantage or other group health care program

Methods (Continued)

Patient-Episode

- Patient-episode (episode) was defined as the 6-month period starting with the first chemotherapy claim (trigger claim) with a qualifying cancer diagnosis code during the specified time period
- Subsequent episodes were defined when earlier episodes for the same patient were completed (up to 6 episodes per patient)
- Each episode was assigned an associated clinical practice using Taxpayer Identification Numbers

Episode Beginning and End Dates

Episode Number	Episode Beginning Dates	Episode End Dates
1	1/2/2012 – 7/1/2012	7/1/2012 – 12/31/2012
2	7/2/2012 – 1/1/2013	1/1/2013 – 6/30/2013
3	1/2/2013 – 7/1/2013	7/1/2013 – 12/31/2013
4	7/2/2013 – 1/1/2014	1/1/2014 – 6/30/2014
5	1/2/2014 – 7/1/2014	7/1/2014 – 12/31/2014
6	7/2/2014 – 1/1/2015	1/1/2015 – 6/30/2015

Assignment of Cancer Type

- Cancer type was assigned using ICD-9-CM diagnosis codes, and the cancer type resulting in the most evaluation and management visits was assigned to the episode

Identification of Hospital Admissions

- Hospital admissions were identified from Medicare Part A inpatient claims during the episode and were limited to short-term acute-care facilities or critical-access hospitals

ED/OB Stays

- ED/OB stays that did not result in a hospital admission were identified from the Medicare Part A outpatient claims during the episode

Statistical Analyses

- Episode level
 - Total number of episodes, mean number of episodes per patient, and percentage of episodes with hospitalization and ED/OB stays were reported overall and by cancer type
- Practice level
 - For each practice, the percentage of episodes with hospitalization and ED/OB stays was calculated
 - Distribution of practice-level total number of episodes was characterized by mean, median, and interquartile ranges (IQR)
 - Distribution of practice-level percentage of episodes with hospitalization and ED/OB stays was summarized by median, 20th percentile, and 80th percentile for practices with at least 20 episodes and for select cancers

Results

- A total of 485,186 episodes at 13,823 practices were identified
- Number of episodes was highest for breast cancer and lowest for anal cancer
- The mean number of episodes per patient was 1.9 overall, and was highest for multiple myeloma and prostate cancer (2.3) and lowest for anal cancer and head & neck cancer (1.2)
- At practice level, the overall mean number of episodes/practice was 35.1, and the overall median (IQR) number of episodes/practice was 2 (1–15)

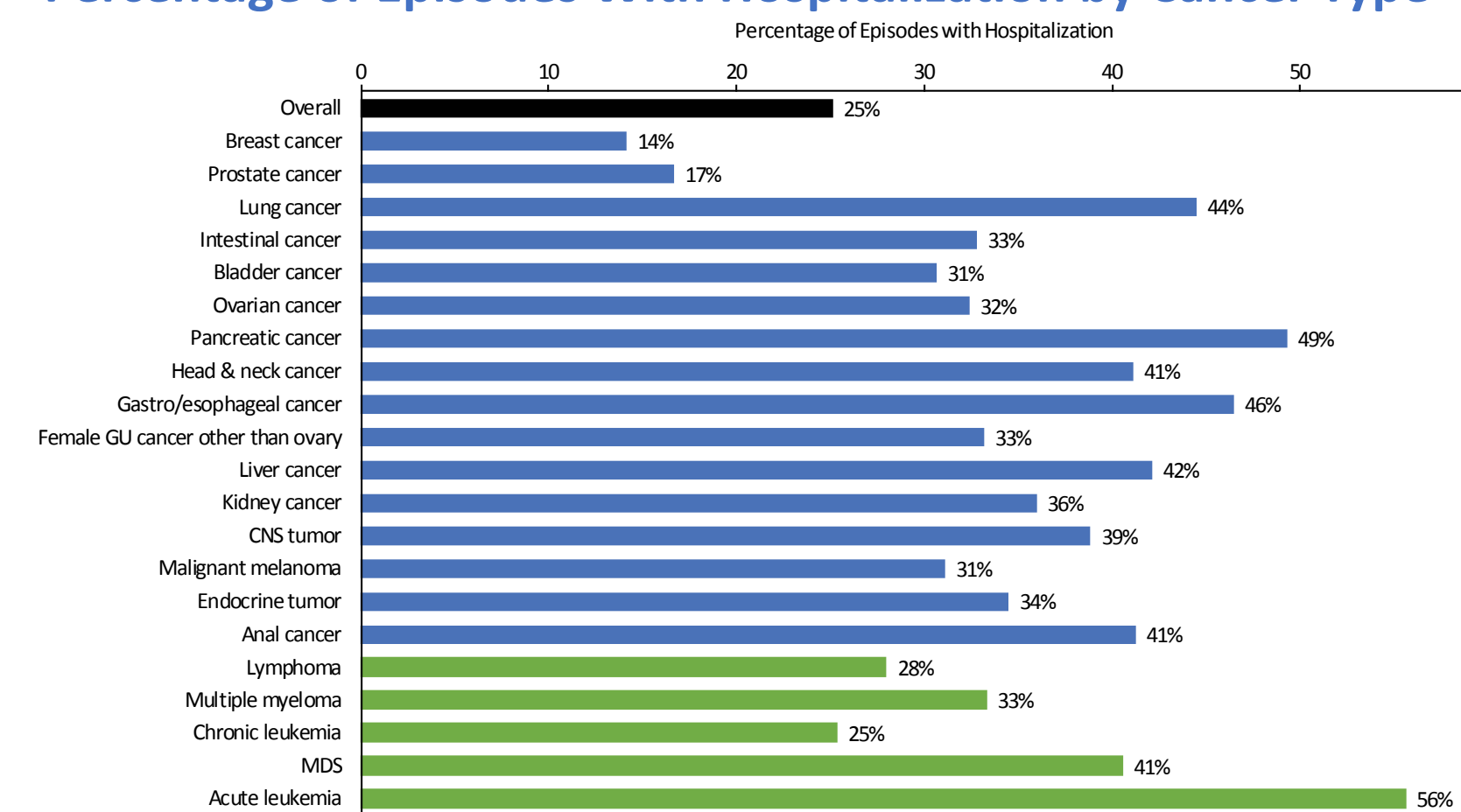
Results (Continued)

	Patient-Episodes		Practice-Level Patient-Episodes		
	Episodes N	Episodes per Patient Mean	Practices N	Episodes per Practice Mean	Median (IQR)
Overall	485,186	1.9	13,823	35.1	2 (1–15)
Solid tumors					
Breast cancer	135,905	2.1	6,456	21.1	3 (1–14)
Prostate cancer	123,505	2.3	7,356	16.8	4 (1–15)
Lung cancer	46,876	1.5	3,401	13.8	4 (1–14)
Intestinal cancer	25,672	1.7	2,621	9.8	4 (1–11)
Bladder cancer	13,234	1.2	2,897	4.6	2 (1–5)
Ovarian cancer	12,368	1.9	1,754	7.1	3 (1–8)
Pancreatic cancer	9,039	1.4	1,657	5.5	2 (1–6)
Head & neck cancer	7,458	1.2	1,796	4.2	2 (1–4)
Gastro/esophageal cancer	7,313	1.4	1,619	4.5	2 (1–5)
Hematologic malignancies					
Lymphoma	31,954	1.6	2,667	12.0	4 (1–13)
Multiple myeloma	21,459	2.3	2,097	10.2	4 (1–11)
Chronic leukemia	15,313	2.0	1,998	7.7	4 (1–8)
MDS	8,561	1.9	1,538	5.6	3 (1–6)
Acute leukemia	3,464	1.5	906	3.8	2 (1–4)

Abbreviations: CNS, central nervous system; GU, genitourinary; IQR, interquartile range; MDS, myelodysplastic syndrome.

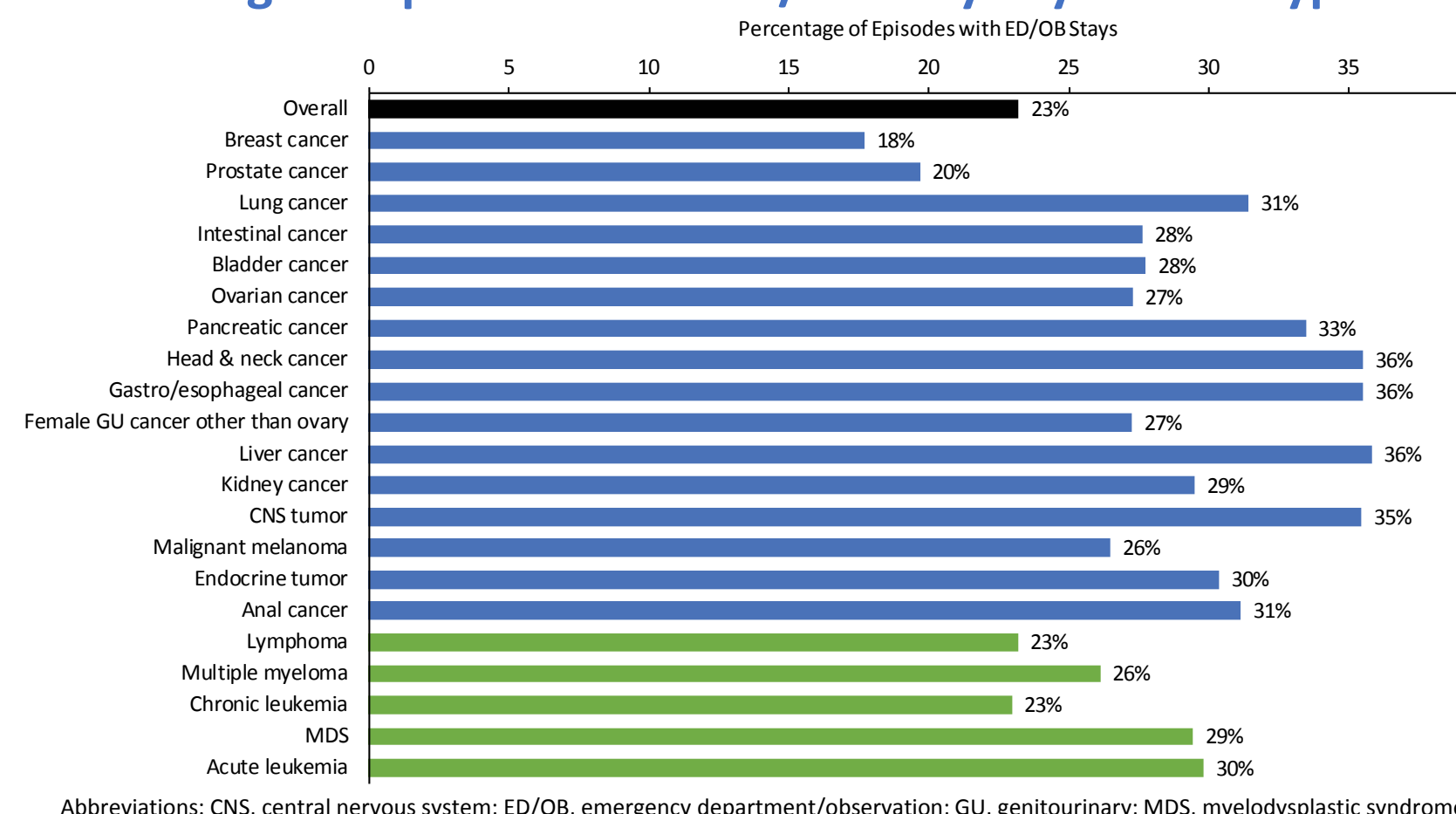
- The percentage of episodes with hospitalization was 25% overall, and was highest for acute leukemia (56%) and lowest for breast cancer (14%)

Percentage of Episodes With Hospitalization by Cancer Type



- The percentage of episodes with ED/OB stays was 23% overall, and was highest for head & neck, liver, and gastro/esophageal cancers (36%) and lowest for breast cancer (18%)

Percentage of Episodes With ED/OB Stays by Cancer Type



Results (Continued)

- Among 2,995 practices with ≥ 20 total episodes (at practice level), the median (20th–80th percentile) percentage of episodes with hospitalization and with ED/OB stays was 24% (14%–31%) and 23% (17%–29%), respectively
- Among practices with ≥ 20 episodes by select cancers, the percentage of episodes with hospitalization and ED/OB stays was highest for lung cancer and lowest for breast cancer

Practice-Level Percentage of Episodes With Hospitalization or ED/OB Stays: Practices With ≥ 20 Episodes by Select Cancers

Cancer Type	Practices With ≥ 20 Episodes, n	Hospitalization, %	ED/OB Stay, %
Overall	2,995	24 (14–31)	23 (17–29)
Solid tumors			
Breast cancer	1,386	14 (9–19)	18 (12–23)
Prostate cancer	1,459	16 (10–22)	20 (14–26)
Lung cancer	635	44 (36–52)	31 (24–39)
Intestinal cancer	334	32 (24–40)	26 (19–36)
Hematologic malignancies			
Lymphoma	428	26 (19–35)	23 (15–30)
Multiple myeloma	259	32 (26–40)	24 (19–32)

*Median (20th–80th percentile).
Abbreviation: ED/OB, emergency department/observation.

Limitations

- The sample size from the Medicare 20% sample data may not be sufficient for stable estimates of outcomes in less-common cancer types
- Some trigger events identified from Part D claims may not be for cancer treatment, because the qualifying cancer diagnosis codes were identified from outpatient, carrier, and durable medical equipment claims within the 59-day window before the fill date; however, since intravenous chemotherapy was commonly used in cancer treatment, we anticipate minimal misclassification
- This study was performed in cancer patients with Medicare fee-for-service coverage. The findings may not apply to patients who are not enrolled in Medicare Part A and Part B

Conclusions

- There was considerable cancer-specific and practice-specific variation in the percentage of 6-month OCM episodes of care with hospitalization and ED/OB stays after chemotherapy
- Variations among cancers are important considerations when evaluating practice performance within the OCM
- Additional analyses are needed to understand practice and episode characteristics and the associated risk of outcome measures and costs

Reference

- Centers for Medicare & Medicaid Services. Oncology Care Model. <https://innovation.cms.gov/initiatives/Oncology-Care/>.

Acknowledgments

- This study was funded by Amgen Inc.
- Medical writing support for this poster was funded by Amgen Inc. and was provided by Kathryn Boorer, PhD, of KB Scientific Communications, LLC.

Disclosures

- Shuling Li, Yi Peng, and Suying Li: nothing to disclose; Leon Raskin, Michael A. Kelsh, Rebecca Zaha, and Prasad L. Gawade: employees and stockholders of Amgen Inc.; David Henry: honoraria and research funding from Amgen Inc. and consultant/advisor to Amgen Inc.