

High-intensity healthcare utilization at end of life for patients with cancer in the Puget Sound region

Cara McDermott, PharmD, PhD

Postdoctoral Fellow

Cambia Palliative Care Center of Excellence

clm2@uw.edu

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Trends in high-intensity healthcare utilization at end of life

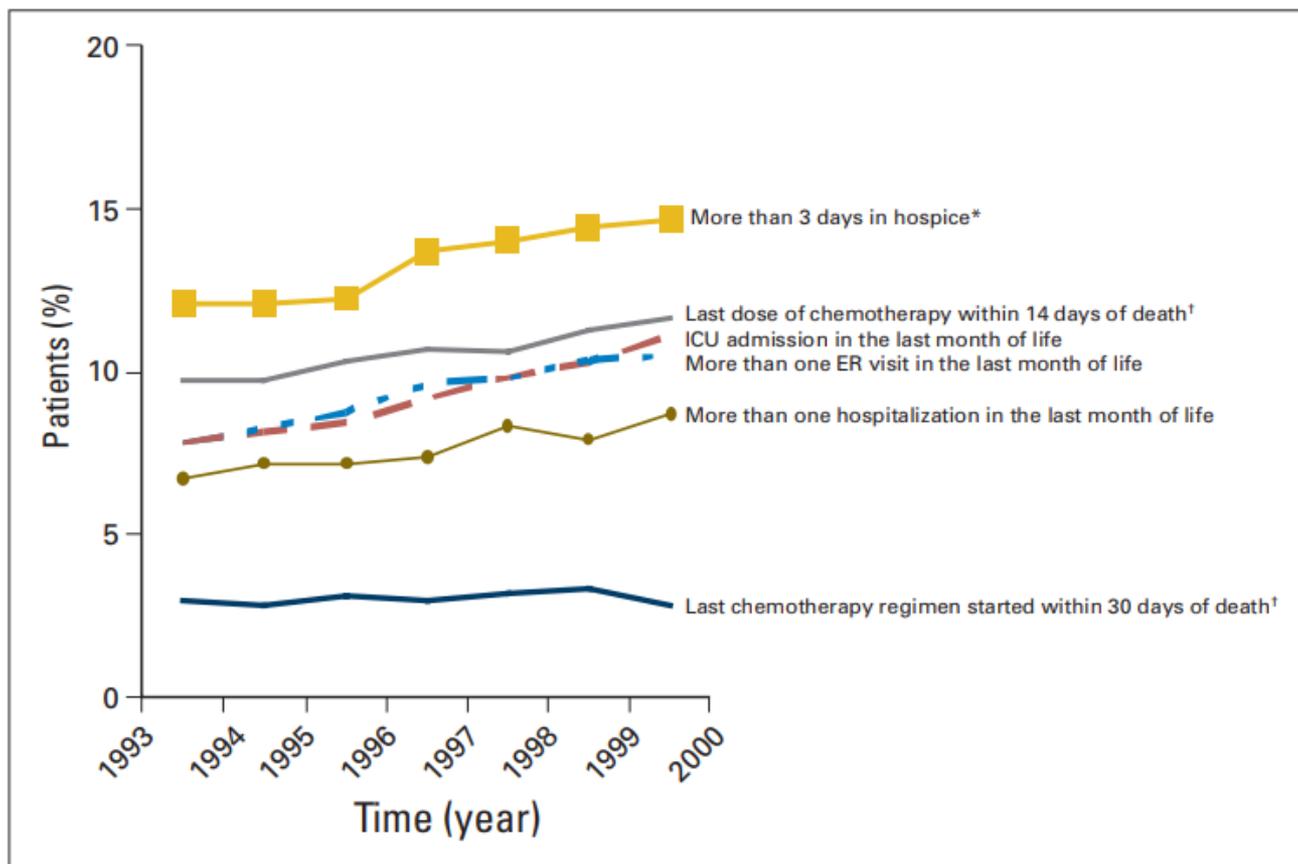


Fig 1. Updated trends in the aggressiveness of cancer care near the end of life, all cancer types, all durations of disease among 215,484 Medicare enrollees in Surveillance, Epidemiology, and End Results (SEER) areas who died as a result of cancer. (*) Among patients admitted to hospice. (†) Among patients who received chemotherapy. ER, emergency room; ICU, intensive care unit.

High-intensity utilization: survival and quality of life

- Survival
 - Chemotherapy in last 14 days vs standard chemotherapy
 - HR = 1.03 (95%CI 0.91-1.16) ¹
 - No association found²
- Quality of life near death ²
 - QOD OR 0.35 (95% CI, 0.17-0.75) for ECOG=1

High-intensity utilization: the family perspective

- Excellence of care, as reported by families
 - Use of ICU vs no ICU: 45% vs 52.3%
 - In-hospital death vs died elsewhere: 42.2% vs 57.4%
 - No hospice use/<3 days vs 3 days or more: 43.1% vs 58.8%

High-intensity utilization: financial impact on families

At end of life & following patient's death:

- 25% reported costs of care as a major financial burden
- 33% used all or most of their savings
- Financial burden also significantly associated with:
 - no/limited insurance,
 - employment changes,
 - provider interactions (e.g., whether the MD paid attention to non-medical factors or having unanswered questions about medications).

Intensity of healthcare utilization at end of life among commercially insured patients dying of cancer

Study objective & goals

To assess the intensity of healthcare utilization in the last 30 days of life for commercially insured adults in the Puget Sound region.

Research questions:

1. What are the patterns of high-intensity healthcare utilization?
 - Hospitalization
 - Imaging
 - Radiation
 - Chemotherapy (last 14 days)
2. What is the utilization of supportive care?
 - Hospice
 - Opioid prescriptions for pain

ReCAPs (Research Contributions Abbreviated for Print) provide a structured, one-page summary of each paper highlighting the main findings and significance of the work. The full version of the article is available online at jop.ascopubs.org.

Fred Hutchinson Cancer Research Center; University of Washington, Seattle; Premera Blue Cross, Mountlake Terrace, WA; and Cambia Health Solutions, Portland, OR

End-of-Life Services Among Patients With Cancer: Evidence From Cancer Registry Records Linked With Commercial Health Insurance Claims

Cara L. McDermott, Catherine Fedorenko, Karma Kreizenbeck, Qin Sun, Bruce Smith, J. Randall Curtis, Ted Conklin, and Scott D. Ramsey

QUESTION ASKED: Using a database of commercial insurance claims linked to the Western Washington State SEER registry, we investigated patterns of care to identify areas for improvement and to inform future interventions to enhance end-of-life care for patients with cancer.

younger than 65 years, 31.4% were enrolled in hospice; of those not enrolled in hospice, 40.5% had received an opioid prescription. Over time, opioid use in the last 30 days of life among those not enrolled in hospice dropped from 44.7% in the period 2007 to 2009 to 42.5% in the period 2010 to 2012 and to 36.7% in the period 2013 to 2015 ($P < .01$).

Study design

- Study population
 - Commercially insured adults ages 18+
- Inclusion criteria:
 - Insurance enrollment 12 months prior to diagnosis
 - Made at least one claim in last 90 days of life
- Exclusion criteria:
 - Excluded subjects diagnosed at autopsy/from death certificate, died on same day as diagnosis, had previous cancer diagnoses
- Analysis
 - Covariates of interest: age, gender, race, marital status

Table 1. Demographic Characteristics of the Study Sample

Characteristic	Cancer Site						Total (N = 6,568)
	Breast (n = 482)	Lung (n = 1,625)	Colorectal (n = 609)	Gynecologic Malignancy (n = 428)	Pancreatic (n = 506)	Other (n = 2,918)	
Age at diagnosis, years, No. (%)							
< 50	75 (16)	62 (4)	74 (12)	46 (10)	18 (4)	211 (7)	486 (7)
50-64	150 (31)	534 (33)	156 (26)	153 (36)	176 (35)	923 (32)	2,092 (32)
≥ 65	257 (53)	1,029 (63)	379 (62)	229 (54)	312 (62)	1,784 (61)	3,990 (61)
Female, No. (%)	471 (98)	848 (52)	309 (51)	428 (100)	241 (48)	976 (33)	3,273 (50)
White, No. (%)	456 (95)	1,530 (94)	566 (93)	400 (93)	469 (93)	2,711 (93)	6,132 (93)
Married, No. (%)	239 (50)	947 (58)	303 (50)	204 (48)	315 (62)	1,774 (61)	3,782 (58)
State at diagnosis, No. (%)							
Localized	172 (36)	159 (10)	107 (18)	66 (15)	28 (6)	970 (33)	1,502 (23)
Regional	180 (37)	288 (18)	158 (26)	86 (20)	135 (27)	631 (22)	1,478 (23)
Distant	106 (22)	1,100 (68)	295 (48)	255 (60)	306 (60)	956 (33)	3,018 (46)
Unknown	24 (5)	78 (5)	49 (8)	21 (5)	37 (7)	361 (12)	570 (9)
Year of death, No. (%)							
2007-2009	30 (6)	309 (19)	82 (13)	55 (13)	89 (18)	398 (14)	963 (15)
2010-2012	181 (38)	635 (39)	253 (42)	179 (42)	217 (43)	1168 (40)	2628 (40)
2013-2015	271 (56)	681 (42)	274 (45)	194 (45)	200 (40)	1357 (47)	2977 (45)
Age at death, years, mean (SD)	70.4 (16.3)	70.8 (12.1)	71.8 (16.7)	69.3 (14.3)	70.5 (12.0)	71.1 (14.1)	70.9 (13.9)
No. days from diagnosis to death, mean (SD)	1,055 (690)	363 (423)	654 (618)	712 (627)	297 (368)	570 (594)	551 (585)
No. days from diagnosis to death, median	990	205	498	547	182	370	342

Abbreviation: SD, standard deviation.

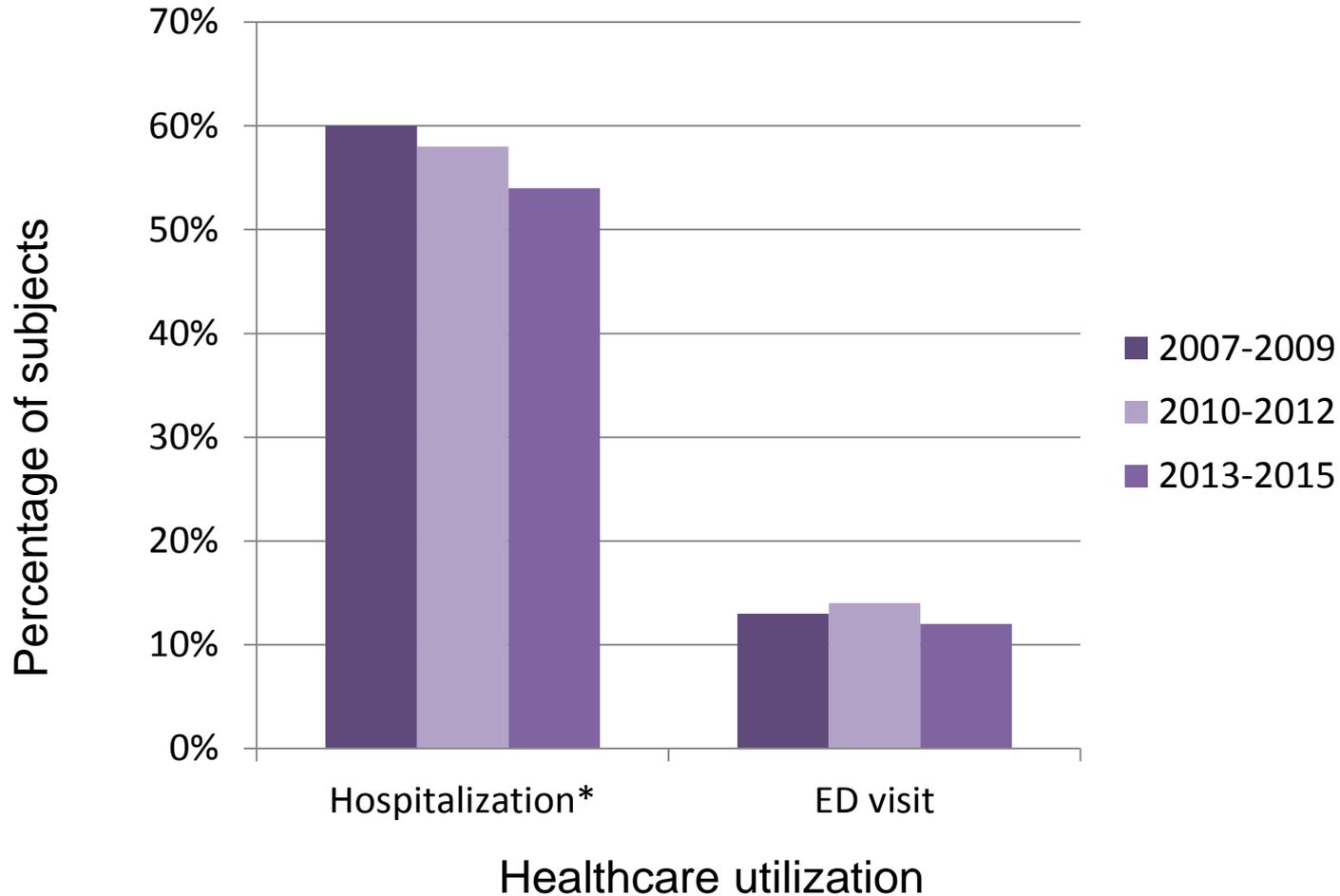
Study findings (n=6,568)

- Healthcare utilization in last 30 days of life:
 - Emergency department visits: 13.1%
 - Hospitalization: 56.3%
 - Inpatient admission without ICU stay: 21.2%
 - Inpatient admission with ICU stay: 35.1%
 - MRI, CT, PET or bone scan: 48.6%

Study findings (n=6,568)

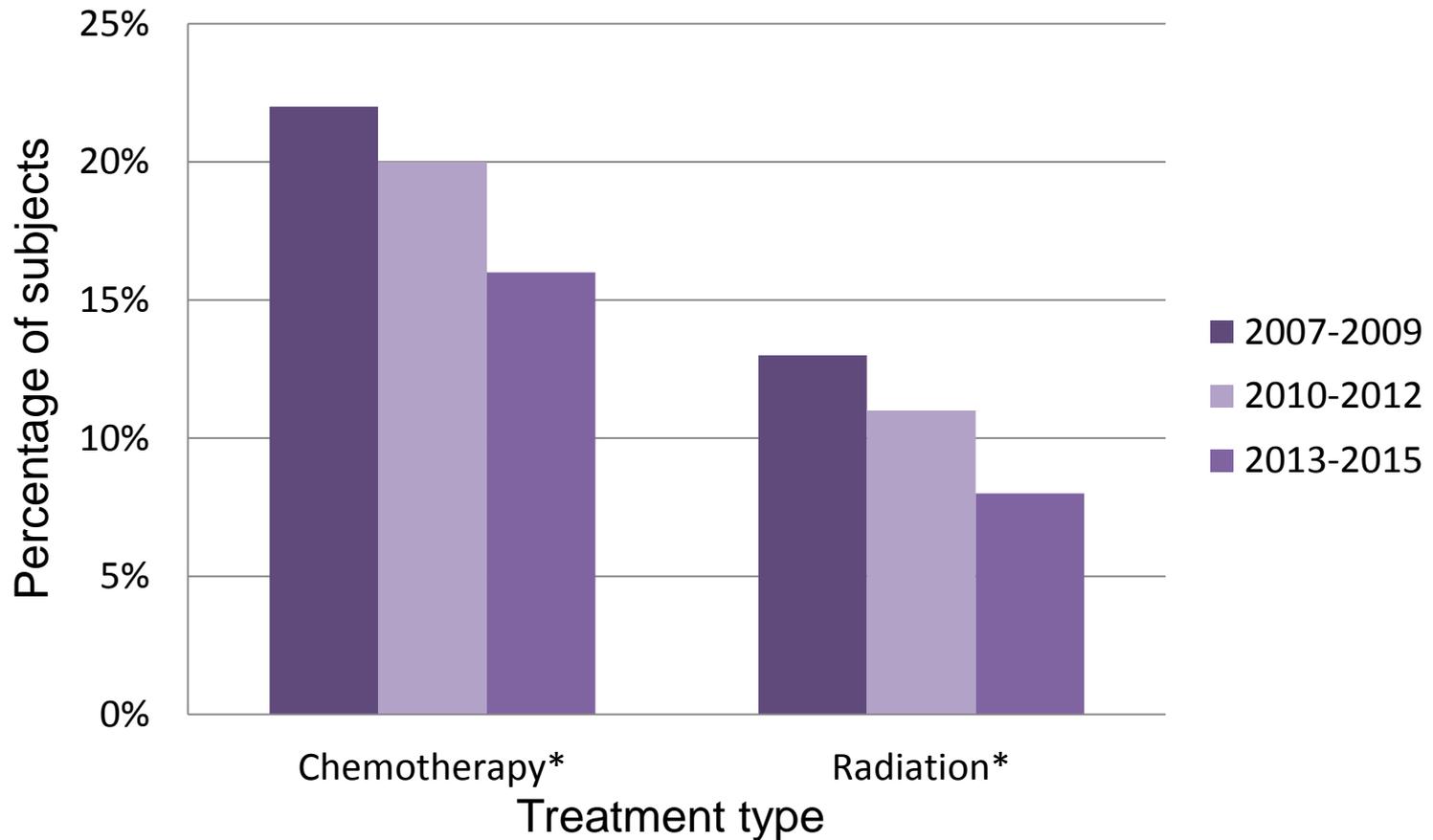
- Healthcare utilization in last 30 days of life:
 - Radiation: 9.8%
 - Chemotherapy
 - Last 30 days, 18.5%
 - Last 14 days, 7.8%
 - Among those ages 18-64 years
 - Hospice enrollment: 31.4%
 - Opioid prescriptions: 40.5%

Trends in healthcare utilization, last 30 days of life



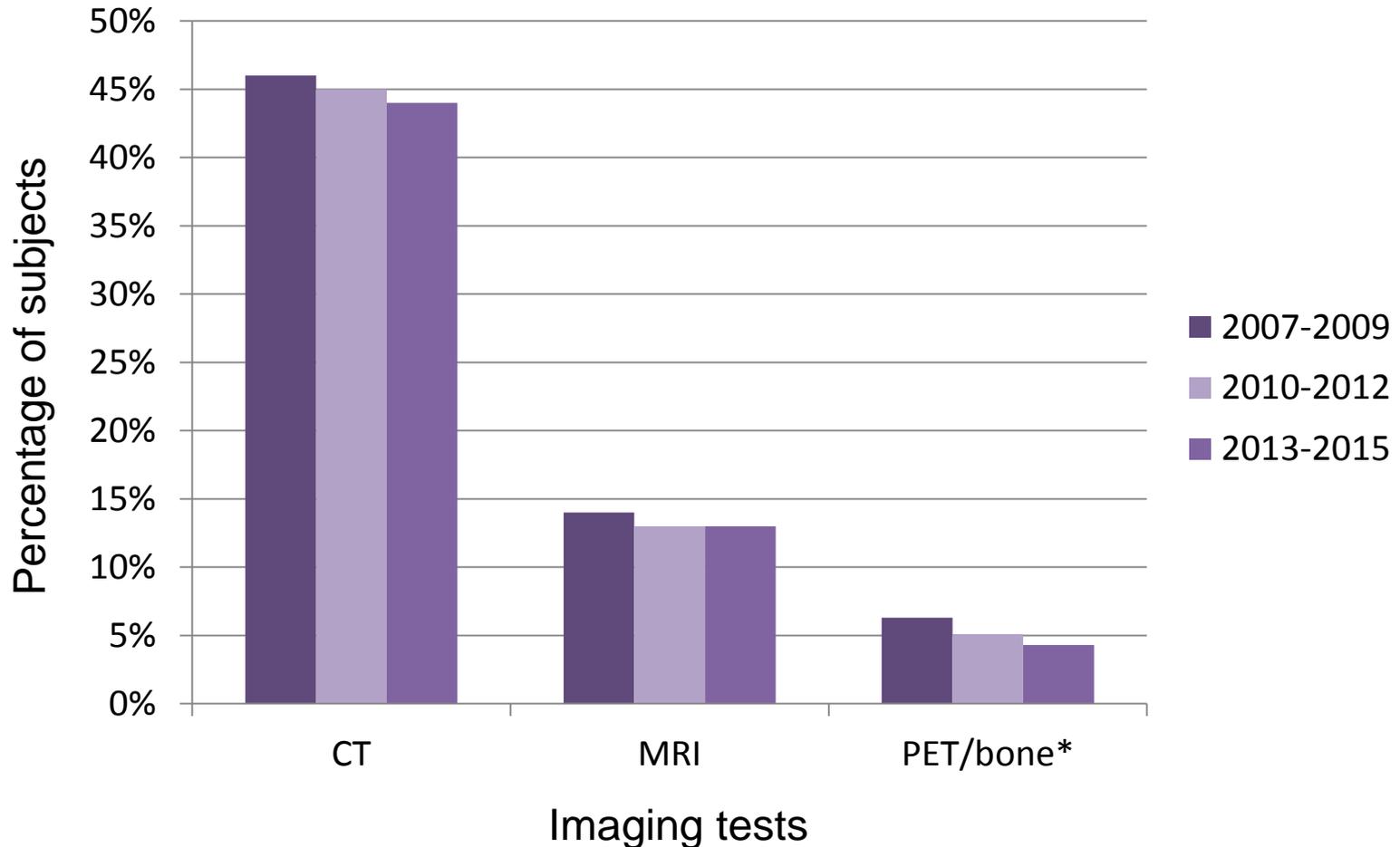
*statistically significant

Trends in chemotherapy & radiation use, last 30 days of life



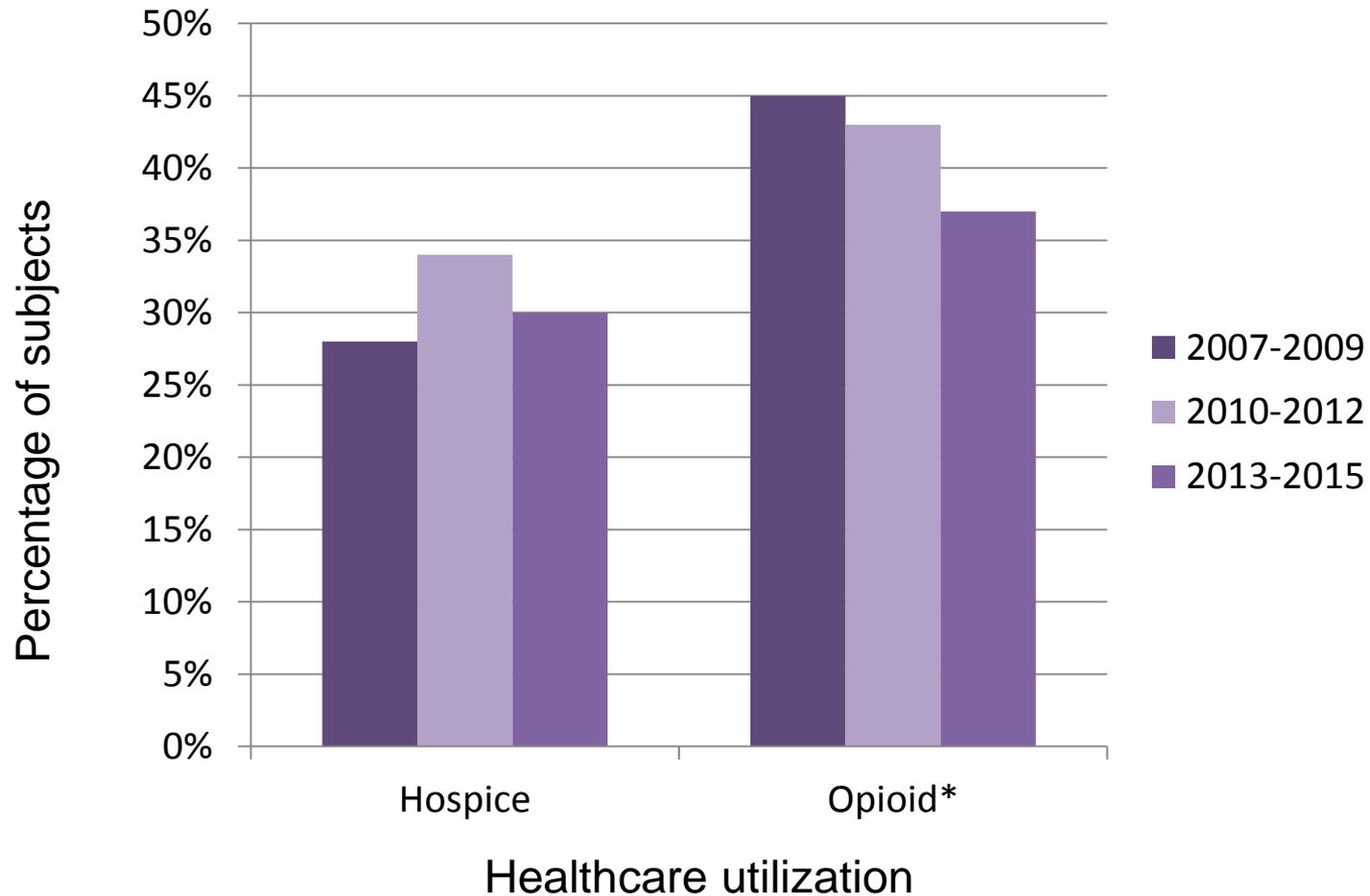
*statistically significant

Trends in imaging use, last 30 days of life



*statistically significant

Trends in healthcare utilization, last 30 days of life



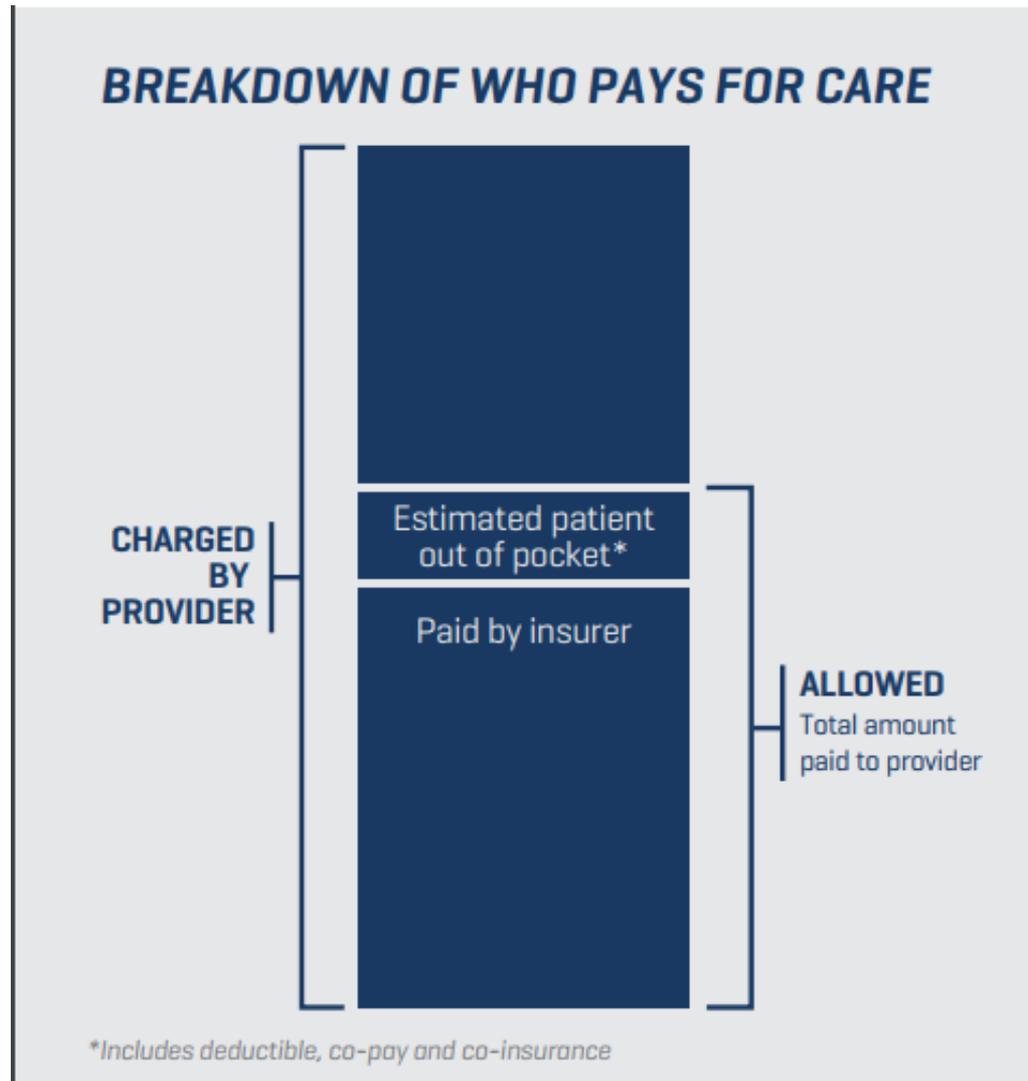
*statistically significant

Study findings & implications

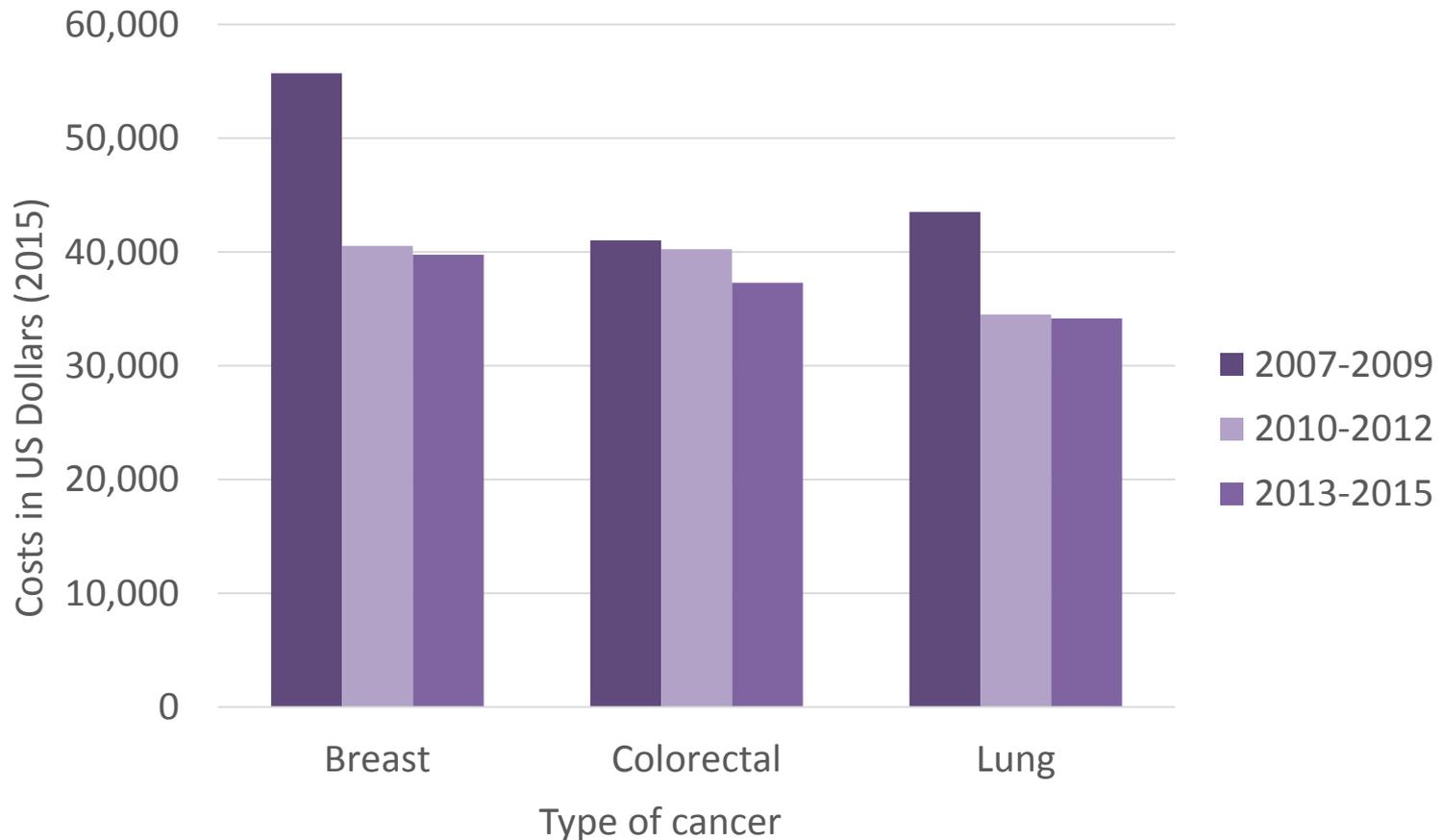
- High use of imaging, hospitalization
- Such use may not be in agreement with patient goals of care
- Low hospice utilization among adults < 64 years
- Opioid use decreasing over time, with marked decrease after 2012

Out-of-pocket expenses and medication use among commercially insured adults at end of life

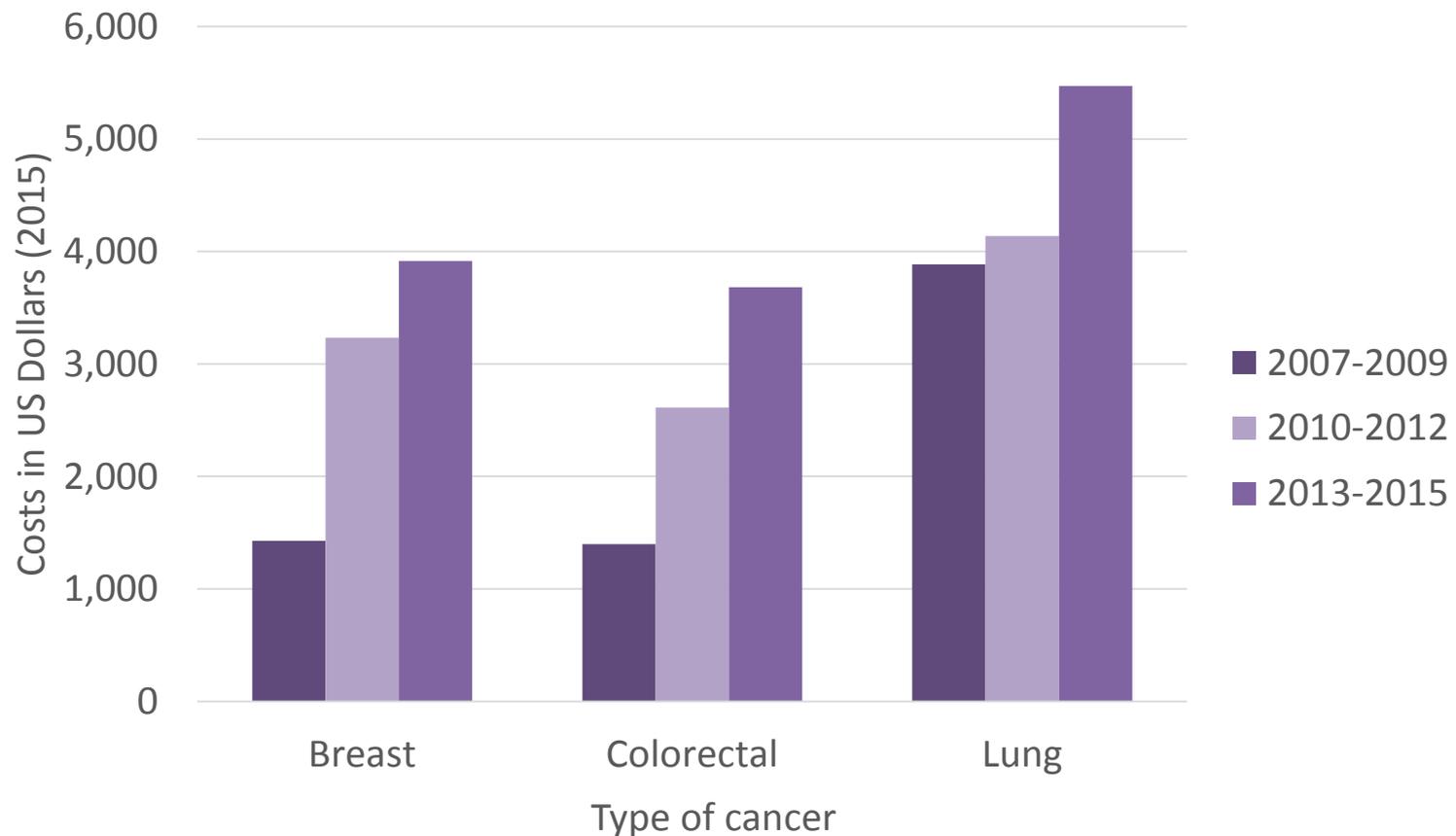
HICOR-IQ: Analyzing costs



Costs Paid by Commercial Insurers Last 90 Days of Life

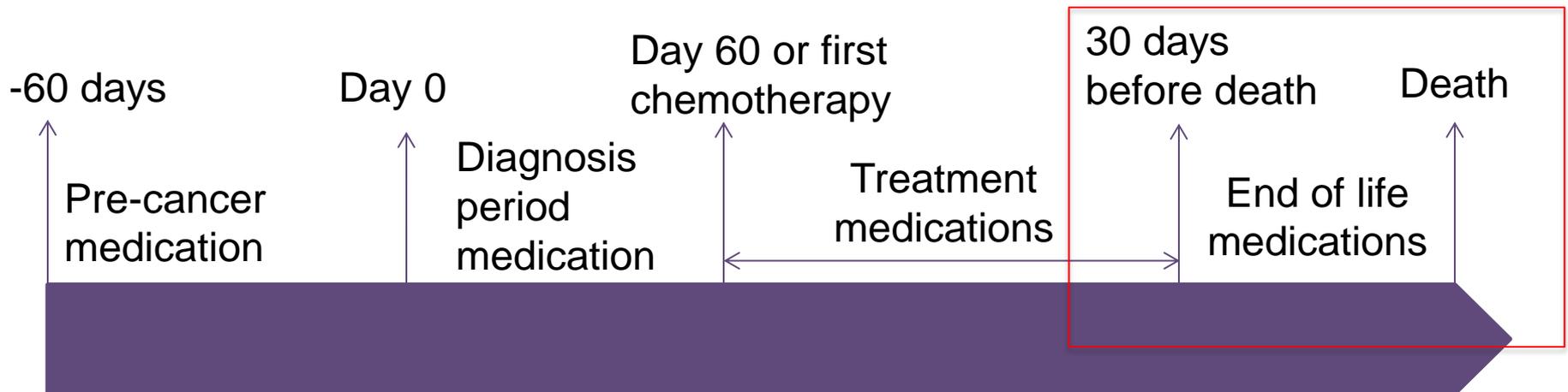


Costs Paid by Commercially Insured Patients, Last 90 Days of Life



Medication use and associated costs among commercially insured adults dying with cancer

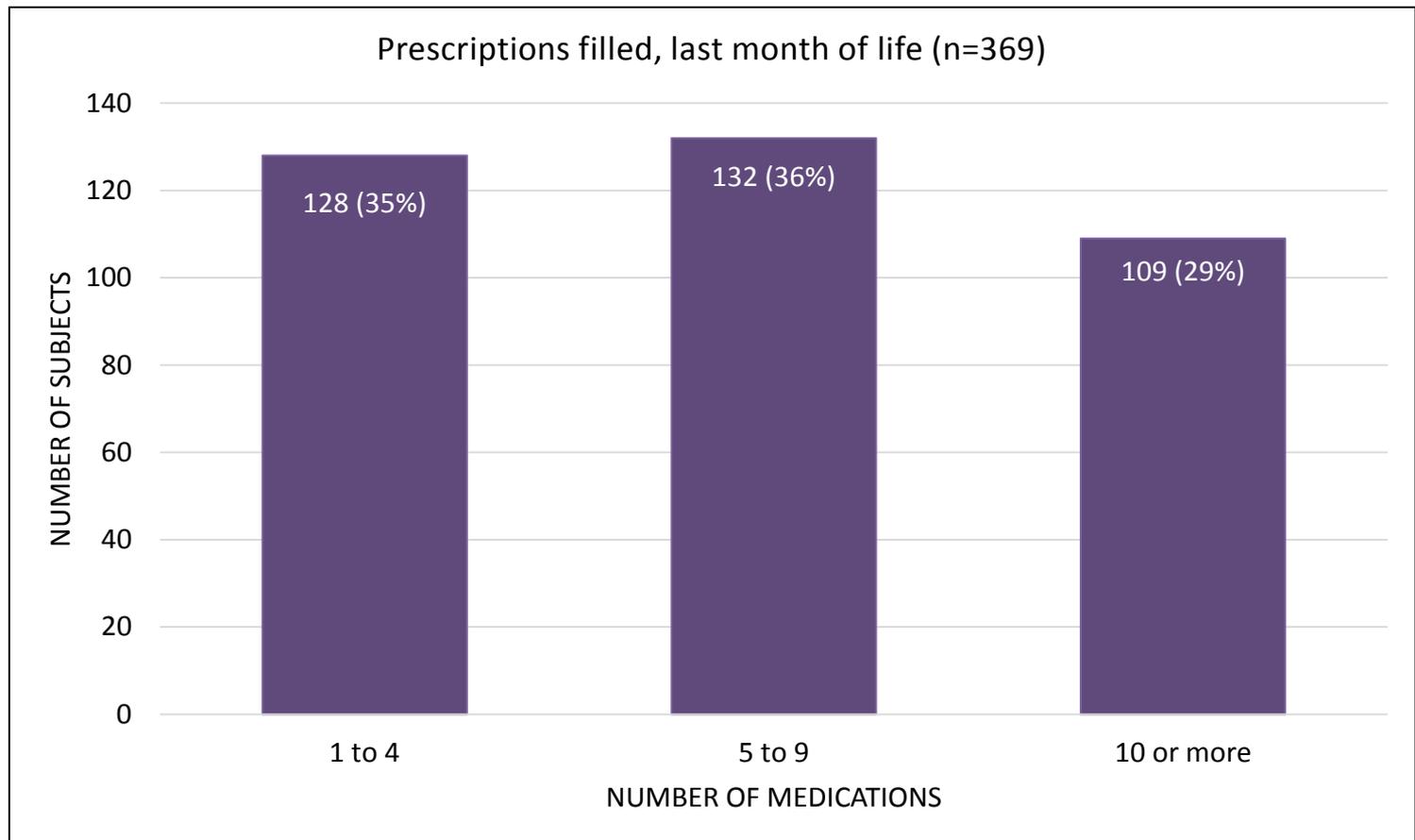
Medication use at different time points:



• Study outcomes

- Comorbidity burden
- Prevalence of polypharmacy
- Patterns of medication use
- Out-of-pocket costs to patients

Medication use in last 30 days of life

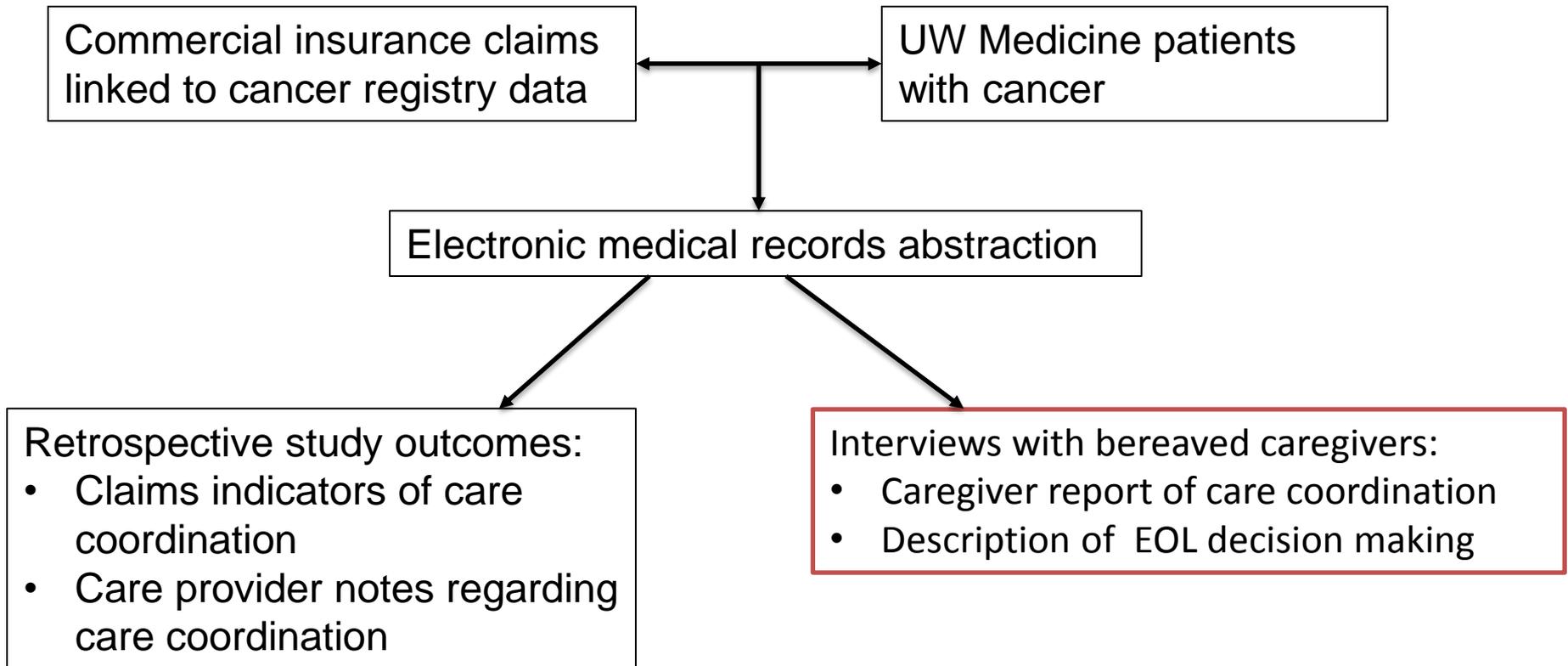


Care Coordination and Low-Value Care at End-of-Life Among Patients with Advanced Cancer

2017 AcademyHealth New Investigator Small Grant Award

- Evaluating association between care coordination and use of high-intensity end-of-life care
- Hypothesized associations with low value care
 - Lack of knowledge regarding available resources
 - Poor pain and symptom management
 - Limited support for patient
 - Caregiver burden

Study Structure



Caregiver reports of reasons for high-intensity healthcare use: most common themes

- Not knowing/understanding available options
- Symptom/medication management
- Falls
- Caregiver burden

Caregiver reports—lack of other options

And we ended up at the emergency room. And that was, I don't know. That was **preventable in hindsight if we'd known** that [name] could have a permanent drain put in and that we could relieve that pressure on a routine basis. But we just didn't know that there was a solution available.

Caregiver reports—healthcare provider recommendation

When he got really ill, he got real dehydrated and I had talked to his doctor about signing us up for hospice when **he told me I should take him back to the emergency room because I had questions about his medication more than anything else.** So he signed us up when we went back to the emergency room and was admitted.

Caregiver reports—falls

I saw him really take a tumble, and I said: No, we are done. And I said, I'm taking you back. **Either I'm going to call 911 or I'm going to get a neighbor to help me put you in the car, but we have to go back to the hospital.** You are getting worse and you are getting so weak, you are going to fall.

And he said: Okay, let's go. And he never came back home.

Caregiver feedback

“consistent **integration in a way or single point contact**, perhaps, in a way that would allow for the patient to contact somebody who had more of a complete knowledge...”

“[the nurse case managers] weren’t really **there—they were there to provide answers, but not to coordinate**...it might be helpful to have some kind of entity that functions to be sort of like the operator for requests of that nature specific to cancer patients.”

“focus on allowing for **close and efficient communication** and minimizing the patients and the caregiver’s burden as far as revealing some of the phone tree and bureaucratic nature of healthcare organization.”

“We were only able to contact somebody because one of the radiologists is best friends with the radiologist’s daughter. And so he gave me his cell phone number...that’s sort of, you know, the **ad hoc fashion of fixing the immediacy of care for only, you know, an individual patient.**”

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References

- Cagle JG, Carr DC, Hong S, Zimmerman S. Financial burden among US households affected by cancer at the end of life. *Psychooncology*. 2016 Aug;25(8):919-26. doi: 10.1002/pon.3933. Epub 2015 Aug 17.
- Earle CC, Landrum MB, Souza JM, et al. Aggressiveness of cancer care near the end of life: is it a quality-of-care issue? *J Clin Oncol*. 2008 Aug 10;26(23):3860-6. doi: 10.1200/JCO.2007.15.8253.
- McDermott CL, Fedorenko C, Kreizenbeck K, et al. (2017) End-of-life services among cancer patients: evidence from cancer registry records linked with commercial health insurance claims. *J Oncol Pract*. Jul 19:JOP2017021683. doi: 10.1200/JOP.2017.021683. [Epub ahead of print] PMID: 28723253.
- McDermott CL, Fedorenko C, Kreizenbeck K, et al. Health care utilization and costs at end-of-life among patients with leukemia or lymphoma in a regional cancer registry-insurance claims linked database. 2016 American Society of Clinical Oncology Palliative Care in Oncology Symposium, (poster).
- McDermott CL, Fedorenko C, Greenwood-Hickman MA, et al. (2017) Polypharmacy and out-of-pocket medication costs in the last month of life among commercially insured patients with advanced cancer: insights from linking a regional cancer registry and insurance claims. American Society of Clinical Oncology Palliative Care in Oncology Symposium, San Diego CA, (poster).
- Prigerson HG, Bao Y, Shah MA, et al. Chemotherapy Use, Performance Status, and Quality of Life at the End of Life. *JAMA Oncol*. 2015 Sep;1(6):778-84. doi: 10.1001/jamaoncol.2015.2378.
- Saito AM, Landrum MB, Neville BA, et al. The effect on survival of continuing chemotherapy to near death. *BMC Palliat Care*. 2011 Sep 21;10:14. doi: 10.1186/1472-684X-10-14.
- Wright AA, Keating NL, Ayanian JZ, et al. Family Perspectives on Aggressive Cancer Care Near the End of Life. *JAMA*. 2016 Jan 19;315(3):284-92. doi: 10.1001/jama.2015.18604.