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

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 found\(^2\)

• Quality of life near death \(^2\)
  – QOD OR 0.35 (95% CI, 0.17-0.75) for ECOG=1

\(^1\)Saito, \(^2\)Prigerson
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%

Wright et al.
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).

Cagle et al.
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
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.

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

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

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<thead>
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<tbody>
<tr>
<td>Hospice</td>
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<tr>
<td>Opioid*</td>
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</tbody>
</table>

*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

BREAKDOWN OF WHO PAYS FOR CARE

CHARGED BY PROVIDER

Estimated patient out of pocket*

Paid by insurer

ALLOWED
Total amount paid to provider

*Includes deductible, co-pay and co-insurance
Costs Paid by Commercial Insurers Last 90 Days of Life

- **Type of cancer**
  - Breast
  - Colorectal
  - Lung

- **Costs in US Dollars (2015)**
Costs Paid by Commercially Insured Patients, Last 90 Days of Life

Type of cancer

Breast
Colorectal
Lung


2007-2009
2010-2012
2013-2015
Medication use and associated costs among commercially insured adults dying with cancer

Medication use at different time points:

-60 days
- Day 0
- Day 60 or first chemotherapy
- 30 days before death
- Death

• 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

Prescriptions filled, last month of life (n=369)

- **1 to 4 medications:** 128 (35%)
- **5 to 9 medications:** 132 (36%)
- **10 or more medications:** 109 (29%)
Care Coordination and Low-Value Care at End-of-Life Among Patients with Advanced Cancer
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

- Commercial insurance claims linked to cancer registry data
- UW Medicine patients with cancer

Electronic medical records abstraction

Retrospective study outcomes:
- Claims indicators of care coordination
- Care provider notes regarding care coordination

Interviews with bereaved caregivers:
- Caregiver report of care coordination
- Description of EOL decision making
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.”
Acknowledgements

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- J. Randall Curtis, MD, MPH
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- Scott Ramsey, MD, PhD
- Helene Starks, PhD, MPH

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References