

Who doesn't use homecare at end-of-life?
Predictive factors of not receiving in-home formal
support among cancer decedents

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Background

Homecare: in-home nursing, personal support, equipment, and allied health services, coordinated by the CCAC

End-of-Life (EOL) Homecare: Service Recipient Code (SRC) 95, (sometimes) involves specialized palliative care providers

Benefits of Homecare

In clinical trials and population-based studies, receiving homecare in last months of life has been shown to*:

- Reduce emergency department visits
- Reduce hospitalizations
- Increase home as place of death
- Reduce health care costs
- Improve patient/caregiver satisfaction with health care

*Barbera, 2010; Seow, 2010; Brumley, 2007; Higginson, 2000

Gaps in Research

Lack of research examining factors contributing to end-of-life populations receiving homecare

Little known about EOL patients who need but don't access homecare/palliative care

Roughly 60% of Canadians receive homecare in the last year of life

Questions

Among those who died of cancer, what factors were associated with:

1. Not receiving homecare
2. Not receiving EOL homecare
3. Later initiation of EOL homecare
in the last 6 months of life

Methods

Study Design: population based, retrospective cohort study using linked administrative health care datasets

Population: all decedents in Ontario, Canada with a confirmed cancer cause of death in 2006

Data Source: ICES* Ontario Cancer Data Linkage Project (CD LINK) dataset

*Institute for Clinical Evaluative Sciences

Databases

Study population identified from the Ontario Cancer Registry (OCR)

Linked to:

- Registered Persons Database (RPDB)/ Census of the Population = demographic characteristics
- Home Care Database (HCD) = homecare use
- National Ambulatory Care Reporting System (NACRS) = ED visits
- Discharge Abstract Database (DAD) = inpatient hospitalizations

Research Outcomes (last 6 months)

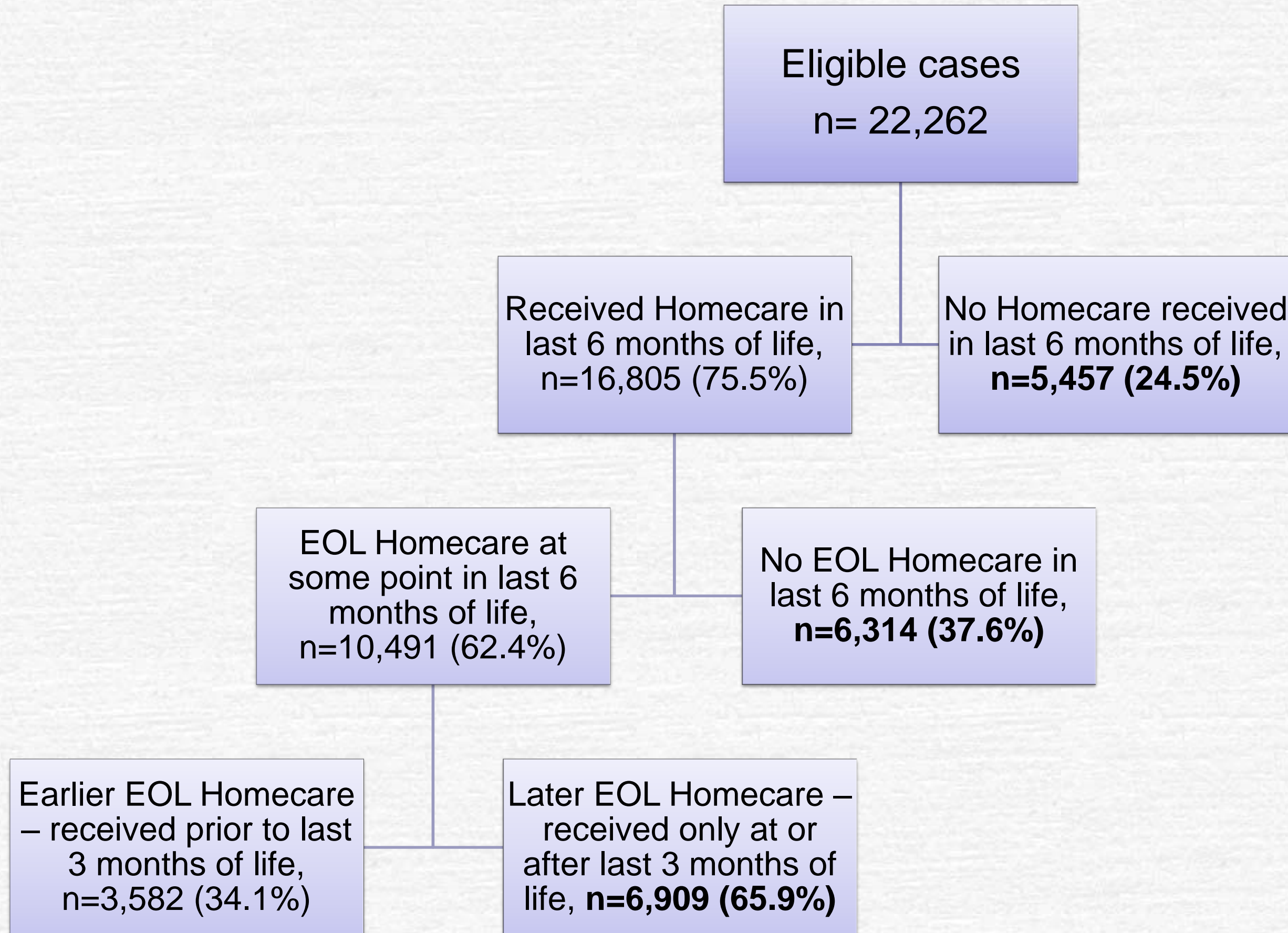
- 1. Homecare not received: Yes / No**
- 2. EOL Homecare not received: Yes / No**
among homecare recipients
- 3. Later initiation of EOL Homecare: not received**
until last 3 months of life vs earlier
among EOL homecare recipients

Analysis was logistic regression

Independent Variables (Predictors)

- **Gender:** male/female
- **Age at death:** 11 categories based on age
- **LHIN of residence:** 14 covering all of province
- **Income Quintile:** specific to each LHIN
- **Rural:** Y/N (Stats Canada defined)
- **Cancer diagnosed prior to 6 mo before death:** Y/N
- **Prior Emergency Department (ED) visits:** number of unique visits in the last year to six months of life, categorized as 0, 1, 2, 3+
- **Cancer Diagnosis:** 7 categories based on prevalence in cohort (ICD-9 cause of death)
- **Charlson-Deyo Modified Comorbidity score:** co-morbidity diagnosis coded (last 2 years of life) excluding cancer and metastatic cancer codings, categorized as 0 to 1 = low, 2+ = high

“No Homecare”, “No EOL Homecare”, and “Later EOL Homecare” Groupings



Characteristics of Cohort (n=22,262)

	Number	Percent
Age (years)		
54 or less	2671	12.0
55-69	6691	30.1
70-84	10243	46.0
85 and older	2657	11.9

Gender		
Male	11929	53.6
Female	10333	46.4

Rural	3348	15.0
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Time of First Cancer Diagnosis		
6 months or earlier before death	14505	65.2

	Number	Percent
Cancer Diagnosis (death)		
Lung	5800	26.1
Upper Gastrointestinal	3103	13.9
Colorectal	2679	12.0
Hematological	2031	9.1
Breast	1603	7.2
Prostate	1104	5.0
Miscellaneous Cancer	5942	26.7

Comorbidity score		
Low (0 to 1)	16890	78.1
High (2 or higher)	4729	21.9

ED use last 12 to 6 months (any)	8235	37.0
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Outcome 1: No Homecare

Variable	Adjusted OR†	95%CI
Gender: Female	1.00	
Male	1.243	1.160, 1.332
Age (years): Younger to Older (continuous)	1.035	1.020, 1.049
Income Quintile: Low to High (continuous)	0.944	0.923, 0.967
Rural: Yes	1.00	
No	1.017	0.920, 1.124
Cancer Death: Lung	1.00	
Upper Gastrointestinal	0.731	0.615, 0.868
Colorectal	0.734	0.627, 0.861
Breast	0.908	0.760, 1.085
Miscellaneous Cancer	1.009	0.890, 1.143
Prostate	1.012	0.839, 1.220
Hematological	1.560	1.336, 1.822
Comorbidity: Low (0 to 1)	1.00	
High (2 or higher)	1.174	1.086, 1.268
Prior ED visits: 0	1.00	
1	0.567	0.518, 0.620
2	0.468	0.409, 0.536
3 or more	0.385	0.334, 0.445

P value < 0.001

† Adjusted for by health care region (LHIN) and later diagnosis both P value < 0.001

Outcome 2: No EOL Homecare

Variable	Adjusted OR†	95%CI
Gender: Female	1.00	
Male	0.996	0.928, 1.068
Age (years): Younger to Older (continuous)	1.053	1.040, 1.067
Income Quintile: Low to High (continuous)	0.940	0.918, 0.962
Rural: Yes	1.00	
No	0.787	0.712, 0.869
Cancer Death: Lung	1.00	
Upper Gastrointestinal	0.889	0.766, 1.033
Colorectal	1.126	0.982, 1.291
Breast	1.069	0.914, 1.250
Miscellaneous Cancer	1.266	1.129, 1.419
Prostate	1.258*	1.055, 1.499
Hematological	2.519	2.164, 2.932
Comorbidity: Low (0 to 1)	1.00	
High (2 or higher)	1.596	1.474, 1.728
Prior ED visits: 0	1.00	
1	0.956	0.879, 1.040
2	0.881*	0.786, 0.988
3 or more	0.855*	0.764, 0.956

P value < 0.001
*** P value ≤ 0.03**

† Adjusted for by health care region (LHIN) and later diagnosis both P value < 0.001

Outcome 3: EOL Homecare “Late” referral

Variable	Adjusted OR†	95%CI
Gender: Female	1.00	
Male	1.192	1.083, 1.312
Age (years): Younger to Older (continuous)	1.001	0.985, 1.018
Income Quintile: Low to High (continuous)	1.040*	1.008, 1.074
Rural: Yes	1.00	
No	0.880	0.767, 1.010
Cancer Death: Lung	1.00	
Upper Gastrointestinal	1.254*	1.060, 1.484
Colorectal	1.008	0.860, 1.181
Breast	1.098	0.916, 1.316
Miscellaneous Cancer	1.165	1.017, 1.334
Prostate	0.856	0.690, 1.061
Hematological	1.429	1.153, 1.772
Comorbidity: Low (0 to 1)	1.00	
High (2 or higher)	0.950	0.846, 1.067
Prior ED visits: 0	1.00	
1	0.645	0.578, 0.720
2	0.481	0.418, 0.553
3 or more	0.387	0.337, 0.444

P value < 0.001
*** P value ≤ 0.01**

† Adjusted for by health care region (LHIN) and later diagnosis both P value < 0.001

Summary

	Homecare not received	EOL Homecare not received	Later initiation of EOL Homecare
LHIN	●	●	●
Late Diagnosis	●	●	●
No Prior ED visits	●	●	●
Male	●		●
Older	●	●	
Lower Income	●	●	
Rural		●	
Prostate		●	
Hematological	●	●	●
High Comorbidity	●	●	

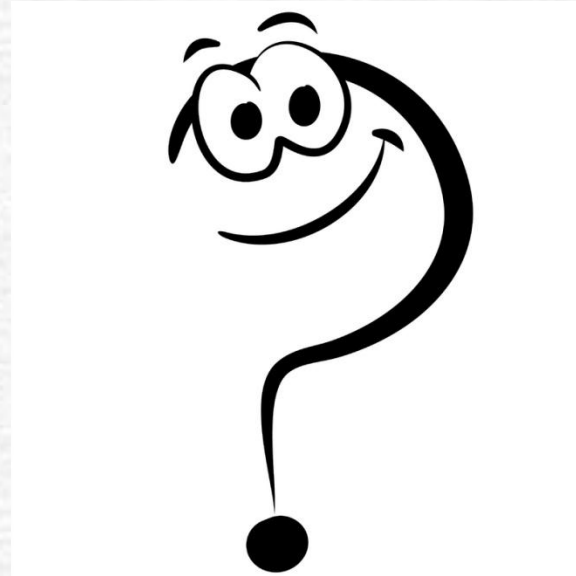
Strengths and Limitations

- + All cancer descendants in Ontario (available for homecare)
- + Regression analysis - control for multiple variables
- Patient level factors not captured, e.g., extent of family support, ethnicity, patient choice
- Associations between IVs and outcomes
⇒ identified but not explained

Conclusions

- Study represents a starting point \Rightarrow exploratory
- **Findings:**
 - Lower Income, Rural locale, Cancer type, LHIN variation, Prior ED visits
- **Implications:**
 - unequal access across province
 - systematic barriers to access
 - need for further descriptive research

Questions



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