

ARCC

Canadian Centre
for Applied Research
in Cancer Control

Quality of end of life cancer care in Canada: a four province study



BC Cancer Agency
CARE & RESEARCH
An agency of the Provincial Health Services Authority



Canadian
Cancer
Society

Société
canadienne
du cancer



Cancer Care Ontario
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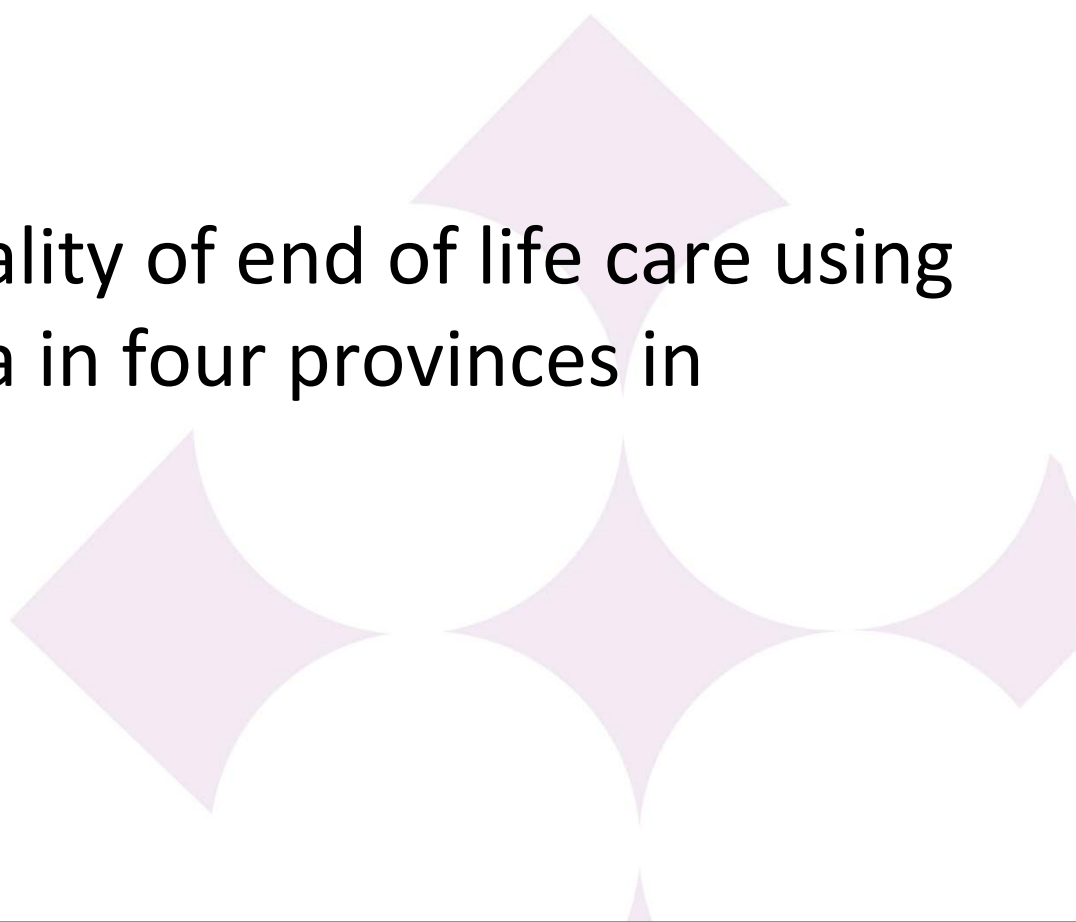
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Background


- Access to palliative care can improve quality of life at the end of life and may improve survival
- In 2010 the Canadian Cancer Society reported on end of life care as the special topic for their annual report
 - Authors concluded that comparisons among provinces are limited because of a lack of standard definitions and methods and the inability to link data across provinces

Objective

To evaluate the quality of end of life care using administrative data in four provinces in Canada

A decorative graphic consisting of several overlapping, light purple, rounded square shapes with concave sides, arranged in a pattern that resembles a stylized floral or geometric design. The shapes are semi-transparent and overlap each other, creating a sense of depth and movement. They are positioned in the lower right quadrant of the slide, partially overlapping the text area.

Methods-cohort

- Defined from each province's provincial cancer registry
 - Age ≥ 19 years
 - Cancer cause of death
 - Death between 2004-2009
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Methods-indicators

ACD

- Death in acute care hospital

ED

- Visit to an emergency department within 2 weeks of death

Chemo

- Chemotherapy administration within 2 weeks of death

ICU2

- Admission to the ICU within 2 weeks of death

House call

- House call from a physician within 2 weeks of death

Home care

- Home care visit within 6 months of death
- Evaluated RN, PSW and “palliative” home care

Methods-aggregate indicator of aggressive care

ACD	<ul style="list-style-type: none">• At least one hospitalization in the last 30 days
ED	<ul style="list-style-type: none">• More than one visit to an emergency department within 30 days of death
Chemo	<ul style="list-style-type: none">• Chemotherapy administration within 2 weeks of death
ICU2	<ul style="list-style-type: none">• At least one admission to the ICU within 30 days of death
House call	<ul style="list-style-type: none">• House call from a physician within 2 weeks of death
Home care	<ul style="list-style-type: none">• Home care visit within 6 months of death• Evaluated RN, PSW and “palliative” home care

Methods-aggregate indicator of supportive care

ACD	<ul style="list-style-type: none">• Death in acute care hospital
ED	<ul style="list-style-type: none">• Visit to an emergency department within 2 weeks of death
Chemo	<ul style="list-style-type: none">• Chemotherapy administration within 2 weeks of death
ICU2	<ul style="list-style-type: none">• Admission to the ICU within 2 weeks of death
House call	<ul style="list-style-type: none">• House call from a physician within 2 weeks of death
Home care	<ul style="list-style-type: none">• At least on “palliative” home care visit within 6 months of death

Methods-data sources

	BC	AB	ON	NS
ACD	CIHI – DAD			
ED	n/a	AACRS/NACRS	NACRS, claims	Claims
	CIHI – DAD			
Chemo	BCCA systemic therapy	Electronic medical record	NACRS, claims	n/a
ICU	CIHI – DAD			
House call	Claims	Claims	Claims	Claims
Home care	HCC	n/a	OHCAS/HCD	SeaScape

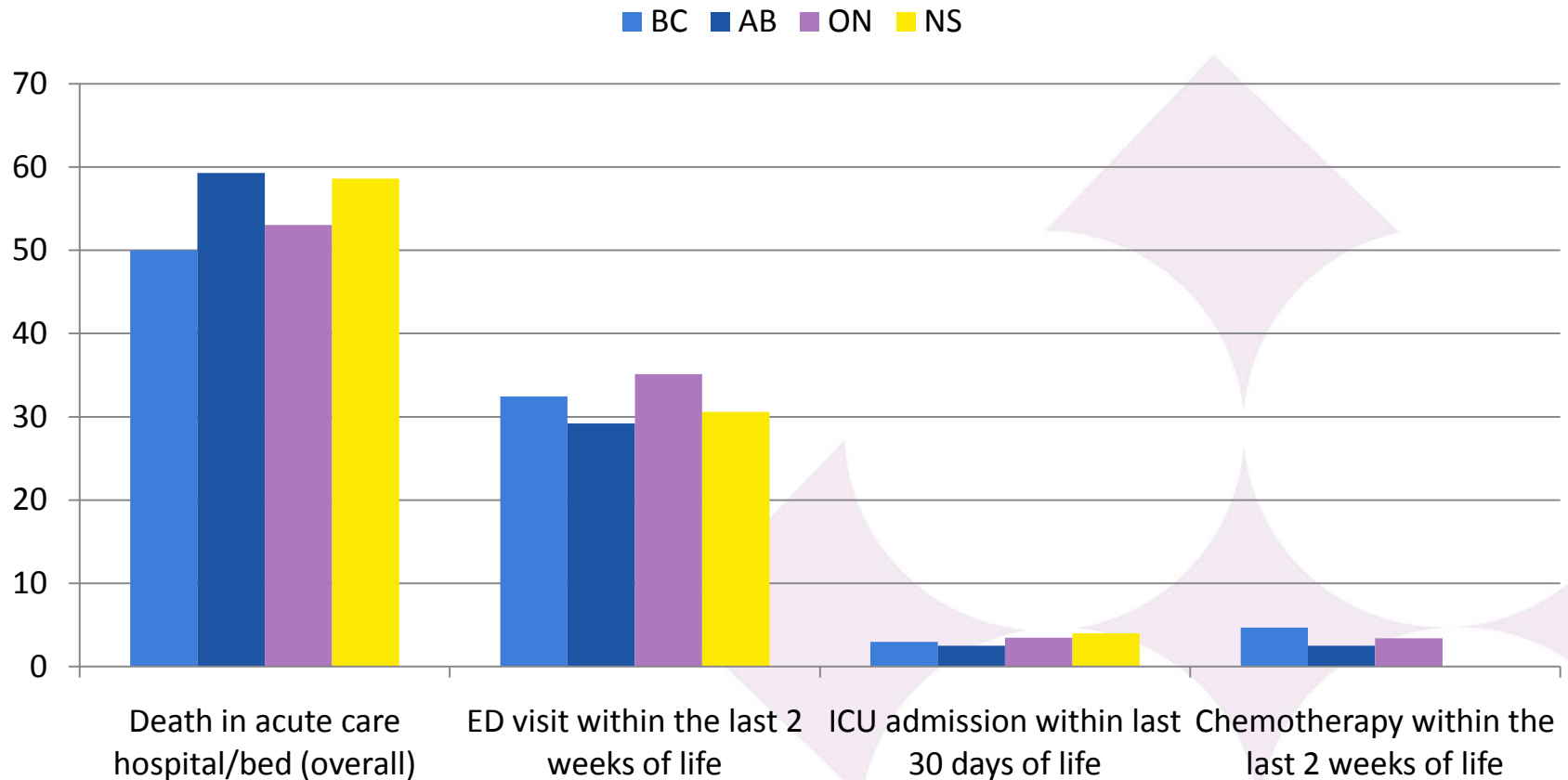
Methods-challenges

- ICU indicator
 - uses common data source (CIHI-DAD)
 - should have the same variables in all provinces
- In 3 provinces, ICU admission date was available
- In 1 province, ICU admission flag available for each hospitalization, not ICU admission date

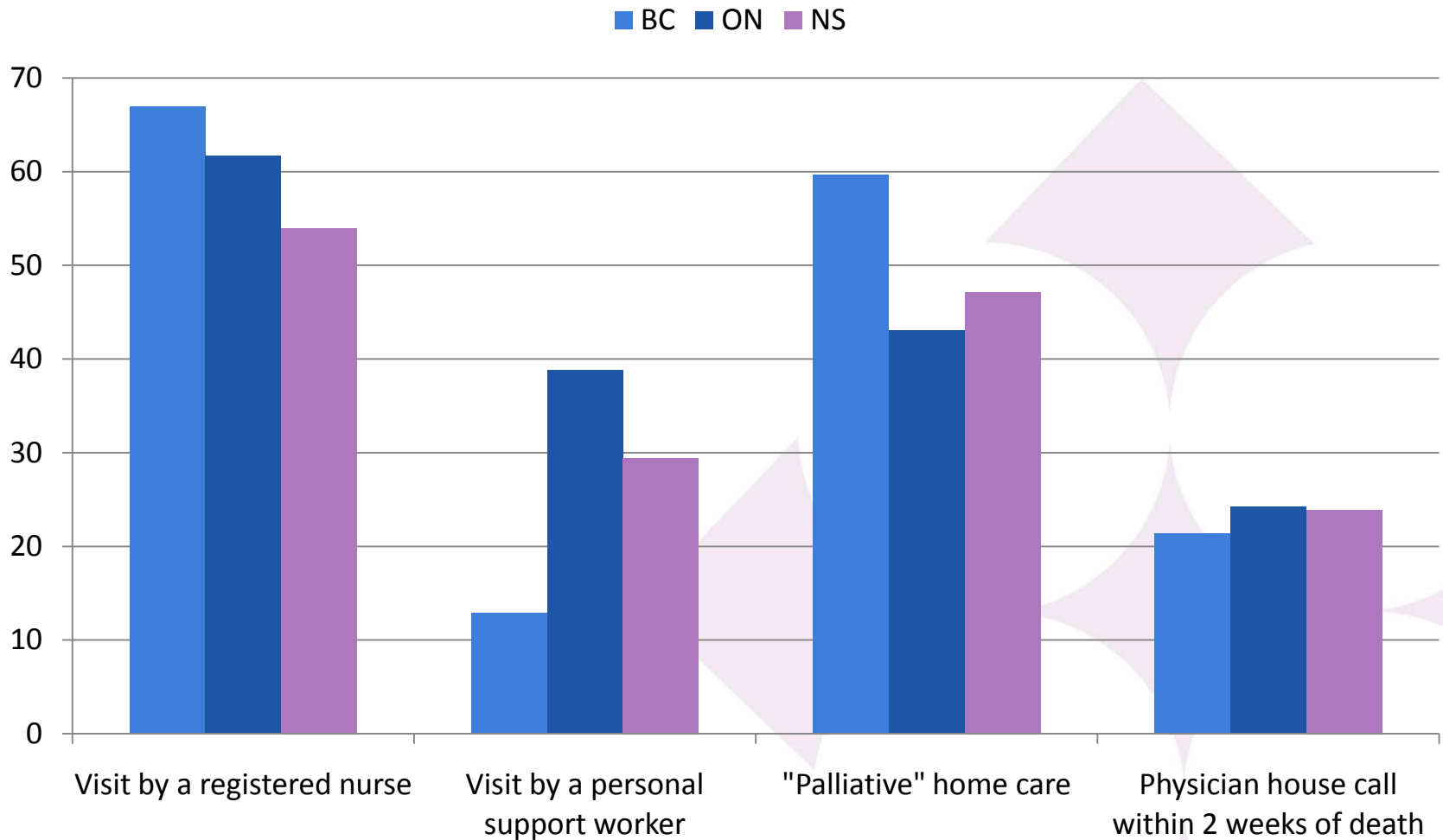
Cohort Characteristics

	BC N=40,175	AB N=27,782	ON N=119,543	NS N=12,804
Age				
Mean	71.8	70.5	71.3	72.7
Sex				
Female	46.6	46.9	47.6	45.8
Male	53.4	53.1	52.4	54.2
Community Size				
>1,500,000	42.9	0.0	33.3	0.0
500,000-1,499,999	0.0	60.1	13.1	0.0
100,000-499,999	18.3	0.0	27.2	46.6
10,000-99,999	23.5	14.1	11.4	11.9
<10,000	15.1	25.4	15.2	41.2
Income Quintile				
1 (lowest)	23.4	23.1	21.7	21.2
2	20.7	22.4	21.6	20.3
3	18.9	20.1	19.3	19.8
4	18.0	17.5	18.6	17.8
5	17.4	16.0	18.4	17.2
Charlson score				
0	82.0	78.0	78.6	78.6
1+	18.0	22.0	21.4	21.4
Cancer type				
Breast	7.1	6.9	8.3	7.2
Lung	26.3	24.9	24.9	27.5
Prostate	6.5	5.8	6.3	6.6
Colorectal	12.3	11.5	13.6	13.7

Proportion of decedents receiving aggressive care

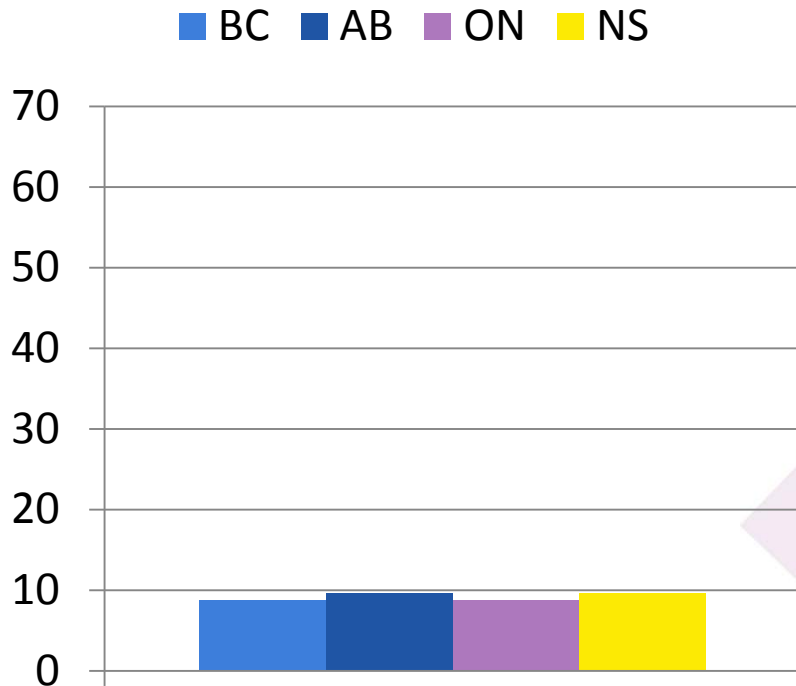


Proportion of decedents receiving supportive care

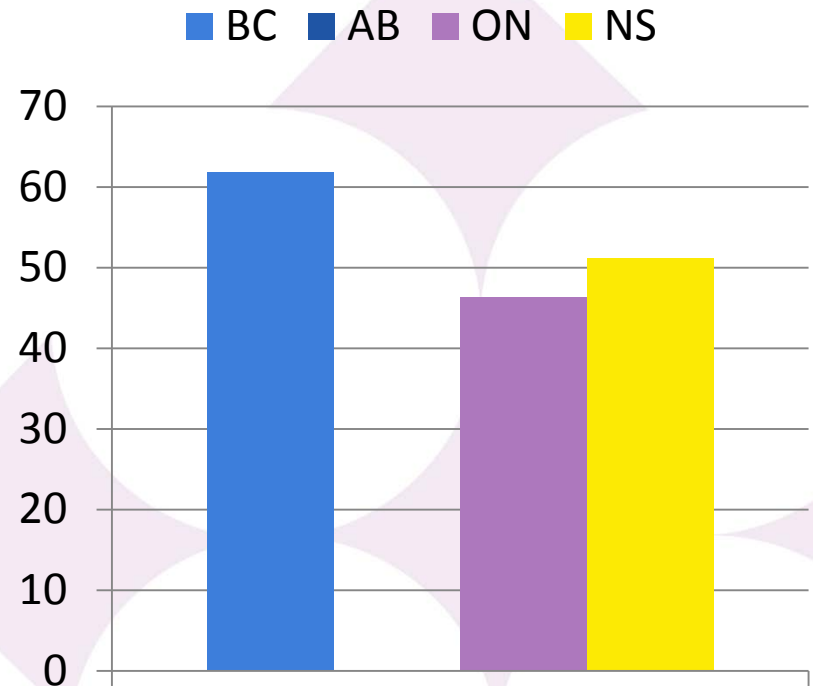


Aggregate indicators

Aggressive Care



Supportive care



Logistic Regression model

Outcome = aggressive care

	BC		AB		ON		NS	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Age	0.98	0.98-0.98	0.97	0.97-0.98	0.98	0.98-0.98	0.98	0.98-0.99
Sex								
Female	1.00		1.00		1.00		1.00	
Male	1.23	1.14-1.34	1.25	1.12-1.39	1.29	1.23-1.35	1.55	1.34-1.79
Charlson								
0	1.00		1.00		1.00		1.00	
1+	1.04	0.93-1.15	1.11	0.98-1.27	1.18	1.12-1.24	1.10	0.93-1.29
Cancer Type								
Lung	1.00		1.00		1.00		1.00	
Breast	0.92	0.78-1.10	0.96	0.75-1.21	0.83	0.76-0.91	1.05	0.77-1.42
Colorectal	1.08	0.95-1.23	1.18	0.98-1.41	0.88	0.82-0.95	1.06	0.86-1.32
Prostate	1.11	1.01-1.21	0.86	0.66-1.12	0.73	0.66-0.81	0.86	0.64-1.16
Other	0.88	0.73-1.05	1.35	1.19-1.53	1.00	0.95-1.05	1.04	0.89-1.22

Model also controls for region

Logistic Regression model

Outcome = aggressive care

	BC		AB		ON		NS	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Income Quintile								
1	0.98	0.87-1.11	1.16	0.99-1.37	1.10	1.03-1.18	1.22	0.99-1.51
2	0.99	0.88-1.12	1.08	0.91-1.27	1.09	1.01-1.16	1.14	0.92-1.42
3	1.03	0.91-1.17	1.12	0.95-1.32	1.09	1.02-1.17	1.07	0.86-1.33
4	1.02	0.92-1.15	1.05	0.89-1.25	1.06	0.98-1.13	1.25	1.00-1.55
5 (high)	1.00		1.00		1.00		1.00	
Fiscal Year								
2004	0.97	0.86-1.09	1.11	0.95-1.30	1.03	0.96-1.10	1.27	1.03-1.57
2005	0.92	0.81-1.03	1.10	0.94-1.28	1.00	0.94-1.07	1.16	0.94-1.44
2006	1.02	0.90-1.14	1.00	0.85-1.17	0.99	0.93-1.06	1.31	1.06-1.61
2007	0.95	0.84-1.07	0.99	0.84-1.16	1.01	0.95-1.08	1.18	0.95-1.46
2008	1.00		1.00		1.00		1.00	
Community size								
>99,999	1.00		1.00		1.00		1.00	
10,000-99,999	1.52	1.36-1.70	2.04	1.56-2.65	1.32	1.22-1.42	1.31	0.98-1.76
<10,000	1.73	1.53-1.95	2.73	2.18-3.42	1.47	1.37-1.57	1.59	1.06-2.39

Model also controls for region

Logistic Regression model

Outcome = supportive care

	BC		ON		NS	
	OR	95% CI	OR	95% CI	OR	95% CI
Age	0.97	0.97-0.97	0.98	0.98-0.98	0.98	0.97-0.98
Sex						
Female	1.00		1.00		1.00	
Male	0.96	0.91-1.01	0.96	0.93-0.99	0.90	0.83-0.99
Charlson						
0	1.00		1.00		1.00	
1+	0.91	0.85-0.97	0.67	0.65-0.69	0.69	0.62-0.76
Cancer Type						
Lung	1.00		1.00		1.00	
Breast	0.78	0.70-0.87	0.97	0.92-1.03	0.72	0.60-0.86
Colorectal	0.87	0.80-0.95	1.01	0.96-1.06	0.97	0.85-1.12
Prostate	0.77	0.72-0.82	0.94	0.88-1.00	0.78	0.65-0.93
Other	0.84	0.76-0.94	0.81	0.78-0.84	0.82	0.74-0.91

Model also controls for region

Logistic Regression model

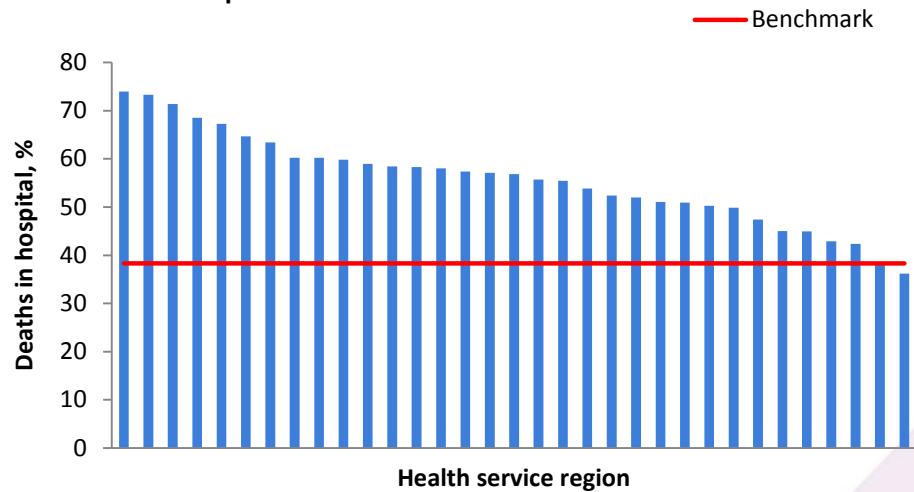
Outcome = supportive care

	BC		ON		NS	
	OR	95% CI	OR	95% CI	OR	95% CI
Income Quintile						
1	0.74	0.69-0.80	0.73	0.70-0.77	0.87	0.77-1.00
2	0.87	0.80-0.94	0.84	0.80-0.88	0.89	0.78-1.01
3	0.87	0.80-0.94	0.86	0.82-0.90	0.99	0.86-1.13
4	0.90	0.83-0.97	0.92	0.88-0.96	1.00	0.88-1.15
5 (high)	1.00		1.00		1.00	
Fiscal Year						
2004	1.06	0.97-1.15	-	-	-	-
2005	1.10	1.01-1.19	0.98	0.93-1.02	0.82	0.73-0.92
2006	1.13	1.04-1.23	0.98	0.95-1.02	0.92	0.82-1.03
2007	1.10	1.01-1.20	1.00	0.96-1.04	0.95	0.85-1.07
2008	1.00		1.00		1.00	
Community size						
>99,999	1.00		1.00		1.00	
10,000-99,999	1.02	0.95-1.10	0.96	0.92-1.01	0.60	0.49-0.72
<10,000	0.91	0.83-0.99	0.93	0.89-0.97	0.55	0.42-0.72

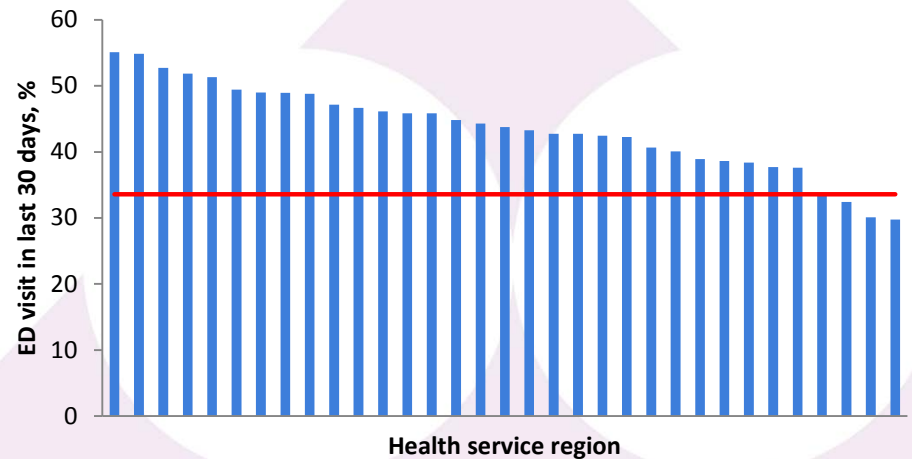
Model also controls for region

Empiric Benchmarks

A. Deaths in hospital

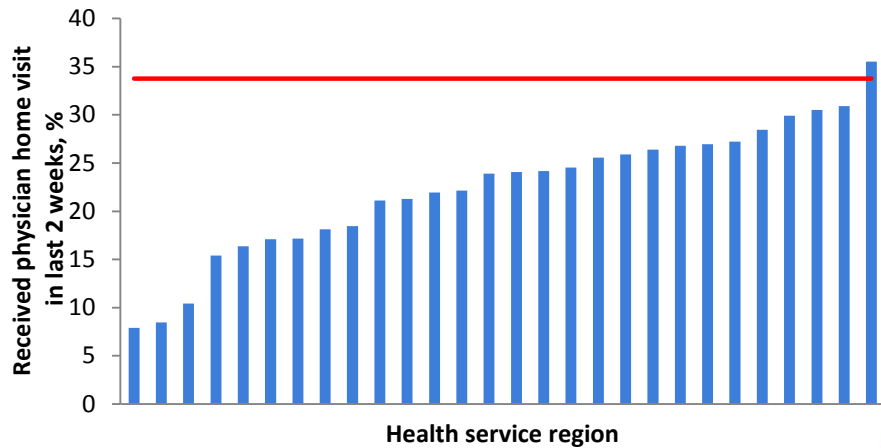


C. Emergency department visits

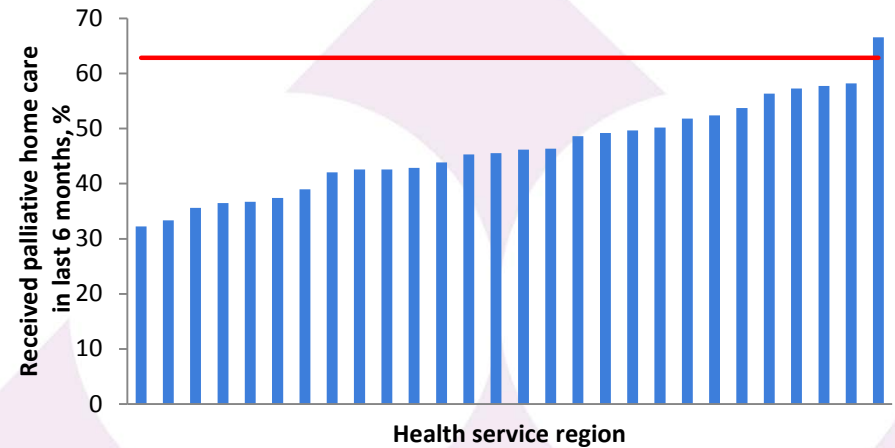


Empiric Benchmarks

E. Physician home visits



D. Palliative home care



Conclusions (1)

- Feasible to describe health service utilization in multiple provinces using linked administrative health care data (even if silo'd)
- Modest differences between provinces
- Similar patterns for factors associated with health service use
- Much more variation among all regions of the provinces

Conclusions (2)

- Work to identify “what rate is right?” is ongoing
- This work contributes to a gap in our knowledge in this area
 - CIHI EOL report: cohort was cancer patients who died in hospital, ambulatory services not included
 - CCS Special report: did not align definitions
 - CPAC System performance: place of death