What is the quality of end-of-life care in Calgary Zone for chronic disease patients *other* than cancer?

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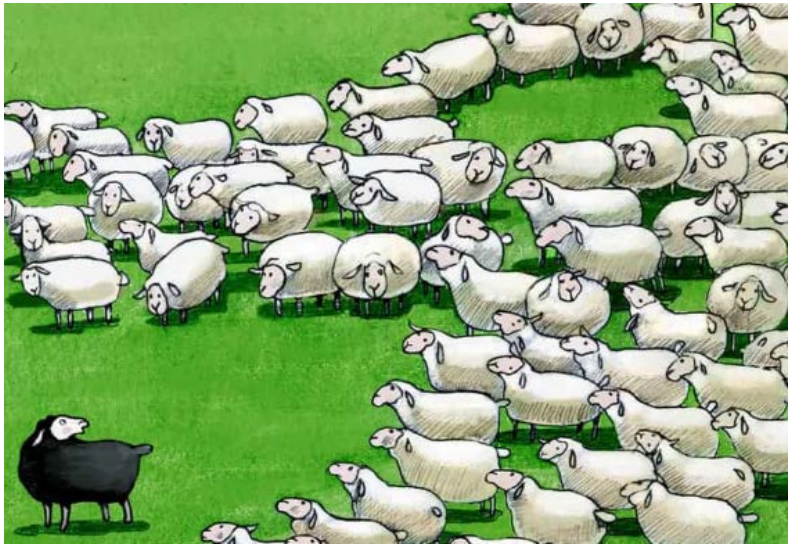
The Palliative Care Early and Systematic (PaCES) Project

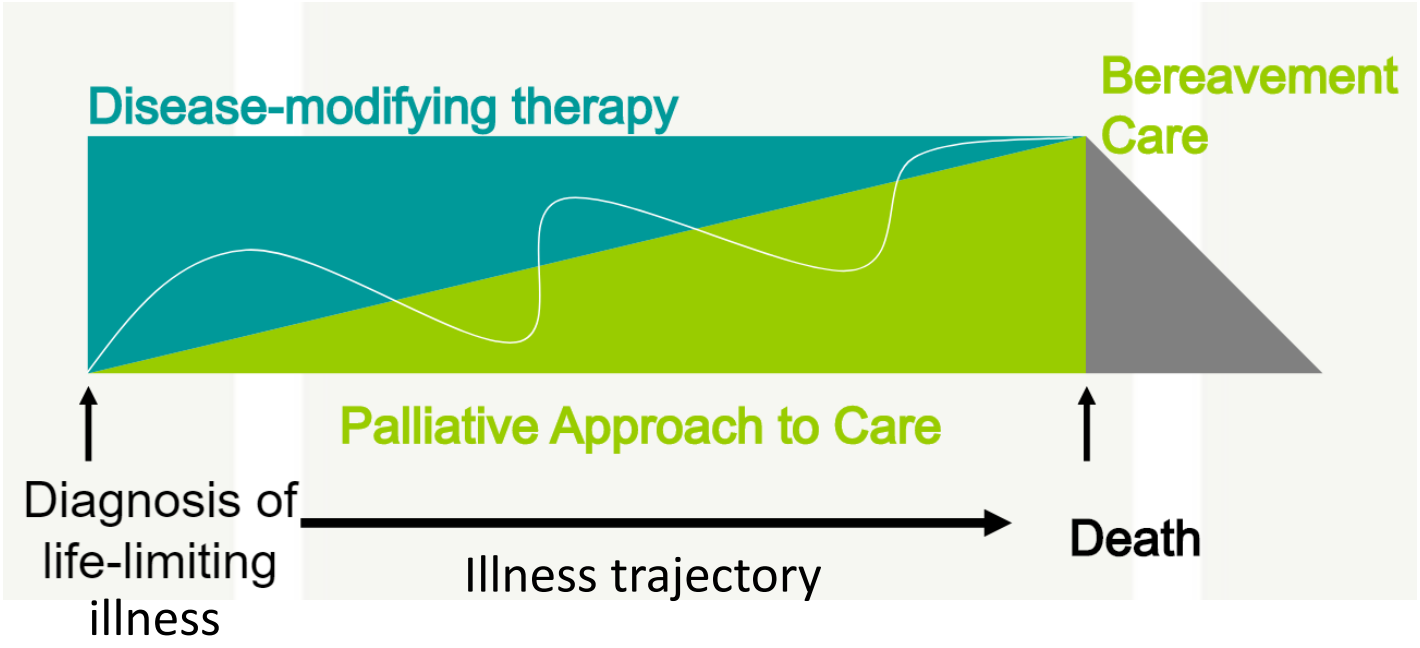
Improving quality of life for Albertans with advanced cancer

PaCES
PALLIATIVE CARE EARLY AND SYSTEMATIC



Quality end-of-life care:

"Quality end-of-life care is generally defined as reducing or withdrawing ineffective treatment (e.g. diagnostic or curative therapies) and increasing utilization of evidence-based palliative therapy while also reflecting patient preferences."



Canadian Hospice Palliative Care Association model of care (2002)

Study questions

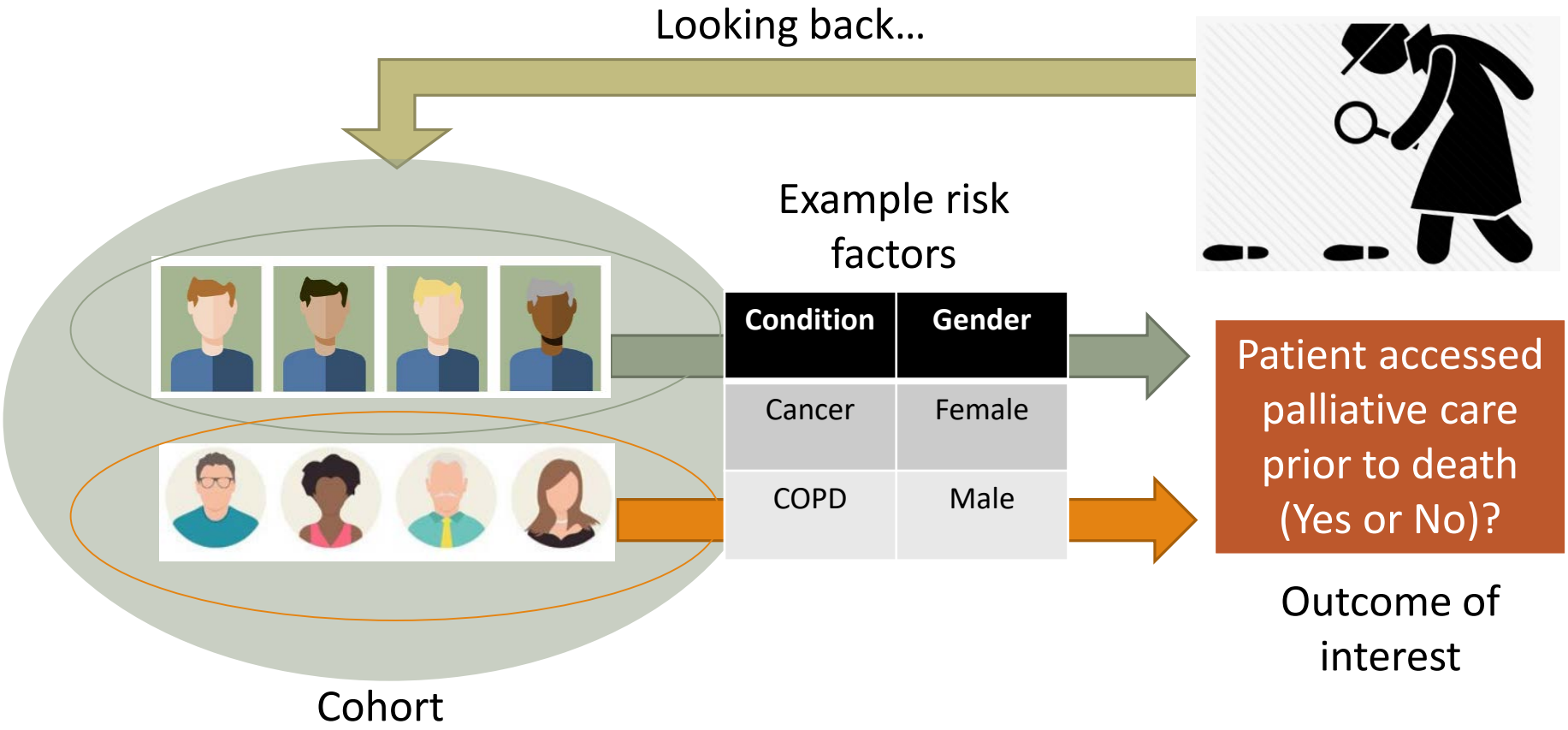
Do we observe **increasing** utilization of evidence-based palliative therapy prior to death.

Do we observe **decreasing** utilization of acute care services indicative of “aggressive” or low-quality care in the 30 days prior to death.

What exposures or “factors” are associated with these trends?

Study design:

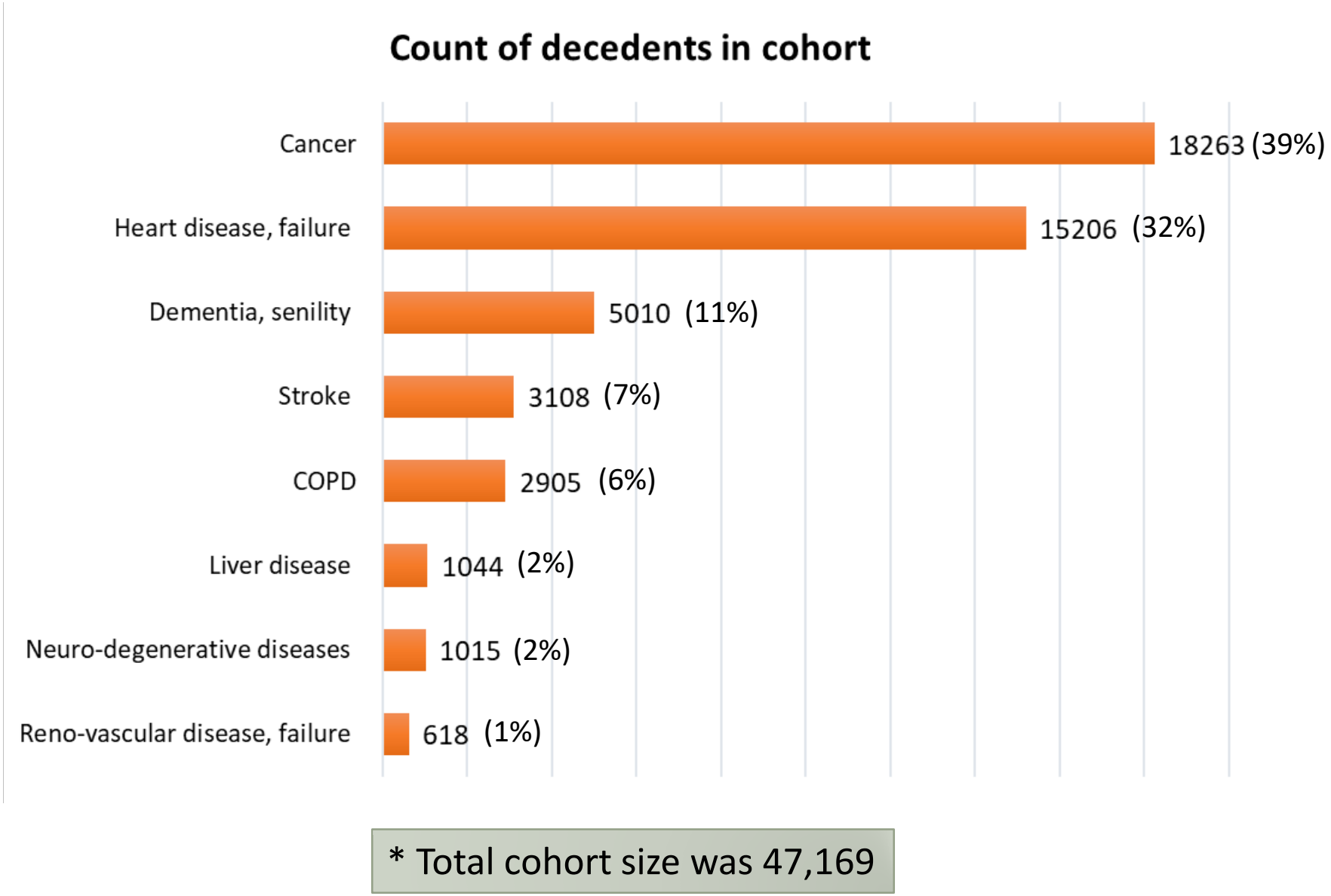
Retrospective, cohort, administrative data



Conditions included (based on ICD-10)
Cancer (reference group)
Heart disease and heart failure
Dementia, Alzheimer's disease, senility
Stroke
COPD, respiratory failure
Liver Disease
Neurodegenerative
Reno-vascular disease, renal failure

Cohort

- Patients who died of chronic conditions considered "amenable" to palliative care.
- Died 2007 – 2016 (10 year interval)
- Calgary Zone only
- Adults only



* Total cohort size was 47,169

Factors	Count (%), Total Cohort
Gender	
Female	23865 (51)
Male	23304 (49)
Age at death (years)	
< 61	6749 (14)
61-70	7066 (15)
71-80	10449 (22)
81-90	15355 (33)
≥91	7550 (16)
Rurality	
Urban	41664 (88)
Rural	5505 (12)
Income quintile	
Q1 – Lowest	13211 (28)
Q2	10972 (23)
Q3	8896 (19)
Q4	6614 (14)
Q5 – Highest	7476 (16)
Comorbidity Score	
0	32666 (69)
1 (score 1-2)	9399 (20)
2 (score ≥3)	5104 (11)
Year of death	
2007-2008	8771 (19)
2009-2010	9032 (19)
2011-2012	9195 (19)
2013-2014	9731 (21)
2015-2016	10440 (22)

Exposures or "risk" factors

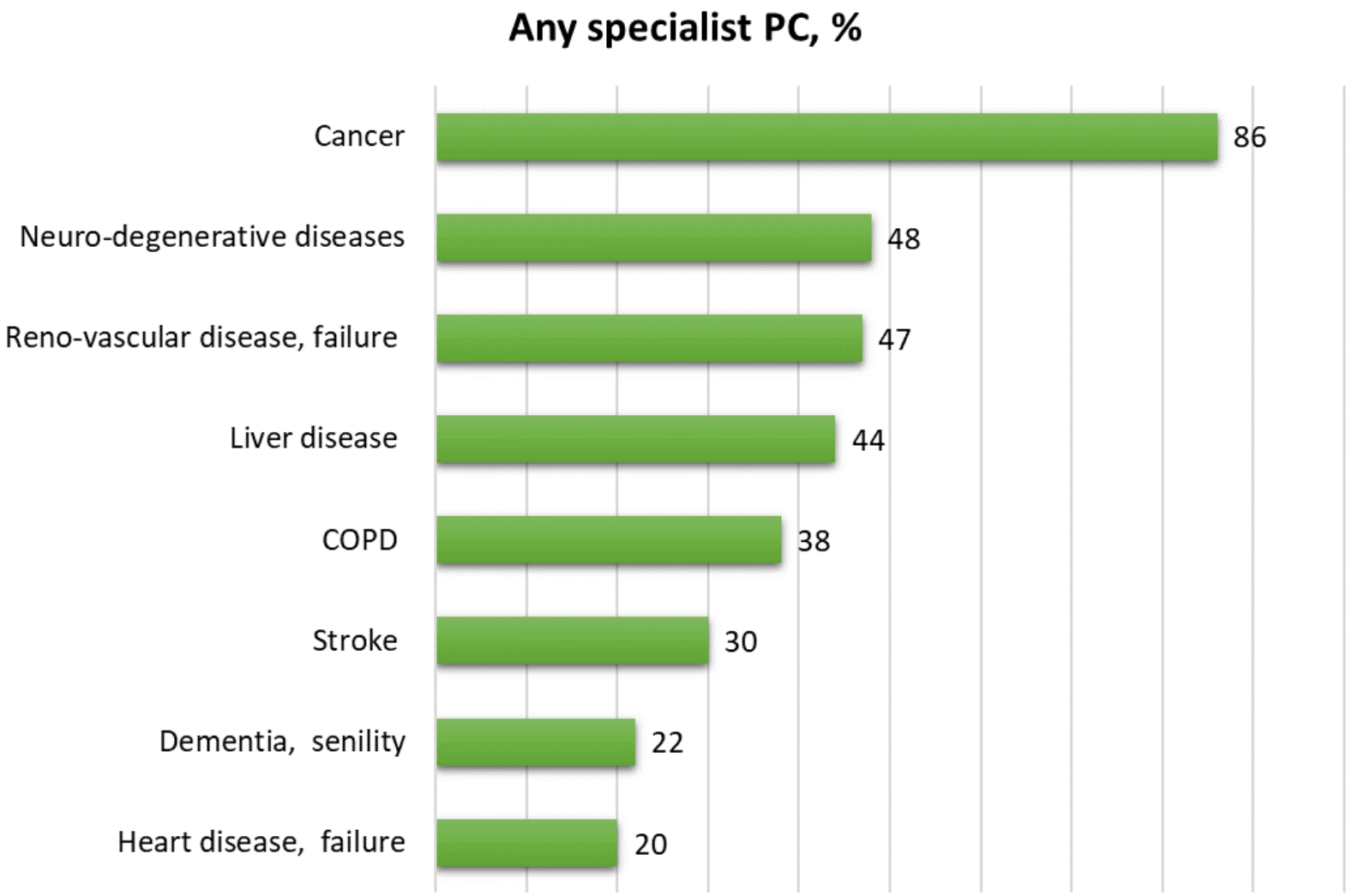
Outcome of interest:

Patient accessed palliative care prior to death

Yes or No

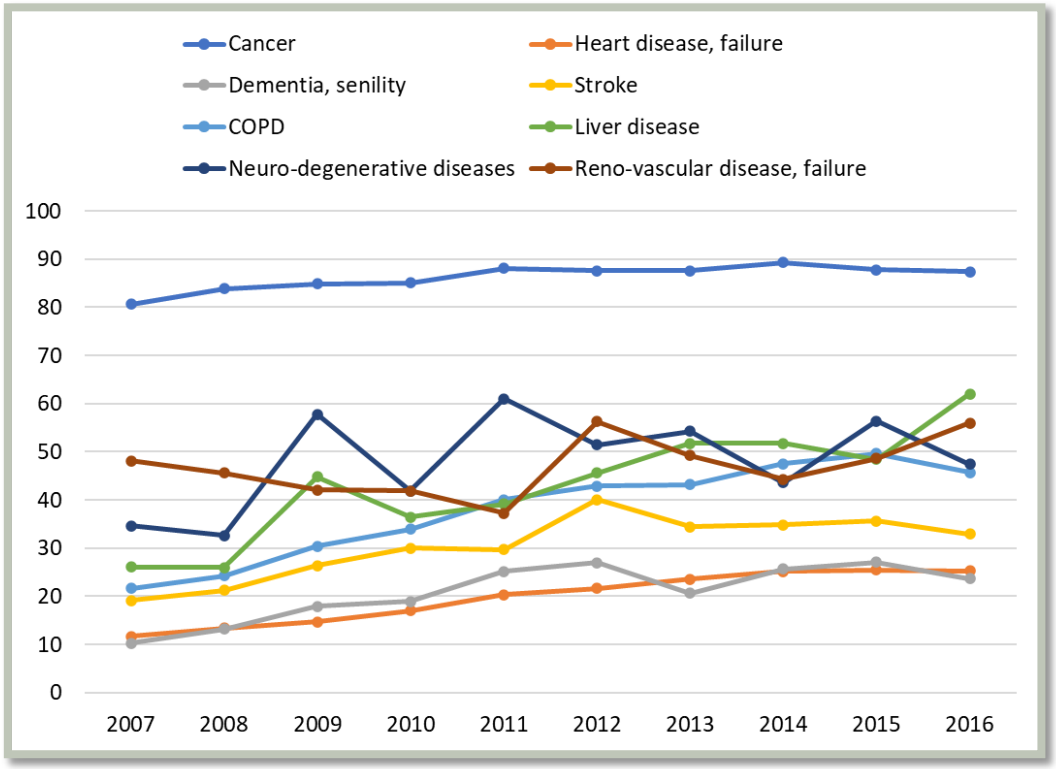
Any service

At any time



* Cohort average was 49%

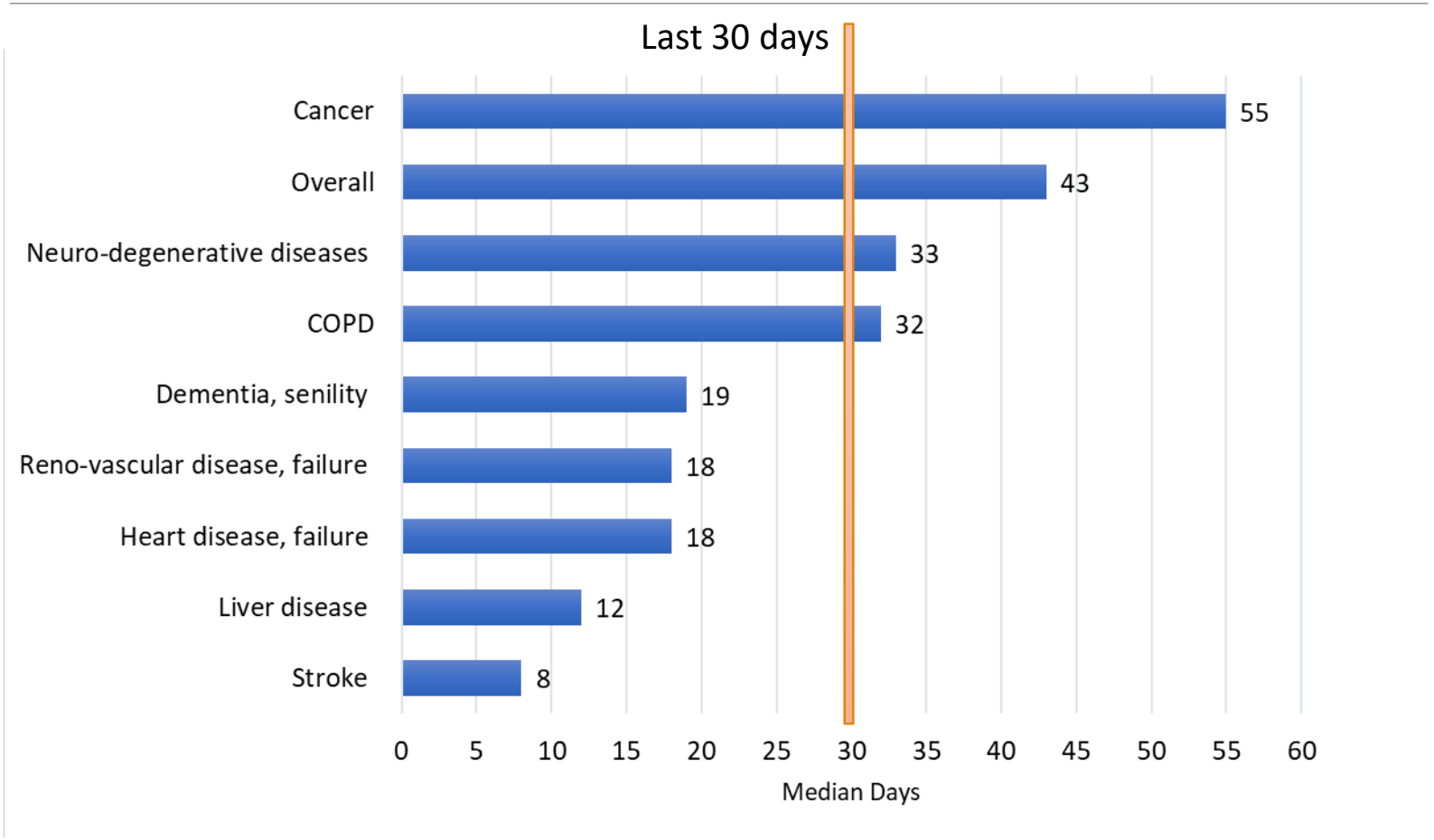
The proportion of the cohort who accessed specialist PC, change by year.



Disease category	%Δ[a]
Overall	**+10.2**
Cancer	+5.3
Heart disease, failure	+12.8
Dementia, senility	+13.5
Stroke	+14.1
COPD	+24.6
Liver disease	+29.1
Neuro-degenerative diseases	+17.6
Reno-vascular disease, failure	+5.9

[a] Percent change in the proportion of decedents in 2007/2008 versus 2015/2016.

Average first palliative care contact, median days



What exposures or “factors” are associated with palliative care use (any versus none)?

Exposure or 'risk' factor	Used any specialist PC		Adjusted model 2	
	N (%)	p-value	OR	p-value
Sex				
Male	11375 (49)	0.0955	1	--
Female	11832 (50)		1.3	<0.001
Age at death				
< 61	4063 (60)	<0.001	1.01	0.817
61-70	4250 (60)		1	0.956
71-80	5784 (55)		1.12	0.007
81-90	6782 (44)		1.12	0.003
≥91	2328 (31)		1	--
Rurality				
Rural	1916 (35)	<0.001	1	--
Urban	21291 (51)		3.07	<0.001
Neighbourhoo				
Q1	5596 (42)	<0.001	1	--
Q2	5592 (51)		1.18	<0.001
Q3	4568 (51)		1.26	<0.001
Q4	3513 (53)		1.27	<0.001
Q5	3938 (53)		1.26	<0.001
CCI score				
0	15851 (49)	<0.001	1	--
1 (score 1-2)	4884 (52)		1.67	<0.001
2 (score ≥3)	2472 (48)		2.37	<0.001
Year of death				
2007-2008	3725 (42)	<0.001	1	--
2009-2010	4229 (47)		1.38	<0.001
2011-2012	4698 (51)		2.11	<0.001
2013-2014	5051 (52)		2.23	<0.001
2015-2016	5504 (53)		2.28	<0.001
LTC or SL use				
No	20879 (54)	<0.001	1	--
Yes	2328 (27)		0.47	<0.001
Non-palliative				
No	10448 (49)	0.856	1	--
Yes	12759 (49)		1.54	<0.001

What exposures or "factors" are associated with palliative care use (any versus none)?

Adjusting for cause of death, decedents more likely to receive specialist PC were:

- Female
- Living in an urban area
- Not from the lowest neighbourhood income quintile
- Had a comorbidity (CCI) score >0
- Died in more recent years
- Never admitted to LTC or SL
- Used non-palliative home care

Adjusted model (multivariate logistic regression) includes all exposures simultaneously.

What about cause of death?

Exposure or 'risk' factor	Used any specialist PC		Adjusted model		
	N (%)	p-value	OR	p-value	1/OR
Cause of death					
Cancer	15763 (86)	<0.001	1.00	--	1.0
COPD	1118 (38)		0.07	<0.001	13.6
Dementia, senility	1098 (22)		0.05	<0.001	22.1
Stroke	942 (30)		0.06	<0.001	17.1
Heart disease, failure	3041 (20)		0.03	<0.001	36.0
Liver disease	461 (44)		0.11	<0.001	9.4
Neurodegenerative diseases	492 (48)		0.14	<0.001	7.1
Reno-vascular disease/failure	292 (47)		0.09	<0.001	10.8

* All non-cancer chronic disease patients are less likely to access palliative care than cancer patients

Study questions

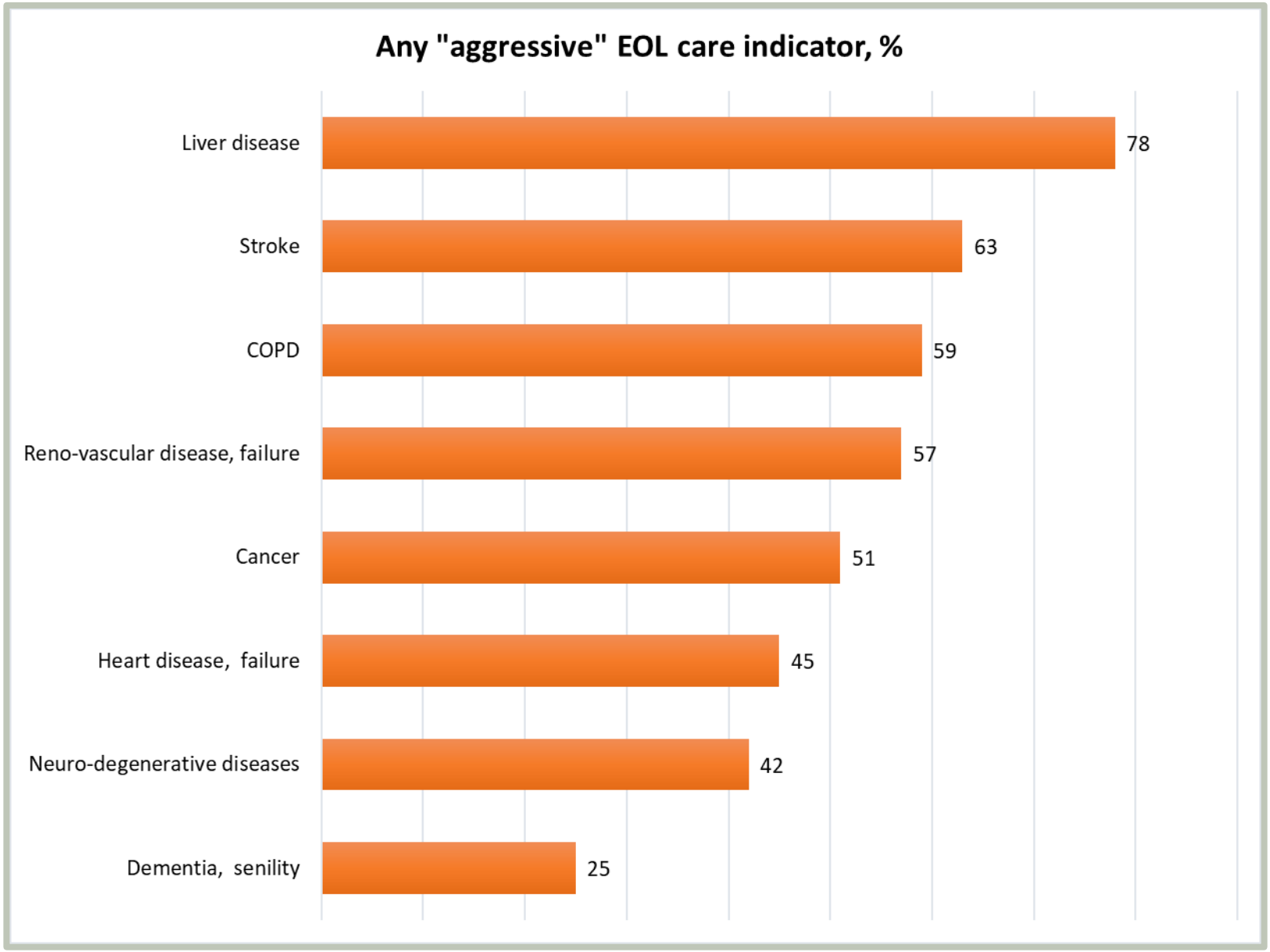
Do we observe **increasing** utilization of evidence-based palliative therapy prior to death.

Do we observe **decreasing** utilization of acute care services indicative of “aggressive” or low-quality care in the 30 days prior to death.

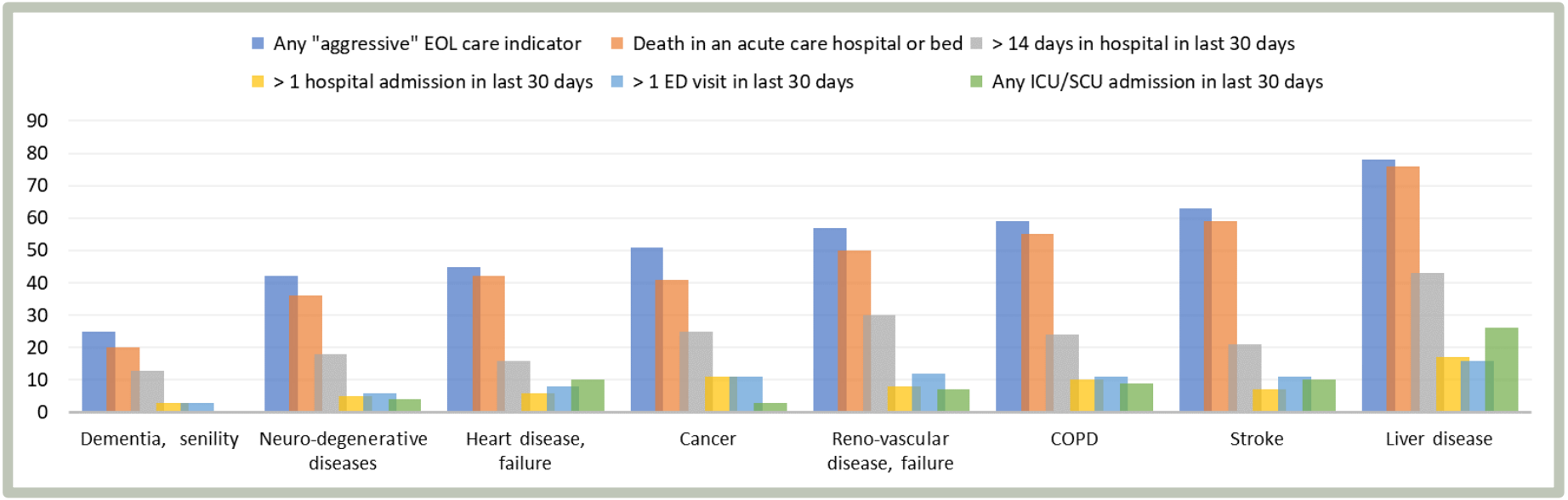
What exposures or “factors” are associated with these trends?

Indicators of "aggressive" low-quality EOL care

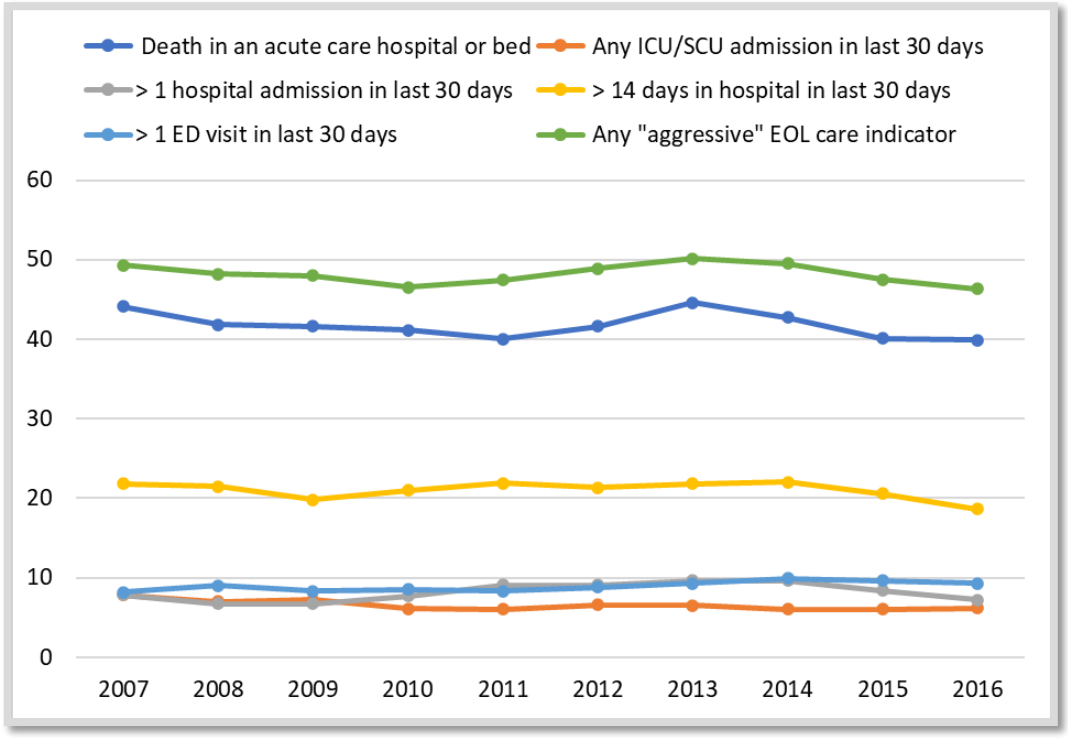
- Death in an acute care hospital or bed
- > 14 days in hospital in last 30 days
- > 1 hospital admission in last 30 days
- > 1 ED visit in last 30 days
- Any ICU/SCU admission in last 30 days


Any "aggressive" EOL care indicator, %
Liver disease
78
Stroke
63
COPD
59
Reno-vascular disease, failure
57
Cancer
51
Heart disease, failure
45
Neuro-degenerative diseases
42
Dementia, senility
25

Individual “aggressive” care indicators (%), by disease category

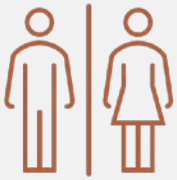


The proportion of the cohort who experienced care indicative of “aggressive” care, change by year.



Indicator of “aggressive” care	%Δ[a]
Death in an acute care hospital or bed	-2.9
Any ICU/SCU admission in last 30 days	-1.3
> 1 hospital admission in last 30 days	+0.5
> 14 days in hospital in last 30 days	-2
> 1 ED visit in last 30 days	+0.8
Any "aggressive" EOL care indicator	-1.8

[a] Percent change in the proportion of decedents in 2007/2008 versus 2015/2016.



What exposures or “factors” are associated with experiencing **acute care indicative of “aggressive” care** in the last 30 days of life (any versus none)?

Exposure or 'risk' factor	Adjusted Relative Risk (95%CI)	% RR
Sex		
Male	**1.06 (1.04,1.08)**	+6%
Female	**ref**	
Age at death		
< 61	**1.15 (1.12,1.19)**	+15%
61-70	**1.07 (1.04,1.10)**	+7%
71-80	**1.04 (1.01,1.06)**	+4%
81-90	ref	
≥91	**0.86 (0.83,0.89)**	-14%
Rurality		
Rural	**1.21 (1.18,1.24)**	+21%
Urban	**ref**	
Income Quintile		
Q1	ref	n.s.
Q2	0.99 (0.96,1.01)	n.s.
Q3	0.98 (0.95,1)	n.s.
Q4	0.98 (0.95,1.01)	n.s.
Q5	0.96 (0.93,0.99)	n.s.
Charlson Comorbidity Index Score Bins		
0	ref	
1 (score 1-2)	**1.56 (1.53,1.59)**	+56%
2 (score ≥3)	**1.76 (1.72,1.80)**	+76%
Year of death		
2007-2011	0.92 (0.91,0.94)	-8%
2012-2016	ref	
Ever admit to LTC/SL		
No	ref	
Yes	**0.49 (0.47,0.51)**	-51%
Ever home care visit		
No	ref	
Yes	**1 (0.98,1.02)**	n.s.
PC use		
% Early (≥90 days)		
% Late (<90 days)	**1.66 (1.61,1.72)**	+66%
% Never	**1.4 (1.35,1.46)**	+40%

What exposures or "factors" are associated with experiencing acute care indicative of "aggressive" care in the last 30 days of life (any versus none)?

Adjusting for cause of death, decedents more likely to experience care indicative of "aggressive" EOL care:

- Received palliative care late (+66%) or not at all (+40%)
- Had a comorbidity (CCI) score >0 (+56-76%)
- Were living rurally (21% increase)
- Younger at death (4-15% increase)
- Male (6% increase)
- Died in more recent years
- Never admitted to long term care

Adjusted relative risk model (modified Poisson, log link) includes all exposures simultaneously.

What about cause of death?

Exposure or 'risk' factor	Adjusted Relative Risk (95%CI)	% Relative Risk
Cause of death		
Cancer	*ref*	*ref*
Stroke	**1.36 (1.31 - 1.40)**	+36%
Liver Disease	**1.29 (1.24 - 1.34)**	+29%
COPD	**1.20 (1.17 - 1.25)**	+20%
Reno-vascular disease, failure	1.05 (0.99 - 1.12)	n.s.
Neuro-degenerative diseases	1.04 (0.97 - 1.12)	n.s.
Heart disease, failure	**0.90 (0.87 - 0.92)**	-10%
Dementia, senility	**0.81 (0.77 - 0.85)**	-19%

Patients who died of stroke, liver disease, or COPD were **more likely** to experience "aggressive" care in the last 30 days of life, relative to cancer patients

Patients who died of heart disease/failure, or dementia/Alzheimer's disease were **less likely** to experience "aggressive" care in the last 30 days of life, relative to cancer patients.

Discussion:

What are opportunities to improve quality of end-of-life care in Calgary Zone for chronic disease patients *other* than cancer, suggested by this data.

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*"Quality end-of-life care is generally defined as reducing or withdrawing ineffective treatment (e.g. **diagnostic or curative therapies) and increasing utilization of evidence-based palliative therapy while also reflecting patient preferences."***

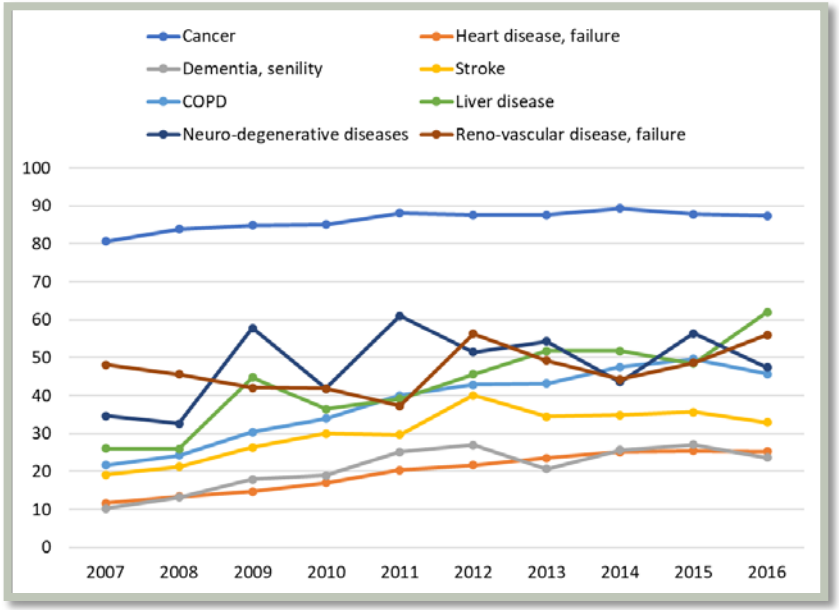
Opportunities

Palliative care access rates are increasing; however, there is still 'room' to improve, including for chronic disease groups more likely to experience aggressive EOL care.

Relative risk of aggressive care in the last 30 days

Exposure or 'risk' factor	Adjusted Relative Risk (95%CI)	% Relative Risk
Cause of death		
Cancer	*ref*	*ref*
Stroke	**1.36 (1.31 - 1.40)**	+36%
Liver Disease	**1.29 (1.24 - 1.34)**	+29%
COPD	**1.20 (1.17 - 1.25)**	+20%
Reno-vascular disease, failure	1.05 (0.99 - 1.12)	n.s.
Neuro-degenerative diseases	1.04 (0.97 - 1.12)	n.s.
Heart disease, failure	**0.90 (0.87 - 0.92)**	-10%
Dementia, senility	**0.81 (0.77 - 0.85)**	-19%

The proportion of the cohort who accessed specialist PC

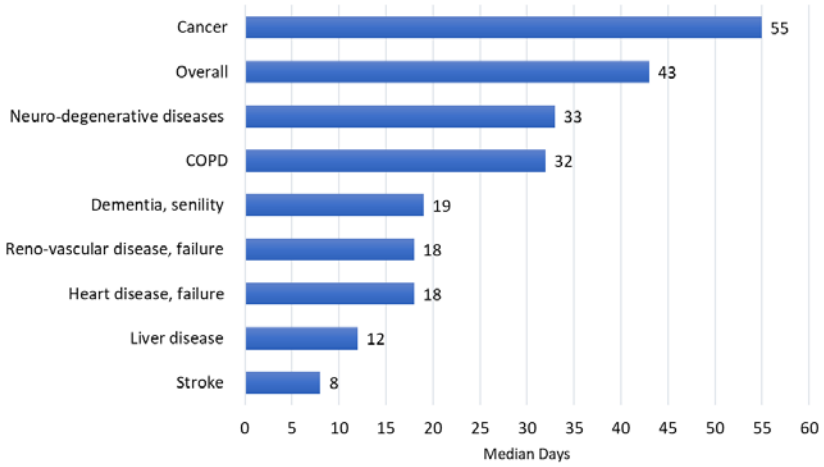


Opportunities, continued

Relative risk of aggressive care in the last 30 days

Exposure or 'risk' factor	Adjusted Relative Risk (95%CI)	% Relative Risk
Cause of death		
Cancer	*ref*	*ref*
Stroke	**1.36 (1.31 - 1.40)**	+36%
Liver Disease	**1.29 (1.24 - 1.34)**	+29%
COPD	**1.20 (1.17 - 1.25)**	+20%
Reno-vascular disease, failure	1.05 (0.99 - 1.12)	n.s.
Neuro-degenerative diseases	1.04 (0.97 - 1.12)	n.s.
Heart disease, failure	**0.90 (0.87 - 0.92)**	-10%
Dementia, senility	**0.81 (0.77 - 0.85)**	-19%

Average timing of first palliative care access



The average timing of first contact with palliative care contact is still late, or very late, for many disease groups. There is 'room' to improve, for all chronic disease groups.

Limitations

"Quality end-of-life care is generally defined as reducing or withdrawing ineffective treatment (e.g. diagnostic or curative therapies) and increasing utilization of evidence-based palliative therapy ***while also reflecting patient preferences."***

- Very limited ability to know what patient preferences are from healthcare administrative data.
- More "aggressive" care at end-of-life may be the *preferred care* and/or appropriate care for some chronic disease groups and/or individual patients.
- Indicators of "aggressive" care developed primarily based on cancer patients. Applicability to non-cancer chronic diseases is not certain.

Questions