

Effect of comprehensive primary care model on end-of-life care and care outcomes: A population-based retrospective cohort study in Ontario, Canada

Michelle Howard, Mathieu Chalifoux, Peter Tanuseputro
CAHSPR Conference, May 11, 2016



Acknowledgement and Disclaimer

- Study supported by a research grant from the Ontario Ministry of Health and Long Term Care (MOHLTC) to the Health System Performance Research Network (HSPRN) and the Institute for Clinical Evaluative Sciences (ICES), which is funded by an annual grant from the Ontario MOHLTC.
- The opinions, results and conclusions reported in this presentation are those of the authors and are independent from the funding sources. No endorsement by MOHLTC is intended or should be inferred.

Background

- Most people will experience a prolonged period of declining health before dying
- Family physicians and other primary care professionals have an important role at the end-of-life care
- Most deaths in Ontario occur in hospital
- Family physician continuity near end-of-life associated with decreased use of acute care
- Through funding structure and support for comprehensiveness, model of primary care may be associated with involvement in end-of-life care and outcomes

Objectives

1. To describe health care utilization, costs, and outcomes in the last six months of life across the 3 types of primary care model in Ontario
2. To examine associations between primary care model and days institution use and death in institution

Methods

- Retrospective cohort study using linked health administrative data
- Utilization over last 6 months of life by decedents in 3 primary care models
- deaths from April 2010 to March 2013 in Ontario (residents of LTC excluded)
- Descriptive analyses and regression for examining associations

Primary care models

1. **Capitation** – patients enrolled, age/sex adjusted set \$ amount per patient for basket of services, some with interprofessional team (incentivized for comprehensive, longitudinal care, receive performance feedback)
2. **Enhanced fee-for-service** – enrolment optional, fee enhancements for comprehensive care services, no interprofessional team
3. **Traditional fee-for-service** – no enrollment, FFS payment, no incentives

Analyses

Primary

Describe across 3 models

- % of specialist (versus family physician) claims
- Presence of billings (1+) from a palliative care physician
- Occurrence of home visits by a specialist and/or by a family physician
- # days receiving care from various sectors
- Whether death occurred in an institution
- Cost overall and by sector

Secondary

Association between model and:

- # days receiving care in institution
- Whether death occurred in an institution

Controlling for:

age category, sex, urban versus rural, income quintile, the presence of a cancer diagnosis, and ADG score

Results (%)

	Capitation (n=98, 578)	Enhanced FFS (64,913)	Traditional FFS (30,621)	All (194,112)
Age 70+ (%)	68.7	66.2	57.1	66.0
Female (%)	47.1	46.9	44.1	46.6
High-highest income quintile (%)	38.7	35.0	32.6	36.5
Urban (%)	81.3	92.3	85.1	85.5
ADG group 10+ (%)	66.9	72.0	58.0	67.2
Cancer diagnosis (%)	53.3	51.6	44.2	51.3

Health services by PC model

	Capitation	Enhanced FFS	Traditional FFS	All
Majority MD claims by family physician	44.8%	38.6%	34.3%	41.1%
Home visit by family physician	22.9%	23.3%	19.4%	22.5%
Palliative physician claim	34.8%	41.5%	34.4%	37.0%
Days of palliative home care (mean)	27.2	24.2	21.7	25.4
Died in institution*	63.5%	64.3%	59.1%	63.1%
Days institution use** (mean)	23.9	25.5	24.3	24.5

* Institution death includes acute care, complex continuing care or rehabilitation hospitals

** Excludes days registered in home care

Mean costs (\$)

Mean Cost \$	Capitation	Enhanced FFS	Traditional FFS	Total
<u>Continuing Care Sectors</u>				
Complex Continuing Care	2358.87	2874.96	3209.51	2665.64
Home Care	3000.03	2990.03	2683.24	2946.71
Rehabilitation	743.76	700.75	566.98	701.49
<u>Acute Care Sectors</u>				
Inpatient	20922.53	22569.79	21663.59	21590.29
Emergency Department	1077.71	1077.55	980.12	1062.26
<u>Outpatient Care Sectors</u>				
Outpatient clinics	2338.57	2487.91	2242.63	2373.38
Physician Billings	4157.14	4620.17	4016.35	4289.77
Non-physician Billings (OHIP)	43.75	42.46	42.05	43.05
Laboratory (OHIP)	92.84	96.55	70.30	90.53
Drugs/Devices	1493.54	1445.50	1277.31	1443.36
Total Cost	36228.75	38905.67	36752.08	37206.49

Predictors of total days institution use (adjusted for all factors)

Reference Value	Parameter Variable	Parameter Estimate	Standard Error	P value
Ages 70-79	0-49	0.96	0.33	.0035
	50-59	-0.53	0.28	0.06
	60-69	-0.26	0.24	0.28
	80-89	0.10	0.21	<0.0001
	90+	-1.52	0.27	<0.0001
Sex – Male	Sex - Female	2.04	0.15	<0.0001
Rurality - Rural Resident	Urban Resident	-0.41	0.22	0.06
	Missing	2.10	2.38	0.38
Income Quintile - Lowest	Low	0.003	0.23	0.01
	Middle	-0.97	0.23	<0.0001
	High	-1.23	0.24	<0.0001
	Highest	-1.72	0.24	<0.0001
	Missing	13.29	1.16	<0.0001
Cancer Status - No Cancer	Cancer	-0.50	0.16	0.002
ADG score†		0.75	0.005	<0.0001
Primary Care Model*	Enhanced FFS	1.12	0.17	<0.0001
	Traditional FFS	2.21	0.22	<0.0001

Predictors of dying in an institution (adjusted for all factors)

Reference Value	Parameter Variable	Odds Ratio	95% confidence interval	P value
Ages 70-79	0-49	0.71	0.68-0.74	<.0001
	50-59	0.79	0.77-0.82	<.0001
	60-69	0.89	0.86-0.92	<.0001
	80-89	1.09	1.06-1.12	<.0001
	90+	1.01	0.97-1.04	0.80
Sex - Male	Sex - Female	1.08	1.06-1.10	<0.001
Rurality - Rural Resident	Urban Resident	1.15	1.11-1.18	<0.001
	Missing	0.92	0.67-1.26	0.60
Income Quintile - Lowest	Low	0.96	0.93-0.99	0.005
	Middle	0.92	0.89-0.95	<0.001
	High	0.88	0.86-0.91	<0.001
	Highest	0.84	0.81-0.87	<0.001
	Missing	1.12	0.96-1.31	0.15
Cancer Status - No Cancer	Cancer	0.84	0.83-0.86	<0.0001
ADG score†		1.06	1.059-1.061	<0.0001
Primary Care Model*	Enhanced FFS	1.03	1.00-1.05	0.02
	Traditional FFS	0.98	0.95-1.01	0.16

note

Limitations

- Variability in the comprehensiveness of care provided within and between physicians in the three models
- Physicians self-select into model
 - Differences in patient populations, geography
- Residual confounding – unknown/unmeasured factors

Conclusions

- Capitation model, by way of supporting comprehensiveness, may be beneficial for patients at end of life
 - More care provided by family physician vs specialist, more home care services
 - Fewer days in institution
- Need further investigation of the specific organizational aspects of practice that would support the involvement of primary care at the end of life



Department of Family Medicine
Michael G. DeGroote School of Medicine
Faculty of Health Sciences

mcmaster.ca/fammed
@McMasterFamMed