



# Resource Utilization and Costs of Integrated Palliative Care Service Provision: The Niagara West End-of-Life Care Project in Ontario (Canada)

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## Background:

This study describes resource utilization and costs of enhanced home-based palliative care service provision in the Niagara West region of Ontario (Canada) under a **shared-care approach**. The goal is to improve the overall quality of life for terminally ill patients and their families/caregivers.

Following a screening\* in physician offices, regular Community Care Access Centre (CCAC) services - such as homemaking and specialized nursing at no charge - were supplemented for eligible participants with:

- further homemaking and nursing support,
- 24 hour access to palliative medicine consultation,
- psychosocial/bereavement counseling, and
- medication, equipment and transportation services

under the "navigation" of an experienced advance practice nurse (APN).

\* Would you be surprised if this patient would die within 12 months? Inclusion criteria: **No**.

## Methodology:

Utilization of services was ascertained using patient-level data from:

- the Enhanced Palliative Care Team (EPCT),
- the Community Care Access Center (CCAC) - responsible for client service planning, case management and brokerage of community services - and
- family physicians/Family Health Teams as well as
- ER visits/hospitalizations at the local community hospital.

Costs were established using CCAC and Ontario Health Insurance Plan (OHIP) fee schedules and/or estimates used in the health economics literature (e.g. hospitalization was estimated at \$Can 1,000.00/day). The study received ethics approval from the University of Toronto Office of Research Ethics (ORE).

## Study Population:

95 patients (N = 95) were admitted to the demonstration project during the 15 months period from January 2005 to March 2006. 47 (50%) were male and 48 (50%) were female. Average age was 71 years (70 years male; 72 years female), but patients ranged from 33 to 97 years.

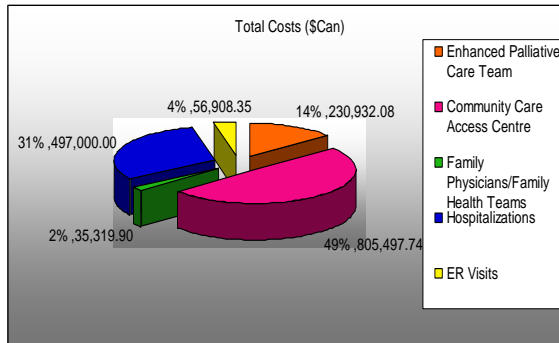
Cancer (83 Patients [87%] (100%))	Non-Cancer (12 Patients [13%] (100%))
- 21x Colo-rectal cancer (25%); - 19x Lung cancer (23%); - 8x Breast cancer (10%); - 39x Other cancers (42%).	- 4x Advanced heart diseases (33%); - 4x COPD (33%); - 4x Others (34%).

67 patients (71%) died during the project timeframe, 28 (29%) were still alive at the end of the initial program. Data computations are based on the 13,783 EPCT patient days (n = 13,783) for which data were available. 5 patients (5%) became ineligible/were transferred to long-term care and 2 patients (2%) withdrew during the project timeframe.

## Total Service Utilization:

Data Source	Services/Number of Patients
Enhanced Palliative Care Team (EPCT)	Medication, transportation, equipment and miscellaneous for 43 patients;  366,962 minutes of EPCT services [nursing, psycho-social/bereavement counseling, case management and palliative care consults] (6,116 hours during 1,815 visits) for 92 patients
Community Care Access Centre (CCAC)	Equipment for 67 patients; 20,686 CCAC service hours for 90 patients
Family Physician/Family Health Team	780 visits for 91 patients leading to 486 palliative care consults
ER Visits	51 ER visits by 35 patients leading to 44 hospitalizations
Hospitalizations	39 patients spending 497 days in hospital

## Total Costs:



## EPCT Service Utilization:

	EPCT Total	EPCT Cancer	Non-Cancer
Nursing	319,950 min (86%) [100%] at 1,074 visits (59%) [100%]	212,600 min (85%) [66%] at 617 visits (49%) [57%]	107,350 min (92%) [34%] at 457 visits (84%) [43%]
Psycho-Spiritual	13,453 min (4%) [100%] at 246 visits (14%) [100%]	10,348 min (4%) [77%] at 205 visits (16%) [83%]	3,105 min (3%) [23%] at 41 visits (8%) [17%]
Bereavement	15,430 min (4%) [100%] at 183 visits (10%) [100%]	13,628 min (5%) [88%] at 164 visits (13%) [89%]	1,802 min (2%) [12%] at 19 visits (3%) [11%]
APN	9,358 min (3%) [100%] at 154 visits (8%) [100%]	8,639 min (3%) [92%] at 146 visits (11%) [95%]	719 min (1%) [8%] at 8 visits (1%) [5%]
Palliative Care Physician	5,640 min (2%) [100%] at 104 visits (6%) [100%]	4,615 min (2%) [82%] at 92 visits (7%) [88%]	1,025 min (1%) [18%] at 12 visits (2%) [12%]
Case Management	3,131 min (1%) [100%] at 54 visits (3%) [100%]	2,464 min (1%) [79%] at 45 visits (4%) [83%]	667 min (1%) [21%] at 9 visits (2%) [17%]
<b>Total</b>	<b>366,962 min (100%) [100%] at 1,815 visits (100%) [100%]</b>	<b>252,294 min (100%) [69%] at 1,269 visits (100%) [70%]</b>	<b>114,668 min (100%) [31%] at 546 visits (100%) [30%]</b>

## Patient Days/Time in Program:

Male patients accounted for 6,860 patient days (50%) and female patients for 6,923 patient days (50%). Patients spent an average of 145 days in the program (Male: 146 days; Female: 144 days).

## Costs:

**Total costs** for all services for the 95 patients over the 15 month study period, in \$Can, were **\$1,625,658.07** (\$ 17,112.19 per patient/\$ **117.95 per patient day**). Total costs of those services provided by the Enhanced Palliative Care Team (EPCT) were \$ 230,932.08 (\$ 2,430.87 per patient/\$ 16.75 per patient day).

There were some sub-group differences: Female patients cost \$ 143,648.54 (\$ 3,420.20 per patient/\$ 20.74 per patient day), while male patients cost \$ 87,283.54 (\$ 2,128.86 per patient/\$ 12.72 per patient day).

Cancer	Non-Cancer
\$ 165,539.21 (\$ 1,994.45 per patient/ \$ 14.27 per patient day)	\$ 65,392.87 (\$5,449.41 per patient/ \$ 29.96 per patient day)

This reflected relatively high EPCT costs for certain non-cancer diseases (such as ALS and Alzheimer's) at \$ 7,296.49 per patient/\$ 40.36 per patient day). However, colo-rectal cancer patients (\$ 4,252.76 per patient/\$ 28.59 per patient day) and breast cancer patients (\$2,949.97 per patient/\$ 24.92 per patient day) were also high service users/relatively expensive.

## Discussion:

EPCT service utilization varies significantly across patients, with additional nursing hours accounting for the bulk of costs. Different disease trajectories lead to varying service utilization patterns, with psycho-spiritual and bereavement services more often utilized by cancer than non-cancer patients.

Limitations of the study are the relatively small number of participants (N = 95), its short time frame (15 months), the reliance on secondary data analysis of administrative data sets from multiple sources and the availability of ER visit and hospitalization data only from the community hospital within the catchment area.

## Conclusion:

The costs of enhanced home-based palliative care service provision under a shared-care approach are well within the parameters of the (US) Medicare Hospice Benefit for both cancer and non-cancer patients - even in this less urban region - and **significantly lower than costs for long-term or hospital-based care**.

## Acknowledgements:

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