Palliative Care Provision to Patients Dying from Cancer in Halifax and Cape Breton, Nova Scotia, Canada

J Gao¹, GM Johnston¹,², MB O’Brien², P McIntyre³, D Orychack⁴

¹Cancer Care Nova Scotia ²Dalhousie University ³Capital Health ⁴Cape Breton District Health Authority

Context
Palliative care (PC) programs began in 1988/9 in Halifax and Cape Breton counties. By 1997/8 both programs were seeing more than 70% of all adults dying of cancer with Cape Breton seeing over 90% in 2003. Identifying barriers to PC access will enable health care policy makers, administrators, and providers to achieve equity in PC services.

Purpose
Determine predictors of timely PC program enrollment.

Compare the utility of logistic regression with that of classification and regression tree (CART) analysis.

Study Subjects
4137 residents of Cape Breton and Halifax counties who died from cancer between January 1, 2000 and December 31, 2003 were identified using Vital Statistics death certificate records. These decedents account for 54% of all 2000-2003 Nova Scotia cancer deaths.

Analyses

Traditional: Univariate and multivariate logistic regression.

Innovative: CART analysis is a powerful data mining tool for investigating multi-level interactions. CART searches the values of all variables to split the PC and non-PC decedents into maximal homogeneous subgroups.

Results
75% of the cancer decedents were enrolled in PC program.
The CART results show that being diagnosed with cancer within 2 weeks (12.3 days) of death (n=253) is a primary low PC enrollment factor (33%) with those most affected being decedents from Halifax (27%) and Cape Breton who lived in geographic areas where more than 20% of people lived alone (35%). The results of CART also show that among the 3884 decedents who survived more than 2 weeks (12.3 days) after diagnosis, 78% were enrolled in PC.
The 105 nursing home residents who were more than 80 years old and who were diagnosed more than 9 months (293.5 days) before death had the lowest PC enrollment rate (19%).The results of logistic regression show that time from cancer diagnosis to death 61-119 days is an indicator of higher PC enrollment compared to 0-60 days (OR=2.5). It also indicates that being a nursing home resident (OR=0.3) and 85 years or older (OR=0.3) are indicators of lower PC enrollment.

Conclusions
Time from cancer diagnosis to death, geographic location, age, nursing home residency, and radiotherapy treatment and medical oncology visit at end of life influence PC enrollment.

CART analysis provides more specific and therefore more useful results than logistic regression methods for policy and interventions.

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² Surveillance and Epidemiology Unit, Cancer Care Nova Scotia
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