

Original Article

Does Increasing Home Care Nursing Reduce Emergency Department Visits at the End of Life? A Population-Based Cohort Study of Cancer Decedents

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Abstract

Context. Despite being commonplace in health care systems, little research has described home care nursing's effectiveness to reduce acute care use at the end of life.

Objectives. To examine the temporal association between home care nursing rate on emergency department (ED) visit rate in the subsequent week during the last six months of life.

Methods. We conducted a retrospective cohort study of end-of-life cancer decedents in Ontario, Canada, from 2004 to 2009 by linking administrative databases. We examined the association between home care nursing rate of one week with the ED rate in the subsequent week closer to death, controlling for covariates and repeated measures among decedents. Nursing was dichotomized into standard and end-of-life care intent.

Results. Our cohort included 54,576 decedents who used home care nursing services in the last six months before death, where 85% had an ED visit and 68% received end-of-life home care nursing. Patients receiving end-of-life nursing at any week had a significantly reduced ED rate in the subsequent week of 31% (relative rate [RR] 0.69; 95% confidence interval [CI] 0.68, 0.71) compared with standard nursing. In the last month of life, receiving end-of-life nursing and standard nursing rate of more than five hours/week was associated with a decreased ED rate of 41% (RR 0.59, 95% CI 0.58, 0.61) and 32% (RR 0.68, 95% CI 0.66, 0.70), respectively, compared with standard nursing of one hour/week.

Conclusion. Our study showed a temporal association between receiving end-of-life nursing in a given week during the last six months of life, and of more standard nursing in the last month of life, with a reduced ED rate in the subsequent week. *J Pain Symptom Manage* 2015;■:■-■. © 2015 American Academy of Hospice and Palliative Medicine. Published by Elsevier Inc. All rights reserved.

Key Words

End of life, palliative care, home care, nursing, emergency department use, cancer

Introduction

Emergency department (ED) visits at the end of life have been used as indicators of poor quality cancer care.^{1,2} The rationale is that high rates of ED visits at

end of life can indicate too much focus on aggressive care, lack of advance directives, and inattention to symptom issues. Indeed, symptoms typically worsen as cancer patients approach death,³ and uncontrolled

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symptoms have been reported as the main cause of ED visits among cancer patients.^{4,5} Therefore, end-of-life cancer research has suggested that with appropriate supports, education, and symptom control, many ED visits can be prevented.^{6–9} Moreover, many cancer patients prefer to be cared for and die at home.^{10–12} Patients want to avoid ED visits because they are exhausting, distressing, and disruptive⁴ and because they often lead to a hospital admission. Policymakers also recognize the imperative to avoid unnecessary ED visits and hospitalizations as the last year of life costs are estimated at 10% to 20% of all health care expenditures,^{13,14} mostly because of hospitalizations.¹⁵

Several reviews have identified the need to improve care in the ED for end-of-life patients, including cancer patients,^{16–19} although a systematic review²⁰ was unable to estimate the incidence of patients with palliative care needs presenting to the ED because of study and definitional variation. In addition, there is a body of research, including several systematic reviews, focused on factors that can help to avoid ED and hospital use and/or increase the likelihood of a home death.^{21–25} These studies have identified patient factors, such as patient preferences, functional status, and family support, as protective against hospital use at the end of life. They also have identified health system factors, such as home-based palliative care services, interdisciplinary primary care teams, and home care nursing as factors that can help avoid acute care use. Regarding the latter, most of the previous research focused on specialized palliative care service interventions, such as specialist multidisciplinary provider teams. However, few studies focused on the impact of publicly available home care services, especially generalist nursing, which is ubiquitous across health care systems. One Canadian cancer study examined publicly provided home care nursing in particular, showing a dose-response relationship between more home care hours and reduced use of ED visits²⁶ but was limited in only examining outcomes in the last two weeks of life and only including those already receiving end-of-life care, which underestimates the true need in a population because prognostication is inaccurate.

We sought to examine the independent effect of home care nursing on avoiding ED visits for a broad end-of-life cancer population. Our hypothesis is that more home care nursing hours in one week will be associated with a lower ED visit rate in the subsequent week across the last six months of life. We focused on ED visits because these remain an important outcome from a quality and policy perspective. The present study builds on and expands the existing literature in several ways. We broadened the time horizon to a full six months

before death, investigated the amount of home care that was required to reduce ED visits, assessed any differences based on nursing intent (standard versus end-of-life care intent), and whether these relationships changed over time as death approached. We chose an end-of-life cohort definition that did not rely on patients being labeled as “palliative” because of differences in prognostic tools and provider knowledge. A broad approach also ensures our results are more easily interpreted, compared, and generalized.

Methods

We conducted a retrospective cohort study of end-of-life home care patients in Ontario who had a prior cancer diagnosis and a confirmed cancer cause of death in the provincial cancer registry from April 1, 2004, to March 31, 2009.²⁷ Each adult decedent (19 years or older at diagnosis) had to have used home care nursing within six months of their date of death. Where a patient was diagnosed less than six months from death, only time from diagnosis to death was examined. For each patient with a confirmed diagnosis of cancer, we examined time in weeks, looking backward from death up to 26 weeks before (six months). For those who started home care nursing services less than six months before death, only time from first nursing service until death was included. Data sources that we linked to the cancer registry to define our cohort include: the Canadian Institute for Health Information’s Discharge Abstract Database provided data for hospital admissions and comorbidity²⁸; the provincial home care database provided data on home care nursing use and its care intent (standard or end-of-life); and the provincial health insurance database provided information on demographics of age, sex, and postal code for income quintile, community size, and region at death.^{29,30}

As a publicly funded health care system, all Ontarians with a valid provincial insurance number have access to home care services. Referrals originate mostly from hospitals and the community but also can be from patients and families themselves. The home care case managers assess patients’ eligibility and needs by home visit, authorize a certain number of hours of services in a time period within regulated limits, and coordinate various home care services. Changes to the service hours require the case manager’s permission or another assessment. The limits on service authorization relate to the intent of care. For nursing, standard nursing intent is defined as having service goals ranging from “short-term care” with a predictable recovery (e.g., wound care) to “preserving the client’s level of function and autonomy,”

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