

Original Article

A Nationwide Analysis of Antibiotic Use in Hospice Care in the Final Week of Life

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Abstract

Context. Antibiotic prescription in hospice patients is complicated by the focus on palliative rather than curative care and concerns regarding increasing antibiotic resistance.

Objectives. To estimate the antibiotic use in a national sample of hospice patients and identify facility and patient characteristics associated with antibiotic use in this population.

Methods. This was an analysis of data from the 2007 National Home and Hospice Care Survey, a nationally representative sample of U.S. hospice agencies. We included data from 3884 patients who died in hospice care. The primary outcome measure was prevalence of antibiotic use in the last seven days of life. Diagnoses, including potential infectious indications for antibiotic use, were defined using *International Classification of Diseases, Ninth Revision (ICD-9)* codes. Chi-squared tests and *t*-tests were used to quantify associations of patient and facility characteristics with antibiotic use.

Results. During the last seven days of life, 27% (95% CI: 24%–30%) of patients received at least one antibiotic and 1.3% (95% CI: 0.7%–2.0%) received three or more antibiotics. Among patients who received at least one antibiotic, 15% (95% CI: 10%–20%) had a documented infectious diagnosis compared with 9% (95% CI: 7%–11%), who had an infectious diagnosis but received no antibiotics.

Conclusion. In this nationally representative sample, 27% of hospice patients received an antibiotic during the last seven days of life, most without a documented infectious diagnosis. Further research is needed to elucidate the role of antibiotics in this patient population to maintain palliative care goals while reducing unnecessary antibiotic use. *J Pain Symptom Manage* 2013;46:483–490. © 2013 U.S. Cancer Pain Relief Committee. Published by Elsevier Inc. All rights reserved.

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Key Words*Hospice, antibiotics, NHHCS, infection***Introduction**

Hospice is intended to provide palliative care for patients with a terminal diagnosis and offer support to them and their families. In the U.S., the number of patients using hospice care has increased sharply. In 2009, an estimated 1.56 million patients received hospice care in the U.S., a 30% increase from 2005, and 41% of all U.S. deaths occurred in a hospice setting.¹ Furthermore, the aging of the U.S. population will no doubt continue to increase the utilization of hospice services, especially among those aged 85 years and older, who constitute the fastest growing group of hospice patients.²

Hospice patients are especially vulnerable to infection because of suppressed immune function after chemotherapeutic regimens in those with advanced cancer or as the result of multiple comorbid conditions, functional debility, and complex diseases that also compromise host resistance.^{1,3} Despite this increased risk, health care providers have little guidance regarding antibiotic use when caring for hospice patients.⁴ Hospice care represents a change in the focus from curative care to symptom management, thereby complicating the decision to use antibiotics.⁵

Although Medicare Hospice Benefit guidelines explicitly define hospice care as “palliative rather than curative,” in reality, many treatments do not clearly fit in one category of treatment goals.⁶ Antibiotics are a case in point because current evidence is divided regarding whether they improve symptoms.^{7,8} Furthermore, excess antibiotic use may unnecessarily increase patient and societal burdens in terms of side effects, use of invasive devices such as intravenous lines, and increasing health care costs as well as potentially increase selective pressure and the development and spread of antimicrobial-resistant organisms.⁴

The frequency and determinants of antibiotic use in hospice patients have not been well described. A better understanding of prescription patterns is essential for structuring guidelines for antibiotic use in this growing health care population. In this study, we

used data from the 2007 National Home and Hospice Care Survey (NHHCS) to estimate antibiotic utilization in hospice care patients and identify potential infectious indications and facility and patient characteristics associated with antibiotic use in this population.

Methods

The 2007 NHHCS was conducted by the Centers for Disease Control and Prevention and National Center for Health Statistics and is a nationally representative sample of U.S. home health and hospice agencies that was designed to provide descriptive information on the agencies along with their staff, services, and patients. The survey design has been previously described in detail.⁹ Briefly, the survey used a stratified two-stage probability sample design. In the first stage, 1545 agencies were systematically and randomly sampled with probability proportional to the agency size. The second stage comprised randomly selecting up to 10 current home health patients per home health agency, up to 10 hospice discharges per hospice agency, and a combination of up to 10 current home health patients and hospice discharges per mixed agency. Hospice discharges were defined as patients who were discharged from the hospice agency during the three-month period beginning four months before the agency interview.⁹ For this study, we only included patients who were deceased at discharge.

Patient data were collected through in-person interviews with the hospice agency directors and designated staff in consultation with the patients' medical records. Neither patients nor family members were interviewed. Patient data collected for the NHHCS included demographic variables and the current primary and secondary diagnoses at discharge, medication use in the last seven days of care, and location of hospice care. Each patient received only one current primary diagnosis code, which referred to the patient's primary diagnosis at discharge.

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