

Original Article

Interventions Associated with the Management of Suspected Infections in Advanced Dementia

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Abstract

Context. Nursing home (NH) residents with advanced dementia are commonly suspected of having infections. Most episodes are treated with antimicrobials, although evidence supporting bacterial infections is often lacking. The extent to which other interventions are used in managing suspected infections is unknown.

Objectives. To describe interventions used to manage suspected infections in advanced dementia and identify factors associated with greater intervention use.

Methods. Residents with advanced dementia who experienced suspected infections in 35 Boston NHs were followed for 12 months. Data describing interventions used in managing each episode were ascertained, including blood draws, chest radiographs, procurement of urine samples, and hospital transfers. Resident and episode characteristics associated with greater intervention use were identified using mixed model regression.

Results. A total of 240 residents experienced 496 suspected infections involving the following interventions: any, $n = 360$ (72.6%); hospital transfer, $n = 51$ (10.3%); blood draw, $n = 215$ (43.3%); chest radiograph, $n = 120$ (24.2%); and urine sample, $n = 222$ (44.8%). Factors associated with greater intervention use included black race (adjusted odds ratio [AOR] 3.19; 95% CI, 1.37–7.44); no do not hospitalize order (AOR, 1.83; 95% CI, 1.16–2.90); not on hospice (AOR, 5.41; 95% CI, 2.14–13.70); and suspected source being respiratory (AOR, 10.67; 95% CI, 4.99–22.80), urine (AOR, 15.79; 95% CI, 7.41–33.66) or fever of unknown source (AOR, 20.26; 95% CI, 8.42–48.73) vs. skin/soft tissue.

Conclusion. NH residents with advanced dementia frequently experience potentially burdensome interventions when suspected of having an infection. Advance directives to limit such interventions may be appropriate for residents whose goal of care is comfort. *J Pain Symptom Manage* 2015;■:■–■. © 2015 American Academy of Hospice and Palliative Medicine. Published by Elsevier Inc. All rights reserved.

Key Words

Nursing home, dementia, palliative care, infection

Introduction

In 2013, Alzheimer's disease affected more than five million Americans and was the sixth leading cause of death in the U.S.¹ Currently, the aggregate cost of long-term care for Americans with dementia totals \$203 billion annually, with Medicare and Medicaid covering 70% of the total cost.² Given our rapidly

aging population and the economic and medical burden of dementia, determining how to best care for these patients has become a clinical and research priority.³

Advanced dementia is characterized by severe cognitive impairment, inability to communicate verbally, inability to ambulate, and dependence on

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Accepted for publication: June 14, 2015.

others for all activities of daily living. Because more than 70% of such patients die in nursing homes (NHs),⁴ current research has been directed at optimizing end-of-life care in these facilities. Although previous work has found that most health care proxies for residents with advanced dementia prefer an approach based on comfort care, residents frequently receive interventions that can be considered burdensome.⁵

Suspected infections are common among NH residents with advanced dementia,^{5,6} and there exists a growing body of literature addressing concerns regarding the approach to their management.^{7,8} The vast majority of suspected infections are treated with antimicrobials, although benefit in terms of either symptomatic relief or life prolongation remains unclear in this population.^{8–10} Chief among the potential reasons for lack of benefit is the fact that minimal clinical criteria to support the presence of a bacterial infection are often not present for treated episodes.^{11,12} Antimicrobial misuse, whether a result of inaccurate diagnoses or misalignment with patient preferences, has sequelae with respect to both individual patient burden near the end of life and the emergence of multidrug-resistant organisms.^{6,8,13}

Prior research regarding suspected infections among NH residents with advanced dementia has largely focused on the impact of potential antimicrobial overuse.^{6,11,13} However, the use of burdensome interventions in the clinical assessment of suspected infections is less well described. These assessments may involve a variety of interventions that may be potentially uncomfortable or disturbing in these very frail residents, such as bladder catheterization or hospital transfers. Even seemingly innocuous procedures in more robust patients, such as a blood draw or obtaining a chest radiograph, can be traumatic for residents with advanced dementia. Given the fact that most suspected infections do not meet clinical criteria for treatment, we may be subjecting residents to burdensome interventions unlikely to yield useful information or beneficial treatments.

The present study seeks to examine the burdensome medical interventions experienced by NH residents with advanced dementia using data collected during the Study of Pathogen Resistance and Exposure to Antimicrobials in Dementia (SPREAD), a prospective study of 362 NH residents with advanced dementia in 35 NHs throughout the Boston area. Our objectives were to describe and quantify the burdensome interventions as well as to identify factors associated with greater use of interventions in response to suspected infections in this cohort.

Methods

Data were collected during the National Institutes of Health–funded SPREAD study, the methodology of which is described in detail elsewhere.¹⁴ The health care proxies of residents with advanced dementia provided informed consent for their own participation, as well as for that of the residents. The Hebrew Senior-Life Institutional Review Board approved the study's conduct.

All data were collected between September 2009 and November 2012 from 362 NH residents with advanced dementia and their health care proxies in 35 Boston-area NHs. Eligibility criteria required that the NH resident was 65 years or older, had dementia with a score of 7 on the Global Deterioration Scale,¹⁵ had an available English-speaking health care proxy, and had resided in the NH for at least 30 days. A Global Deterioration Scale score of 7 is characterized by severe memory deficits, verbal ability of less than five words, incontinence, and inability to walk independently.¹⁵

Resident and Proxy Variables

All residents enrolled in SPREAD were followed for 12 months or until death. Data were collected during baseline and quarterly assessments as well as monthly chart reviews. During the baseline resident assessment, data on demographics (age, gender, race) and common comorbidities (diabetes, congestive heart failure, chronic obstructive pulmonary disease) were extracted from the medical record. A nurse who cared for the resident quantified their functional ability using the Bedford Alzheimer's Nursing Severity Subscale (BANS-S; range 7–28; higher scores indicate greater disability).¹⁶ Cognitive status was assessed by direct examination of the resident at baseline by a member of the research team using the test for severe impairment (TSI; range 0–24; lower scores indicate greater impairment).¹⁷ At baseline and quarterly assessments, data on the presence or absence of a “do not hospitalize” (DNH) order and hospice enrollment were collected from the chart. Whether the resident was cared for on a dementia special care unit was determined at baseline. The residents' health care proxies were interviewed by telephone at baseline by a trained research assistant. Proxies were asked the frequency with which they visited the NH and their perception of the resident's primary goal of care (life prolongation vs. comfort).

Infectious Episodes

Each month, trained research nurses reviewed the resident's medical record to determine whether a

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