

Chapter 13 The Relationship between a Quality Measure and Staffing Hours in Nursing Homes

Patricia A. Senk, PhD, RN

Sally K. Koski, PhD, RN

Learning Objectives

- Describe the process of combining multiple data sets for carrying out analytical procedures
- Demonstrate the use of t test, ANOVA, and linear regression to evaluate a quality measure in nursing homes
- Evaluate the effect of adjusted nurse staffing hours per resident per day, nursing home type, and nursing home location on percentage of high-risk long-stay residents with pressure ulcers

Key Terms

Categorical data

Descriptive statistics

Line of best fit

Pairwise comparisons

Simple linear regression

Two-sample t-test

Two-way ANOVA

Improving the quality of healthcare and quantifying health outcomes are important goals in healthcare today. Outcome quality measures are used to capture the health-related outcomes of residents in nursing homes (Bowblis 2011) and are used to quantify the healthcare processes; outcomes; perceptions of patients; and systems and structures of the organization (CMS 2014). The overall goal of quality measures are to provide effective, safe, efficient, patient-centered, equitable, and timely care to residents. CMS (2014) uses quality measures as a means to measure quality improvement, pay for reporting, and reporting to the public. Quality measures can be

used by healthcare organizations to change processes of care that can lead to improved patient outcomes.

Mandatory reporting of health outcomes is required for acute-care hospitals, long-term care hospitals, skilled nursing facilities, home healthcare, and outpatient facilities. In 2002, CMS initiated Nursing Home Compare (NHC), a public reporting program about nursing homes ([CMS n.d.](#)). NHC, managed by CMS, includes data from over 15,000 Medicare and Medicaid certified nursing homes in the United States (CMS n.d.). The data from the quality measures, in the NHC database, provide information on quality measures as a means for patients, families, and clinicians to compare facilities, make informed decisions about choosing a nursing home, and evaluate the quality of care (CMS, n.d.). Data are collected from nursing homes, using the minimum data set (MDS), which is an assessment completed at regular intervals for each CMS-certified nursing home resident. The MDS focuses on health, physical functioning, mental status, and general well-being; the data are used by the nursing home to plan residents' care needs. NHC rankings provide an unbiased way to assess the services provided and comparison of quality measures between nursing homes ([Lutfiyya et al. 2013](#)).

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Table 13.1. NHC quality measures

Long-Stay Resident Quality Measures
Percentage experiencing one or more falls with major injury
Percentage with a urinary tract infection
Percentage who self-report moderate to severe pain
Percentage of high-risk residents with pressure ulcers
Percentage of low-risk residents who lose control of their bowels or bladder
Percentage who have/had a catheter inserted and left in their bladder
Percentage who were physically restrained
Percentage whose need for help with daily activities has increased
Percentage who lose too much weight
Percentage who have depressive symptoms
Percentage assessed and given, appropriately, the seasonal influenza vaccine
Percentage assessed and given, appropriately, the pneumococcal vaccine
Percentage who received an antipsychotic medication
Source: CMS n.d.

Short-Stay Resident Quality Measures
Percentage who self-report moderate to severe pain
Percentage with pressure ulcers that are new or worsened
Percentage assessed and given, appropriately, the seasonal influenza vaccine
Percentage assessed and given, appropriately, the pneumococcal vaccine
Percentage who are newly administered antipsychotic medications
Source: CMS n.d.

There are thirteen NHC quality measures for long-stay residents (individuals whose cumulative stay is 101 days or greater) and five quality measures for short-stay residents (individuals whose cumulative stay is 100 days or less) (CMS 2014). Refer to [table 13.1](#) for NHC quality measures. NHC data have been used in research to evaluate the effect of staffing patterns on outcome measures (Trinkoff et al. 2013), differences in outcome measures based on rurality (Lutfiyya et al. 2013), quality ratings (Unroe et al. 2012), and influenza vaccine rates (Cai and Temkin-Greener 2011). This chapter focuses on high-risk long-stay residents.

Pressure ulcers are localized skin or tissue injuries that occur due to pressure, and sometimes shear, usually over bony prominences (National Pressure Ulcer Advisory Panel et al. 2014). Preventing the development of pressure ulcers is important in all healthcare settings and guidelines have been developed that focus on prevention. Pressure ulcers have been shown to cause pain and may potentially invoke mood changes, impact self-image, and restrict activities of daily living and social participation (Gorecki et al. 2011). Long-term care settings are federally mandated to properly care for and prevent the development of pressure ulcers, which was established by the federal framework of the Omnibus Budget Reconciliation Act of 1987 (Thomas 2006). Specifically, residents admitted without a pressure ulcer should not develop one, and if a pressure ulcer is present on admission healing should be promoted and additional pressure ulcers should be prevented. NHC includes a quality measure specific to long-term residents that identifies the percentage of high-risk long-term residents with pressure ulcers; the measure includes residents at high risk of developing a pressure ulcer and actually develop a pressure ulcer while in the nursing home (CMS n.d.). This is one of the measures used in this chapter.

Currently, Federal law mandates each nursing home must have at least one registered nurse (RN) on duty for at least eight straight hours a day, seven days a week; either an RN or licensed practical nurse or licensed vocational nurse (LPN/LVN) must be on duty 24 hours per day. Certified nursing assistants (CNAs) provide care to nursing home residents 24 hours per day, 7 days a week. A number of states may have additional staffing requirements (CMS n.d.). For example, Minnesota requires that nursing homes provide the greater of 2 total nursing hours for each resident every 24 hours, or 0.95 hours per standardized resident day ([Revisor of Statutes, State of Minnesota 2014](#)). Because RNs, LPNs, and CNAs are generally the largest numbers of personnel in nursing homes, quality care is often equated with staffing levels of these individuals ([Wunderlich and Kohler 2001](#)).

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