Clinical Staff Retention and Leadership Stability and Antibiotic Utilization in Nursing Homes

J Ford, PhD1, E Ramly, PhD2, M Bahranian, MD2, L Vranas, MS2, G Anderson, PhD3, S Saracco, RN3, D Nace, MD3, C Crnich, MD,PhD2,4  
1) University of Wisconsin-Madison (UW) School of Pharmacy 2) UW School of Medicine and Public Health 3) University of Pittsburgh 4) William S. Middleton VA Hospital

Funding for this project was provided by a grant from the Agency for Healthcare Research and Quality (R18HS022465)

Abstract

Background: Antibiotic utilization in skilled nursing facilities (SNFs) varies widely and the factors responsible for this variation remain poorly understood. Staff retention and leadership stability in SNFs have been associated with a number of important resident and facility outcomes but the relationship to antibiotic utilization has not been examined previously. Data collected as part of an ongoing study of an antibiotic stewardship intervention in SNFs in two states provided an opportunity to explore the relationship between these facility characteristics on baseline antibiotic utilization in SNFs participating in this study.

Methods: 12 months of pre-intervention data on antibiotic use were abstracted from pharmacy records in 9 SNFs in Wisconsin and Pennsylvania. Baseline SNP characteristic were collected. The analysis focused on four clinical nursing variables: (1) director of nursing (1 = tenure > 5 years); (2) RN & LPN retention (1 = retention >= median of 79.5% of staff still employed after one year); (3) CNA retention (1 = retention >= median of 77.3% of staff still employed after one year); and full-time infection preventionists (1 = works 50% of time or more).

Results: GLM analysis explored the differences for the dichotomous variables. Measures of overall antibiotic utilization, including antibiotic starts (AS) and days of therapy (ADT) per 1,000 staff still employed after one year); and full-time infection preventionists (1 = works 50% of time or more). Future studies should examine how these attributes exert influence on provider antibiotic decision-making. Nevertheless, our results on infection control activities are associated with lower rates of antibiotic use in SNFs. Future studies should

Conclusion: Our study shows that RN/LPN staff retention and having an IP, who spends 50% or more of their time

Understanding the Problem

Influence of Nursing Home Structure on Quality in Nursing Homes

• Relationship between staffing levels (e.g., RN, LPN, CNA) and clinical as well as process outcomes is mixed.  
• Evidence suggests that
  • Lower nurse aid turnover and higher retention is associated with lower pressure ulcer incidence rates.  
  • NH administrative tenure (< 1 year vs. 15+ years) is associated with a two fold increase of having higher total number of deficiencies.  
  • NH Director of Nursing tenure (1 year vs. 15+ years) is associated with a four-fold increase in the likelihood of having severe deficiencies.  
  • Part-time infection control practitioner is associated with lower indwelling UTI catheter use.  

Nursing may play an important role in Antibiotic Stewardship

• Recently updated nursing home regulations emphasize an interdisciplinary approach to antibiotic stewardship.  
• Though limited in number, hospital base studies suggest an important role of nursing staff in reducing UTI rates.  

To our knowledge, no studies provide evidence of the impact of nursing structural characteristics on antibiotic utilization in NHs.

Methodological Approach

Sample Size: 9 Nursing Homes participating in a recently completed Nursing Home Antibiotic Stewardship intervention.  

Outcomes: Number of antibiotic starts and days of treatment per 1,000 resident days over a 12 month pre-intervention period.  

Independent Variables: Focused on leadership stability, infection control practitioner and staff retention (see Table).  

Analytical Approach: GLM repeated measures to explore differences between dichotomous variables.

Impact and Limitations

• Higher NHs staff retention is significantly associated with lower antibiotic starts and days of treatment per 1,000 resident days.  
• NHs with an IP working more than > 20 hours per week have significantly lower antibiotic days of treatment per 1,000 resident days.  
• Given the observed association between antibiotic use and the presence of a full time IP, NHs should consider ensure antimicrobial stewardship is the major role (>50%) of the IP.  
• Limitations include small sample size (n=9), missing retention data and data reporting on the organizational profile by NH administrator or champion which may create a normative influence on the findings.

Next Steps

While we found an associations between nursing staff characteristics and antibiotic stewardship outcomes, this study was not designed to identify the mechanism by which nursing staff structure may influence antibiotic stewardship. Future research should seek to answer the following questions:

• What are the mechanisms by which nursing structure impacts NH antibiotic utilization?  
• What is the likelihood that NHs with these structural staffing characteristics will respond more favorably to antibiotic stewardship interventions?

Cited Literature

For more information, contact Jay Ford at jhfordii@wisc.edu