American Journal of Infection Control 43 (2015) 100-6

Contents lists available at ScienceDirect

American Journal of Infection Control

journal homepage: www.ajicjournal.org

Major article

Influenza vaccination rates and beliefs about vaccination among nursing home employees

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Key Words:
Influenza
Vaccination
Long-term care facilities

Background: Recent studies have suggested that vaccination of nursing home staff members may reduce the incidence of influenza among nursing home residents. Current national estimates of employee vaccination rates (around 50%) indicate that residents may be at an unnecessarily high risk of contracting influenza. This article reports on the influenza vaccination rates and attitudes toward the vaccine among employees in 37 nursing homes in 3 states.

Methods: Nursing home employees were surveyed at nursing homes in Florida, Georgia, and Wisconsin in 2011-2012. Completed surveys were received from a total of 1,965 employees.

Results: Approximately 54% of the employees surveyed received the vaccination during the 2010-2011 and 2011-2012 influenza seasons. Nursing home–level staff vaccination rates varied widely, from 15%-97%. Black and younger employees were less likely to receive the vaccine. Employee vaccination rates in nursing homes that used incentives were 12 percentage points higher than those that did not use incentives ($P = .08$).

Conclusion: Low vaccination rates among nursing home workers may put residents at increased risk for influenza-related morbidity and mortality. The Centers for Medicare and Medicaid Services may consider employee vaccination rates as a quality indicator in addition to resident vaccination rates. Our findings support the use of a trial to test the use of incentives to increase employee vaccination rates.

Influenza in nursing home residents is responsible for 7,300 deaths annually and over $173 million in inpatient Medicare spending.[1] Although approximately three-quarters (72%) of nursing home residents receive the seasonal influenza vaccine annually,[2] the vaccine offers limited protection in older and immunocompromised patients.[3,4] Case reports of outbreaks of influenza-like illnesses in health care facilities suggest that workers transmit the virus to patients.[5,6]

Observational studies also support the theory that vaccinating workers can reduce the transmission of influenza to nursing home residents. A survey of New Mexico nursing homes found that the likelihood of an influenza outbreak was inversely related to the staff vaccination rate but unrelated to resident vaccination rates.[7] Shugarman et al[8] assessed the impact of staff and resident vaccination rates, as reported by facility administrators, on influenza-like illness outbreaks at 301 nursing homes in a for-profit chain. They found that staff and resident vaccination rates did not independently predicted the occurrence of outbreaks, but nursing homes with higher combined staff and resident vaccination rates had lower rates of outbreaks. Studies of facilities that have experienced a serious influenza-like outbreak note that staff vaccination should be a targeted area for intervention.[4] For this reason, the Advisory Committee on Immunization Practices of the Centers for Disease Control and Prevention (CDC) and the U.S. Department of Health and Human Services state that "vaccination of all health care personnel who have no contraindications is recommended."[9,10] Newly released recommendations from the National Vaccine Advisory Committee suggest that facilities integrate influenza vaccination programs into their existing infection prevention programs or occupational health programs. It is also recommended that the facilities that continue to struggle to meet vaccination goals should implement a vaccination requirement for employees.[9]

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Funding/support: The study was supported by the Centers for Disease Control and Prevention cooperative agreement 1U01IP000411-01.

Disclaimer: The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Conflicts of interest: None to report.

http://dx.doi.org/10.1016/j.ajic.2014.08.021

Estimates of influenza vaccination rates among long-term care (eg, nursing home) employees range from 33%-61%.[8] The CDC estimates that 58.9% of long-term care employees received the influenza vaccine in 2012-2013 based on an online panel of 1,944 health care workers.[11] When asked why they do not receive the vaccine, health care workers typically cite a fear of needles, worries of side effects, concerns about contracting the virus from the vaccine, a belief that they are not at risk of contracting influenza, and a desire to avoid medications.[12-15] Only 34.2% of the nonvaccinated respondents in the CDC panel agreed with the statement that "influenza is a serious threat to my health," and only 45.8% agreed that "getting vaccinated for influenza is worth the time and expense."[10]

Previous studies measuring long-term care employee vaccination rates and attitudes have been hampered by small samples. Many only include employees at a single facility and do not measure employees' beliefs about vaccination and influenza. In this article we describe influenza vaccination rates and attitudes toward influenza and the influenza vaccine among long-term care employees in 37 homes in Florida, Georgia, and Wisconsin.

MATERIAL AND METHODS

Data collection

This survey was conducted as part of a larger study to describe nursing homes' policies for promoting and documenting receipt of the influenza vaccine by residents and staff, to understand the causes of racial disparities in resident vaccination rates, and to verify the accuracy of nursing homes' resident vaccination records. We chose to conduct the study in Florida, Georgia, and Wisconsin because they vary in terms of the gap in vaccination rates between black and white nursing home residents. Wisconsin has one of the lowest gaps, and Florida has one of the highest. Georgia's gap is somewhere in-between. Because we traveled to each facility in person, geographic proximity also played a role in our selection.

We recruited nursing homes that had a resident population that fell into 1 of 3 categories: mostly white (>90% white), mostly black (>50% black), or racially mixed (50% white and 5%-50% black). Our goal was to recruit 5 nursing homes in each state that represented each of these 3 categories. To facilitate recruitment of nursing homes, we used our existing relationships with each state's nursing home association. Representatives from the nursing home associations advertised the study through direct letters to nursing home administrators, notices in their member newsletters, and advertisements at association meetings and conferences. Interested participants were provided the contact information for a study team member and encouraged to contact the team member to learn more about the study and site visit opportunity. This approach allowed us to more efficiently recruit nursing homes into the study compared with random sampling. Final recruitment ranged from 12-15 nursing homes per state and included facilities that met the demographic criteria and agreed to participate in the survey and host a site visit.

We conducted site visits in 2011 and 2012 to capture data on the 2010-2011 or 2011-2012 influenza seasons at each nursing home. During these visits, we collected paper staff survey forms that had been sent ahead of the site visits to our contact person (typically the administrator or director of nursing). We instructed the contact person to have English-speaking staff complete the survey. We decided against directly distributing surveys to employees at the nursing home to minimize the disruption to employees' work routine and because we would miss employees who were not working at the time of our visit. To address possible nonresponse bias, we examined the correlation between the staff vaccination rate and the number of surveys received per 100 beds.

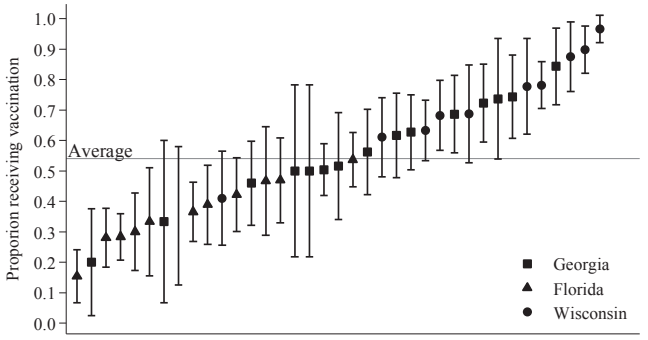

Fig 1. Facility-level staff vaccination rates from the surveys of staff in 37 nursing homes. Each marker represents a facility. Facilities are ordered from lowest to highest in terms of the staff vaccination rate. Error bars represent 95% confidence intervals.

We asked respondents about receipt of vaccination during the most recent influenza season. We classified respondents as having been vaccinated if they responded affirmatively to the following question: "Did you receive the seasonal influenza vaccine during the [2010-2011/2011-2012] influenza vaccination season?" We also asked respondents about their demographic characteristics, job title and tenure, and beliefs about influenza and the influenza vaccine. Respondents were asked whether they believe that the influenza vaccine causes illness, whether it is effective in preventing influenza, whether staff members are at risk for influenza, whether staff members can spread influenza to residents, and whether residents are at risk for influenza. Respondents were also asked: "How contagious is influenza?" Responses for all questions were divided into "very" versus "somewhat" or "minimally" categories. We obtained information on each nursing home's bed size, racial composition, ownership (for profit vs nonprofit), and quality rating from the Nursing Home Compare Web site. We conducted site visits and administered surveys throughout the year. Respondents who are surveyed during or soon after influenza season may provide different answers from those who are surveyed in the spring or summer. We measured the time in years between the survey and the most recent influenza season to adjust for recall bias.

We conducted interviews with each nursing home's leadership team, including administrators, directors of nursing, and infection control administrators, to learn about nursing homes' policies for vaccinating residents and staff. We asked administrators and other members of the leadership team whether the facility used incentives to promote staff vaccination and the vaccination status of the members of the leadership team who attended the interview. Nursing facilities that provided gift cards to vaccinated employees or entered vaccinated employees in a lottery were classified as offering incentives.

Analysis

We compared unadjusted differences in individual and nursing home characteristics between vaccinated and unvaccinated employees using t tests for continuous variables and χ^2 tests for dichotomous variables. We used logistic regression to measure the association between employee and nursing home characteristics and the receipt of the influenza vaccine. We estimated 3 models. The first included only staff and nursing home characteristics (eg, age of staff member, location of nursing home); the second included only measures of staff beliefs (eg, belief about the effectiveness of the vaccine, belief that residents are at risk of contracting influenza); and the third included both sets of variables. The models included a random intercept term for the nursing home