Improving Immunization Rates in Long-Term Care: Where the Forest Stops and the Trees Begin

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In a health care system now spending over 2 trillion dollars annually, or roughly $7000 per person, we should at least have the comfort of knowing we are adequately covering basic services such as vaccine-preventable diseases. After all, this assumption is only logical, right? Unfortunately, conventional wisdom is losing more fans than professional tennis. At the same time as we are expanding the use of minimally invasive surgeries, exploring roles for capsule endoscopies, and escalating national prescription drug spending to record high levels, we have failed to close the loop on the most basic of interventions, namely vaccination. We are losing sight of the forest for the trees.

Influenza and pneumonia remain the leading causes of death from vaccine-preventable disease, wreaking havoc annually in the United States. Most of these deaths occur in older adults, including those residing in long-term care (LTC). Influenza case fatality rates ranging between 5% and 55% and pneumococcal case fatality rates of 27% have been reported in nursing homes. Despite this, only 60% to 66% of institutionalized adults are immunized each year against influenza and 38% for pneumococcal disease. While the Advisory Committee on Immunization Practices (ACIP) recommends health care workers receive the influenza vaccine, the national average has not changed in the past decade and is only 37%. LTC residents are at risk for other vaccine-preventable illnesses as well. Included are herpes zoster and tetanus. While generally not fatal, herpes zoster is associated with substantial morbidity and reductions in quality of life. While national data are not available, LTC immunization rates for these conditions are likely to be even lower.

One could argue there are other treatments, namely antivirals and antibiotics, for these conditions. Such alternatives, though, have their limitations. Antimicrobial resistance is a very real crisis. More importantly, this is not a logical approach to care. It is more like applying a seat belt after the driver is thrown through the windshield. Addressing immunizations up front should result in lower downstream expenditures. A recent study suggests this to be the case at least for influenza. Prevention trumps treatment.

Thus, we must address the inadequate immunization status of our LTC residents. The American Medical Directors Association (AMDA), along with other professional organizations strongly supports immunization of older adults and health care workers. In 2006, AMDA updated its immunization toolkit, Immunizations in the LTC Setting, to assist its members in their immunization efforts. However, just having this information is not enough to change practice. Each facility needs to approach immunizations using a systems perspective. We must understand that structure combined with process yields outcomes. Whether good or bad, outcomes happen because the system is perfectly designed to create them. The first step when using a systems approach is to determine the baseline vaccination rates of your organization. Then, barriers to performance must be assessed. These barriers can be individual or organizational. In general, though, organizational factors tend to be easier to address than individual factors.

In this issue of the Journal, Marstellar and colleagues explore the topic of racial disparity, a potential individual barrier, in pneumococcal vaccinations (PPV) among nursing home residents. The authors used a combined data set from the 1997 and 1999 National Nursing Home Surveys (NNHS) to ensure adequate sampling. The NNHS is a national stratified 2-stage survey that first selects representative facilities based on bed size. Subsequently, data are collected on 6 residents of each participating facility using a staff member as a proxy source of information. The staff proxy is asked to consult relevant medical and facility documentation as necessary. The outcome measure for the authors’ study is the proxy’s report of the resident having had a PPV. The response to this question could be yes, no, or unknown. Race was the primary explanatory variable. Controlling was accounted for by using other resident and facility-level characteristics. The authors found a statistically significant difference in the proportion of blacks and whites having received PPV, 27% versus 34% respectively. They also found an interaction with facility certification and ownership with lower rates of PPV. Blacks in Medicaid-only and dually certified facilities were less likely to have had PPV and more likely to have an unknown status. Blacks in government facilities were less likely to have an unknown vaccination status. The tempting result of this study is to focus on race as a significant potential barrier to immunization status in LTC. But does this study really answer this question? Should we target this potential barrier separately?
To answer these questions, we have to carefully examine the study’s methods. A basic rule in research is to “first know thy data.” Not all data sets are created to answer the question being asked, and this certainly applies to the NNHS. While the NNHS employs a highly structured format, it has several critical flaws. First, it relies on a proxy response for information. Turnover among long-term care staff is a known problem. Turnover may prevent having a proxy respondent who is intimately knowledgeable about the resident’s history. Additionally, residents may stay for months or years in a facility, and their medical records are often “debrided.” The older portions of the chart are removed and sent for storage elsewhere in the facility. Vital information is often “debrided” including immunization information for a given resident. We cannot be certain the proxies in this study had access to the full chart of each resident. Additionally, while each chart should have information on a resident’s immunization status, the location of this information can vary greatly between facilities or even from chart to chart. Most facilities do not have a separate central vaccine list or registry for their residents. Thus, the validity of the proxy responses is uncertain. While there are some data supporting accuracy of self-reported vaccine status among community-dwelling direct respondents, the accuracy of proxy respondent PPV information in the NNHS has not been validated (CDC; CDC info., 800-COC, INFO, personal communication May 2008). This study suffers significantly from ascertainment bias.

We must next look at the level of significance. While there is a statistically significant difference based on race, the absolute magnitude of this difference is only 7%. Based on the sample size for blacks, this is a difference of only 101 persons out of a sample size of over 14,000. Even a small error resulting from ascertainment bias could magnify differences between the groups.

One other major point to consider is that these data are now over a decade old. Any consideration of the data must take into account the realities of the study period. While the ACIP did recommend pneumococcal vaccination during the 1990s, there was extensive controversy among health care providers about the effectiveness and utility of the vaccine. In a survey done at the time of this data collection, Goldstein and coworkers11 noted that less than half of respondents felt the pneumococcal vaccine was effective. Truly, we have failed as a system to communicate a clear and concise message on the importance of this vaccine. Without a clear message of the benefits of PPV immunization, we cannot expect PPV immunization to be a priority.

The main message, then, that we should take from this study isn’t about what role race plays as a barrier to PPV immunization in LTC facilities. Rather, what is striking is the fact that reported PPV immunization rates are disgracefully low across all the facilities included. This may be because of incomplete documentation, a failure to immunize, or both. In any event, it is a systems issue.

What then, should we be doing to improve immunization rates in our nursing facilities?

In keeping with a systems approach, we must define our baseline performance, look at the processes currently in place in our facilities, and define what barriers to further improvement exist. Figure 1, which shows the model for organizational change that we have adopted at the University of Pittsburgh Institute on Aging, illustrates the steps involved in a systems approach. Combining this process with the use of care bundles, a concept developed by the Institute for Healthcare Improvement, allows one to create change more effectively. A care bundle is simply a collection of suggested practices that have evidence supporting their use.12 Care bundles are being increasingly employed to reduce health care-associated infections, but are applicable to other improvement opportunities. Following is an example of an immunization care bundle that can be used to address organizational or individual barriers to immunization improvement. We have successfully used these practices as part of our influenza programs at the University of Pittsburgh Institute on

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**Figure 1.** Process for organizational change.
Aging. They are also key components of the AMDA toolkit mentioned earlier. These practices are applicable to all immunizations.

ESTABLISHING IMMUNIZATION AS A PRIORITY

In the past, organized immunization programs in LTC were uncommon. In 2005, the Centers for Medicare and Medicaid Services (CMS) introduced 2 major changes to improve immunization rates for influenza and pneumococcal disease in nursing facilities. First, F tag 334 *Influenza and Pneumococcal Immunizations* was added to the State Operations Manual. This section requires facilities to offer each resident influenza vaccine annually, offer each resident at least 1 dose of pneumococcal vaccine, and provide education on the benefits and risks of the vaccines. The second change was the addition of Section W to the Minimum Data Set (MDS). Section W inquires specifically about the influenza and pneumococcal immunization status of each resident. Together, these changes necessitate that each facility have an immunization program, although they do not ensure the programs will be effective.

From regulatory and patient safety standpoints, we must make immunization programs a priority in our facilities. CMS has laid the groundwork, but it is up to us, individual LTC clinicians, to implement system changes. This will require leadership. There are 2 groups of leaders: senior or administrative leadership and opinion leaders. Senior leadership in the nursing facility will usually consist of the administrator, director of nursing, and medical director. In contrast, opinion leaders are respected peers among the different categories of staff members. Both play a critical role in the success of immunization programs and must be engaged.

Senior leadership must be keenly aware of the need to improve immunization rates since they are ultimately responsible for assigning resources to the program and ensuring accountability for processes. Identifying how residents benefit from immunization, how improved rates help facilities meet the regulatory requirements, and how poor immunization rates may negatively impact staffing levels and absenteeism are important points to convey to the senior leadership team. Opinion leaders have direct influence among their peers and can help tremendously by sharing positive experiences and their appreciation of the value of immunization with other team members.

COMMUNICATION

Once established as a priority, it is important to communicate the importance of immunizations and the program goals and mechanics. One of the main reasons organizational change fails is inadequate communication. Organizations simply underestimate the need for constantly conveying the rationale for change to all team members. Communication should be repetitive and should be done through various means. As an illustration of this point, in 2003 we undertook the Promoting Long Term Care Vaccinations Project (PLTCVP). The PLTCVP was an AMDA Foundation/Pfizer Quality Improvement project aimed at improving LTC immunization rates. Extensive communication occurred during the launch phase of the project, but then only intermittent e-mail communication occurred in the implementation and follow up phases. During the 12-month course of this study, one of the facility immunization teams sustained a 200% turnover rate. The entire team was replaced, not once, but twice. The e-mail communications were ignored and the team in place at the 1-year mark didn’t even know there was an immunization improvement project under way (author’s unpublished data, 2003). The significant turnover that exists in LTC requires constant reiteration of the message.

EDUCATION

Initiating educational efforts is basic instinct among professionals. Contrary to popular opinion though, facilities should not feel they must develop intense education programs and in-services before launching immunization programs. Education alone will not change immunization rates. This is a common pitfall in quality improvement efforts that increases organizational inertia and slows the change process. One likely reason educational programs often fail is they are grounded in the assumption that improvement is linked more strongly to individual behavior rather than organizational factors. A study by Jessop and Hausman specifically exploring the knowledge, beliefs, and practices of nursing directors about pneumococcal vaccination barrier downplays the role of education in improving rates. Facilities should make the subtle, but important distinction between providing detailed in-service education on vaccines and vaccine-related conditions as a primary strategy, and succinctly communicating the importance of getting vaccinated and system changes that are being implemented. Specifically for health care worker immunization, AMDA has created a brief, though excellent instructional DVD that facilities can use in conjunction with other change initiatives.

DOCUMENTATION

Measurement is a fundamental requirement for improvement. There simply is no way for a person to know if improvement has occurred unless data are collected. Facilities must document whenever an immunization is administered, along with critical information such as vaccine lot number, site of injection, expiration date, and dosage. Information of this type is generally recorded on each resident’s Medical Administration Record (MAR). However, immunization programs require access to facility-level data to assess performance. Unless an electronic record system is in place, it is profoundly time consuming to search each month’s MAR to know if a resident has been immunized for a particular vaccine. Having a central record of all residents immunized, such as a vaccine registry, is a reasonable strategy to gain this information. Although central registries may increase documentation work, they are the only reliable way to give facility-level data.

STANDING ORDERS

In 2002, CMS eliminated the requirement for a practitioner order to receive an influenza or pneumococcal vaccine. As long as the facility has a physician-approved policy meeting
the CMS guidelines, no written order is required to receive these vaccines. All facilities should implement the use of standing orders for influenza and pneumococcal vaccination. It should be noted, the shingles vaccine is not covered under the CMS regulation. The shingles vaccine was approved after the 2002 ruling and there is a need for individualized patient assessment when considering this particular vaccine for an LTC resident.

One important caveat of a standing orders program is to immunize in the event vaccine status cannot be readily determined. This is particularly important for pneumococcal vaccination. In the Marstellar et al article, 42% percent of residents had an undetermined PPV status. Under a standing orders program, all of these residents would be vaccine eligible.

MANDATORY DECLINATIONS

Typical immunization programs have relied heavily on the use of written consents for a person to receive the influenza vaccine. However, written consent is not a federal requirement and several authors have tried to dispel this myth. This myth is a significant one that has been linked to lower immunization rates. Since the possibility of harm resulting from a missed vaccine exceeds the potential of harm from a vaccine by magnitudes, we should change the default position of our consent process. Namely, vaccine candidates should opt out of a vaccine through written consent rather than opting in. This strategy is gaining wide support with recent evidence suggesting benefit among health care workers. Data demonstrating its impact among LTC residents are needed. A key consideration is that the declination process must be incorporated within the context of a care bundle and not as a separate single intervention. Figure 2 illustrates a sample declination form.

MONITORING, FEEDBACK, AND SHARED LEARNING

Once changes are implemented, facilities should monitor immunization rates for improvement. If no improvement occurs, additional interventions should be planned and executed. Feedback to staff on immunization rates is important in improving immunization rates. By emphasizing the importance of the immunization program, feedback fosters collaboration between staff and the program. We have found such shared learning a powerful motivator for compliance with other patient safety issues as well.

FUTURE DIRECTIONS

While identification of new barriers is helpful, there is a greater need in identifying effective ways to make immunization an LTC priority and implement evidence based changes. By doing so, we may just keep our eyes on the forest. Like CMS, several states are taking legislative steps to address immunization rates, but it is uncertain if these efforts will have any significant impact. While several states mandate the offering of vaccines to patients and health care workers, there are often no actionable means identified to hold facilities accountable for improving immunization rates. Better systems are needed to transfer information on immunization status between care sites to avoid unnecessary revaccination and at the same time ensuring better vaccine uptake among eligible residents. Incorporating such information into transfer medical records is likely to be the best way to accomplish this task. However, use of more formal statewide vaccine registries may be necessary. A promising tool, optimal implementation of declination forms must still be determined. Any tool misused is not likely to create the intended change. Surveyor education and redirection are also needed. We are currently noting numerous examples in Pennsylvania where facilities are being questioned more on whether they have written documentation about resident education than if any efforts have been undertaken to actually improve immunization rates (D. Nace, MD; Co-chair, PA Medical Directors Association’s Public Policy Committee; PMDA Public Policy Committee minutes, June 2008). By incorrectly emphasizing written documentation of education over improvement efforts, facilities are being sent the wrong message.

SUMMARY

By approaching LTC immunizations systematically and applying the steps reviewed in this article, facilities can improve their immunization rates. While individual barriers such as race or lack of education may play a minor role, organizational barriers are more likely to be important. Focusing effort on these barriers should result in more substantial improvements over time. It is important that we establish immunization
programs as regulatory and patient safety priorities in our LTC facilities. Organizations such as AMDA can provide helpful resources to those interested.

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REFERENCES