Increasing Influenza and Pneumonia Vaccination Rates in Long-Term Care

ABSTRACT

Influenza and pneumonia remain significant causes of mortality from vaccine-preventable diseases, with 90% of these deaths occurring in adults age 65 or older, including those residing in long-term care (LTC) facilities. Improving the delivery of currently available vaccines decreases the exacerbation of underlying disease and should be a priority to prevent hospitalizations and deaths in this population. The Advisory Committee for Immunization Practices provides annual age-defined recommendations for adult immunization for influenza and pneumococcal pneumonia, yet a recent National Center for Health Statistics report shows that, on average, only 42% to 66% of LTC residents received these vaccinations. Healthcare workers self-report a low 45% acceptance of influenza immunizations, and unvaccinated healthcare workers risk spreading influenza to the vulnerable institutionalized elderly. Barriers to success can be overcome by the application of systems interventions, such as standing orders, approved since 2003 by the Pennsylvania Department of Health and the Centers for Medicare & Medicaid Services, as well as provider reminders and a standardized process and outcome measure protocol. This article explores risk reduction methods to enable LTC facilities to assess current program strengths and weaknesses, to increase vaccine availability and acceptance, to overcome decisional conflict, and to select new strategies to improve the effectiveness of vaccination programs. (Pa Patient Saf Advis 2009 Dec;6[4]:132-7.)

Introduction

Vaccination remains the best approach to protect the elderly with chronic health conditions who are considered at high risk for exposure to influenza,[1] invasive pneumococcal disease,[2] and complications. However, current vaccination rates of elderly individuals lag behind the Centers for Disease Control and Prevention (CDC) Healthy People 2010 goals of 90% for institutionalized adults with high-risk conditions that may contribute to unnecessary outbreaks of institutional influenza and pneumococcal pneumonia.[3]

Background

Influenza virus and pneumoccal pneumonia continue to be leading causes of vaccine-preventable diseases in the United States, with influenza epidemics causing an average of 36,000 deaths and 200,000 hospitalizations per year. Ninety percent of these deaths attributed to influenza occur in adults older than 65 years.[4] The National Center for Health Statistics (NCHS) 2004 data summary reports that only 59% to 66% of institutionalized adults in the United States are immunized each year against influenza and 42% to 49% are immunized for pneumococcal disease.[5] Morbidity is compounded by underlying health problems,[6] and pneumonia and influenza together remain one of the six principal causes of death in people age 65 or older, according to a 2005 NCHS report.[7] The CDC Advisory Committee for Immunization Practices (ACIP) report on prevention of pneumococcal disease[2] states that the highest case fatality rates for pneumococcal bacteremia occur among the elderly, and Muder reports that the mortality associated with bacteremic pneumonia in nursing home residents may be as high as 50%.[8]

National Nursing Home Quality Measures and Metrics' state performance ratings reveal that the immunization rates of Pennsylvania long-stay residents—the number of residents who were assessed and given influenza vaccination in the 2007 season—were 3.1% lower than the nationwide average of 85.9%. Pneumococcal polysaccharide vaccine (PPV) administration rates also fell 3.2% below the national average of 83.6%. In a national comparison, Pennsylvania nursing homes ranked 38th for residents given influenza vaccination and 26th for residents administered PPV.[9]

Treating influenza and pneumonia, rather than striving to prevent the infections through vaccination, can have variable outcomes and contribute to morbidity, mortality, and the growing concern of antimicrobial resistance due to inappropriate antibiotic use.[10]

In October 2005, the Centers for Medicare & Medicaid Services (CMS) introduced two major updates to make immunization an organizational priority. CMS requires long-term care (LTC) facilities to ensure that residents are immunized annually against influenza and are offered at least one dose of PPV when there is no history of immunization. Facilities are required to educate residents or their legal representatives about the benefits and risks of vaccination, and facilities must provide residents with influenza vaccine and PPV unless medically contraindicated or refused.[11] The LTC state operations manual guidance for surveyors[12] outlines requirements for annual influenza and lifetime pneumococcal immunizations. Section W, added to the minimum data set (MDS 2.0), specifically inquires about the influenza vaccine and PPV status of each resident.[13]

Risk Reduction Strategic Planning

Despite the 2005 CMS requirement to offer these vaccines to all LTC residents, annual immunization programs often fall short of providing comprehensive policies and procedures to ensure that recommended vaccines are delivered to all eligible residents and employees.[10]

Program Assessment

Initial steps toward creating a system to get everyone vaccinated include assessing the facility's baseline vaccination rates and establishing a leadership facility workgroup with the involvement of the facility medical director. Team member roles can be defined as assignment of resources, development of policy statements, and auditing of resident medical records for the most recent vaccination information. Defined roles also serve to structure implementation processes and influence peers by sharing positive experiences.

A random survey of nursing directors from 291 Pennsylvania nursing homes conducted between April and June 1999 listed the following factors associated with higher vaccination levels:[14]

- Strong belief in the importance and effectiveness of the vaccine
- Development of institutional policies related to assessment, consent, and orders
- Identification of a staff vaccine advocate
- Concentration on effective practices rather than on basic information about the vaccine
- Use of a resident management system, prompting staff to assess vaccination status and order vaccinations
- Knowledge of financial reimbursements

Practice-Proven Strategies Increase Vaccine Availability and Acceptance

Many residents remain unvaccinated because of missed opportunities. Every healthcare encounter is an opportunity to offer vaccines to eligible residents and new admissions.[15] Historically, ACIP recommended that influenza vaccine should be offered beyond the traditional fall immunization season (October into January and beyond). Adherence to traditional timing is no longer recommended, and the vaccine should be given as soon as available until the end of the influenza season (April/May), depending on activity.

That this recommendation clearly differs from practice is made evident by a 2000 national survey of 1,606 physician practices regarding influenza vaccine in which Davis et al. report that 43% of respondents stopped vaccinating in December and only 27% vaccinated into February.[16] Medicare began coverage for pneumococcal vaccine in 1981 and for influenza immunizations in 1993 with no coinsurance or copayment.[11] A direct personal recommendation from healthcare providers has been shown to increase immunization rates among residents who are opposed to vaccination. Although education alone does not significantly affect vaccination rates, medical and support staff who are up-to-date in their knowledge are more likely to immunize themselves and to credibly encourage residents to consent to vaccination.[15]

O'Connor et al. describe decisional conflict associated with vaccination in a 2004-2005 survey of direct care providers and in a systematic review of 55 randomized controlled trials on patient decision-making interventions published between 1983 and 2006. These studies concluded that uncertainty regarding healthcare decisions can be resolved by identification of individual support and clinical counseling needs, by presentation of clear and compelling evidence about vaccination risks and benefits by a strong clinical champion, and through the use of decision aids such as persuasive testimonials, posters, brochures, videos, and vaccination events for families and residents.[17,18]

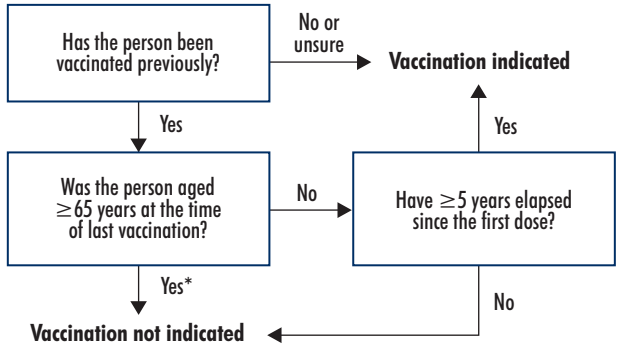
CDC produces vaccine information statements (VISs)—or information sheets—that explain both the benefits and the risks of vaccine administration. Federal law requires that the facility provide VISs to residents or their legal representatives before influenza vaccinations are given. VISs are available online for PPV and influenza vaccine at http://www.cdc.gov/vaccines/pubs/vis/default.htm. Furthermore, CDC provides a decision-making algorithm with recommendations for PPV, revaccination, and uncertain vaccine status for individuals age 65 or older. (See Figure.)

An important process in the transition of care between hospitals and LTC facilities is documentation of a resident's vaccination history in the medical record and on the transfer form. Improvement in this process will clearly enhance identification of the resident's vaccination needs and prevent revaccination.

Vaccine Safety and Effectiveness

An observational study of more than 140,000 older adults occurring over the 1998 to 1999 and 1999 to 2000 influenza seasons highlights the effects of influenza vaccine in reducing the exacerbation of comorbidities, demonstrating an almost twofold reduction in hospitalization and death rates due to underlying comorbidity.[19] Although comorbidities are associated with age-related decline in response to vaccines, these residents have the most to gain from

Figure. Algorithm for Pneumococcal Polysaccharide Vaccination of People ≥65 years



*Note: For any person who has received a dose of pneumococcal vaccine at age ≥65 years, revaccination is not indicated.

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Reprinted from Centers for Disease Control and Prevention. Prevention of pneumococcal disease: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR Recomm Rep *1997 Apr 4;49 (RR-8):1-24.*

immunization because many of the complications of influenza are the result of exacerbation of underlying condition.[6]

CDC reports that the risk of adverse events from repeated pneumococcal vaccinations, other than self-limited local injection site reactions, is minimal. A second PPV dose, administered two to five years after the first dose, does not represent a contraindication to revaccination, and the vaccine should be administered to residents who are uncertain of their immunization history.[2]

See "Novel Influenza A (H1N1) 2009 Vaccine Use in the Elderly" for information about the novel influenza (H1N1) virus.

Overcome Barriers to Success—Systems Interventions

An improved vaccination program is achievable with implementation of a structured process. A systematic review of evidence-based recommendations to increase the influenza and pneumococcal vaccination rates in the over-65 age group was published in 2003 by the Rand Corporation for the U.S. Department of Health and Human Services. Reviewers examined categories of interventions that included organizational changes in clinical procedures; the designation of a nurse to administer vaccines; the use of reminders, feedback, education, and financial incentives; regulatory and legislative mandates; and media campaigns. The review concluded that multifaceted organizational changes (e.g., standing orders, provider reminders) most consistently produce the greatest increase in vaccination program effectiveness. Vaccination reminders can take the form of electronic or paper-based warnings, flags, or stamps on charts of residents who need vaccines. Resident reminders that are personalized by their physicians have a high rate of success. The organization's on-hold telephone message can include information about vaccination during the influenza season. Mass mailings, posters, leaflets, computer-based programs, and postcards are useful when combined with other high-level interventions such as standing orders.[20] The Agency for Healthcare Research and Quality[21] and CDC[22] offer immunization toolkits detailing development and implementation of a LTC immunization program, sample guidelines, education brochures, campaign materials, and customizable standing order forms. The American Medical Directors Association published the *Immunizations in the Long Term Care Setting Tool Kit* in 2006, offering guidance, information, and tools to enable medical directors and other practitioners to take the lead in initiating and implementing activities to address and prevent influenza and pneumococcal disease in LTC facilities. The document is available at http://www.amda.com.

Standing Orders

On October 2, 2002, CMS published an interim final rule removing the physician signature requirement for influenza and pneumococcal vaccinations from its Conditions of Participation. Some LTC facilities are unaware of this and continue to send

Novel Influenza A (H1N1) 2009 Vaccine Use in the Elderly

The H1N1 "swine flu" novel influenza virus, initially identified in April 2009 in two children in California, progressed to uncontained worldwide transmission by June 2009 and is expected to continue to spread into the 2009-2010 fall and winter influenza season. The pandemic was declared to be an emergency by the U.S. Department of Health and Human Services in April 2009; the emergency declaration was extended in July 2009.[1] The Advisory Committee on Immunization Practices determined that the new H1N1 vaccine will initially be targeted to five specific priority groups and subsequently to a subset group.[2] The remaining available vaccine will then be offered to members of the over-64 age group. The rationale for this determination is that in contrast to seasonal influenza, the new H1N1 virus accounted for only 5% of hospitalizations and 8% of reported deaths in the over-65 age group, including residents in long-term care facilities where healthcare personnel worked while ill with H1N1, according to July 2009 unpublished data from the U.S. Centers for Disease Control and Prevention (CDC). CDC explains that results of serologic tests suggest that adults age 60 years or older may possibly possess some level of preexisting immunity to the novel H1N1 strains as a result of previous vaccination or infection with an influenza A (H1N1) virus that is more closely related to the novel influenza A (H1N1) virus than the current seasonal H1N1 strains.[2] The August 2009 *Morbidity and Mortality Weekly Report* describes a low 33% to 43% response to H1N1 vaccine in the over-60 age group.[2] A July 2009 amendment to the Public Readiness and Emergency Preparedness Act, or PREP, provides targeted liability protection for the administration of the vaccine.[1] For more information on H1N1novel influenza virus, visit the Pennsylvania Department of Health information Web site at http://www.h1n1inpa.com.

Notes

1. United States Department of Health and Human Services. Public Readiness and Emergency Preparedness Act. Fed Regist [online] 2009 Jun 29 [cited 2009 Oct 15]. Available from Internet: http://edocket.access.gpo.gov/2009/E9-14948.htm.
2. Centers for Disease Control and Prevention. Use of influenza A (H1N1) 2009 monovalent vaccine: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Recomm Rep* 2009 Aug 28;58(RR-10):1-8.

out verbal orders for every resident.[11,20] Goldstein et al. noted that obstacles to adoption of standing order policies include providers who are unconvinced of vaccine benefits, physician discomfort with delegation of responsibility to nursing, lack of administrative support, need for examples of policies and forms, proof of regulatory requirements, resident refusal, and program expense.[23] A Health Care Financing Administration systematic literature review spanning 1998 to 2003 assessed the evidence of interventions designed to improve vaccination rates and showed that in nearly every study, organizational changes that included standing orders improve vaccination rates.[20]

ACIP recommends that standing order programs be used in LTC facilities to ensure the administration of recommended vaccinations for adults as a national public health priority. Nurses and pharmacists are authorized to administer vaccinations without the need for a physician's examination or direct order under the supervision of a medical director according to an institution- or physician-approved protocol. Based on the strength of available evidence, successful standing orders programs begin with the formation of a committee to develop a program plan and write protocols for the following procedures:[24]

- Assessment of residents eligible for vaccination based on their age, vaccination status, and risk factors
- Education of residents or their guardians regarding the risks and benefits of vaccine administration
- Documentation of patient refusals and medical contraindications
- Recording the administration of vaccine(s) and any postvaccination adverse events
- Documentation of education and vaccine administration
- Training and competency of healthcare professionals who administer vaccines to screen patients for vaccination contraindications, to monitor adverse reactions, and to report adverse events to the federal Vaccine Adverse Events Reporting System (VAERS) at http://www.vaers.hhs.gov (CDC uses information from VAERS reports to ensure the safest vaccine use strategies and to further reduce the rare risks associated with vaccines.)
- Use of a standard personal and institutional immunization record to verify the immunization status of patients and to reduce the risk for inappropriate revaccination
- Implementation of a quality assurance process to maintain appropriate standards of care

In a 1996 survey of 405 primary care physicians specializing in geriatrics, family practice, internal medicine, and general practice, 66% of physicians favored a standing order policy to immunize their eligible patients.[25] Preprinted admissions orders could improve the effectiveness of the program, encouraging staff members to assess the vaccination status of patients and to provide information about the risks for and benefits of administering vaccinations routinely upon admission to facilities.[23]

Consent

Written consent is not required before administration of vaccines, according to the Pennsylvania Medical Care and Reduction of Error (MCARE) Act of 2002, as amended.[26] Kissam et al. note that obtaining signed consent sets a precedent for an unnecessary impediment to implementation of a standing orders program. The authors also note that requiring consent before administering low-risk, high-benefit vaccines is inconsistent with the current practice of not requiring signed consent before prescribing other common low-risk treatments such as routine oral medications. Requiring written consent inappropriately gives the impression of risk beyond normal standards, takes substantial and precious staff time, and paradoxically discourages residents from receiving the vaccine. Informed consent is provided by the required provision of the VIS.[27]

Outcome Measures/Documentation

Outcome measurement by means of standardized data collection is an essential process to evaluate success and maintain a sustainable immunization program. CDC recommends that each resident's chart include a permanent individual vaccination record providing a history of vaccination events from admission through discharge, immunization status on admission, the date vaccinated or reason for refusal, and adverse reactions. Standardized data collection logs provide reliable metrics to determine process and outcome measures such as the number of residents with up-to-date vaccinations, the number of new arrivals vaccinated, the baseline immunization state of current residents, the number of residents not vaccinated, and the reasons why. A facility vaccination registry would allow improved ease of reporting on vaccination rates and declination reasons. Program effectiveness is also measured by surveillance data for influenza-like illness and lower respiratory tract infections for residents and staff, the number of training sessions for staff, as well as assigned versus actual completion of program tasks. An annual written evaluation of the vaccination program compared to previous years is suggested to provide feedback to providers and personnel to motivate higher performance and set new goals.[22]

Successful Outcomes

In August 2009, the Authority conducted interviews of a sample of LTC facilities reporting vaccination rates over 90%. Twelve facilities participated in a telephone questionnaire discussing strategies that led to their successful vaccination program. Examples are as follows:

Gwynedd Square Center for Nursing reported vaccination rates of 99% for influenza and 100% for PPV, attributing its success to the use of standing orders and a facility vaccination information log and nursing support of detailed resident assessment and vaccination throughout the influenza season. Residents,

families, and staff receive education and handouts at admission, at resident council meetings, and at orientation. Vaccination status is reviewed at the resident care conference. Critical to success was the active involvement of the owner, the administrator, and a committed staff, 63% of whom have more than five years longevity.

Tel Hai Retirement Community reported a 95% influenza vaccination rate and a 98% PPV rate using standing orders, with onetime orders for annual influenza vaccines and PPV and a onetime consent on admission, as well as education with VIS. A standardized process for follow-through with reminders, documentation, orders, logs, audits, and risk assessments contributes to a successful program.

Davis Manor, with a 98% influenza vaccination rate and a 100% PPV rate, obtains a onetime order on admission and attributes its success to the use of an individual resident vaccination record and constant monthly chart and vaccination log audits. Interviewed facilities also incorporate strategies such an annual in-service by the medical director, physician interviews with declining residents, education at an annual safety fair, and use of a declination form for employees. (See "Improving Healthcare Worker Vaccination Acceptance.")

Conclusion

Immunization is the primary method of preventing invasive pneumococcal diseases as well as influenza and its more severe complications. Despite documented vaccine safety and numerous regulatory efforts, the rate of vaccination among high-risk institutionalized elderly has not substantially improved. Vaccination program success can be enhanced and sustained by applying facility-specific comprehensive strategies such as standardized documentation, standing orders, provider reminders, and vaccine champions and by replacing complicated written consent procedures with informed consent via the VIS.[15] LTC facilities can extend the

Improving Healthcare Worker Vaccination Acceptance

Transmission of influenza to patients by healthcare workers is well documented,[1] and healthcare settings are favorable environments for outbreaks of febrile respiratory illness. Achieving healthcare worker vaccination levels of 60% or higher is a Healthy People 2010 goal.[2] In a 2007 national health interview survey, 45% of healthcare workers self-reported that they protect their patients by getting immunized against influenza; the remaining unvaccinated 55% greatly increase the risk of spreading influenza virus in healthcare facilities.[3]

The Joint Commission advocates the prioritization of staff immunization programs over resident programs because the virus can be shed at least one day before symptoms start. Vaccination provides a reduction in influenza-like illness (ILI), fewer days of illness and absenteeism, and a decrease in impaired work performance and emphasizes a professional obligation to minimize the risk of virus transmission to patients, to vulnerable coworkers, and to family members. The 1999 Joint Commission collaborative tool "Providing a Safer Environment for Health Care Personnel and Patients through Influenza Vaccination"[4] describes high vaccine acceptance resulting from visible marketing strategies and active promotion of annual educational campaigns (e.g., e-mails, newsletters, screen savers, gift card incentives).

Data from staff surveys that determine reasons for vaccine acceptance can be used to design future campaigns. Staff feel supported during the decision-making process when provided with facts that clarify personal issues such as fear of needles, avoidance of medication, and peer pressure. Access to vaccination is improved by the use of mobile carts on all shifts or when it is linked to a group activity. Signed declinations with statements of declination risks and of leadership expectations indicate the organization's commitment to the program and motivates acceptance of the vaccine. A sample declination form is available at http://www.immunize.org/catg.d/p4068.pdf. Leadership commitment is ensured by the involvement of a program leader, role models such as administrators who are photographed getting vaccinated or vaccine "deputies." Feedback to the staff and the governing body is measured by the impact of vaccination rates related to surveillance of ILI in patients and staff.

Notes

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benefits of vaccinations to all recommended residents and improve their vaccination rates by approaching the resident immunization program as a regulatory and patient safety priority.[10]

Notes

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