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Multifaceted strategies needed for influenza prevention in long-term care

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The increased risk of severe illness from influenza among older adults is well-established with almost 90% of annual influenza-associated deaths occurring among adults 65 years and older.¹ This burden is compounded by significantly reduced efficacy of inactivated influenza vaccine in older adults, particularly those aged 70 or older or with decreased functional status.^{2,3} Outbreaks of influenza among residents in long-term care facilities (LTCF) are well-documented even in the setting of high vaccination rates.^{4,5} Clearly, additional strategies are needed to prevent influenza in these high-risk populations. In this issue of *Journal of Infectious Diseases*, Nace et al. present results from an immunogenicity study of high-dose influenza vaccine in a sample of frail elderly residents of LTCF. This study compliments earlier work by DiazGranados et al., who demonstrated superior immunogenicity and superior clinical efficacy against laboratory-confirmed influenza of the high-dose compared to the standard-dose influenza vaccine in community-dwelling persons 65 years and older.⁶

Immune senescence is associated with decreased vaccine immune response among healthy adults in their 70s or 80s, and differences in frailty (as measured by ability to live unassisted or other factors) may significantly impact the benefit of influenza vaccination in preventing influenza-related illness and death.^{2–3,7} The development of more immunogenic vaccines – including high-dose (HD) influenza vaccines – aims to address both of these problems, but confirmatory studies documenting the clinical impact of HD vaccine and superiority of HD over standard-dose vaccine in preventing influenza among LTCF residents are not yet available. Although the study by Nace et al. provides some evidence of improved immunogenicity of HD over standard dose vaccine among LTCF residents, overall titers even after HD vaccination are modest at best, and far below titers reported among community-dwelling older adults following HD influenza vaccination.⁶

Long-term care facilities concentrate large numbers of frail older adults in relatively closed areas, increasing both the likelihood and the potential harm of influenza outbreaks in LTCF. Attack rates of over 20% during influenza outbreaks have been reported even among well-

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vaccinated populations of LTCF residents.^{4,8} The Centers for Disease Control and Prevention (CDC) recommends active surveillance for respiratory disease outbreaks in LTCF and testing when influenza is suspected as the cause of an outbreak. Administration of influenza antiviral medications for treatment of ill residents and prophylaxis of unaffected residents, use of standard and droplet precautions by healthcare personnel (HCP) in the facility, and social distancing measures such as isolation of ill residents, limiting group activities and restricting visitors to the facility, and ensuring HCP do not move between affected and unaffected areas of the facility are further recommended to reduce the impact of influenza during outbreaks.⁹ Rapid implementation of recommended control measures can reduce the number of secondary influenza cases and limit the size of outbreaks, while lack of control measures can result in high rates of illness, hospitalization and death in frail LTCF populations.^{4-5,9}

Although far from perfect, annual influenza vaccination of both residents and HCP remains one of the most important measures available to reduce the risk of influenza and its complications in long-term care settings. Given the considerable risk of influenza complications and death among LTCF residents in particular, even partial protection against the sequelae of influenza infection is an outcome to be highly valued. However, vaccination of LTCF residents alone is not sufficient. Vaccination of HCP who work in LTCF is critical to reduce the risk of introducing influenza into the LTCF. Findings from multiple studies indicate that influenza vaccination of HCP lowers the risk of death among LTCF residents.¹⁰ In general, HCP are younger and healthier than LTCF residents and are therefore likely to have superior immune responses to seasonal influenza vaccination; studies support effectiveness of influenza vaccination in reducing confirmed influenza among healthy adults.¹¹ Despite evidence of the benefits of HCP vaccination in reducing the risk of mortality among LTCF residents and longstanding CDC recommendations to vaccinate all healthcare personnel, vaccination rates among HCP working in LTCF are far from optimal and are notably lower than rates for HCP working in other healthcare settings: for the 2013–2014 influenza season, 63% of HCP working in LTCF reported influenza vaccination compared to 74% working in ambulatory care settings or physician offices and nearly 90% of HCP working in hospitals.¹²

Nace and colleagues note several potential challenges to conducting a clinical trial among LTCF residents to examine the clinical benefit of HD versus standard dose influenza vaccination to prevent influenza and its complications. However, several cluster randomized trials in LTCF that included influenza surveillance among LTCF residents have been successfully conducted to study the effects of HCP influenza vaccination on LTCF residents.¹⁰ Similar trials focused on vaccination of LTCF residents would provide much-needed information about the relative benefits of HD versus standard dose vaccine for preventing influenza in this frail group. In the interim, LTCF should focus efforts on ensuring influenza vaccination of residents, improving the suboptimal influenza vaccination rates among HCP in LTCF, and ensuring they are prepared to detect and mitigate influenza outbreaks among LTCF residents when outbreaks do occur.

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