

A 5-year experience with influenza prevention and containment in a program of all-inclusive care for elderly adults

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Background: Influenza causes mortality and morbidity in the frail elderly population. Influenza prevention and mitigation models need to be developed for this population.

Methods: An observational study at a Program for All-Inclusive Care for the Elderly (PACE) during years 1999-2004. Participants were frail elderly adults who meet the state Medicaid requirements for nursing home placement.

Results: Over 91 % of participants have been immunized yearly since the beginning of the program. Employee immunization has increased yearly from 61 % to 90 %, and caregivers known to be immunized increased from 9 % to 62 % over the last 4-year period. During 2 influenza seasons, we placed all our participants on ramantidine prophylaxis within a 2-week period.

Conclusions: The incentives and flexibility offered by PACE have allowed our participants to enjoy much higher influenza immunization rates than experienced by other elderly adults while also prophylaxing employees and caregivers. Our systems have allowed us to prophylax all our participants within a short time during 2 influenza seasons. Nonetheless, many questions remain regarding the optimal way to decrease the burden of influenza in frail elderly adults. With adequate integration and supplementary financing, PACE programs throughout the United States could serve as laboratories to test candidate interventions. (Am J Infect Control 2005;33:238-42.)

Ninety percent of influenza deaths occur in persons aged 65 years and older, and influenza is a devastating illness in the frail elderly population.¹⁻³ Because the frail elderly population often have limited physiologic reserve secondary to the burden of many diseases and are immunosuppressed by disease and the medications used to treat them, their influenza-related mortality is even higher than that of other elderly adults.⁴ Influenza is responsible for a considerable excess of health care utilization by the elderly population during winter.⁵

The frail elderly compose the very population served by the Program of All-Inclusive Care for the Elderly (PACE).⁶ The primary goal of PACE is to keep elderly adults who have severe disability living in the community, using a multidisciplinary team of care

providers.⁷ PACE aims to meet participants' medical, psychologic, social, and spiritual needs.

Because PACE programs are capitated, they are greatly incentivized to prevent and treat illness expeditiously because medical care is the largest and most variable expense for the program.⁸ PACE is free to expend resources in any way that it sees fit to meet its objectives of keeping patients in the least restrictive environments while providing patient care that is delivered with high rates of participant and caregiver satisfaction. Alexian Brothers Community Services' PACE program began enrolling participants in January of 1999 and is one of 32 fully operational programs in the country.⁹

Influenza is one of many illnesses that must be managed carefully to meet PACE objectives. The purpose of this paper is to describe the influenza prevention and containment program that has evolved at 1 PACE site since its inception and to discuss problems with implementation and areas of scientific uncertainty that limit further efforts to minimize the burden of influenza in this population of frail elderly adults.

METHODS

Prevention

The prevention portion of our program is geared toward participants, employees, and caregivers. We

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offer each participant an influenza (flu) shot every year in late October, unless there has been a delay in obtaining the vaccine. Although we provide our participants with information regarding the risks and benefits of flu shots, we do not require them to sign informed consent forms.¹⁰ Refusals are documented in the medical record and reported to the participant's PACE primary care physician.^{11,12} A few do not receive immunizations because they report egg allergies or are in the dying process.

Employees are also offered flu shots. Early on in the program, our employees were loath to accept flu shots, but compliance with immunization improved after many discussions emphasizing the benefits for themselves, their families, and our participants. After several years, we also offered prizes for immunizations received by a given date. In the last several years, we have made willingness to receive flu shots a requirement for PACE employment, and this year we have required all employees to take the flu shot (unless their own physicians attest to a medical contraindication).

In the last several years, we have made greater efforts to encourage caregivers to receive flu shots, either from their usual providers or gratis from PACE. This portion of our program remains to be completely developed.

Surveillance

Our surveillance aims to detect influenza activity in our region and in our participants. Beginning in the fall, we monitor for influenza activity in our community by checking the Centers for Disease Control and Prevention's (CDC) Web site and receive weekly e-mail updates on flu activity in our region provided by an antiviral manufacturer.^{13,14}

To monitor activity in our program, we participated in the CDC's Sentinel Physician surveillance network.¹⁵ Nasal swabs are obtained from participants with influenza-like illness (ILI; >100°F plus cough or sore throat) and shipped to the CDC for culture. Although not part of the CDC system, we also do a point-of-service test for influenza A and B using a commercial kit (QuickVue; Quidel Corp, San Diego, CA).¹⁶

Containment

Once we have a confirmation of influenza A by the kit or the CDC, we then prophylaxis all participants with ramantidine. We have chosen ramantidine over amantidine because, although slightly more expensive, it has less toxicity, and over oseltamivir because it is much less expensive and there are no convincing data that it is less effective for prophylaxis. The usual dose

Table 1. Characteristics of participants at the Chattanooga Program of All-Inclusive Care for the Elderly^{*,†}

Characteristic	%
Age greater than 74 years	64
Female	76
Not married	76
African American	52
Income less than \$800 per month	71
Medicare and Medicaid	94
Dependent in bathing	88
Dependent in toileting	66

^{*}From DataPace report (National Program for All-Inclusive Care of the Elderly Association) 10/01/02.

[†]N = 243.

for our frail elderly population is 100 mg daily because these participants almost all have decreased renal function. We have prophylaxed our entire population for 2 of the last 5 years. It usually takes approximately 1 week for all our participants to begin receiving the medication. We have kept the participants on prophylaxis for approximately 1 month.

Treatment

After October, all participants with flu-like illnesses are treated with ramantidine regardless of test results. However, based on several recent studies, we have decided to treat with oseltamivir in the future.^{17,18}

RESULTS

PACE participants are very frail elderly adults who have many medical problems and high rates of disability; many are socially disadvantaged and poor (Table 1). Although participants' immunization rates have been very high since the inception of our program, employee rates have markedly improved in the last several years because of strong encouragement and recent insistence by management that all PACE personnel receive flu shots, unless they have contradictions to the shots as determined by their own physicians (Table 2). Our efforts to encourage caregivers to receive flu shots are more recent and less developed.

In the last 6 years, we have prophylaxed all participants in the program on 2 occasions. Both decisions to prophylax were triggered by several documented cases of influenza in our population over a period of 2 weeks. Prophylaxis was continued until we observed no ILI for a 2-week period. During the 2003-2004 season, PACE experienced 7 cases of influenza. Six contracted influenza at home and 1 in a

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