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Economic Costs of Influenza-Related Work Absenteeism

Manabu Akazawa, MPH, Jody L. Sindelar, PhD, A. David Paltiel, PhD

Yale School of Medicine, New Haven, CT, USA

ABSTRACT

Background: Influenza vaccinations are currently advocated only for individuals over age 50. However, vaccination of all working-age people may be warranted based on reduced absenteeism from work.
Objective: This study aims to quantify the association between lost workdays and influenza, controlling for other factors. A secondary aim of the study is to assess the net benefit of expanded vaccination in a workplace setting.
Research design: Multivariate regression analyses of the 1996 Medical Expenditure Panel Survey Household Component are used to estimate the number of workdays missed because of influenza-like illness (ILI) when controlling for other health, demographic, and employment factors. Mean productivity costs are measured in terms of absences from work and valued in dollar terms. The net benefit of influenza vaccination is estimated using a simple decision analysis.
Subjects and measures: Health, demographic, and employment data for employed individuals between the ages of 22 and 64 years are analyzed.
Results: The average number of workdays missed due to ILI was 1.30 days, and the average work loss was valued at $137 per person. The vaccine strategy was not preferred in the baseline analysis; however, this result was sensitive to assumptions regarding the incidence of influenza, the cost of delivering the vaccine, and the productivity impact of worker absenteeism. Moreover, nonproductivity benefits of vaccination were omitted.
Conclusions: The economic attractiveness of expanded investment in influenza vaccination hinges on employer- and population-specific assumptions. Our analysis provides a simple framework within which competing considerations of disease epidemiology, worker productivity, and economic cost may be weighed.
Keywords: absenteeism, influenza, MEPS, productivity costs.

Introduction

Influenza epidemics occur nearly every year from the late fall through the early spring. In the United States, the disease causes an average of approximately 110,000 hospitalizations and 20,000 deaths per year and imposes a significant economic burden [1]. Treatment and hospitalization occur frequently in high-risk populations, including people 65 years or older and those of any age with underlying chronic respiratory, cardiovascular, metabolic, or renal diseases [2]. Even for healthy adults, the typical symptoms of influenza can restrict daily activities. Kavet [3], in 1977, estimated that the costs of work loss due to influenza ranged from $0.5 to $2.0 billion, using epidemic models for which the incidence of influenza was assumed to range from 11% to 26%.

Address correspondence to: A. David Paltiel, Yale School of Medicine, PO Box 208034, 60 College Street, New Haven, CT 06520. E-mail: david.paltiel@yale.edu

The cost-effectiveness of influenza vaccination for elderly and other high-risk populations is well established [4]. Indeed, the Advisory Committee on Immunization Practices has recommended annual vaccination against influenza for individuals older than 50 years and all adults and children with chronic medical conditions [1]. However, whether vaccination is cost-beneficial for the working-age population has not been determined. While recent studies show that vaccination programs reduce health costs in large corporate settings [5–9], the generalizability of these findings to all working-age individuals is not clear. Nichol [10] conducted a cost-benefit analysis of vaccination using a Monte Carlo decision model to adjust for demographic characteristics, year-to-year variability, and vaccine efficacy rates. However, this analysis still relied upon the corporate study results cited above for its base-case estimates of worker absenteeism (base case: 2 days; range: 0.75–4 days).

The present study is motivated by the hypothesis that there are potential societal gains to be

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enjoyed from greater investment in the vaccination of employed, working-age individuals. To that end, we aim to estimate the economic costs of influenza-related absenteeism from work using nationally representative samples and to compare these to the estimated costs of increased vaccination. Such information could help to support revision of current guidelines to include working-age individuals. It could also help both employers and employees to identify the degree to which they would benefit from worker vaccination and the extent to which they might be willing to bear a share of any new vaccination program implementation costs.

Data

Source

The data for this study were taken from the 1996 Medical Expenditure Panel Survey (MEPS). The MEPS is a nationally representative survey of medical care use and expenditures conducted by the Agency for Healthcare Research and Quality (AHRQ) [11]. The Household Component (HC) of the MEPS includes detailed data on demographic characteristics, health conditions, health status, use of medical care services, charges and payments, access to care, health insurance coverage, income, and employment. The MEPS sample was drawn from respondents to the National Health Interview Survey. Data were collected via a preliminary contact followed by a series of six rounds of interviews over a 2.5-year period. The public use data files of the MEPS are available on the Internet at the AHRQ home page (http://www.meps.ahrq.gov [last accessed on May 10, 2002]).

The present study used the following data files: 1) Medical Conditions (HC-006); and 2) 1996 Full Year Consolidated Data File (HC-012). Based on US influenza surveillance data, widespread influenza activity during the 1995–96 seasons started the week ending November 25 and lasted until the week ending March 16 [12]. To enhance the likelihood that we would capture only influenza-related workdays missed, we used survey data collected only during round 1 of the MEPS follow-up interviews from January 1, 1996, to the next field interviews conducted from March through July 1996.

Study Sample

The study sample includes all working, non-self-employed people between the ages of 22 and 64 years. Self-employed individuals were excluded from the analysis because job benefits such as paid sick leave were not specified for these individuals. The HC-012 contains records of 21,750 eligible individuals in Round 1. The data of 10,156 people were excluded because they were either younger than 22 years or older than 65 years during the interview period. The data of 4368 persons were also excluded because they were either self-employed or not employed. Of the 7226 remaining observations, the data of 189 were excluded because of missing information about missed workdays (147 cases) or hourly wage (42 cases). As a result of these various exclusions, the data of 7037 observations were analyzed for this study.

Study Variables

Work loss. This study restricts attention to the work- and productivity-related costs of influenza and influenza-related absenteeism. We adopt this perspective to inform employer and employee decisions regarding vaccination. Our analysis is premised on the assumption that there may be gains to be enjoyed by both workers and employers from greater investment in the vaccination of employed, working-age individuals. We therefore aim to provide information that could help both workers and employers to determine whether they might enhance productivity by funding a vaccination program.

Costs of influenza were measured in terms of absences from work. Loss of life and unemployment due to long-term disability were not considered for this analysis because influenza-related deaths and hospitalizations are relatively rare in the working-age population [13]. Moreover, productivity losses while on the job were not addressed in this analysis because the data related to job performance were limited in the MEPS. The survey asked subjects to specify how many workdays were missed and for what health conditions. A continuous variable (MISSDAYS) indicating how many days an individual missed from work was created from the subjects' responses of missed workdays. All variable names used for this analysis and their descriptions are listed in Table 1. The descriptive statistics for this study population are summarized in Table 2. The average number of health-related missed workdays was 1.81 days. Average hourly wages were $14. We obtained a mean value of 39 usual hours worked per week. However, because data were incomplete on the number of hours worked per time period, we used the median value of 40 hours per week in our analyses.