

Estimates of Cost-Effectiveness of a Comprehensive Influenza Vaccination Program for Emergency Medical Services Personnel

Deal JM, Hubble MW

Introduction

Because of their frequent contact with vulnerable patients, vaccination against influenza is recommended for all health care workers. Vaccination has been shown to decrease influenza transmission to patients as well as reduce worker illness and absenteeism. However, the vaccination rate among Emergency Medical Services (EMS) workers remains low and most EMS agencies are reluctant to mandate vaccination because of the unknown economic consequences of mandatory, employer-provided vaccination programs.

Objective

To estimate the cost-effectiveness of a mandatory, employer-provided influenza vaccination program for EMS personnel.

Methods

Using estimates from published reports on influenza vaccination, a cost-effectiveness model of an employer-provided vaccination program in an urban EMS system of 100 employees was developed from the perspective of the EMS employer. Model inputs included vaccination costs, vaccination rate, infection rate, and costs associated with absenteeism, lost productivity due to working while ill (presenteeism), and medical care for treating illness (medical office visits and prescription drugs). To assess the robustness of the model, a series of univariate and multivariate sensitivity analyses were performed on the input variables.

Results

In the base case scenario, the proportion of employees contracting influenza or influenza-like illness (ILI) was estimated to be 19% among vaccinated employees compared to 26% among non-vaccinated employees. The costs of vaccine, consumables, and employee time for vaccination totaled \$40.86 per vaccinated employee. For a theoretical EMS system of 100 employees, the total cost of mandatory vaccination was estimated to be \$4,086. Compared to no vaccination, a mandatory vaccination program would save \$20,122 (or \$16,036 in net savings). The total savings were 4.9 times the cost of the vaccination program and were derived from avoided absenteeism (\$7,241), avoided presenteeism (\$10,963), and avoided medical costs of treating influenza/ILI (\$1,918). Through sensitivity analyses the model was verified to be robust across a wide range of input variable assumptions. The net monetary benefits were positive across all ranges of input assumptions, but cost savings were most sensitive to the vaccination uptake rate.

Conclusions

This cost-benefit analysis suggests that an employer-provided influenza vaccination program is a cost-effective strategy for reducing EMS employee absenteeism, presenteeism, and influenza/ILI health care costs.