

Vaccinating Against the Flu: A Business Case



Introduction

Each fall, public health and medical experts urge Americans to get vaccinated against the flu (seasonal influenza). By doing so, people protect themselves against a health threat that is more dangerous than generally thought. The flu isn't just another cold; it is a viral illness known to cause significant morbidity and mortality around the world. Between 5% and 20% of the U.S. population comes down with the flu every year¹ resulting in more than 200,000 hospitalizations and 36,000 deaths.² The financial costs of flu are not insignificant. Ultimately, annual influenza epidemics incur a national economic burden of \$87.1 billion.²

Background

What is the flu?

The *flu* is a contagious respiratory illness caused by influenza viruses. Flu viruses are spread person-to-person through coughing or sneezing. Like viruses that cause the common cold, influenza viruses bind within the respiratory tract. This means that people with the flu have many of the same symptoms as those with a common cold, although they tend to report more serious illness including symptoms like fever, body aches, lethargy and dizziness with often more serious complications.

Some people (older persons, young children and people with certain health conditions) have an increased risk of secondary infection or complications from the flu. Flu complications can include bacterial pneumonia, ear infections, sinus infections, dehydration and worsening of chronic medical conditions, such as congestive heart failure, asthma or diabetes.

Influenza-related deaths are generally the result of secondary pneumonias, exacerbated cardiopulmonary conditions or other chronic diseases. Death may occur weeks after

initial infection.³ According to national mortality data, pneumonia and influenza (P&I) are:

- The sixth leading cause of death among persons 65 and older.⁴
- The overall eighth leading cause of death in the United States in 2006.⁵

Although everyone is susceptible to the flu, infection rates among children under 5 years are three times higher than those for working-age adults.⁶ Rates of serious illness and death as a result of the flu are greatest among people aged 65 and older; children under 2; and those with an underlying chronic medical condition.^{7, 8}

Symptoms of the flu include:

- high fever
- headache
- extreme tiredness
- dry cough
- sore throat
- runny or stuffy nose
- muscle aches
- stomach symptoms (e.g., nausea, vomiting and diarrhea)

Source: Centers for Disease Control and Prevention. Available at: www.cdc.gov/flu/symptoms.htm

Accessed: August 17 2009.

Influenza's Burden: The health care system is flooded with 24.7 million cases of influenza each year. In approximately half of all cases of influenza-like-illnesses (ILI*), a person sees a health care provider⁹ which translates into 31.4 million outpatient visits and 3.1 million hospitalized days.² Ultimately, the annual direct medical costs of flu average \$10.4 billion.²

Indirect costs of influenza are significant. The annual economic burden of influenza amounts to between 0.24% and 0.79% of the U.S. Gross Domestic Product (GDP).² Lost earnings due to illness and loss of life associated with influenza epidemics average \$16.3 billion every year.⁶ Annual flu epidemics result in approximately 610,660 life-years lost.²

**Note: An influenza-like-illness (ILI) is defined as feverishness or a measured temperature of at least 37.7°C (≥ 100°F) plus cough or sore throat. As many cases of influenza are never officially diagnosed, it is difficult to quantify the true number of flu cases. As such, researchers use the term ILI's to refer to all illnesses that look and feel like the flu.*

Employers bear the brunt of indirect flu costs. For each episode of illness, a person has symptoms for five to six days and misses between a half day and five days of work.^{7,9-13} This is not just a disruption in the sick person's life; it is an obstacle to how well companies function given employee absence and/or diminished employee productivity. Having the flu is as impairing to completing certain tasks as sleep deprivation or alcohol consumption.¹ The flu indirectly costs employers about \$76.7 million a year in employee absenteeism, presenteeism and other indirect costs.¹⁴ Among unvaccinated participants, ILIs accounted for 45% of all days of illness during the influenza season, 39% of all illness-related work days lost and 49% of all days with illness-related reduced on-the-job productivity.¹⁵

Table 1: Projected economic burden of influenza in the United States, by age group and type of care (millions of dollars), 2003

Age Group	Cost of ILI/Not Medically Attended*	Cost of Outpatient Services	Cost of Hospitalizations	Cost of Death	Total Medical Costs by Age Group	Percentage of Total Direct Medical Expenditures on Influenza
0-17 years	16.6	776.7	865.5	8.6	1,667.4	15.0
18-64 years	22.2	1,458.7	2,575.4	535.1	4,591.5	45.0
65+ years	2.2	879.3	1,923.6	1,347.6	4,152.6	40.0
Total Cost by Type of Care	41.1	3,114.6	5,364.5	1,891.3	10,411.6	—
Percentage of Total Medical Expenditures on Influenza	<1.0	30.0	52.0	18.0	—	—

Source: Molinari NM, Ortega-Sanchez IR, Messonnier ML, et al. The annual impact of seasonal influenza in the US: measuring disease burden and costs. Vaccine. 2007;25(27):5086-5096.

* Medical costs of individuals with clinical influenza infection who were sick but did not seek medical attention were expenses on over-the-counter medications.

How does seasonal flu differ from pandemic flu? Individuals and employees need to prepare for both seasonal and pandemic influenza because each illness poses distinctly different threats and is associated with varying risks. Being organized and ready to manage seasonal flu outbreaks is a first step in any effective pandemic planning.

Seasonal Flu	Pandemic Flu
Outbreaks follow predictable seasonal patterns; occurs annually, usually in winter, in temperate climates.	Occurs rarely (three times in 20th century—last in 1968).
Usually some immunity built up from previous exposure.	No previous exposure; little or no pre-existing immunity.
Healthy adults usually not at risk for serious complications; the very young, the elderly and those with certain underlying health conditions at increased risk for serious complications.	Healthy people may be at increased risk for serious complications.
Health systems can usually meet public and patient needs.	Health systems may be overwhelmed.
Vaccine developed based on known flu strains and available for annual flu season.	Vaccine probably would not be available in the early stages of a pandemic.
Adequate supplies of antivirals are usually available.	Effective antivirals may be in limited supply.
Average U.S. deaths approximately 36,000/yr.	Number of deaths could be quite high (e.g., U.S. 1918 death toll approximately 675,000).
Symptoms: fever, cough, runny nose, muscle pain. Deaths often caused by complications, such as pneumonia.	Symptoms may be more severe and complications more frequent.
Generally causes modest impact on society (e.g., some school closing, encouragement of people who are sick to stay home).	May cause major impact on society (e.g. widespread restrictions on travel, closings of schools and businesses, cancellation of large public gatherings).
Manageable impact on domestic and world economy.	Potential for severe impact on domestic and world economy.

Source: www.flu.gov

The Advisory Committee on Immunization Practices (ACIP) develops national immunization guidelines for children, adolescents and adults which are then reviewed by the CDC. In times of limited vaccine supply, specific populations should receive the vaccine preferentially. At all other times, *anyone who wants to avoid getting the flu should get vaccinated.*

Routine influenza vaccination is recommended for all persons 6 months of age and older.

This universal recommendation is supported by evidence that annual influenza vaccination is a safe and effective preventive health action with potential benefit for all age groups.

Certain populations should be particularly diligent about being vaccinated against the flu given their own increased risk for flu-related complications or those with close contact of (i.e., those who live with or care for) high-risk persons, etc.

- Pregnant women;
- People of any age with certain chronic medical conditions;
- People who live in nursing homes and other long-term care facilities; and
- People who live with or care for those at high risk for complications from flu, including:
 - Health care workers;
 - Household contacts of persons at high risk for complications from the flu; and
 - Household contacts and out-of-home caregivers of children less than 6 months of age.

Certain people should **not** be vaccinated against the flu without first consulting a physician.

- People who have a severe allergy to chicken eggs;
- People who have had a severe reaction to an influenza vaccination in the past;
- People who developed Guillain-Barré syndrome (GBS) within six weeks of getting an influenza vaccine previously;
- Children less than 6 months of age (influenza vaccine is not approved for use in this age group); and
- People who have a moderate or severe illness with a fever should wait to get vaccinated until their symptoms lessen.

For more information about who should or should not be vaccinated against the flu, individuals should speak to their personal health care provider.

Source: Prevention and Control of Influenza with Vaccines, Recommendations of the Advisory Committee on Immunization Practices (ACIP), 2010. *Morbidity and Mortality Weekly. July 29, 2010/59 (Early Release);1-62.* http://www.cdc.gov/mmwr/preview/mmwrhtml/rr59e0729a1.htm?s_cid=rr59e0729a1_w

Section I: What Can Individuals Do to Protect Themselves From Flu?

There are three ways for individuals to protect themselves and others from the flu: get vaccinated, practice good cough and hand hygiene and stay at home when ill.

A. Vaccination

The best way to avoid getting the flu is to be vaccinated against it each and every fall. A person that has been vaccinated develops protective antibodies against those strains of virus included in the vaccine. It takes approximately two weeks from when a person is vaccinated to develop these antibodies. Protection wanes within one year.

Why do people need to be vaccinated against the flu every year? Every year different strains of influenza virus circulate the globe. Laboratories around the world collect the viruses. Scientists meet twice a year, once for the Northern and once for the Southern Hemisphere, and decide which circulating and/or new viruses present the greatest threat for the upcoming flu season. Ultimately, there are two separate vaccine recommendations about which three viral strains to include in the vaccine are made each year, one for each hemisphere. *Because each year's flu vaccine is tailored to the upcoming flu season, people must be revaccinated annually.*

There are two types of flu vaccine on the market. Both are effective at preventing the flu.

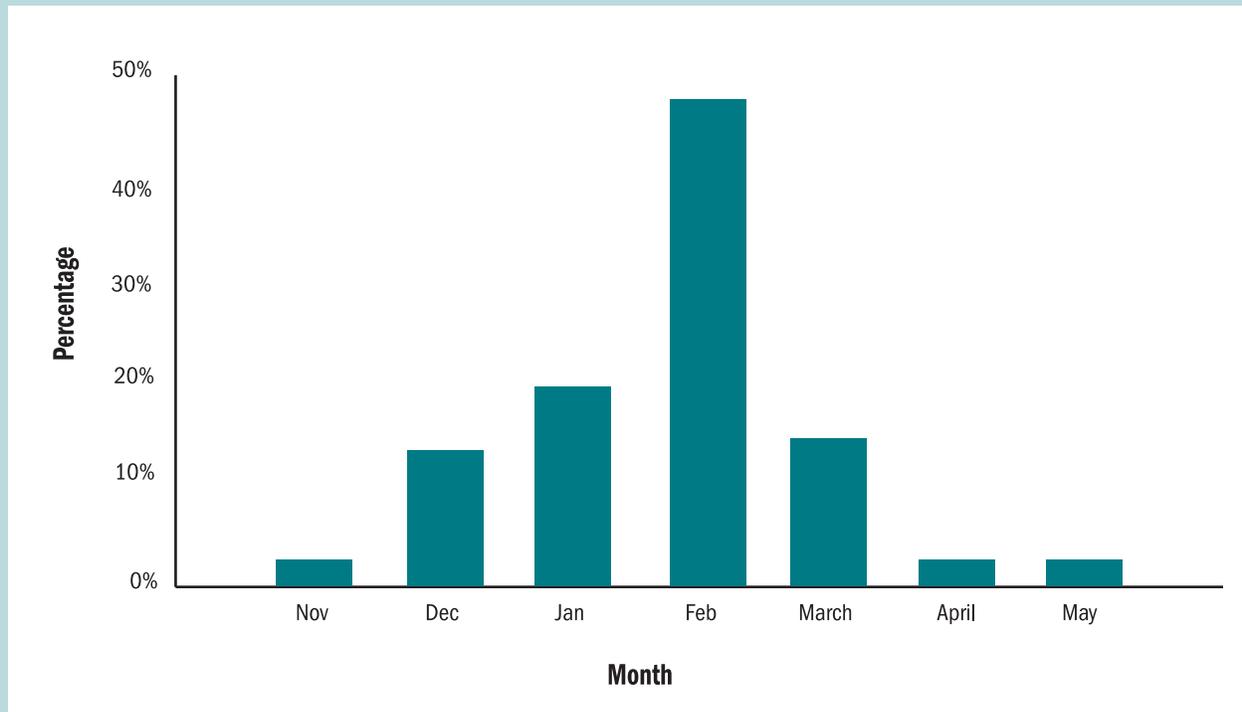
1. **Flu shot**—an inactivated vaccine made from dead virus cells. It is administered by injection and is approved for use in all people 6 months of age and older, including those who are healthy *and* those with chronic medical conditions.
2. **Nasal spray flu vaccine**—made from weakened, live influenza viruses that cannot cause severe symptoms. This vaccine is approved for use in *healthy*, non-pregnant people aged 2-49 years.

It takes about two weeks after vaccination to develop antibodies against the relevant influenza viruses. Ultimately, a flu vaccine's ability to protect a person depends on the age and health status of the person getting the vaccine, and the similarity or "match" between the virus strains in the vaccine and those in circulation.

The flu season can begin as early as October and last as late as May. Peak illness tends to occur in February. While the best time to be vaccinated is October or November, people can still benefit from being vaccinated in December and January. As long as there is a chance of infection, there is value to getting vaccinated.

Vaccination in traditional and nontraditional settings should be strongly encouraged. Upwards of 30% of all influenza vaccinations are administered in non-traditional settings like worksites, shopping centers, pharmacies, etc.¹⁶ Getting vaccinated in a mass vaccination or pharmacy setting is considerably less expensive than when administered in a scheduled office visit.¹⁶

Figure 1: Peak influenza activity by month



Source: Centers for Disease Control and Prevention. *Prevention and control of influenza: Recommendations of the Advisory Committee on Immunization Practices, 2008. MMWR 2008; 57 (RR-7):1-64.*

B. Good Hygiene

People can protect themselves from the flu by practicing good cough and hand hygiene. Flu viruses are spread in respiratory droplets. When an infected person sneezes or coughs, he or she may expel the virus onto any number of surfaces (hands, doorknobs, keyboards, etc). If someone touches an infected surface and then introduces the virus into his or her own body (by touching the eyes, nose or mouth), that person may become infected with the flu.

Good hygiene requires:

- Covering your mouth and nose when you sneeze or cough. This prevents an infected individual from infecting others.
- Cleaning your hands often. People who wash their hands often are less likely to introduce viruses into their bodies.
- Limit unnecessary touching of your eyes, nose or mouth. If influenza viruses can't get into a person's body, they can't make him or her sick.

Good Cough Etiquette: Viruses and bacteria can live for 2 or more hours on surfaces outside the body.¹⁷ To limit the spread of disease:

- Cover your mouth and nose with a tissue when you cough or sneeze.
- *If you don't have a tissue*, cough or sneeze into your upper sleeve, not your hands.
- Throw used tissues in the garbage.

Good Hand Hygiene: Simple hand washing with soap and water can reduce infections by more than 50 percent.¹⁸

When should you wash your hands?¹⁹

- Before preparing or eating food;
- After going to the bathroom;
- After changing a diaper or cleaning a child who has gone to the bathroom;
- Before and after tending to someone who is sick;
- After blowing your nose, coughing or sneezing;
- After handling an animal or animal waste;
- After handling garbage; and
- Before and after treating a cut or wound.

Hand Sanitizer: Waterless hand sanitizers present some advantages over hand washing with soap and water:²⁰

- Require less time than hand washing;
- Act quickly to kill microorganisms on hands;
- Are more accessible than sinks;
- Reduce bacterial counts on hands;
- Do not promote antimicrobial resistance; and
- Are less skin irritating than soap and water.

Hand sanitizers are **not** effective at removing organic matter (dirt, food, or other material) visible on hands.²⁰

C. Isolation When Sick

Sick people should stay home. To prevent others from catching their illness, sick people should **not** go to school or work. Trying to avoid sick people is not an effective strategy for keeping uninfected persons from getting sick. Healthy adults can infect others from the day before their flu symptoms develop for up to five days after actually becoming sick. In other words, it is possible to catch the flu from someone before that person even knows he or she is sick.

Section II: What Can Employers Do to Protect Their Employees From the Flu?

Employers can play an important role in flu prevention.

1. Encourage your employees to get vaccinated. Getting employees vaccinated against the flu makes sound business sense. Research shows it can lower direct and indirect employer costs. A 2006 study found that the cost effectiveness of influenza vaccination was \$980 per quality adjusted life year (QALY)* saved in persons 65 years and older, and \$28,000 per QALY saved in persons aged 50 to 64.²¹ Healthy, immunized working adults experience significantly fewer days of influenza-like illnesses (ILI), have fewer doctor visits for ILIs and take fewer days off from work due to an ILI.⁷ Specifically, employees that have been vaccinated have:

- 13% to 44% fewer health care/provider visits;
- 18% to 45% fewer lost workdays; and
- 18% to 28% fewer work days with reduced effectiveness.^{7,10}

**Note: The quality-adjusted life year (QALY) is a measure of disease burden that includes estimates of both the quality and the quantity of life lived. It is used to assess the relative value for money of a medical intervention.*

Table 2: Potential costs for economic models evaluating influenza vaccination

	Costs Incurred	Costs Avoided
Direct Costs	<ul style="list-style-type: none"> • Vaccine and administration • Health care for vaccination side effects 	<ul style="list-style-type: none"> • Health care for influenza illness and complications • Health care for secondary cases • Includes medication, testing/imaging provider visits and hospitalizations
Indirect Costs	<ul style="list-style-type: none"> • Work/school time loss for vaccination • Work/school time loss for vaccination side effects • Travel for side effects and vaccination 	<ul style="list-style-type: none"> • Work/school time loss for illness and complication (including parent's work loss for child's illness) • Work/school time loss for secondary cases • Travel for health care visits • Services for patient • Death (e.g., future earnings)

Source: National Vaccine Program Office (NVPO) presentation (National Business Group on Health webinar, September 12, 2006)

2. Consider offering opportunities to get vaccinated against the flu on-site.

Workplace vaccination efforts are cost saving for employers. A recent study found the mean cost of vaccination was lower in mass vaccination (\$17.04, 2004 USD) and pharmacy (\$11.57, 2004 USD) settings than in scheduled doctor's visits (\$28.67, 2004 USD).¹⁵

Table 3: Results of selected vaccination cost analyses

Study authors	Workdays gained per employee	Cost or (savings) per employee
(Rothberg et al, 2005) ²²	.09	\$3
(Bridges et al, 2001)	-.09 to .04	\$11 to \$66
(Campbell et al, 1997) ²³	0.38	(\$22)
(Nichol, 2001) ²⁴	0.12	(\$13.66)
(Nichol et al, 2003) ²⁵ live vaccine	0.18	Cost savings if vaccine costs < \$26/person

Source: National Vaccine Program Office (NVPO) presentation (National Business Group on Health webinar, September 12, 2006)

Cost-effectiveness or cost savings of worksite flu vaccination depends on:

- Demographic characteristics of the employee population (age, gender, age, etc);
- Geographic distribution of employees and worksites;
- Employer efforts at making on-site vaccination attractive to employees (i.e., reasonable out-of-pocket costs, acceptable work leave policies, vaccine availability for dependents, etc.).
- Severity of influenza outbreak in a given year.
- Effectiveness and compatibility of the vaccine against circulating influenza viruses.

Employers should consider the above factors when deciding whether it makes sense to organize worksite flu vaccination.

Explanation of concepts:

Cost-effectiveness analysis— A program evaluation method whereby the costs and/or effects of two or more alternatives are compared.

A program that is *cost-effective* shows improvement in health outcomes for a ‘reasonable’ increase in cost.

A program that is *cost saving* results in a reduction in total dollars spent.

3. Audit health plans for consistent coverage for flu vaccine.

Getting employees vaccinated against the flu should be a corporate health priority. Employers know what vaccination strategy works well for their organization.

- Covering influenza vaccine within the context of the health plan.
- Offering on-site flu vaccination.
- Encouraging employees to be vaccinated in nontraditional settings not covered by the health plan (i.e., pharmacy, supermarket, etc.).

Deciding upon a strategy should be based on an informed analysis of what makes sense given the financial means and culture of the company. It is important that an employer’s decision be standardized across all plans, facilities and locations to the greatest extent possible.

4. Encourage your employees to practice good hygiene.

Employees spend a significant percentage of their waking hours at work. During that time an employee can either pick up a virus or infect others making workplaces the perfect breeding grounds for germs and infection. Research shows that children who practice good hygiene miss fewer days of school because of cold or flu.²⁶ The same holds true for adults: those who wash their hands regularly are less likely to get sick.^{27,28}

What can employers do to promote improved employee hygiene? Employers should consider organizing comprehensive hand washing campaigns to educate employees about the importance of regular hand washing. Additionally, they should provide hand sanitizer wipes or gel where sinks are unavailable, etc. Hand washing reminders should be available in all public spaces—bathrooms, kitchens, public sinks, communal areas, etc.,—explaining that:

- To dislodge and remove germs, people must scrub their hands with soap and warm water for at least 15 to 20 seconds.
- When soap and water are not available, alcohol-based disposable hand wipes or gel sanitizers are effective at killing viruses that cause both common colds and the flu.²⁹ (These products should contain 60% to 95% ethanol or isopropanol.)

For existing publicly available resources about proper hygiene, please see:

http://www.businessgrouphealth.org/globalhealth/avianflu_hygiene posters.cfm

5. Encourage sick employees to stay at home.

Employers should structure leave policies to incent sick people to stay at home and not come to work. Where possible, employers should promote telework options. Many companies struggle with how to do this effectively as corporate culture may reward employees that work under all circumstances.

For more information about stopping the spread of germs at work, please see:

<http://www.cdc.gov/germstopper/work.htm>.

Conclusion

Influenza costs employers in employee absenteeism, presenteeism and medical claims. On a national level, this translates into billions of dollars. Employers should encourage all employees to get a flu shot and, where possible, provide on-site vaccination opportunities for employees and their dependents. Ultimately, a vaccinated workforce is healthier, more productive and less costly.

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Issue Brief

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The Center houses Business Group projects related to the delivery of prevention and health services through employer-sponsored health plans and worksite programs. Employers should look to the Center for:

- Current information and practical recommendations from both federal agencies and professional associations;
- Analyses of model programs from other employers, and
- Findings from recent clinical and health service research.

For more information, visit <http://www.businessgrouphealth.org/prevention/index.cfm>

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The National Business Group on Health, formerly the Washington Business Group on Health, is the national voice of large employers dedicated to finding innovative and forward-thinking solutions to the nation’s most important health care issues. The Business Group represents over 280 members, primarily Fortune 500 companies and large public sector employers, who provide health coverage for approximately 50 million U.S. workers, retirees, and their families. The Business Group fosters the development of a quality health care delivery system and treatments based on scientific evidence of effectiveness. The Business Group works with other organizations to promote patient safety and expand the use of technology assessment to ensure access to superior new technology and the elimination of ineffective technology.

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