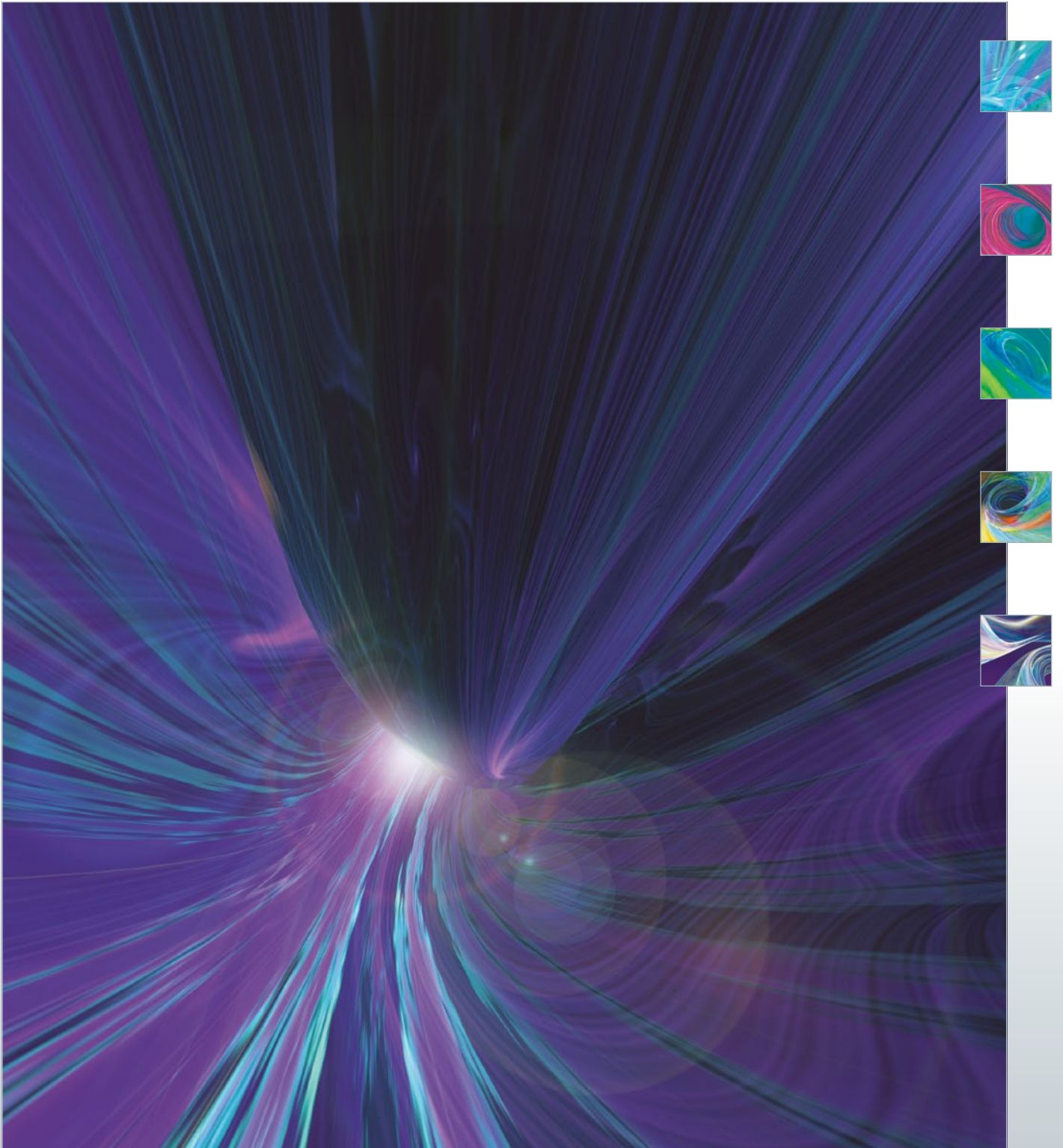


Chronic Disease and Medical Innovation in an Aging Nation

The Silver Book[®]: Infectious Diseases and Prevention through Vaccination



The Silver Book®: Infectious Diseases and Prevention through Vaccination

Older Americans are more likely to get an infectious disease, be hospitalized for it, suffer complications, and die. Despite the tremendous value vaccines hold in preventing these diseases, barriers in infrastructure, cost, education, tracking, and research cause vaccination rates in seniors to fall short of targets set by the Centers for Disease Control and Prevention (CDC).

Prevalence & Incidence

APPROXIMATE NEW CASES IN AMERICANS EACH YEAR:

PNEUMONIA	INFLUENZA ("FLU")	HERPES ZOSTER ("SHINGLES")
5 TO 10 MILLION	35 TO 50 MILLION	1 MILLION

(Niederman 2001, Garibaldi 1985, Right Diagnosis, Sampathkumar 2009)

5-20% OF THE U.S. POPULATION GETS THE FLU EACH YEAR

(CDC 2011)



Around **1 in 2** who live to be 85 will get shingles

(Schmader 2001)

- Hospital-acquired pneumonia (HAP) is the **2nd most frequent** cause of hospital-acquired infection. (McEachern 1998)



The Economic Burden

The annual direct & indirect medical cost of INFECTIOUS DISEASES:

\$120 BILLION

15%

of all U.S. healthcare expenditures

(NIAID 2000)



1 in 4

physician visits are due to infectious diseases. (NIAID 1991)

Medicare beneficiaries hospitalized for pneumonia have

\$15,682

HIGHER EXPENSES

than those without the infection. (Thomas 2012)

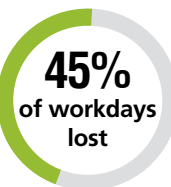
THE ANNUAL DIRECT AND INDIRECT COST OF FLU in the U.S. is:

OVER \$87 BILLION

(Molinari 2007)

During flu season, in working adults 50 to 64 years old, flu-like illness is responsible for

(Nichol 1999)

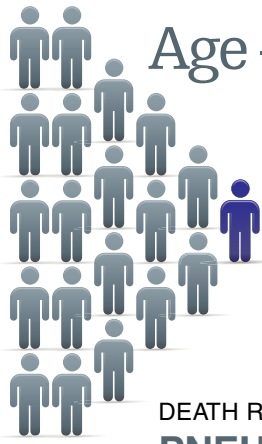


SHINGLES cost

~\$1 BILLION

in direct and indirect medical expenses each year (CDC 2012)

- Shingles patients lose an average 129 hours of work per episode. (Pellesier 2007, Ortega-Sanchez 2006)



Age – A Major Risk Factor

Every year
1 in 20

Americans age 85+ will have an episode of community-acquired pneumonia.

(Jackson 2004)



People age 65+ account for **50%** of FLU HOSPITALIZATIONS. (CDC 2013)



Hospitalization rates for shingles are **75X higher for people age 85+** than for those under the age of 30. (Lin 2000)

DEATH RATE FROM
PNEUMONIA & FLU

130X
HIGHER FOR
AGES 85+

compared with people ages 45 to 54. This increased risk due to age is **higher than that seen in heart disease, stroke, cancer, and other leading causes of death.**

(Gorina 2008)

The Human Burden



Vaccine-preventable diseases or their complications account for

50,000 TO 90,000
ADULT DEATHS

IN THE U.S. EACH YEAR. (Reid 1999)



PNEUMONIA is the **5th most frequent** CAUSE OF HOSPITALIZATION in the U.S. (NCHS 2010)

CASES LEADING TO HOSPITALIZATION EVERY YEAR:

PNEUMONIA	SHINGLES	FLU
>1.1 MILLION	50 TO 60 THOUSAND	55 TO 431 THOUSAND

(NCHS 2010, Insinga 2005, Thompson 2004)

- Community-acquired pneumonia is the **#6 cause of death** and the **#1 cause of death from infection** in the U.S.

(Mortensen 2003)

FLU EPIDEMICS in the U.S. lead to approximately:

600,000	life years lost
3,000,000	days of hospitalization
30,000,000	outpatient visits
≥48,000	deaths

(Molinari 2007) (CDC 2010)

COMPLICATIONS, including postherpetic neuralgia (PHN), occur in

~50%
of **OLDER PERSONS**
with shingles (Oxman 2005)

Addressing Barriers in Adult Immunization



Infrastructure

Adult immunization needs coordination similar to the Vaccines for Children (VFC) program—and should involve an interagency working group and non-governmental leadership that coordinates immunization activities to address the unique needs of heterogeneous patient and provider populations.



Cost

Elimination of cost-sharing for preventive services through the Affordable Care Act addresses some financial barriers. However, all ACIP-recommended vaccines should be covered under Medicare Part B, and this is especially important for shingles where procedural steps and financial barriers hinder vaccination uptake. Medicaid reimbursement rates across states should be uniform. And coverage delays for new vaccines should be eliminated.



Education

Educational outreach should target adults and healthcare providers and address misconceptions and knowledge gaps regarding scope of disease burden, benefits to individuals and the community, efficacy, safety, and necessity of vaccination—including timing and candidacy.



Tracking

Lack of appropriate standards and systems to track immunizations hampers efforts to measure outcomes and inform needed vaccinations. Better use of immunization information systems (IIS) to facilitate data exchange and coordination with EHRs should be promoted to assist diverse providers, generate reminders, and track vaccine histories.



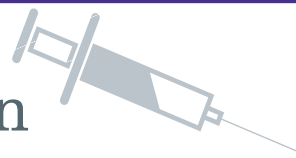
Research

New vaccine development lags due to lack of research priorities, high cost and low revenue, high regulatory hurdles in clinical trials, vigorous post-licensure monitoring, and uncertainty regarding market demands. An economic model to determine effective federal subsidy prices to stimulate innovation should be developed and investments in rapid-vaccine discovery systems to make vaccine development more predictable should be supported.

IMMUNIZATIONS ARE ONE OF THE MOST COST-EFFECTIVE WAYS TO PROTECT THE HEALTH OF INDIVIDUALS AND OUR COMMUNITIES.

The Value of Innovation

Prevention Through Vaccination



The Human Value

- PPSV23 pneumonia vaccine is 60% to 80% effective in immunocompetent adults age >65. (Immunization Action Coalition 2012)
- The flu vaccine can reduce risk of illness in the U.S. population by ~60%. (CDC 2013)
- Over 6 years the flu vaccine prevented ~13 million flu cases, >110,000 hospitalizations and >5.8 million medical visits. (Kostova 2013)
- Varicella-zoster virus shingles vaccine reduces
 - Incidence by 51.3%
 - PHN by 61.1%
 - Death by 33% (Mahamud 2013, Oxman 2005)

The Economic Value

- Every \$ spent on immunization saves \$6.30 in direct medical costs—total savings of \$10.5 billion. (Rappaport 2003)
- Most vaccines cost <\$50 per healthy life year saved. Treating hypertension costs \$4,340 to \$87,940 per healthy life year saved. (Ehreth 2003)
- The flu vaccine could save \$60 to \$4,000 per case prevented. (Pearson 2006)
- Use of the shingles vaccine in immunocompetent adults ≥60 could save \$82 to \$103 million in healthcare costs. (Pellesier 2007)

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