Immunizations Programs

Influenza, Pneumonia, 2009 H1N1

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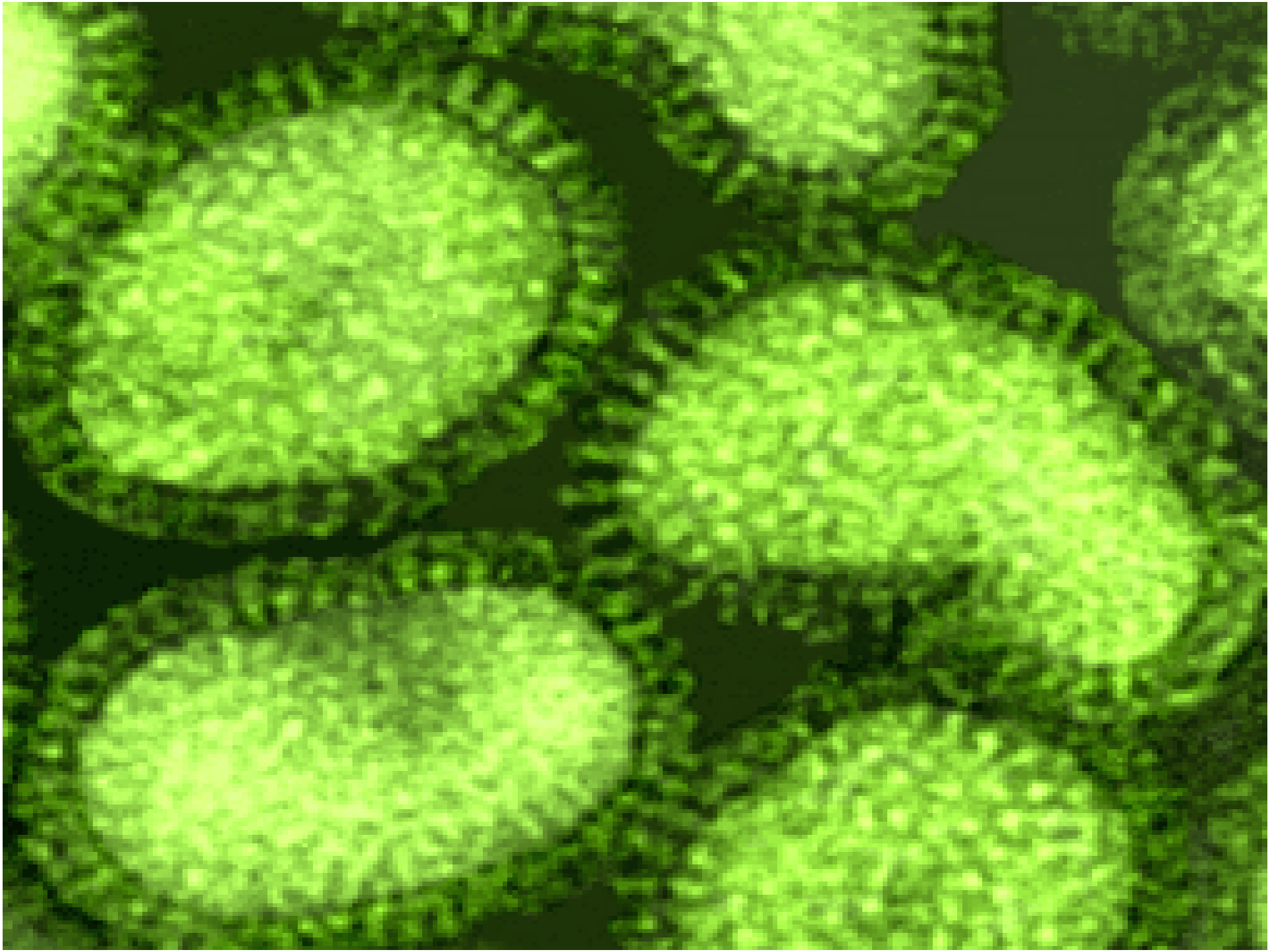
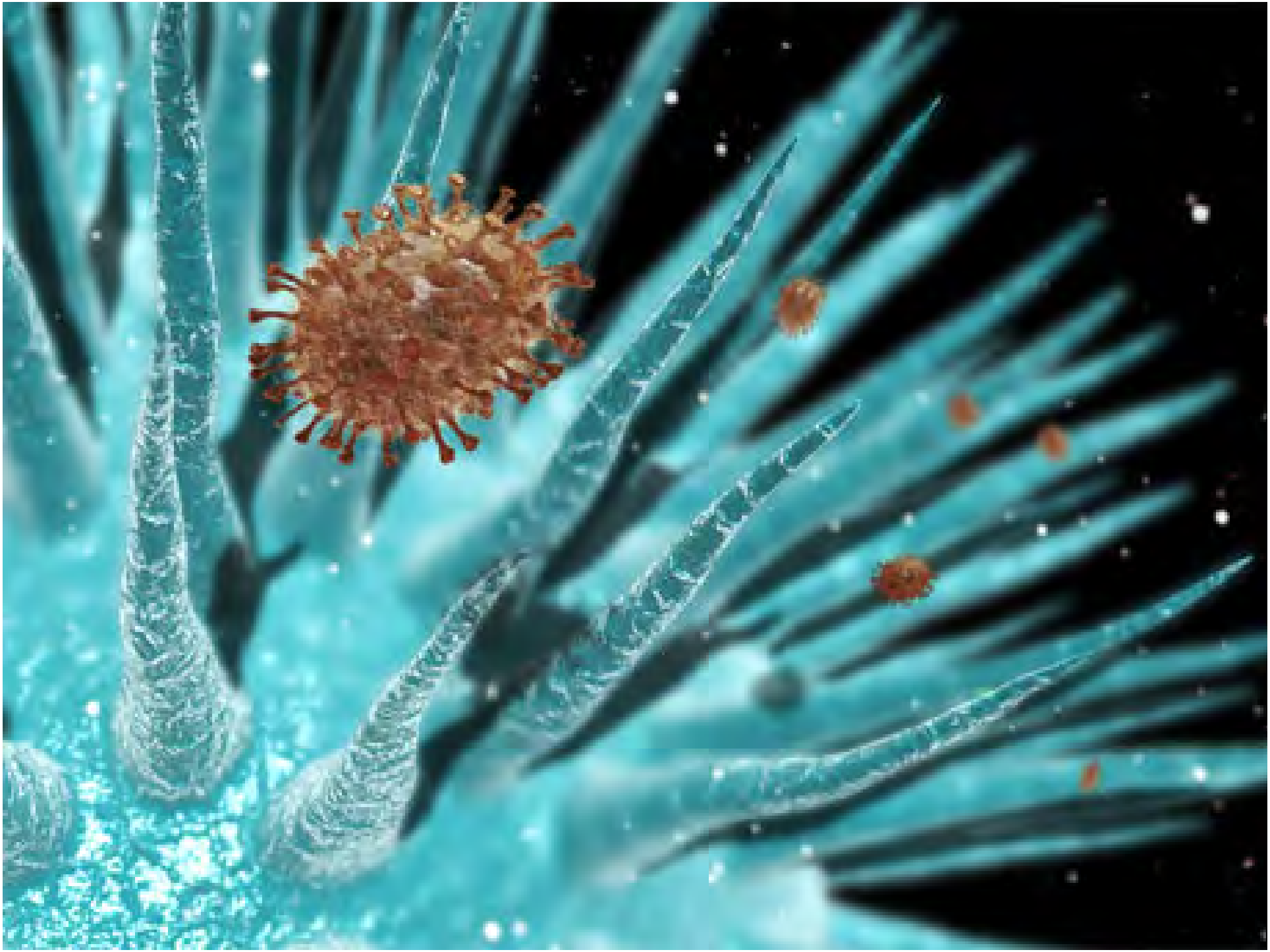


Objectives

- Describe the impact of influenza on LTC populations
- Describe the impact of pneumococcal disease on LTC populations
- Provide update on 2009 H1N1
- Discuss vaccine issues
  - Critical role in disease prevention
  - Well established safety record

Objectives

- Discuss F 334 Program requirements
- List strategies to improve immunization rates
  - Consent
  - Standing orders
  - Declinations
  - Education
- Define the importance of healthcare worker immunizations

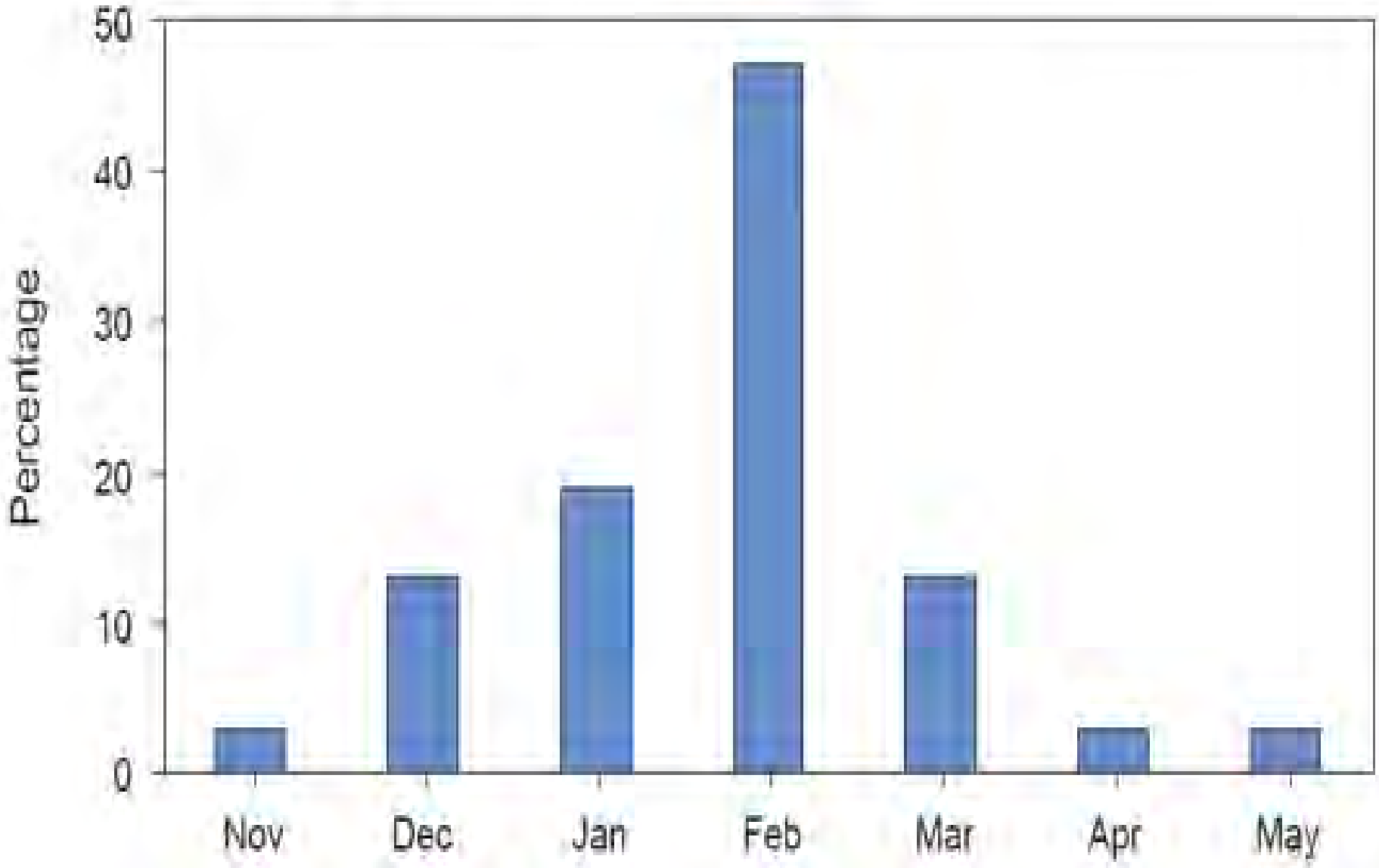


Influenza

Seasonal Influenza

- Annual viral infection
- Virus tends to undergo changes each year
  - These changes mean that we must change the flu vaccine each year to match what is going around

FIGURE 1. Peak influenza activity, by month — United States, 1976–77 through 2007–08 influenza seasons



Seasonal Influenza

- General Symptoms
  - Fever
  - Muscle aches
  - Headache
  - Fatigue
- Respiratory symptoms
  - Cough
  - Sore throat
  - Runny / stuffy nose
  - Shortness of breath
  - Pneumonia
- GI Symptoms not typical of seasonal flu

Getting Past the Lingo

- *What are we talking about?* - types, subtypes, strains
  - 2 main types of human influenza
    - Influenza A
    - Influenza B
  - Influenza A can be divided into subtypes, eg
    - H1N1
    - H3N2

Getting Past the Lingo

- *What are we talking about?* - types, subtypes, lineages, strains
  - Influenza B is divided into lineages, eg
    - Victoria
    - Yamagata
  - Both types of flu are further separated into strains based on where they were first identified, eg
    - Brisbane
    - California
    - Fujian

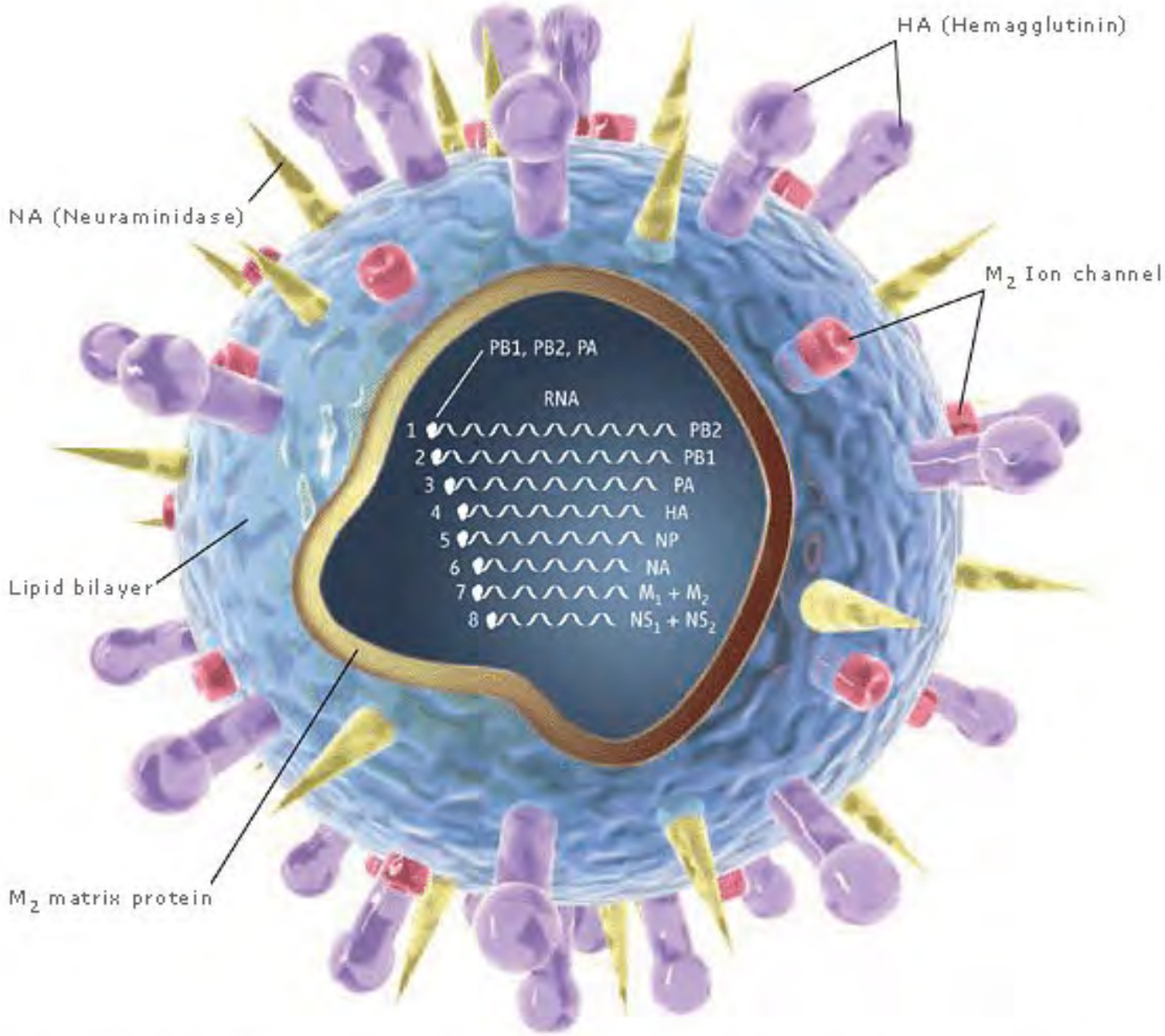


Illustration: Chris Bickel/Science. Reprinted with permission from Science Vol. 312, page 380 (21 April 2006) © 2006 by AAAS

Seasonal Influenza

- Average 226,000 hospitalizations annually
- Rates higher in older adults
  - 560 influenza-related hospitalizations per 100,000 persons

Fiore, et al. MMWR 58;2009

Seasonal Influenza

- 36,000 deaths annually from influenza
- 90% of deaths occur in elderly >/= 65 yrs
- Risk is greatest in oldest old (>/= 85 yrs)
  - 16 times more likely than those 65-84

Fiore, et al. MMWR 58;2009

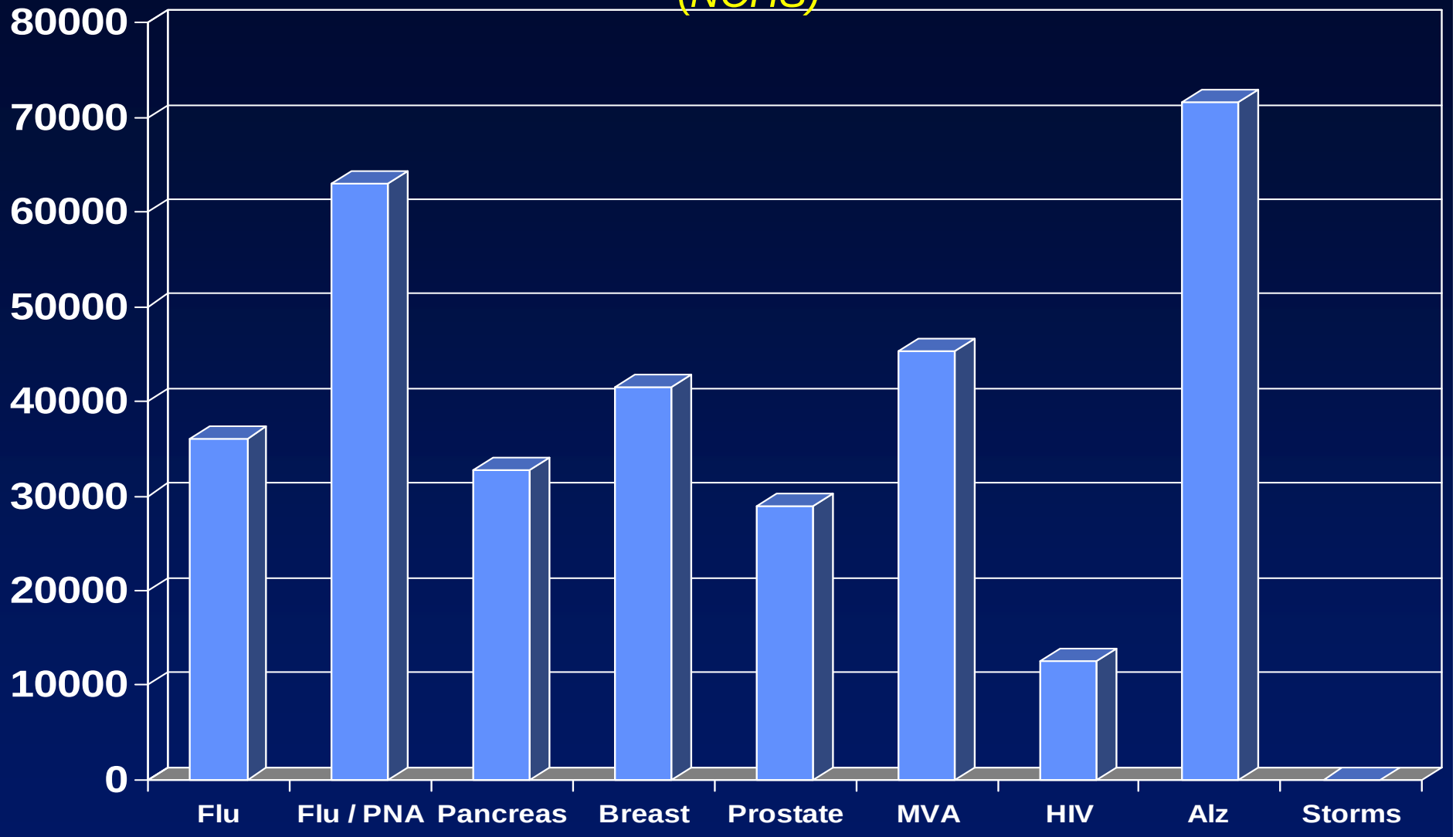
Seasonal Influenza

- Nursing facility outbreaks common
  - Close contact
  - Frail population
  - Reduced immune response to vaccination
- Nursing facility outbreaks often unrecognized
  - Adequate testing not available
  - Disease masquerades as anything else
- Case fatality rates
  - 5 - 55%

Fiore, et al. MMWR 58;2009

Causes of Death 2005

(NCHS)



Pneumococcal Pneumonia

Pneumonia

- 6th leading cause of death in the US (2005, NCHS)

- Numerous causes
  - Bacterial
  - Viral
  - Fungal
  - Parasites

Pneumonia

- Significant Issue in LTC
  - Frequent
    - Incidence 1/1000 patient days
    - 10 times more frequent than community acquired pneumonia
  - Leading cause of death among LTC residents
    - Mortality increases with age > greater 65 yrs
    - Mortality rate is 6-28%
  - Frequent cause of hospital transfers

Pneumococcal pneumonia

- Pneumococcal pneumonia one of the most common bacterial types
  - 25-35% of community acquired pneumonia
  - 0-39% of nursing home acquired pneumonia

- Associated with NF outbreaks
  - 2001 outbreak in NJ *(MMWR 2001;50(33):707-10)*
    - 114 beds with 200 staff
    - 9 cases among residents
    - 4 deaths
    - 49% vaccinated prior to outbreak
    - None of cases vaccinated

Pneumococcal pneumonia

- Drug resistance a concern
  - Macrolides (erythromycin, zithromycin)
    - 33.2% *(Jenkins, Farrell. EID 15(8);2009)*
  - Penicillins (PCN, ampicillin, amoxicillin)
    - Up to 32% *(Barry. Am J Med 107(1 Sup 1);1999)*
  - Multidrug resistance
    - LTC outbreak *(Nourti, et al. NEJM 338(26);1998)*
    - 13% of residents

Risk Factors for Pneumococcal Pneumonia

- Age > 64 yrs or < 2 yrs
- Immunosuppression
  - Therapy
  - Underlying diseases
    - Cancer
    - HIV
- Transplantation

Semin Respir Crit Care Med 26(6);2005

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Risk Factors for Pneumococcal Pneumonia

- Institutionalization
- Alcoholism
- Male sex
- Smokers

Semin Respir Crit Care Med 26(6);2005

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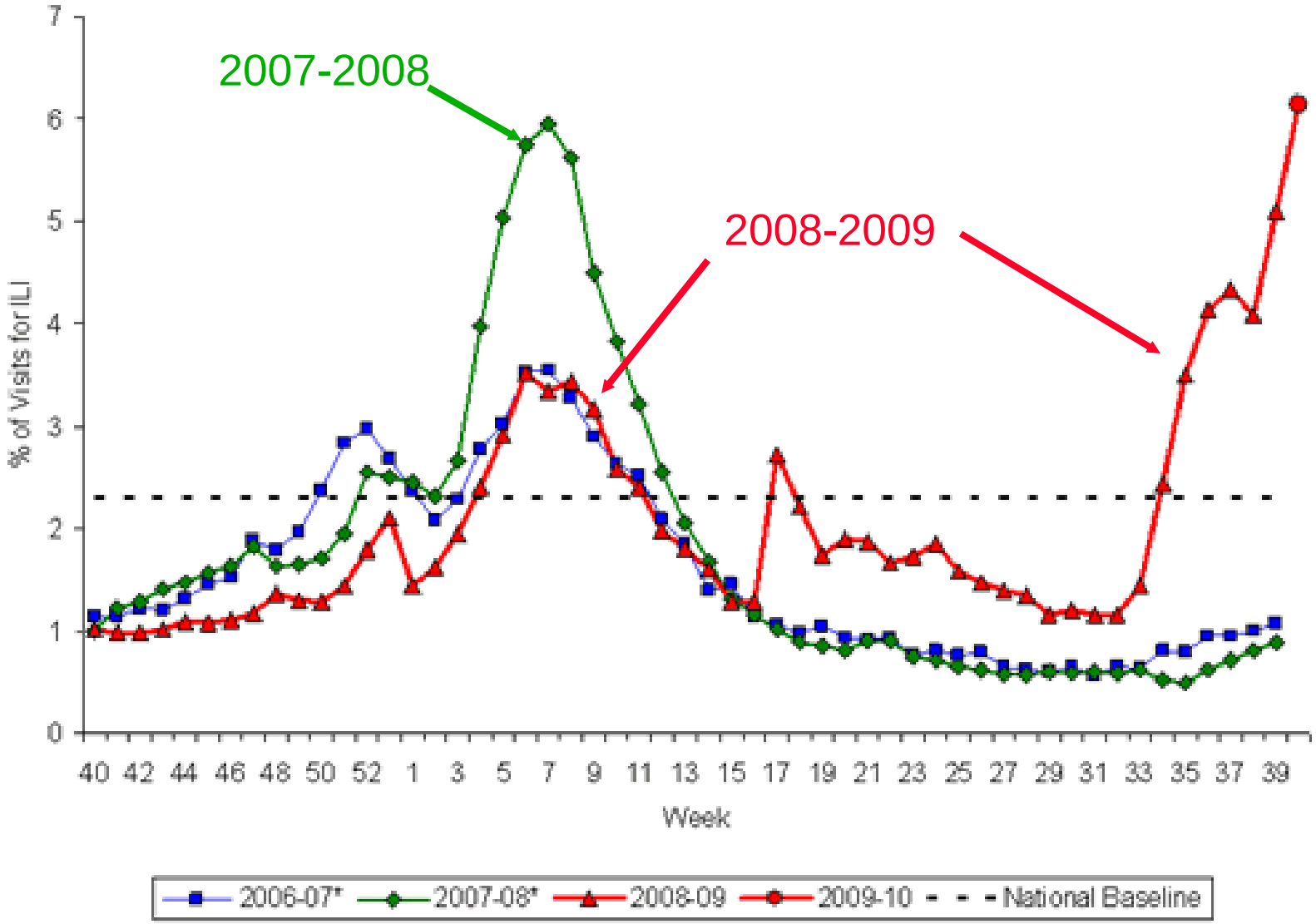
Risk Factors for Pneumococcal Pneumonia

- Chronic Conditions
  - Heart disease
  - Lung disease
  - Sickle cell disease
  - Parkinsons
  - Diabetes
  - Dementia
  - Cirrhosis
  - Kidney disease

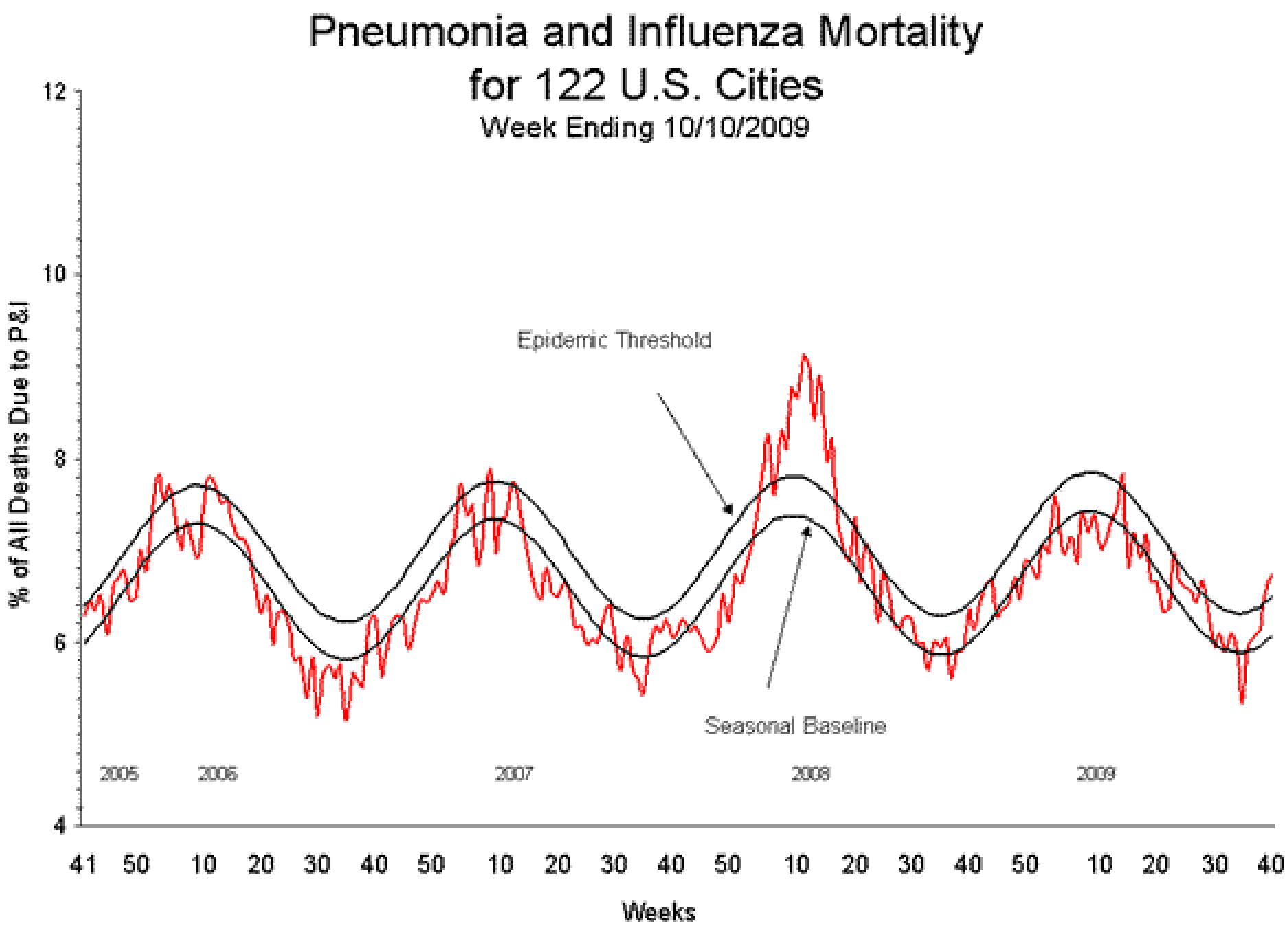
Semin Respir Crit Care Med 26(6);2005

Flu Activity 2009-2010

Percentage of Visits for Influenza-like Illness (ILI) Reported by the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Weekly National Summary, October 1, 2006 - October 10, 2009

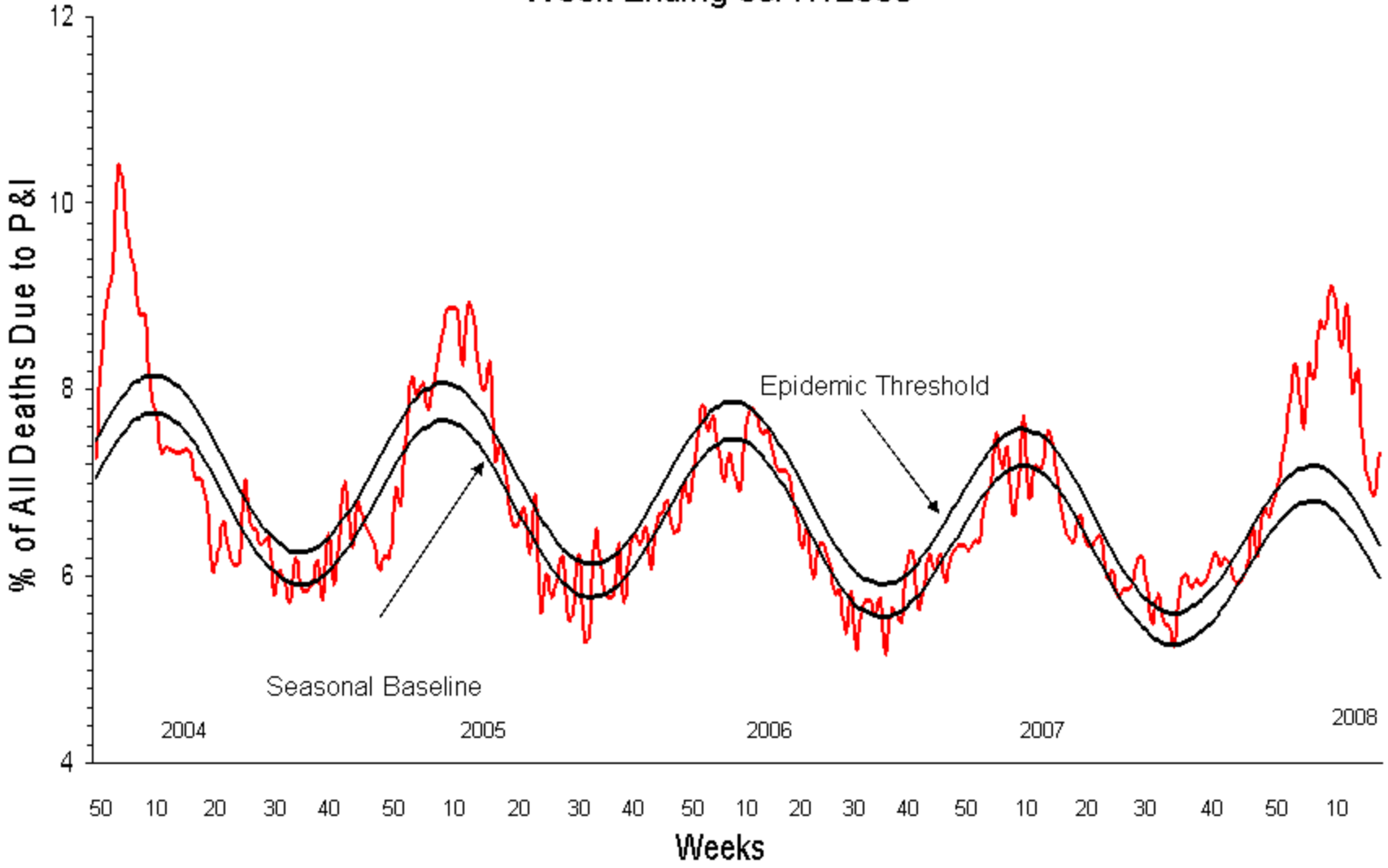


*There was no week 53 during the 2006-07 or 2007-08 influenza seasons, therefore the week 53 data point for those seasons is an average of weeks 52 and 1.

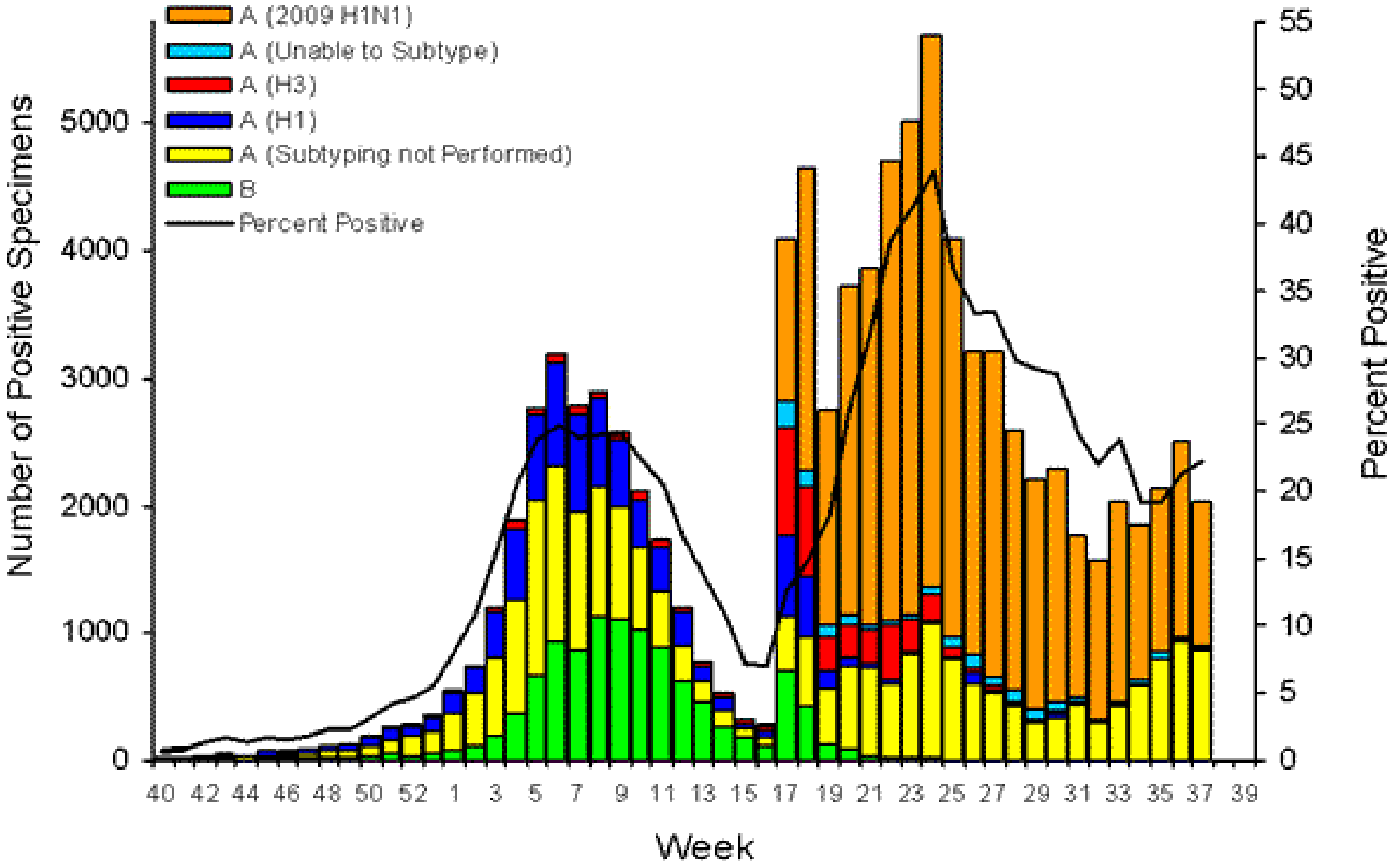

Pneumonia and Influenza Mortality
for 122 U.S. Cities
Week Ending 10/10/2009
% of All Deaths Due to P&I
12
10
8
6
4
Epidemic Threshold
Seasonal Baseline
2005
2006
2007
2008
2009
41 50 10 20 30 40 50 10 20 30 40 50 10 20 30 40 50 10 20 30 40
Weeks

Pneumonia and Influenza Mortality for 122 U.S. Cities

Week Ending 05/17/2008



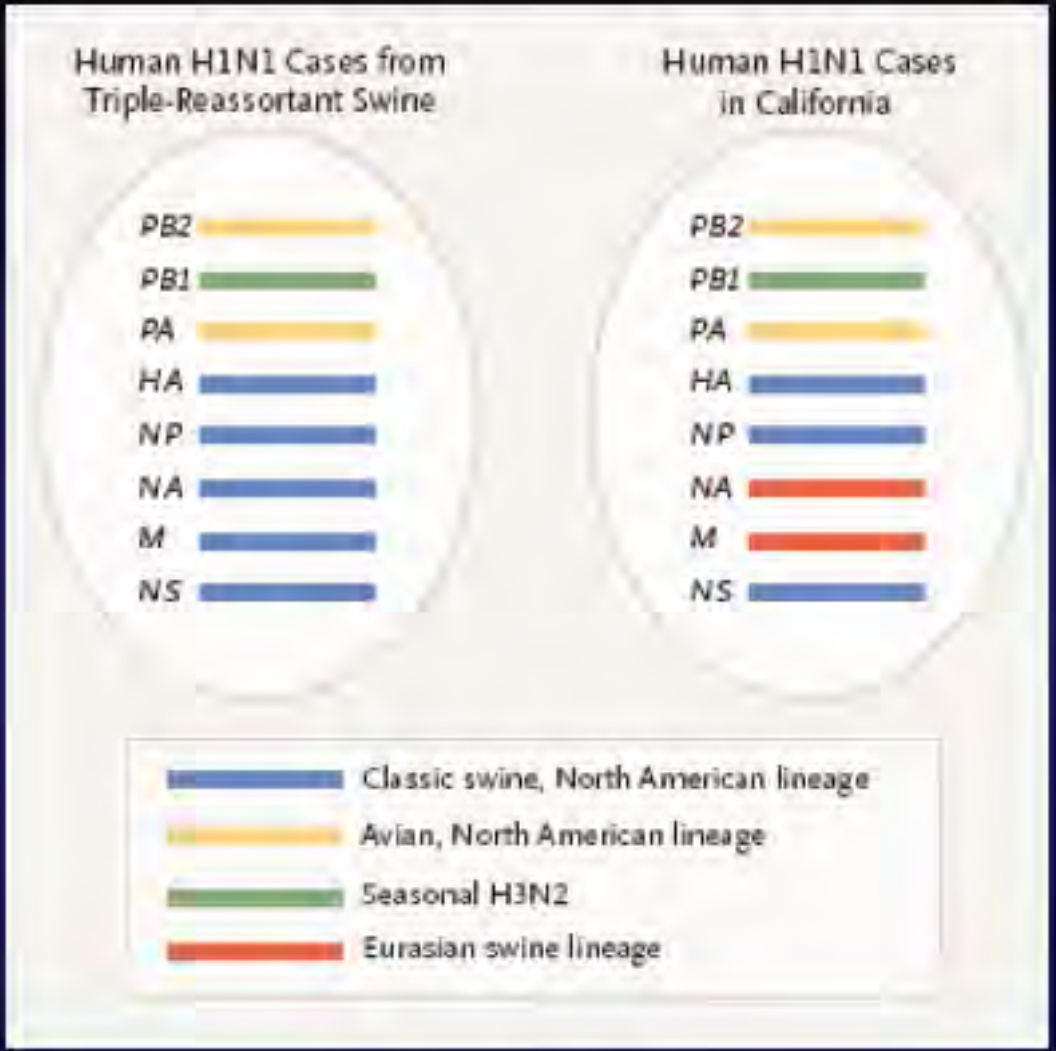
Influenza Positive Tests Reported to CDC by U.S. WHO/NREVSS Collaborating Laboratories, National Summary, 2008-09



Influenza Pandemics				
Year	Name	Strain	Source	Death Toll
1889-1890	Russian	H2N2		1 M
1918-19	Spanish	H1N1	A	50-100 M
1956-58	Asian	H2N2	H, A	2 M
1968-69	Hong Kong	H3N2	H, A	1 M
2009	Swine	H1N1	S,H	TBD

Courtesy Ray Strikas

NIVS June 2009



HA denotes the hemagglutinin gene, M the M protein gene, NA the neuriminidase gene, NP the nucleoprotein gene, NS the nonstructural protein gene, PA the polymerase PA gene, PB1 the polymerase PB1 gene, and PB2 the polymerase PB2 gene

www.pandemicflu.gov www.cdc.gov/flu

National Vaccine Program Office

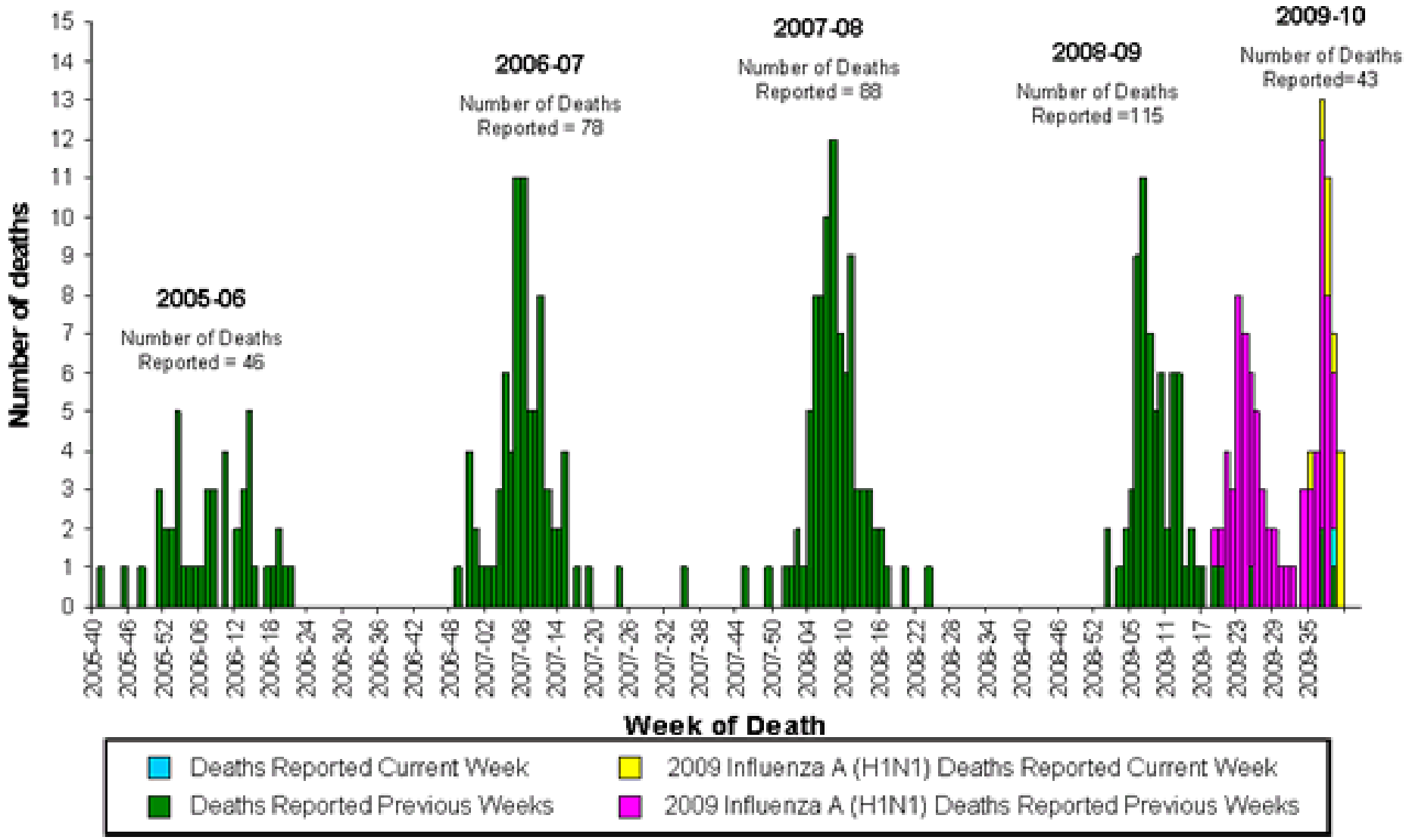
CDC

LUVIEW

ekly Influenza Surveillance Report Prepared by the Influenza Division
ly Influenza Activity Estimates Reported by State and Territorial Epidemiologists*

Week Ending October 10, 2009- Week 40

Number of Influenza-Associated Pediatric Deaths by Week of Death: 2005-06 season to present



"U.S. Army Camp Hospital No. 45, Aix-Les-Bains, France, Influenza Ward No. 1, 1918"

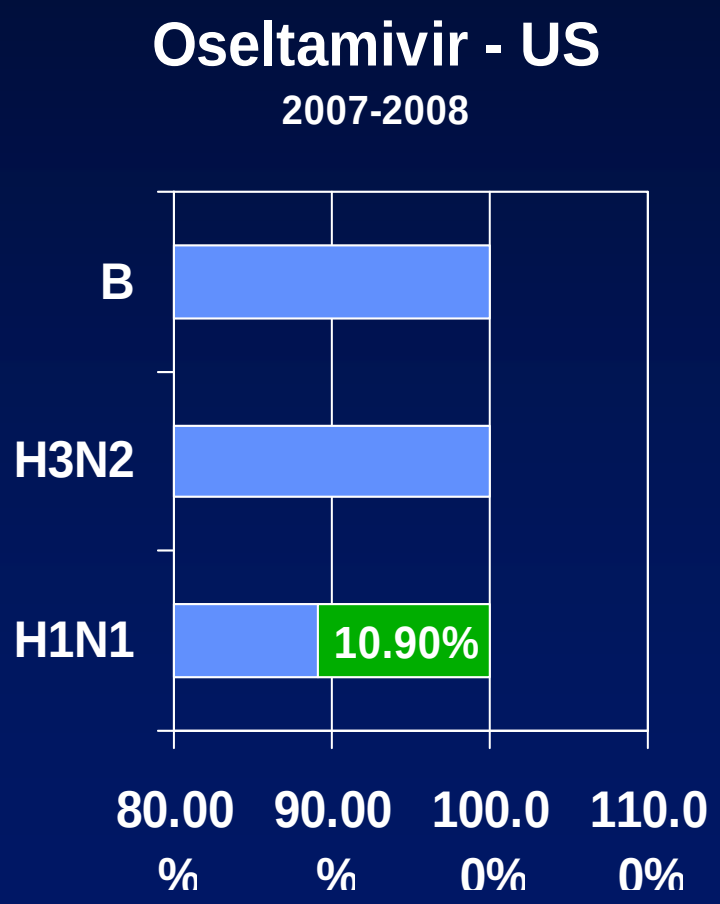
Vaccination

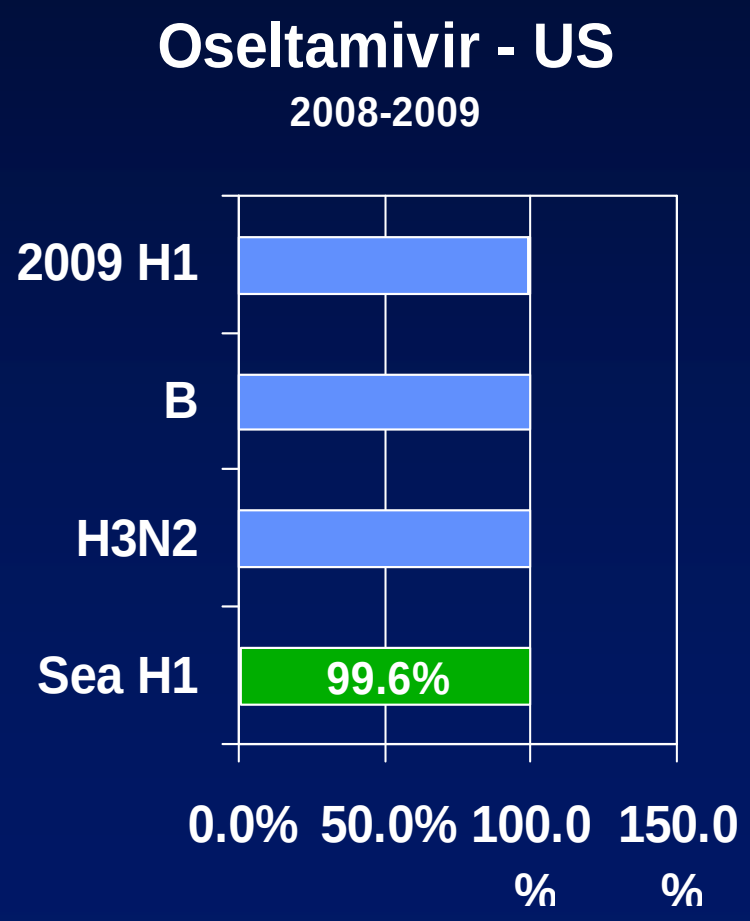
Prevention

- Vaccination remains the most effective means of reducing influenza and pneumococcal disease.
  - Primary prevention
  - Low cost
  - Few side effects
- Antivirals, while useful, have major limits to their impact
  - Antiviral resistance
  - Cost
  - Side effects
  - Secondary prevention strategy

Antiviral Resistance

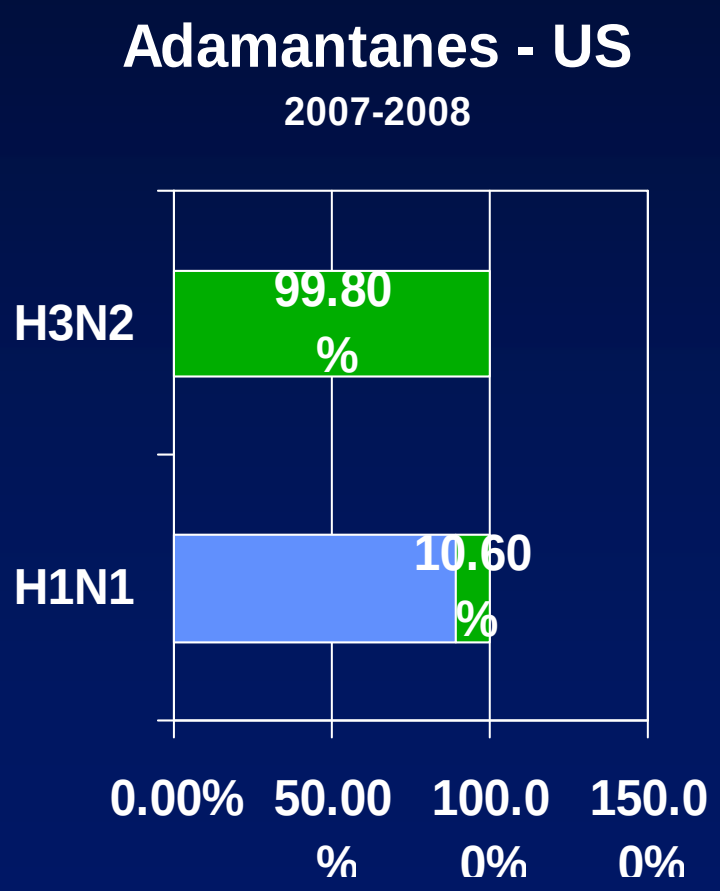
Green = Resistant

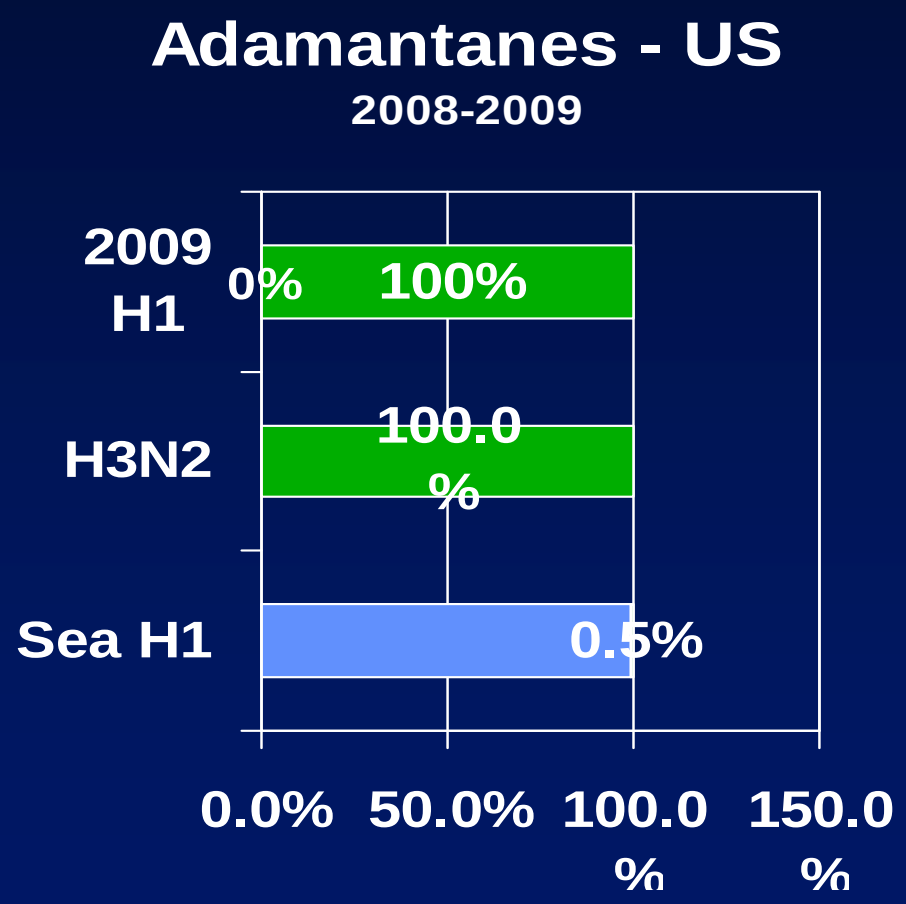




Antiviral Resistance

Green = Resistant





What if the vaccine doesn't match what's out there?

Within-Season Estimate of the Effectiveness of TIV Marshfield Wisconsin 2007-2008

MMWR 2008;57(15):393-398.

- Study of the effectiveness of the mismatched 2007-08 vaccine

- Patients with respiratory illness
- Jan 21, 2008 – March 28, 2008

- *Vaccine still provided some level of protection*
  - Despite mismatch with circulating strains

Within-Season Estimate of the Effectiveness of TIV Marshfield Wisconsin 2007-2008

MMWR 2008;57(15):393-398.

TABLE 1. Number and percentage of patients with medically attended acute respiratory illness who were enrolled* in a study and tested for influenza, by selected characteristics — Marshfield, Wisconsin, January 21–February 8, 2008

	Patients testing positive for influenza† (n = 191)		Patients testing negative for influenza (n = 425)		Total (N = 616)	
Characteristic	**No.**	**(%)**	**No.**	**(%)**	**No.**	**(%)**
Sex						
Male	94	(49)	188	(44)	282	(46)
Female	97	(51)	237	(56)	334	(54)
Age group						
6–59 mos	23	(12)	148	(35)	171	(28)
5–49 yrs	139	(73)	219	(52)	358	(58)
50–64 yrs	24	(13)	39	(9)	63	(10)
≥65 yrs	5	(3)	19	(4)	24	(4)
Existing chronic medical condition§						
Yes	17	(9)	62	(15)	79	(13)

* Patients who reported having feverishness, chills, or cough for <8 days were eligible for enrollment.
† By reverse transcription–polymerase chain reaction.
§ Defined as existing if the patient had two or more health-care visits with relevant *International Classification of Diseases, Ninth Revision, Clinical Modification* diagnosis codes during 2007. Diagnosis codes were based on Advisory Committee on Immunization Practices (ACIP) criteria, including cardiac, pulmonary, renal, neurological/musculoskeletal, metabolic, cerebrovascular, immunosuppressive, circulatory system, and liver disorders; diabetes mellitus; and malignancies.

Within-Season Estimate of the Effectiveness of TIV Marshfield Wisconsin 2007-2008

MMWR 2008;57(15):393-398.

TABLE 2. Interim vaccine effectiveness (VE) estimates among patients with medically attended acute respiratory illness who were enrolled* in a study and tested for influenza, by influenza type and selected categories — Marshfield, Wisconsin, January 21–February 8, 2008

	Patients testing positive for influenza† (n = 191)		Patients testing negative for influenza (n = 425)		Adjusted VE	
Influenza type/Patient group	Vaccinated§	Not vaccinated	Vaccinated	Not vaccinated	%	(95% CI¶)
All influenza						
All enrollees	36	155	165	260	44**	(11–65)
ACIP recommended††	21	39	120	114	34	(-31–67)
Healthy persons aged 5–49 yrs§§	15	116	45	146	54**	(12–76)
Influenza A						
All enrollees	22	122	179	293	58**	(28–76)
ACIP recommended	14	28	127	125	49	(-14–77)
Healthy persons aged 5–49 yrs	8	94	52	168	68**	(29–86)
Influenza B						
All enrollees	14	33	187	382	-35	(-172–33)
ACIP recommended	7	11	134	142	-32	(-287–55)
Healthy persons aged 5–49 yrs	7	22	53	240	-33	(-241–48)

* Patients who reported having feverishness, chills, or cough for <8 days were eligible for enrollment.

† By reverse transcription–polymerase chain reaction.

§ Patients were categorized as vaccinated if they had received influenza vaccine ≥14 days before enrollment; in addition, children aged <9 years were categorized as vaccinated if they had received 2 doses of influenza vaccine. Twenty-three children were excluded because they had received only 1 of the 2 recommended doses.

¶ Confidence interval.

** Statistically significant.

†† All children aged 6–59 months, all adults aged ≥50 years, and persons aged 5–49 years with an existing chronic medical condition for whom influenza vaccination is recommended by the Advisory Committee on Immunization Practices (ACIP).

§§ Persons aged 5–49 years with no chronic medical conditions for which ACIP recommends influenza vaccination.

Is Vaccination Really Safe?

Flu Shot Side Effects

- Sore or red arm
  - 12.8 per million doses *(Vaccine 2009;27:2114-2120)*
- Sore, red, or itchy eyes
- **< 1%** develop muscle aches or fever for **one-two** days
  - About 3 per million doses
  - It does **not mean** you have the flu
  - These side effects are more common for people who are receiving the vaccine for the first time
  - Those having the vaccine before are unlikely to have these side effects

Flu Shot
Serious Side Effects Are Rare

- Anaphylaxis (severe allergic reaction)
  - Usually persons allergic to eggs
  - Flu vaccine is grown in eggs
- Dizziness or fainting

Who Should Not Get the Flu Vaccine?

- Anyone with a prior severe allergic reaction
  - Contraindication
- Anyone allergic to any of the vaccine components
  - Contraindication
- Persons who are severely ill may want to wait to receive the vaccine
  - Precaution
- Persons with a past history of GBS should consult with their physician
  - Precaution

Pneumococcal Vaccine Side Effects

- Sore or red arm
  - 1/2 of persons who get the vaccine
- Muscle aches, fever
  - <1%

Who Should Not Get the Pneumococcal Vaccine?

- Anyone with a prior life threatening allergic reaction
  - Contraindication
- Anyone allergic to any of the vaccine components
  - Contraindication
- Persons who are severely ill may want to wait to receive the vaccine
  - Precaution

Frequency of Adverse Reactions to Influenza Vaccine in the Elderly A Randomized, Placebo-Controlled Trial

- Margolis, et al. *JAMA.* 1990;264(9):1139-1141.
- Older adults received either flu shot or placebo
- Followed for 2 weeks then crossover
- No difference in reported side effects between placebo and flu shot

"The flu shot can give me the flu"

Types of Influenza Vaccines

- The flu shot is inactivated
  - Its not alive
- The influenza nasal spray is a live attenuated vaccine
  - Weakened virus
  - May cause a mild runny nose or headache
  - Does not cause the flu

Doesn't the flu shot cause Guillian-Barre Syndrome?

Flu Shot and GBS

- 1976 Swine Flu
  - Halted after reports of GBS following vaccination
    - 45 million doses given
  - No further cases of swine flu
  - Actual risk is not know, but if present was small
- At that time did not have good estimates of GBS in unvaccinated patients
    - GBS occurs even in unvaccinated persons

Flu Shot and GBS

- No evidence of association between GBS and vaccinations in recent studies
  - GBS reports from 1990-2003 declining
  - Immunization rates increasing
- Baseline rate in general population is about 0.6 – 4.0 per million

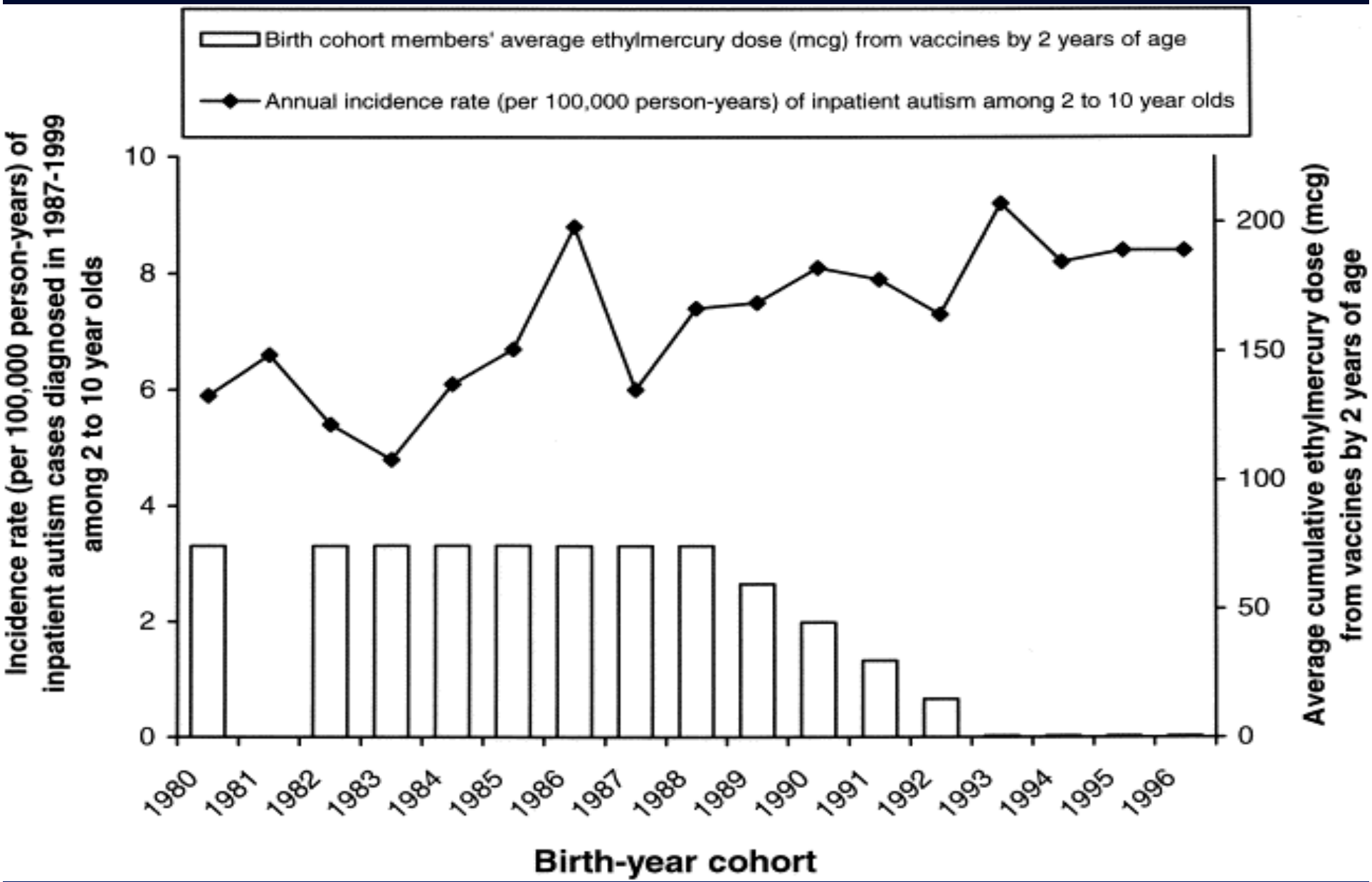
Flu and GBS

- Infections can cause GBS
  - This includes influenza

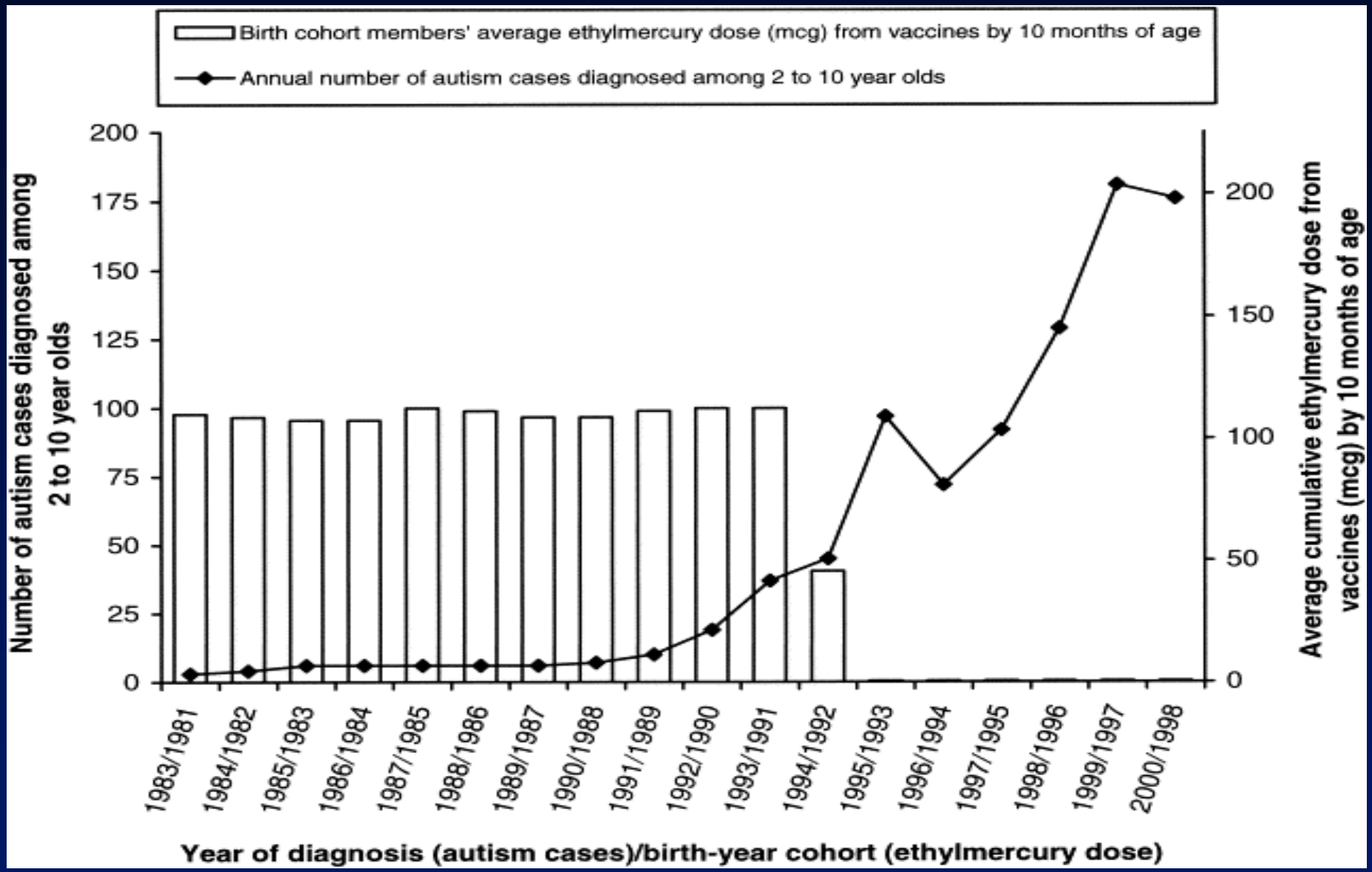
Doesn't the flu shot has mercury in it?

Thimerosal

- Preservative with 49% ethylmercury (organic)
- IOM Report, *Immunization Safety Review: Vaccines and Autism*, 2004 found no evidence between mercury and autism
- http://www.cdc.gov/flu/about/qa/thimerosal.htm
- Mercury in vaccines is being eliminated, yet autism rates are rising



American J Prevent Med 2003;25(2):101-6.



American J Prevent Med 2003;25(2):101-6.

I'm pregnant, should I get the vaccine?

Pregnancy

- Pregnant women are at increased risk of influenza and complications of the flu
  - 25/10,000 women in 3rd trimester during flu season will be hospitalized with flu complications
- May pass on protection to newborns
- No harm to fetus when pregnant women get the flu vaccine
  - Study of 2000 pregnant women showed no adverse fetal events with flu immunization

Pregnancy

- Pregnant women are particularly vulnerable to severe H1N1 cases
  - Over 100 women sent to the ICU nationally through late August
  - 28 of these women have died

Effectiveness of Maternal Influenza Immunization in Mothers and Infants

Zaman K, et al. NEJM 2008;359(15):1555-64.

- Mother's Gift Study
- 316 mothers & infants
  - Mothers randomly received flu or pneumonia vaccine
  - Infants did not get the flu shot
- August 2004 to November 2005
- Infants with respiratory illness
  - Throat swab
  - Influenza A & B EIA (Zstat)

Clinical Effectiveness of Influenza Vaccine in Infants and Mothers

Table 2. Clinical Effectiveness of Influenza Vaccine in Infants and Mothers.*

Variable	Episodes		Clinical Effectiveness (95% CI)†	Risk Difference (95% CI)‡
	Control	Influenza Vaccine		
	no.		%	
Infants				
Person-months	870	881		
Respiratory illness with fever				
Any fever	153	110	28.9 (6.9 to 45.7)	−28.1 (−48.2 to −8.0)§
Temperature >38°C	77	56	28.1 (−4.6 to 50.6)	−13.7 (−28.0 to 0.5)
Diarrheal disease	138	137	1.9 (−30.0 to 26.0)	−1.6 (−22.1 to 18.9)
Clinic visit	92	54	42.0 (18.2 to 58.8)	−24.5 (−39.5 to −9.5)§
Influenza test ordered	79	41	48.7 (25.4 to 64.7)	−24.4 (−38.0 to −10.8)§
Influenza test positive	16	6	62.8 (5.0 to 85.4)	−6.4 (−12.2 to −0.5)§
Mothers				
Person-months	1076	1089		
Respiratory illness with fever				
Any fever	77	50	35.8 (3.7 to 57.2)	−14.2 (−25.5 to −2.9)§
Temperature >38°C	33	19	43.1 (−9.0 to 70.3)	−7.3 (−14.5 to −0.1)§
Diarrheal disease	60	49	19.3 (−24.6 to 47.8)	−5.9 (−16.4 to 4.5)
Clinic visit	25	19	24.9 (−43.9 to 60.8)	−3.2 (−9.8 to 3.4)

* A total of 300 mothers were followed from 2 weeks after antenatal immunization to delivery, and 316 were followed from delivery until their infants were 24 weeks of age. For case definitions, see the Supplementary Appendix.

† Clinical effectiveness was calculated according to the formula (1 − incidence rate ratio) × 100. The incidence rate ratio was calculated with the use of Poisson regression.

‡ The risk difference was calculated as the difference in the incidence of influenza per 100 subjects at 6 months among infants and mothers in the influenza-vaccine group, as compared with those in the control group, according to the formula ([episodes in influenza group/person/day] × 168 × 100) − ([episodes in control group/person/day] × 168 × 100).

§ $P<0.05$.

Zaman K et al. N Engl J Med 2008;359:1555-1564

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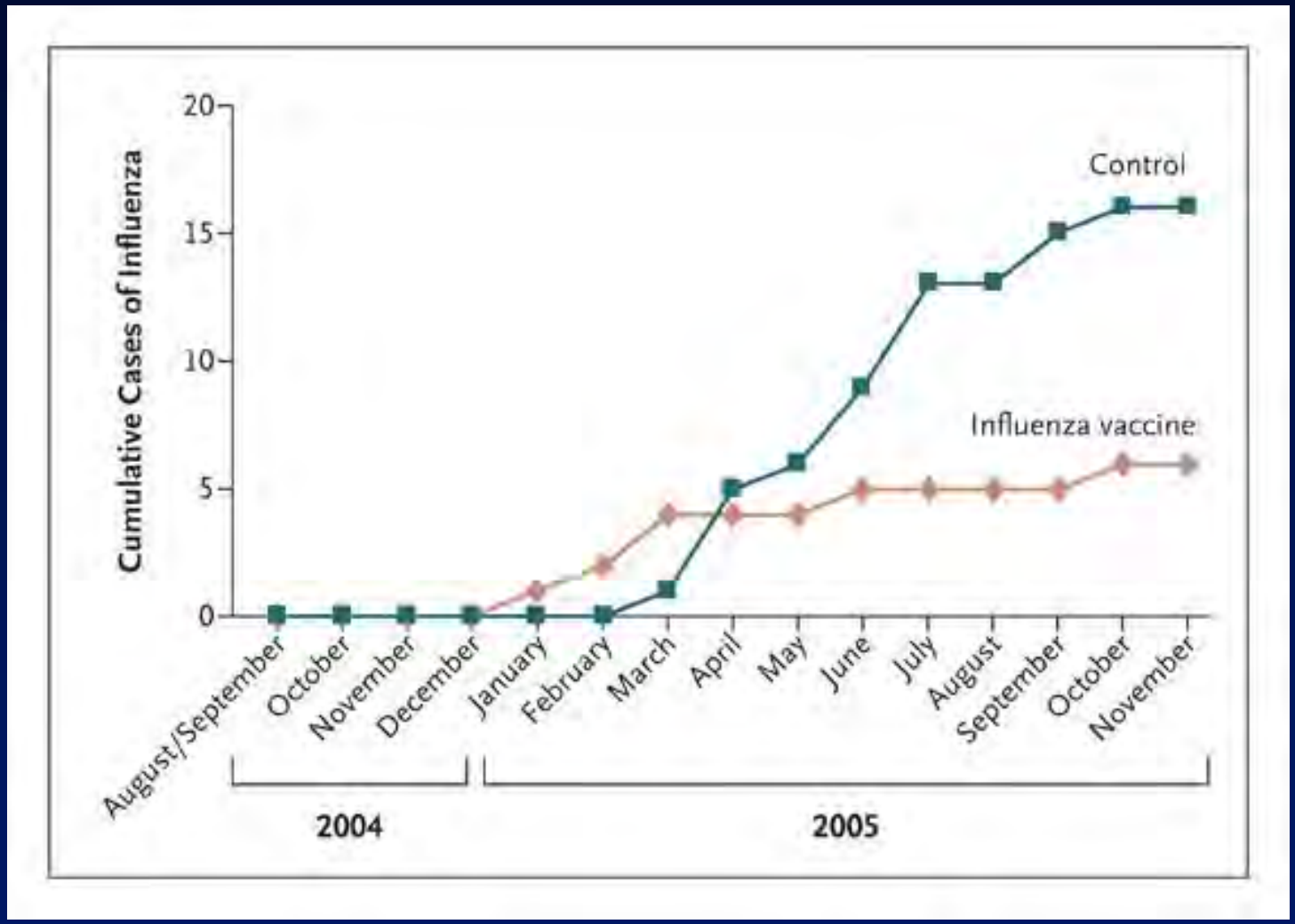
Cumulative Cases of Laboratory-Proven Influenza in Infants Whose Mothers Received Influenza Vaccine, as Compared with Control Subjects



Zaman K et al. N Engl J Med 2008;359:1555-1564

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Conclusion

Zaman K, et al. NEJM 2008;359(15):1555-64.

- Flu vaccine (TIV) reduced proven influenza illness by 63% in infants up to 6 months of age
- Flu vaccine reduced febrile respiratory illnesses in mothers & infants by about a third
- Maternal flu vaccination is a strategy with substantial benefits for both mothers & infants

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Who should get the 2009 H1N1 vaccine?

Pandemic Vaccine – Who?

- Pregnant women
- Household contacts of children under 6 months
- Persons 6 months to 24 years
- Adults under 65 with medical conditions
- Healthcare workers & EMS personnel

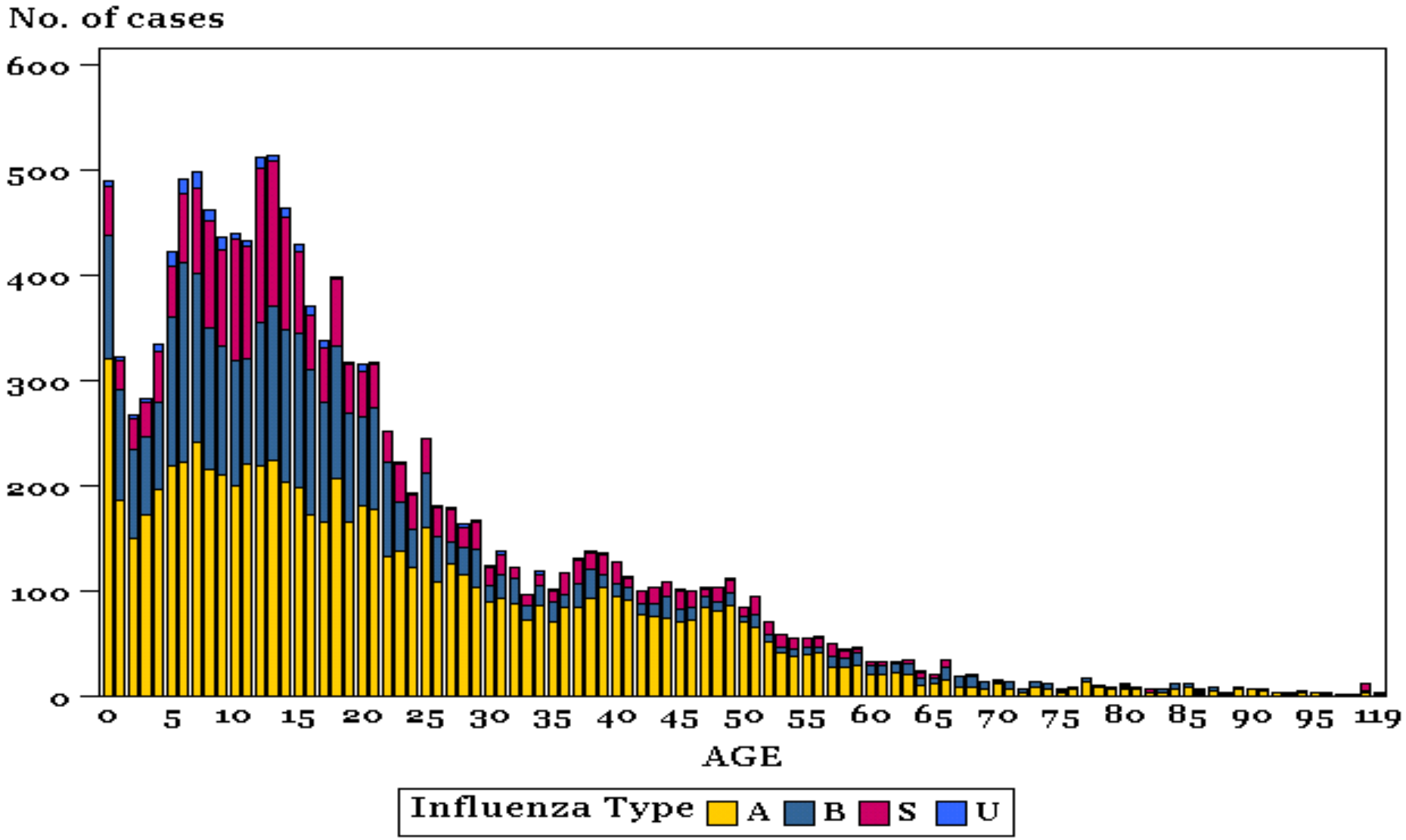


Figure 10: Total number of flu cases (all types) reported to PA NEDSS by flu type and age during the 2008-09 flu season, as of September 19, 2009 (# 14, 233)

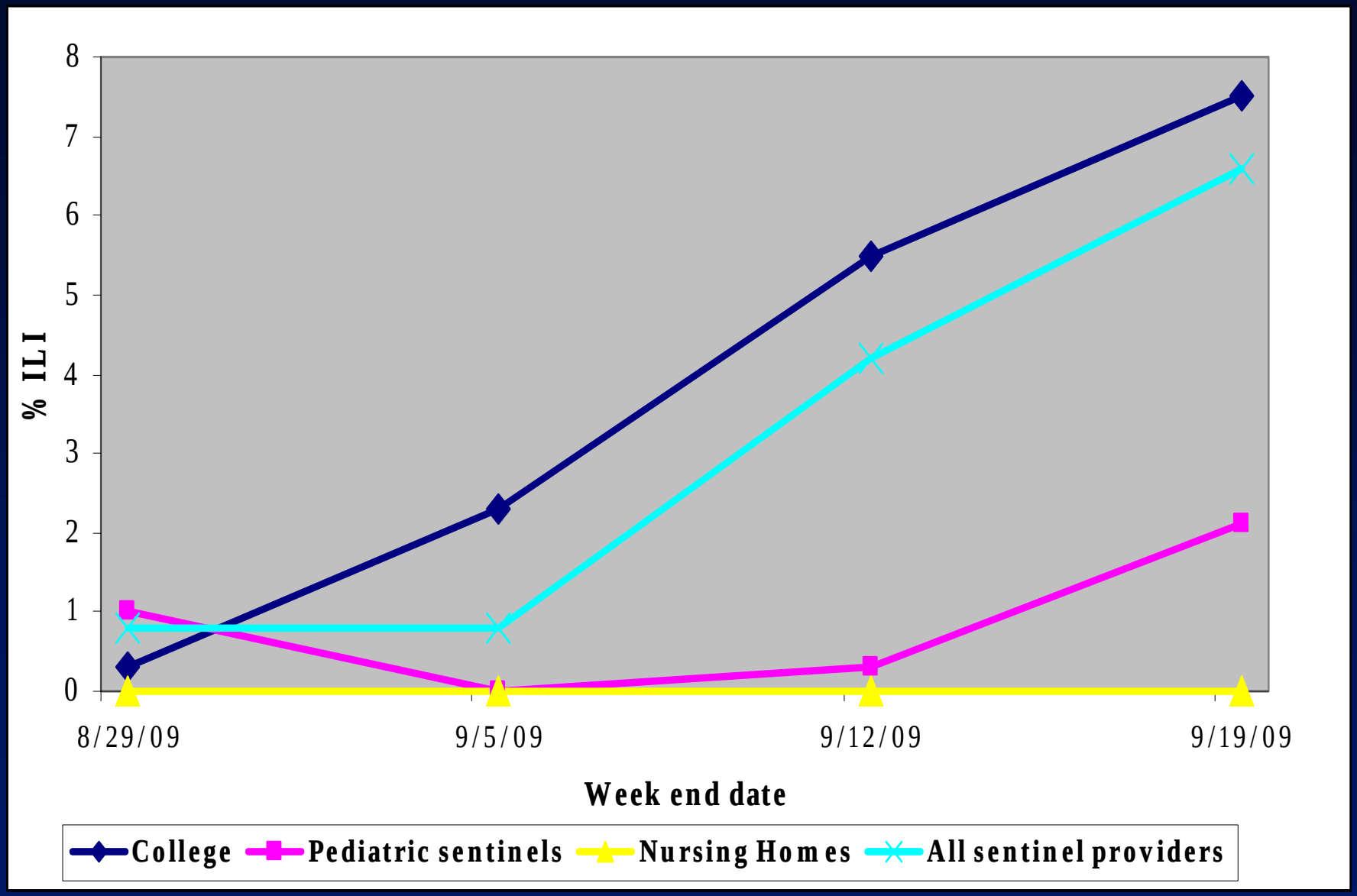


Figure 8: Levels of ILI reported by PA Sentinel Providers 8/29/09 to 9/19/09

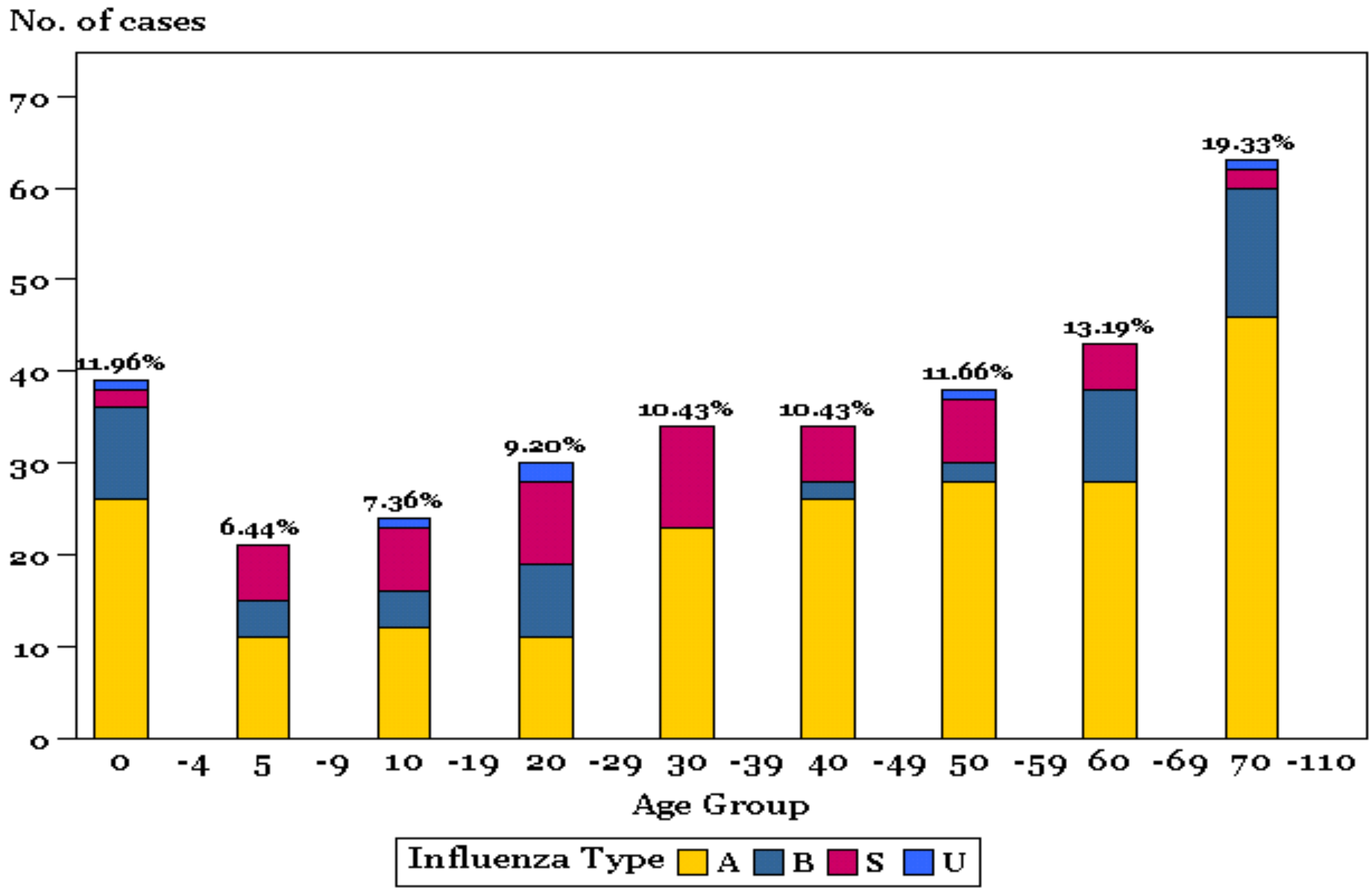


Figure 7: Proportion of Influenza hospitalizations by age group and flu type, as of August 8 2009 (N=319)

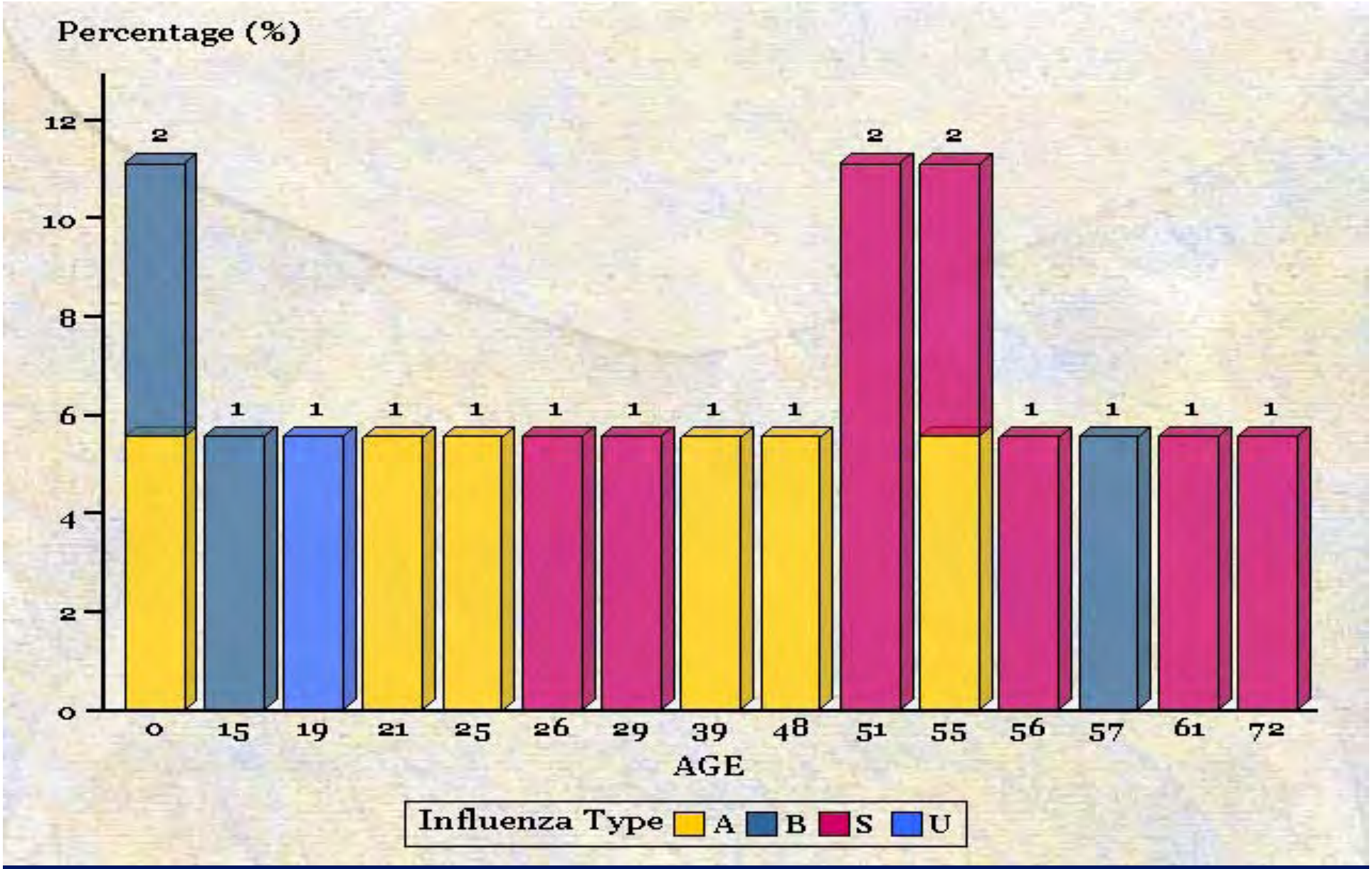


Figure 9: Influenza-associated deaths reported to PA NEDSS by age group and flu type, as of August 8, 2009 (N=21)

Under siege by the Spanish flu epidemic of 1918, nurses in Lawrence, Massachusetts, treat patients in an outdoor hospital.

Influenza Vaccination Goals
Healthy People 2010

- Institutionalized Residents
  - 90 %
- Healthcare Workers
  - 60%

Pneumococcal Vaccination Goals
Healthy People 2010

- Institutionalized Residents
  - 90 %

F334 Influenza & Pneumococcal Immunizations (483.25(n))

(1) The facility must develop policies and procedures that ensure that

- (i) Before offering the influenza immunization, each resident, or the resident's legal representative receives education regarding benefits and potential side effects of the immunization
- (ii) Each resident is offered an influenza immunization October 1 through March 31 annually, unless the immunization is medically contraindicated or the resident has already been immunized during this time period

F334 Influenza & Pneumococcal Immunizations (483.25(n))

(1) (continued)

(iii) The resident or the resident's legal representative has the opportunity to refuse immunization

(iv) The resident's medical record includes documentation that indicates at a minimum the following

(A) That the resident or resident's legal representative was provided education regarding the benefits and potential side effects of influenza immunization

(B) That the resident either received the influenza immunization or did not receive the influenza immunization due to a medical contraindications or refusal

F334 Influenza & Pneumococcal Immunizations (483.25(n))

(2)The facility must develop policies and procedures that ensure that

(i) Before offering the pneumococcal immunization, each resident, or the resident's legal representative receives education regarding benefits and potential side effects of the immunization

(ii) Each resident is offered a pneumococcal immunization, unless the immunization is medically contraindicated or the resident has already been immunized

F334 Influenza & Pneumococcal Immunizations (483.25(n))

(2) (continued)

(iii) The resident or the resident's legal representative has the opportunity to refuse immunization

(iv) The resident's medical record includes documentation that indicates at a minimum the following

(A) That the resident or resident's legal representative was provided education regarding the benefits and potential side effects of pneumococcal immunization

(B) That the resident either received the pneumococcal immunization or did not receive the pneumococcal immunization due to a medical contraindications or refusal

F334 Influenza & Pneumococcal Immunizations (483.25(n))

(2) (continued)

(v) As an alternative, based on an assessment and practitioner recommendation, a second pneumococcal immunization may be given after 5 years following the first pneumococcal immunization, unless medically contraindicated or the resident or the resident's legal representative refuses the second immunization.

Intent

- Minimize the risk of residents acquiring, transmitting, or experiencing complications from influenza and pneumococcal pneumonia by assuring that each resident:
  - Is informed about the benefits and risks of immunizations
  - Has the opportunity to receive, unless medical contraindicated or refused or already immunized the influenza pneumococcal vaccine

Intent

- Assure documentation in the resident's medical record of the information / education provided regarding the benefits and risks of immunization and the administration or the refusal of or medical contraindications to the vaccine.

Definitions

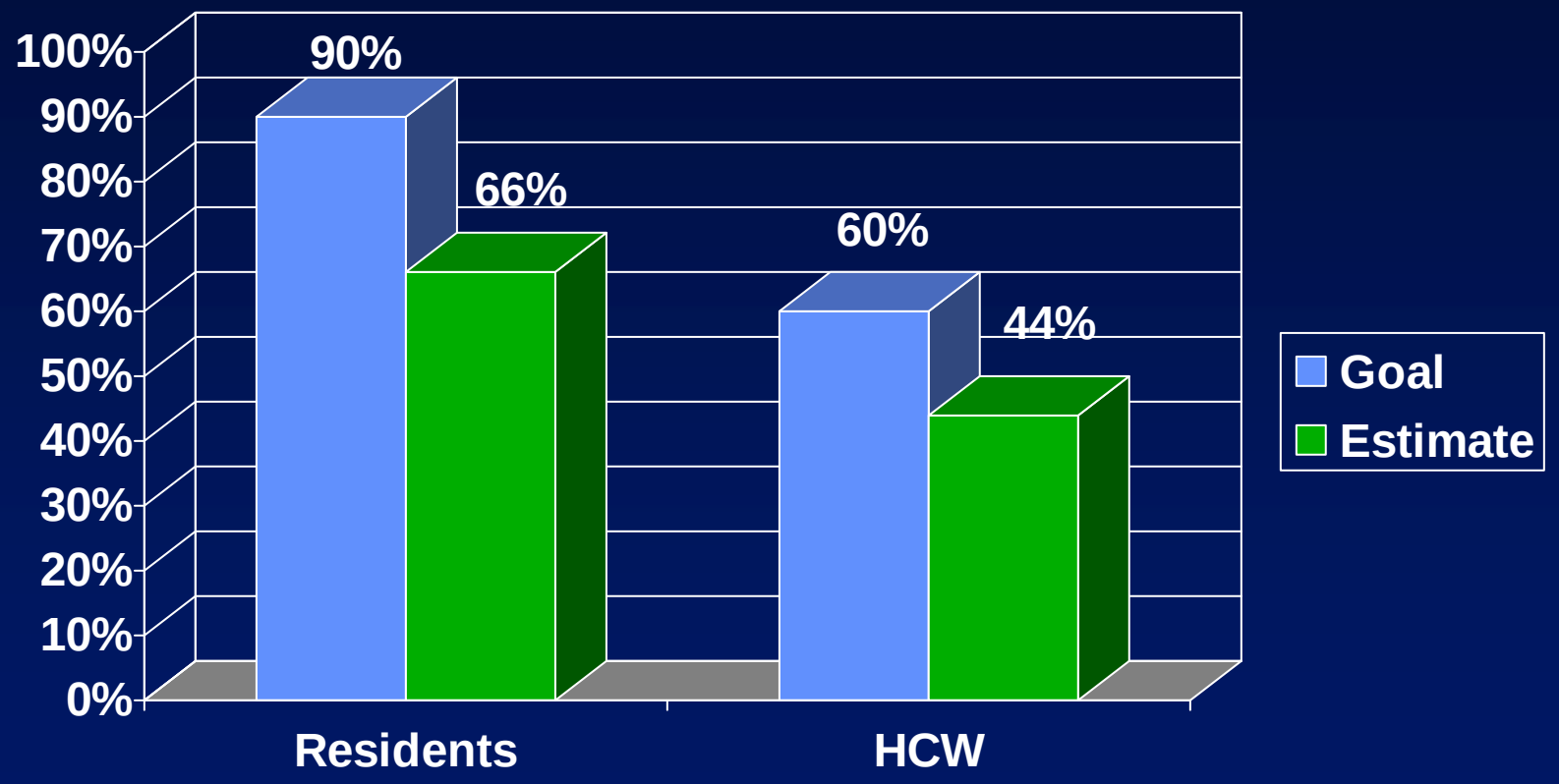
- Medical Contraindication – a condition or risk that precludes the administration of a treatment or intervention because of the substantial probability that harm to the individual may occur.

- Precaution – a condition in a potential recipient that might increase the risk for a serious adverse reaction or that might compromise the vaccine's induction of immunity. The risk of this happening is less than expected with a contraindication

Resident Care Policies

- Physician approved policies for administering vaccine
  - Standing orders programs recommended
- Identification of immunization status
  - Assessment of contraindications
  - Documentation of immunization status
- How information is provided to residents
  - Vaccine Information Statements (VIS)

Influenza Vaccine Coverage Estimates - LTC



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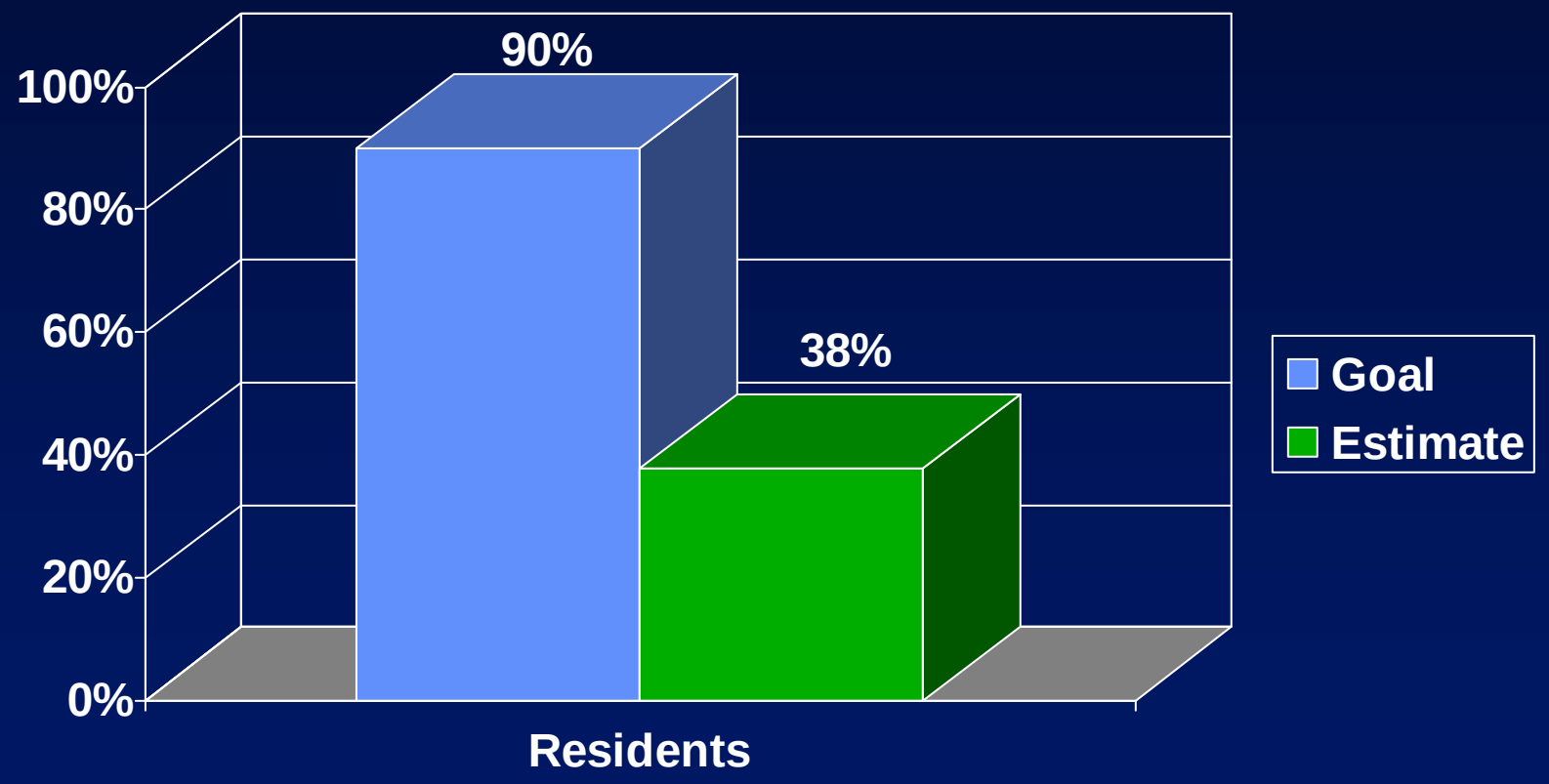
Data Updated 2009
Data 2010

Pneumococcal Vaccine Coverage Estimates - LTC



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Data Updated 2009
Data 2010

Recommended Strategies to Improve Immunization Coverage

Consent

- The resident has the opportunity to accept or decline the immunization
  - Resident is simply offered the vaccine and may say yes or no
  - Can use opt out policies
- Written consent not a licensure requirement
- Written consent not recommended

Comparative Risk Example

Treatment	Type of Serious Risk	Risk
Warfarin	Serious bleeding	0.9-2.7% per year
Flu Shot	Serious Neurologic Disorder	< 4 / million doses

Consent

- No other federal requirement for written informed consent
- Should not be considered a standard of care
- Written consent serves as an impediment to improving immunization rates

Education

- Goal is to understand risks
  - Substantial risk of not getting vaccine
  - Minimal risk with getting vaccine
- Provision of education critical to improve rates
  - Focus area when immunization rates are low

Education

- Education is best kept simple
- Vaccine information statements (VIS) meet requirement

Standing Orders

- 2002 CMS authorized use of standing orders programs
  - Removes requirement for a physician order to receive influenza or pneumococcal vaccines
  - Physician approved policy in place
  - Facility assesses for contraindications, provides education and administers vaccine to eligible residents

Standing Orders

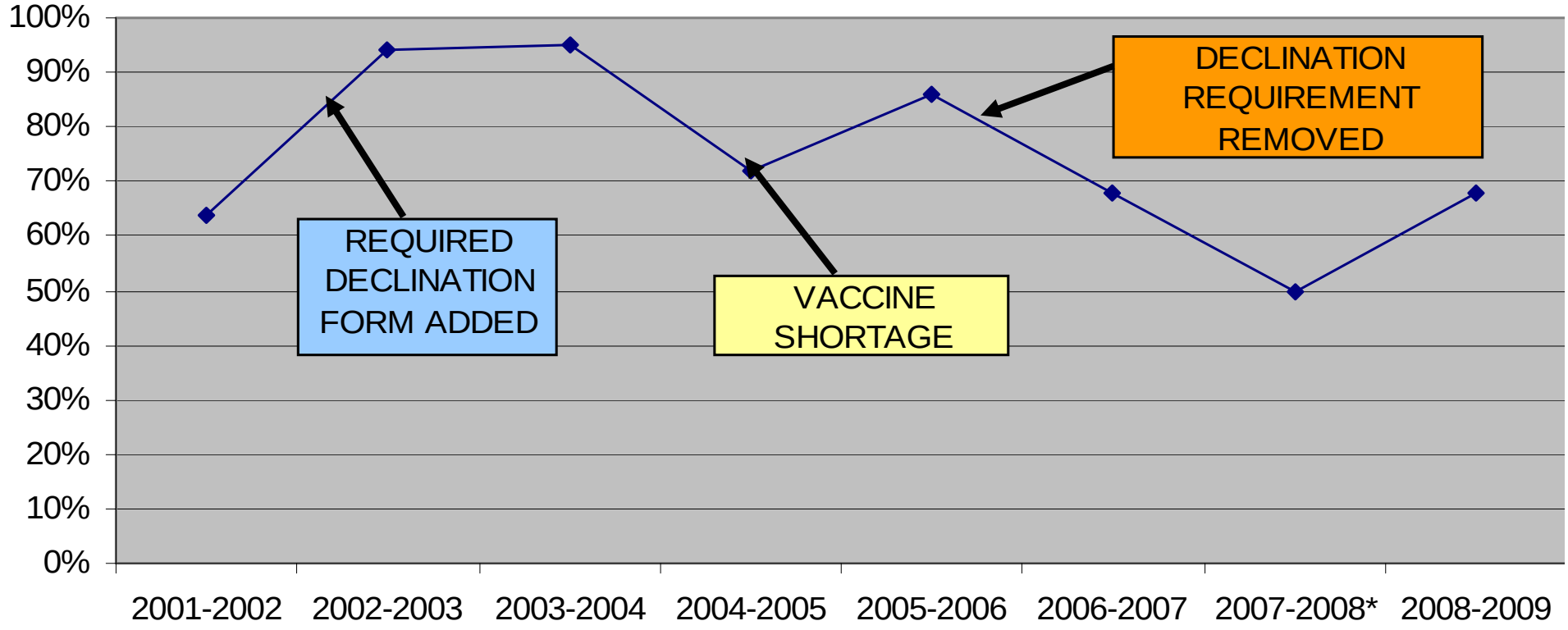
- Standing order programs improve immunization rates by removing a barrier to vaccine receipt – the physician order

- Standing order programs are safe
  - Low risk procedure
  - Greater risk is being unvaccinated

Declination Forms

- Form that individuals sign in order to refuse vaccine
  - Greater risk of harm is being unvaccinated
  - Can be used to ensure refusal is done as part of informed consent
- Particularly helpful with healthcare workers

Impact of Implementation and Removal of an Influenza Declination Form on HCW Immunization Rates



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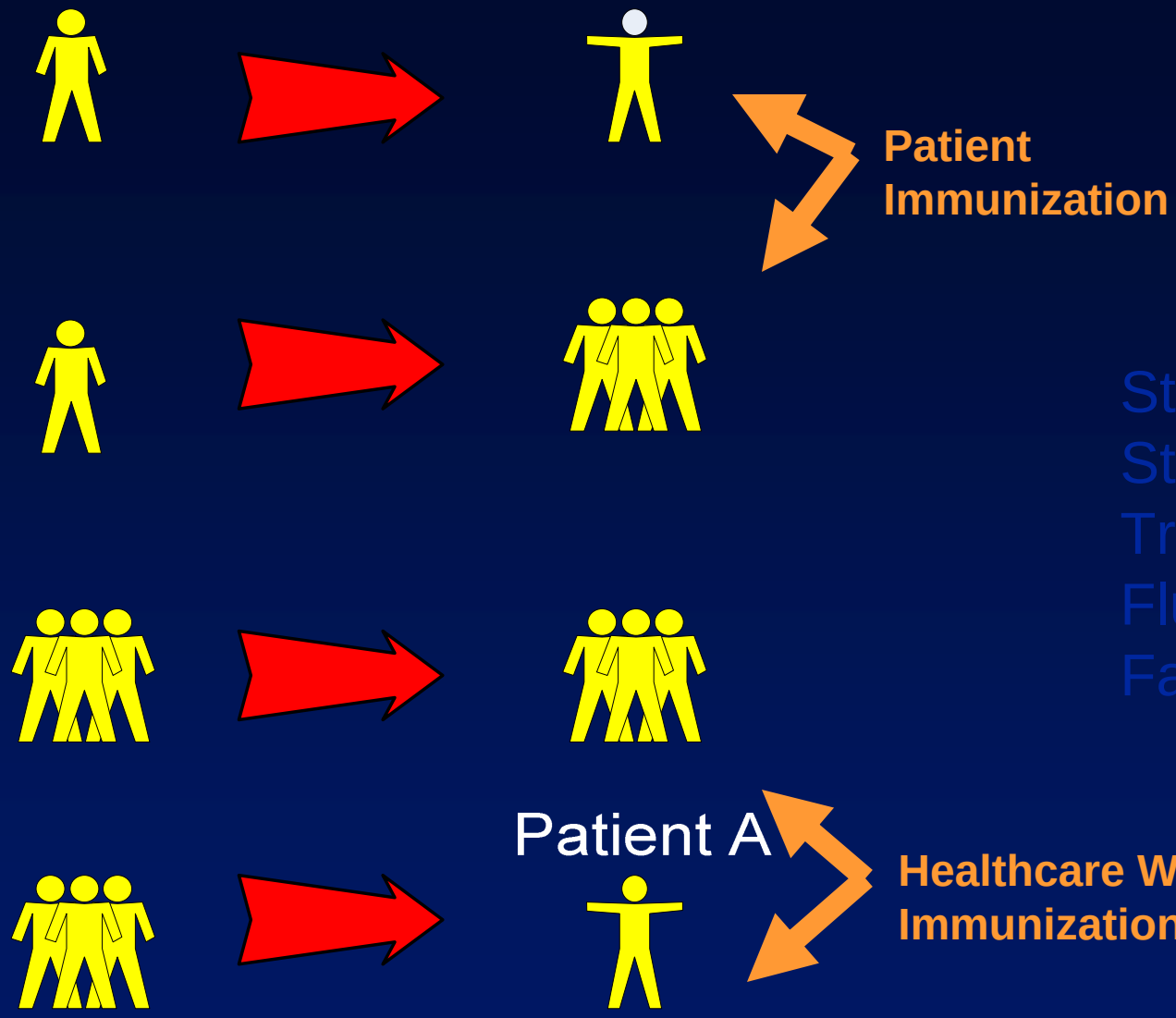
Health workers administer flu and pneumonia inoculations at Embarkation Camp in Genicart, France, during the 1918 flu pandemic.

Future Directions:
Healthcare Worker Immunizations



Strategies to Stop Transmission of Flu in Healthcare Facilities

FLU

Antiviral Agents

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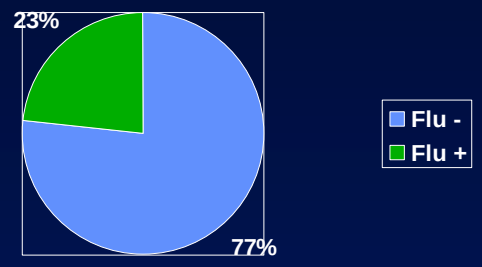
Does HCW Immunization Improve Resident Health?

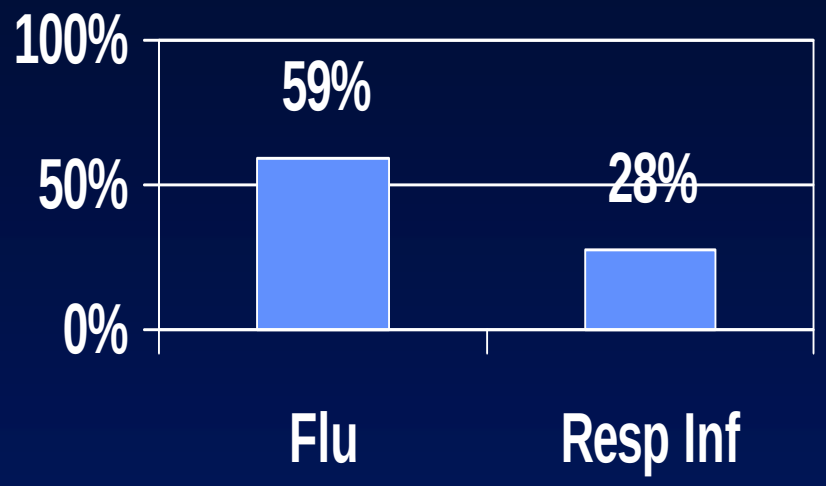
- There are now multiple studies showing benefit to HCW immunizations
- Reduction in influenza like illness
- Resident mortality is reduced
  - 40% reduction in 2 trials

(Potter, J Inf Disease 1997, Carman Lancet 2000, Hayward BMJ 2006, Salgado ICHE 2004)

Study of Influenza Prevalence in HCW

BMJ 1996;313:1241-2.





Percent Staff w / Flu

Percent Flu + Staff w / No Recollection of Infection

- 1993-1994 Glasgow
- 518 subjects, influenza A/B antibodies w/paired serum samples
- Survey questionnaire

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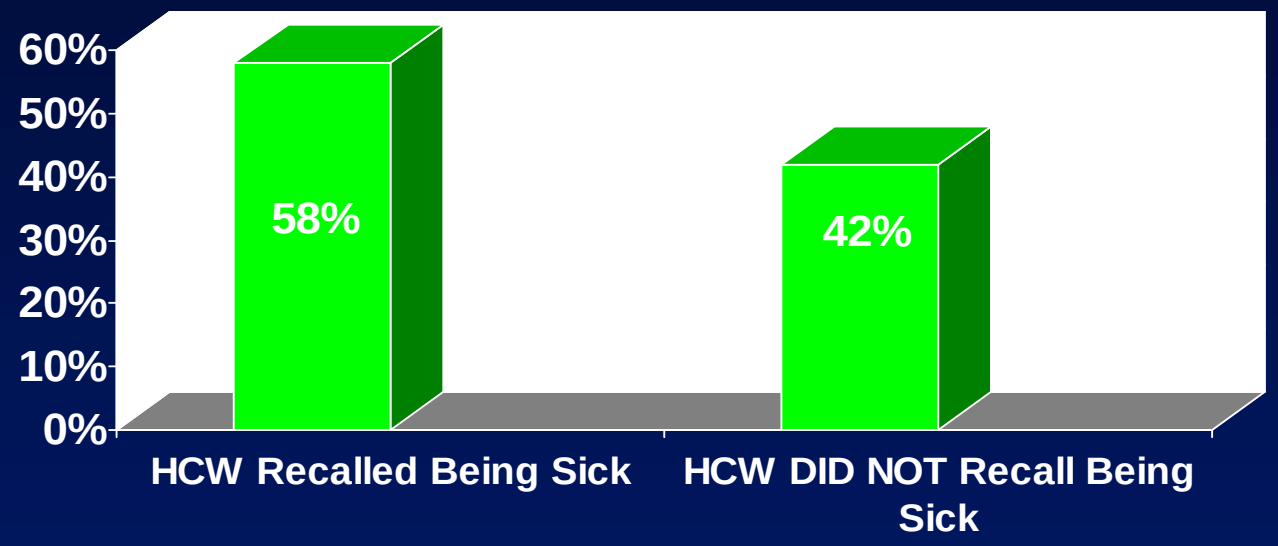
Effectiveness of Influenza Vaccine in Health Care Professionals: A Randomized Trial

Wilde JA, McMillan JA, Serwint J, et al. *JAMA* 1999;281(10):908-913.



- Randomized trial of flu vaccine versus placebo in HCW
- Percentage of asymptomatic carriage in placebo group with flu

Benefits of HCW Immunization

Patient Safety

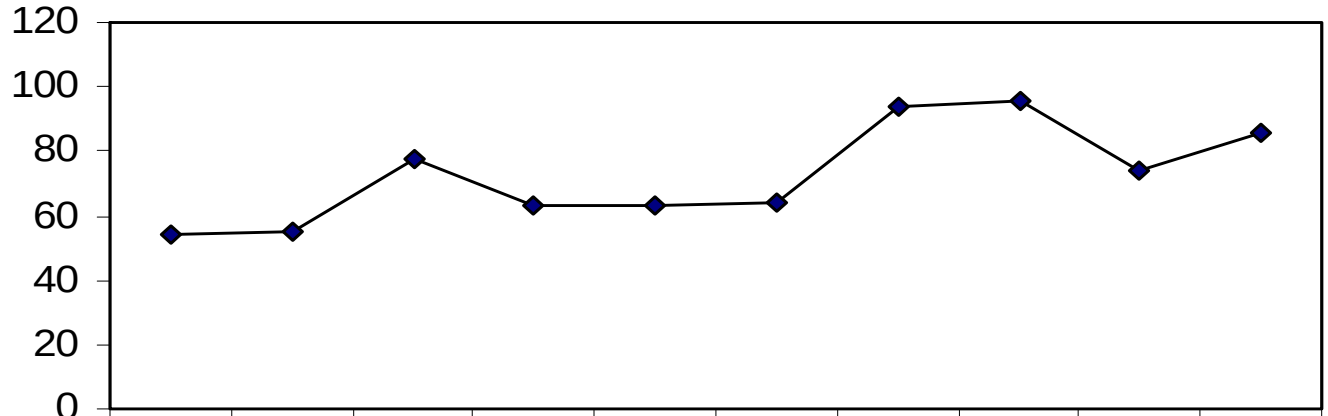
Personal Safety

Future Directions

- HHS supporting mandatory HCW immunization
- JCAHO standard
- Professional organizations supporting HCW immunization

BHWP HCW Rates

Nace DA, Hoffman EL, Resnick NM, Handler SM. Achieving and Sustaining High Rates of Influenza Immunization Among Long-Term Care Staff. *J Am Med Dir Assoc* February 2007; 8(2):128-133.



	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006
Pecentage of Staff Vaccinated	54.03	55.32	77.52	62.79	63.03	64.09	93.67	95.45	73.71	86.02

Flu Season

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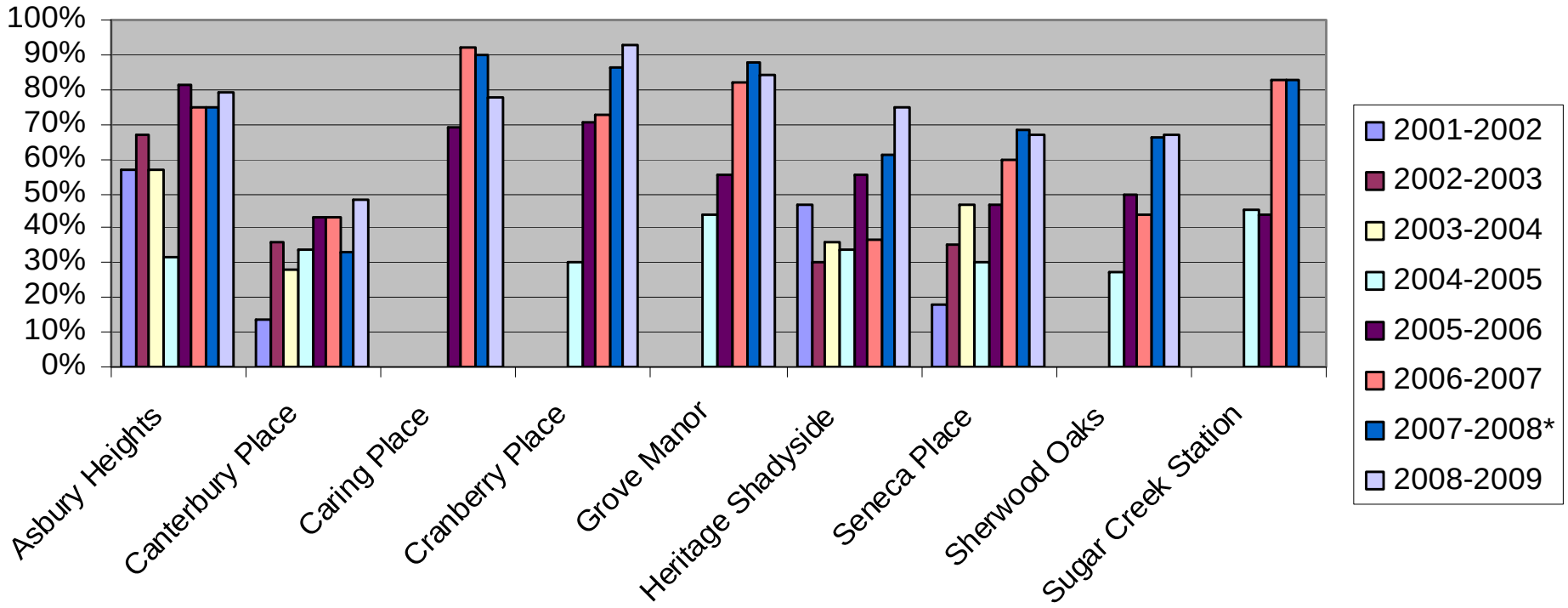
RISE-HCW FLU IMMUNIZATION RATES 2001-2009*

(Baseline Seasons = 2001-2004, RISE Intervention Seasons = 2004-2009)

(*2009 Data as of May 18, 2009)



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1918 flu tissue samples at Maryland's Institute of Pathology

Photograph by Karen Kasmauski

NATIONAL GEOGRAPHIC

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Resources

- Immunizations in the LTC Setting
  - AMDA Toolkit (www.amda.com)
- Society for Healthcare Epidemiology of America (SHEA)
  - www.shea-online.org
- Sand KL, et al. Increasing influenza immunization for long-term care facility staff using quality improvement. *J Am Geriatr Soc.* 2007;55:1741-1747.
- www.hhs.gov/ophs/initiatives/vacctoolkit/index.html

Resources

- Immunization Action Coalition
  - www.Immunize.org
- National Influenza Vaccine Summit
  - www.preventinfluenza.org