Expanding Influenza Vaccination Among Young Children

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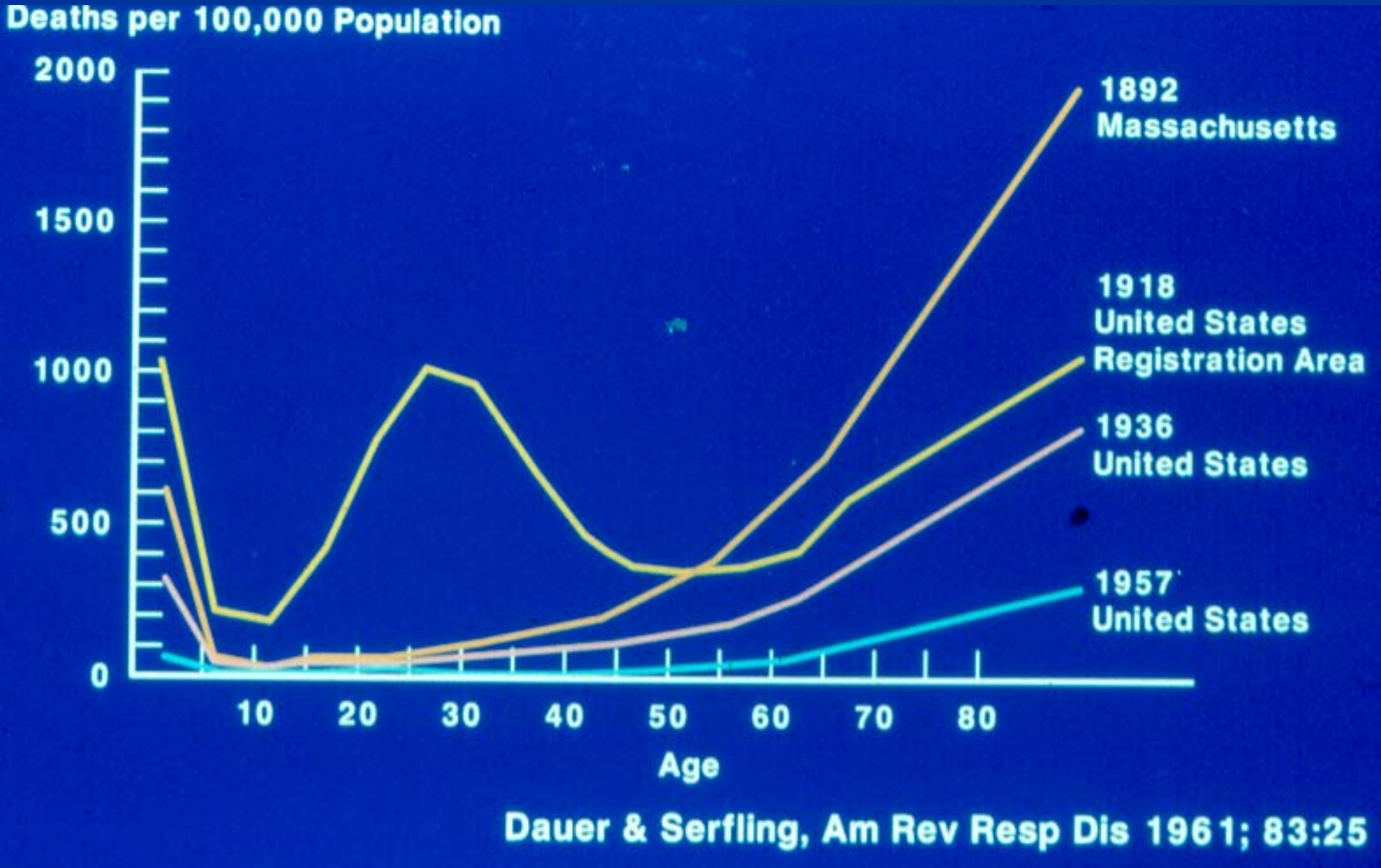
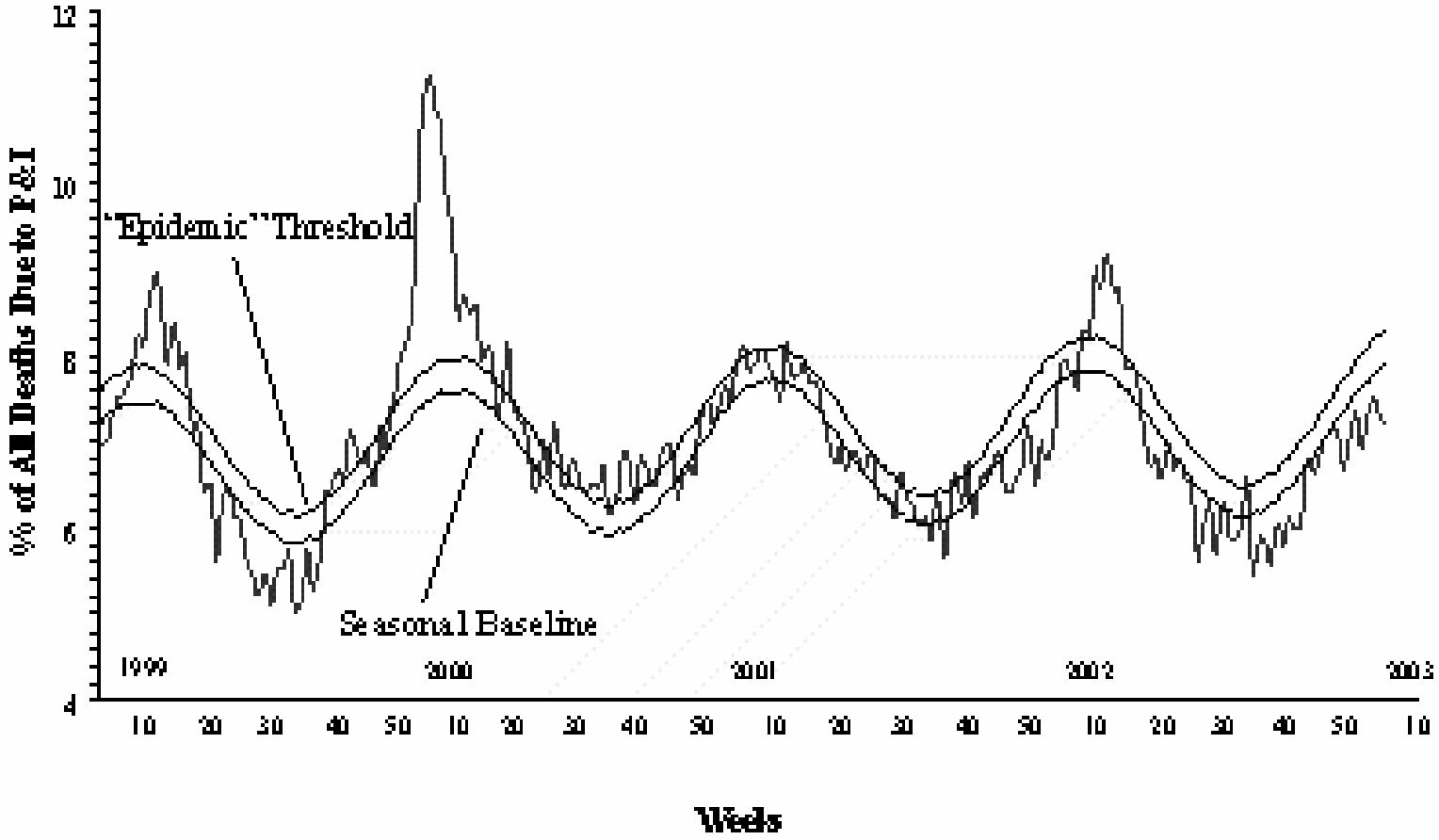
National Immunization Conference
March 18, 2003

20th Century Influenza Pandemics

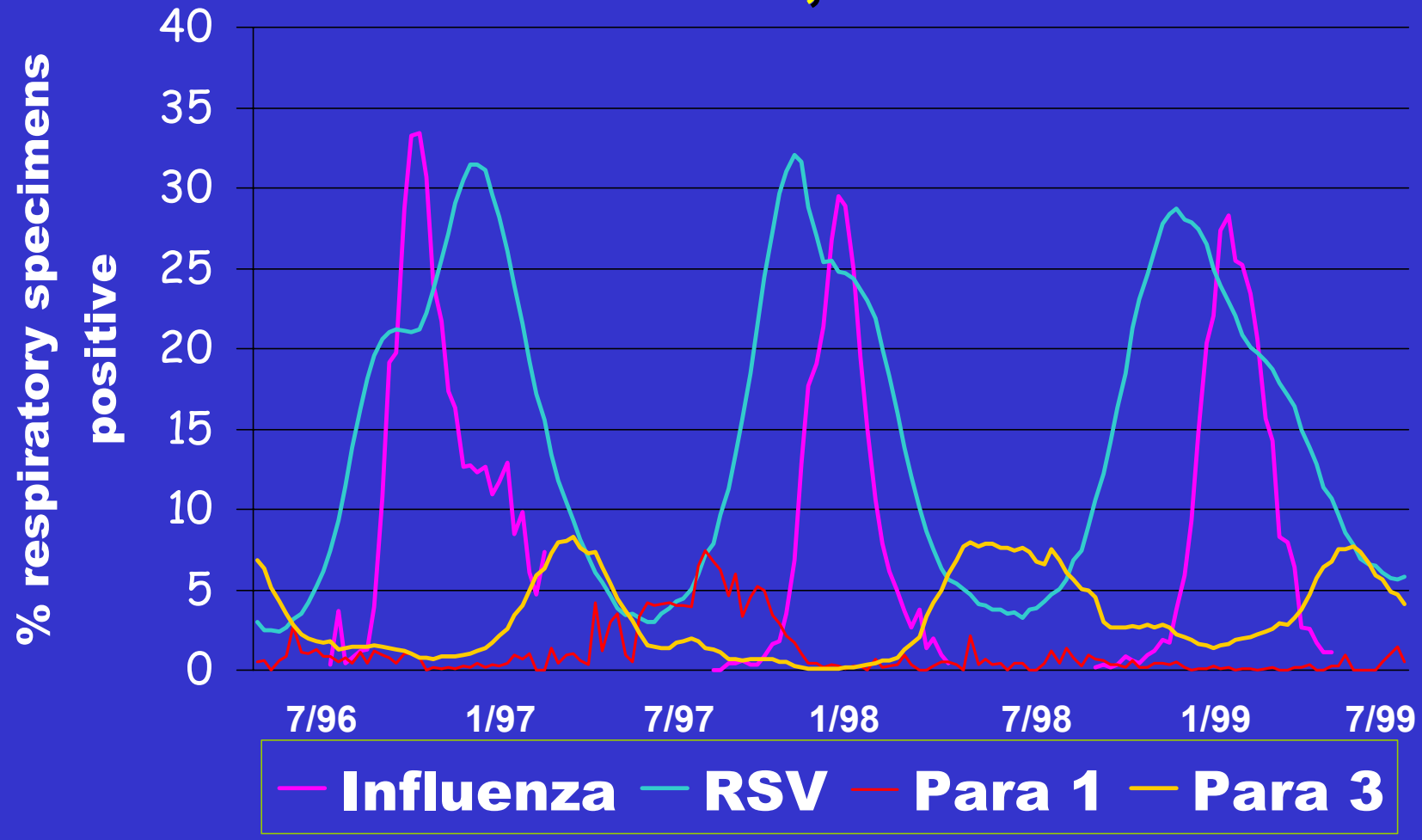


Pneumonia and Influenza Mortality for 122 U.S. Cities

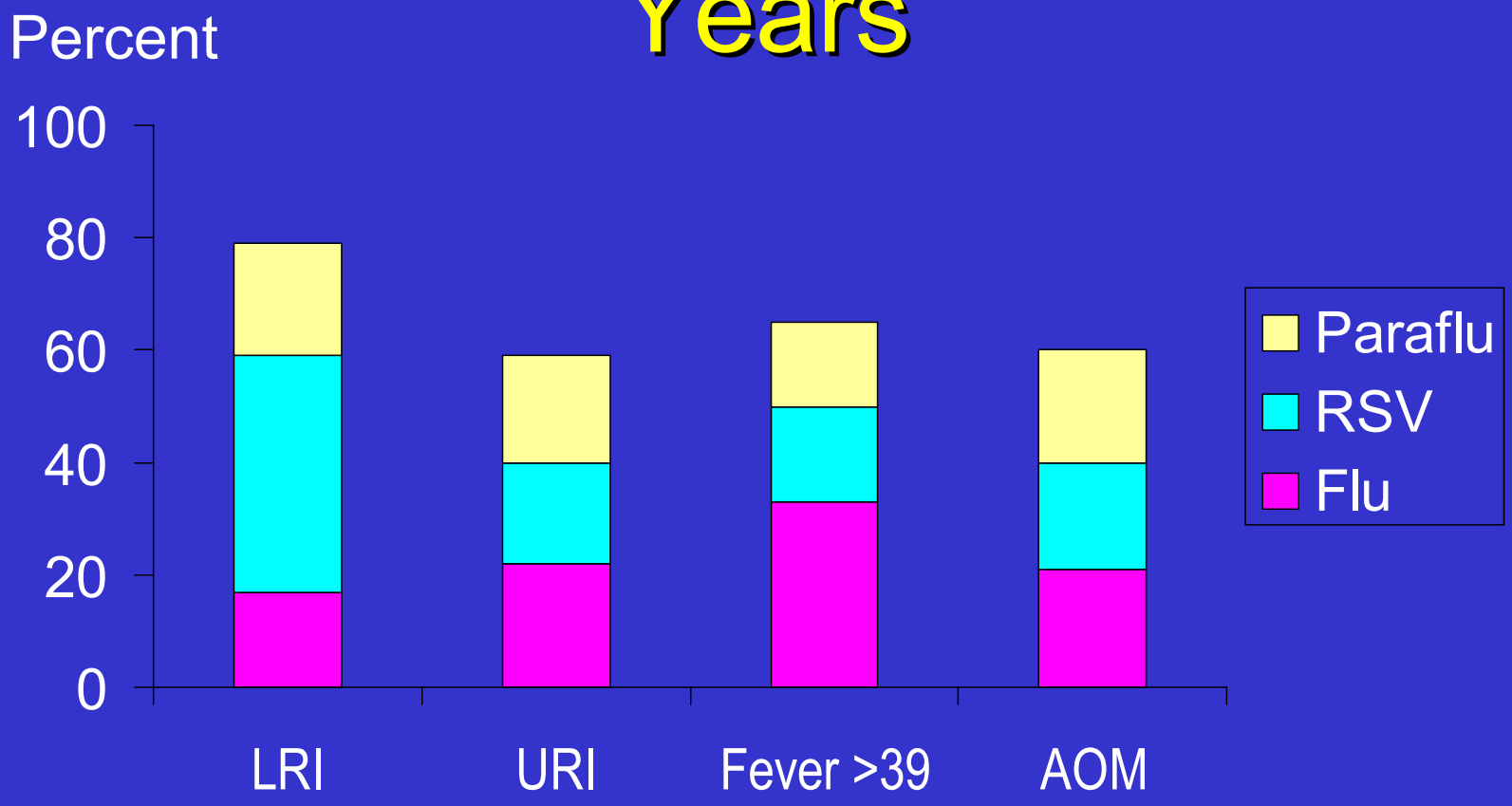
Week Ending 02/01/03



Seasonal Occurrence of Respiratory Viruses, United States, 1996-99



Impact of Respiratory Viruses on Illness in Children Aged < 5 Years



Reed G et al. J Infect Dis 1997; 175:807.

Respiratory Hospitalizations Per 10,000 Person-months in Healthy Children

Neuzil et al. NEJM 2000; 342: 225.

Children Hospitalized with Culture-Positive Influenza

Age months	Days Hosp.	Influenza strain	Diagnosis
8	7	H3N2	H. Flu meningitis
1.5	1	H3N2	Pneumonia
20	3	H3N2	Croup
12.5	2	H3N2	Croup
2	2	B	Sepsis
6	10	B	S.pneumo meningitis
13	4	H3N2	S. Pneumo cellulitis

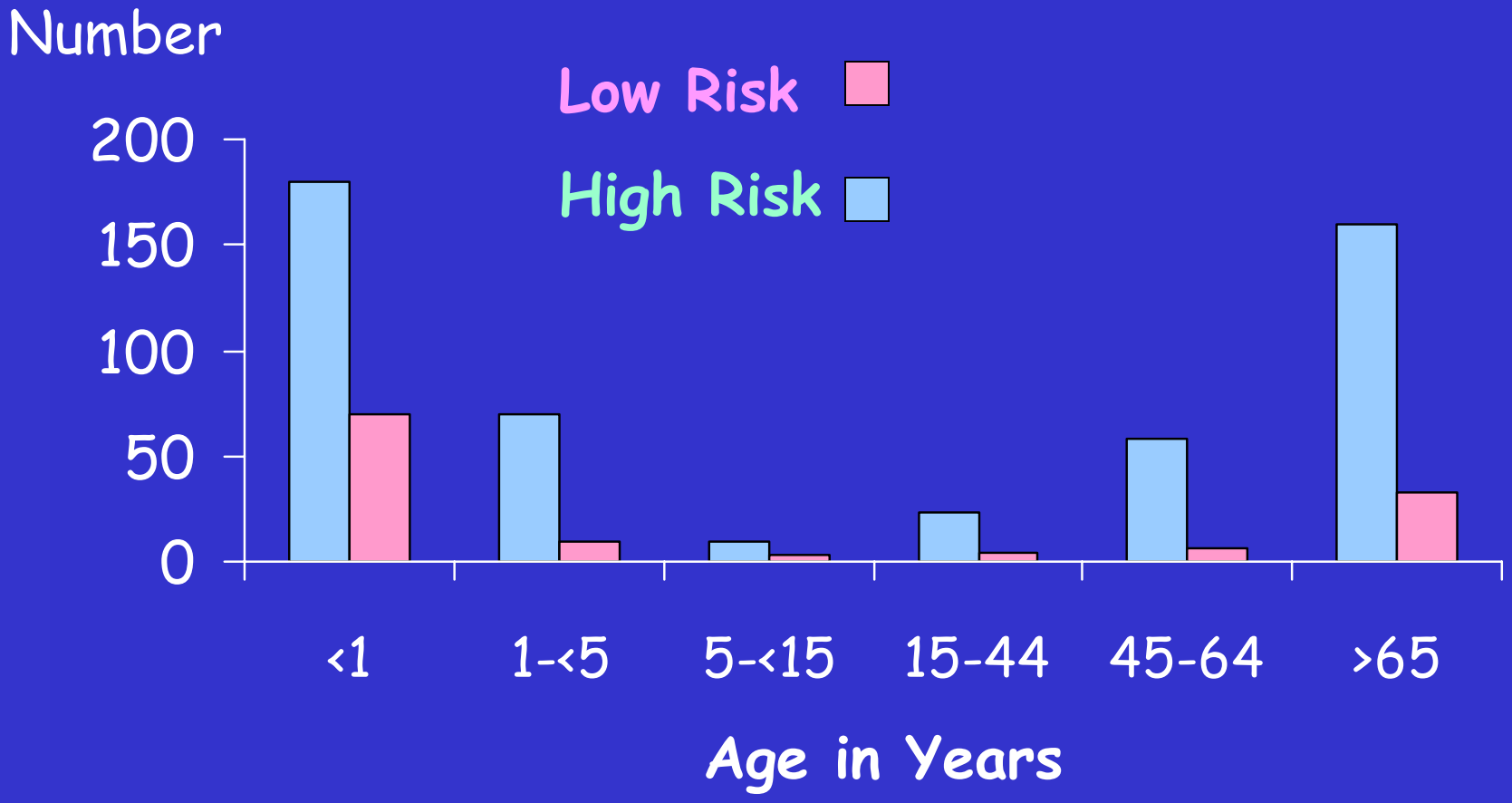
Neuzil et al JID 2002

Neurologic Manifestations of Influenza

- 100 cases of fatal influenza encephalopathy in Japan reported annually over past 4 years, most following A/H3N2/Hong Kong:
  - Associated with early sudden onset of high fever, early severe seizures, rapidly progressive coma, death within 2-3 days
  - Acute necrotizing encephalopathy in >90%
  - > 25% of patients with bilateral thalamic necrosis

Sugaya N. Sem Ped Infect Dis 2002: 13: 79.

Hospitalizations Per 10,000 Persons Attributable to Influenza



Glezen et al Am Rev Respir Dis 1987 Neuzil et al. NEJM 2000, J Peds 2000

Influenza Vaccine: Side Effects and Adverse Reactions

- Inactivated influenza virus vaccines contain killed virus and cannot cause influenza
- Coincidental respiratory disease unrelated to influenza vaccination can occur after vaccination

Influenza Vaccine: Side Effects and Adverse Reactions

- Healthy children aged 1-5 years
  - 3% had induration
  - 6% had redness
  - 11.5% had postvaccination fever

Neuzil et al. Ped Infect Dis J 2001; 20: 733

Summary of Analysis of TIV Studies in Children

- ~1000 doses current TIV vaccine administered to healthy children 6-24 mos age participated in RCT in US
- TIV well-tolerated in all ages
- Insufficient power to assess uncommon adverse events
- Studies support the protective efficacy of TIV against all 3 strains of influenzavirus, however magnitude of protection varies by year and by age group (0-83%)

Young children are a “high-risk” group for influenza-related hospitalizations

- Encourage vaccination for children 6-23 months of age when feasible
- Strongly recommend influenza vaccination of children aged > 6 months who have high-risk medical conditions
- Recommend vaccination of household and close contacts of children 0-23 months to prevent transmission

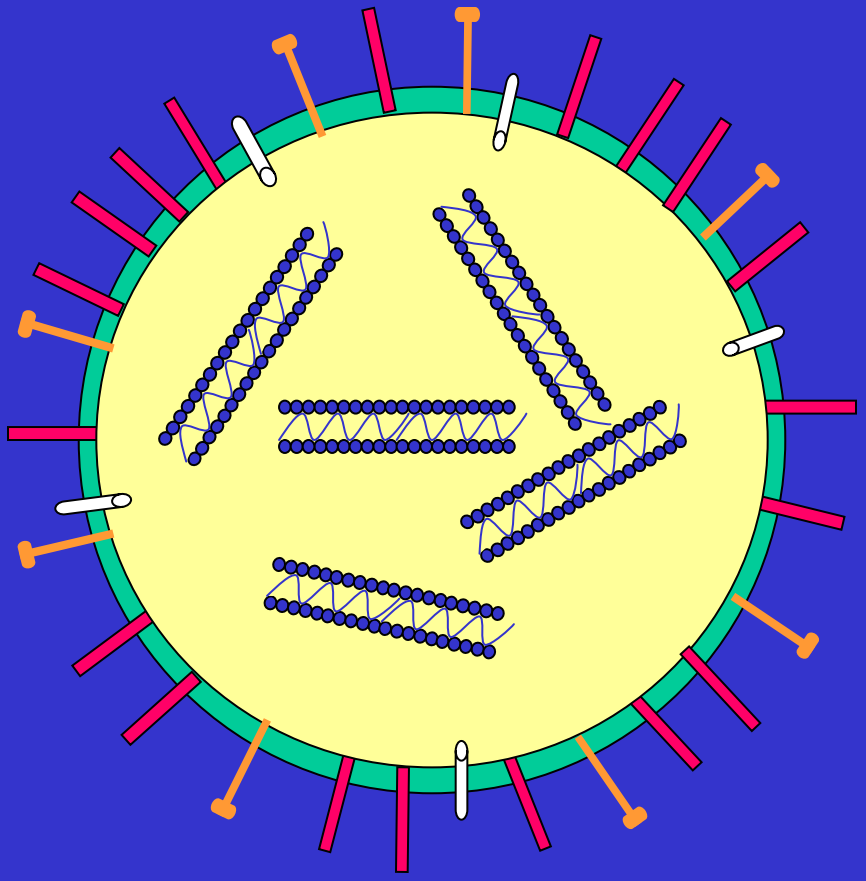
MMWR 2002; 51: 1-39.

Vaccination Coverage Levels in Children

- Published rates 9-25% among children with asthma
  - MMWR 2002; 51 (RR-3)
- Significant increases in vaccination rate of children with asthma or reactive airways disease demonstrated after implementing a reminder/recall system
  - Gaglani et al. Pediatr infect Dis J 2001; 20: 1155.

Influenza

- Undergoes antigenic shift and drift
- Vaccine changes annually
- Vaccine supply and distribution cannot be predicted in advance



Influenza vaccine dose by age group

Age group	Dose	# Doses
6-35 mos	0.25 mL	1 or 2
3-8 years	0.50 mL	1 or 2
> 9 years	0.50 mL	1

What's the Diagnosis?

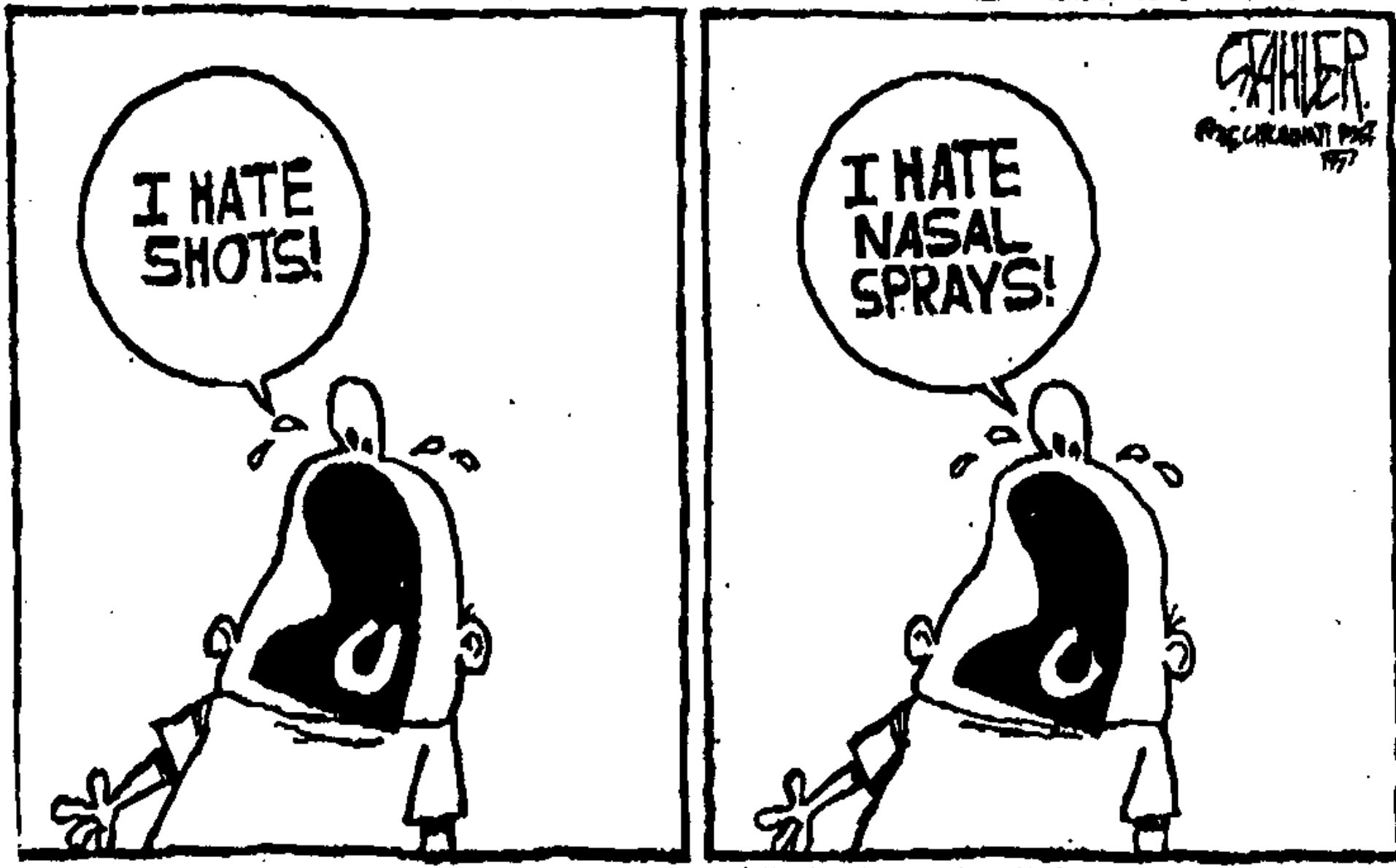
Should young children be vaccinated annually?

- Logistics (2 doses during defined season)
- Education of parents and providers
- Vaccine supply/distribution
- Cost (cost-effective or cost-beneficial)
- Reimbursement
- Other practical issues (pediatrician volume, crowded immunization schedule)

Live, attenuated,intranasal influenza vaccine

- Vaccines and Related Biological Products Advisory Committee of FDA recommended approval of LAIV for healthy individuals ages 5-49 years
- 95% reduction in febrile illness among children 15-71 months
  - (Belshe et al, NEJM 1998;338:1405)
- No head-to-head studies with inactivated vaccine

JEFF STAHLER



Conclusions

- Influenza is a frequent and potentially serious disease in children, particularly young children
- Increased use of influenza vaccines may reduce disease burden
- “Encouragement” phase is an opportunity to evaluate strategies and uptake of vaccine
- Barriers exist to successful implementation of a broader influenza vaccine policy