The Consequences of Our Choices: Some Old, Some New

Personal Perspectives over a Career in Pediatric Critical Care

Steve Schexnayder, MD

Executive Vice Chair, UAMS Dept. of Pediatrics

Professor of Pediatrics and Internal Medicine

Disclosures:

- No financial conflicts to disclose
- I will discuss an off-label use of a vaccine from many years ago, before CME rules required any disclosure

Objectives

- List the common presentations of now vaccine preventable diseases that frequented high acuity pediatric medical centers just three decades ago
- Describe evolving threats that can result for vaccine preventable (or modifiable) infections
- Describe the impact such disease may have on a child and their family

My personal story

- Native Arkansas, born and raised in the Delta
- UAMS trained in med/peds, then pediatric critical care
- Pediatric critical care/emergency medicine practice since 1994, with a small academic internal medicine practice for the first 20 years of my career
- Married to a Arkansas-born general pediatrician who practiced in the ACH ED for 28 years; we have four children and now three grandchildren
- Academic interest is pediatric resuscitation

Confessions of a Vaccine Believer

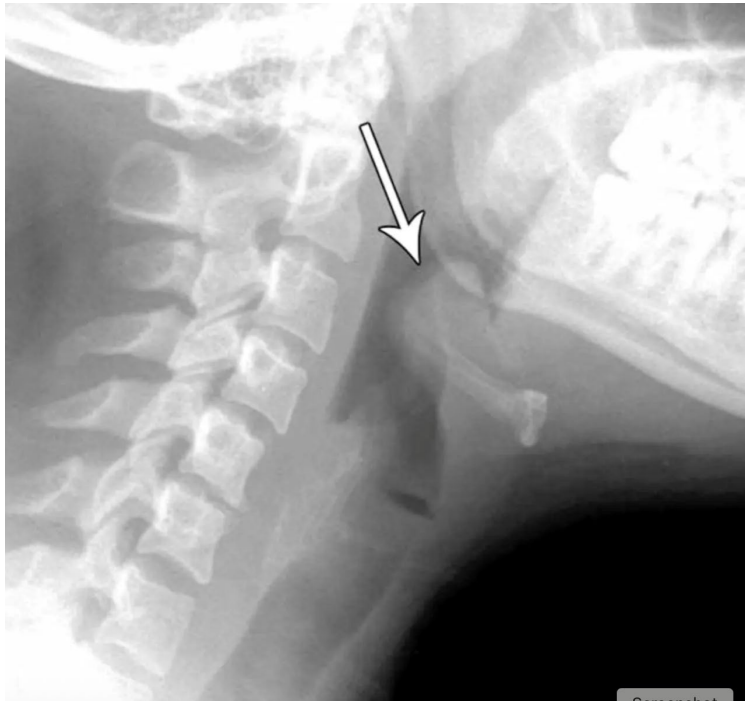
A personal story of the first conjugate vaccine effective against the big three enemies of children in my lifetime

The big three in pediatrics

- Haemophilus influenzae type B
- Streptococcus pneumoniae
- Neisseria meningitidis
- Let’s revisit the disease and destruction these three bacteria previously commonly inflicted on children

Haemophilus influenzae type B

- Common scenarios: sepsis and meningitis
- Pneumonia and empyema
- Epiglottitis



https://coreem.net/core/epiglottitis/

HIB conjugate vaccine: a huge success story

Reduction in Invasive Infection (Blood, CSF, joint, serosal surfaces)

Pediatric Population	Pre-vaccine Era (≈1980s, before 1990)	Recent Incidence (2009–2015 onward)*	Reduction
Children <5 years (overall Hib)	~1 case per 200 children by age 5 → equivalent to ~50–60/100,000/yr in children aged <5 years	≈0.05 / 100,000 (in children <5 yr) or **≈0.13 / 100,000** in that age group	>99%
Children aged <1 year	Peak infant Hib incidence ~50–60/100,000 (as part of <5 group)	Incidence ~0.30 / 100,000 in infants <1 yr	~99%
Children aged 1–4 years	Part of ~50–60/100,000 group (highest in infants)	Incidence ~0.08 / 100,000 in 1–4-year-olds	>99%

Streptococcus pneumoniae

- Serious invasive infections: pneumonia, sepsis
- Sepsis in the immunocompromised
- My personally most feared in very early childhood: pneumococcal meningitis

What this vaccine has done for children: Pneumococcal meningitis

Age group	Circa 1990 incidence(per 100,000)	Today incidence(per 100,000)	% decline
<1 year	10.0	3.0	~70%
1 year	7.7	2.6	~66%
2–4 years	2.0	0.6	~70%
5–17 years	0.5	0.2	~60%
All children	0.8–1.1	0.3–0.6	~40–70%

Neisseria meningitidis

- Meningococcal infection- sepsis and meningitis
- Incredibly fulminant, the one I feared among adolescents

A third success story:

Effectiveness of the meningococcal conjugate vaccine

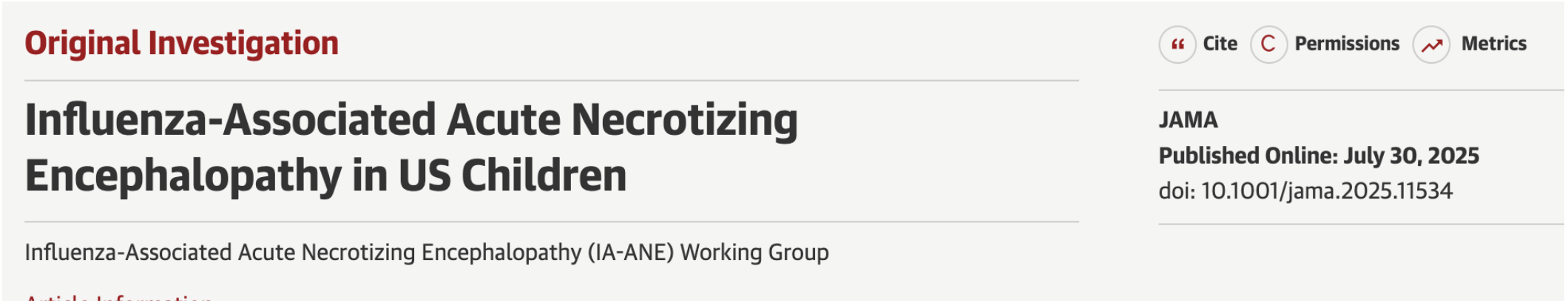
Age Group	Pre-MenACWY Era Incidence	Recent Incidence	Approx. Decline
Children (<11 yr)	~0.9–1.5 / 100,000	~0.10 / 100,000	~85–90% ↓
Adolescents (11–18 yr)	~0.61 / 100,000	~0.15 / 100,000	~75% ↓

Other players reemerging today as problems because of choices

- Pertussis
- Deaths do still occur, even in Arkansas in 2025

Influenza

- Newly recognized complication that has been the discussed among my ICU colleagues around North America: Influenza-Associated Acute Necrotizing Encephalopathy



Original Investigation

Influenza-Associated Acute Necrotizing Encephalopathy in US Children

Influenza-Associated Acute Necrotizing Encephalopathy (IA-ANE) Working Group

Article Information

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Influenza-Associated Acute Necrotizing Encephalopathy (ANE)

CONCLUSIONS AND RELEVANCE In this case series of children with influenza-associated ANE from the 2 most recent influenza seasons in the US, the condition was associated with high morbidity and mortality in this cohort of predominantly young and previously healthy children. The findings emphasize the need for prevention, early recognition, intensive treatment, and standardized management protocols.

Conclusions

- Vaccines have been a huge success story during my medical career in reducing morbidity and mortality in children
- Messaging on a personal level is a hugely important task
- Thank you for your interest in the future of our state