

CHAMPS, CCHN, & CCIC  
2010 Immunization Update Teleconference

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with  
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### Disclosures

- I have no financial interest in any vaccine or vaccine delivery device
- Pharmaceutical companies do not pay my salary directly or indirectly
- Trade names do not imply endorsement
- No photograph of any patient in this talk is of the stated patient
  - Robert Brayden, MD

### Vaccine Update Fall 2010

- HPV vaccines for boys?
- Pertussis cocooning
- Influenza vaccine for Fall 2010
- New vaccines on the horizon
- Vaccine shortages

### Human Papillomavirus (HPV)

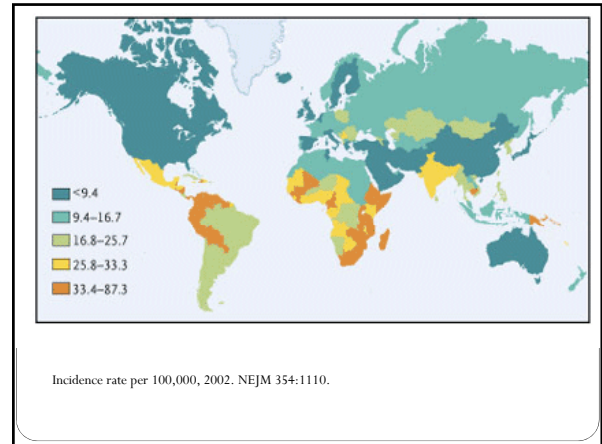
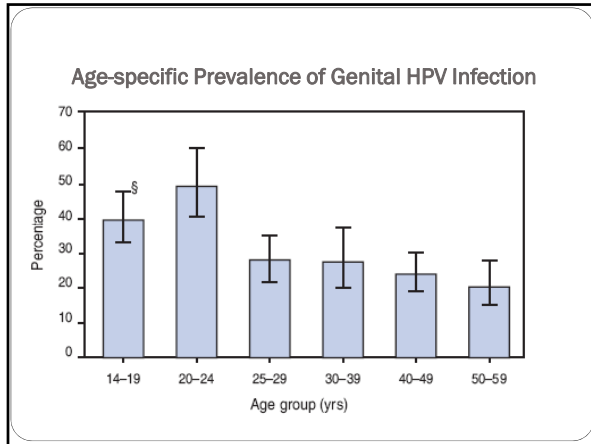


### Types of HPV

- About 100 types
  - 60 types – Cutaneous warts
  - 40 types – Mucosal/genital
    - Cervical
    - Vulvar
    - Penile

### HPV

- The most common sexually transmitted disease in the US
- Annually:
  - 4.6 million cases of HPV
  - 1.9 million cases of trichomonas
  - 1.5 million cases of Chlamydia
  - 431,000 cases of gonorrhea
  - 8,200 cases of syphilis



### Other HPV complications

- Anal cancer (90% due to HPV infection)
- Many vulvar, vaginal, penile cancers
- Some oral and pharyngeal cancers

### How does a person get HPV?

- Sexual activity
- Neonatal acquisition
- Once a person is chronically infected, clearance may or may not occur.
- Some pre-cancerous vulvar lesions have improved with a research vaccine (NEJM, 2009; 361: 1838.)

### Sexual debut

- 9<sup>th</sup> grade
  - 40% males
  - 30% female
- 12<sup>th</sup> grade
  - 55% for both genders
- Source: Grunbaum JA et al. *MMWR Surveill Summ* 2004; 53(2):1-96.
- 2 years after sexual debut 60% of males are colonized with the HPV

### HPV vaccines

- Both HPV vaccines protect against types 16 and 18
  - 95% effective in preventing cervical pre-cancer
- 3 dose series (0, 2, 6 months)
  - 24 week minimum interval doses 1 - 3
- Ages 11 – 12
- FDA approved ages 9 to 26 years
- Sub-unit vaccine
  - Cannot cause HPV infection
- HPV4 (Gardasil) also covers HPV types 6, 11
  - Non-carcinogenic, cause of genital warts

### Males and HPV vaccines

- October 2009: FDA licensed HPV4 for males
  - 62 - 89% effective at preventing genital warts in males
  - Same 3-dose schedule
- ACIP makes a permissive recommendation
  - Does not recommend routine use

### Conclusions of Safety Review

- JAMA . 2009; 302: 750-757
  - “The post-licensure safety profile presented here is broadly consistent with safety data from pre-licensure trials.
- HPV vaccines continue to be recommended

### Pertussis cocooning

- A concept for the protection of infants too young to be protected by DTaP
- People who have close contact with infants
  - Families
  - Day-care workers
  - Health-care providers

### Pertussis

- Pertussis is highly contagious
  - Complications:
    - Pneumonia, seizures, asphyxia, death
- 90% of deaths from pertussis occur to children < 1 yr of age

Does this baby have pertussis?



Pertussis



### Pertussis immunity

- Pertussis immunity requires multiple doses of DTaP to develop
- Adult immunity declines if not boosted

### Cocooning and pregnancy

- Ideally Tdap before pregnancy
- Immediate post-partum period (+ others) acceptable
- Permissive (but not recommended) during pregnancy
  - 2<sup>nd</sup> or 3<sup>rd</sup> trimester advised
  - Transplacental antibody might protect in infancy
  - Transplacental antibody might interfere with DTaP

### Tdap pregnancy registries

- GSK: 1-888-825-5249
- Sanofi-pasteur: 1-800-822-2463

### Tdap

- 11 – 12 years recommended
- Catch-up dose 19 – 64 years of age
- Tdap should be received 1 month before infant contact
- Interval from previous Td
  - As short as 2 years
  - Shorter intervals may be used

### Pertussis statistics

Colorado		United States	
• 2004	1,185	• 2004	25,827
• 2005	1,383	• 2005	21,003
• 2006	710	• 2006	15,632
• 2007	306	• 2007	8,739
• 2008	158	• 2008	11,581
• 2009	237	• 2009	13,506

### 2010-11 Influenza vaccine

- 101 countries surveillance data
- 4 WHO Collaborating Centers for Reference and Research on Influenza
- Normally select vaccines to protect against 3 types of human influenza
  - Type A (H1N1 and H3N2) and type B

### 2010-11 Influenza vaccine

- The current H1N1 vaccine-strain virus is the same as used for the 2009 monovalent vaccine.
- This strain is one of three in the 2010-11 seasonal vaccine.
- The Northern Hemisphere 2010-11 vaccine is the same composition as the Southern hemisphere 2010 vaccine

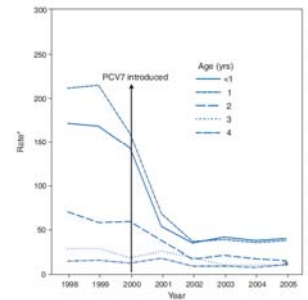
### 2010-11

- 2<sup>nd</sup> year for universal vaccination of all persons
- Families Fighting Flu
  - Social media effort
    - Watch the YouTube videos
    - Downloadable coloring book

### Candidate new vaccines

- Pneumococcal 13-valent
- RSV and Parainfluenza virus-3
- Cytomegalovirus

FIGURE 1. Changes in incidence rate\* of invasive pneumococcal disease (IPD) among children aged <5 years before and after introduction of 7-valent pneumococcal conjugate vaccine (PCV7), by age and year — Active Bacterial Core surveillance, eight states,<sup>†</sup> 1998–2005



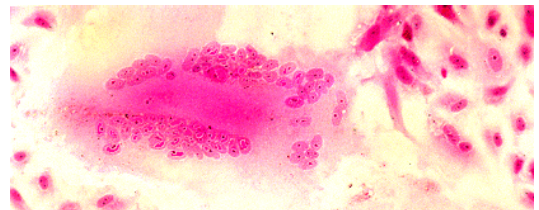
\*Per 100,000 population.  
<sup>†</sup>California (one county); the state of Connecticut; Georgia (20 counties); Maryland (six counties); Minnesota (seven counties); New York (seven counties); Oregon (three counties); and Tennessee (four counties).

### Pneumococcal 13-valent vaccine

- In PCV7 vaccine
  - non-pathogenic pneumococci did not expand niche
  - pathogenic pneumococci, especially 7F and 19A, expanded, but these latter two and four others are in PCV13

### RSV

- Respiratory syncytial virus, the most important cause of viral lower respiratory tract infection



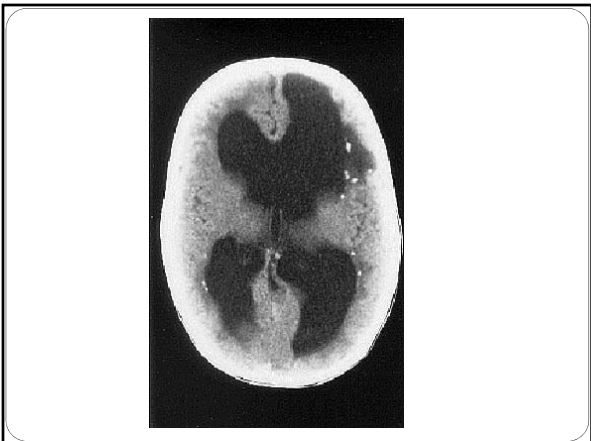


### RSV Burden of disease

- 100,000 hospitalizations of infants, RSV, 40,000 hospitalizations of elderly, RSV
- Immunocompromised at risk of severe RSV disease
- By 2 years of age almost all have had RSV, 50% have had it twice

### RSV vaccine

- Live, temperature sensitive mutants
  - RSV
    - Intranasal vaccines, 1 – 12 months of age



### Cytomegalovirus (CMV)

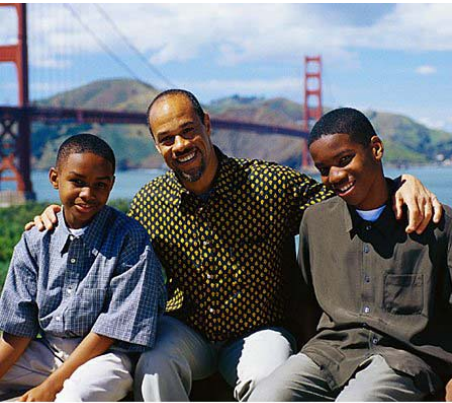
- Burden of disease
  - Most common intrauterine infection
    - Deafness
    - Mental retardation
  - 720 deaths/yr
  - 4,800 survivors with sequelae
  - Economic impact: \$1 B/yr
  - Severe infection in the immunosuppressed

### CMV

- Rationale a vaccine should protect a fetus:
  - Infections more common for fetuses of seronegative mothers compared to seropositive mothers
  - Severe fetal congenital fetopathies are much less common in seropositive infants compared to seronegative
  - Several vaccines are being researched

### Vaccine shortages, June 2010

- Hib booster has been back in place nearly a full year; screen for undervaccination.
- Hepatitis A adult formulations unavailable (Merck) or in short supply (GSK). Hepatitis A/hepatitis B preparation (Twinrix) is available.
- Monovalent M, M, R will not be available in the US.
- Merck is taking orders for MMRV



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Questions? Comments?

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If you did not receive a link to the online Evaluation & CME Questions, or if you are unable to complete the questions online, please contact [Kara@championline.org](mailto:Kara@championline.org) for a link or a copy of the questionnaire.

