

Cocooning: Building Layers For Preventing Pertussis, Part II

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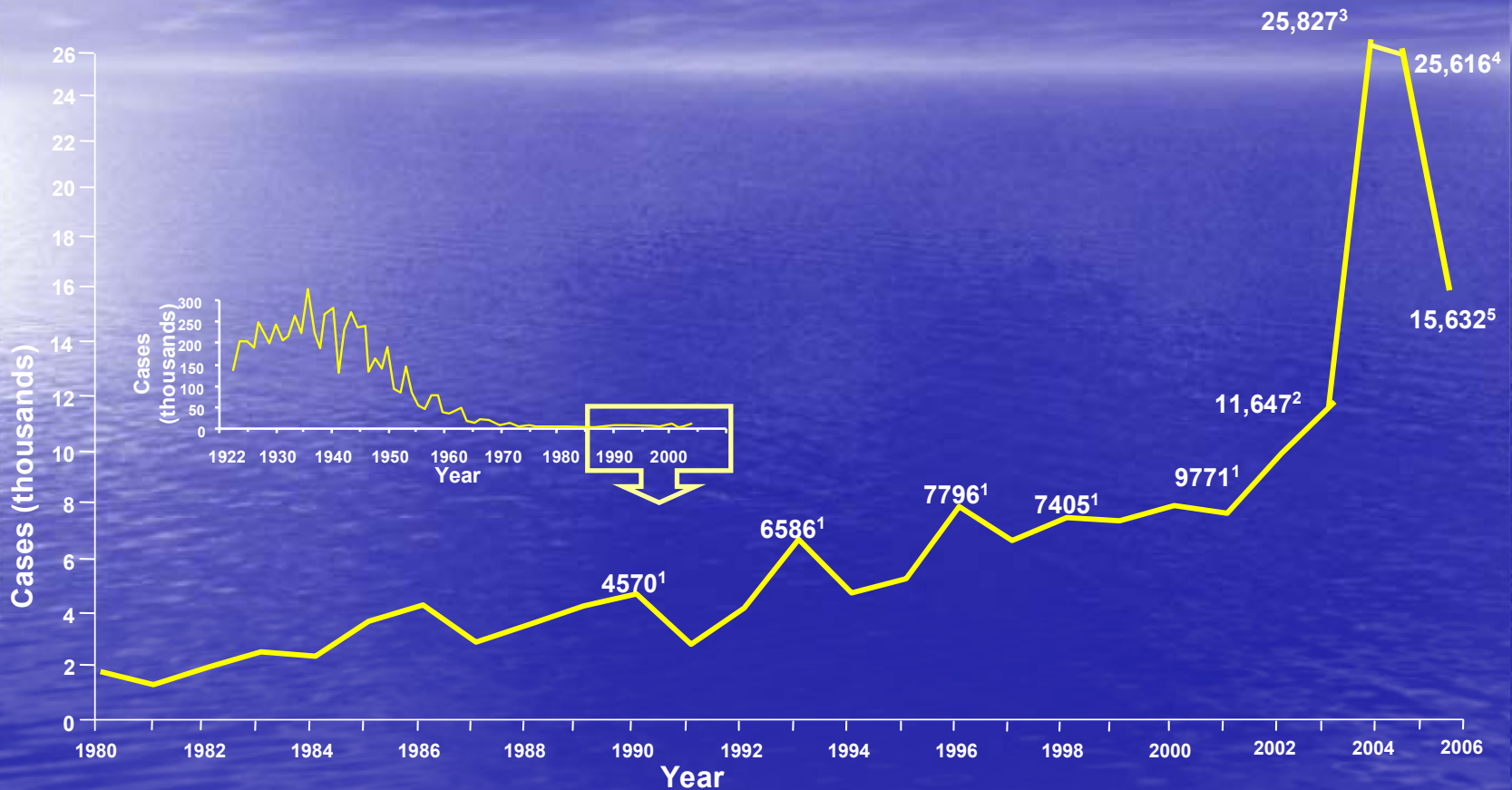
Objectives:

1. Explain why pertussis is of special concern to newborns & young infants.
2. Define "cocooning" in relationship to the protection this vulnerable group.
3. Name 4 key people from a hospital and/or health division that should be part of building a "cocooning" program.
4. List 3 different ways to finance a "cocooning" program.

Why Pertussis?

- Only vaccine preventable disease on the rise today....
- Higher morbidity & mortality in newborns & young infants....
- Vaccination is the answer, just not in the usual way....

Reported Pertussis Cases in the United States (1922-2006)

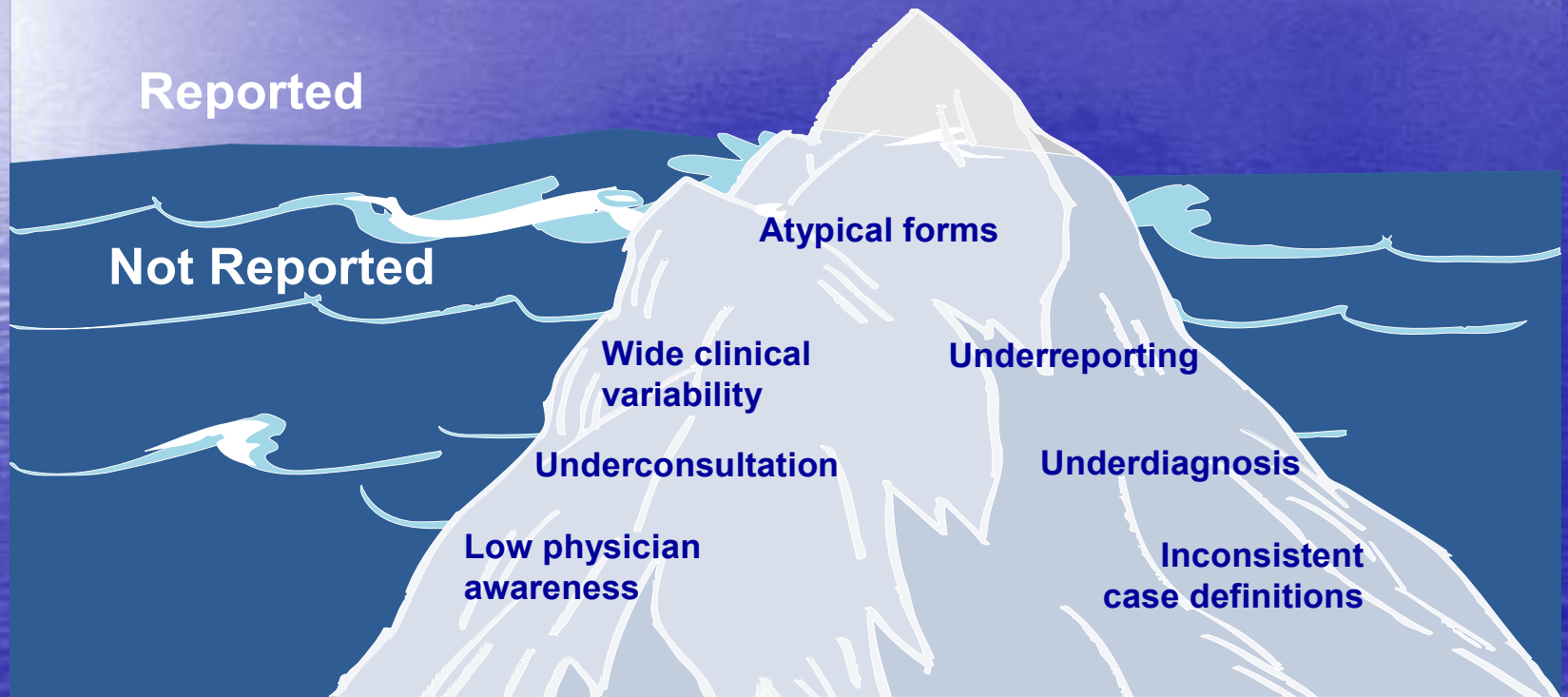


References:

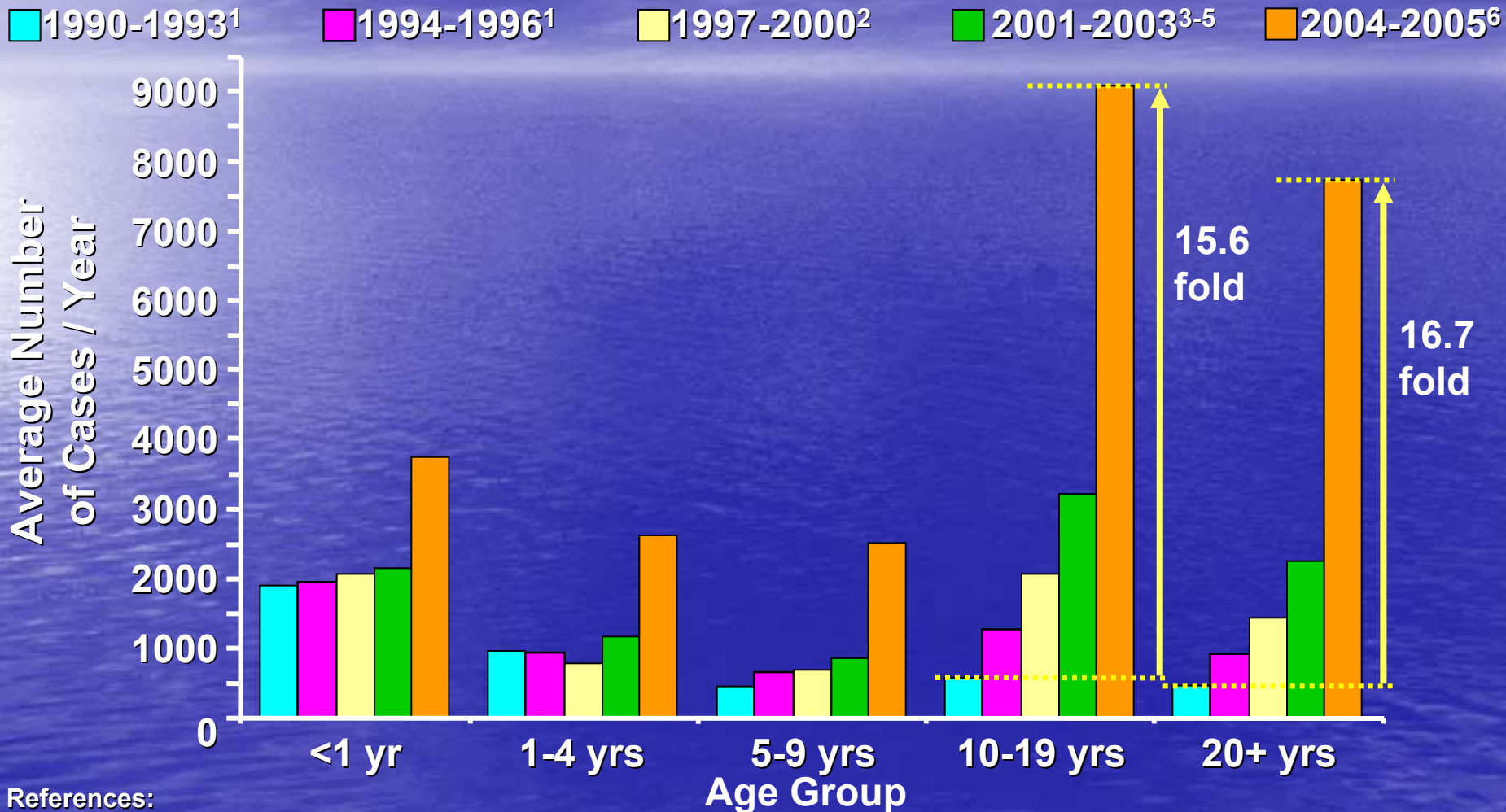
1. Centers for Disease Control and Prevention (CDC). *MMWR*. 2004;51(53):74.
2. CDC. *MMWR*. 2004;53(30):693.
3. CDC. *MMWR*. 2005;54(31):777.
4. CDC. *MMWR*. 2006;55(32):890.
5. CDC. *MMWR*. 2007;56(33):851, 860.

Reported Pertussis Cases Are Just the Tip of the Iceberg

- Nationwide, a small % of pertussis cases are actually reported
- Underreporting may be greatest among adults and adolescents



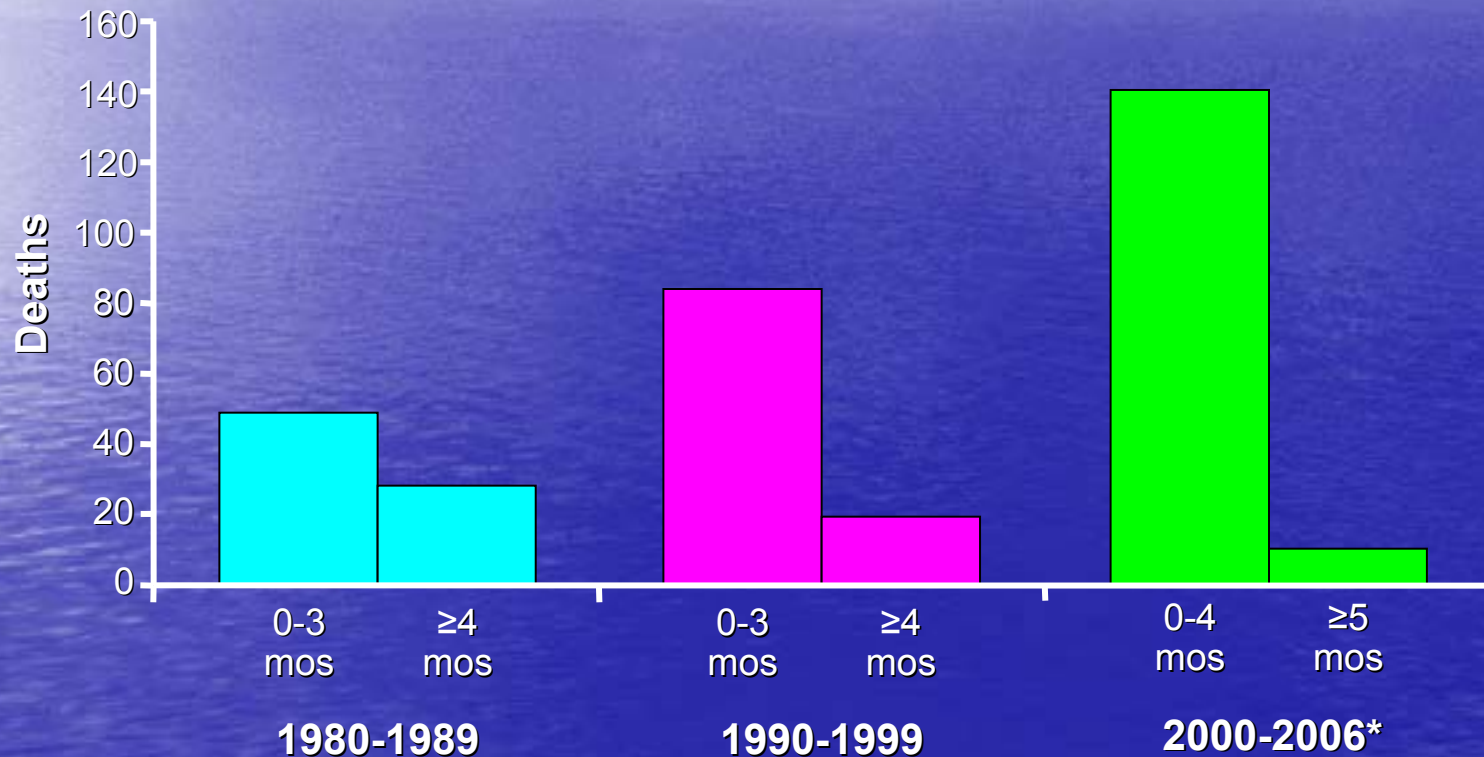
Dramatic Growth in Reports of Adult and Adolescent Pertussis



References:

1. Güriş D, et al. *Clin Infect Dis*. 1999;28:1230-1237.
2. CDC. *MMWR*. 2002;51(4):73-76.
3. CDC. *MMWR*. 2003;50(53):9.
4. CDC. *MMWR*. 2004;51(53):23.
5. CDC. *MMWR*. 2005;54(31):777.
6. National Center for Immunization and Respiratory Diseases, CDC. Pertussis Surveillance Reports for 2004 & 2005.

Pertussis Deaths by Decade and Age Group: 1980-1989 vs 1990-1999 vs 2000-2006¹



*Deaths reported by CDC were for ≤ 4 months of age for 2001, 2002, 2003, and 2005 and ≤ 3 months of age in 2000 and 2004. Data for 2006 are provisional.

1. Vitek CR, et al. *Pediatr Infect Dis J.* 2003;22:628-634.

2. Centers for Disease Control and Prevention (CDC). Data on file. MKT13012.

PEDIATRICS®

The Epidemiology of Pertussis

James D. Cherry, MD, MSc

Pediatrics 2005;115;1422-1427

ABSTRACT. In the prevaccine era pertussis epidemics followed a cyclic pattern, with peaks every 2 to 5 years. With the marked reduction of pertussis by vaccination, the same cyclic pattern still occurs. Studies relating to reported pertussis and *Bordetella pertussis* infection have been reviewed and analyzed. The increase in reported pertussis over the last 2 decades is mainly due to a greater awareness of pertussis and perhaps to the use of several less efficacious vaccines.

Studies of prolonged cough illnesses in adolescents and adults reveal that 13% to 20% are a result of *B pertussis* infection. Serologic studies suggest that the rate of *B pertussis* infection in adolescents and adults is ~2.0% per year. The rate of cough illnesses (pertussis) caused by *B pertussis* infection in adolescents and adults

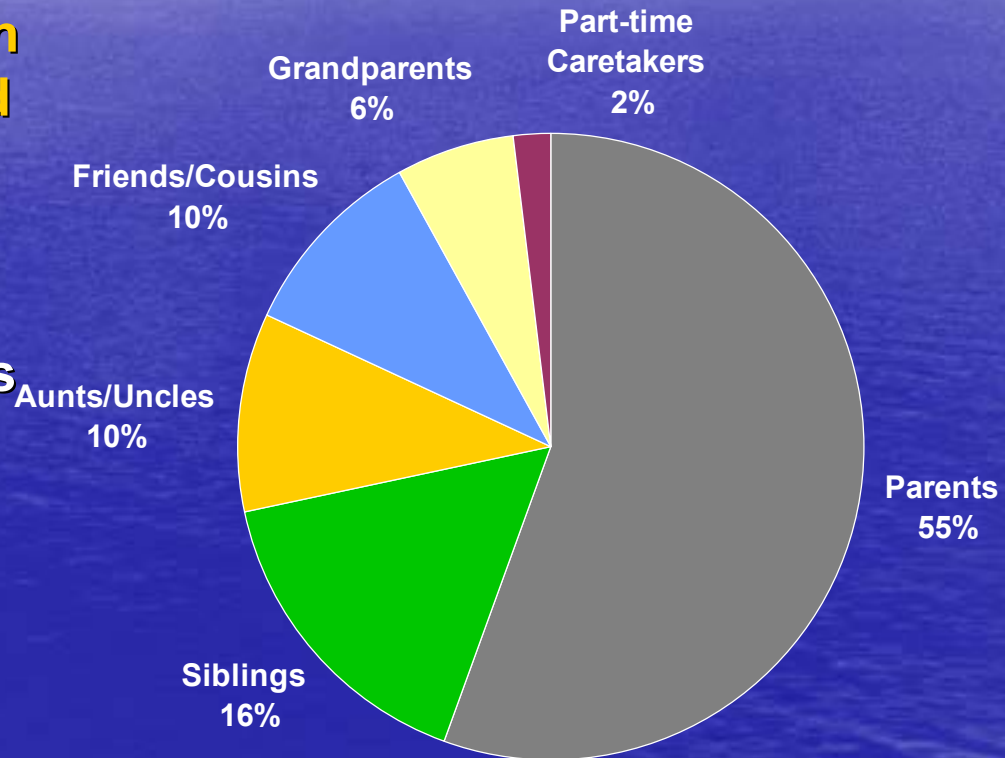
is between 570 and 1500 per 100 000 population. These data suggest that there are between ~800 000 and 3.3 million cases per year in the United States.

The coming availability of adolescent- and adult-formulated diphtheria and tetanus toxoids and acellular pertussis vaccines for adolescents and adults and their widespread use should reduce the reservoir of *B pertussis* disease. It is suggested that a universal program of adolescent and adult boosters would decrease the circulation of *B pertussis* in these age groups and possibly could lead to the elimination of the organism from the population. *Pediatrics* 2005;115:1422-1427; *pertussis, Bordetella pertussis, adult pertussis, adolescent pertussis, pertussis, epidemiology.*

...there are between ~800,000 and 3.3 million cases per year in the United States.

Infant Pertussis: Who is the Source?

- **Hospital-based, prospective multicenter study conducted in France, Germany, Canada, and the United States**
- **Study population included 95 infants ≤ 6 months of age with laboratory-confirmed pertussis and 404 household and close non-household contacts**
- **Household members responsible for 76%-83% of transmission of pertussis to this high-risk infant group**



Reference:

1. Wendelboe AM, et al. *Pediatr Infect Dis J.* 2007;26:293-299.

Variations on “Cocooning”

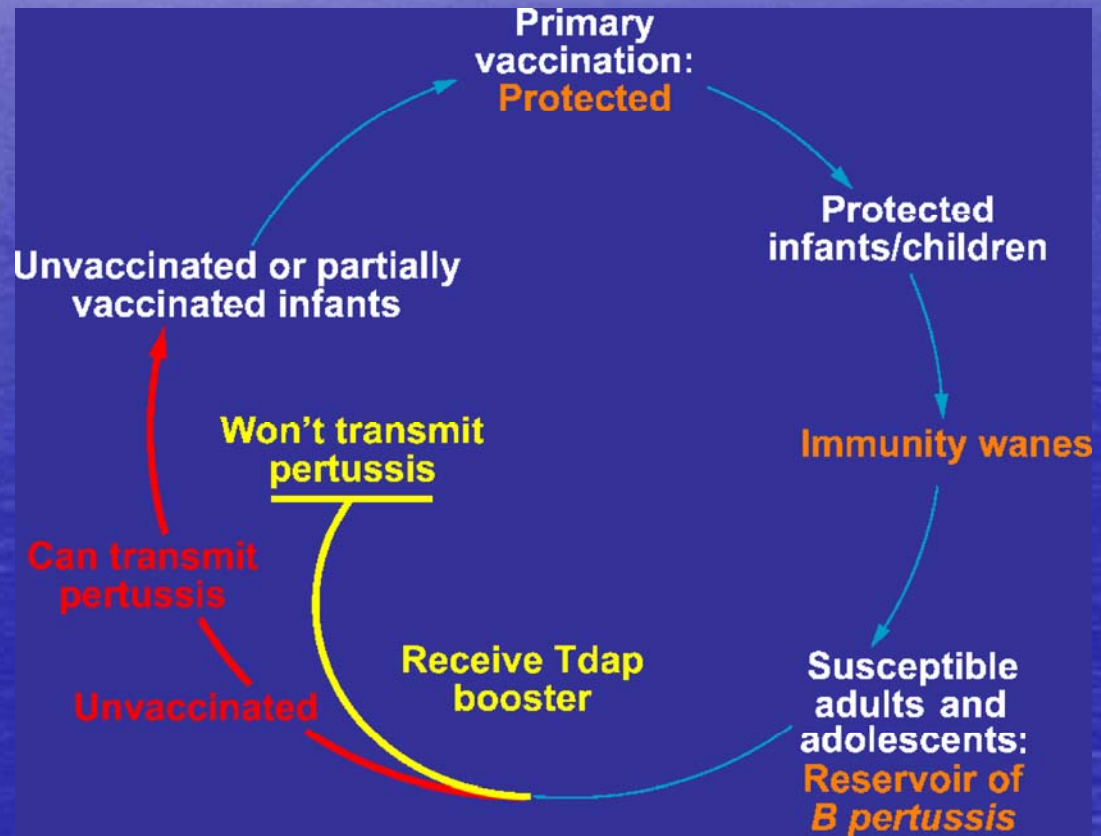
- Definition: “Immunization of family members and close contacts of the newborn.” GPI 2001
- ACIP recommendations 2006 & 2008
- Full “cocooning”
- Partial “cocooning”

Kathie's Mantra:

Some "cocooning"
is better than
no "cocooning"!!!

Break the Cycle of Pertussis Susceptibility With Tdap Booster for Adults and Adolescents ¹

- Potentially reduce morbidity in all age groups
- Reduce reservoir of pertussis disease
- Potentially prevent transmission of pertussis disease between adults and adolescents, and from adults and adolescents to infants



"Cocooning" Programs

- First full-scope "cocooning" hospital in the U.S.
 - Renown Regional Medical Center
 - Located in lovely Reno, Nevada
 - Approximately 5000 deliveries per year
 - July 5, 2006 & still going
- Many other hospitals and health departments across the U.S. have begun "cocooning", even in economically challenging times

Challenges in Building a “Cocooning” Program

- Financial – How do we pay for it?
- Buy-in – How do we convince our administration, staff & patients?
- Sustainability – How do we keep the enthusiasm & work ethic up?
- Reporting – How do we collect & report the data to validate or change how we protect our newborns & young infants?

Different Methods to Finance a "Cocooning" Program

- Collaboration with state and/or county health divisions using federal funding
- Grants
- Incorporate costs into your most popular insurance plan
- Accept the cost as part of your own Quality Improvement programs
- A combination of the above

Key Players to Build a “Cocooning” Program

- Administration of maternal-child program
- Managers of L&D, PP, NICU & Pediatrics
- Pediatric providers
- OB providers
- Pharmacy
- Medical Records
- Legal counsel
- Community partners

How to Get and Keep Support for Your “Cocooning” Program

- EDUCATION on the rise of pertussis!
- EDUCATION on the risks to newborns!
- EDUCATION on “cocooning” the newborn!
- INVOLVEMENT in the planning & process!
- CELEBRATE successes regularly!
- Remind your staff often that they are KEY!

What About the Data?

- Work out an easy process to document your data from the start of the process
- Collect demographic information if at all possible on your patients
- Document refusal of Tdap as well as acceptance of Tdap
- Find a “research loving person” to help you organize your data for reporting
- The CDC wants this data!!!

What Does the Research Show?

- Economical
- Logical
- Not much yet, we need more time & data to evaluate the impact of “cocooning” on rates of pertussis in newborns & young infants
- Anecdotal information is encouraging....

MASSACHUSETTS

- **Harvard Vanguard:**

- Not a hospital, but a group of 500 specialized physicians and 100 Certified Nurse Midwives, Advance Practice Nurses & Physician's Assistants at 4 Harvard teaching hospitals
- **Dr. Ben Krustal, Pediatrician & Director of Infection Control leads this program**
- Have 400,000 patients in their practice
- **Non-profit organization; they fund their own patients**
- "We're a fairly idealistic group & it's the right thing to do."
- **Between Beth Israel Deaconess, Brigham & Women's, Newton-Wellesley & Mount Auburn Hospitals, they can impact almost 20,000 births a year.**

GEORGIA

- **Northside Hospital, Atlanta, GA**

- 17,000 deliveries per year
- Read the 2006 ACIP recommendations & began their program in October 2007
- No special funding, hospital absorbs the cost of the vaccine as part of their QI clinical guidelines
- “NH, which is the largest single birthing hospital in the country, is pleased to participate in the efforts to raise awareness of the benefits of the Tdap vaccine.”

Phyllis Hlavac, MN, NNP-BC, RNC-NIC, Perinatal

TEXAS

- Ben Taub General Hospital, Houston, TX
 - 5,000 deliveries per year
- Parkland Memorial Hospital, Dallas, TX
 - 13,500 deliveries per year
- Seaton Medical Center, Austin, TX
 - 3500 deliveries per year
- St. David's Medical Center, Round Rock, TX
 - 3000 deliveries per year
 - Recent outbreak of pertussis in Williams County
 - Collaborative effort
 - Research done and presented at NIC last week
 - <http://texmed.org/Template.aspx?id=8448>

UTAH

- **This isn't just a few hospitals following ACIP recommendations, but an entire health care system**
- Intermountain Healthcare has 21 facilities in UT & 1 in ID, all offering Tdap, Influenza, Varicella, MMR & when indicated, Pneumococcal vaccine, to new mothers on PP
- **Increased the global coverage for pregnancy in their biggest selling insurance program & IHC absorbs the rest**
- Began in 2006 & still going
- **"It's the right thing to do." Dr. Tamara Lewis MD, MPA, MPH, Medical Director, Community Health & Prevention**

NEVADA

- Renown Regional Medical Center, Reno
 - Collaborative effort between the Nevada State Health Division, Washoe County Health District & RRMC using federal 317\$
- Shared & encouraged other birthing hospitals to begin “cocooning”:
 - St. Mary’s Regional Medical Center, Reno
 - Carson Tahoe Regional Medical Center, Carson City
 - University Medical Center, Las Vegas

CALIFORNIA

- Tahoe Forest Hospital, Truckee, CA
 - 1200 deliveries per year
- Cedar-Sinai Medical Center, Los Angeles, CA
 - 7500 deliveries/yr.
 - Dr. Sylvia Yeh, MD, Assoc. Prof. of Pediatrics, Harbor-UCLA Medical Center

So What's the Total of Lives Protected in This Small Sampling?

- 123, 410 newborns possible
- 123,410 mothers possible
- 123, 410 fathers possible
- Total of 370,230 lives protected from pertussis & if more layers are added by "cocooning"
 - Siblings
 - Aunts/Uncles
 - Health Care Personnel....
 - Grandparents
 - Cousins

So What Else Can We Do to Improve “Cocooning”?

- EDUCATION on the importance of vaccines for all health care personnel
- INCREASED immunization of health care personnel as role models & vaccine advocates
- ASSIST providers of obstetrical care in immunizing pregnant women & their spouse or S/O with seasonal influenza vaccine prior to delivery for increased “cocooning” of our newborns.... pilot program in Nevada 2010-2011

In Conclusion:

- These are financially challenging times
- There are still vaccine preventable diseases taking a toll on the health and lives of our newborns and young infants
- Vaccines are available that make a difference
- Research studies will validate or change the ways we protect our most vulnerable population
- We ALL need to be part of this process!!!