Using the EMR to improve Tdap vaccination rates in pregnant women

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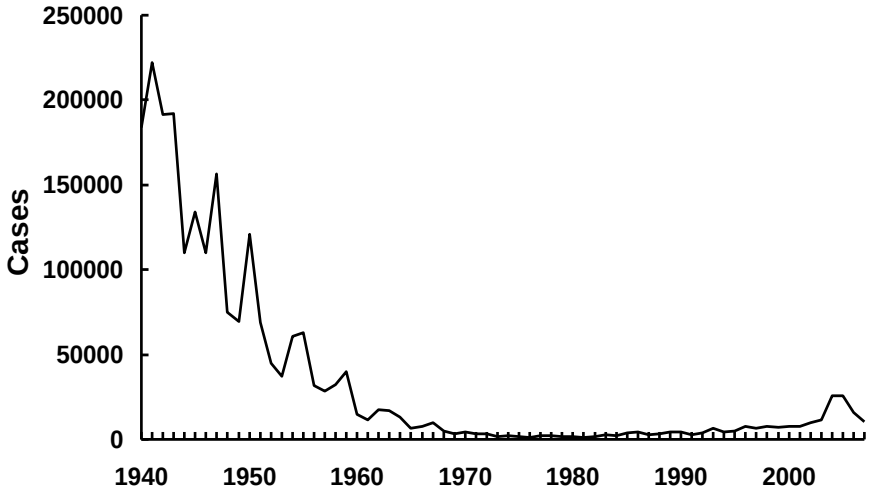
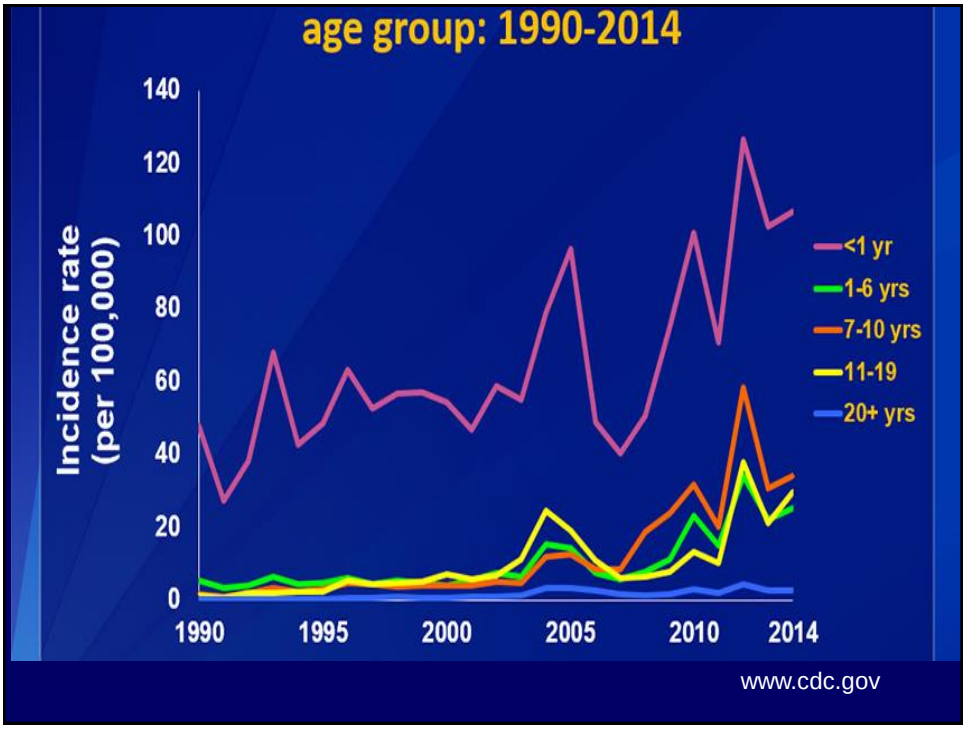
Background

- Pertussis peaks every 3-5 years but the overall incidence has been steadily rising since the 1980s
  - 2012 48,277 cases in the U.S. with 20 attributed deaths
  - Infants bear a disproportionate burden, most younger than 2 months of age (too young to vaccinate)

Pertussis—United States





Recommendations

- 2005 ACIP : Tdap vaccine be offered to all immediately postpartum women and the family members who would be in close contact with the newborn (Cocooning)
  - Very difficult to implement and no significant benefit
- 2011 ACIP : Tdap vaccine to all previously unvaccinated women for passive immunization
  - Poor compliance
  - Antibody sustainability issues

Recommendations

- 2012 ACIP : All pregnant women should receive a Tdap booster between 27 and 36 weeks gestation regardless of vaccination status
  - Every pregnancy
  - Optimum time for pertussis antibody development and transfer to the fetus

The obvious problem…

- Pregnant women notoriously have poor vaccination uptake, with rates 10 - 34% nationwide
  - Safety concerns : Pregnant women and their medical providers
  - Cost/reimbursement
  - Confusion regarding the recommendations
- Enter the Electronic Medical Record and the ability to do “alerts” at set times

Methodology

- Before-after study
  - Prior to June, 2013 women were offered vaccination postpartum
- June 2013 we started offering all antepartum pregnant women Tdap vaccine
  - Best Practice Alert “fired” at 32 weeks
    - If accept, it sent the provider straight to the order screen
    - If decline, had to document the reason for the patient declining
      - If declined, the BPA would fire at every visit to remind the provider to readdress tdap vaccination

Methodology

- We went out to all our outlying clinics as well as our OB Complications Clinic and educated our providers on the epidemiology, the clinical disease in infants, children and adults and the benefits of vaccination
- Worked extensively with our EPIC BPA builders

Methodology

- The BPA in EPIC allowed us to track
  - Acceptance rates
  - Providers and clinic vaccination rates
  - Reasons for declination
  - Demographic, pregnancy and delivery information as well as neonatal follow-up

Original Research
Pregnancy Outcomes After Antepartum Tetanus, Diphtheria, and Acellular Pertussis Vaccination
Jamie L. Morgan, MD, Sangameshwar R. Baggari, MBA, Donald D. McIntire, PhD, and Jeanne S. Sheffield, MD Obstet and Gynecol 2015

Results

- Epoch 1: the 17 months prior to starting the BPA
  - Availability of complete pertussis ascertainment data from the Dallas County Health Department
- Epoch 2: June, 2013 to July, 2014 (13 months)

Results

- Epoch 1
  - Accepted the vaccine postpartum 48%
- Epoch 2
  - 10,201 women had the BPA fire (were in prenatal care and made it to 32 weeks)
  - Vaccination rate **97%**

Results

- Average gestational age at vaccination 34.3 ± 2.4 weeks
- Patients delivered a mean of 35.3 ± 17.3 days after vaccination
  - Enough time to develop antibodies and provide passive immunity

Results

- During the same time period, the Dallas County Health Department reported
  - Epoch 1
    - 61 cases of pertussis in children < 2 years of age
    - Parkland incidence 13 cases per 10,000 deliveries
  - Epoch 2
    - 22 cases in the same cohort
    - Parkland incidence 7 per 10,000 deliveries
      - All vaccinated (majority antepartum)
        - » CDC reports a 70% efficacy rate
      - Will continue to track – these are early data

Conclusions

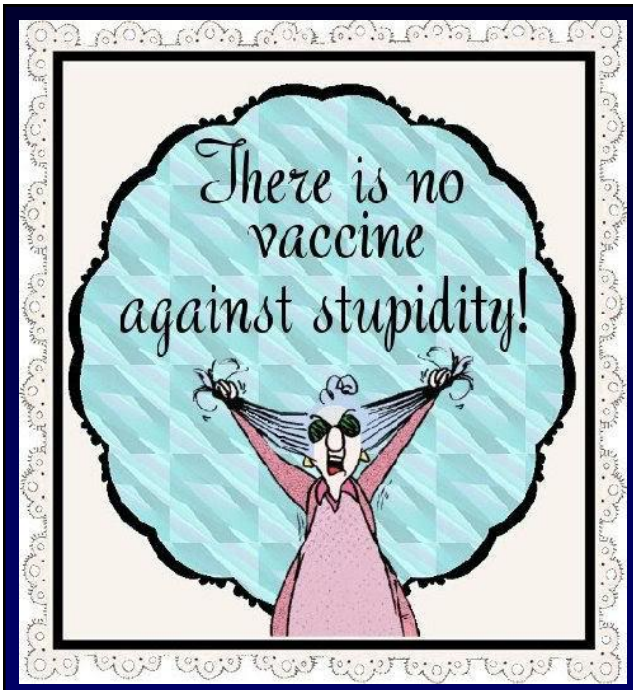
- Even in a county hospital-based prenatal care setting where the majority of pregnant patients are indigent, medically underserved, and receive Medicaid benefits, the Electronic Medical Record can be vital in improving vaccination rates.

Other aspects to the success of the BPA

- This was a single academic institution
  - Protocol driven, homogenized care
  - Advanced practice nurses (Nurse practitioners and midwives), residents and faculty physicians
  - Extensive education
- Streamlining the order entry and administration process
- The community push for vaccination at the time this was rolled out

Other compelling evidence for the use of the EMR to improve vaccination rates

- The use of the electronic medical record has been shown to be associated with increased influenza vaccination rates in several high-risk groups in various health care settings
  - Klatt and Hopp: Influenza vaccination rates increased with the use of a BPA (42% to 61%)



Thank you