



VACCINES AND VACCINE-PREVENTABLE DISEASES

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Disclosures

- Dr. Van Enk has no conflicts of interest regarding any topic discussed in this talk and will not discuss non-approved uses of drugs



Outline

- State and local immunization data
- What's new in the 2017 pediatric immunization schedule
- What may be coming in the 2018 immunization schedule
- Changes in MCIR
- Hot topics in immunization
 - Vaccines that may be coming
 - Vaccine hesitancy



Introduction

- In the period up to when we were born, infectious diseases were the **biggest threat** to the health and survival of children
- The risk of most serious infections has been **almost eliminated** by immunization
 - Antimicrobial drugs have also helped, but vaccines are far more important
 - We currently immunize children against 14 serious infections
- We still have some **opportunities** to improve immunization and further reduce the risk of infectious disease in children

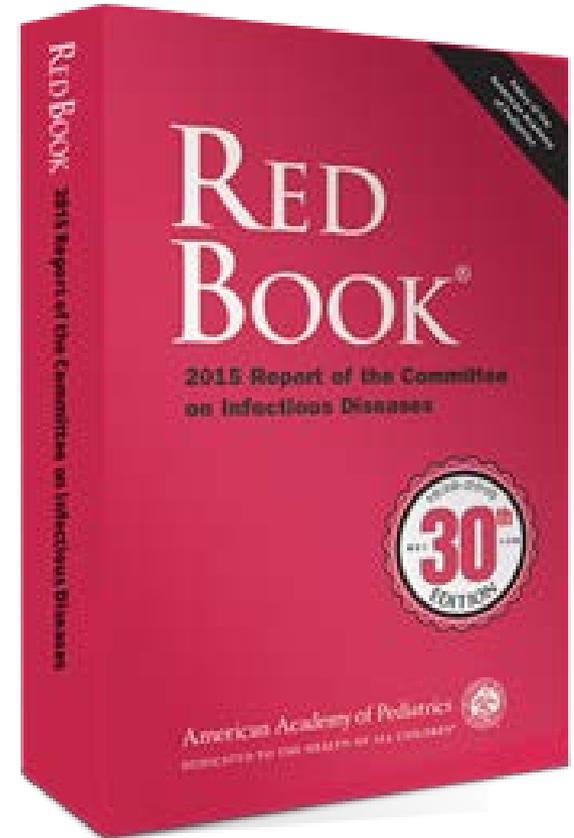
Reminders to begin

- Immunizations in the US are recommended and schedules are published annually by the Advisory Committee on Immunization Practices (**ACIP**) of the CDC
- Michigan has a mandatory immunization registry for children; the Michigan Care Improvement Registry (**MCIR**) of MDHHS



Reminders to begin

- Pediatrics is unique in that the **American Academy of Pediatrics** has their own immunization committee
- They produce the **Red Book**
- They do not always agree with ACIP





Immunizations in Michigan

- Pediatric immunization schedules are **clear**
 - We all know **what** vaccines we should give and **when**
- Because Michigan has an immunization registry, providers are required to use it for children, and immunizations are required for school, we have **good data** on how well we are doing
- Michigan as a state is **not very good**
 - We rank 43rd out of 50 states for age group 19-35 months
 - We had the 10th highest non-medical exemption rate (3.4% of all parents)
 - Only 29% of Michigan adolescents are up to date on their immunizations



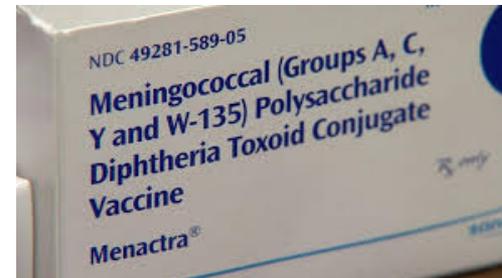
Immunizations in Kalamazoo

- Kalamazoo County collects immunization data too
- Kalamazoo County is **one of the better counties** in Michigan for immunizations
 - Our local waiver rate decreased from a high of 4.8% to 3.1% in 2015 because of a new policy
 - We are 8th out of 84 counties in age 19-35 mo
 - We are 2nd in age 13-17 years
 - Above the state average for every vaccine in every age group, most are above 80%

Immunizations in Kalamazoo

- There are **three** vaccines in the **adolescent** age group where we are **low**
 1. HPV (both boys and girls)
 2. MenACWY
 3. Influenza
- **Why?**


GARDASIL[®] 9
Human Papillomavirus
9-valent Vaccine, Recombinant



Immunizations in Kalamazoo

- **Healthy People 2020** has goals (between 80% and 90%) for eight pediatric immunization rates
 - Five for 19-35 months and three for 13-17 years
- Kalamazoo County currently meets **three of eight** goals
 - We are close in four
 - The farthest from the goal is HPV (goal is 80%, we are at 53.5%)





Changes in the immunization schedule for 2016

- Only a few changes:
 - Two type B meningococcal (*Neisseria meningitidis* type B, **MenB**) vaccines were released and ACIP “recommended considering them for adolescents aged 16 to 23 years”
 - A problem; what does “consider” mean?
 - *Haemophilus influenzae* type b (**Hib**) schedule was extended from 5 years to 18 years if the patient has risk factors
 - Added the new 9-valent Human Papillomavirus vaccine (**9vHPV**), actually replaced the old one



Changes in the immunization schedule for 2017

- Even fewer substantive changes:
 - Added a column for **16 year olds** to call out the **meningococcal vaccine** specifically
 - Reduced **HPV** doses from three to **two**
 - Lowered the minimum age of **HPV** to 9-10 (younger is better)
 - Added a table for immunizing kids with **immunocompromising conditions** (they need more); not a change but a help
 - Removed Cervarix® HPV vaccine; no longer available
 - Removed intranasal influenza vaccine

Updates so far during 2017

- ACIP meets quarterly, so they often have mid-year updates
- Hepatitis B vaccine
 - Recommendation is to give the first dose **within 24 hours of birth**, rather than at the first doctor's visit
- Cholera vaccine
 - A new live cholera vaccine (Vaxchora™) was approved in late 2016 and is now recommended for travelers to endemic countries



Reconstitution Instructions



Trends in vaccines

- Lots of focus on the “big three” infectious diseases: **HIV, malaria and tuberculosis**
- Others; RSV, gonorrhoea, emerging things like Zika and Ebola
- A **universal influenza vaccine**; one antigen that does not change like the current ones
- **DNA vaccines**
- **Adjuvants** in vaccines (chemicals that boost immunity)
 - FLUAD™ influenza for seniors is out
- **“Painless”** vaccines (oral, intranasal, dermal patches)



The meningococcal issue

- Kalamazoo is good (86%) at giving the first dose of ACWY but not so good (59%) at giving the second dose, and the MenB is very confusing
- ACWY is given at 11-12 and 16, but if the patient has one of a list of risk factors, it is given at 2 months, and the schedule is complicated
- There are 2 MenB vaccines, they are different and not interchangeable (one is 2 doses and one is 3), and the schedule is not the same as ACWY
 - Recommended at age 10 for risk factors or outbreaks
 - Risk can include going to college
- How can we get this right?



Future ACIP decisions coming

- Not for pediatrics, but a new **shingles** vaccine (**Shingrix**®, GSK), is being approved, better than Merck's Zostavax®, and you can get Shingrix after you had Zostavax
- A **third dose of MMR** is being recommended in cases of **outbreaks** or exposures to mumps (mumps is coming back, happening on **college campuses**)



Vaccine shortages

- Many vaccines are made by only one or two companies at one plant
- Shortages are common when manufacturers have production problems
- All vaccines on the routine schedule are currently available, but some might be hard to get due to increased demand; we might get a limited quota
 - Hepatitis A
 - Hepatitis B (Merck is out until 2018)
 - Tetanus
 - Yellow fever
 - Injectable polio



MCIR and EPIC

- Bronson Healthcare Group uses the Epic health information system for clinical documentation
- Most immunization information is documented in Epic during the patient encounter
- MCIR holds the patient's immunization history and figures out which immunizations the patient is due for
- Epic and MCIR each had information the other needed, but they did not talk to each other





The issue of vaccine hesitancy

- For many preventable infectious diseases, areas of the US are **at risk of outbreaks** because of inadequate immunity rates in the population (**herd immunity**)
- The biggest reason for population susceptibility is not lack of access to care, but deliberate decisions to not immunize; **vaccine hesitancy**
- Vaccine hesitancy is complex, but can often be addressed by **taking time** with the patients



The issue of vaccine hesitancy

- Across Michigan, 4% of kindergarteners have waivers, but rates are not evenly distributed; there are pockets of unimmunized children
- Vaccine hesitancy is socioculturally complex
 - Distrust in the pharmaceutical industry
 - Distrust in “government”
 - Distrust in science
 - Change in the medical model
 - Compression bias (over-estimate risks)
 - Ambiguity aversion (fear of unknown risks)
 - Preference for “natural” risks
 - Preference for errors of omission than commission

The issue of vaccine hesitancy

- Vaccine hesitancy can be overcome, but it takes extra time during the visit
- Discuss during your new patient interview; if a new family is not open to working with you, you may suggest they find another practice





Vaccine hesitancy resources

- American Academy of Pediatrics (AAP) has an educational and process improvement tool to prepare you
 - <https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/immunizations/Practice-Management/Pages/Change-Template-on-Vaccine-Hesitancy.aspx>
- The CDC, AAP and AAFP have a series of fact sheets that address common concerns
 - <https://www.cdc.gov/vaccines/hcp/conversations/conv-materials.html>



Vaccine hesitancy resources

- The Immunization Action Coalition has lots of discussion materials
<http://www.immunize.org/>
- The Alliance for Immunization in Michigan (AIM) has lots of resources
 - <http://www.aimtoolkit.org/>



Thank you!
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