Alternative Immunization Schedules

Western Canada Immunization Forum

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Objectives

- You will know what we mean by alternative immunization schedules and what some of the commonly requested schedules look like.
- You will be able to recite six reasons in alphabetical order as to why parents are keen on such schedules.
- You will know some of the risks and benefits of these schedules.

What do we mean by alternative schedules?

- The parent is not opposed to all immunization but wants to choose which vaccines their child will receive and direct the timing of all vaccines. Typically, they want to delay most or all vaccines or avoid combination vaccines.

Donald Miller schedule

- **No vaccinations until a child is two years old.**
- **No vaccines that contain thimerosal (mercury).**
- **No live virus vaccines (except for smallpox, should it recur).**
- These vaccines, to be given one at a time, every six months, beginning at age 2:
- **a. Pertussis (acellular, not whole cell)**
- **b. Diphtheria**
- **c. Tetanus**
- **d. Polio (the Salk vaccine, cultured in human cells)**

Robert Sears schedule

2 months Rotavirus DTaP

3 months PCV Hib

4 months Rotavirus (second dose) DTaP (second dose)

5 months PCV (second dose) Hib (second dose)

6 months Rotavirus (third dose) DTaP (third dose)

7 months PCV (third dose) Hib (third dose)

9 months Polio Influenza (and given every year until at least 19 years old)

12 months Polio (second dose) Mumps (separated from MMR)

15 months PCV (fourth dose) Hib (fourth dose)

18 months DTaP (fourth dose) Varicella

2 years Rubella (separated from MMR) Polio (third dose)

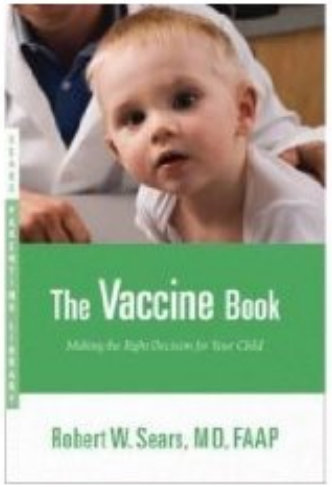
2 1/2 years Hep B Hep A

3 1/2 years Hep B (second dose) Measles (separated from MMR)

4 years DTaP (fifth dose) Polio (fourth dose)

5 years MMR (second dose of each vaccine)

6 years Varicella (second dose)



- A recent study showed that about 2% of US parents refused all immunizations but another 12% deliberately followed an alternative schedule. About 8% followed the Miller or Sears schedule but the others derived their own schedule. Another 28% thought that a delayed schedule would be safer. (Dempsey AJ. Alternative vaccination scheduling preference among parents of young children. Pediatrics 2011;128:848-856)

Personal, unscientific observation:

- Parents requesting such schedules are typically well-educated folk who have read a lot. They are usually not health care workers and are simply not as impressed with scientific evidence as most of us in this room are. They often have some connection with BC!

- Why do they want the schedule changed and what are the theoretical risks and benefits of these changes?

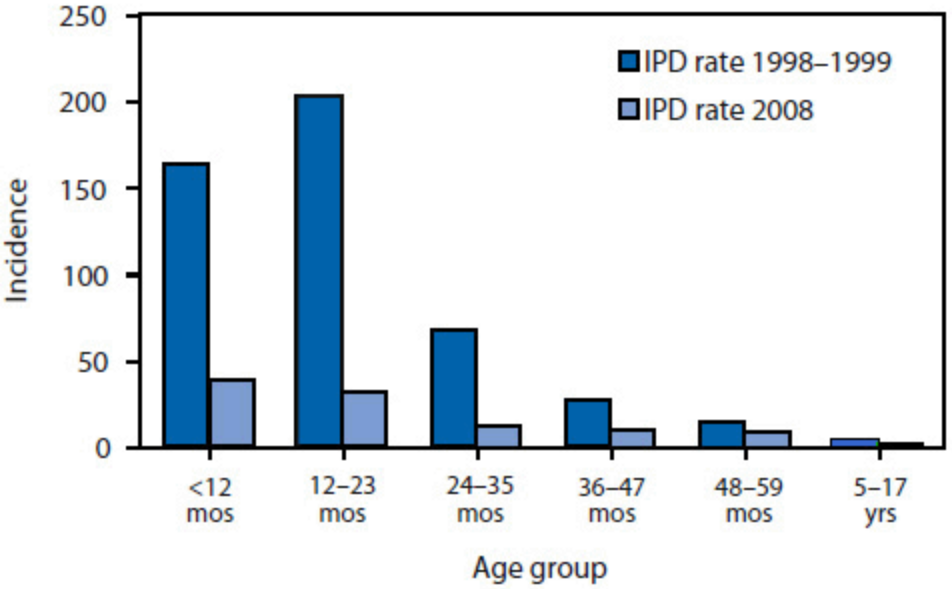
Reason #1 – Unexpected bad things can happen.

Reason # 1 - My mother -in-law says that my husband and his sister both almost died after receiving their 6 month immunizations. We'll wait until our kids are 2 to immunize them.

- Rebuttal A: It is possible the problem was not as serious as described or was not vaccine-related (but no family is likely to buy that argument if they think the same bad thing happened twice). Many current vaccines have improved safety profiles over the ones in use decades ago.

- Rebuttal B: Parents view immunization as protection for life, so don't get why we are in such a rush to immunize. The problem is that some of the diseases we are immunizing against have a much higher incidence and higher mortality rate in the first year of life.

CDC data on incidence of invasive pneumococcal disease



*Per 100,000 population.

Invasive meningococcal disease Incidence per 100,000 population in Canada Age Group, 2006

< 1 yr	1-4 yrs	5-9 yrs	10-14 yrs	15-19 yrs	20-24 yrs	25-64 yrs	65+ yrs	Total
7.83 (27)	1.82 (25)	0.43 (8)	0.48 (10)	1.43 (31)	1.24 (28)	0.30 (54)	0.62 (27)	0.64 (210)

- *Haemophilus influenza* type B – barely worth immunizing kids older than 4 years as incidence is so low
- Pertussis – almost all deaths occur in children < 6 months of age

Reason # 2- It is “dangerous” to expose the neonatal immune system to so many antigens.

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- Rebuttal A: Think about the number of antigens one finds in the birth canal! Infants were cleverly designed to live in a world full of potential pathogens.
- Rebuttal B: The number of antigens in vaccines are a drop in the bucket compared to all the antigens a neonate will be exposed to.
  - Current vaccine schedule involves giving less than 10% of the antigens in the 1980 schedule.
  - It is estimated that infants have enough B cells that they could actually respond to minimum 10,000 modern vaccines at once! (Offit PA: Pediatrics 2002; 109:124-9.)

Reason #3

Reason #3: It is dangerous to expose a child to multiple vaccines at once.

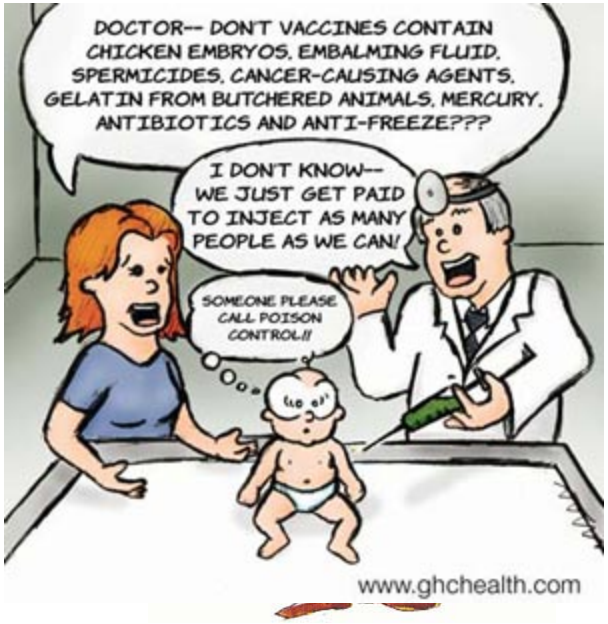
- Rebuttal A: Only on rare, rare occasions have combination vaccines been associated with more adverse events:
  1. about 1 in 2,500 children who receives MMRV rather than MMR and Varicella at 12 months of age has a febrile seizure
  2. Same may be true for PCV-13 given at the same time as some inactivated influenza vaccines
- Rebuttal B: If we could get consent from the child, would the agree to four shots spread out over time when one will do? Would they rather "get it over with" or keep coming back for more?

Reason #4

Reason #4: Pain will scar my child for life.

- Rebuttal: This is a legitimate argument as there is some evidence that painful experiences early in life may decreases a person's ability to cope with pain later. However, the degree of physical pain from an injection is minor compared with the discomfort that a child is likely to endure should they develop any vaccine-preventable disease.
- I think that part of the problem that we never talk about is that many parents have needle phobia themselves .
- There are things that we can do to reduce pain from immunizations. (Taddio A. Reducing the pain of childhood vaccination: an evidence-based clinical practice guideline. CMAJ. 2010;182(18):E843-55)

Reason #5


DOCTOR-- DON'T VACCINES CONTAIN CHICKEN EMBRYOS, EMBALMING FLUID, SPERMICIDES, CANCER-CAUSING AGENTS, GELATIN FROM BUTCHERED ANIMALS, MERCURY, ANTIBIOTICS AND ANTI-FREEZE???
I DON'T KNOW-- WE JUST GET PAID TO INJECT AS MANY PEOPLE AS WE CAN!
SOMEONE PLEASE CALL POISON CONTROL!!
www.ghchealth.com

Reason #5

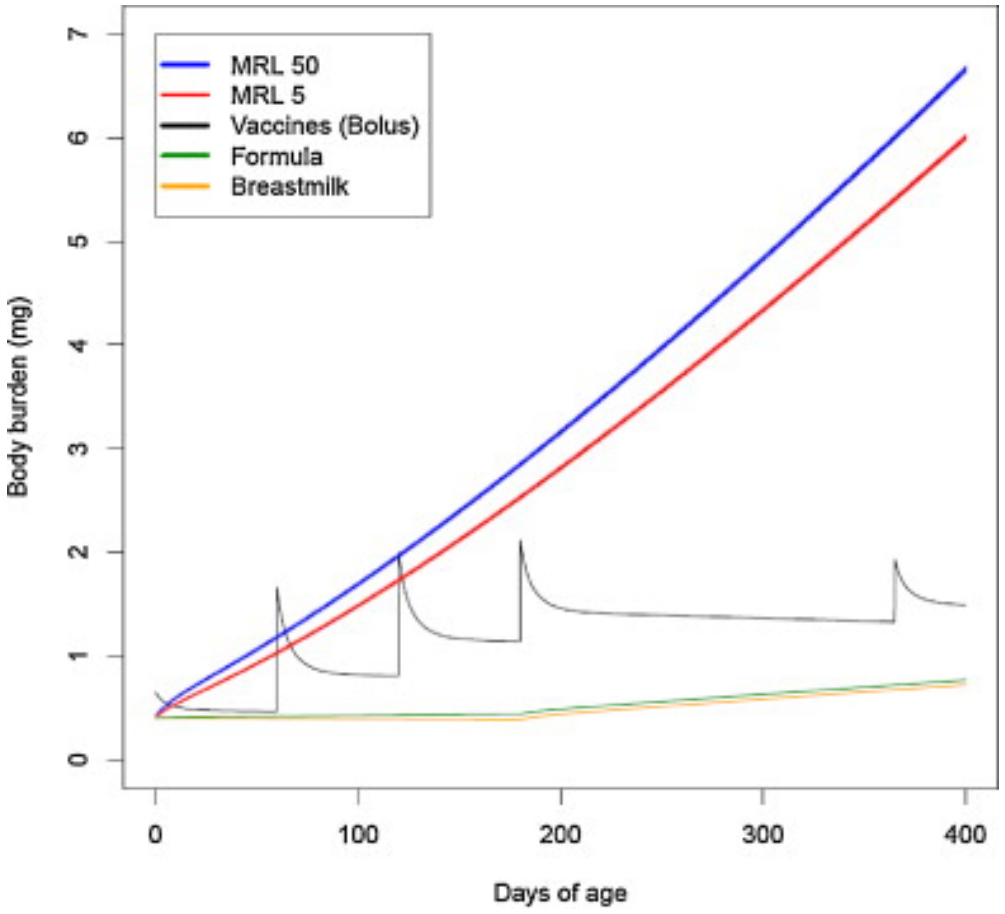
- Parents perceive that those who make guidelines profit from recommending vaccines.
- Rebuttal: There is no denying that those who make vaccines do an excellent job of marketing them to whoever will listen. We cannot deny that the optics have not always been favorable but there is increasing awareness that we must deal with conflicts of interest for those who make recommendations.

Reason #5

Reason #6 – Aluminum might be the new mercury

- Rebuttal A: Use of aluminum as an adjuvant dates back to 1926. It was only when we used an adjuvanted influenza vaccine for H1N1 that the general public sat up and took notice.
- Rebuttal B: The amount of aluminum in vaccines amounts to not much more than the amount in a normal infant diet.

Estimated aluminum body burden in infants given maximum amount of aluminum possible in CDC schedule (Mitkus RJ. Updated aluminum pharmacokinetics following infant exposures through diet and vaccination. Vaccine 2011; 29:9538-9543)



Reason #6

- Looking back at the immunization schedules in place in Canada over the past decades, would the parents ever have been right in delaying immunizations?

- I can think only of two examples of problems related to immunizations-as-per-schedule:

1. preterm infants and apnea - benefit still thought to outweigh the risk but consider monitoring
2. BCG can lead to disseminated infection with undiagnosed immunodeficiency, which has resulted in a change in the Canadian recommendations

- In terms of efficacy, we now believe that the initial NACI-recommended schedule for conjugated meningococcal serotype C vaccine (2,4, and 6 months) resulted in shorter times with theoretically protective titers than schedules where at least one dose was given at minimum 12 months of age