
Choosing an Alternative Vaccine Schedule

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The Vaccine Book

Making the Right Decision for Your Child

Robert W. Sears, MD, FAAP

Dr. Bob's Alternative Vaccine Schedule

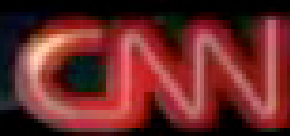
<i>2 months</i>	DTaP, Rotavirus
<i>3 months*</i>	Pc, HIB
<i>4 months</i>	DTaP, Rotavirus
<i>5 months*</i>	Pc, HIB
<i>6 months</i>	DTaP, Rotavirus
<i>7 months*</i>	Pc, HIB
<i>9 months</i>	Polio, Flu (2 doses†)
<i>12 months</i>	Mumps, Polio
<i>15 months</i>	Pc, HIB
<i>18 months</i>	DTaP, Chickenpox

Too Many Vaccines Too Early



JENNY MCCARTHY'S FIGHT TO SAVE SON

LARRY KING LIVE



AUTISM: FASTEST-GROWING DEVELOPMENTAL DISORDER IN U.S. HITS 1 IN 150 KIDS



Times have changed

<u>Year</u>	<u>Vaccines</u>	<u># of shots by 2 years of age</u>	<u># shots at one time</u>
1900	Smallpox	1	1

Times have changed

<u>Year</u>	<u>Vaccines</u>	<u># of shots by 2 years of age</u>	<u># shots at one time</u>
1980	DTwP Polio (OPV) MMR	5	2

Times have changed

<u>Year</u>	<u>Vaccines</u>	<u># of inocs by 2 years of age</u>	<u># of inocs one time</u>
2015	DTaP	26	5
	Polio (IPV)		
	MMR		
	Varicella		
	Pneumococcal (conj)		
	Hepatitis A, B		
	Hib		
	Influenza		
	Rotavirus		

**Fewer immunologic components are
in vaccines today than
100 years ago**

Number of antigens in vaccines

Year
1900

Vaccine
Smallpox

of antigens
200

Number of antigens in vaccines

<u>Year</u>	<u>Vaccine</u>	<u># of antigens</u>
1980	Diphtheria	1
	Tetanus	1
	Pertussis (wc)	~3000
	Polio (OPV)	15
	Measles	10
	Mumps	9
	<u>Rubella</u>	<u>5</u>
	Total	~3041

Number of antigens in vaccines

<u>Year</u>	<u>Vaccine</u>	<u># of antigens</u>
2015	Diphtheria	1
	Tetanus	1
	Pertussis (ac)	2-5
	Polio (IPV)	15
	MMR	24
	Hib	2
	Varicella	69
	Hepatitis A, B	5
	Rotavirus	11-15
	Influenza	12-14
	<u>Pneumococcus</u>	<u>8</u>
	Total	150-159

Are infants too young to be vaccinated?

- ◆ **From birth, infants are challenged by bacteria in the environment (colonizing bacteria on intestines, skin, and throat; bacteria inhaled on dust).**
- ◆ **Vigorous sIgA responses within the first week of life keeps colonizing bacteria from invading.**

Are infants too young to be vaccinated?

- ◆ **Excellent immune responses to HBV and BCG vaccines given at birth.**
- ◆ **About 95% of infants will develop protective immune responses to HBV, Hib, DTaP, polio, and pneumococcal vaccines by 6 months of age.**
- ◆ **Need to be fully immunized against certain infections (Hib, pertussis, pneumococcus) by 6 months of age.**

Aluminum Overload



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“The alternative schedule suggests only one aluminum containing vaccine at a time in infant years. By spreading out the shots, you spread out the exposure so infants can process the aluminum without it reaching toxic levels.”

Robert Sears, *The Vaccine Book*, p. 239

Aluminum

- ◆ **Aluminum is the third most abundant element on the earth's surface and the most abundant metal.**
- ◆ **As a consequence, aluminum is in the air we breathe, the food we eat, and the water we drink.**

Aluminum in food

- ◆ **The greatest source of aluminum is in food.**
- ◆ **Adults typically ingest 5-10 mg of aluminum per day.**
- ◆ **Aluminum is found naturally in teas, herbs, and spices.**

Aluminum in food

- ◆ **Aluminum is also added to foods such as leavening agents, anti-caking agents, emulsifiers, and coloring agents.**
- ◆ **Found commonly in pancake mixes, self-rising flours, baking powder, processed cheese, and cornbread.**

Aluminum in food

◆ Aluminum is also found in breast milk and infant formulas.

◆ By 6 months of age:

Vaccines	4 mg
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Breast milk	10 mg
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Infant formula	30 mg
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Soy formula	120 mg
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Disposition of aluminum

- ◆ **100% of aluminum is absorbed following vaccination.**
- ◆ **Only 1% of aluminum is absorbed after ingestion.**

Disposition of aluminum

- ◆ Aluminum enters the circulation, binds to transferrin, and is eliminated by kidneys.
- ◆ 50% eliminated in 24 hour
85% eliminated in 13 days
96% eliminated in 3 years

Disposition of aluminum

◆ Aluminum is not completely eliminated from the body.

◆ End of 1st year of life:

Breast milk	0.1 mg
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Infant formula	0.1 mg
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Vaccines	0.1 mg
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Adult	50-100 mg
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How do we know aluminum is safe?

- ◆ **Aluminum can cause encephalopathy, osteomalacia, and anemia in two groups: severely premature infants and patients on chronic dialysis.**
- ◆ **Must meet two criteria: decreased or absent renal function AND large source of exogenous aluminum (i.e., IV solutions or antacids).**

How do we know aluminum is safe?

- ◆ Circulating levels of aluminum in those with symptoms between 100-1,000 ng/ml.
- ◆ Typically, children and adults have between 1-5 ng/ml of aluminum in blood.
- ◆ Injected vaccines do not raise that level.

Aluminum references

Baylor, NW et al. Aluminum salts in vaccines—US perspective. *Vaccine* 2002;20:S18-S23

Bishop NJ et al. Aluminum neurotoxicity in preterm infants receiving intravenous feeding solutions. *N Engl J Med* 1997;336:1557-1561

Committee on Nutrition. Aluminum toxicity in infants and children. *Pediatrics* 1996;97:413-416

Keith LS, et al. Aluminum toxicokinetics regarding infant diet and vaccinations. *Vaccine* 2002;20:S13-S17

Pennington JA. Aluminum content in food and diets. *Food Additives and Contaminants* 1987;5:164-232

Too Many Shots at One Time

Dr. Bob's Alternative Vaccine Schedule

<i>2 months</i>	DTaP, Rotavirus
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Are more shots more stressful?

- ◆ Study showing that two shots are not more likely to induce cortisol (as a marker for stress) than one shot.

Ramsay DS, Lewis M. Developmental changes in infant cortisol and behavioral response to inoculation. *Child Development* 1994;65;1491-1502.

The Harm

Harm in alternative schedule

- ◆ **Not science based**
- ◆ **More likely to induce needle phobia**
- ◆ **Increase time during which children are susceptible to vaccine-preventable diseases**
- ◆ **Responsibility to the waiting room**
- ◆ **No benefit**