

AUTISM AND VACCINES AROUND THE WORLD: Vaccine Schedules, Autism Rates, and Under 5 Mortality

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The United States has the highest number of mandated vaccines for children under 5 in the world (36, double the Western world average of 18), the highest autism rate in the world (1 in 150 children, 10 times or more the rate of some other Western countries), but only places 34th in the world for its children under 5 mortality rate. What’s going on?

Context: There is an intense debate over the correlation between rising autism prevalence and the United States vaccine schedule. The vaccine schedule for children aged 5 and under has nearly tripled in 25 years. In 1983, the Centers for Disease Control recommended 10 vaccines for this age group. Today, the recommendation is 36 vaccines. Calls by advocacy organizations for a “safer and leaner vaccine schedule” have been dismissed, with health authorities implying that mortality rates from childhood diseases would materially increase.

Objective: To compare vaccine schedules, autism rates, and under 5 mortality rates of the United States to other countries to see if any differences emerge.

Design: A full publication and literature review was completed to determine vaccine schedules and under 5

mortality rates for 30 countries, including the United States. The 29 other countries all had lower (better) under 5 mortality rates than the U.S. Additionally, autism rates were compared for certain countries with reliable, published autism prevalence data.

Results: The United States mandates the most vaccines in the Western world (36), double the average of the 30 countries studied (18). All countries with lower vaccine mandates have better under 5 mortality rates and many have materially lower autism rates.

Conclusions: The analysis lends credibility to the relationship between vaccines and autism and challenges the public view of both the Centers for Disease Control and American Academy of Pediatrics that more vaccines is always positive for public health.

THE UNITED STATES has the most aggressive mandated vaccine schedule in the world. The vaccine schedule has grown materially since 1990 (25 additional vaccines). Interestingly, the adoption rate of other countries are far lower for recent vaccines (Varicella, Rotavirus, Hepatitis A & B, Flu) than they have been for the “core” vaccines used to fight deadly disease (DTP, MMR, Polio). Today, there are 11 licensed vaccines on the U.S. Recommended Immunization Schedule published annually by the Centers for Disease Control. Many of the vaccines are administered multiple times. Table 1 depicts the evolution of the U.S. vaccine schedule and also highlights the adoption rates of other Western Countries of each vaccine. Generally speaking, the U.S. has been the early adopter of new vaccines.

TABLE 1: U.S. MANDATED VACCINES VERSUS OTHER COUNTRIES

Year Added	USA Mandated	Doses	How many countries
USA Schedule	Vaccines	Given USA	(of 30 studied) mandate this vaccine?
1940s	Diphtheria, Tetanus, Pertussis (DTP)	5	30 of 30 (100%)
1955	Inactivated Poliovirus (IPV)	4	30 of 30 (100%)
1971	Measles, Mumps, Rubella (MMR)	2	30 of 30 (100%)
1990	Haemophilus Influenzae type B (Hib)	4	28 of 30 (93%)
1991	Hepatitis B (HepB)	3	18 of 30 (60%)
1995	Varicella	2	4 of 30 (13%): USA, Germany, Australia, Canada
1998	Rotavirus (RV)	3	3 of 30 (10%): USA, Australia, Austria
2000	Pneumococcal (PCV)	4	11 of 30 (37%)
2004	Influenza	7	2 of 30 (7%): USA, Canada
2004	Hepatitis A (Hep A)	2	1 of 30 (3%): USA
2006	Meningococcal (high risk groups only)	--	
	<i>Total Vaccines to US Children Under 5</i>	36	

UNDER 5 MORTALITY is a measure of country-specific child mortality rates before the age of 5. The United Nations tabulates the data for all countries. The rates are expressed per 1,000 children born. The United States is 34th in the world for under 5 mortality, tied with Greece and behind such diverse countries as France, Germany, Japan, Singapore, Cuba, and Slovenia, to name a few. In Table 2, vaccine schedules (where obtainable) and under 5 mortality rates are compared for the 30 countries studied. Note that all 29 other countries have lower (better) under 5 mortality rates than the U.S.

TABLE 2: NUMBER OF MANDATORY VACCINES AND UNDER 5 MORTALITY RATES FOR TOP 30 COUNTRIES

Country	# of Mandatory Vaccines (<5 yrs old)	Mortality Rates Per 1,000 children Under 5 yrs oldⁱ	Mortality Rate Worldwide Rank
United States	36	7.8	34
Iceland	11	3.9	1
Sweden	11	4.0	2
Singapore	13	4.1	3
Japan	11	4.2	4
Norway	13	4.4	5
Finland	12	4.7	6
Hong Kong	13	4.7	7
Czech Republic	20	4.8	8
Korea, South	n.a.	4.8	9
Switzerland	16	5.1	10
France	17	5.2	11
Spain	20	5.3	12
Belgium	18	5.3	13
Germany	22	5.4	14
Austria	19	5.4	15
Australia	27	5.6	16
Israel	11	5.7	17
Denmark	12	5.8	18
Netherlands	20	5.9	19
Canada	28	5.9	20
United Kingdom	20	6.0	21
Italy	13	6.1	22
Ireland	24	6.2	23
Channel Islands	n.a.	6.2	24
Slovenia	14	6.4	25
New Zealand	21	6.4	26
Cuba	n.a.	6.5	27
Luxembourg	23	6.6	28
Portugal	19	6.6	29
Brunei	n.a.	6.7	30
Cyprus	23	6.9	31
Malta	14	7.6	32
Croatia	18	7.7	33
Average	18.0		

n.a.: Vaccine schedules for certain countries were unobtainable.

AUTISM PREVALENCE in the United States has soared. In 1970, Treffert et. al. published the first known autism prevalence study in the United States, *Epidemiology of Infantile Autism*, with an autism prevalence rate of less than 1 per 10,000. In 1987, Burd et. al. published a study, *A prevalence study of pervasive developmental disorders in North Dakota*, showing an autism rate of 3.3 per 10,000. In 2007, the Centers for Disease Control's Autism and Developmental Disabilities Monitoring Network released data showing that prevalence of autism had grown to 66 per 10,000 or 1 in 150, an increase of more than 6,000% from the 1970 study.

Prevalence data on autism from other countries is limited. For purposes of this report, only journal-published prevalence data was used. Below, in Table 3, the United States current autism prevalence is compared to certain other countries that met the following criteria: materially lower levels of mandated vaccines and published autism prevalence data. For comparison purposes, the prevalence figures are also expressed as a multiplier of the U.S. autism rate. For example, if a country has an autism rate of 1 in 2,000, than the U.S. rate is 13-times greater, expressed as 13x.

TABLE 3: VACCINE SCHEDULES, AUTISM RATES, AND UNDER 5 MORTALITY FOR SELECT COUNTRIES

Country	# of Mandatory Vaccines (<5 yrs old)	Autism Rate	US Autism Rate Multiplier	Mortality Rates Per 1,000 children Under 5 years old	Mortality Rate Worldwide Rank
<u>United States</u>	<u>36</u>	<u>1 in 150</u>		<u>7.8</u>	<u>34</u>
Iceland	11	1 in 1,100 ⁱⁱ	7.3 x	3.9	1
Sweden	11	1 in 862 ⁱⁱⁱ	5.7 x	4.0	2
Japan	11	1 in 475 ^{iv}	3.2 x	4.2	4
Norway	13	1 in 2,000 ^v	13.3 x	4.4	5
Finland	12	1 in 719 ^{vi}	4.8 x	4.7	6
France	17	1 in 613 ^{vii}	4.1 x	5.2	11
Israel	11	1 in 1,000 ^{viii}	6.7 x	5.7	17
Denmark	12	1 in 2,200 ^{ix}	14.6 x	5.8	18

DISCUSSION

Worldwide vaccine schedules, autism rates, and under 5 mortality rates have not been previously compared. The United States has the highest number of mandated vaccines of any country in the world, the highest prevalence of autism in the world, and places 34th for under 5 mortality.

This study appears to lend credibility to the theory that the U.S. vaccine schedule is linked to the U.S. epidemic of autism, particularly when compared to the published autism rates of other countries. Urgent additional study is required. If it is determined that the U.S. vaccine schedule should be reduced, many international models exist that appear to strike a successful balance between vaccines and mortality levels.

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References

Note: All vaccine schedules are as of 2006. Some countries use combination vaccines. All schedule counts have been normalized to compare to the US schedule. For example, if a country uses an MMR-Varicella combination vaccine, it counts as "2" vaccines.

All European schedules can be found at: www.euvac.net

For Japan's schedule: http://idsc.nih.go.jp/yosoku/vacpdf/EN_05-1.pdf

For Singapore's schedule: <http://www.tts.edu.sg/pdf/Medicalmatters/Singapore%20Immunisation%20schedule.pdf>

For Hong Kong's schedule: <http://www.fmshk.org/database/articles/005sf1.pdf>

For Australia's schedule: <http://www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/nips>

For New Zealand's schedule: <http://www.moh.govt.nz/immunisation>

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