

The Continued Need for Immunizations in 2016



Stephanie Schauer, Ph.D.
Program Manager, Immunization Program
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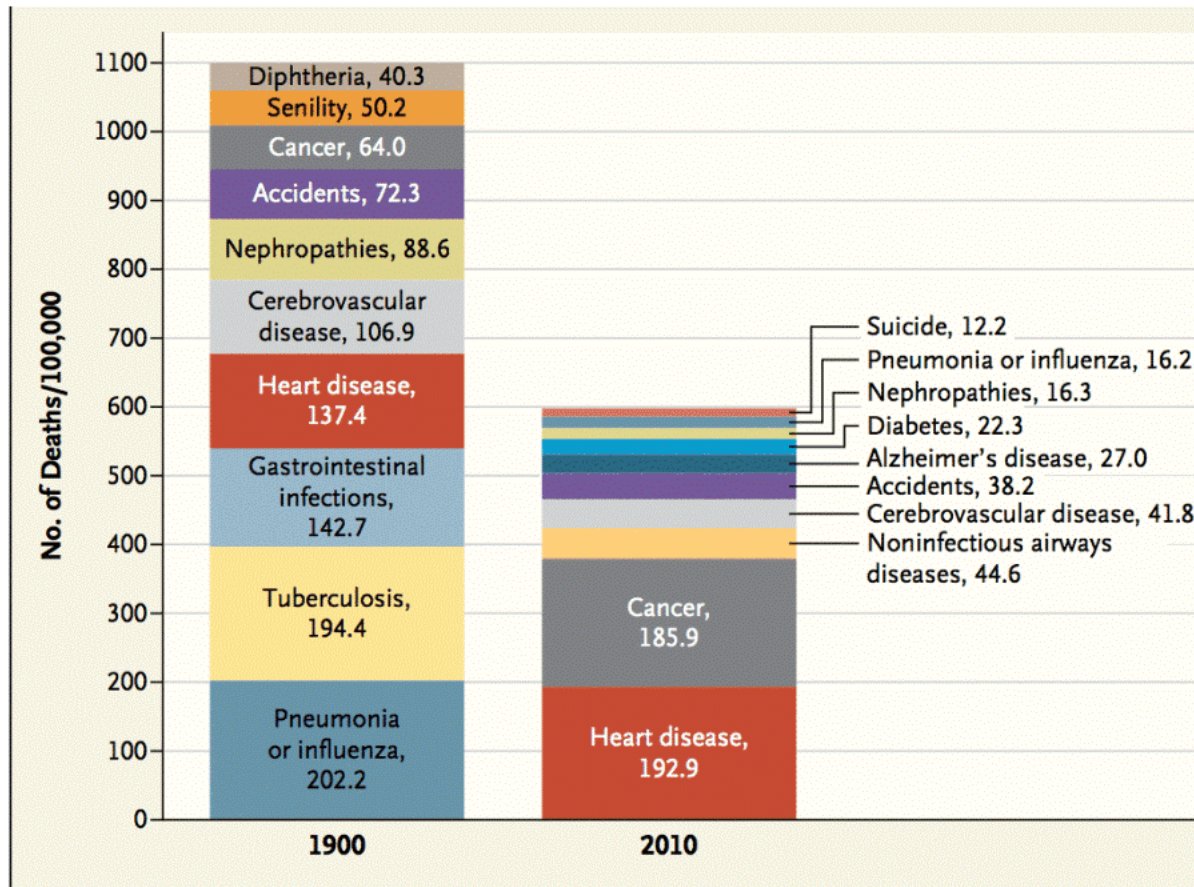
Wisconsin Department of Health Services

Ten Great Public Health Achievements United States, 1900-1999– MMWR 1999

- ❑ Control of infectious diseases
- ❑ **Vaccination**
- ❑ Motor-vehicle safety
- ❑ Safer workplaces
- ❑ Decline in death from coronary heart disease and stroke
- ❑ Safer and healthier foods
- ❑ Healthier mothers and babies
- ❑ Family planning
- ❑ Fluoridation of drinking water
- ❑ Recognition of tobacco use as health hazard



Top Ten Causes of Death in the U.S., 1900 vs. 2010



Top 10 Causes of Death: 1900 vs. 2010.

Data are from the Centers for Disease Control and Prevention.



Common Questions about Vaccines

- ❑ How do vaccines protect us?
- ❑ Are they effective?
- ❑ Why do we need to keep vaccinating?
- ❑ Are they safe?
- ❑ What vaccines are recommended?





HOW DO VACCINES WORK?

How do vaccines work?

- ❑ Vaccines use a person's immune system to protect against disease.
- ❑ A weakened form of the disease germ (the vaccine) is injected into the body.
- ❑ The immune system responds and makes specialized cells and antibodies to fight the germ.



How do vaccines work?

- ❑ The immune system keeps some of these cells and antibodies around long past vaccination.
- ❑ If the germ ever gets into the body, the immune system can rapidly call up these “memory” cells and respond to the germ quickly and more efficiently, inactivating it before it can cause disease.
- ❑ This memory persists for years, and often for life.



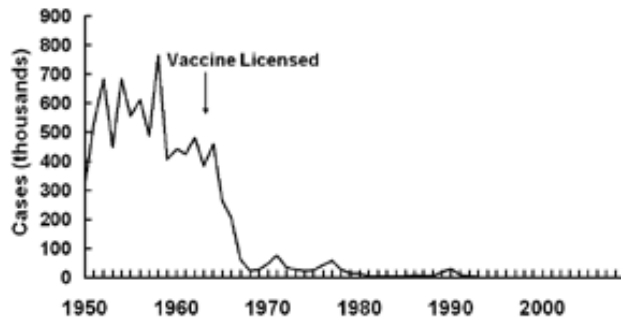


ARE VACCINES EFFECTIVE?

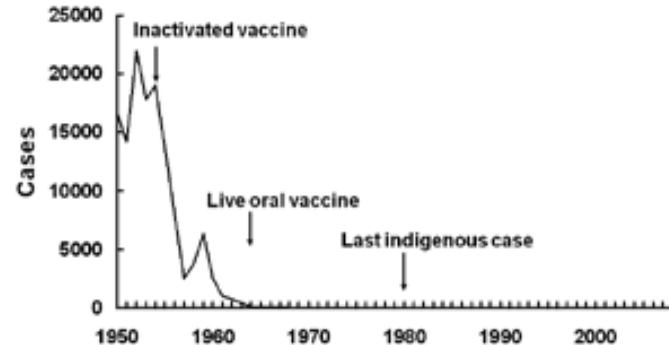
**(AND IF SO, WHY DO WE NEED
TO STILL VACCINATE?)**

How successful have vaccines been?

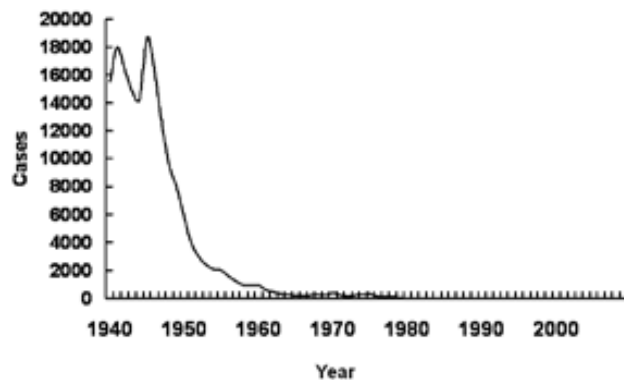
Measles - United States, 1950-2009



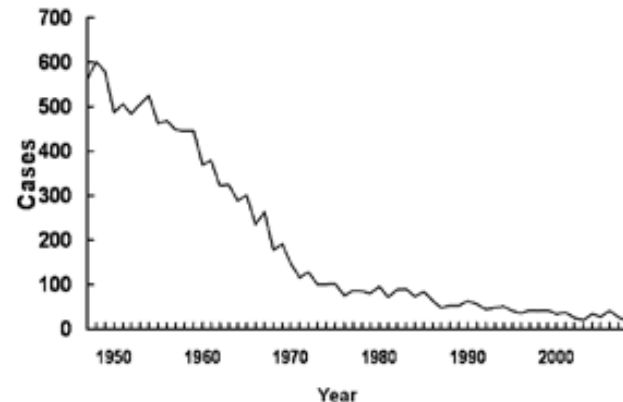
Poliomyelitis—United States, 1950-2009



Diphtheria - United States, 1940-2009



Tetanus—United States, 1947-2009

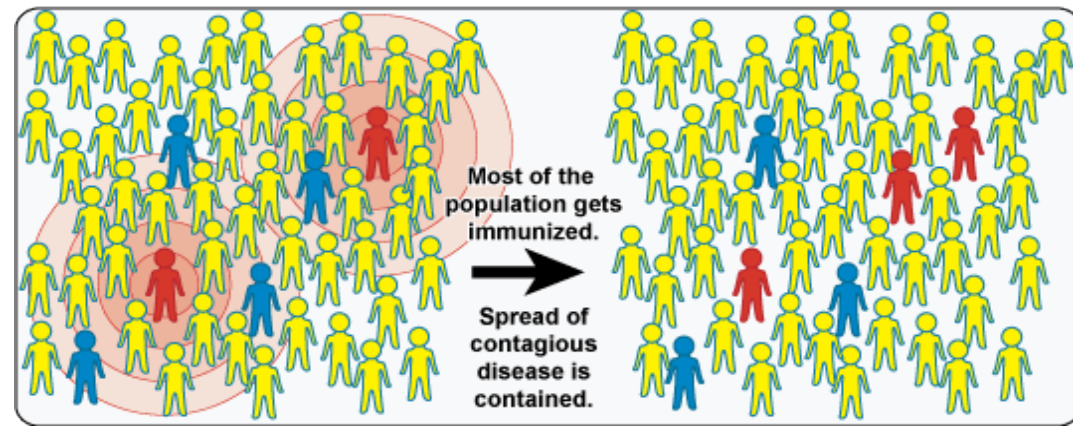
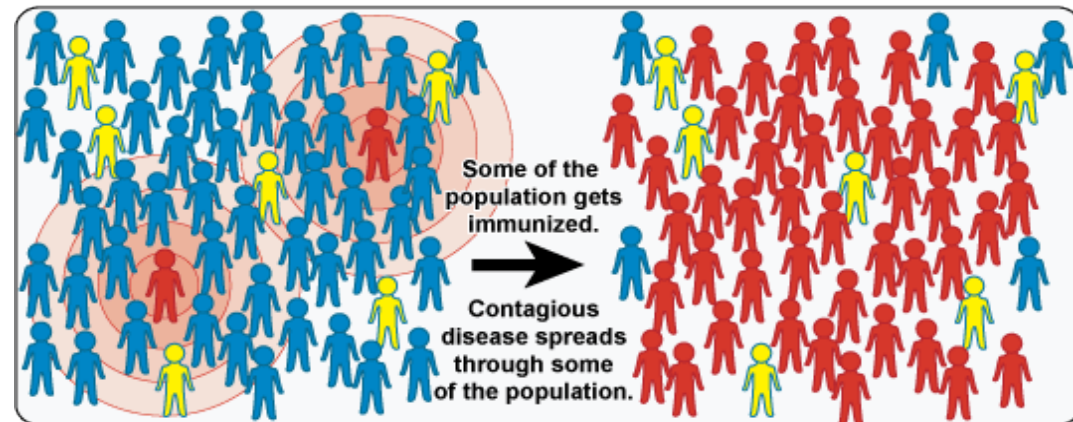
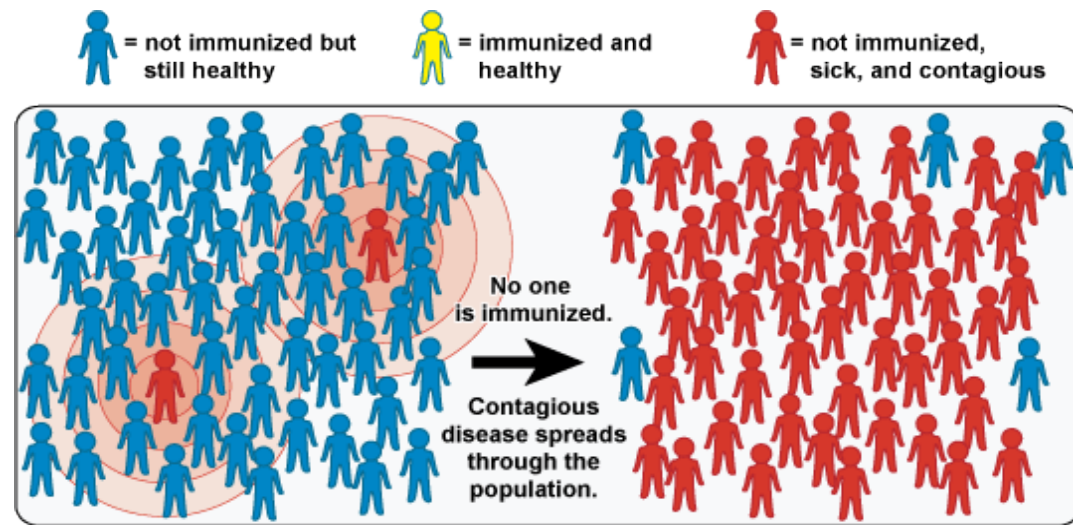


So why keep immunizing if the diseases are gone?

- ❑ While some diseases are becoming rare, it is because we are vaccinating against them. If we stop, then the diseases could start spreading again.
- ❑ Before long, we would see epidemics again as the number of individuals who are not protected rises.



Herd Immunity



Are vaccines effective?

- ❑ No vaccine (or medicine) is 100% effective, but many provide excellent protection.
- ❑ Many give life-long protection (though some may need boosters to provide high levels of protection).
- ❑ Since the introduction of vaccines, diseases such as rubella have been eliminated from circulating in certain parts of the world.



Why continue to immunize?

- ❑ Just because the disease rates are low in the U.S. doesn't mean we won't be exposed.
- ❑ Given how our world now moves and travels, disease is only an airplane ride away!
- ❑ Example: Pertussis (whooping cough) in Japan, 1974-1981



Measles Mumps Rubella (MMR) Vaccine

- ❑ Provides protection against three viral illnesses.
- ❑ Recommended as a two-dose series, typically given at 12-15 months of age and 4-6 years.
- ❑ Two doses of MMR has been shown to be 98% effective against measles.
- ❑ Effectiveness against mumps is lower-estimated 88% (range 66-95%)



Mumps

- ❑ Mumps is a viral illness that causes parotitis (swelling of the salivary glands).
- ❑ Transmission is airborne or direct contact with droplet nuclei or saliva.
- ❑ Starts with nonspecific symptoms, such as headache, low-grade fever, malaise and muscle aches.
- ❑ Complications include orchitis, pancreatitis, deafness and rarely, death.



2015 Mumps Outbreak in Wisconsin

- ❑ There were 43 cases; all were laboratory confirmed by PCR.
- ❑ Affected eight counties and five university/college settings.
- ❑ Vast majority of cases were aged 18-25 years.
- ❑ Three individuals were hospitalized and two individuals developed orchitis.



2015 Mumps Outbreak in Wisconsin

- ❑ The majority of cases (64%) had previously received two doses of MMR vaccine.
- ❑ Why is this happening?

≥2 Doses of MMR	29 (64%)
1 Dose of MMR	4 (9%)
0 Doses of MMR	4 (9%)
Unknown/Under Investigation	8 (18%)



2015 Mumps Outbreak in Wisconsin

- ▣ To assess the effectiveness of the vaccine, one should compare the attack rate in those who **are** vaccinated with the rate in those who are **not** vaccinated.



Outbreak Example

	Number of Individuals	Number of Cases	Attack Rate	Percentage
Vaccinated	950	29	3%	$29/44 = 66\%$
Unvaccinated	50	15	30%	$15/44 = 34\%$
Total	1000	44		



2015 Mumps Outbreak in Wisconsin

- ❑ So while the absolute number of cases of mumps in individuals who are vaccinated is large, so is the number of exposed individuals who are vaccinated (and didn't get sick).
- ❑ From the 2006 U.S. outbreak, CDC has determined that while the majority of cases occurred in vaccinated individuals, the attack rate was much higher in unvaccinated individuals.





ARE VACCINES SAFE?

Are vaccines safe?

- ❑ All vaccines used in the United States are required to go through extensive safety testing before they are licensed by FDA.
- ❑ Once in use, they are continually monitored for safety and effectiveness.
- ❑ Any vaccine can cause a side effect, but for the most part, these are minor (like a sore arm) and go away in a few days.
- ❑ Careful screening ensures that vaccines continue to be given in a safe manner.



Risk of Vaccination

- ❑ Serious reactions are extremely rare, and the risk of serious complications from a disease that could have been prevented is far greater.
- ❑ The choice to not be vaccinated is the choice to accept the risk of getting the disease, and transmitting that disease to others.



Risk Comparison

139 Motor Vehicle Deaths

Per 1,000,000 people

99 Unintentional poisonings

Per 1,000,000 people

Less than 1 serious allergic reaction to MMR vaccine

Per 1,000,000 doses

1000 cases of encephalopathy after measles disease

Per 1,000,000 cases





WHAT VACCINES ARE RECOMMENDED?

Recommended Vaccines for Children

- ❑ Diphtheria
- ❑ Tetanus
- ❑ Pertussis (Whooping Cough)
- ❑ Polio
- ❑ *Streptococcus pneumoniae*
- ❑ *Haemophilus influenzae*
- ❑ Influenza
- ❑ Measles
- ❑ Mumps
- ❑ Rubella
- ❑ Varicella (Chickenpox)
- ❑ Hepatitis B
- ❑ Hepatitis A
- ❑ Meningococcal
- ❑ Human Papillomavirus



2016 Recommended Adult Immunization Schedule

Figure 1. Recommended immunization schedule for adults aged 19 years or older, by vaccine and age group¹

VACCINE ▼	AGE GROUP ►	19-21 years	22-26 years	27-49 years	50-59 years	60-64 years	≥ 65 years
Influenza ^{*2}		1 dose annually					
Tetanus, diphtheria, pertussis (Td/Tdap) ^{*3}		Substitute Tdap for Td once, then Td booster every 10 yrs					
Varicella ^{*4}		2 doses					
Human papillomavirus (HPV) Female ^{*5}		3 doses					
Human papillomavirus (HPV) Male ^{*5}		3 doses					
Zoster ⁶						1 dose	
Measles, mumps, rubella (MMR) ^{*7}		1 or 2 doses depending on indication					
Pneumococcal 13-valent conjugate (PCV13) ^{*8}		1 dose					
Pneumococcal 23-valent polysaccharide (PPSV23) ⁸		1 or 2 doses depending on indication					1 dose
Hepatitis A ⁹		2 or 3 doses depending on vaccine					
Hepatitis B ^{*10}		3 doses					
Meningococcal 4-valent conjugate (MenACWY) or polysaccharide (MPSV4) ^{*11}		1 or more doses depending on indication					
Meningococcal B (MenB) ¹¹		2 or 3 doses depending on vaccine					
<i>Haemophilus influenzae</i> type b (Hib) ^{*12}		1 or 3 doses depending on indication					



Adult Immunization Schedule Recommendation Groupings



Recommended for all persons who:

- **Meet the age requirement**
- **Lack documentation of vaccination, or**
- **Lack evidence of past infection**



Recommended for persons with a risk factor (medical, occupational, lifestyle, or other indication)



No recommendation



Vaccine Recommendations Based on Medical and Other Indications

Figure 2. Vaccines that might be indicated for adults aged 19 years or older based on medical and other indications¹

VACCINE ▼	INDICATION ►	Pregnancy	Immuno-compromising conditions (excluding HIV infection) ^{4,6,7,8,13}	HIV infection CD4+ count (cells/μL) ^{4,6,7,8,13}	Men who have sex with men (MSM)	Kidney failure, end-stage renal disease, on hemodialysis	Heart disease, chronic lung disease, chronic alcoholism	Asplenia and persistent complement component deficiencies ^{8,11,12}	Chronic liver disease	Diabetes	Healthcare personnel
Influenza ^{*2}				< 200	≥ 200						
Tetanus, diphtheria, pertussis (Td/Tdap) ^{*3}		1 dose Tdap each pregnancy									
Varicella ^{*4}			Contraindicated								
Human papillomavirus (HPV) Female ^{*5}			3 doses through age 26 yrs				3 doses through age 26 yrs				
Human papillomavirus (HPV) Male ^{*5}			3 doses through age 26 yrs				3 doses through age 21 yrs				
Zoster ⁶			Contraindicated				1 dose				
Measles, mumps, rubella (MMR) ^{*7}			Contraindicated				1 or 2 doses depending on indication				
Pneumococcal 13-valent conjugate (PCV13) ^{*8}							1 dose				
Pneumococcal polysaccharide (PPSV23) ⁸							1, 2, or 3 doses depending on indication				
Hepatitis A ^{*9}							2 or 3 doses depending on vaccine				
Hepatitis B ^{*10}							3 doses				
Meningococcal 4-valent conjugate (MenACWY) or polysaccharide (MPSV4) ^{*11}							1 or more doses depending on indication				
Meningococcal B (MenB) ¹¹							2 or 3 doses depending on vaccine				
<i>Haemophilus influenzae</i> type b (Hib) ^{*12}			3 doses post-HSCT recipients only				1 dose				

Wisconsin Immunization Registry (WIR)

- ❑ Since 2000, collects immunization information for Wisconsin residents of all ages.
- ❑ Gathers information from vital records, public and private health care organizations, pharmacies, HMOs, Medicaid, WIC.
- ❑ As of February 2016, WIR contained 8,659,811 clients with 86,411,227 immunizations and had 5,508 active providers.



WIR Forecasting Functionality

WIR Wisconsin Immunization Registry

Production Region 10.1.3

Maintenance
manage physicians
manage sites
manage clinicians
manage schools
manage schedules

Inventory
barcode reports
manage inventory
manage orders
manage transfers
shipping documents
transaction summary
vaccine usage

Clients
manage client
order new client
find blood lead results

Immunizations
manage immunization

Reports
reminder / recall
check reminder status
request callback
casa extract
check request status
assessment report
benchmark report
check benchmark
ad hoc list report
ad hoc count report
ad hoc report status
manage custom letters
check gis status
blood lead reports
blood lead report status

Mass Vaccination
enter new client (ny)
add mass vaccination

VIC
vic report
vic billing extract
vic billing extract status

organization: WIR Physicians • user: WILMOT VALHMU • role: IR Administrator

Client Information

Client Name (First - MI - Last) [REDACTED] DOB 05/21/1946 Gender M Mother's Maiden [REDACTED] Tracking Schedule ACIP Chart # [REDACTED]

Address [REDACTED]

Comments (1 of 4) - 10/20/1963 - History of Chicken Pox/Varicella

History

Vaccine Group	Date Administered	Series	Trade Name (Vaccine)	Dose	Owned?	Reaction	Hist?	Edit
Influenza	08/28/2014	Booster	Fluzone Quadrivalent, P-Free®	Full				
	10/20/2015	Booster	FluLaval, P-Free®	Full				
Pneumo-Poly	10/28/2015	1 of 2	Prennar 13®	Full				
Zoster	10/28/2015	1 of 1	Zostavax®	Full				

Vaccines Recommended by Selected Tracking Schedule

Select	Vaccine Group	Vaccine	Earliest Date	Recommended Date	Overdue Date	Latest Date
<input type="checkbox"/>	Influenza		08/01/2016	08/01/2016	01/30/2017	
<input checked="" type="checkbox"/>	Pertussis/Tdap	Tdap	05/21/1956	05/21/1957	05/21/1959	
<input type="checkbox"/>	Pneumo-Poly	Pneumococcal 23	04/28/2016	04/28/2016	10/28/2016	
<input checked="" type="checkbox"/>	Td	Tdap	05/21/1953	05/21/1953	06/21/1953	
	Varicella	History of Disease Complete				
	Zoster	Complete				

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Current Age: 69 years, 9 months, 19 days

Vaccines Recommended by Selected Tracking Schedule

Select	Vaccine Group	Vaccine	Earliest Date	Recommended Date	Overdue Date	Latest Date
<input type="checkbox"/>	Influenza		08/01/2016	08/01/2016	01/30/2017	
<input checked="" type="checkbox"/>	Pertussis/Tdap	Tdap	05/21/1956	05/21/1957	05/21/1959	
<input type="checkbox"/>	Pneumo-Poly	Pneumococcal 23	04/28/2016	04/28/2016	10/28/2016	
<input checked="" type="checkbox"/>	Td	Tdap	05/21/1953	05/21/1953	06/21/1953	
	Varicella	History of Disease Complete				
	Zoster	Complete				

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Your Immunization Record

- ❑ Wisconsin Immunization Registry (WIR) is a centralized repository of immunization information
- ❑ Located at <https://www.dhsWIR.org/>
- ❑ To find your record, you will need to enter first name, last name, date of birth and social security number (or medical record number or Medicaid ID)
- ❑ Includes what immunizations you have had and what is recommended





Wisconsin Immunization Registry

[HOME](#)[FORMS](#)[RENEWAL/REGISTRATION](#)[RELATED LINKS](#)

Production Region

Org Code:

Username:

Password:

Login

DO NOT ATTEMPT TO
LOG ON UNLESS YOU
ARE AN AUTHORIZED
USER.

Immunization Record Search

Families and individuals can use this screen to view and print their immunizations.
First Name, Last Name, and Birth Date are required.

Search

Home

Help

* First
Name

* Last Name

* Birth Date



MM/DD/YYYY

Please supply either the Social Security Number, Medicaid ID, or Health Care Member ID:

* SSN

 - -

- or -

* Medicaid ID

- or -

* Health Care Member ID

Click one of the links below to see the Wisconsin Immunization Registry Parent Brochure:

- [WIR Parent Brochure](#)
- [Folleto de WIR para Padres de Familia](#)
- [WIR Niam Thiab Txiv Phau Me Nyuam Ntawv](#)



Department of Health Services

Client Information		School Release on File: Yes		VFC Eligible: Yes	
Client Name (First - MI - Last)	DOB	Gender	Mother's Maiden	Tracking Schedule	Chart #
MARTHA VERDON	09/01/2012	F		ACIP	
Address	1 West Wilson, MADISON, WI 53701 (608) 261-4948				
Comments					

History								
Undo FERPA Release Add Immunization Edit Client Reports Print Print Confidential Lead								
Vaccine Group	Date Administered	Series	Trade Name (Vaccine)	Dose	Owned?	Reaction	Hist?	Edit
DTP/aP	11/05/2012	1 of 5	Pediarix®		No		Yes	✎
	01/07/2013	2 of 5	Pentacel®		No		Yes	✎
	03/09/2013	3 of 5	Pentacel®		No		Yes	✎
	09/06/2013	4 of 5	Pediarix®		No	Yes	Yes	✎
HepA	09/06/2013	1 of 2	Havrix-Peds 2 Dose®		No		Yes	✎
HepB	09/01/2012	1 of 3	Engerix-B Peds®		No		Yes	✎
	11/05/2012	2 of 3	Pediarix®		No		Yes	✎
	09/06/2013	3 of 3	Pediarix®		No	Yes	Yes	✎
Hib	01/07/2013	1 of 3	Pentacel®		No		Yes	✎
	03/09/2013	2 of 3	Pentacel®		No		Yes	✎
	09/06/2013	3 of 3	ActHib®		No		Yes	✎
HPV	12/18/2014	NOT VALID	Gardasil®		No		Yes	✎
Influenza	09/06/2013	1 of 2	Fluzone®		No		Yes	✎
	09/15/2014	2 of 2	Fluzone®		No		Yes	✎
MMR	09/06/2013	1 of 2	M-M-R II®		No		Yes	✎
Pneumococcal	11/05/2012	1 of 4	Prevnar 13®		No		Yes	✎
	01/07/2013	2 of 4	Prevnar 13®		No		Yes	✎
	03/09/2013	3 of 4	Prevnar 13®		No		Yes	✎
	09/06/2013	4 of 4	Prevnar 13®		No		Yes	✎
Polio	11/05/2012	1 of 5	Pediarix®		No		Yes	✎
	01/07/2013	2 of 5	Pentacel®		No		Yes	✎
	03/09/2013	3 of 5	Pentacel®		No		Yes	✎
	09/06/2013	4 of 5	Pediarix®		No	Yes	Yes	✎
Rotavirus	11/05/2012	1 of 3	RotaTeq®		No		Yes	✎
	01/07/2013	2 of 3	RotaTeq®		No		Yes	✎
	03/09/2013	3 of 3	RotaTeq®		No		Yes	✎
Varicella	09/06/2013	1 of 2	Varivax®		No		Yes	✎

Current Age: 2 years, 4 months, 1 day

Vaccines Recommended by Selected Tracking Schedule						
Authorize Overrides Add Selected						
Select	Vaccine Group	Vaccine	Earliest Date	Recommended Date	Overdue Date	Latest Date
<input type="checkbox"/>	DTP/aP		09/01/2016	09/01/2016	09/01/2018	08/31/2019
<input checked="" type="checkbox"/>	HepA		03/06/2014	03/06/2014	03/06/2015	
	HepB			Complete		
	Hib			Complete		
<input type="checkbox"/>	HPV		09/01/2021	09/01/2023	09/01/2038	08/31/2039
<input type="checkbox"/>	Influenza		08/01/2015	08/01/2015	12/15/2015	
<input type="checkbox"/>	MMR		10/04/2013	09/01/2016	09/01/2016	
	Pneumococcal			Complete		

SAMPLE CLIENT



Wisconsin
 Department of Health Services

Timing of Vaccination

Timing of vaccination is critical.

For example, to prevent head injuries from riding a bike, when is the best time to put on a bike helmet?

- A) Before you get on your bike
- B) When you are riding your bike
- C) After you have crashed





COMMON MISCONCEPTIONS ABOUT VACCINES

Do vaccines cause autism?

- ❑ There is **no** link between vaccines and autism.
- ❑ A 2011 Institute of Medicine (IOM) report on 8 vaccines given to children and adults found that with rare exceptions, these vaccines are very safe.
- ❑ 2013 CDC study showed that vaccines do not cause Autism Spectrum Disorder (ASD).
- ❑ Numerous studies have also determined vaccine ingredients (such as thimerosal) do not cause autism.



Do children receive too many vaccines?

- ❑ From the moment babies are born, they are exposed to numerous bacteria and viruses on a daily basis. When they have a cold, they can be exposed to up to 50 antigens.
- ❑ A child who receives all the recommended vaccines may be exposed to up to 315 antigens by age two.
- ❑ This is not considered an appreciable burden on the immune system (1994 IOM report).



Can I get the flu from the flu vaccine?

- ❑ No, the flu vaccine cannot cause the flu. The vaccines either contain inactivated virus (influenza shot), or a weakened version (nasal spray) and cannot cause influenza.
- ❑ Side effects of the vaccine may occur, but are usually mild and self-limited.



Should pregnant women be vaccinated?

- ❑ Yes! Women who are pregnant are at higher risk of complications from influenza and are recommended to receive influenza vaccine.
- ❑ Additionally, Tdap (tetanus, diphtheria and pertussis) vaccine is recommended during each pregnancy (ideally between 27-36 weeks' gestation) to provide the newborn protection against pertussis.



Should pregnant women be vaccinated?

- ❑ Vaccination of mothers is important for the infant as they must rely on protection from the mother until they are old enough to be vaccinated.
 - For influenza, an infant may be vaccinated starting at 6 months of age.
 - Pertussis series begins at 2 months of age, with significant protection after 3 doses (approximately 6 months of age).



Summary

- ❑ Vaccines have contributed tremendously to the health of our nation.
- ❑ Vaccines are a safe and effective way to prevent disease.
- ❑ High rates of vaccination are needed to keep ourselves and our communities healthy.



References

- ❑ Centers for Disease Control and Prevention. <http://www.cdc.gov/vaccines/>
- ❑ The History of Vaccines, College of Physicians of Philadelphia
<http://www.historyofvaccines.org>
- ❑ Institute of Medicine
<http://www.cdc.gov/vaccinesafety/research/iomreports/index.html>
- ❑ Wisconsin Immunization Registry (WIR).
Available at: <https://www.dhfswir.org>

