

# Vaccines and Vaccine Safety

**Vaccines save lives!** Prior to vaccinations, diseases injured or killed thousands of children. The development of vaccines created an opportunity to completely eliminate such diseases.

## HOW DO VACCINES WORK?

Vaccines build immunity to a disease by imitating an infection which causes the body to create antibodies and defensive white blood cells.<sup>1</sup> The defensive white blood cells remain in the body and fight the disease if the body encounters it in the future.<sup>2</sup>

## WHY SHOULD CHILDREN GET VACCINATED?

Vaccines protect against **25+** serious, and often life-threatening, diseases in the U.S.<sup>3</sup> The majority appear on the recommended childhood immunization schedule. Vaccines protect **everyone**, but especially those most vulnerable immune systems, including:<sup>4, 5</sup>



Newborns



People with Cancer /  
Weak Immune Systems



Transplant Patients

## VACCINE SAFETY

Vaccines are safe. While there can be side effects, they are usually minimal (e.g., slight discomfort and redness at the injection site).<sup>8</sup> Serious side effects such as allergic reactions are extremely rare.<sup>9</sup> The benefits of vaccines significantly outweigh the risks.<sup>10</sup>

## SO WHAT'S THE CONCERN?

Despite ample evidence of vaccines being safe and effective, some parents are choosing to not vaccinate their children. When children are not vaccinated, they are at risk of life-threatening diseases including diseases that were once rare or completely eradicated.<sup>11</sup>

## VACCINES AVAILABLE TO CHILDREN

**Diphtheria\***

**Hepatitis A\***

**Hepatitis B\***

**Hib\***

**Human Papillomavirus (HPV)**

**Influenza (Flu)**

**Measles\***

**Meningococcal (Meningitis)\***

**Mumps\***

**Pertussis\* (Whooping cough)**

**Pneumococcal Disease\***

**Polio\***

**Rotavirus**

**Rubella\***

SARS-COV-2 (COVID-19)

**Tetanus**

Tuberculosis

**Varicella (chickenpox)**

\*Vaccines that are required for school or childcare attendance in Georgia.<sup>6</sup>

**Bolded** vaccines appear on the Child and Adolescent Immunization Schedule<sup>7</sup>

## VACCINES DO NOT CAUSE AUTISM



Since 2003

**9**

studies from the Centers for Disease Control (CDC) confirmed the mercury-based ingredient thimerosal is not linked to autism.<sup>12</sup> The CDC stresses vaccines are safe, necessary to save lives, and there is no link between vaccines and autism.<sup>13</sup>

A study of more than

**95,000**

children found that the measles-mumps-rubella (MMR) vaccine did not increase a child's risk of autism.<sup>14</sup>

## VACCINE-PREVENTABLE ILLNESSES

Polio	<ul style="list-style-type: none"> <li>Poliovirus spreads from person to person via contact with an infected person's feces; a less common spread can occur through sneezing or coughing<sup>15</sup></li> <li>Lives in infected individual's throat and intestines but can enter the brain and spinal cord and result in paralysis or death<sup>16</sup></li> <li>Vaccine developed 1955<sup>17</sup></li> <li>Some common ways to contract poliovirus are through contaminated food and unsanitary water<sup>18</sup></li> </ul>
Tetanus	<ul style="list-style-type: none"> <li>Serious disease caused by a bacterium, called Clostridium tetani, that produce toxins<sup>19</sup></li> <li>Some common ways to contract the bacteria that causes tetanus are through contaminated wounds and burns<sup>20</sup></li> <li>Causes muscle stiffness and spasms, paralysis, and breathing problems<sup>21</sup></li> <li>Treatment usually requires hospitalization<sup>22</sup></li> <li>Vaccine first introduced in late 1940s<sup>23</sup></li> <li>Tetanus has an approximately 11% fatality rate, and an even higher fatality rate among unvaccinated persons at 22%<sup>24</sup></li> </ul>
Influenza	<ul style="list-style-type: none"> <li>Respiratory illness caused by a virus<sup>25</sup></li> <li>Every year since 2010, between 12,000 and 48,000 children under the age of 18 have been hospitalized by the flu<sup>26</sup></li> <li>Vaccine licensed for all civilians in the U.S. during 1945<sup>27</sup></li> </ul>
Hepatitis A	<ul style="list-style-type: none"> <li>Liver infection caused by hepatitis A virus<sup>28</sup></li> <li>Can be contracted from contaminated food, drinks, stool or sexual contact<sup>29</sup></li> <li>Vaccine developed in 1995<sup>30</sup></li> </ul>
Hepatitis B	<ul style="list-style-type: none"> <li>Liver infection caused by the hepatitis B virus<sup>31</sup></li> <li>Spread when blood and other bodily fluids of an infected person enter an uninfected person<sup>32</sup></li> <li>Vaccine first became commercially available in 1981 in the U.S.<sup>33</sup></li> <li>Some common ways to contract the hepatitis B virus are through sexual contact, mother to child during pregnancy, sharing needles, and needle sticks<sup>34</sup></li> </ul>
Rubella	<ul style="list-style-type: none"> <li>Spreads through sneezing and coughing<sup>35</sup></li> <li>Especially dangerous to pregnant women and fetuses<sup>36</sup></li> <li>Vaccine first available in 1969<sup>37</sup></li> </ul>
Hib	<ul style="list-style-type: none"> <li>Haemophilus influenzae type b is a bacteria that infects the lining of the brain<sup>38</sup></li> <li>Harms the immune system and causes brain damage and hearing loss and is sometimes fatal<sup>39</sup></li> <li>Prior to vaccine development, Hib was the leading cause of bacterial meningitis for children under age five<sup>40</sup></li> <li>Can cause severe infections of the lining of the brain and spinal cord (meningitis) and the bloodstream<sup>41</sup></li> <li>Vaccine first licensed in 1987<sup>42</sup></li> </ul>
Measles	<ul style="list-style-type: none"> <li>Very contagious and can be contracted through airborne particles. The virus can stay active for up to 2 hours in the air or on objects<sup>43</sup></li> <li>Especially serious for young children<sup>44</sup></li> <li>Vaccine first available in 1963<sup>45</sup></li> </ul>
Pertussis	<ul style="list-style-type: none"> <li>Highly contagious and sometimes deadly for infants<sup>46</sup></li> <li>Known for uncontrollable, violent coughing which makes it difficult to breathe<sup>47</sup></li> <li>Vaccine developed in 1930s and used widely by the mid-1940s<sup>48</sup></li> </ul>
Pneumococcal Disease	<ul style="list-style-type: none"> <li>Bacterial disease that results in ear and sinus infections, pneumonia and sometimes meningitis<sup>49</sup></li> <li>Especially dangerous for children and can affect the brain and spinal cord<sup>50</sup></li> <li>Vaccine first used in U.S. in 1977<sup>51</sup></li> </ul>
Rotavirus	<ul style="list-style-type: none"> <li>Spread through hand-to-mouth contact<sup>52</sup></li> <li>Symptoms include severe diarrhea and vomiting which can lead to severe dehydration requiring hospitalization<sup>53 54</sup></li> <li>Vaccine was approved by the FDA in 2006 and a second was introduced in 2008.<sup>55</sup></li> </ul>
Mumps	<ul style="list-style-type: none"> <li>Contagious disease with most common outbreaks occurring among groups of people who have prolonged, close contact (e.g., sharing eating and drinking utensils, kissing, heavy breathing, sports, close quarters with a person who has mumps)<sup>56</sup></li> <li>Symptoms include salivary gland swelling, fever and aches and fatigue<sup>57</sup></li> <li>Vaccine licensed in the U.S. in 1967<sup>58</sup></li> </ul>
Chickenpox	<ul style="list-style-type: none"> <li>Can be serious or even deadly for infants, adults and immunosuppressed<sup>59</sup></li> <li>Symptoms include itchy rash, blisters, and fever<sup>60</sup></li> <li>Vaccine first licensed for use in the U.S. in 1995<sup>61</sup></li> </ul>
Diphtheria	<ul style="list-style-type: none"> <li>Can cause difficulty breathing and lead to heart failure, paralysis or even death<sup>62</sup></li> <li>Vaccine was developed in the early 1920s and widely used by the 1930s<sup>63</sup></li> <li>Most commonly spread from person to person through coughing or sneezing<sup>64</sup></li> </ul>

Human Papillomavirus	<ul style="list-style-type: none"> <li>• Spread primarily through skin to skin contact (e.g., sexual contact<sup>65</sup>, cut, abrasion, or small tear in skin)<sup>66</sup></li> <li>• Most infections go away on their own, some can cause certain types of cancer in both men and women<sup>67</sup></li> <li>• Children can receive the vaccine (administered in two doses) around ages 11-12, or around 15 (administered in three doses)<sup>68</sup></li> <li>• Nearly all men and women will get HPV at some point in their lives<sup>69</sup></li> </ul>
Tuberculosis	<ul style="list-style-type: none"> <li>• A bacteria spread through the air (cough, speak, sing) from one person to another<sup>70</sup></li> <li>• Symptoms can include a cough lasting three weeks or longer, chest pain, and coughing up blood<sup>71</sup></li> <li>• Can be detected through two tests: a blood test or a skin test<sup>72</sup></li> </ul>

## WHY HAVEN'T I HEARD OF SOME OF THESE DISEASES?



Because vaccines **WORK!**

Many of these diseases have been wiped out or are very rare, thanks to vaccines!



## Sources for Vaccines and Vaccine Safety

- 1 Centers for Disease Control and Prevention. "Understanding how vaccines work." Accessed September 22, 2022. <https://www.cdc.gov/vaccines/hcp/conversations/understanding-vacc-work.html>.
- 2 Ibid.
- 3 Centers for Disease Control and Prevention. "List of Vaccines in the US." Accessed September 22, 2022. <https://www.cdc.gov/vaccines/vpd/vaccines-list.html>.
- 4 Georgia Department of Public Health. "School Vaccines and Updates". Accessed November 23, 2020. <https://dph.georgia.gov/schoolvaccines>.
- 5 Centers for Disease Control and Prevention. "Child and Adolescent Immunization Schedule." Accessed October 26, 2022. <https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html#vaccines-schedule>.
- 6 Georgia Department of Public Health. Immunization Guidelines for Schools and Childcare Facilities. Accessed October 24, 2022. <https://www.gadoe.org/wholechild/Documents/SchoolNurse/Immunization-Guidelines-for-Schools-Childcare-Facilities-form-3258.pdf#search=immunization>.
- 7 Centers for Disease Control and Prevention. "Child and Adolescent Immunization Schedule." Accessed October 26, 2022. <https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html#vaccines-schedule>.
- 8 Centers for Disease Control and Prevention. "Understanding Adverse Events and Side Effects" Accessed September 22, 2022. <https://www.cdc.gov/vaccinesafety/ensuringsafety/sideeffects/index.html>.
- 9 Centers for Disease Control and Prevention. "Preventing and Managing Adverse Reactions." Accessed September 22, 2022. <https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/adverse-reactions.html>.
- 10 U.S. Department of Health & Human Services. "Five Important Reasons to Vaccinate Your Child." Accessed September 22, 2022. <https://www.hhs.gov/immunization/get-vaccinated/for-parents/five-reasons/index.html>.
- 11 Centers for Disease Control and Prevention. "Making the Vaccine Decision: Addressing Common Concerns." Accessed September 22, 2022. <https://www.cdc.gov/vaccines/parents/why-vaccinate/vaccine-decision.html>.
- 12 Centers for Disease Control and Prevention. "Vaccines Do Not Cause Autism." Accessed September 22, 2022. <https://www.cdc.gov/vaccinesafety/concerns/autism.html>.
- 13 Ibid.
- 14 Jain, A., Marshall, J., Buikema, A., Bancroft, T., Kelly, J. P., & Newschaffer, C. J.. (2015). "Autism Occurrence by MMR Vaccine Status Among US Children with Older Siblings With and Without Autism." Journal of the American Medical Association, 1534-1540.
- 15 Centers for Disease Control and Prevention. "What is polio?" Accessed September 22, 2022. <https://www.cdc.gov/polio/what-is-polio/index.htm>.
- 16 Ibid.
- 17 Centers for Disease Control and Prevention. "Polio Vaccination." Accessed September 22, 2022. <https://www.cdc.gov/vaccines/vpd/polio/index.html#:~:text=The%20first%20polio%20vaccine%20was,been%20polio%2Dfree%20since%201979>.
- 18 Centers for Disease Control and Prevention. "What is polio?" Accessed September 22, 2022. <https://www.cdc.gov/polio/what-is-polio/index.htm>.
- 19 Centers for Disease Control and Prevention. "The pink book: tetanus." September 22, 2022. <https://www.cdc.gov/vaccines/pubs/pinkbook/tetanus.html>.
- 20 Centers for Disease Control and Prevention. About Tetanus. Accessed September 22, 2022. <https://www.cdc.gov/tetanus/about/causes-transmission.html>.
- 21 Ibid.
- 22 Centers for Disease Control and Prevention. "Travelers Health, Yellow Book." September 22, 2022. <https://wwwnc.cdc.gov/travel/yellowbook/2020/travel-related-infectious-diseases/tetanus>.
- 23 Centers for Disease Control and Prevention. "The pink book: tetanus." September 22, 2022. <https://www.cdc.gov/vaccines/pubs/pinkbook/tetanus.html>.
- 24 Ibid.
- 25 Centers for Disease Control and Prevention. "Key facts about Influenza." Accessed September 22, 2022. <https://www.cdc.gov/flu/about/keyfacts.htm#:~:text=Flu%20is%20a%20contagious%20respiratory,a%20flu%20vaccine%20each%20year>.
- 26 Centers for Disease Control and Prevention. "Protect Children with the Flu Vaccine." Accessed November 23, 2020. <https://www.cdc.gov/features/flu-children/index.html>.
- 27 Centers for Disease Control and Prevention. "Influenza historic timeline." Accessed September 22, 2022.
- 28 Centers for Disease Control and Prevention. "Hepatitis A Questions and Answers for the Public." Accessed October 17, 2022. <https://www.cdc.gov/hepatitis/hav/afaq.htm>.

29 Ibid.  
30 Ibid.  
31 Centers for Disease Control and Prevention. "Viral Infections: Hepatitis B." Accessed October 17, 2022. <https://www.cdc.gov/hepatitis/hbv/index.htm>.  
32 Centers for Disease Control and Prevention. "The Pink Book: Hepatitis B." Accessed October 17, 2022. <https://www.cdc.gov/vaccines/pubs/pinkbook/hepb.html#>.  
33 Ibid.  
34 Mayo Clinic. "Hepatitis B." Accessed October 17, 2022. <https://www.mayoclinic.org/diseases-conditions/hepatitis-b/symptoms-causes/syc-20366802>.  
35 Centers for Disease Control and Prevention. "Rubella." Accessed October 17, 2022. <https://www.cdc.gov/rubella/about/transmission.html>.  
36 Centers for Disease Control and Prevention. "Pregnancy and Rubella." Accessed October 17, 2022. <https://www.cdc.gov/rubella/pregnancy.html>.  
37 Centers for Disease Control and Prevention. "The Pink Book: Rubella." Accessed October 17, 2022. <https://www.cdc.gov/vaccines/pubs/pinkbook/rubella.html>.  
38 Children's Hospital of Pennsylvania. "A Look At Each Vaccine." Accessed October 17, 2022. [https://www.chop.edu/centers-programs/vaccine-education-center/vaccine-details/haemophilus-influenzae-type-b-hib-vaccine#:~:text=Haemophilus%20influenzae%20type%20b%20\(Hib\)%20is%20a%20bacterium%20that%20infects,fever%2C%20stiff%20neck%20and%20drowsiness](https://www.chop.edu/centers-programs/vaccine-education-center/vaccine-details/haemophilus-influenzae-type-b-hib-vaccine#:~:text=Haemophilus%20influenzae%20type%20b%20(Hib)%20is%20a%20bacterium%20that%20infects,fever%2C%20stiff%20neck%20and%20drowsiness).  
39 Centers for Disease Control and Prevention. "The Pink Book: Haemophilus Influenzae Type B." Accessed October 17, 2022. <https://www.cdc.gov/vaccines/pubs/pinkbook/hib.html>.  
40 Ibid.  
41 Centers for Disease Control and Prevention. "Haemophilus Influenzae Disease." Accessed October 17, 2022. [https://www.cdc.gov/hi-disease/index.html#:~:text=influenzae%20\(type%20b%20or%20Hib\)%20disease.&text=Hib%20can%20cause%20severe%20infections,Vaccines%20can%20prevent%20Hib%20disease](https://www.cdc.gov/hi-disease/index.html#:~:text=influenzae%20(type%20b%20or%20Hib)%20disease.&text=Hib%20can%20cause%20severe%20infections,Vaccines%20can%20prevent%20Hib%20disease).  
42 Ibid.  
43 Center for Disease Control and Prevention. "The Pink Book: Measles." Accessed October 17, 2022. <https://www.cdc.gov/vaccines/pubs/pinkbook/meas.html>.  
44 Ibid.  
45 Ibid.  
46 Centers for Disease Control and Prevention. "Pertussis (Whooping Cough)." Accessed October 17, 2022. <https://www.cdc.gov/pertussis/index.html>.  
47 Ibid.  
48 Centers for Disease Control and Prevention. "The Pink Book: Pertussis." Accessed October 17, 2022. <https://www.cdc.gov/vaccines/pubs/pinkbook/pert.html>.  
49 Centers for Disease Control and Prevention. "The Pink Book: Pneumococcal Disease." Accessed October 17, 2022. <https://www.cdc.gov/vaccines/pubs/pinkbook/pneumo.html>.  
50 Centers for Disease Control and Prevention. "Pneumococcal Disease: Symptoms and Complications." Accessed October 17, 2022. <https://www.cdc.gov/pneumococcal/about/symptoms-complications.html>.  
51 Ibid.  
52 Centers for Disease Control and Prevention. "Rotavirus Transmission." Accessed October 17, 2022. <https://www.cdc.gov/rotavirus/about/transmission.html>.  
53 Centers for Disease Control and Prevention. "Rotavirus Symptoms." Accessed October 17, 2022. <https://www.cdc.gov/rotavirus/about/symptoms.html>.  
54 Centers for Disease Control and Prevention. "Rotavirus Treatment." Accessed October 17, 2022. <https://www.cdc.gov/rotavirus/about/treatment.html>.  
55 Centers for Disease Control and Prevention. "Rotavirus Vaccination: Information for Health Care Professionals." Accessed October 17, 2022. <https://www.cdc.gov/vaccines/vpd/rotavirus/hcp/index.html#:~:text=CDC%20recommends%20that%20infants%20get,and%206%20months%20of%20age>.  
56 Centers for Disease Control and Prevention. "Mumps." Accessed October 17, 2022. <https://www.cdc.gov/mumps/index.html>.  
57 Centers for Disease Control and Prevention. "Signs & Symptoms of Mumps." October 17, 2022. <https://www.cdc.gov/mumps/about/signs-symptoms.html>.  
58 Centers for Disease Control and Prevention. "Mumps Vaccination." Accessed October 17, 2022. <https://www.cdc.gov/mumps/vaccination.html>.  
59 Centers for Disease Control and Prevention. "The Pink Book: Varicella." Accessed October 17, 2022. <https://www.cdc.gov/vaccines/pubs/pinkbook/varicella.html>.  
60 Centers for Disease Control and Prevention. "Chickenpox: Signs and Symptoms." Accessed October 17, 2022.

<https://www.cdc.gov/chickenpox/about/symptoms.html>.

- 61 Centers for Disease Control and Prevention. "The Pink Book: Varicella." Accessed October 17, 2022. <https://www.cdc.gov/vaccines/pubs/pinkbook/varicella.html>.
- 62 Centers for Disease Control and Prevention. "Diseases You Almost Forgot About (Thanks to Vaccines)." Accessed October 17, 2022. <https://www.cdc.gov/vaccines/parents/diseases/forgot-14-diseases.html#diphtheria>.
- 63 Centers for Disease Control and Prevention. "The Pink Book: Diphtheria." Accessed October 17, 2022. <https://www.cdc.gov/vaccines/pubs/pinkbook/dip.html#:~:text=Diphtheria%20toxoid%20was%20developed%20in,routinely%20used%20in%20the%201940s>.
- 64 Centers for Disease Control and Prevention. "About Diphtheria." Accessed October 17, 2022. <https://www.cdc.gov/diphtheria/about/causes-transmission.html#:~:text=Diphtheria%20bacteria%20usually%20spread%20from,people%20to%20get%20very%20sick>.
- 65 Centers for Disease Control and Prevention. "About HPV." Accessed October 17, 2022. <https://www.cdc.gov/hpv/parents/about-hpv.html>.
- 66 Mayo Clinic. "HPV Infection." Accessed October 17, 2022. <https://www.mayoclinic.org/diseases-conditions/hpv-infection/symptoms-causes/syc-20351596>.
- 67 Ibid.
- 68 Centers for Disease Control and Prevention. "Vaccine (Shot) for Human Papillomavirus." Accessed October 17, 2022. [https://www.cdc.gov/vaccines/parents/diseases/hpv.html?CDC\\_AA\\_refVal=https%3A%2F%2Fwww.cdc.gov%2Fvaccines%2Fparents%2Fdiseases%2Fteen%2Fhpv.html](https://www.cdc.gov/vaccines/parents/diseases/hpv.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fvaccines%2Fparents%2Fdiseases%2Fteen%2Fhpv.html).
- 69 Centers for Disease Control and Prevention. "About HPV." Accessed October 17, 2022. <https://www.cdc.gov/hpv/parents/about-hpv.html>.
- 70 Centers for Disease Control and Prevention. "How TB Spreads." Accessed October 17, 2022. <https://www.cdc.gov/tb/topic/basics/howtbspreads.htm>.
- 71 Centers for Disease Control and Prevention. "Signs and Symptoms." Accessed October 17, 2022. <https://www.cdc.gov/tb/topic/basics/signsandsymptoms.htm>.
- 72 Centers for Disease Control and Prevention. "TB Testing & Diagnosis." Accessed October 17, 2022. <https://www.cdc.gov/tb/topic/testing/default.htm>.