



Vaccine Immunity Medical Perspective: What Really Constitutes Immunity?

Many times patients have a history of an infectious illness or present with antibody titers, but in very few cases does this correlate with lifetime clinical immunity that should impact vaccine forecasting. While there are technical coded values for having had a disease or having antibody protection, not all of these constitute appropriate medical reasons to defer future immunization.

This article is intended to provide current, best practice information based on science

Many illnesses do not confer lifetime immunity for reasons such as multiple strains, or waning natural protection. Even if a patient presents with a documented history of rotavirus gastroenteritis, Hib meningitis, or pneumococcal pneumonia, the presence of the disease does NOT constitute lifetime immunity and patients should continue to receive vaccines per ACIP schedule.

Tetanus, diphtheria and pertussis immunity wanes over time. For patients who want to delay/defer any tetanus/diphtheria/pertussis-containing vaccine, the presence of antibodies should not impact following ACIP schedules for immunizations.

Polio vaccine in the US constitutes 3 strains of poliovirus, while in many other countries only 2 strains are currently included in their oral vaccine. In order to be considered immune in the US, patients need to have evidence of immunity of all 3 strains. There is no antibody test commercially available for testing type 2 and therefore antibody titers are not valid and should not impact polio vaccination in accordance with the ACIP schedule. [Per CDC](#): *“Children living in the United States who might have received poliovirus vaccination outside the United States should meet ACIP recommendations for poliovirus vaccination, which require protection against all three poliovirus types by age-appropriate vaccination with IPV or tOPV. In the absence of vaccination records indicating receipt of these vaccines, only vaccination or revaccination in accordance with the age-appropriate U.S. IPV schedule is recommended. Serology to assess immunity for children with no or questionable documentation of poliovirus vaccination will no longer be an available option and therefore is no longer recommended, because of increasingly limited availability of antibody testing against type 2 poliovirus.”*

On the other hand, history of documented clinical varicella confers lifelong immunity. However, if the patient was treated with antivirals during the course of their illness, their immune response may have been blunted and Varicella immunization should be administered per ACIP guidelines.

[Information from the CDC](#) regarding assessing varicella immunity:



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“Routine testing for varicella immunity after two doses of vaccine is not recommended. Available commercial assays are not sensitive enough to detect antibody after vaccination in all instances. Documented receipt of two doses of varicella vaccine supersedes results of subsequent serologic testing.”

CDC guidance regarding what constitutes acceptable immunity for measles, mumps and rubella can be [found here](#).

References

Diphtheria <https://www.cdc.gov/vaccines/pubs/surv-manual/chpt01-dip.html>
Tetanus <https://www.cdc.gov/tetanus/clinicians.html>
Pertussis <https://www.cdc.gov/vaccines/pubs/pinkbook/downloads/pert.pdf>
Hepatitis A <https://www.cdc.gov/vaccines/pubs/pinkbook/hepa.html#vaccine>
Hepatitis B <https://www.cdc.gov/vaccines/pubs/pinkbook/hepb.html>
Measles <https://www.cdc.gov/vaccines/vpd/mmr/public/index.html>
Mumps <https://www.cdc.gov/vaccines/vpd/mmr/public/index.html>
Rubella <https://www.cdc.gov/vaccines/vpd/mmr/public/index.html>
Varicella <https://www.cdc.gov/chickenpox/hcp/index.html?#assessing-immunity>
Rotavirus <https://www.cdc.gov/vaccines/pubs/pinkbook/rota.html#contraindications>
Pneumococcal <https://www.cdc.gov/pneumococcal/about/prevention.html>
Hib <https://www.cdc.gov/vaccines/pubs/pinkbook/hib.html>
Meningococcus <https://www.cdc.gov/meningococcal/about/prevention.html>
Polio <https://www.cdc.gov/vaccines/pubs/pinkbook/hpv.html#contraindications>

OP workflow for Documented Immunity: Serology or Disease

Patient Chart > Problem List

The user will select 'Problem' (SNOMED code), which will trigger the documented immunity or diseases correlating LOINC code:

Documented Immunity, OP will send the documented immunity LOINC code in the HL7 message to the Immunization Registry

LOINC code/Description to be sent in HL7: 75505-8^Diseases with serological evidence of immunity



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The following SNOMED codes correlate to Documented Immunity (which can be selected on problem list)

SNOMED CT Concept	Description
278971009	Hepatitis A immune (finding)
271511000	Hepatitis B immune (finding)
371111005	Measles immune (finding)
371112003	Mumps immune (finding)
278968001	Rubella immune (finding)
371113008	Varicella immune (finding)

Documented Disease, OP will send the presumed immunity LOINC code in the HL7 message to the Immunization Registry

LOINC code/Description to be sent in HL7: 59784-9^Disease with presumed immunity

The following SNOMED codes correlate to Documented Immunity (which can be selected on problem list)

SNOMED CT Concept	Description
398102009	Acute poliomyelitis (disorder)
409498004	Anthrax (disorder)
397428000	Diphtheria (disorder)
18624000	Disease due to Rotavirus (disorder)
91428005	Haemophilus influenzae infection (disorder)
240532009	Human papilloma virus infection (disorder)
6142004	Influenza (disorder)
52947006	Japanese encephalitis virus disease (disorder)
14189004	Measles (disorder)
23511006	Meningococcal infectious disease (disorder)
36989005	Mumps (disorder)
27836007	Pertussis (disorder)
16814004	Pneumococcal infectious disease (disorder)
14168008	Rabies (disorder)
36653000	Rubella (disorder)
76902006	Tetanus (disorder)
66071002	Type B viral hepatitis (disorder)
4834000	Typhoid fever (disorder)



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111852003 Vaccinia (disorder)
38907003 Varicella (disorder)
40468003 Viral hepatitis, type A (disorder)
16541001 Yellow fever (disorder)