SMFM Provider FAQs
Measles and Pregnancy: What Maternal-Fetal Medicine Subspecialists Need to Know

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This document has been updated as follows:

- Includes updated information on measles cases in the US in 2024 and 2025.
- Includes updated information about vitamin A supplementation during pregnancy.
- Includes a recommendation on how to counsel postpartum patients on breastfeeding with a suspected or confirmed case of measles.
- Includes updated information on infection prevention and control measures at a system level.
- Includes a recommendation on how to approach rooming-in of a postpartum patient with suspected or confirmed measles and their infant.

Background

Measles, also known as rubeola, is a preventable, highly contagious, acute febrile viral illness and an important cause of mortality and morbidity. The Centers for Disease Control and Prevention issued a Health Alert Network Health Advisory (HAN) in March 2024, reporting on an increase in global and domestic measles cases and outbreaks, which have continued to expand.[1] More recently, a HAN Advisory was issued in March 2025, in response to over 200 cases reported nationwide, with cases largely concentrated in Texas and New Mexico.[2] As of June 9, 2025, 1,288 confirmed cases of measles have been reported by the CDC in the United States, including 3 confirmed measles-related deaths. In contrast, previous recent annual US measles cases ranged from 13 in 2020 to 285 in 2024. Of the confirmed 2025 cases, 13% required hospitalization.[3] The rise in measles cases has been linked to decreased vaccination rates and increased travel (see The Centers for Disease Control and Prevention Measles Cases and Outbreaks for latest updates of cases in the US).

Measles is an airborne illness that can cause rash, fever, red eyes, and cough. Severe cases can result in blindness, pneumonia or encephalitis. In some cases, illness can be fatal. Pregnant

individuals are at increased risk for measles-related complications such as pneumonia and for adverse perinatal outcomes such as miscarriage, stillbirth, preterm birth, and low birth weight.

This document provides interim guidance and clinical considerations for measles and pregnancy.

Summary of Recommendations

- Pregnant persons without evidence of immunity should receive a single 400-mg/kg dose of immune globulin IV (IVIG) within 6 days of exposure.
- The use of Vitamin A at doses used for supportive treatment of measles is contraindicated in pregnancy.
- Non-pregnant reproductive age people who do not have presumptive evidence of immunity should receive at least one dose of MMR vaccine.
- Pregnant people who are unimmunized should defer vaccination until postpartum, ideally before discharge from the delivery hospital.
- MMR vaccination is safe for breastfeeding people. Breastfeeding does not interfere with immunity, and the vaccine is not transmitted through breast milk.
- Lactating patients with suspected or confirmed active measles infection should be counseled on safe practices to prevent virus transmission.
- Postpartum patients with suspected or confirmed measles should be isolated to reduce risk of disease transmission. In the case of a confirmed measles infection, the family and clinicians, including the pediatrician, should engage in shared-decision making when considering rooming-in of the infant with the postpartum patient.

About Measles

How is measles spread?

Measles is considered transmissible from 4 days before through 4 days following rash onset. The causative organism is the measles virus, a member of the Paramyxoviridae family. The virus is highly contagious; up to 90% of susceptible persons develop measles after exposure. Measles is transmitted from person to person by respiratory droplets, small particle aerosols, and close contact.

How does measles present?

The incubation period lasts an average of 11 to 12 days, but a range between 6 and 21 days has also been reported. During the incubation period, many patients are asymptomatic, although some may report transient respiratory symptoms.

The prodromal phase lasts for 2 to 4 days and is defined by fever, malaise, and anorexia, followed by conjunctivitis, coryza, and cough. Koplik spots are pathognomonic. These 1 to 3-millimeter elevations with an erythematous base appear in the buccal mucosa 1 to 2 days before the viral exanthema.

The measles rash is an erythematous, maculopapular, blanching eruption, which classically begins on the face and spreads caudally to the neck, upper and lower trunk, and extremities. It lasts for 5 to 6 days and fades in order of appearance (see: CDC Photos of Measles and People with Measles).

Approximately 30% of measles cases will have complications, including diarrhea, otitis media, pneumonia, encephalitis, subacute sclerosing panencephalitis, and death. Individuals at risk include children too young to be vaccinated, unvaccinated individuals, and those unable to mount a response to vaccination.

Clinical Considerations

What measles complications are unique to pregnancy?
Measles during pregnancy is associated with an increased risk for adverse maternal and fetal outcomes.[4] Measles during pregnancy has been associated with an increased maternal risk of hospitalization, pneumonia, need for oxygen support or mechanical ventilation, and death. Fetal and neonatal risks include an increased risk of miscarriage, stillbirth, low birth weight, prematurity, and infant mortality. Occasional cases of congenital viral syndrome have been described with case reports indicating an increased risk of neonatal mortality.[5,6,7] Five cases of congenital measles have been reported in Alberta, Canada in 2025, and all mothers whose newborns were diagnosed with infection had not been vaccinated against measles themselves. There was one case of congenital measles in a premature infant in Ontario, Canada, whose mother was also unvaccinated.[8] That infant died, and health officials have reported that although the infant had other medical concerns, measles was a "significant contributing factor" to their death.[8]

What diagnostic and laboratory tests are available for measles?
Measles should be suspected in any patient presenting with an acute febrile rash. Laboratory confirmation should be performed through the detection of measles-specific immunoglobulin (Ig) M and measles RNA by real-time polymerase chain reaction (RT-PCR) in a respiratory specimen (nasopharyngeal or throat swab). Healthcare providers are required to report suspected cases to their local health department.

What treatment is available for measles?
The treatment of measles is supportive and includes antipyretics, fluids, treatment of bacterial superinfections such as bacterial pneumonia, and treatment of other complications, such as respiratory failure. While the measles virus has been shown to be susceptible to ribavirin in vitro, and case reports have described its use in severely immunocompromised patients with measles, no controlled trials have been conducted to assess its safety or effectiveness in humans.[9] In addition, ribavirin has been assigned to pregnancy category X by the FDA. Nearly all animal studies have revealed evidence of embryo lethality and teratogenicity, and limited human pregnancy data are available.

Vitamin A has demonstrated some benefit for the treatment of measles in children; however, the benefit has not been established for adults. The recommended dosing for vitamin A as a supplemental treatment for measles is substantially higher than pregnancy-allowable levels at 100,000 – 200,000 International Units (IU) per day for up to two days.[10] In cases of treating pediatric patients, administration of vitamin A, in the setting of preexisting vitamin A deficiency and in under-resourced countries, such treatment, supervised by a health provider, decreased morbidity and mortality risk by approximately 50%.[11,12]

In addition, vitamin A doses above 10,000 IU/day in the preconception period or during early pregnancy are associated with tripled risks of fetal craniofacial, central nervous system, heart and thymus abnormalities in exposed fetuses.[13] Therefore, the use of vitamin A at doses used for supportive treatment of measles is contraindicated in pregnancy. There are no data to inform the risk of vitamin A supplementation for treatment of measles during lactation.

Importantly, vitamin A supplementation has not been shown to prevent measles and is not a substitute for recommended vaccination. The recommended daily allowance for vitamin A supplementation for all women, including during pregnancy, does not exceed 3,000 IU/day. Chronic vitamin A toxicity has been associated with prolonged ingestion of excessive vitamin A, typically exceeding 20,000 IU per day. This condition can develop after consuming substantial quantities of animal-based foods rich in preformed vitamin A, such as liver, or through the prolonged use of high-dose vitamin A supplements. Multiple organ systems can be affected by chronic toxicity, leading to abnormal bone resorption, hepatomegaly, hyperlipidemia, and central nervous system abnormalities, including pseudotumor cerebri. [14,15]

What preventive options are available for measles-exposed pregnant patients?
Exposure is defined as being in close contact with a known infected person without adequate personal protective equipment. Given its small-particle aerosol transmissibility, measles exposure is also defined as sharing the same room with a person who is actively infectious for measles or sharing the same air space within 2 hours of a person who is actively infectious.

Individuals are considered susceptible to measles if they have not been completely immunized. If a pregnant individual is exposed and does not know their vaccination record, measles immunity can be determined using a laboratory test (see: CDC "Am I protected against measles?").

If the pregnant individual is immune by vaccination record or laboratory test, no further intervention or treatment is needed for the pregnant person after exposure.

Pregnant persons without evidence of immunity should receive a single 400-mg/kg dose of immunoglobulin (Ig) intravenously (IVIG) within 6 days of exposure. Adults and persons weighing >30kg or 66lbs are not good candidates for intramuscular Ig (IMIG) because they are unlikely to receive an adequate amount of measles antibody, as the maximum weight-based dose of 0.5 mL/kg for this route is reached at 15 mL.[16] IVIG should not be given to people with immunoglobulin A (IgA) deficiency due to the risk of anaphylaxis. IVIG should not be administered to people with known anaphylaxis.

For post-exposure prophylaxis in non-immune postpartum patients, a dose of the MMR vaccine should be given within 3 days of exposure; if after 3 days, Ig can be administered within 6 days intramuscularly (IMIG). Ig and the MMR vaccine should not be given together, as the Ig counteracts the immunogenicity of the vaccine. For those patients who receive Ig, a single dose of MMR vaccine should be given 8 months after receiving IVIG or IMIG.[17]

Is routine measles serology screening necessary in pregnancy?
Routine screening for measles immunity is not currently recommended in pregnancy. However, serologic screening for immunity (measles IgG) can be considered for pregnant individuals without evidence of presumptive immunity in areas of ongoing transmission. Additionally, rubella immunity does not equate to measles immunity.[18-20]

System and Individual Infection Prevention Control Practices

Do healthcare personnel need to be vaccinated against measles?
All healthcare personnel with direct patient contact should have documented evidence of immunity to measles.

How should healthcare providers report suspected and confirmed measles cases?
Providers should notify their state, tribal, local, and/or territorial health departments of any suspected or confirmed measles cases within 24 hours. Cases can be reported to CDC directly at measlesreport@cdc.gov and through the National Notifiable Diseases Surveillance System (NNDSS).

How can hospital systems prepare for measles infection prevention and control (IPC), and are there any additional considerations for IPC in Labor & Delivery (L&D) and Neonatal Intensive Care Unit (NICU)?
Because measles is a highly contagious disease, a plan for infection prevention and control (IPC) is critical. Here are action steps to prepare for an outbreak of measles in your hospital:

- **Ensure all healthcare personnel have evidence of measles immunity**: For staff born after 1957 who have not received two doses of the measles vaccine or have a confirmed history of measles disease, or who otherwise do not have evidence of immunity to measles, vaccination is strongly recommended. Consider vaccinating healthcare personnel born before 1957 who do not have other evidence of immunity to measles. See CDC page on Measles Vaccine Recommendations for more information.
- **Educate, train, and increase awareness among healthcare personnel**: Refresh knowledge regarding measles (eg, ability to recognize suspected measles cases and responding with urgency by isolating and reporting suspected cases to minimize exposure to others). Additionally, train staff on infection prevention measures, such as proper use of protective personal equipment (PPE), and to screen patients for travel and vaccination status.
- **Steps to take for suspected cases of measles**:
    - **Isolate** the patient.
    - **Notify** the direct care team, the IPC team, other healthcare providers and public health authorities immediately.
    - **Test** the patient.
    - **Manage** the measles case.
- **Airborne Considerations**: Place patients with known or suspected measles in an airborne infection isolation room (AIIR). If no AIIR is available, patient should be transferred to another facility where AIIR is available. Until transfer, the patient should be placed in a private room with the door closed, preferably remote from other patients who are susceptible to measles and/or at high risk of complications if safe and feasible to

do so. In addition, ensure IPC measures are in place regarding separation of hospital unit air filtration and ventilation systems.

- **Pregnant Patients with Measles or Exposure to Measles:** Pregnant patient should wear a surgical face mask, and airborne and contact precautions should be taken. If the pregnant patient requires L&D admission, they should be placed in airborne isolation in L&D.

See CDC Page on Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings for more information.

Mother-Baby Dyad

How should lactating patients with suspected or confirmed measles infection be counseled regarding infant feeding?

Lactating patients with suspected or confirmed active measles infection should be counseled on safe practices to prevent virus transmission, including:

- Wearing a well-fitting respirator face mask (N95, KF94, or FFP2) when near the infant;
- Handwashing before a feeding session;
- Limiting skin-to-skin contact with the infant for up to 3 days; and
- Considering use of a breast pump to extract milk for bottle-feeding.

Is the practice of rooming-in an option for postpartum patients with suspected or confirmed measles?

Postpartum patients with suspected or confirmed measles should be isolated to reduce risk of disease transmission. In the case of a confirmed measles infection, the family and clinicians, including the pediatrician, should engage in shared-decision making when considering rooming-in of the infant with the postpartum patient. Maternal-infant separation is reasonable to consider until the mother is no longer infectious (ie, four days after onset of rash). In addition, patients should be counseled on safe practices to prevent virus transmission (see above section on IPC and Mother Baby-Dyad question on lactation).

Immunization

What are the current recommendations for measles vaccination?

The Centers for Disease Control and Prevention (CDC) recommends that all children receive 2 doses of measles-mumps-rubella vaccine.[4] The first dose should be given at age 12 to 15 months and the second dose at 4 to 6 years of age.

Non-pregnant reproductive age people who do not have presumptive evidence of immunity* should receive at least one dose of MMR vaccine.

Pregnant people who are unimmunized should defer vaccination until postpartum, ideally before discharge from the delivery hospital.

MMR vaccination is safe for breastfeeding people. Breastfeeding does not interfere with immunity, and the vaccine is not transmitted through breast milk.

* Evidence of immunity includes at least one of the following:
1. Written documentation of adequate vaccination:
    a. One or more doses of measles-containing vaccine administered on or after the first birthday for preschool-aged children and adults not at high risk for exposure and transmission.
    b. Two doses of measles-containing vaccine for school-aged children and adults at high risk for exposure and transmission, including college students, healthcare personnel, and international travelers.
2. Laboratory evidence of immunity
3. Laboratory confirmation of measles
4. Born before 1957

How should patients be counseled regarding MMR vaccination?
Patients should be informed that measles is almost entirely preventable through vaccination. Two doses are about 97% effective at preventing measles, and one dose is approximately 93% effective. There is no association between MMR vaccination and autism.

Because the MMR vaccine is an attenuated live virus vaccine, unvaccinated pregnant individuals should wait until after giving birth to receive the MMR vaccine. Pre-pregnancy and postpartum vaccination are options for individuals not previously vaccinated. Pregnancy should be delayed for at least four weeks after receiving the MMR vaccine.

Pregnant patients who inadvertently receive MMR vaccine should be counseled that the risk of infection from live vaccine is theoretical and that no documented harm has occurred following vaccination.

Vaccination while breastfeeding is safe. Additionally, it is safe for family members of the pregnant person to be vaccinated as they do not pose a risk of transmission to the pregnant person.

Additional Resources

For Clinicians

- CDC Healthcare Providers Measles Page
- CDC HAN March 2024 on Measles
- CDC HAN March 2025 on Measles
- CDC Measles Cases and Outbreaks in the US
- CDC Interim Infection Prevention and Control Recommendations for Measles in Healthcare Settings
- ACOG Practice Advisory on Management of Obstetric–Gynecologic Patients During a Measles Outbreak

For Patients and the Public

- SMFM Vaccination Guide for Pregnancy
- SMFM Page on Measles
- SMFM Patient Education Page on Measles
- SMFM Measles Blog
- SMFM Measles Podcast 2025
- SMFM and MotherToBaby MMR Vaccine Flowchart
- Maternal Immunization Task Force Call to Action on Measles
- CDC Vaccine Recommendations Before, During and After Pregnancy

References

1. Centers for Disease Control and Prevention. Increase in Global and Domestic Measles Cases and Outbreaks: Ensure Children in the United States and Those Traveling Internationally 6 Months and Older are Current on MMR Vaccination. Department of Health and Human Services. Updated March 18, 2024. Accessed March 19, 2025. https://www.cdc.gov/han/2024/han00504.html
2. Centers for Disease Control and Prevention. Expanding Measles Outbreak in the United States and Guidance for the Upcoming Travel Season. Department of Health and Human Services. Updated March 7, 2025. Accessed March 19, 2025. https://www.cdc.gov/han/2025/han00522.html
3. Centers for Disease Control and Prevention. Measles Cases and Outbreaks. Department of Health and Human Services. Updated July 9, 2025. Accessed July 9, 2025. https://www.cdc.gov/measles/data-research/index.html
4. Rasmussen SA, Jamieson DJ. What Obstetric Health Care Providers Need to Know About Measles and Pregnancy. *Obstet Gynecol*. Jul 2015;126(1):163–70. doi:10.1097/AOG.0000000000000903
5. Jespersen CS, Lttauer J, Sagild U. Measles as a cause of fetal defects. A retrospective study of tem measles epidemics in Greenland. *Acta Paediatr Scand*. May 1977;66(3):367–72. doi:10.1111/j.1651-2227.1977.tb07909.x
6. Atmar RL, Englund JA, Hammill H. Complications of measles during pregnancy. *Clin Infect Dis*. Jan 1992;14(1):217–26. doi:10.1093/clinids/14.1.217
7. Dyer I. MEASLES COMPLICATING PREGNANCY REPORT OF TWENTY-FOUR CASES WITH THREE IN- STANCES OF CONGENITAL MEASLES. *Southern medical journal (Birmingham, Ala)*. 1940;33(6):601–604. doi:10.1097/00007611-194006000-00007
8. Lee J. Alberta babies have been born with measles due to outbreaks, worrying doctors. *CBC*. https://www.cbc.ca/news/canada/calgary/alberta-measles-outbreak-congenital-babies-1.7565626
9. Centers for Disease Control and Prevention. Measles Treatment Overview. Information for Healthcare Providers2025.
10. World Health Organization. Treating measles in children. General Management: World Health Organization; 1996.
11. Huiming Y, Chaomin W, Meng M. Vitamin A for treating measles in children. *Cochrane Database Syst Rev*. Oct 19 2005;2005(4):Cd001479. doi:10.1002/14651858.CD001479.pub3
12. Imdad A, Mayo-Wilson E, Herzer K, Bhutta ZA. Vitamin A supplementation for preventing morbidity and mortality in children from six months to five years of age. *Cochrane Database Syst Rev*. Mar 11 2017;3(3):Cd008524. doi:10.1002/14651858.CD008524.pub3
13. Rothman KJ, Moore LL, Singer MR, Nguyen US, Mannino S, Milunsky A. Teratogenicity of high vitamin A intake. *N Engl J Med*. Nov 23 1995;333(21):1369–73. doi:10.1056/nejm199511233332101
14. Genaro Pde S, Martini LA. Vitamin A supplementation and risk of skeletal fracture. *Nutr Rev*. Feb 2004;62(2):65–7. doi:10.1111/j.1753-4887.2004.tb00026.x
15. Olson JM, Ameer MA, Goyal A. Vitamin A Toxicity. *StatPearls*. StatPearls Publishing. Copyright © 2025, StatPearls Publishing LLC.; 2025.
16. National Center for Immunization and Respiratory D. Manual for the surveillance of vaccine-preventable diseases. *Manual for surveillance of VPD*. 2008;

17. California Department of Public Health. Immune Globulin for Measles Postexposure Prophylaxis. 2025.
18. Haas DM, Flowers CA, Congdon CL. Rubella, rubeola, and mumps in pregnant women: susceptibilities and strategies for testing and vaccinating. *Obstet Gynecol*. Aug 2005;106(2):295–300. doi:10.1097/01.AOG.0000171110.49973.e3
19. Kassir E, Holliman K, Negi M, et al. Risk Factors for Measles Nonimmunity in Rubella-Immune Pregnant Patients. *Am J Perinatol*. Jul 2024;41(9):1178–1184. doi:10.1055/a-1799-5714
20. Kennedy CM, Burns BA, Ault KA. Does rubella immunity predict measles immunity? A serosurvey of pregnant women. *Infect Dis Obstet Gynecol*. 2006;2006:13890. doi:10.1155/idog/2006/13890

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