Measles

Section 1: Introduction

At one time, measles was considered a common childhood illness; however, lingering behind the idea that it is simply a minor childhood rite of passage is the potential for lifelong adverse effects and even death. This is especially true for younger children and those with a compromised immune system (Mayo Clinic, 2025). Prior to modern prevention methods, this virus was responsible for approximately 2.6 million deaths worldwide each year. In 2023, there were an estimated 107,500 deaths from measles, and of those, most were children under age five (WHO, 2024). Each case of measles can lead to 14-18 new cases. For comparison, the SARS-CoV-2 virus had a contribution rate of 1-6 new cases for each infected person (Kondamudi et al., 2025).

In 2000, the CDC declared measles eliminated in the United States. This meant that there were no new cases or outbreaks and that any cases identified had been acquired through exposure when the individual, or someone they were exposed to, had traveled outside of the United States. This is no longer the situation in the United States. Just eight months into 2025, there were 1,375 measles cases and three measles-associated deaths reported from 43 states. It is estimated that 87% of confirmed measles cases are associated with 35 separate outbreaks in the United States in 2025. In the entire year of 2024, there were 16 outbreaks and 285 total cases of measles. This illustrates the profound increase in recent measles cases and the public health emergency that nurses and other healthcare workers face in the United States (CDC, 2025b).

Despite its history as a common childhood illness, measles can be very serious. Approximately 20% of unvaccinated individuals who contract measles will become hospitalized, and this rate is higher for children. In 1,000 people with measles, one will develop brain swelling. One in 20 children with measles will have pneumonia during the course of their illness. One to three people of every 1,000 with measles will die, even with appropriate healthcare (NFID, 2025). Measles can also lead to long-term complications, including blindness, neurological disease, and hearing loss (CDC, 2024b).

For decades, nurses in the United States have rarely interacted with individuals suspected of or confirmed to have measles. With a recent resurgence in measles outbreaks, nurses and other healthcare workers must understand basic information regarding measles, including how the virus is spread, what populations are at risk, signs and symptoms, treatment and prevention methods, and evidence-based nursing interventions. By being knowledgeable, nurses can improve outcomes and prevent outbreaks.

Section 2: What is measles?

Measles is a highly contagious, though preventable, viral illness characterized by widespread rash and flu-like symptoms. Other names for measles include rubeola, 10-day measles, or red measles. Measles should not be confused with German measles, which is also known as rubella (Cleveland Clinic, 2025). It is common that people mistakenly consider measles as a benign childhood illness; however, it has the potential to cause serious adverse effects and even death (Berche, 2022). Measles can be a particularly significant health threat in regions with fewer available medical resources, such as Africa and Southeast Asia (Kondamudi et al., 2025).

Measles is an illness caused by the measles virus, an enveloped, single-stranded, negative-sense ribonucleic acid (RNA) virus of the genus Morbillivirus in the family Paramyxoviridae. The measles virus contains six structural proteins and two non-structural proteins. The non-structural proteins are V and C. The structural proteins are nucleoprotein, phosphoprotein, matrix, fusion, haemagglutinin (HA), and large protein. The HA protein binds the virus to the host cell (Kondamudi et al., 2025).

Measles was first clearly described by the Persian physician Rhazes in the 10th century, differentiating it from smallpox. Although there is no description of measles in ancient Greek texts, it may have been mentioned in Indian ayurvedic texts centuries before. It also could have easily been confused with other eruptive fevers, like smallpox, which had been described in the 7th century. Rhazes (860-932), the chief physician at the hospital in Baghdad, theorized that smallpox was caused by a transitional state between childhood and adulthood characterized by the blood fermenting like wine, accounting for the prevalence of the childhood illness. He described that measles was different from this, though they appear similar, and is caused by too much bilious blood. Rhazes may not have had the available science to understand measles thoroughly; however, he correctly identified that the best way to avoid contracting smallpox was to avoid others who had it. Many centuries of medical research later, scientists are able to fully understand measles, including how it is spread and how it can be prevented (Berche, 2022).

Section 2 Personal Reflection

Why do you think people often consider measles a minor childhood illness? What are the potential risks of thinking of measles in this way? What information do you think early physicians had when considering measles and other viral illnesses? What technology has been developed in the last millennium that helped scientists better understand measles?

Section 3: How does measles spread?

The measles virus is highly contagious and spreads in various ways. While it is typically contracted through droplet transmission from the coughing and sneezing of someone who is infected, the virus can also survive on surfaces for up to two hours, contributing to its ability to make people sick (CDC, 2024a). Since it is transmitted by droplets in the air, individuals who speak with, share food or drink, kiss, shake hands, or hug someone already infected are at risk for being infected. People can also become infected by touching a surface or object with the infected droplets and then touching their mouth, nose, or eyes. Measles can spread through vertical transmission, when a mother spreads the virus to her child during pregnancy, childbirth, or breastfeeding (Cleveland Clinic, 2025). Measles is only spread by humans, and animals cannot carry or spread the virus (Kondamudi et al., 2025).

When the virus is initially inhaled from the environment, the droplets infect the respiratory tract cells, including lymphocytes, dendritic cells, and alveolar macrophages. The virus then spreads to the lymphoid tissue and into the bloodstream, carrying it to the rest of the body. The measles virus also spreads to the epithelial cells of the respiratory tract, which are shed and expelled when the infected individual coughs or sneezes. Before the infected person exhibits symptoms, known as the prodromal phase, the virus can decrease the host's immunity by negatively affecting interferon production. As the virus replicates, an immune response is initiated (Kondamudi et al., 2025).

Measles is most infectious and likely to spread to others during the period that is four days before and four days after the characteristic rash is first noted. This is due to the peak in coughing, conjunctivitis, and inflammation of the mucus that occurs during this time (Kondamudi et al., 2025). Measles also spreads through individuals who are unaware they are infected. During an outbreak, approximately

67% of infected individuals may be asymptomatic or without measles-specific symptoms (NNU, 2025). Measles is so contagious that up to 90% of people who are not immune and have close interactions with an infected individual will become infected. Infected people can also spread the virus up to four days before they realize they are infected (CDC, 2024a). Measles is known to be 2-3 times more contagious than the SARS-CoV-2 virus (Kondamudi et al., 2025).

Measles outbreaks typically occur in populations with a large number of individuals who are unvaccinated or are under-vaccinated. While this may be due to a lack of healthcare system infrastructure and access in some countries, outbreaks can also occur in countries where vaccines are readily available and accessible. This is most often due to individuals being reluctant to vaccinate themselves or their children. This reluctance is known as vaccine hesitancy (Kauffmann et al., 2021). In 2024, it was reported that less than 93% of kindergarteners in the United States were fully vaccinated for measles. This is below the threshold of 95% needed to maintain community protection from the disease (NNU, 2025). Globally, the measles vaccination rate in 2023 was only 83%, with only 74% of children receiving both necessary vaccine doses. The global vaccination rate is down from 86% in 2019 (WHO, 2024).

According to the Strategic Advisory Group of Experts (SAGE), vaccine hesitancy is influenced by complacency, convenience, and confidence. The public rarely sees significant complications from measles due to the success of vaccination programs. This causes individuals not to be aware of the possibility of serious complications. Safety concerns not rooted in science can also contribute to vaccine hesitancy (Kauffmann et al., 2021). Vaccine hesitancy is most often due to misinformation among parents with low parental trust, low perceived disease susceptibility, and skepticism of vaccine safety and benefits. Social drivers of vaccine hesitancy include primary care, education, the economy, and politics. Social factors influence vaccine hesitancy depending on how determinants are experienced. College-educated mothers who live in middle to high-income areas and who prefer to get medical information from the internet or social media are most likely to have vaccine hesitancy. Vaccine hesitancy may be exhibited in different ways, such as delaying early immunizations, limiting the number of immunizations given in a single visit, avoiding certain vaccines, and declining to catch up on missed immunizations (Novilla et al., 2023).

Misinformation related to the MMR vaccine has had rippling effects. In 1998, an article was published that claimed to identify a link between the MMR vaccine and autism. Other studies found that symptoms of autism spectrum disorder occurred in the first year of life, before MMR vaccination administration. It was later determined, in 2004, that the article claiming a relationship between the vaccine and autism was inaccurate and did not follow medical ethics guidelines. Most of the article's authors officially withdrew unreliable applications, and the article was officially retracted by the publication in 2010. This is not to say that adverse events cannot be caused by vaccines, only that the relationship between the MMR vaccine and autism spectrum disorder cannot be scientifically established (Patel & Tobin, 2025).

Section 3 Personal Reflection

What does airborne transmission mean? How can someone become infected with measles if they have not personally interacted with an infected individual? Why do more symptomatic individuals have an increased likelihood of spreading the measles virus? When is a person infected with measles most contagious? Where do measles outbreaks tend to occur? What factors contribute to vaccine hesitancy? Why is misinformation, especially from a usually reputable source, so impactful?

Section 4: Risk Factors for Infection and Complications

Some individuals are at increased risk of becoming infected with measles, though anyone who is not immune to measles is at risk (WHO, 2024). Those who live in close communities, such as students in dormitory housing, may be at increased risk. Individuals with weak immune systems or who are too young to be vaccinated are also at increased risk for infection (Mayo Clinic, 2025). A weak immune system may be caused by HIV, cancer treatment, or other medications and medical conditions (Do & Mulholland, 2025). The measles vaccine is a two-step vaccine; therefore, those who have only received one dose are at increased risk for infection. Travel to places where measles outbreaks are common, like parts of Africa, the Middle East, and Asia (WHO, 2024), increases risk for infection, especially for those not fully vaccinated (Mayo Clinic, 2025).

Some individuals may be at increased risk of becoming infected with measles due to the country they live in. Individuals who live in countries with an inadequate health infrastructure, due to conflict, natural disaster, or low per capita incomes, are at increased risk for measles outbreaks. When the healthcare infrastructure is insufficient or damaged, reaching children and others with immunizations is difficult. Conflict and natural disasters can disrupt already established immunization programs or force families to live in crowded residential camps, which increases the risk of an outbreak (WHO, 2024).

Some populations, such as unvaccinated children and pregnant women, are at increased risk for complications (WHO, 2024). Children younger than 5 years, adults older than 20, and those who are malnourished, especially those with vitamin A deficiency, are at increased risk for complications (Mayo Clinic, 2025). Children with vitamin A deficiency are more likely to develop measles keratoconjunctivitis, which can lead to blindness (Kondamudi et al., 2025).

Pregnant women can have serious complications as a result of a measles infection and are at risk for pre-term birth and low birth weight (CDC, 2024b). They are also at increased risk for maternal death, spontaneous abortion, and intrauterine fetal death (Kondamudi et al., 2025).

Most individuals recover from a measles infection without complications; however, some experience chronic and lifelong adverse outcomes (Kondamudi et al., 2025). Complications due to measles are varied. One in ten children with measles will experience an ear infection. Diarrhea also occurs in 10% of children (CDC, 2024b). Inflammation of the airways may lead to the need for oxygen supplementation or mechanical ventilation (Mayo Clinic, 2025). Dehydration, bronchitis, laryngitis, pneumonia, and blindness are complications of measles (Cleveland Clinic, 2025).

Another complication associated with a measles infection is immune amnesia, which occurs in approximately 1 in 20 children infected with measles. This condition refers to long-term damage to the immune system, causing it to be unable to recognize known pathogens. Immune amnesia increases susceptibility to other infections, as the immune system cannot recognize previously known pathogens (NNU, 2025). It is unclear why immune amnesia occurs, though it may be related to the development of measles-specific lymphocytes that replace established memory cells. Secondary infections, often due to immune amnesia, are the leading cause of death for individuals with measles (Kondamudi et al., 2025).

Rarely, measles can lead to central nervous system (CNS) complications. Encephalitis can occur, possibly resulting in deafness and intellectual disability (CDC, 2024b). Acute disseminated encephalomyelitis (ADEM), an autoimmune demyelinating disease, can occur within days to weeks after infection (Kondamudi et al., 2025). ADEM is characterized by inflammation in the CNS, which damages the myelin sheath of nerve cells, resulting in symptoms including fever, headache, nausea, vomiting, confusion, fatigue, numbness or tingling in the extremities, dysphagia, vision loss, muscle weakness, difficulty walking, or seizures (Cleveland Clinic, 2023). Measles inclusion body encephalitis (MIBE) is a progressive brain infection that occurs in patients with compromised cellular immunity within months of measles infection (Kondamudi et al., 2025). MIBE begins with an altered mental status and eventually leads to worsening seizures, neurological deficits such as aphasia, hemiplegia, and ataxia. MIBE is fatal in 75% of cases (Diwan et al., 2022). Children infected with measles before age 2 are at increased risk for subacute sclerosing panencephalitis (SSPE), which typically presents 7-11 years after a measles infection (Mayo Clinic, 2025). SSPE is a fatal central nervous system disease (CDC, 2024b) that is characterized by progressive neurological decline, beginning with behavior changes and progressing to the presence of myoclonus, autonomic dysfunction, focal paralysis, and eventually a vegetative state and death. Some children with SSPE may develop epilepsy during the course of their illness. SSPE occurs in 4-11 per 100,000 cases of measles, though it increases to 18 per 100,000 among children infected before age five (Rocke & Belyayeva, 2023). There are 100,000 to 200,000 measles-associated deaths annually of unvaccinated individuals (Kondamudi et al., 2025).

Section 4 Personal Reflection

Who is at increased risk of becoming infected with measles? How can a lack of a functioning healthcare system affect the spread of measles? What populations are at increased risk for complications? What are some of the neurological complications that can occur? What is immune amnesia? How does immune amnesia contribute to morbidity and mortality associated with measles?

Section 5: Signs and Symptoms

Measles is categorized as an acute febrile exanthema characterized by cough, coryza (inflammation of the mucous membrane of the nose), and conjunctivitis (Kondamudi et al., 2025). Cough, coryza, and conjunctivitis are considered the 'three C's' of measles (Gooch, 2024).

Measles occurs in four phases. The initial phase is the incubation period, when an individual has been infected but has not yet experienced symptoms. The incubation period lasts 8-12 days. In the prodromal phase, the patient begins to experience mild symptoms that may be attributed to a cold virus, as they are similar (Gooch, 2024). Initial symptoms may include a high fever, cough, rhinorrhea, and conjunctivitis (CDC, 2024b). Initial symptoms may also include fatigue, sore throat, muscle pain, and headache (Cleveland Clinic, 2025). Within 2-3 days of the onset of initial symptoms, an individual will develop tiny white spots, known as Koplik spots, inside the mouth in the buccal mucosa (CDC, 2024b). These spots may be missed during a clinical exam because they resolve within a few days. The next phase is the viral exanthem phase (Gooch, 2024). Within 2-5 days after the onset of initial symptoms, a rash characterized by flat, red spots will appear, most often on the face and at the hairline, spreading downward towards the feet (CDC, 2024b). The rash can vary in color depending on skin type and tone. It does not typically occur on the palms of the hands or the soles of the feet (Gooch, 2024). The red spots may also include small, raised bumps. They can become joined and are often accompanied by a high fever (CDC, 2024b). Patients infected with measles typically appear most ill on the first or second day after developing the characteristic morbilliform rash (Chen, 2025). The final phase is the recovery phase. The fever reduces and eventually resolves during this time, though the characteristic cough may continue. Measles typically resolves about a week after the onset of the rash. The rash typically fades in the order in which it initially appeared (Gooch, 2024). Desquamation, or shedding of the outermost layer of skin, often occurs following measles (Kondamudi et al., 2025).

Breakthrough, or modified measles, occurs when someone becomes infected with measles as their vaccine immunity wanes. Symptoms of breakthrough measles include mild illness, and while the patient may experience the classic measles symptoms, they may not experience all the usual symptoms, and the rash progression may not be typical. Breakthrough measles often presents similarly to an influenza infection. Breakthrough measles is contagious, but transmission to another individual is rare (Kondamudi et al., 2025).

Measles is diagnosed when there is a history of viral-type exanthem, high fever, and at least one of the 'three C's' (cough, coryza, or conjunctivitis). Serology can be performed to confirm measles if necessary. Typically, serum immunoglobulin M antibody testing results are available more quickly. This test can also detect antibodies within four days of onset and up to thirty days after the onset of the rash. PCR testing may also be used instead of or in conjunction with immunoglobulin testing. PCR testing is preferred for tracing purposes, as it can help identify the genotype and origin of the virus. All confirmed measles cases should be reported to the local and state health department (Gooch, 2024).

Section 5 Personal Reflection

What are the 'three C's' of measles? What are the four phases of a measles illness? How can it be helpful for nurses and other healthcare workers to understand the typical progression of measles infections? Why do you think individuals with breakthrough measles do not experience symptoms in the same way as patients who had no previous immunity? Why do you think individuals are less likely to spread measles if they have a breakthrough infection? Why is tracing important when it comes to measles infections?

Section 6: Treatment and Prevention

Treatment for measles is focused on symptom management and the prevention of complications. Antiviral medication is not routinely used to treat measles (Mayo Clinic, 2025). Therapy practices include managing fever, preventing and correcting dehydration, and infection control interventions (Kondamudi et al., 2025). Acetaminophen and ibuprofen are typically used to treat fever. However, medications containing aspirin should be avoided in pediatric patients due to the risk of Reye's syndrome (Gooch, 2024). Although Reye's syndrome is rare, it affects children after a viral infection, causing swelling in the liver and brain. The use of aspirin in febrile children and adolescents has been linked to Reye's syndrome (Mayo Clinic, 2024). Patients with measles must stay hydrated, as measles increases the risk of dehydration. Patients can drink water, broth, or rehydration solutions to help replace fluid loss. Rest and nutritious foods are also essential in helping the body recover from measles (Mayo Clinic, 2025).

Sometimes, providers may recommend vitamin A supplementation for someone who has measles. The World Health Organization and American Academy of Pediatrics recommend a two-day course of vitamin A supplementation. It may be administered longer for children who are malnourished (Kondamudi et al., 2025). Vitamin A does not treat or prevent measles, but can help reduce overall mortality for children living in areas with high rates of Vitamin A deficiency. The recommended therapy is a daily dose of 50,000 IU for infants younger than six months old, 100,000 IU for infants 6-11 months old, and 200,000 IU for children 12 months and older (CDC, 2025c). Since vitamin A is fat-soluble, children can consume too much, leading to dangerous neurologic and hepatic complications; therefore, doses should be conservative (Kondamudi et al., 2025). Pregnant women should avoid taking high doses of vitamin A, as high levels have been associated with congenital anomalies (CDC, 2025c).

While there are no FDA-approved medications for treating measles, ribavirin and interferon have been used off-label to manage measles in immunocompromised patients (Gooch, 2024). The use of these medications is considered experimental. Ribavirin is a broad-spectrum antiviral that has been used to treat respiratory infections. Research has found that ribavirin does show in vitro activity against the measles virus, but there is not enough clinical data to provide evidence-based support for its efficacy. Antibiotics are not routinely used to treat measles, but may be used if there is a secondary infection that will respond to antibiotic therapy. Inhaled steroids may be used for patients with reactive airway disease, though this is based on clinical presentation (CDC, 2025c).

If an individual who is not immune through previous illness or vaccination is exposed to measles and is older than six months, they can receive a measles vaccine up to three days after the exposure. Infants up to eleven months old who are not immune and are exposed to measles can get an immune globulin injection to help prevent major illness or complications. These infants must also be quarantined for 21 days (Mayo Clinic, 2025).

The best way to treat measles is to prevent the illness altogether. The primary strategy used to prevent measles infections is vaccination. The measles-mumps-rubella (MMR) vaccine is considered one of the most effective and safest vaccines ever developed (Kondamudi et al., 2025). The measles vaccine is recommended for anyone born after 1957 who does not already have immunity. It may also be recommended for military personnel, healthcare workers, and international travelers, regardless of birth year (Patel & Tobin, 2025). Breastfeeding women may receive the MMR vaccine. MMR vaccine may be delayed or contraindicated for those who have had an allergic reaction to it in the past, may be pregnant, have a weakened immune system, have a bleeding disorder, have recently received a transfusion of blood products, have tuberculosis, have had other vaccines in the past four weeks, have a history of seizures, are taking salicylates, or are feeling unwell (CDC, 2025d).

The MMR vaccine is a live attenuated combination vaccine. The vaccine contains a less virulent version of the diseases it was created to prevent. It strengthens the immune system to recognize these viruses and respond appropriately. The MMR vaccine requires two doses to produce effective patient immunity (Patel & Tobin, 2025). The initial MMR vaccine is 93% effective against measles, and this rises to 97% effectiveness after the second dose (CDC, 2025d). For routine inoculation, the first dose is administered to infants at 12-15 months of age, and then the second dose is given at 4-6 years of age. While this is the usual pediatric immunization schedule, the vaccine doses can be given closer together, as long as they are not given less than 28 days apart. Travelers and those at high risk for measles should maintain immunity, which can be checked through titers. The MMR vaccine is estimated to be 99% effective in preventing measles for individuals who have received both doses (Patel & Tobin, 2025). When someone fully vaccinated against measles becomes infected, it is usually due to a very close and prolonged exposure to an infected individual. Healthcare workers caring for individuals acutely ill with measles are at the highest risk of becoming infected, despite having presumptive immunity.

The CDC has published recommended guidelines for the inoculation of children. Two vaccine doses are recommended because approximately 15% of children do not develop immunity from the first dose (Fappani et al., 2022). For children who live in areas at higher risk for measles, or who will be traveling to these areas, it is recommended by the CDC that the first MMR dose be given earlier than usual, between 6 and 11 months of age, with the second dose given at 12-15 months. Common side effects of the MMR vaccine include localized pain and redness, irritability, loss of appetite, fever, and drowsiness (Patel & Tobin, 2025). The MMRV vaccine, which includes inoculation for varicella, the virus that causes chicken pox, can be given in place of the MMR vaccine if the initial dose is given after 12 months or before age 12 (CDC, 2025d).

With the recent outbreaks of measles in the United States, research continues to seek treatments for measles. One study examined the effects of remdesivir for the treatment of measles. While evidence did show that remdesivir temporarily suppressed the replication of the measles virus, it did not clear the virus, and replication resumed. The clinical course for the test subjects that received remdesivir was not improved compared to the control subjects (Peart Akindele et al., 2023).

Section 6 Personal Reflection

What is the focus of measles treatment? How can vitamin A supplementation affect someone with measles? Why do you think some medications may be used off-label to treat measles for certain patients? How do you think immunization of most of the population affects those who cannot receive the MMR vaccine?

Section 7: Nursing Interventions

Effective nursing interventions can reduce the spread of measles and improve outcomes for those who become infected. Monitoring, symptom management, infection prevention measures, staffing decisions, education, preparation, and advocacy can all contribute to reducing morbidity and mortality related to measles. Nurses can implement specific interventions to help manage symptoms and prevent complications, such as administering antipyretics, implementing cooling measures, and encouraging fluids. Monitoring is an important aspect of nursing care related to an acute measles illness. Fluid status should be carefully observed, as patients who are infected with measles can become dehydrated

(Cleveland Clinic, 2025). A thorough assessment can alert the nurse to findings that may indicate worsening clinical status.

While measles most commonly spreads within the household or community, it can also spread within the healthcare setting (CDC, 2025a). Isolation is an effective strategy to prevent further spread of measles. It is recommended that individuals be isolated for four days after the onset of the rash associated with measles (CDC, 2025c). When calculating isolation days, the day of the onset of the rash is considered “day 0” (CDC, 2025a).

Healthcare workers must follow standard and airborne precautions to prevent the spread of the measles virus. Once a patient is suspected of having measles, they should wear a facemask. Upon arrival to the patient’s room, they may remove the facemask, but staff should continue to wear appropriate PPE, including a fit-tested respirator mask, such as an N95. Nurses and other staff should be aware of their facility’s policy regarding airborne precautions, as gowns, gloves, and goggles/face shields are also typically required (CDC, 2025a).

An airborne isolation patient room should be used to prevent the spread of measles. This is a dedicated room built into the hospital with specialized ventilation that prevents air from traveling from the room to the hallway. The door of the airborne infection isolation room must remain closed when not used for entry and exit from the room (CDC, 2025a). These rooms often have an anteroom that physically separates the patient room from the hallway. This transition area allows healthcare workers to don and dispose of PPE without exposing others to the virus (Ather et al., 2023). Once the patient has been discharged, the room should remain vacant for at least two hours to ensure all potentially infectious droplets are no longer in the air. Individuals considered immunocompromised should continue in airborne precautions for the duration of their illness. This is due to the prolonged virus shedding experienced by these patients (CDC, 2025a).

Healthcare employees who interact with infected patients or enter the patient's room should have documented presumptive immunity to measles. This can include written documentation of receiving two doses of the measles vaccine according to recommended guidelines, laboratory evidence of immunity such as the presence of measles immunoglobulin G (IgG) in the worker's serum, or proof of birth before 1957. It is recommended that individuals born before 1957 who have not been vaccinated against measles or do not show clinical immunity should consider completing the vaccine series. During a documented measles outbreak, any healthcare worker who is not vaccinated, regardless of birth year, and lacks lab evidence of immunity, should be vaccinated. Staffing decisions should prioritize the safety of healthcare staff. Workers who do not have presumptive evidence of measles immunity should not enter the patient's room when staff with presumptive immunity are available. Nurses and other healthcare workers should also be adequately trained in the appropriate use, disposal, and medical contraindications of respirator use (CDC, 2025a).

Transport of patients with known or suspected measles should be limited to only the most essential purposes and only when the required test or procedure cannot be completed in the patient's room. During transport, the patient should wear a facemask if tolerated, and the transporting staff members should use an N95 respirator for respiratory protection. The transportation route should be carefully considered so that the route used has minimal contact with other individuals. The nurses and other staff in the receiving destination should be notified in advance regarding the patient's requirement for airborne precautions (CDC, 2025a).

Measles exposures should be minimized. According to the Centers for Disease Control and Prevention, an exposure occurs when a patient, visitor, or healthcare worker is not wearing recommended personal protective equipment (PPE), regardless of their presumptive measles immunity status, and comes in contact with air that may carry the measles virus. One way to minimize exposures is to schedule appointments strategically. If someone has signs or symptoms of measles when they call to make an appointment, they should be given instructions on an alternative entrance and what precautions to take. If the patient is transported to the hospital via emergency services, the receiving facility and staff should be notified in advance that the patient is known to have or is suspected of having measles. When a patient arrives and is identified as possibly having measles, the individual should be given a facemask to wear and separated from other patients as soon as possible. Another way to limit exposure in the healthcare setting is to post visual alerts, such as signs or posters, in languages common to the community that educate patients and visitors regarding respiratory hygiene, cough etiquette, and hand hygiene. Hand hygiene supplies and facemasks should also be near the alerts for individuals to access as needed. Visitor screening may be necessary when there is an outbreak of measles in the community. If an exposure occurs, postexposure prophylaxis measures should be implemented. These may include vaccination administration, isolation, and days excluded from work (CDC, 2025a).

Nurses can learn from past events to limit measles exposures. In 2014, a patient in a healthcare facility in California was diagnosed with measles, but was not placed in airborne isolation for over eight hours because healthcare workers had false assurance that, since they had been vaccinated, they did not need to implement isolation precautions or wear respiratory protection. When they began to experience prodromal symptoms, they were not initially attributed to measles, and therefore, they continued to provide care in the clinical setting. The delay in isolating the patient resulted in 450 exposures, and the improper actions of healthcare workers following their infection led to five measles infections of previously vaccinated employees and 1,014 exposures. Another investigation of a healthcare-related measles outbreak found that employees who became infected with measles in the workplace had been appropriately vaccinated, but had waning immunity (NNU, 2025). Nurses and healthcare workers must understand that vaccination alone is insufficient to protect themselves and others from the measles virus. Limiting exposure includes implementing appropriate isolation practices, regardless of presumptive immunity. In addition to implementing these protocols, nurses who are knowledgeable regarding measles can educate other staff members on the risks and necessity of following airborne isolation and precautions.

Nurses can be instrumental in reducing vaccine hesitancy through education (Novilla et al., 2023). Interventions to reduce vaccine hesitancy should be dialogue-based and tailored to the target population and their specific concerns. This can improve vaccination coverage, decreasing the number of measles cases in communities. Nurses can also educate patients and families on the potential severity of measles and how vaccines help avoid becoming infected or mitigate major complications of a measles infection (Kauffmann et al., 2021). Patient education can help to counteract misinformation regarding the measles vaccine by providing evidence-based and accurate scientific information to the public (Kondamudi et al., 2025). Trust must be nurtured between parents, physicians, and policymakers to dispel doubts regarding vaccine benefits and safety. This can be done through exploring culturally appropriate outreach interventions and engaging in nonjudgmental discussions. Healthcare workers must understand the concerns of parents in order to provide information to improve understanding. Historically, interventions have been focused on educating mothers; however, other family members, such as grandparents, can be trusted messengers who can share valid information with their family (Novilla et al., 2023).

Nurses can work to reduce measles morbidity and mortality through preparation and advocacy. This includes becoming educated regarding measles, understanding specific policies related to airborne illnesses, and implementing strategies to reduce exposures. In most institutions, infection prevention guidelines must be reviewed annually. Nurses can advocate for policies that support strategies to improve vaccination coverage, strengthen healthcare systems, improve access to vaccinations, raise awareness of the severity of measles, and improve surveillance systems to quickly identify immunity gaps and outbreaks (Kauffmann et al., 2021). Disseminating accurate information to policymakers can influence change, reducing the potential for outbreaks.

Section 7 Personal Reflection

What bedside nursing interventions should be implemented when caring for someone with measles? How can nurses help to reduce the spread of the measles virus through isolation and airborne precautions? Why do you think airborne isolation rooms are necessary to prevent the spread of the measles virus? How can nurses and other healthcare workers prevent exposure to measles? How do nurses counter vaccine hesitancy? How can providing science-based information to policymakers influence the prevalence of measles?

Section 8: Conclusion

Despite being eliminated from the United States in 2000, the spread of measles in recent years is primarily related to a lack of sufficient immunization coverage and a change in vaccination needs due to increased global population mobility and population density. Measles, though often considered a once-routine childhood illness, continues to be a potentially fatal illness that requires awareness from nurses and other healthcare workers to prevent the spread of the virus and to care for patients who become infected (Kauffmann et al., 2021).

Research regarding measles continues, and new discoveries are being made. Scientists are investigating strategies to trace, identify, and treat measles. Since measles RNA is shed and excreted mostly in the urine, it is possible to identify a measles outbreak by monitoring for virus shedding in wastewater; however, the feasibility of this monitoring is still being studied due to a lack of data or the ability to determine infection rates based on shed virus RNA present in wastewater (Chen & Bibby, 2025). This is just one example of strategies being investigated to reduce the spread of the measles virus.

While many nurses have not directly cared for a patient who has measles, they must be prepared as the number of measles cases in the United States rises. Nurses who understand what measles is, how it is spread, risk factors and complications, how measles is treated, and especially how it is prevented are most equipped to meet the needs of their patients and community and improve outcomes associated with measles infections.

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