

THE PATHCARE NEWS

RUBELLA ALERT!

Increase in rubella cases, 2024

Rubella, or "German measles", is a common childhood viral illness, caused by *Rubella virus*, of the family *Matonaviridae*. It is usually a self-limiting illness in children but can have devastating effects on the foetus when acquired during early pregnancy ¹.

Rubella is targeted for elimination by the World Health Organization (WHO), and is now a category 1 notifiable medical condition in South Africa ². Category 1 notifiable medical conditions require immediate reporting by the most rapid means available upon diagnosis followed by a written or electronic notification to the Department of Health within 24 hours of diagnosis by healthcare providers.

According to NICD data, as well as PathCare data, there has been an increase in rubella cases in 2024 ³. A more significant increase was noted recently in August and September, with several provinces affected, including the Eastern Cape, Gauteng, KwaZulu-Natal, Northern Cape and the Western Cape province.

Table 1. PathCare reference laboratory data showing marked increase in rubella IgM positivity rates in recent months, 2024.

PathCare Data: Rubella IgM positivity rate, Jan-Dec 2023	PathCare Data: Rubella IgM positivity rate, Jan-Sep 2024	PathCare Data: Rubella IgM positivity rate, Sep 2024 only
0.2%	6%	18%

Clinicians should have a high index of suspicion when seeing patients presenting with fever and rash, which should prompt testing and reporting, to allow for identification of cases and continued surveillance. To prevent exposure to rubella virus during pregnancy, pregnant patients should be advised to avoid people with known rash illnesses. In addition, females planning pregnancy should be encouraged to check their immunity and/or get vaccinated before conceiving.

Additional Information

Epidemiology

Intermittent outbreaks of rubella still occur in many countries, even in those with rubella vaccination as part of a national immunization program. Rubella was eliminated from the Americas in 2015 ⁴, while progress has also occurred in the European region and a number of countries in other regions, suggesting that rubella elimination is attainable and should be a worldwide effort. Based on WHO estimates, approximately 100,000 infants are born annually with congenital rubella syndrome ¹.

Transmission

Rubella virus is predominantly acquired via the respiratory route through droplet spread. The incubation period ranges from 12-23 days. The infectious period may range from 1 week before to 1 week after rash onset, with asymptomatic infection and shedding possible ¹.

Infection can also occur from mother to foetus through the placenta, potentially resulting in congenital rubella syndrome (CRS).

Virology and Pathogenesis

The positive-sense, single-stranded RNA virus first enters the body through the upper respiratory tract. Initial replication occurs in nasopharyngeal cells followed by spread to cells within regional lymph nodes. Viremia occurs five to seven days after exposure, allowing the virus to spread throughout the body. The rash appears around the same time as the neutralizing antibodies appear, leading to the hypothesis that the rash is an immune-mediated phenomenon.

Regarding CRS, maternal-fetal transmission of rubella virus occurs via hematogenous spread during maternal viremia, which usually occurs five to seven days after maternal inoculation ¹. After infecting the placenta, the virus spreads through the vascular system of the developing foetus. The resulting congenital defects stem from cytopathic damage to blood vessels and ischemia in affected organs ⁵. Fetal infection is chronic, persisting throughout gestation and after birth ¹.

Clinical Manifestations

The clinical manifestations of postnatally acquired rubella are generally mild and many cases are subclinical or asymptomatic. Illness among children tends to be milder than among adults, with fewer prodromal symptoms and complications ¹.

Children typically present with a generalized maculopapular rash with minimal systemic symptoms ¹. Low-grade fever and lymphadenopathy may occur ⁶.

Primary infection among teenagers and adults tends to be of longer duration than that among young children. Adults are more frequently symptomatic, and symptoms are more frequently accompanied by a prodrome of fever and systemic complaints. The exanthem in adults is similar to that in children ¹.

Arthralgias and arthritis occur among as many as 70 percent of teenagers and adult women but are uncommon among children and adult males ⁶.

Additional findings may include conjunctivitis, testalgia, and orchitis.

Morbidity resulting from rubella infection occurs primarily in congenitally acquired infections. The most frequent defect associated with CRS is sensorineural hearing loss, followed by intellectual disability, congenital heart defects, and ocular defects ¹.

Complications outside of CRS

Complications of rubella are infrequent except in the developing foetus. Hemorrhagic complications (e.g. thrombocytopenic purpura, cerebral, gastrointestinal, and intrarenal hemorrhage) are estimated to occur in approximately 1 per 3000 cases and are more frequent among children than adults ⁷. Other complications are observed more frequently among teenagers and adults. Postinfectious encephalitis occurs in about 1 per 6000 rubella cases, usually within a week of the exanthem, but may occur without any rash. Although the prognosis is generally good, fatal cases have been reported⁷.

Diagnosis

Rubella may be clinically indistinguishable from measles, thus necessitating laboratory testing for both measles and rubella when suspecting a case of either measles or rubella.

Testing options for both rubella and measles includes serology (IgG and IgM) and PCR (throat swab or urine).

Rubella IgM may become detectable from a day or two before rash onset, to about 5 days after rash onset. Thus, if testing occurs too early in relation to rash onset, the IgM test may be negative. If the IgM test is negative but rubella still suspected, then a throat swab PCR test may be done. Rubella IgG becomes detectable from approximately 5 days after rash onset. IgG seroconversion may also confirm a recent infection. A throat swab PCR may already be positive during the prodromal period, and may remain positive for several days after rash onset.

Laboratory diagnosis of CRS involves IgM testing and PCR. A negative IgM in the first 3 months of life excludes the diagnosis. Positive IgM results need to be confirmed with PCR.

Treatment and Prevention

There is no specific antiviral agent to treat rubella. Treatment consists of supportive care. Supportive therapy includes antipyretics, oral fluids, and symptomatic control of the rash and arthralgias/arthritis, if present ¹.

For CRS, supportive care and surveillance are the cornerstones of management, with multidisciplinary involvement essential.

Various formulations of rubella vaccine are available. The MMR (measles, mumps, rubella) vaccine is widely used in the private sector in South Africa, as part of childhood immunization programs. The public sector in South Africa is due to implement an MR (measles, rubella) vaccine as part of its childhood immunization program.

References:

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Prepared by: Dr Howard Newman, Virologist, PathCare Reference Laboratory