THE PATHCARE NEWS

MEASLES OUTBREAK 2025: IMPORTANT REMINDERS

Background

Measles morbillivirus (MV) is one of the most contagious human pathogens known[1].

MV infection occurs worldwide[2], sporadically or through outbreaks, such as the current outbreak in South Africa. In 2025, cases have been reported in all provinces in South Africa, with Gauteng and Free State reporting the majority of cases[3]. In Gauteng, the majority of the laboratory-confirmed cases were reported in the City of Johannesburg (116), City of Tshwane (198), Ekurhuleni (83), Sedibeng (10), and West Rand (2)[3]. In the Free State province, the majority of the laboratory-confirmed cases were reported in the Lejweleputswa district, which reported 95 cases [3]. Due to the highly infectious nature of the virus, coupled with low immunization coverage, the risk of a broader, national outbreak is high. Clinicians should be on high alert for potential MV cases, which will assist with early detection and general outbreak response measures.

Epidemiology

- Transmission → Airborne route, person-to-person, contaminated surfaces
- Highly contagious → Basic reproductive number (Ro) = 12-18
- Patients at greatest risk of infection and severe disease [4]
  → children ≤ 5yr, unvaccinated or partially vaccinated, children too young to be vaccinated (under 6-9 months of age), immune compromise, pregnancy.
- Incubation period → 6-21 days (median 13 days) [4].
- Infectiousness period → 5 days before the rash to 4 days after appearance of rash.
- Outbreak prone → Vaccine coverage of 95% required to prevent outbreaks.
  Routine childhood vaccination coverage in SA in 2020 approximately 80% [5].

Clinical Features and Stages of Infection

MV infection typically presents with fever and a maculopapular rash. Figure 1 expands on the stages of infection.

Atypical MV presentations are possible, specifically in patients with partial immunity and those with immune-compromise. The latter group of patients may present without the typical measles rash.

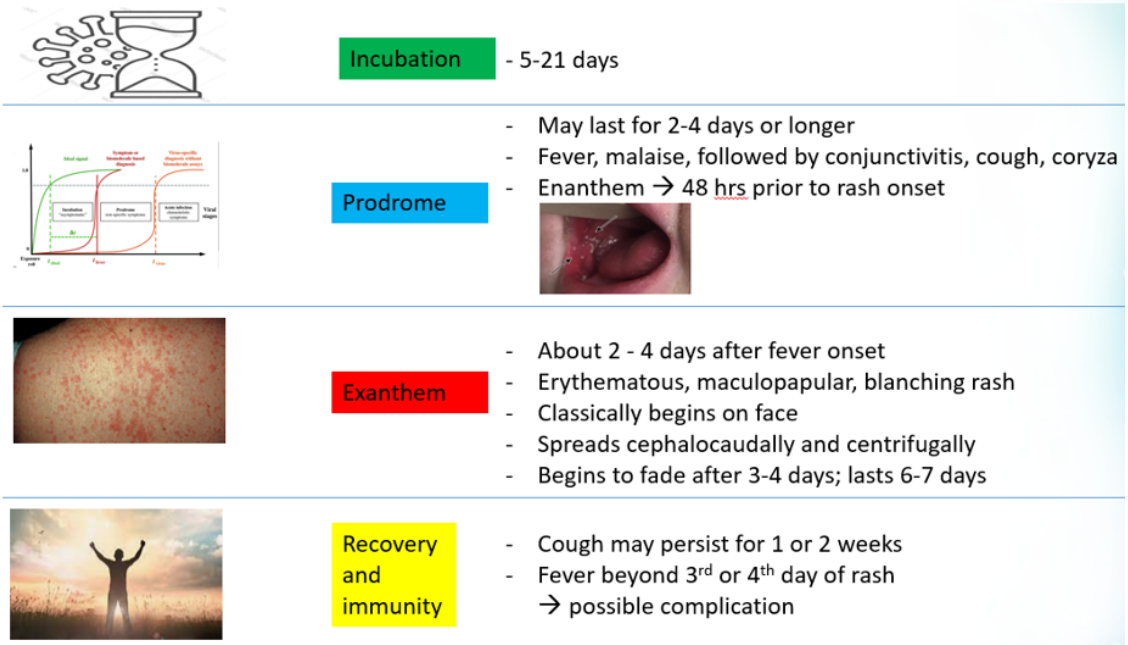

Figure 1. Stages of MV infection

Complications of MV infection

MV infection carries a high risk of developing one or more complications (~ 30% of cases), and can lead to complications involving almost all organs and systems[6].

Possible complications include (list not exhaustive):

- Diarrhoea (most common)
- Pneumonia
- Encephalitis (Acute demyelinating encephalomyelitis [ADEM], sub-acute sclerosing pan-encephalitis [SSPE], measles inclusion body encephalitis [MIBE])
- Immunosuppression and secondary bacterial infections
- Xerophthalmia and blindness
- Otitis media

Treatment and Prevention

There is no specific antiviral agent to treat measles. Treatment is supportive and aimed at alleviating symptoms and preventing complications. Vitamin A should be given to all children with measles to prevent eye damage.

For prevention of MV infection, there are safe and effective vaccines. MV vaccines are typically given as part of the expanded programme on immunization (EPI), in a two-dose schedule.

MV vaccines can be used for post-exposure prophylaxis (PEP) if given within 72 hours of the exposure. In cases where vaccination is contraindicated (eg < 6 months of age, pregnancy, severe immune compromise etc) immune globulin may be used for PEP if given within 6 days of the exposure.

Laboratory diagnosis

At PathCare we offer serological (IgM and IgG) as well as molecular (PCR) testing. See Table 1 for more details. A positive IgM or positive PCR typically confirms an acute MV infection. In certain outbreak situations, the Department of Health may request, in addition to serum for IgM testing, throat swabs for PCR testing at the National Institute of Communicable Diseases.

Test	Type	Specimen type	Timing	Notes
Measles IgM	Serology	Blood	Becomes detectable ~3 days after rash onset. Usually undetectable ~30 days after rash onset.	False positive results are possible. May need PCR to confirm (especially outside of outbreak setting).
Measles IgG	Serology	Blood	Becomes detectable from ~7 days after rash onset. Peaks at ~14 days after rash onset.	Can be used to test for previous exposure and immunity. Interpret in conjunction with IgM result, as both can be positive with a recent infection.
Measles PCR	Molecular	Throat swab, nasopharyngeal aspirate, urine	Viral RNA can be detected before rash onset, up to ~7-14 days after rash onset.	Used to confirm equivocal serological results. Detection rates low after 7 days post rash onset.

Table 1. Laboratory testing for measles

Conclusion

During outbreaks of measles it is important to have a high index of suspicion, especially where a patient presents with fever and rash. Laboratory testing for measles is important, especially at the beginning of an outbreak, or outside of an outbreak setting.

Please note that measles is a notifiable condition in South Africa. Please report all cases to the NICD via the NMC app or by manually completing the necessary forms, available on the NICD website. For measles testing, a case investigation form needs to be completed in conjunction with the standard Pathcare request form. Notification forms available at: https://www.nicd.ac.za/diseases-a-z-index/measles/

For further clinical queries and testing advice, contact one of our clinical virologists.

References

1. Strebel PM, Orenstein, WA. Measles. N Engl J Med 2019; 381:349-357. DOI: 10.1056/NEJMcp1905181
2. Gans H, Maldonado YA. Measles: Clinical manifestations, diagnosis, treatment, and prevention. Uptodate. https://www.uptodate.com/contents/measles-clinical-manifestations-diagnosis-treatment-and-prevention
3. National Institute for Communicable Diseases. Measles & Rubella Updates. 2025. https://www.nicd.ac.za/measles-updates/
4. Gans H, Maldonado YA. Measles: Epidemiology and transmission. Uptodate. https://www.uptodate.com/contents/measles-epidemiology-and-transmission?topicRef=3021&source=see_link
5. Department of Health, National Expanded Program on Immunization, Pretoria, South Africa. Republic of South Africa, Expanded Programme on Immunisation (EPI), National Coverage Survey Report 2020. https://www.health.gov.za/wp-content/uploads/2022/03/National-EPI-Coverage-Survey_Final-full-report-Dec-2020.pdf
6. Misin A et al. Measles: An Overview of a Re-Emerging Disease in Children and Immunocompromised Patients. Microorganisms 2020, 8, 276; doi:10.3390/microorganisms8020276

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