What are the best ways to treat measles?

Top Papers on Measles Treatment and Prevention

References

The best ways to treat measles focus on supportive care to manage symptoms and prevent complications, as no specific antiviral therapy exists for the virus itself. Vitamin A supplementation is recommended for children under 5 years to reduce mortality and severity, particularly in vitamin A-deficient populations (“WHO-UNICEF Joint Statement on Strategies to Reduce Measles Mortality Worldwide.,” 2002)(McLean et al., 2013). Antibiotics are used only for secondary bacterial infections like pneumonia or otitis media, not for the viral infection (Rafat et al., 2013)(Zhang, 2016). Hospitalization may be required for severe cases involving dehydration, respiratory distress, or neurological complications.

Supportive management includes fever control with antipyretics (e.g., acetaminophen or ibuprofen), hydration to prevent dehydration from fever and poor intake, and rest (Rafat et al., 2013)(Zhang, 2016). Isolation is essential to prevent spread, as measles is highly contagious via respiratory droplets for 4 days before and after rash onset (Frantzis et al., 2025)(Wang & Ratner, 2019). For high-risk exposures (e.g., immunocompromised individuals or infants), post-exposure prophylaxis with immunoglobulin within 6 days can prevent or attenuate disease (McLean et al., 2013)(Endres et al., 2014). Prevention through two doses of MMR vaccine (at 12-15 months and 4-6 years) remains the most effective strategy, achieving 97% efficacy and enabling global elimination efforts (McLean et al., 2013)(Gastañaduy et al., 2021).

Evidence from systematic reviews and guidelines supports these approaches, with vitamin A reducing measles mortality by up to 50% in deficient children (“WHO-UNICEF Joint Statement on Strategies to Reduce Measles Mortality Worldwide.,” 2002). However, limited evidence exists for antivirals like ribavirin, which is not routinely recommended due to toxicity and lack of proven benefit in uncomplicated cases (Rafat et al., 2013). Complications like pneumonia (most common cause of death) or encephalitis occur in 20-30% of cases, often requiring ICU care in adults or immunocompromised patients (Rafat et al., 2013)(Zhang, 2016). Bacterial superinfections necessitate targeted antibiotics, but prophylactic use is not advised due to resistance risks.

Supportive Care Strategies

Supportive measures form the cornerstone of treatment, emphasizing symptom relief and complication prevention. Hydration and fever management are prioritized to avoid dehydration and seizures (Rafat et al., 2013). In severe cases, oxygen therapy or mechanical ventilation may be needed for respiratory failure (Rafat et al., 2013).

• Vitamin A Supplementation: Two doses (200,000 IU for ages 12 months+, 100,000 IU for 6-11 months) on days 1 and 2 reduce severity and mortality by supporting immune function and epithelial integrity (“WHO-U

NICEF Joint Statement on Strategies to Reduce Measles Mortality Worldwide.," 2002)(McLean et al., 2013). Effective in reducing diarrhea and pneumonia risks by 30-50% in deficient regions.

• Fever and Pain Control: Acetaminophen (10-15 mg/kg every 4-6 hours) or ibuprofen for temperatures >38.5°C, avoiding aspirin due to Reye's syndrome risk (Zhang, 2016)(Rafat et al., 2013).

• Hydration and Nutrition: Oral rehydration solutions for mild cases; IV fluids for severe dehydration. Nutritional support prevents secondary infections (Zhang, 2016).

• Isolation and Infection Control: Airborne precautions in healthcare settings, including N95 masks and negative-pressure rooms, reduce nosocomial spread (Frantzis et al., 2025)(Wang & Ratner, 2019).

These interventions, when implemented early, shorten illness duration by 1-2 days and lower complication rates (Zhang, 2016).

Pharmacological Interventions for Complications

No drugs directly target measles virus replication, but adjunctive therapies address complications. Evidence is strongest for vitamin A; other agents like ribavirin show limited, investigational benefit (Rafat et al., 2013).

• Antibiotics for Secondary Infections: Amoxicillin or azithromycin for bacterial pneumonia or otitis (e.g., 40-50 mg/kg/day divided doses) if confirmed by culture or clinical signs (Rafat et al., 2013)(Zhang, 2016). Used in 20-30% of hospitalized cases; reduces mortality from bacterial superinfections.

• Ribavirin: Investigational antiviral for severe, immunosuppressed cases (e.g., 15 mg/kg loading dose IV, then maintenance); may reduce viral load but lacks randomized trial support and has toxicity risks (Rafat et al., 2013).

• Immunoglobulin: Post-exposure (0.5 mL/kg IM within 6 days) for high-risk groups prevents infection in 50-85% of cases (McLean et al., 2013)(Endres et al., 2014). Not for active disease treatment.

• Corticosteroids: Not routinely recommended; may worsen viral replication despite short-term symptom relief in encephalitis (Rafat et al., 2013).

In a cohort of 36 severe adult cases, supportive care with antibiotics for superinfections yielded 86% survival, but 14% mortality in immunocompromised patients (Rafat et al., 2013).

Prevention and Outbreak Management

While not treatment, prevention underpins management by averting cases. Two-dose MMR vaccination is 97% effective, with global coverage reducing deaths by 73% since 2000 (Gastañaduy et al., 2021)(McLean et al., 2013). In outbreaks, ring vaccination (targeting contacts) and school closures interrupt transmission (Hall, 2000)(Wang & Ratner, 2019).

• Vaccination Schedules: First dose at 12-15 months (93% efficacy); second at 4-6 years boosts to 97%

(McLean et al., 2013). For adults at risk (e.g., travelers, healthcare workers), two doses if no immunity evidence (McLean et al., 2013).

• Outbreak Response: Immediate isolation, contact tracing, and immunoglobulin for exposed susceptibles; vaccination campaigns in undervaccinated communities (Hall, 2000)(Wang & Ratner, 2019). In the Americas, elimination was achieved via catch-up campaigns reaching 90% coverage (Castillo-Solórzano et al., 2011)(Castillo-Solórzano et al., 2011).

High vaccination rates ("e95%) prevent outbreaks; waning immunity or hesit in 2019 (Gastañaduy et al., 2021).

Evidence Quality and Gaps

Most evidence derives from observational studies and guidelines (e.g., CDC, WHO), with low certainty for specific treatments like ribavirin due to small trials and bias risks (Rafat et al., 2013)(Zhang, 2016). Vitamin A has moderate evidence from RCTs in deficient populations ("WHO-UNICEF Joint Statement on Strategies to Reduce Measles Mortality Worldwide.," 2002). Gaps include antiviral efficacy in adults and long-term outcomes post-severe infection. Future research should prioritize RCTs for adjunctive therapies in high-risk groups.

• Key Gaps: Limited data on ribavirin/immunoglobulin in non-deficient adults; need for trials on integrated supportive care in low-resource settings.

• Methodological Notes: Future studies should use standardized outcomes (e.g., hospitalization rates) and subgroup analyses (e.g., by age/immunostatus).

In summary, supportive care with vitamin A and targeted antibiotics remains the evidence-based standard for measles treatment, while vaccination prevents most cases (McLean et al., 2013)(Gastañaduy et al., 2021) ("WHO-UNICEF Joint Statement on Strategies to Reduce Measles Mortality Worldwide.," 2002). Early intervention reduces complications, but global elimination requires sustained 95% coverage (Gastañaduy et al., 2021). For clinical relevance, these findings support routine vitamin A in pediatric cases but emphasize vaccination to avoid disease altogether.

References

McLean, H., Fiebelkorn, A., Temte, J., & Wallace, G. S. (2013). Prevention of measles, rubella, congenital rubella syndrome, and mumps, 2013: summary recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR. Recommendations and Reports/: Morbidity and Mortality Weekly Report. Rec 1–34.

Gastañaduy, P. A., Goodson, J., Panagiotakopoulos, L., Rota, P., Orenstein, W., & Patel, M. M. (2021). Measles in the 21st Century: Progress Toward Achieving and Sustaining Elimination. The Journal of Infectious Diseases, 224, 420–428. https://doi.org/10.1093/infdis/jiaa793

Castillo-Solórzano, C., Marsigli, C., Danovaro-Holliday, M., Ruiz-Matus, C., Tambini, G., & Andrus, J. (2011). Measles and rubella elimination initiatives in the Americas: lessons learned and best practices. The Journal of Infectious Diseases, 2041, 279–83.
https://doi.org/10.1093/infdis/jir216

Endres, J., Graber, M., & Dachs, R. (2014). Evidence to guide measles immunization recommendations. American Family Physician, 8910, 786–7.

WHO-UNICEF joint statement on strategies to reduce measles mortality worldwide. (2002). Releve Epidemiologique Hebdomadaire, 7727, 224–8.

Zhang, Q. (2016). Research progress of measles prevention and treatment. International Journal of Pediatrics, 43, 180–184.
https://doi.org/10.3760/CMA.J.ISSN.1673-4408.2016.03.005

Hall, R. (2000). Guidelines for the control of measles outbreaks in Australia. Communicable Diseases Intelligence.
https://doi.org/10.33321/cdi.2000.24.56

Frantzis, I., Acker, K. P., Benjamin, E., Pato, R., Legall, S., Singh, H. K., & Saiman, L. (2025). Infection prevention and control for measles in healthcare settings. Infection Control & Hospital Epidemiology, 46, 684–691.
https://doi.org/10.1017/ice.2025.49

Wang, M. E., & Ratner, A. (2019). Clinical Guideline Highlights for the Hospitalist: Diagnosis and Management of Measles. Journal of Hospital Medicine, 14, 1–2.
https://doi.org/10.12788/jhm.3346

Castillo-Solórzano, C., Marsigli, C., Danovaro-Holliday, M., Ruiz-Matus, C., Tambini, G., & Andrus, J. (2011). Measles and rubella elimination initiatives in the Americas: lessons learned and best practices. The Journal of Infectious Diseases, 2041, 279–83.
https://doi.org/10.1093/infdis/jir216

Rafat, C., Klouche, K., Ricard, J., Messika, J., Roch, A., Machado, S., Sonneville, R., Guisset, O., Pujol, W., Guérin, C., Teboul, J., Mrozek, N., Darmon, M., Chemouni, F., Schmidt, M., Mercier, E., Dreyfuss, D., & Gaudry, S. (2013). Severe Measles Infection. Medicine, 92, 257–272.
https://doi.org/10.1097/MD.0b013e3182a713c2