



Editorial

Fever with rash in pediatric age group

Arti Patel¹, Dipen Dudhat¹, Kishan Jadav¹, Nikita Patel¹, Rita Vora^{2*}

¹Dept. of Dermatology, Pramukhswami Medical College, Karamsad, Anand, Gujarat, India

²Dept. of Dermatology, Venereology and Leprosy Shree Krishna Hospital, Pramukhswami Medical College, Bhaikaka University, Karamsad, Anand, Gujarat, India

Received: 01-09-2025; Accepted: 15-09-2025; Available Online: 26-09-2025

This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](#), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprint@ipinnovative.com

1. Introduction

Fever with rash is a common presentation in children. It often causes anxiety among parents and caregivers. In most cases, the cause is a mild viral illness. However, in some children the rash may indicate a serious infection or systemic disease. Recognizing such conditions early is important to reduce complications and mortality.¹

Both infectious and non-infectious causes can lead to fever with rash. The appearance of the rash often provides important diagnostic clues. This review describes the causes, clinical features, and diagnostic approach to fever with rash in children, with special reference to the Indian setting.

2. Etiological Spectrum of Fever with Rash in Children¹

Fever with rash can result from a wide variety of causes. These may be infectious or non-infectious.

Infectious causes include viruses, bacteria, and rickettsial diseases.

1. Viral causes are common. Examples are measles, rubella, varicella, adenoviruses, herpes simplex, human herpesvirus 6 and 7, Epstein–Barr virus, coxsackievirus, dengue, chikungunya, influenza, and hepatitis B virus.
2. Bacterial infections may also produce rashes. Examples are infections due to *Staphylococcus aureus*, Group A *Streptococcus*, *Neisseria meningitidis*, *Listeria*,

Salmonella typhi, *Yersinia pestis*, *Bartonella quintana*, *Borrelia*, and *Leptospira*.

3. Rickettsial diseases are another important group. These include epidemic typhus, murine typhus, scrub typhus, Indian tick typhus, Rocky Mountain spotted fever, rickettsial pox, Q fever, and trench fever.

Non-infectious causes include connective tissue disorders and drug reactions.

1. Collagen vascular diseases such as systemic juvenile idiopathic arthritis, systemic lupus erythematosus (SLE), dermatomyositis, Kawasaki disease, Henoch–Schönlein purpura, polyarteritis nodosa, and granulomatosis with polyangiitis may all present with fever and rash.
2. Drug hypersensitivity reactions may also cause exanthems. Severe forms include Stevens–Johnson syndrome, toxic epidermal necrolysis, acute generalized exanthematous pustulosis, drug rash with eosinophilia and systemic symptoms (DRESS), and leukocytoclastic vasculitis.

3. Infectious Cause

3.1. Viral Causes

3.1.1. Measles

Measles usually begins with fever, cough, coryza, and conjunctivitis. Koplik spots appear inside the mouth. A

*Corresponding author: Rita Vora
Email: ritavv@charutarhealth.org

reddish rash starts behind the ears and spreads downward. The rash fades in the same order. Complications may include pneumonia, encephalitis, and the late complication subacute sclerosing panencephalitis (SSPE).

3.1.2. Rubella

Rubella is generally mild viral illness. There may be low fever, malaise, and enlarged occipital or cervical lymph nodes. The rash is pink and spreads from the face to the trunk. It disappears in two to three days. Forchheimer spots may appear on the palate. Complications are rare but may include joint pains, anemia, and hepatitis.

3.1.3. Erythema infectiosum

Parvovirus B19 causes erythema infectiosum or “slapped-cheek” disease. Children first have mild fever and malaise, followed by bright red cheeks. Later a lace-like rash appears on the trunk and limbs. The illness is self-limited but can rarely affect the heart, liver, or brain.²

3.1.4. Dengue

Dengue begins with sudden high fever, severe body pain, and retro-orbital headache. A rash appears later with islands of normal skin within red areas (“white islands in a sea of red”). There may be bleeding from gums or skin. The illness is managed with fluids and paracetamol, but aspirin and NSAIDs are avoided.

3.1.5. Chikungunya

Chikungunya causes fever, severe joint pains, headache, and lymph node swelling. The rash may be maculopapular, urticarial, or vesicular. In newborns, nasal pigmentation (“chik sign”) is a diagnostic clue. Treatment is supportive.

3.1.6. Hand-foot-and-mouth disease (HFMD)

HFMD is caused by coxsackievirus or enterovirus 71. The child has fever and sore throat. Painful oral ulcers develop along with vesicles on the palms and soles. The illness resolves with hydration and analgesics.⁴

3.1.7. Roseola infantum (HHV-6, HHV-7)

It presents with high fever for three to five days, followed by a sudden rash on the trunk once the fever subsides. The condition is benign. HHV-6/7 may also cause pityriasis rosea in older children, starting with a herald patch followed by multiple lesions in a “Christmas tree” pattern.

3.1.8. Gianotti–Crosti syndrome

It affects children aged one to six years. After a mild prodrome, red papules appear symmetrically on the face, limbs, and buttocks. The eruption lasts three to four weeks and settles on its own.

3.1.9. Infectious mononucleosis

It is due to Epstein–Barr virus causes fever, sore throat, lymph node swelling, and hepatosplenomegaly. A rash often follows antibiotic use. The illness is managed with rest and supportive care.³

3.1.10. Papular-purpuric gloves and socks syndrome

It presents with painful swelling, redness, and purpura confined to hands and feet. Oral lesions may also occur. The condition usually resolves in one to two weeks.⁵

3.1.11. Eruptive pseudoangiomatosis

It shows small red angioma-like papules with halos. It is triggered by viruses or insect bites and resolves quickly.

3.1.12. Ebola

Ebola in children presents with fever, vomiting, diarrhoea, and a widespread rash. Severe forms may cause bleeding and organ failure. Treatment is mainly supportive.

3.1.13. Zika virus

It usually causes mild fever, conjunctivitis, joint pain, itching, and rash. It is self-limiting in children but has serious implications in pregnancy due to risk of microcephaly.

3.2. Bacterial Causes

1. Rickettsial infections are transmitted by ticks, mites, fleas, or lice. A black eschar at the bite site is a typical sign. A rash appears within a few days, beginning at the wrists and ankles and spreading to the trunk. The rash may become petechial or necrotic. If untreated, severe complications occur. Doxycycline or azithromycin is curative.
2. Secondary syphilis is uncommon in children but may occur in congenital cases. The rash is widespread, including the palms and soles, and lesions may show collarettes of scale. Moist warty lesions in body folds are highly infectious. Diagnosis is by serology, and penicillin is curative.
3. Enteric fever (typhoid) starts with persistent fever, malaise, and abdominal pain. Rose spots appear on the trunk during the second week. Complications include intestinal perforation and encephalopathy. Early antibiotic therapy is important.

4. Non-Infectious Causes

1. Systemic lupus erythematosus (SLE) in children is aggressive. Rashes include malar, discoid, and photosensitive lesions. Other features include renal, neurologic, and hematologic disease. Diagnosis is supported by positive ANA and anti-dsDNA. Treatment requires steroids and immunosuppressants.

2. Systemic juvenile idiopathic arthritis (sJIA) causes high daily fevers with a fleeting salmon-pink rash. Arthritis, lymph node swelling, hepatosplenomegaly, and serositis are common. Laboratory findings show inflammation and cytopenias. Steroids, methotrexate, and biologics are used for treatment.
3. Erythema toxicum neonatorum is a benign eruption in newborns. Lesions are erythematous macules, papules, or pustules that appear within 2–3 days of birth. They resolve in one to two weeks without treatment.
4. Erythema multiforme is a hypersensitivity reaction often triggered by herpes simplex virus. It presents with target lesions. Minor cases resolve spontaneously, while severe forms with mucosal involvement may mimic Stevens–Johnson syndrome.

5. Drug-Related Causes

1. DRESS occurs 2–6 weeks after drug exposure. It features fever, widespread rash, lymphadenopathy, eosinophilia, and multi-organ involvement. Immediate drug withdrawal and systemic steroids are needed.
2. Stevens–Johnson syndrome and toxic epidermal necrolysis begin with fever and malaise followed by painful red macules, bullae, and skin detachment. Mucosal involvement is severe. SJS affects <10% of skin, TEN >30%. Mortality is high in TEN. Management requires intensive care, wound care, fluids, and immunotherapy.
3. Acute generalized exanthematous pustulosis (AGEP) is triggered by drugs such as antibiotics. It causes numerous sterile pustules on red skin, usually starting on the face or flexures. It resolves within one to two weeks after stopping the drug.

6. Confluent Desquamative Erythemas

6.1. Staphylococcal scalded skin syndrome

It is caused by exfoliative toxins of *Staphylococcus aureus*. It affects neonates and young children. The skin shows tender erythema, flaccid bullae, and denudation. Mucosa is spared. Treatment requires antibiotics and supportive care.

6.2. Toxic shock syndrome

It is due to toxins of *Staphylococcus aureus* or *Streptococcus pyogenes*. It presents with high fever, vomiting, diarrhoea, conjunctivitis, and diffuse erythema. Later there is desquamation. Hypotension and multiorgan failure occur. Management includes aggressive fluids, antibiotics, and source control.

6.3. Scarlet fever

It follows streptococcal pharyngitis. The rash is fine, red, and rough (“sandpaper rash”). Pastia’s lines, circumoral pallor,

and strawberry tongue are characteristic. Desquamation follows recovery. Penicillin is the treatment of choice.

6.4. Kawasaki disease

It presents in children under five years with fever, conjunctivitis, mucosal changes, rash, cervical lymphadenopathy and erythematous rashes.⁶ The major complication is coronary artery aneurysm. Treatment is IV immunoglobulin and aspirin.

6.5. Graft-versus-host disease

It occurs after stem cell transplantation. Acute GVHD shows fever, rash, liver dysfunction, and diarrhoea.⁷ Chronic GVHD mimics autoimmune disease. Immunosuppressive therapy is required.

7. Diagnostic Approach¹

Diagnosis of fever with rash in children relies on age, morphology, and systemic features.

7.1. Age

Measles and enteroviruses are common under 3 years, while Kawasaki disease and staphylococcal scalded skin syndrome occur below 5 years. Varicella, rubella, and erythema infectiosum are seen between 3–10 years. Meningococemia affects children under 5 years and young adults. Autoimmune conditions such as systemic lupus erythematosus and juvenile idiopathic arthritis occur in older children, Henoch–Schönlein purpura between 2–8 years, and systemic-onset JCA in infants. Dengue and chikungunya may affect all ages.

7.2. Morphology of rash

Maculopapular rashes occur in measles, rubella, dengue, erythema infectiosum/subitum, drug reactions, infectious mononucleosis, chikungunya, adenovirus, enterovirus, brucellosis, rickettsial infections, SLE, and systemic JCA. Diffuse erythema with desquamation suggests scarlet fever, Stevens–Johnson syndrome, drug-induced TEN, toxic shock syndromes, or Kawasaki disease. Vesicular eruptions occur in varicella, herpes simplex, enteroviruses, and SJS. Petechial or purpuric lesions occur in meningococemia, dengue, chikungunya, rickettsioses, HSP, plague, *Borrelia*, *Bartonella*, and vasculitis. Urticarial rashes occur in mononucleosis, coxsackievirus, *Yersinia*, *Borrelia*, and *Coxiella*, while nodular lesions suggest erythema nodosum or *Bartonella*.

7.3. Associated features

URTI prodrome favors viral exanthems or scarlet fever. Acute fever occurs in measles, rubella, varicella, mono, scarlet fever, toxic shock syndrome, meningococemia, leptospirosis, Kawasaki disease, and acute rheumatic fever. Insidious fever occurs in autoimmune and vasculitic disorders. Dengue, chikungunya, meningococemia, and

HSP may present with hemorrhage; severe forms may lead to shock and multiorgan failure.

8. Conclusion

Fever with rash in children is caused by a wide range of disorders. While many are benign viral illnesses, others may be serious infections or systemic diseases. A careful approach based on age, rash morphology, and associated systemic features helps in early recognition and timely management. Prompt diagnosis and appropriate treatment are the keys to preventing complications in paediatric febrile exanthems.

9. Conflict of Interest

None.

References

1. Sarkar R, Mishra K, Garg VK. Fever with rash in a child in India. *Indian J Dermatol Venereol Leprol*. 2012;78(3):251–62

2. Mage V, Lipsker D, Barbarot S, Bessis D, Chosidow O, Del Giudice P, et al. Different patterns of skin manifestations associated with parvovirus B19 primary infection in adults. *J Am Acad Dermatol*. 2014;71(1):62–9.
3. Ebell MH. Epstein-Barr virus infectious mononucleosis. *Am Fam Physician*. 2004 Oct 1;70(7):1279–87.
4. Guerra AM, Orille E, Waseem M. Hand, Foot, and Mouth Disease. [Updated 2023 Mar 4]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan-.
5. Zelman B, Muhlbauer A, Kim W, Speiser J. A rare case of papular-purpuric "gloves and socks" syndrome associated with influenza. *J Cutan Pathol*. 2022;49(7):632–7.
6. Owens AM, Plewa MC. Kawasaki Disease. [Updated 2023 Jun 26]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024.
7. Justiz Vaillant AA, Modi P, Mohammadi O. Graft-Versus-Host Disease. [Updated 2024 Jun In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024.

Cite this article: Patel A, Dudhat D, Jadav K, Patel N, Vora R. Fever with rash in pediatric age group. *IP Indian J Clin Exp Dermatol*. 2025;11(3):284-287.