

## Fever and Rash – Childhood Exanthems

Some illnesses present so typically as to declare themselves. At the turn of the 20<sup>th</sup> century, six separate childhood exanthems were so defined: named in order of their discovery.<sup>1</sup> For the most part, they are infections of children between 6 months and 3 years of age. Measles was the first childhood exanthem described; Rubella the third. In this post-vaccine era, Roseola infantum, a belated addition to the list, is often the first exanthem encountered.

Name	Aetiology	Age	Diagnostic clue	Infectivity ends
<b>First Disease</b> Rubeola / Measles / 14- Day Measles / Morbilli	<i>Measles virus</i> (Paramyxovirus)	6 mth – 3 yrs unusual < 6 months of age due to presence of protective maternal antibodies	<b>Running nose and eyes, fever, irritability, and then:</b> <i>cephalocaudal progression of maculopapular rash</i> Koplik spots: blue-white erythematous buccal mucosal lesions opposite second molar lasting 1-2 days considered pathognomonic	<b>Day 5 after appearance of rash</b> - transmit virus 4 days before and 5 days after appearance of rash
<b>Second Disease</b> Scarlet Fever / Scarlatina	<i>Strep. pyogenes</i> - location of infection not limited to pharynx	<b>All ages</b>	<b>Confluent erythematous sandpaper-like quality to rash</b> (also look for <i>circumoral pallor</i> and strawberry tongue); often fluorescent strawberry colour to pharyngitis	<b>Day 5 after antibiotics commenced</b> - Day 2 for a pharyngotonsillitis <i>without</i> scarlet fever
<b>Third Disease</b> Rubella / German Measles / "Three-day" Measles	<i>Rubella virus</i>	Most cases today occur in young, unimmunised adults	<b>Rash, fever, and swollen neck glands:</b> macular rash face passing down over body to feet, often with occipital and post-auricular lymphadenopathy Forschheimer spots: pin-point red macules and petechiae on soft palate and uvula during rash phase	<b>7 days after onset of rash</b>
<b>Fourth Disease</b> Staphylococcal scalded skin syndrome	<i>Staph. aureus</i> strains that produce epidermolytic toxin			
<b>Fifth disease</b> Erythema Infectiosum	<i>Parvovirus B19</i>	6 mth - 3 yrs	<b>confluent, erythematous, oedematous rash with patches or plaques on cheeks, sparing nasal bridge and periorbital area (slapped cheek appearance) and lasts up to 4 days;</b> followed by maculopapular rash of variable intensity, to trunk and limbs This rash can vary in intensity and duration that, as it begins to fade, can take on a <u>lacy appearance</u>	<b>Once symptoms appear</b> - Care with pregnant: though prenatal and perinatal infections are uncommon due to presence of maternal antibodies
<b>Sixth Disease</b> Roseola Infantum / Exanthem subitum	<i>Human Herpes Virus-6B</i> or <i>HHV-7</i>	6 mth - 3 yrs 86% will have had roseola by the age of 1 year <sup>2</sup>	<b>Sudden high fever (39-41°C), minor symptoms</b> Children appear inappropriately well for degree of fever and <i>only once fever stops does a discrete blanching maculopapular rash develop surrounded by halos and typically lasting 1-2 days</i> <i>rash develop, on trunk and neck; palpebral oedema; Nagayamas spots</i>	<b>48 hours after fever stops</b> - 96% pregnant are immune

<sup>1</sup> May Naravi, Kathleen Berry, and Michael Perry, "Common Childhood Exanthems," RCEM Learning (Jan 15, 2018). Available at <https://www.rcemlearning.co.uk/reference/common-childhood-exanthems/#1568715339434-begf1431-eaae>. Accessed Sep 6, 2020.

<sup>2</sup> Vanessa Ngan, "Roseola", DermNetNZ, 2002. Available at <https://dermnetnz.org/topics/roseola/>. Accessed Sep 14, 2020.

Children commonly present to the ED with fever and rash. Approximately 70% of such cases are attributable to viruses, such as coxsackie, echovirus, or the enteroviruses. The rest result from streptococcal and staphylococcal bacterial infections, mycoplasma or rickettsial infection, drug-related causes, or Kawasaki disease.<sup>3</sup>

In other cases, presenting features may not be specific enough to enable accurate clinical diagnosis. Fourth (Dukes) Disease is considered a variant of scarlet fever – though others feel it referred to what is now Staphylococcal scalded skin syndrome. Chickenpox and Smallpox were two other classic childhood exanthems recognised as distinct in the 18<sup>th</sup> century. Measles, Scarlet fever, and Rubella are notifiable diseases in most jurisdictions.<sup>4</sup>

**Mumps:** Pain in jaw then swelling in front of ear (2-3 week incubation), then fever. Infectious from 1 week prior to symptoms and for 9 days thereafter. Household child contacts can go to school.

**Chicken pox: Fever and pox (14-day incubation)** quickly becoming blistering. Household child contacts can go to school. From up to 5 days before first crop of blisters until blisters crusted, usually about 5 days after last blisters appear.

**Hand foot and mouth disease:** infection from several coxsackie enterovirus, especially A16, present with lesions limited to the hands and feet, usually palms and soles, and oral mucosa, especially tongue. On the palms and soles the lesions are oval or round in shape with a grey colour and purpuric rim. They resolve into a small purpuric line, like a splinter haemorrhage. In the immunosuppressed, larger pustules may occur. Occasionally, lesions occur on the buttocks. The child may have diarrhoea and/or fever, but is usually systemically well. The lesions heal spontaneously in 7-10 days.

**Acral papular or papulovesicular viral exanthem,** caused by several viruses of the enterovirus group, presents as an acrally located exanthema, limited to regions below the knee and elbow, especially dorsa of hands and feet. This reaction pattern is seen particularly in preschool-age children. Tending to monomorphic in the individual case, lesions can vary from small to large papules, small vesicles or, rarely, large bullae that may take some weeks to resolve. The child is usually systemically well.

The Good Doctor

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## References

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<sup>3</sup> May Naravi, "Common Childhood Exanthems."

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