**Fever and Rash Pathway**

**Clinical Assessment/ Management tool for Children**

**Management - Acute Setting**

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**Could petechiae be explained by vomiting/coughing?**

- **YES**
- **NO**

**SVC distribution**

- **ACUTELY ILL**
- **NOT ACUTELY ILL**

**Purpura/petechiae/bruising?**

- **YES**
- **NO**

**Skin blisters / significant erosions**

- **Mucosal blistering**
- **Skin pain**

**Fever ≥38° in child under 3 months of age**

- **YES**
- **NO**

**90% Body Surface Area = ERYTHRODERMA**

- **5 days of fever >38°C Systemically unwell**
- **Atypical / severe rash: e.g. coalescing rash or intense erythema or pustules or large surface area involvement**

**Fever and widespread rash may be a feature of:**

- Infected eczema, drug reaction
- Systemic inflammatory process
- Kawasaki disease

**CLOSE MONITORING IN 1° CARE / ED OR SEEK ADVICE FROM PAEDS.**

**Provide appropriate and clear guidance to the parent / carer and treatment if required.**

- **YES**
- **NO**

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**Anaphylaxis / angioedema affecting airway**

- **Haemodynamic compromise**

**EMERGENCY ACTION:** Contact Lead ED / Paediatric Doctor. Move to Resuscitation Area. Resus Call (“2222”) for Paediatric Arrest - Anaphylaxis or sepsis

- **Immediate medical intervention as appropriate such as: Anaphylaxis: IM Adrenaline**
- **Sepsis: immediately initiate sepsis 6 (See sepsis pathway)**

**IMMEDIATE REFERRAL TO PAEDS**

**Purpura may be a feature of Vasculitis (purpura are palpable). Causes of fever and vasculitis: think infection. Other causes possible e.g. autoimmune, drug reactions etc.**

- **Immediate medical intervention as appropriate such as: Anaphylaxis: IM Adrenaline**
- **Sepsis: immediately initiate sepsis 6 (See sepsis pathway)**

**Possible late onset sepsis. Refer to “fever in children less than 5 years” clinical pathway.**

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**IMMEDIATE REFERRAL TO PAEDS**

**Fever and severe/atypical rashes may be a feature of:**

- Drug Hypersensitivity
- Sweets disease
- Atypical infections
- Erythema Multiforme
- Infected eczema
- Acute psoriasis

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**First Draft Version: November 2017 Review Date: November 2019.**

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This guidance was written in collaboration with the SE Coast SCN and involved extensive consultation with healthcare professionals in Wessex.

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GMC Best Practice recommends: Record your findings (See "Good Medical Practice" [http://bit.ly/1DPXl2b])

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This document was arrived at after careful consideration of the evidence available including but not exclusively NICE, SIGN, EBM data and NHS evidence, as applicable. Healthcare professionals are expected to take it fully into account when exercising their clinical judgement. The guidance does not, however, override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient in consultation with the patient and / or carer.
### Differential Diagnosis

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<tr>
<th><strong>Viral infections</strong></th>
<th><strong>Distinguishing features</strong></th>
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<tr>
<td><strong>Measles</strong></td>
<td>Erythematous maculopapular rash over hairline/forehead and behind the ears, spreading caudally. Koplik spots (gray papules on buccal mucosa). Overwhelming misery. Obtain vaccine history.</td>
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<tr>
<td><strong>Rubella</strong></td>
<td>Erythematous maculopapular rash on face, spreads to extremities. Tender lymphadenopathy (occipital, postauricular, cervical)</td>
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<td><strong>Chicken pox</strong></td>
<td>Consider bacterial secondary infection if fever 3 or more days after onset of chickenpox or increasing erythema around lesions. Consider toxic shock syndrome if haemodynamically unstable, generalised rash (erythroderma) and mucosal erythema (red eyes, red lips).</td>
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<tr>
<td><strong>Eczema herpeticum</strong></td>
<td>Disseminated viral infection (usually HSV1/HSV2) characterised by fever and clusters of itchy blisters or punched-out erosions. Severe eczema herpeticum may affect multiple organs. Risk of bacterial secondary infection (staph aureus or Gp A strep).</td>
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<tr>
<td><strong>Other viral exanthems (enterovirus, adenovirus, HHV6, parvovirus, Coxsackie virus etc)</strong></td>
<td><em>'Slapped cheek'</em> (parvovirus B19 – also causes hydrops fetalis) - macular erythema over cheeks, lacy eruption on extremities; Papular purpuric gloves and socks syndrome (parvovirus B19) – erythema, oedema, petechiae/purpura on palms and soles with burning/pruritis; Roseola (HHV-6) – circular/elliptical macules/papules on trunk +/- surrounding white halo – rash as fever subsides; Herpangina (various enteroviruses) – exanthem (often absent), painful grey oral vesicles; Hand-Foot-Mouth Disease (Coxsackie A16&gt;enterovirus 71) – grey vesicles, pusules and erosions on hands, feet and buttocks with oral vesicles/erosions on an erythematous base; Infectious mononucleosis (EBV) – morbilliform rash, pharyngitis, fatigue, myalgia, hepatosplenomegaly, lymphadenopathy.</td>
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<th><strong>Bacterial infections</strong></th>
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<td><strong>Meningococcal disease</strong></td>
<td>Short prodromal phase (fever, lethargy, malaise, nausea/vomiting), followed by the more specific and severe symptoms of meningitis and sepsis (limb pain, cold hands/feet, pale or mottled skin). Associated with non-blanching rash - a rapidly evolving petechial or purpuric rash is a sign of very severe disease.</td>
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<tr>
<td><strong>Scarlet fever</strong></td>
<td>Erythema of axilla, neck, chest, evolution to pink papules on erythematous background. Pastia’s lines (linear petechial streaks in body folds). Red strawberry tongue. 7-10 days later hand and foot desquamation.</td>
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<tr>
<td><strong>Cellulitis</strong></td>
<td>Erythema, oedema and pain.</td>
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<td><strong>Impetigo</strong></td>
<td>Bullous (only staph aureus) – flaccid see through bullae which rupture leaving a shiny dry erosion with an erythematous base +/- fever/diarrhoea/lethargy; Non bullous (S aureus &gt;&gt; Gp A strep) – erythematous macule – pustule/vesicle – erosion with golden crust – fever should be minimal.</td>
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<tr>
<td><strong>Staph scalded skin syndrome</strong></td>
<td>Fever, conjunctivitis, skin pain and flexural erythema with subsequent desquamation. NB culture of bullae negative.</td>
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<tr>
<td><strong>Staph/strep toxic shock syndrome</strong></td>
<td>Macular exanthem (on trunk spreading outwards), palmoplantar erythema and oedema with subsequent desquamation , conjunctival hyperaemia + hypotension + involvement of three or more organs. Risk factors include recent chickenpox and minor burns.</td>
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<tr>
<td><strong>Secondarily infected eczema</strong></td>
<td>Weeping, crusting or pain occurring on the background of eczema should prompt consideration of secondary bacterial infection.</td>
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### Differential Diagnosis

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<th>Drug Reactions</th>
<th><strong>Severe</strong> - Steven Johnson syndrome (SJS) / toxic epidermal necrolysis (TEN)</th>
<th>Occurring after 7-21 after exposure to a new drug. Rash often preceded by prodromal illness (fever, sore throat, myalgia, conjunctivitis). Rash starts on trunk, extends to limbs (spares soles and palms). SJS &lt; 10% BSA, widespread purpuric macules or atypical targets. TEN &gt; 30% BSA +/- widespread purpuric macules. Mucosal involvement including eyes, mouth/lips, pharynx/oesophagus, genitalia, upper respiratory tract and GI tract. (SJS often occurs in response to infection in the absence of a precipitating drug. Mycoplasma pneumoniae is commonly implicated, often producing a more marked mucosal pattern of disease).</th>
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<td>Drug Hypersensitivity (DRESS – Drug Rash with Eosinophilia and Systemic Symptoms)</td>
<td>Occurring 7-40 days after exposure to new drug. Often morbilliform in appearance, worse initially over the face and upper body. Facial oedema is frequent. Atypical targetoid lesions, pustules, vesicles and purpura may occur. Fever, eosinophilia, lymphadenopathy, internal involvement organ (most frequently hepatitis – risk of liver failure).</td>
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<tr>
<td>Acute Generalised Exanthemous Pustulosis (AGEP)</td>
<td>Erythema and swelling with large numbers of overlying superficial pustules. Most commonly affecting the face and flexures initially. Occurs shortly after or within 4 days of exposure of a culprit drug (commonly antibiotics, but numerous drugs have been reported).</td>
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<tr>
<td><strong>Frequently non-infective causes</strong></td>
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<tr>
<td>Erythema multiforme</td>
<td>Erythematous targetoid-lesion (bulls eye appearance). Minimal associated itch. Common over acral sites, but any part of the body may be affected. In some cases it can be associated with blistering and/or mucosal lesions. May be idiopathic, but Herpes Simplex Virus and mycoplasma pneumonia infection are commonly implicated.</td>
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<td>Henoch Schonlein purpura (HSP)</td>
<td>Classically presents with symmetrical palpable purpura on legs and buttocks in an otherwise well child. May involve joint pain/swelling, abdominal pain and haematuria. Most commonly occurs in children aged 2-11 years. Monitor BP and urine (for blood and protein)</td>
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<tr>
<td>Kawasaki disease</td>
<td>Fever &gt;5 days, rash, bilateral non-exudative conjunctivitis, oral signs (red, cracked lips), oedema of hands/feet and cervical LAN (&gt;1.5cm). Overwhelming misery extremely common. Signs may appear and disappear before others arise. 80% of cases occur in children &lt;5 years of age (peak incidence 1 to 2 years).</td>
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