

AMPLIFY

Pediatric Rashes

Going Beyond Hydrocortisone and a Derm Referral

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Pediatric Rashes – Going Beyond Hydrocortisone and a Derm Referral



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Financial Disclosures

- None
 - Nada
 - Aucune
 - Ingen
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 - Zadny
 - Nessuno

Why Rashes Make Us Nervous

- High volume in pediatrics
- Visual diagnosis under time pressure
- Risk of anchoring bias
- Some life-threatening conditions start subtly

Pediatric Rashes

- Most of the common ones are fairly benign or easy to manage
 - Viral exanthems
 - Contact dermatitis
 - Atopic dermatitis
 - Abrasions/minor injuries
 - Impetigo
 - Warts
 - Diaper rash
 - Sunburn
- High parental anxiety about rashes



Reassurance, Caution, or Act Now?

- Pattern Recognition vs Pattern Interruption
 - Pattern Recognition: classic morphology + well child
 - Pattern interruption: something doesn't fit, evolving fast, systemic toxicity



Green – reassurance

Yellow – proceed with caution

Red – Act now

Green Light Rashes

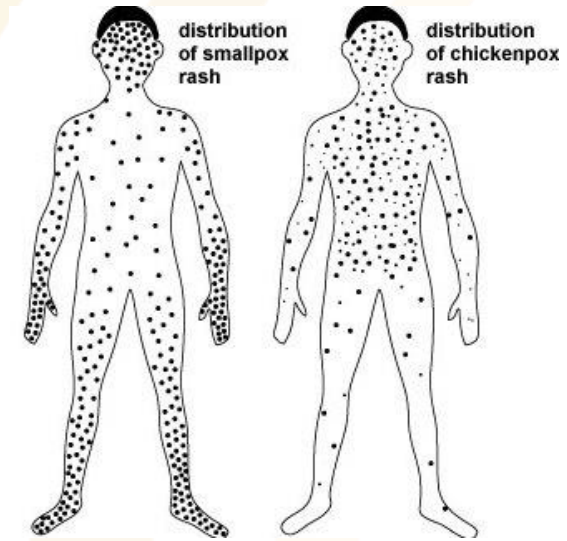
- Well-appearing child + stable vitals + classic pattern

- Pediatric Assessment Triangle



- Rash Patterns

- Timeline
- Distribution
- Appearance
- Itchy? Painful?
- Associated symptoms – fever, fussiness
- Exposures
- Vaccination status



Erythema Infectiosum (Fifth Disease)



- Pattern Recognition
 - Slapped cheeks
 - Lacy reticular rash
 - Well- appearing
- Pattern Interruption
 - Pallor/lethargy -> check anemia risk

Case 1



4 yo female presents with redness and swelling on her upper arm. Mom reports she had an insect bite at this site last evening. The child is well appearing with normal vital signs. The site is erythematous with warmth but no tenderness.

Case 1

The most appropriate treatment would be ...

- A. Topical mupirocin
- B. Oral cephalexin
- C. Oral cetirizine
- D. Oral prednisolone



Local Reactions (Insect Bites)

- Pattern Recognition
 - Central punctum
 - Exposed areas
 - Timing – days 1-3
 - Pruritic
 - **Not particularly painful**
 - Asymmetric
- Pattern Interruption
 - Spreading warmth + pain -> cellulitis?
 - Systemic symptoms
- Pearl: Pediatric local reactions can look dramatic

Local Reactions



Cellulitis



Local Reactions



Cellulitis



Case 2

15 mo female with rhinorrhea, congestion, and cough starting 10 days ago. Seven days ago she was Dx with AOM and started on Amoxicillin. Now with pruritic rash for 2 days. Began on trunk, spread peripherally. No mucosal lesions or ulcers.



Case 2

Seeing her swollen hands and feet, you realize this is...

- A. Anaphylaxis
- B. Erythema multiforme
- C. Urticaria vasculitis
- D. Urticaria multiforme



Urticaria Multiforme

Pattern Recognition

- Annular/polycyclic wheals
- Acral edema
- Migratory
- Often post-viral

Pattern Interruption

- Mucosal erosions - > think Stevens Johnson Syndrome

Pearl: frequently misdiagnosed as erythema multiforme

Urticaria Multiforme

- Benign cutaneous hyper-sensitivity reaction
- Viral or Medication Triggers

Management = antihistamines



Urticaria Multiforme

	Urticaria Multiforme	Erythema Multiforme	Serum-sickness-like Reaction
Age	Infants and small children	All: 50% less than 20 years	All
Lesions	Annular wheals with ecchymotic centers, "target" lesions, middle ring of pallor, center may blister	Classic "target" lesion, center purpuric or dusky, middle ring of pallor	Urticarial, polycyclic wheals with central clearing that may be ecchymotic-appearing
Location	Trunk, extremities, face	Dorsum of extremities, esp. over joints, palms, soles, genitals	Face, trunk, extremities, lateral borders of hands and feet
Lesion Duration	< 24 hours	Days to weeks	Days to weeks
Total rash duration	2-12 days	2-3 weeks	1-6 weeks
Mucous membranes	Oral edema, no erosions or blisters	Erosions, occasional ulcers	Oral edema, no erosions or blisters
Facial/Acral edema	Common	Rare	Less common
Fever	Occasional low grade	Occasional low grade	Moderate to High
Arthralgias	No	No	Yes
Triggers	Viral illness, antibiotics, immunizations	Herpes simplex, other viral illness	Antibiotics
Treatment	Antihistamines	+/- Oral steroids, +/- valacyclovir	Antihistamines, Oral steroids if severe arthralgias/pain

Yellow Light Rashes

Usually self-limited or easily managed/treated BUT:

- Can have systemic complications
- Follow up important



Varicella

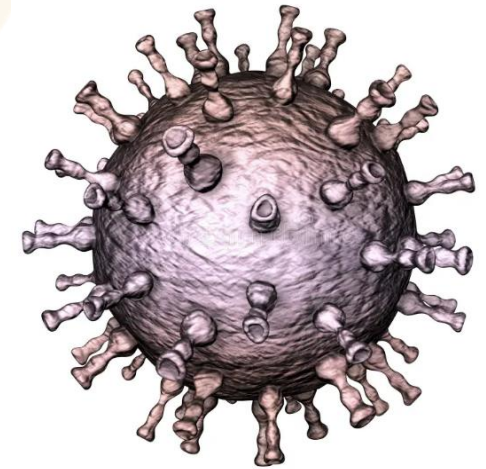
- Pattern Recognition
 - "Dew drops on a rose petal"
 - Pruritic
 - Lesions in multiple stages
 - Truck predominant -> outward
 - 8-12 mo olds prior to vaccine, unvaccinated
- Pattern Interruption
 - Severe headache/irritability, ataxia
 - Immunocompromised
 - Superinfection



Varicella

- Transmission: airborne respiratory droplets or direct contact with vesicular fluid
- Contagious: 2 days before rash and until all lesions are crusted
- Incubation period 10-21 days
- Complications:
 - Pneumonia
 - Encephalitis/cerebellar ataxia
 - Hepatitis
 - Reye syndrome
- Management:
 - Supportive care, antihistamines, avoid NSAIDs
 - Antivirals in high-risk groups

Reportable disease to DOH, Notify exposures, close room



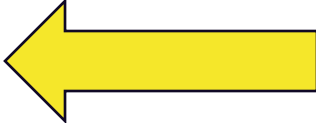
Case 3

5 yo male with rash, mostly on lower extremities and buttocks. He had fever 1 week ago. Non-blanchable petechiae with raised ecchymosis. No conjunctivitis or lip involvement. Intermittent abdominal and joint pain. Well appearing, normal vitals, well perfused, nontoxic.



Case 3

The most likely diagnosis is:

- A. Urticaria
- B. IgA Vasculitis (HSP) 
- C. Rocky Mountain Spotted Fever
- D. Idiopathic Thrombocytopenia Purpura

IgA Vasculitis (Henoch-Schonlein purpura)



- Pattern Recognition

- Palpable purpura
- Dependent areas
- Abdominal/joint pain
- Nontoxic

- Pattern Interruption

- Hypertension
- Hematuria/proteinuria
- Severe abdominal pain -> Intussusception

- Message: Not ER panic, but not routine either



IgA Vasculitis

Epidemiology

- Usually ages 3-15 years
- 50% preceded by URI

Diagnosis is Clinical

- Palpable Purpura (100%)
- Joint pain (50-75%)
- Colicky abdominal pain (20-30%) - if severe, need to rule out intussusception
- Nephritis (20-50%)

Urgent Care Management

- **UA – blood, protein**
- **Check blood pressure**
- **Consider BMP to r/o renal disease**
- **Consider screening CBC, PT/PTT/INR**
- **Close follow up**

Red Light Rashes

These do not follow the usual patterns seen in benign or less serious rashes.

If the child looks sick, believe your eyes.



Case 4

18 yo female presents with 6-hour history of fever and rash. Patient states she feels ill and complains of dizziness.

Initial vitals: T 40.3C, HR 120, BP 90/60

The rash is concentrated on the extremities, purplish-red in color, non-blanching.



Case 4

What do you suspect?

- A. Meningococcal infection
- B. IgA Vasculitis
- C. Gonococcal infection
- D. Toxic shock syndrome



Meningococccemia

- *Neisseria meningococcus*
- Sudden onset fever, nausea, vomiting, headache, and myalgias
- About ¼ of patients with fever, neck stiffness, and altered mental status
- **Decreased perfusion may be the only early hint**
 - (1st 12 hours, often before rash)
- **Petechial rash** on trunk and lower body
- Progression into larger **purpuric and ecchymotic lesions**
- Eventually purpura fulminans = acute onset of cutaneous hemorrhage and necrosis due to vascular thrombosis/DIC



Meningococccemia

Rapid progression within hours:
hypotension, tachycardia, shock, DIC

Urgent Care Management - Transfer to hospital

- Administer ceftriaxone while awaiting transfer
- Report to DOH within 24 hours



RASH- EARLY STAGES



RASH- FINAL STAGES

Petechiae & Purpura – Differential Diagnoses

- Neisseria meningococcus
- Sepsis – bacterial or viral
- IgA Vasculitis
- Immune Thrombocytopenic purpura
- Rocky Mountain Spotted Fever
- Leukemia
- Aplastic anemia
- Disseminated intravascular coagulation
- Vomiting or Coughing – above the nipple line



Case 5

5 mo male presents with fever since yesterday and a generalized macular erythematous rash that appeared this morning. Mother is concerned because baby seems to be in pain when she touches the rash, and skin seems to peel when she wipes him.



Case 5

You suspect

- A. Cellulitis
- B. Epidermolysis bullosa
- C. Scalded skin syndrome
- D. Stevens-Johnson syndrome



Staphylococcal Scalded Skin Syndrome

- Children < 6 years old, newborns
- Exfoliative toxins
- Initial pharyngitis, conjunctivitis, rhinorrhea, or impetigo
- Fever & irritability followed by rash
- Nontoxic appearing
- **Nikolsky's sign**

Management – Transfer to Hospital for parenteral antibiotics and supportive care (similar to burn care)



Toxic Shock Syndrome

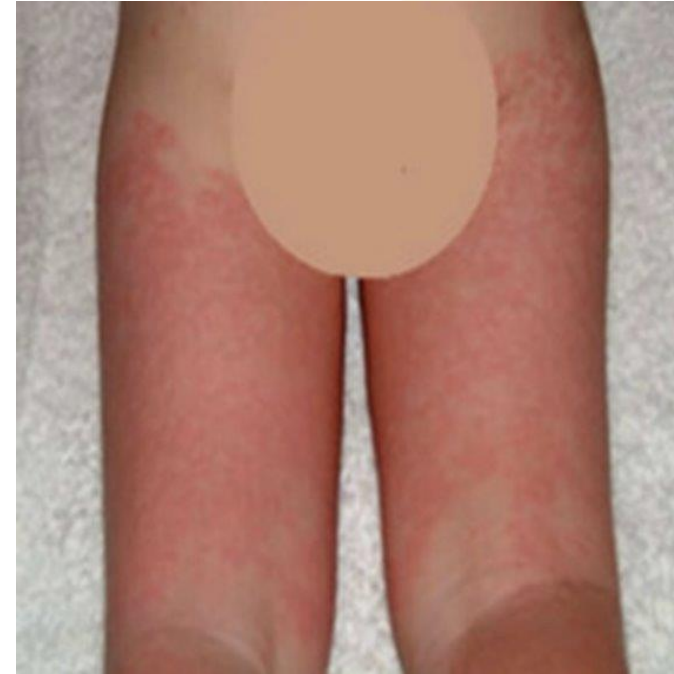
Mostly staph, some strep

Epidemiology

- 50% menstrual (highly-absorbent tampons)
- 50% other (post surgical, wound infxn)

Diagnosis = Clinical + Labs

- **TRIAD = Fever, hypotension, rash**
- **Diffuse erythroderma** (like sunburn), including palms and soles
- Desquamation 1-2 weeks later
- 3 organ involvement
- Labs – Wound and MM culture



Toxic Shock Syndrome

Erythroderma of skin & mucous membranes

- 1-2 weeks -> pruritic maculopapular rash
- 1-3 weeks -> late desquamation of palms & soles

Urgent Care Management

- Early transfer to ED
 - Early IV Antibiotics – Clindamycin + Vancomycin
 - Early Aggressive fluid management
-
- Mortality = 5% non-menstrual, 1.8% menstrual



Case 6

3 yo male with 5 days of fever, fussiness, cervical lymphadenopathy.

Additional findings on exam:



Case 6

What do you suspect?

- A. Scarlet fever
- B. Kawasaki disease
- C. Enteroviral infection
- D. Measles



Kawasaki Disease

- Diagnosis: Child with fever ≥ 5 days and at least 4 of the 5 following criteria:
 - Bilateral bulbar conjunctival injection with limbal sparing
 - Oral mucous membrane changes
 - Injected/fissured lips, injected pharynx, strawberry tongue
 - Peripheral extremity changes
 - Erythema of palms/soles, edema of hands/feet, periungual desquamation
 - Polymorphous rash
 - Cervical lymphadenopathy (at least 1 node ≥ 1.5 cm diameter)

If <3 criteria present, or if child is <6 mos old with ≥ 7 days of unexplained fever, consider laboratory work-up for incomplete/atypical disease

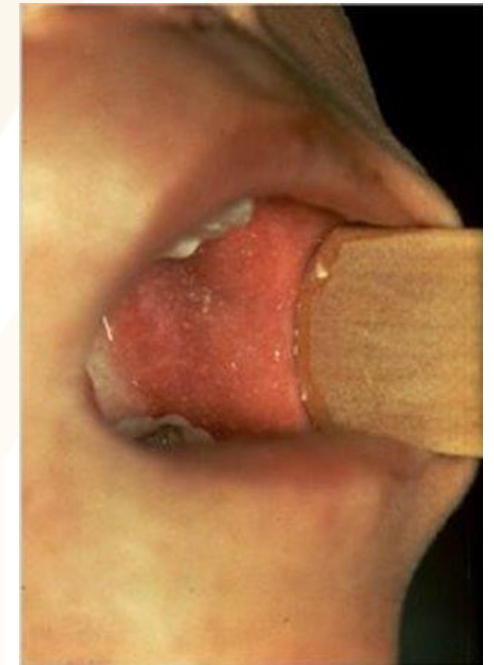
Urgent Care Management - Transfer to hospital (IVIG, aspirin, cardiology)

If does not meet criteria but concerned, may begin outpatient workup



Case 7

14 mo male with fever, URI symptoms for 4 days, with conjunctivitis, maculopapular rash spreading from face to trunk, pinpoint white spots on buccal mucosa. Irritable but consolable, nontoxic.



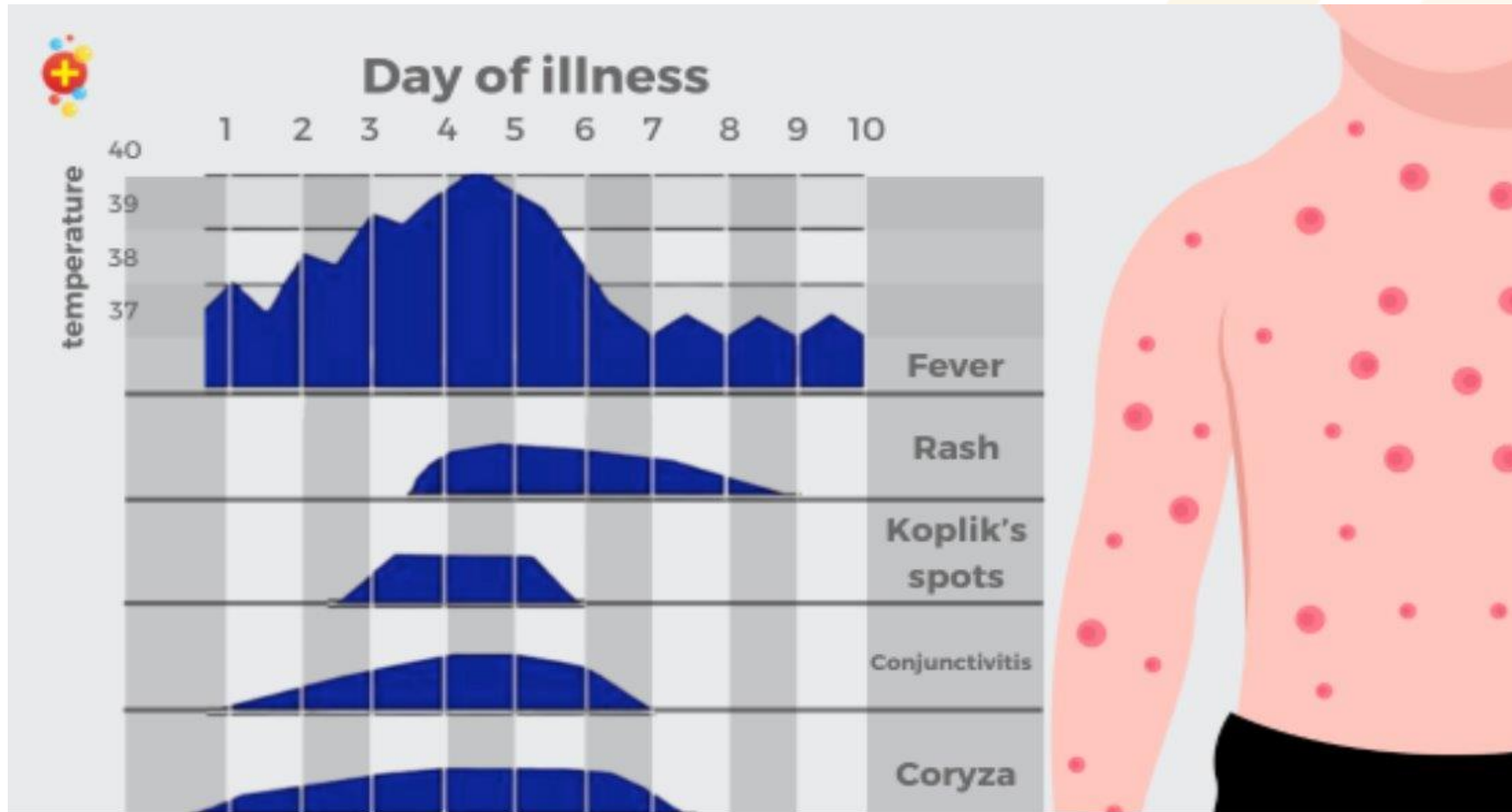
Case 7

What's your diagnosis?

- A. Staph scalded skin
- B. Erythema multiforme
- C. Roseola
- D. Measles



Measles



The clinical course of measles

Measles

- 3 C's: cough, coryza, conjunctivitis
- Isolate the patient, mask
- Call DOH – send screening labs:
 - Nasopharyngeal swab - PCR
 - Blood - Measles IgM
 - Urine – PCR



Urgent Care Management

- Contain the spread
- Don't transfer unless toxic
- Be prepared for these patients – signs, screening, workflows

Complications of Measles

- AOM
 - Pneumonia
 - Bacterial superinfection (5%)
 - Encephalitis (0.1%)
 - Hearing or vision loss
 - Later: subacute sclerosing panencephalitis
-
- Case fatality rate 4-10% worldwide
 - US fatality rate approx 1/1,000
 - Usually due to pneumonia or encephalitis



Measles-like Rashes

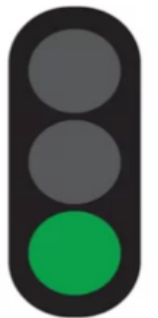
Epstein Barr virus (Mono)



Human Herpesvirus 6
(Roseola)



Morbilliform Drug Eruption



When does a rash move from green to yellow or red?

- Ill appearance
- Hypotension/poor perfusion
- Non-blanching purpura
- Skin pain
- Mucosal involvement
- Rapid progression
- Palms/soles involvement (except hand foot and mouth)
- Prolonged fever



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