

# Approach to Diaper Rashes



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*Pediatrics*

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## Disclosure

- I have no relevant financial relationships with the manufacturers of any commercial products discussed in this CME activity
- I do not intend to discuss an unapproved use of a commercial product in my presentation

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## Learning Objectives

- Discuss differential diagnosis of diaper rashes in infants
- Review clinical features of common diaper rashes in infants
- Discuss treatments for the common diaper rashes in infants

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## Diaper Dermatitis

- Affects 50-65% of neonates and infants
- Peaks at 12 months of age

Blume-Peytavi et al. *Pediatric Dermatology*. 2018;35:s19-s23

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## Differential diagnoses of Diaper Dermatitis

- Inflammatory
- Infectious/Infestations
- Metabolic
- Autoimmune
- Neoplasm

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## Differential diagnoses of Diaper Dermatitis

- Inflammatory:** contact dermatitis, psoriasis, seborrheic dermatitis, atopic dermatitis
- Infectious/Infestations:** candida, strep/staph, scabies
- Metabolic:** acrodermatitis enteropathica, nutritional deficiency
- Autoimmune:** lichen sclerosus
- Neoplasia:** Langerhans cell histiocytosis

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## Clinical subgroups of diaper rashes

- I. Dermatitis due to the diaper
- II. Dermatitis worsened by the diaper
- III. Eruptions in the diaper area independent of the diaper

• Coughlin C et al. Pediatric Dermatology. 2014;31 19-24

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## Clinical subgroups of diaper rashes

- I. Dermatitis due to the diaper
  - Irritant diaper dermatitis
  - Allergic contact dermatitis

• Coughlin C et al. Pediatric Dermatology. 2014;31 19-24

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## Case

6 months old healthy baby girl with erythematous patches sparing the folds in the diaper area

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## Irritant diaper dermatitis

- Most common cause of diaper rashes
- Prolonged contact with urine/feces
- **Pattern:** Convex surfaces, spares the inguinal creases/gluteal cleft

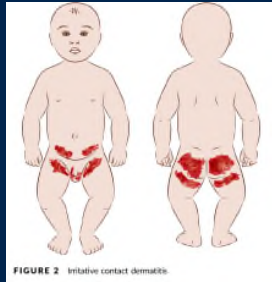


FIGURE 2 Irritative contact dermatitis  
 • Folster-Holst R. *Pediatric Dermatology*. 2018;35:s10-s18

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## Causative factors/Prevention

Cause	Effect	Intervention
Prolonged & excessive humidity	Friction	Frequent diaper change Supra-absorbent diaper
<ul style="list-style-type: none"> <li>• Alkaline urine</li> <li>• Feces</li> </ul>	Disrupts pH balance Microbial overgrowth Activation of fecal lipases, proteases Skin maceration Increased permeability	Clean with wipes or water Topical emollient EDUCATION Supra-absorbent diaper
Harsh soaps and wipes	Skin barrier break down	Clean with wipes or water Topical emollient EDUCATION

Blume-Peytavi et al. *Pediatric Dermatology*. 2018;35:s19-s23

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## Barrier creams

- **Zinc oxide**
- Regular strength 13-16%
- Maximum strength 40%




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## Barrier creams

- Petrolatum
- Beeswax
- Dimethicone



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## pH balance

- Vinegar: Dilution 1:10 parts water
- Maalox: can be mixed with other barrier creams to make "Butt paste"

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Ann Pharmacother. 1996 Sep 30(9):954-6

### Cholestyramine ointment to treat buttocks rash and anal excoriation in an infant.

White CM<sup>1</sup>, Gaskay RA, Lipson S.

Author Information

- Bile acid in the stool is an irritant
- Cholestyramine is a bile acid sequestrant
- Compound cream, apply twice a day

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## Treatment

- Mild topical steroid + Anti-yeast
- Hydrocortisone 2.5% cream mixed with
- Nystatin, miconazole, ketoconazole cream

Apply to AA twice a day

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## Case

CC: Diaper rash

4 week old baby boy with persistent ulcers and rash to his diaper area and perineum.

**Previous Treatments:**  
Desitin, Nystatin cream, cholestyramine cream

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## Jacquet Erosive Diaper Dermatitis

- Associated with frequent stooling, infrequent diaper changes and poor quality diapers

- PE = well-demarcated erosions and superficial erosions @ perianal skin, opposing areas of buttocks

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## Case

• 5 week old boy w/ 2 – 3 week history of worsening diaper rash.

- No pre-/peri-natal infections

• FHx: no known FH of skin dz, no social contacts w/ similar lesions

• SocHx: only child

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## DDx

• Herpes simplex (HSV)

• Candidiasis

• Bacterial infections

• Genital warts

• Irritant diaper dermatitis

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## Perianal Pseudo verrucous Papules

**Reactionary pattern**

**following chronic, persistent irritation due to feces and/or urine**

PE = dome-shaped papules w/ shiny, smooth, white or red surface

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## Case

- 6 months old healthy baby girl with erythematous patches and excoriated erosions and vesicles on the buttocks

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## Read the labels carefully....

- Ingredients - **Calendula officinalis** 1X HPUS-10% - Inactive  
Ingredients: Alcohol, caprylyl glycol, carbomer, cetyl ate, EDTA disodium, glycerin, lauroyl macroglycerides, pegoxol-7 stearate, purified water, sodium hydroxide, sorbic acid, 1, 2-hexanediol



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## Allergic contact diaper dermatitis

- Type IV hypersensitivity reaction
- Pattern: whole diaper area and buttocks
- **Treatment:** patch testing, avoid offending agents, topical steroid

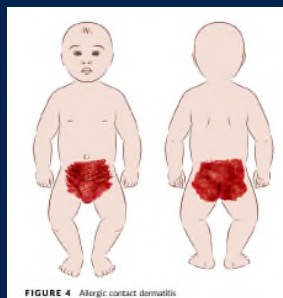


FIGURE 4 Allergic contact dermatitis. • Folster-Holst R. Pediatric Dermatology. 2018;35:s10-s18

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## Allergic contact dermatitis

### I. Diaper wipes/diaper creams

- 1) Botanical extracts
- 2) Fragrance
- 3) Preservatives
- 4) Emulsifiers
- 5) Emollients

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## Natural???

- Zinc Oxide 16%
- Aloe Barbadensis Leaf Juice
- Beeswax
- Carnauba Wax
- Citric Acid
- Ricinus Communis (Castor)
- Peruvian Balsam Oil



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## Allergic contact dermatitis

### II. Diaper components

- 1) Polypropylene, polyethylene, polyurethane → plastic polymers
- 2) Mercaptobenzothiazole, thiuram → Rubber accelerators
- 3) Disperse dye
- 4) Fragrance mix

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**CONTACT DERMATITIS**  
ENVIRONMENTAL AND OCCUPATIONAL DERMATITIS  
Explore this journal >

**'Lucky Luke' contact dermatitis due to rubber components of diapers**

S. Rouil, G. Ducombs, C. Leaute-Labreze, A. Taleb



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**Clinical subgroups of diaper rashes**

- II. Dermatitis worsened by the diaper
  - Fungus: *Candida albicans*
  - Bacteria: *Staph aureus* or *Strep*, *E. Coli*
  - Virus: HSV, VZV
  - Psoriasis
  - Seborrheic dermatitis

• Coughlin C et al. Pediatric Dermatology, 2014;31 19-24

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**Candidal diaper dermatitis**

- Beefy red patches with satellite macules or pustules
- Treatment:** topical nystatin, azole antifungal, oral fluconazole

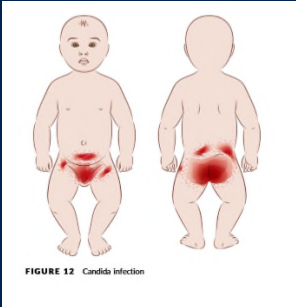



FIGURE 12 Candida infection

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## Case

- 2 y/o with persistent itchy rash ( $x > 10$  days) despite avoidance of potential irritants and regular application of nystatin.

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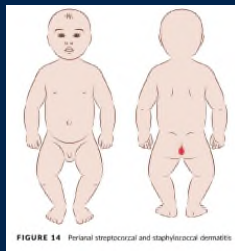
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## Perianal Strep

- Beta-hemolytic streptococcus
- Bright red perianal patches



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## Management

### Strep:

- Bacterial culture
- 10-day course amoxicillin
- Topical mupirocin ointment

### Staph:

- Bacterial culture
- 10-day course cephalixin, clindamycin, oxacillin
- Topical mupirocin ointment

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## Case

2 m/o with 2 – 3 week history of worsening eczema; no improvement on HC 1% or TAC 0.1% creams

- PMH: Healthy w/ no concerning prenatal/delivery dx

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## Scabies

- Lifespan: 15-30 days
- Females lay 1-4 eggs A DAY!
- Eggs hatch in 3-4 days
- Takes 15-20 min of contact on average and 3 weeks for symptoms to surface

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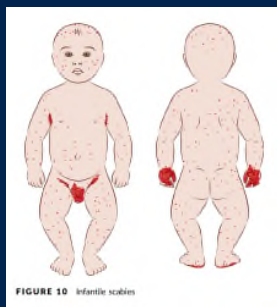
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## Affected areas



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## Treatment Options

Name	Instructions for Use	Comment
Permethrin 5% cream (Elimite, Acticin)	Apply from neck down; rinse in 8-14 hours	Not for use under 2 months of age; may repeat in 1 week if necessary; treat scalp in infants
Lindane 1% lotion	Apply from neck down; rinse in 8-12 hours	Not recommended for infants; not first-line therapy; potential CNS toxicity
Sulfur 6% ointment	Apply from neck down for 3 consecutive nights; rinse 24 hours after last application	Older therapy; malodorous; compounded in petrolatum; safe in infants; pregnant females
Crotamiton cream (Eurax)	Apply from neck down for 2 consecutive nights; rinse 48 hours after last application	High failure rate; may require up to 5 applications
Benzyl benzoate	Apply nightly or every other night for 3 applications	Not available in the United States
Ivermectin (Stromectol)	200 µg/kg per dose given orally for 2 doses, 2 weeks apart	Off-label use; consider for severe infestations, crusted scabies, IC patients; scabies epidemics; should not be used under 5 years of age

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## Treatment plan

- For infants: include scalp & face
- For children/adults: neck down
- 1 application leave on for 8-12 hours then wash off
- Repeat in 1 week
- Wash clothes and linens in hot water and dried high-heat setting.
- Stuffed animals should be stored in bags for 3-7 days

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## Case

- 5 m/o boy with worsening diaper rash
  - not improved with Desitin, nystatin, topical lotrimin and aquaphor/cholestyramine
- ROS: negative – no preceding diarrhea; patient gaining weight well, developmentally appropriate
- PMH/FHx/SocHx: negative, non-contributory.

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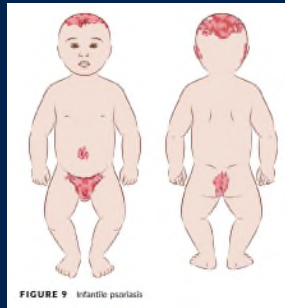
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## Psoriasis

**Pattern:** Scalp, buttocks, periumbilical area

**Treatment:**

Mild topical steroid cream, calcipotriene cream, tacrolimus/pimecrolimus cream



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## Seborrheic Dermatitis

•Resolve by age 6-9 months

•**Treatment:** Mild topical steroid

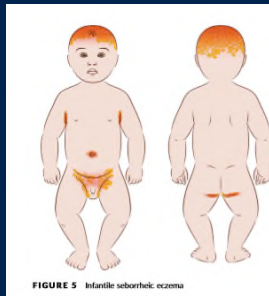


Figure 14.27: Seborrheic Dermatitis. Pediatric Dermatology, 4<sup>th</sup> ed. By Lawrence A. Schachner, MD and Ronald C. Hansen, MD.

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## Clinical subgroups of diaper rashes

•III. Eruptions in the diaper area independent of the diaper

- Acrodermatitis enteropathica
- Langerhans Cell Histiocytosis
- Hemangioma
- Lichen sclerosus

• Coughlin C et al. Pediatric Dermatology, 2014;31 19-24

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## Case

- CC: worsening eczema
- HPI: 4 m/o boy with ~2 month h/o rash around the mouth, scalp and diaper area
  - Patient is formula fed
- ROS: frequent, loose, watery stools, following growth curve
- PMH: no known medical conditions

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## Acrodermatitis Enteropathica

- Lab testing
- Zinc levels
  - Alkaline phosphatase
  - SLC39A4; zinc transporter protein

### Treatment:

- Oral zinc gluconate or sulfate 1-3mg/kg/day
- IV 300-1000mcg/kg/day

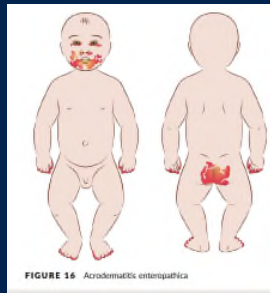


FIGURE 16 Acrodermatitis enteropathica

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## Langerhans Cell Histiocytosis

Crusted papules and petechiae are also noted at the scalp and axillae.

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## Hemangioma

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## Case

2 y/o girl with diaper rash. Potty trained. No complaints of pain w/ urination.

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## Lichen sclerosus

- White glistening, atrophic vulvar area
- Treatment:** high potency topical steroid (clobetasol, halobetasol ointment), tacrolimus ointment

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## References

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