Newborn Rashes: *Learning when not to press the panic button*

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Learning Objectives

- Assess newborn rashes and differentiate benign neonatal skin conditions from infectious pustular eruptions.
- Manage infectious pustular eruptions caused by bacteria, virus, and fungus.
- Treat neonatal seborrheic dermatitis and diaper dermatitis.

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Initial Pearls

- Avoid premature diagnosis
- Consider appropriate PPE
- Undress infant

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Approach to Newborn Rashes

- Quick intake, then VS
- Dermatologic exam / Physical Exam
- Detailed history
- Diagnostics
- Treatment

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Approach to Newborn Rashes

- Intake (rash morphology & distribution, chronology of symptoms)
- Vital signs (severity, instability, signs of sepsis)
  - toxic- or ill-appearing vs. well-appearing
- Quickly assess the likelihood of child:
  - Going home
  - Needing some diagnostic evaluation
  - Requiring hospitalization or intensive therapy

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Approach to Newborn Rashes

Dermatologic exam FIRST!

- Morphology – macules, papules, urticaria, annular, targetoid, petechiae, purpura, etc.
- Distribution – localized vs generalized, discrete vs confluent, flexural vs extensor, intertriginous. Other areas – palms & soles, scalp, mucous membranes, nails
- Other features:
  - Blanching or nonblanching
  - Koebner phenomenon
  - Nikolsky sign
  - Scale or crust
  - Evanescence

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Approach to Newborn Rashes

Physical Exam

- General appearance
- Neuro exam
- Cardiac
- Respiratory
- MSK

History

- Pruritus, pain, evolution/chronology
- Exposures
- Pregnancy and birth hx
- ROS

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Benign Neonatal Skin Conditions

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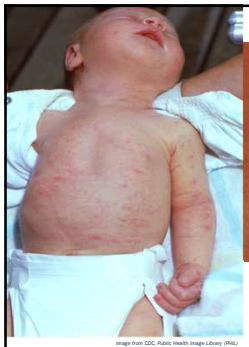

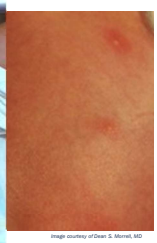

Image courtesy of Dean S. Morrell, MD

- 1 wk-old infant, well-appearing
- Rash started day 2 of life
- Erythematous macules with central papulovesicle
- Location: face, trunk, extremities

Image from CDC, Public Health Image Library (PHIL)

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Erythema Toxicum Neonatorum (ETN)

Presentation:

- Morphology: few to hundreds of erythematous macules with central papule or vesicle
- Distribution: face, trunk, extremities, but *spares genital & acral areas*
- Onset: within 2 days of birth
- Duration: disappears in 1 wk, *no dyspigmentation*

Etiology: unknown, ?allergic

Associations: term infants ≥ 2500 g (5 lb, 8 oz)

Treatment: none, parental reassurance

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Benign Cephalic Pustulosis (BCP)

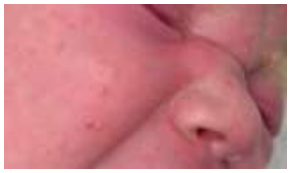

Image courtesy of Dean S. Morrell, MD

Presentation:

- Morphology: erythematous, noncomedonal papulopustules
- Distribution: cheeks, forehead, chin
- Onset: 2-3 weeks
- Duration: few weeks to months

Etiology: *Malassezia sp.*

Treatment: none, *topical azoles*

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Transient Neonatal Pustular Melanosis (TNPM)

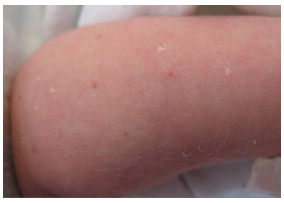

Image courtesy of Dean S. Morrell, MD

Presentation:

- Morphology: fragile, flaccid, superficial pustules *without erythema*, w/ hyperpigmented macules (healed lesions)
- Distribution: forehead, chin, neck, back buttocks, *palms, soles*
- Onset: birth
- Duration: several weeks

Treatment: none

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Milia

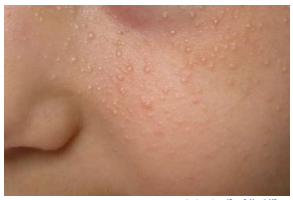

Image courtesy of Dean S. Morrell, MD

Presentation:
- Morphology: 1-2 mm shiny white papules
- Distribution: nose, forehead, chin, and cheeks
- Onset: birth or soon after
- Duration: few weeks

Treatment: none

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Cutis Marmorata

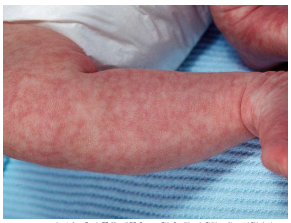

Image from Rajala BZ, Morrell DS. Common Skin Conditions in Children: Neonatal Skin Lesions. FP Essent. 2017 Feb;453:11-17. Images appear with permission from VisualDx®.

Presentation:
- Morphology: transient, symmetric, erythematous, reticular patches
- Distribution: trunk, extremities
- Onset: birth
- Duration: months to early childhood
- Other features: triggered by cold, resolved w/ warming

Treatment: none

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Congenital Dermal Melanocytosis (CDM)

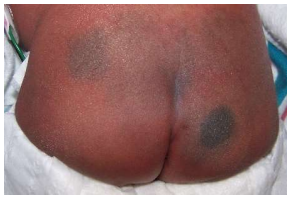

Image courtesy of Dean S. Morrell, MD

Presentation:
- Morphology: bluish-green to black nonblanching patches
- Distribution: lumbosacral area, buttocks, back
- Onset: birth or soon after
- Duration: regresses early childhood

Treatment: none

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Infectious Pustular Eruptions

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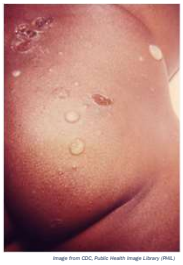
Neonatal Bullous Impetigo



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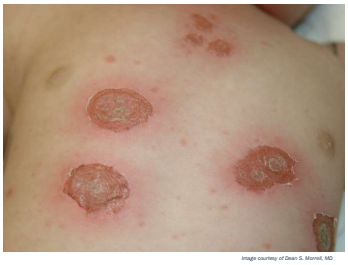

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Neonatal Bullous Impetigo

Presentation:
- Morphology: flaccid bullae, then erythematous erosions w/ honey-colored crust & peripheral scales
- Distribution: diaper, intertriginous area (neck, axilla)
- Onset: 2nd-3rd day of life

Etiology: *S. aureus* (direct contact)

Treatment:
- Non-extensive impetigo
  - topical mupirocin ≥ oral abx
  - Mupirocin TID for 5-7d
- Extensive impetigo
  - Insufficient evidence for best treatment; PCN inferior to erythromycin and cloxacillin
  - Well-appearing – PO dicloxacillin, cephalexin
  - Ill-appearing – IV nafcillin, cefazolin, clindamycin

Return to child care:
- 24 hrs after oral abx
- 48 hrs after topical abx

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Staphylococcal Scalded Skin Syndrome (SSSS)

- Presentation: fever, malaise, localized impetigo or generalized erythroderma
- Precipitated by superantigen from *S. aureus*

Treatment: systemic & topical antibiotics, skin/wound care, IVFs, hospitalization, pain mx

Image courtesy of Brian Z. Reyala, MD

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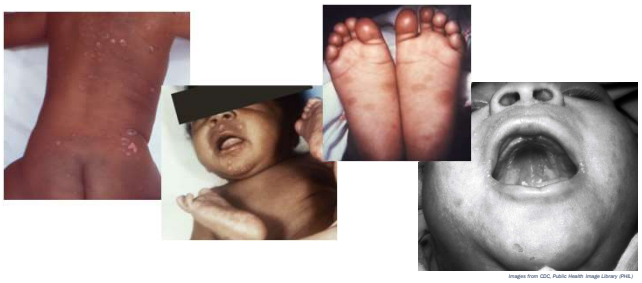
Congenital Syphilis



Images from CDC, Public Health Image Library (PHIL)

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Congenital Syphilis

Presentation:
- CDC definition (<2yo with 1 of the ff): condyloma lata, rhinitis, rash, hepatosplenomegaly, jaundice/hepatitis, pseudoparalysis, edema
- Morphology of rash: maculopapular, vesicobullous, or pustular
- Distribution: palms, soles, trunk, groin, buttocks, perioral
- Onset: birth to <2yo

Etiology: *Treponema pallidum*, (transplacental)

Diagnosis: dx in mother; clinical, lab or radiographic evidence in neonate; comparison of maternal & neonatal RPR

Treatment:
- IV aqueous crystalline penicillin G 200,000-300,000 u/kg/d, administered 50,000 u/kg q4-6h for 10d (CDC guidelines)
- *Note: contact precautions*

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Neonatal HSV

Images from CDC, Public Health Image Library (PHIL)

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Neonatal Herpes Simplex Virus (HSV)

Presentation:
- Forms: limited (45%), CNS (30%), disseminated (25%)
- Morphology of rash: vesicles, pustules or erosions w/ surrounding erythema
- Distribution: mucocutaneous (skin, eyes, mouth)
- Onset: birth; hours to days
- Symptoms: ill-appearing, lethargic, temp instability (CNS, disseminated)

Etiology: HSV 1/2 (in utero, intrapartum)

Diagnosis: dx in mother; clinical; NAAT, PCR

Treatment:
- IV acyclovir 20mg/kg q8h x 14d for limited disease or 21d for CNS/ disseminated
- ID consult
- *Note: contact & droplet precautions*

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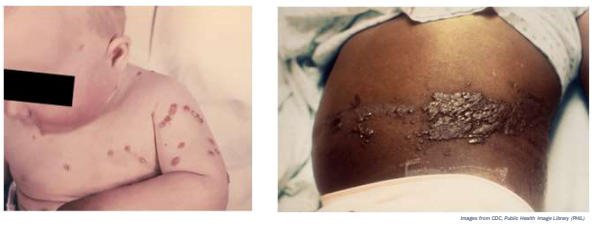
Neonatal Varicella Zoster Virus (VZV)



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Neonatal VZV

Presentation:
- Forms: congenital, perinatal, infantile
- Morphology of rash:
  - Congenital: dermatomal scars (but *no active lesions*), limb hypoplasia, eye defects, neurologic
  - Perinatal: vesicopustules, erosions, crusts in different stages
  - Infantile zoster: clustered macules or vesicopustules on a dermatome
- Distribution: face, scalp, trunk, limbs
- Onset: in utero; days to weeks; up to 2yrs

Etiology: VZV (in utero, perinatal)

Diagnosis: dx in mother; clinical; NAAT, PCR

Treatment:
- Varicella or zoster
  - PO acyclovir 80mg/kg/d x 5d
  - IV acyclovir 30mg/kg/d x 7-10d
- *Note: contact & droplet precautions when active lesions (until crusted)*

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Congenital & Neonatal Candidiasis

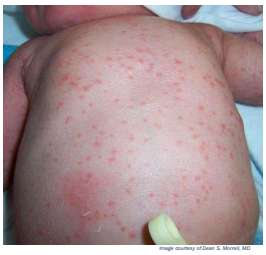

Image courtesy of Dean S. Morrell, MD

Presentation:
- Forms: congenital, neonatal
- Morphology: erythematous vesicopustular; mucocutaneous lesions (neonatal)
- Distribution: face, trunk, extremities, acral areas; diaper area (neonatal)
- Onset: first 12h vs first week of life

Etiology: *Candida albicans* (intrauterine, intrapartum)

Diagnosis: KOH &/or culture

Treatment: expectant; IV/PO fluconazole, PO/topical nystatin, topical azole

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Seborrheic and Diaper Dermatitis

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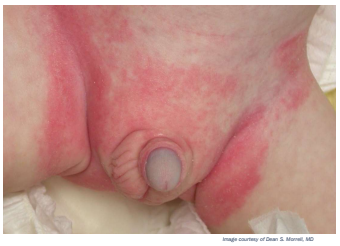

Image courtesy of Dean S. Morrell, MD

- 1mo, well appearing
- Erythematous patches w/ scale
- Duration: 3 days
- Location: diaper area

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Seborrheic Dermatitis

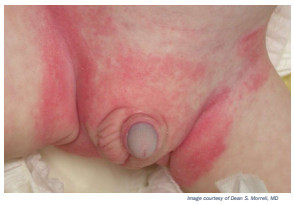

Image courtesy of Dean S. Morrell, MD

Presentation:
- Morphology: erythematous patches w/ greasy scale
- Distribution: scalp, face, ears, neck, diaper area
- Onset: first 4 wks of life
- Duration: several weeks to months
- Association: *Malassezia furfur*, hormonal

Treatment: none, symptomatic, *topical ketoconazaole, low-potency topical corticosteroids (TCS)*

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Diaper Dermatitis

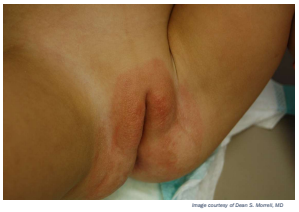

Image courtesy of Dean S. Morrell, MD

Presentation:
- Morphology: erythematous patches or plaques, w/ *sparing of inguinal folds*
- Peak: 9-12 mos
- Causes: allergic contact, irritant contact, atopic, psoriasis, infections, etc.

Treatment: avoidance, ABCDE, *topical antifungals, TCS*

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Practice Recommendations

- Infectious pustular neonatal eruptions need to be recognized and differentiated from benign neonatal skin conditions as they may lead to significant morbidity and mortality (***SOR C***).
- Treat nonextensive bullous impetigo with topical mupirocin (***SOR A***), and SSSS in an ill-appearing neonate with systemic & topical antistaphylococcal antibiotics (***SOR C***).
- Immediately treat neonatal herpes and varicella infections with systemic acyclovir (***SOR B***).
- Consider a diagnosis of seborrheic dermatitis in infants with erythematous patches w/ greasy scale (***SOR C***), and diaper dermatitis when inguinal folds are spared (***SOR C***).

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References

- FP Essent. 2017 Feb;453:11-17.
- Cochrane Database Syst Rev. 2012 Jan 18;1(1):CD003261.
- Clin Infect Dis. 2014 Jul 15;59(2):147-59.
- FP Essent. 2017 Feb;453:18-25.
- https://www.cdc.gov/std/treatment-guidelines/congenital-syphilis.htm
- Cochrane Database Syst Rev. 2008 Jan 23;(1):CD004946.
- https://www.cdc.gov/std/treatment-guidelines/herpes.htm
- Indian Dermatol Online J. 2014 Nov;5(Suppl 1):S44-7.

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Any questions?

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