

A “Rash”ional Approach to DDx: It’s All About Morphology and Distribution



Skin, Bones, Hearts, and Private Parts 2020

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Learning Objectives:

- Identify the most common dermatologic diseases that present with a generalized rash.
- Develop a differential diagnosis of these rashes based on the systematic application of a series of qualifiers including:
 - salient patient history
 - the characteristics of the lesions
 - the location of these lesions
 - and the results of selective diagnostic tests.
- List and identify several life-threatening generalized rashes.
- Increase confidence and enjoyment in seeing patients with dermatologic conditions in the primary care setting.

Evaluation of a Rash

- Enforce a “get naked” policy
 - Good lighting
 - Take a “hands on” approach
-
- What is the type of lesion?
 - Color and shape?
 - Surface characteristics
 - Scaly or not?
 - Arrangement and pattern?



A flat, red, 0.5 cm x 0.5 cm lesion is best described as:

1. Fawn-colored patch
2. Erythematous papule
3. Erythematous plaque
4. Violaceous macule
5. Erythematous macule



How would you describe these skin lesions that do not blanch?

1. Patch
2. Wheal
3. Purpura
4. Macule
5. Papule



Proper documentation of this rash would include which of the following statements?

1. Erythematous plaque on extensor surfaces
2. Generalized erythematous maculopapular rash
3. Confluent fawn-colored patches
4. Salmon-colored plaques with collarette scale



Describing a Rash: Primary Lesions

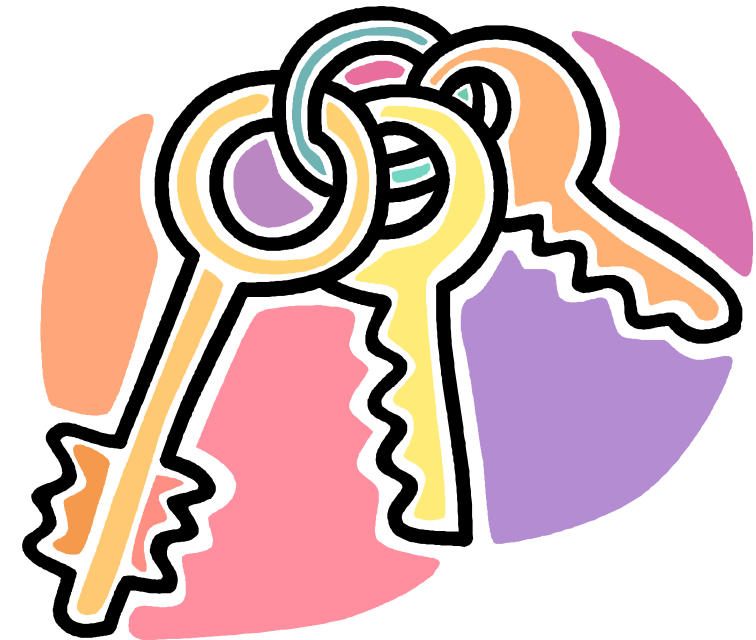
- Macule/Patch – Flat, non-palpable lesion
- Papule/Nodule – Raised lesion
- Plaque – A plateau-like lesion, confluent papules
- Vesicle/Bulla – Circumscribed, elevated lesion containing fluid
- Pustule – Elevated lesion containing pus
- Wheal – Transient, elevated, edematous lesion often with clearing in center
- Maculopapular – Some flat, some raised
- Target/Iris – Concentric circles, different colors or levels

Describing a Rash: Secondary Changes

- Lichenification - Thickened skin with distinct borders
- Crusted - Hard and rough surface caused by dried sebum, exudate, blood, or necrotic tissue
- Scaly - Heaped up horny epithelium, flaky
- Macerated - Increase in water content, soggy
- Fissure - Thin, linear erosion or ulcer
- Atrophy - Loss of skin or tissue, thinning, shiny
- Excoriated - Shallow hemorrhagic excavation, linear or punctate, from scratching
- Erosion - Partial break in epidermis
- Ulcer - Full thickness loss of the epidermis

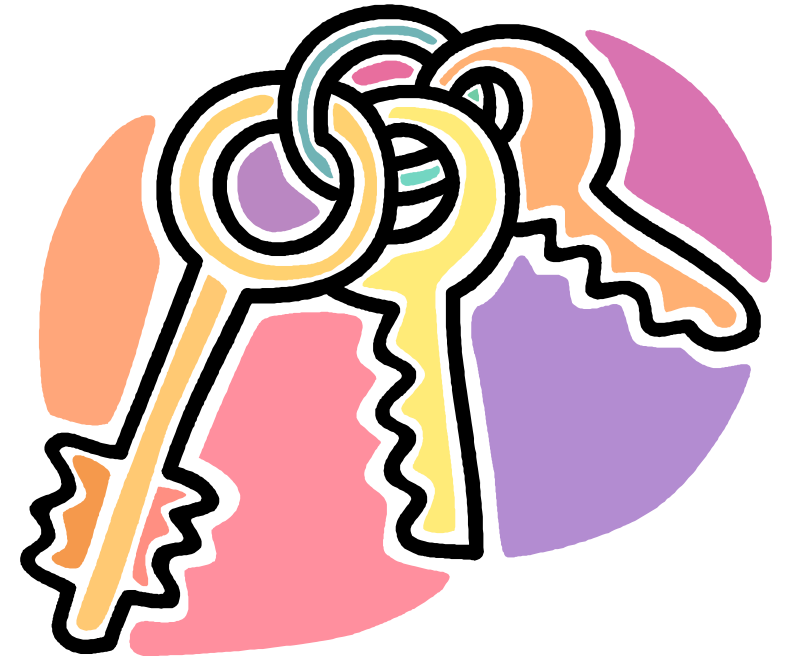
Keys to Unlocking the Diagnosis

- **History**
- **Type of lesion**
- **Distribution**



Keys to Unlocking the Diagnosis

- **History**
 - **Systemic symptoms**
 - **Symptomatic lesions**
 - **New exposures**
- Type of lesion
- Distribution



Important Clues in the Patient History

- Are you feeling **sick**?
 - Fever
 - Malaise
 - Joint or body aching
- Are the lesions **symptomatic**?
 - Pain
 - Pruritus
- Any **exposures**?
 - Ill contacts
 - Insect and/or plant
 - Drugs
 - Occupational
 - Pets
 - Hobbies

Differential Diagnosis: Fever and a Rash

Utilizing the Are-You-Feeling-Sick? History Key

Differential Diagnosis Fever and a Rash

- Infections
 - Viral exanthems: Measles, Erythema infectiosum, Roseola
 - Bacteria: Scarlet fever, Cellulitis, Lyme, RMSF, Secondary Syphilis, Meningococemia
- Drug eruptions
 - Generalized maculopapular eruption
 - Erythema multiforme, SJS, TEN
 - Erythema nodosum
- Rheumatologic conditions
 - JRA/JIA (juvenile idiopathic arthritis)
 - Rheumatic fever
- Vasculitides
 - Kawasaki

Viral Exanthems



Viral Exanthems



Scarlet Fever



Cellulitis



Erythema Migrans

Rocky Mountain Spotted Fever



Secondary Syphilis



Meningococccemia



Erythema Marginatum: Rheumatic Fever

JIA



Kawasaki Syndrome



A



C



E



B



D



F

Differential Diagnosis: A Painful or Itchy Rash

Utilizing the Symptomatic Rash History Key

If the Rash Has Symptoms

- Pain
 - Herpes zoster
 - Cellulitis
 - Necrotizing fasciitis
 - Erythema multiforme
 - Erythema nodosum
 - Endocarditis
- Pruritus
 - Scabies
 - Pityriasis rosea
 - Contact dermatitis
 - Varicella
 - Urticaria

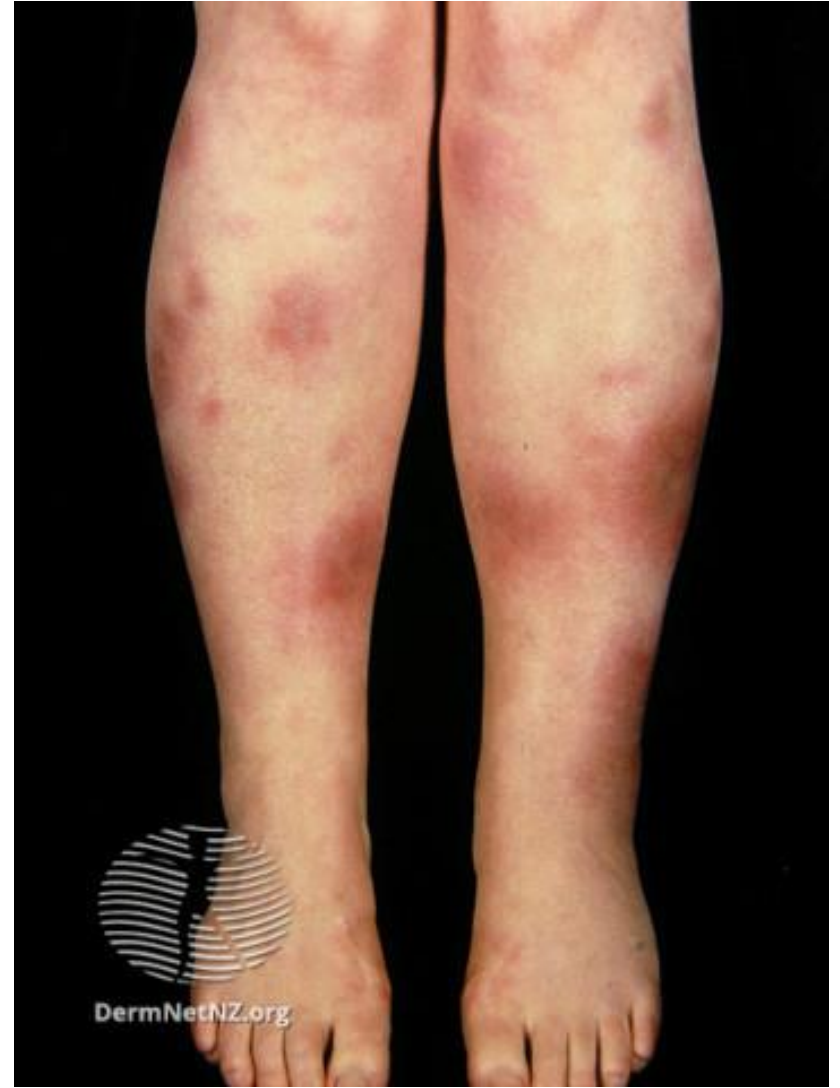
Painful Rash: Herpes Zoster



Pain Out of Proportion Rash: Necrotizing Fasciitis



Painful Rashes: Erythema Nodosum



Itchy Rashes: Scabies



Itchy Rashes: Pityriasis Rosea



Itchy Rashes: Contact Dermatitis



Itchy Rashes: Urticaria



Differential Diagnosis: New Exposure and a Rash

Utilizing the New Exposures History Key

New Exposures

- Ill contacts
 - Viruses, bacteria
- Contact dermatitis
 - Plants, products, foods
- Medication-related (often sulfonamides, penicillins, anticonvulsants, NSAIDs)
 - Urticaria
 - Erythema multiforme
 - Generalized drug eruption

Contact Dermatitis



Common Drug-Induced Rashes

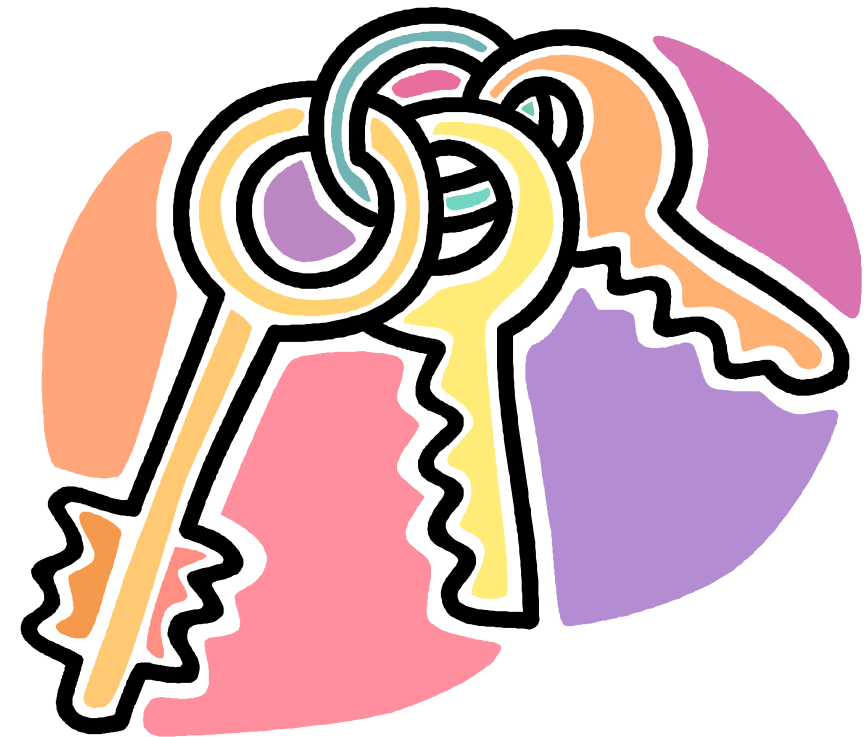


Keys to Unlocking the Diagnosis

- History
 - Systemic symptoms
 - Symptomatic lesions
 - New exposures

- **Type of lesion**

- Distribution



Lesion Type: Macules

- Erythematous
 - Viral exanthems
 - Drug eruptions
- Hypopigmented
 - Vitiligo
 - Tinea versicolor
 - Pityriasis alba
- Hyperpigmented
 - Post-inflammatory
 - Lentigines
 - Café au lait
 - Erythema *ab igne*
 - Melasma

Pityriasis Alba



Vitiligo



Solar Lentigines



Post-inflammatory Hyperpigmentation



Café-au-lait



Erythema *ab igne*



Melasma



Lesion Type: Pustules

- Acne
- Rosacea
- Perioral/ocular dermatitis
- Pustular psoriasis
- Infective
 - Folliculitis
 - Herpes

Acne



Rosacea



Periorifical dermatitis



Pustular Psoriasis



Folliculitis



Lesion Type: Vesicles/Bulla

- Contact dermatitis
- Bullous pemphigoid/pemphigus
- Herpes simplex
- Bullous impetigo
- Polymorphous light eruption
- Pompholyx

Bullous Pemphigoid



Bullous Impetigo



Lesion Type: Umbilicated Papule

Molluscum Contagiosum



Lesion Type: Target/Iris

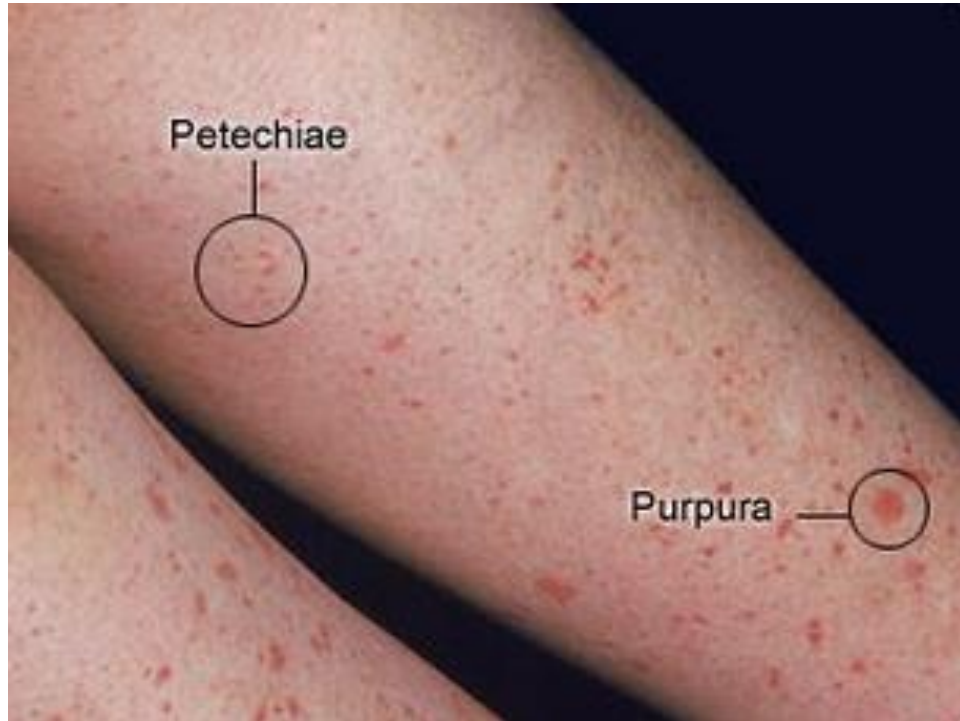
Erythema Multiforme



Lesion Type: Petechiae/Purpura

- Meningococemia
- RMSF
- ITP/TTP
- HSP (or other vasculitis)
- Endocarditis
- Scarlet fever (Pastia lines)
- Viral infections
- Valsalva maneuvers – apply the above the nipple-line rule

Idiopathic/Immune Thrombocytopenic Purpura



<http://www.schonakesslerphotography.com/blog/personal/idiopathic-thrombocytopenic-purpura-and-my-son/>
<http://blackpegeon.blogspot.com/2011/04/idiopathic-thrombocytopenic-purpura.html>

Endocarditis



Lesion Morphology: Additional Assistance

- Lesion size
 - Small
 - Medium
 - Large
 - Red all over
- Presence or absence of scale

Lesion Size

- Pinpoint
 - Folliculitis
 - Keratosis pilaris
 - Scarlet fever
- 1 mm to 1 cm
 - Guttate psoriasis
 - Insect bites
 - Lichen planus
 - RMSF
 - Scabies
 - Viral exanthems
- 1 to 25 cm
 - Lyme
 - Tinea
 - Urticaria
- Erythroderma
 - Drug eruption
 - Staphylococcal scalded skin syndrome
 - Toxic shock syndrome
 - Toxic epidermal necrolysis

Lesion Type: Does It Have a Scale?

- Scales

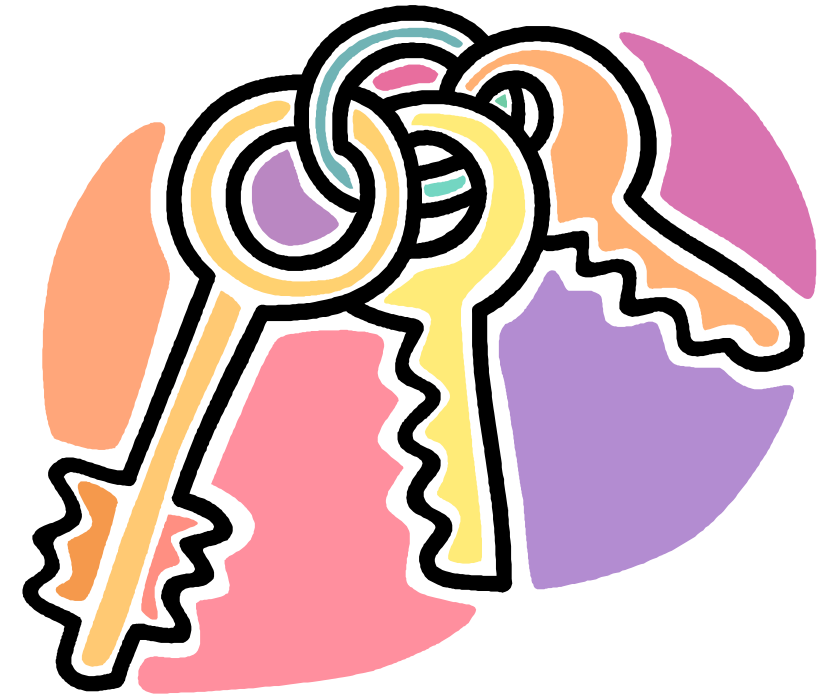
- Psoriasis
- Atopic dermatitis
- Tinea
- Pityriasis rosea
- Pityriasis/tinea versicolor
- Lichen planus
- Discoid lupus

- No scales

- Cellulitis
- Urticaria
- Light eruptions
- Drug reactions
- Viral exanthems
- Erythema multiforme
- Erythema nodosum

Keys to Unlocking the Diagnosis

- History
 - Systemic symptoms
 - Symptomatic lesions
 - New exposures
- Type of lesion
- **Distribution**



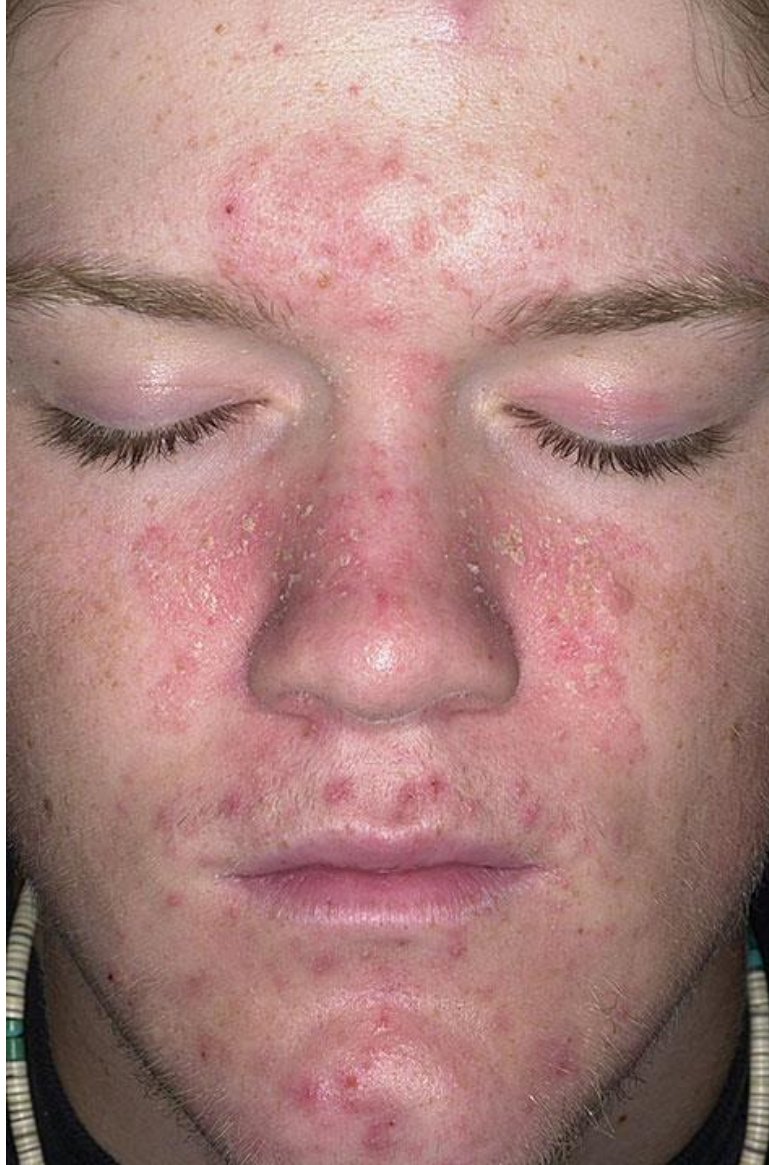
Distribution: Location Matters

- Facial
- Central
- Peripheral/Extremities
 - Palms/Soles
- Intertriginous
- Symmetrical
- Dermatomal
- Photo-distribution

Facial Rashes

- Seborrheic dermatitis
- Rosacea
- Melasma
- Peri-oral dermatitis
- Systemic lupus erythematosus
- Erythema infectiosum
- Erysipelas
- Tinea faciei

Seborrheic Dermatitis



Rosacea



Melasma



Peri-oral Dermatitis



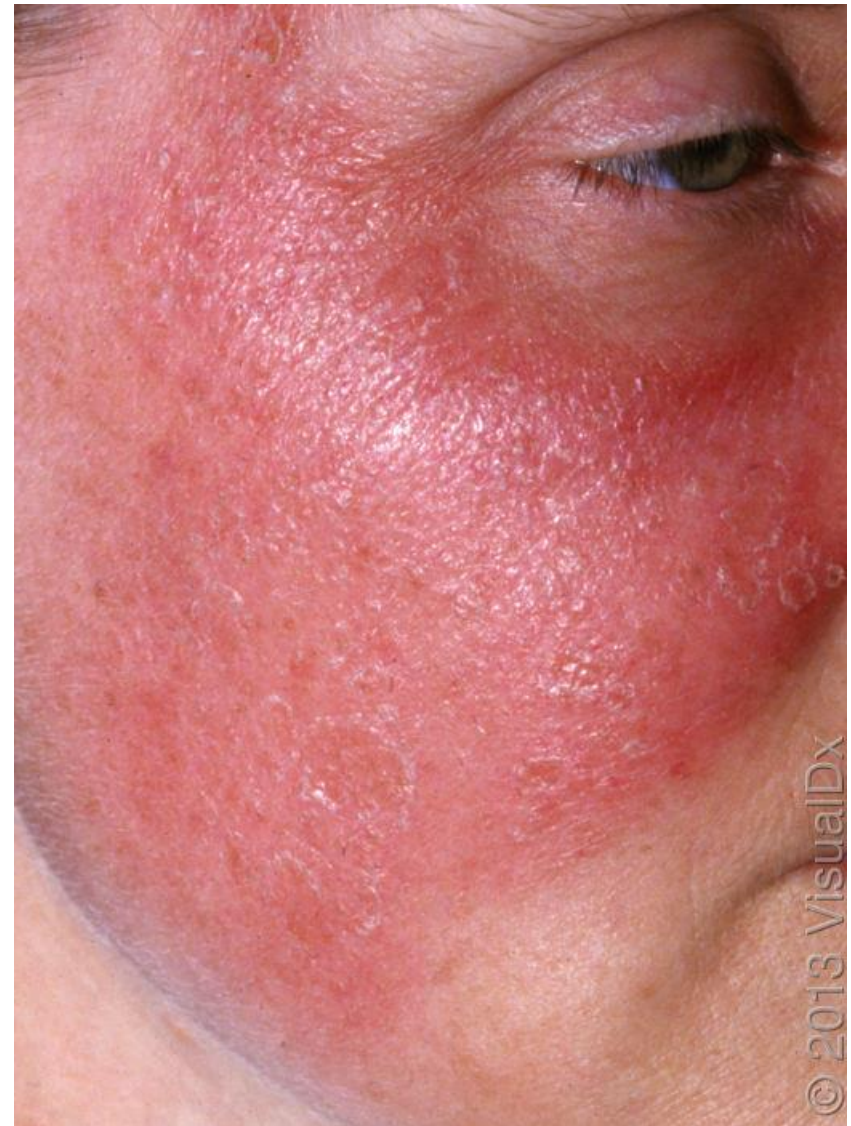
Systemic Lupus Erythematosus



Erythema Infectiosum



Erysipelas



Tinea Faciei



Central vs. Peripheral

- Central
 - Pityriasis rosea
 - Tinea versicolor
- Peripheral
 - Erythema nodosum
 - Petechiae/purpura
 - RMSF
 - Meningococemia
 - HSP
- Palms/Soles
 - Erythema multiforme
 - Pompholyx/dyshidrotic eczema
 - Secondary syphilis
 - Coxsackie – Hand, Foot, Mouth
 - RMSF
 - Endocarditis

Tinea Versicolor



Figure 13-71 Tinea versicolor. The most common presentation with thin fawn-colored scaling papules on the upper chest.

Henoch–Schönlein Purpura (IgA Vasculitis)



Pompholyx/Dyshidrotic Eczema



Hand-Foot-Mouth Syndrome



Intertriginous Rashes: They Love the Folds

- Tinea cruris
- Candida
- Erythrasma
- GAS
- Seborrheic dermatitis
- Atopic dermatitis
- Hidradenitis suppurativa

Tinea Cruris



Candidal Intertrigo



Erythrasma



Image source: DermNetNZ.org

Pastia Lines: Scarlet Fever



<http://www.consultantlive.com/skin-diseases/content/article/10162/1493456>

Seborrheic Dermatitis



Atopic Dermatitis



© 2010 Elsevier Inc. Habif: Clinical Dermatology, 5th Edition.
Figure 5-15 Atopic dermatitis. Classic appearance of confluent papules forming plaques in the antecubital fossae.

Hidradenitis suppurativa



Symmetrical

- Endogenous vs. exogenous
 - Atopic dermatitis
 - Psoriasis
 - Erythema multiforme

- What is not symmetrical?
 - Tinea corporis
 - Contact dermatitis
 - Herpes simplex

Dermatomal or Grouped

- Dermatomal
 - Herpes zoster
- Grouped
 - Herpes simplex
 - Scabies
 - Pityriasis rosea

Herpes Labialis



Photo-distribution

- Actinic keratosis
- Polymorphous light eruption
- Photosensitive drug reaction

Actinic Keratoses



Polymorphous Light Eruption



Photosensitive Drug Reaction



Bizarre Patterns

- Contact dermatitis
- Linear
 - Allergic plant dermatitis

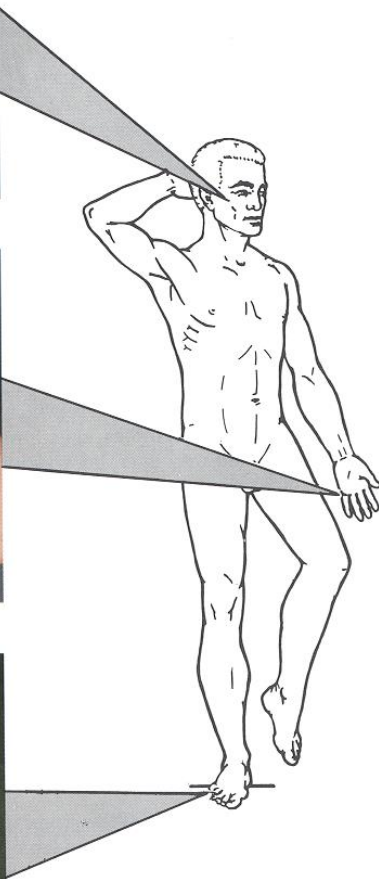
Contact Dermatitis



From poison ivy



From soap under rings



Differential Diagnosis: Dermatologic “Must-Not-Misses”

Using the You-Must-Think-Quickly Key

Clues to Life-Threatening Rashes

- Mucous membrane involvement
- Extensive blisters or peeling of skin
- Extensive erythema and fever
- Pain out of proportion to exam
- Altered LOC
- Petechial or purpuric lesions

Generalized Rashes That Could Be Life-Threatening

- Infectious
 - RMSF
 - Meningococemia
 - Toxic Shock Syndrome/SSSS
 - Necrotizing fasciitis
- Hypersensitivity Reactions
 - Type I: Urticaria, angioedema, anaphylaxis
 - Steven-Johnson syndrome
 - Toxic epidermal necrolysis

Three “Rash-ional” Take Home Points

- Many conditions present with a generalized rash so keep your differential diagnosis broad or you might miss something
- Apply a systematic set of historical questions and physical exam observations to narrow your differential diagnosis
- Failure to respond or worsening of the initial presentation may mean it is time to seek a dermatology consult

A Few Good Resources

- Images – <http://www.dermnetnz.org>
- VisualDx
<https://www.visualdx.com/>
- Global Skin Atlas
<http://www.globalskinatlas.com/searchdiag.cfm>
- Fitzpatrick's Color Atlas & Synopsis of Clinical Dermatology
 - Wolff K, Johnson RA, McGraw Hill
- Clinical Dermatology, 5th Ed – online and print
 - Habif T, Mosby