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



Skin, Bones, Hearts, and Private Parts

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- Thank you

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?





Image source: https://www.bing.com/images
https://www.delasco.com/shop-all/examination/
https://work.chron.com/educational-requirements-become-dermatologist-8497.html

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

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



Image source: https://dermnetnz.org/

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, Meningococcemia
- Drug eruptions
  - Generalized maculopapular eruption
  - Erythema multiforme, SJS, TEN
  - Erythema nodosum
- Rheumatologic conditions
  - JRA/JIA (juvenile idiopathic arthritis)
  - Rheumatic fever
- Vasculitides
  - Kawasaki

Viral Exanthems







https://dermnetnz.org/image-catalogue/viral-skin-infections/

Viral Exanthems





https://dermnetnz.org/image-catalogue/viral-skin-infections/

Scarlet Fever







Cellulitis





https://dermnetnz.org/image-catalogue/bacterial-skin-infection-images/

Erythema Migrans



Image source: DermNetNZ.org

Rocky Mountain Spotted Fever

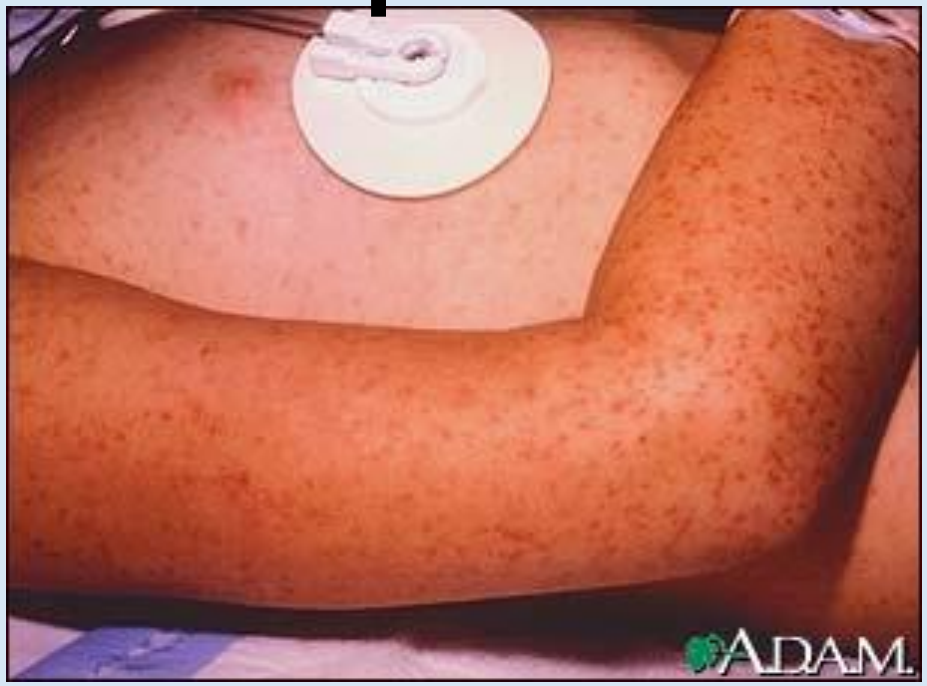




Image source: https://www.cdc.gov/rmsf/training/hcp/html/images/rashpetechialhand_galvarezcrop_image57076.png

Secondary Syphilis







Image Source: DermNetNZ.org

Meningococcemia





http://aapredbook.aappublications.org/cgi/powerpoint/aapredbook;2006/1/3.76/080_10

Erythema Marginatum: Rheumatic Fever





JIA



http://www.duke.edu/~ema5/Golian/Slides/1.1/CardioImages7.html

http://peds.stanford.edu/educational-resources/pearl-library.html

Kawasaki Syndrome



http://www.nejm.org/doi/full/10.1056/NEJM199511233332105

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





Image source: DermNetNZ.org

Pain Out of Proportion Rash: Necrotizing Fasciitis



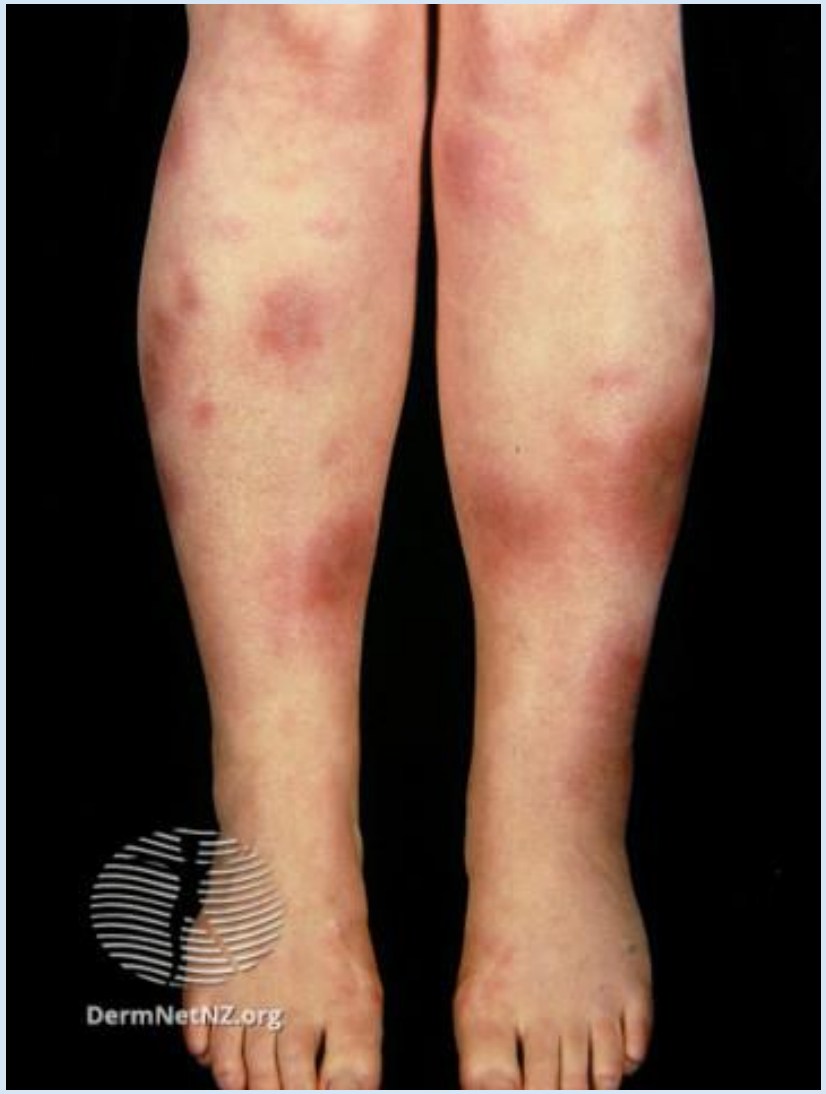


Image Source: DermNetNZ.org

Painful Rashes: Erythema Nodosum







http://www.beltina.org/health-dictionary/erythema-nodosum-symptoms-treatment.html

https://dermnetnz.org/

Itchy Rashes: Scabies





https://dermnetnz.org/

Itchy Rashes: Pityriasis Rosea





https://dermnetnz.org/

Itchy Rashes: Contact Dermatitis





Image source: DermNetNZ.org
http://www.stamfordallergy.com/Services.php

Itchy Rashes: Urticaria







https://dermnetnz.org/

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





Image source: DermNetNZ.org
http://www.riversideonline.com/health_reference/Tools/DS00543.cfm
http://www.dermis.net/dermisroot/en/13356/image.htm

Common Drug-Induced Rashes







Image source: DermNetNZ.org

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





https://www.dermnetnz.org/

Solar Lentigines



https://www.dermnetnz.org/

Post-inflammatory Hyperpigmentation



http://www.skincamouflage.com/indications/index.html

Café-au-lait



Erythema *ab igne*



Melasma



https://www.dermnetnz.org/

http://pictures.doccheck.com/en/photos/483/2043/erythema-from-igne/

Lesion Type: Pustules

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

Acne



Rosacea



Image source: DermNetNZ.org

Periorifical Dermatitis





https://www.dermnetnz.org/

Pustular Psoriasis



Folliculitis



https://www.dermnetnz.org/

Lesion Type: Vesicles/Bulla

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

Bullous Pemphigoid



Bullous Impetigo



Image source: https://www.dermnetnz.org/

Lesion Type: Umbilicated Papule

Molluscum Contagiosum





Image source: DermNetNZ.org

Lesion Type: Target/Iris

Erythema Multiforme

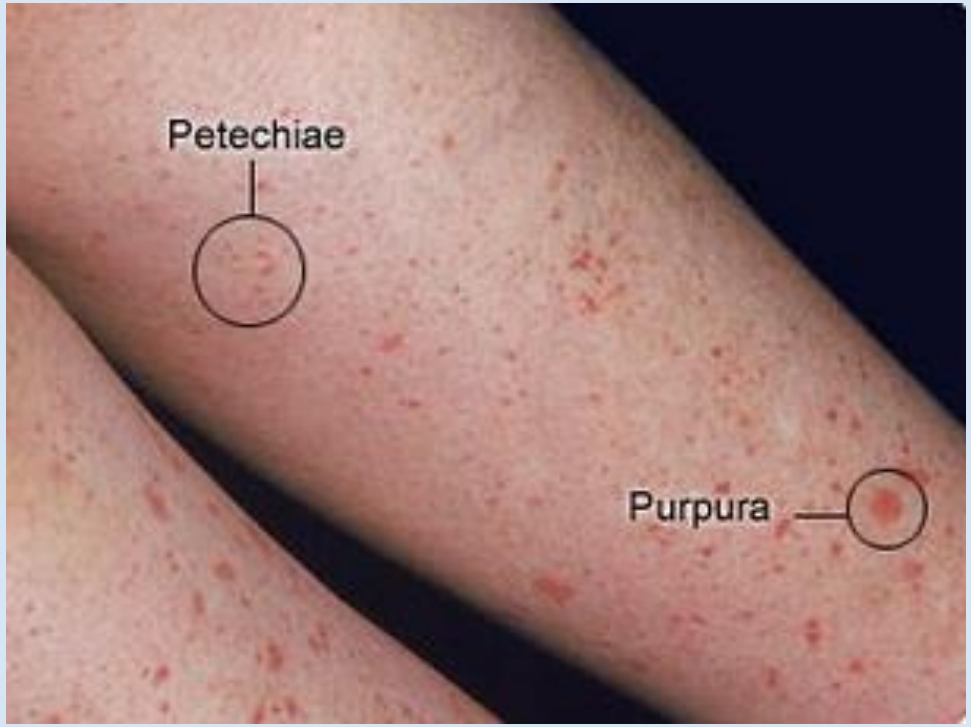


http://www.emedicinehealth.com/script/main/art.asp?articlekey=110051

Lesion Type: Petechiae/Purpura

- Meningococcemia
- 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







http://www.hopkinsvasculitis.org/types-vasculitis/microscopic-polyangiitis/

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**



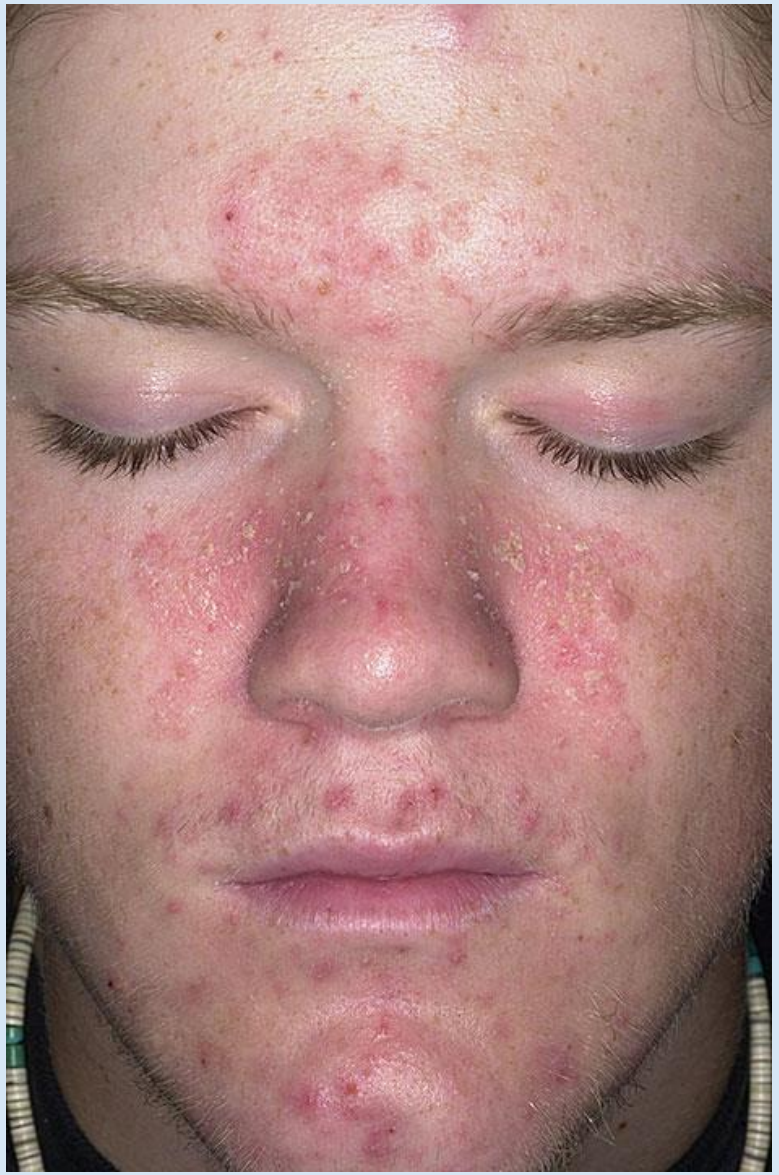
Distribution: Location Matters

- 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



http://hardinmd.lib.uiowa.edu/dermnet/seborrheicdermatitis35.html

Rosacea





Image source: DermNetNZ.org

Melasma





Image source: DermNetNZ.org

Peri-oral Dermatitis



http://dermnetnz.org/common/image.php?path=/acne/img/pod2.jpg

Systemic Lupus Erythematosus

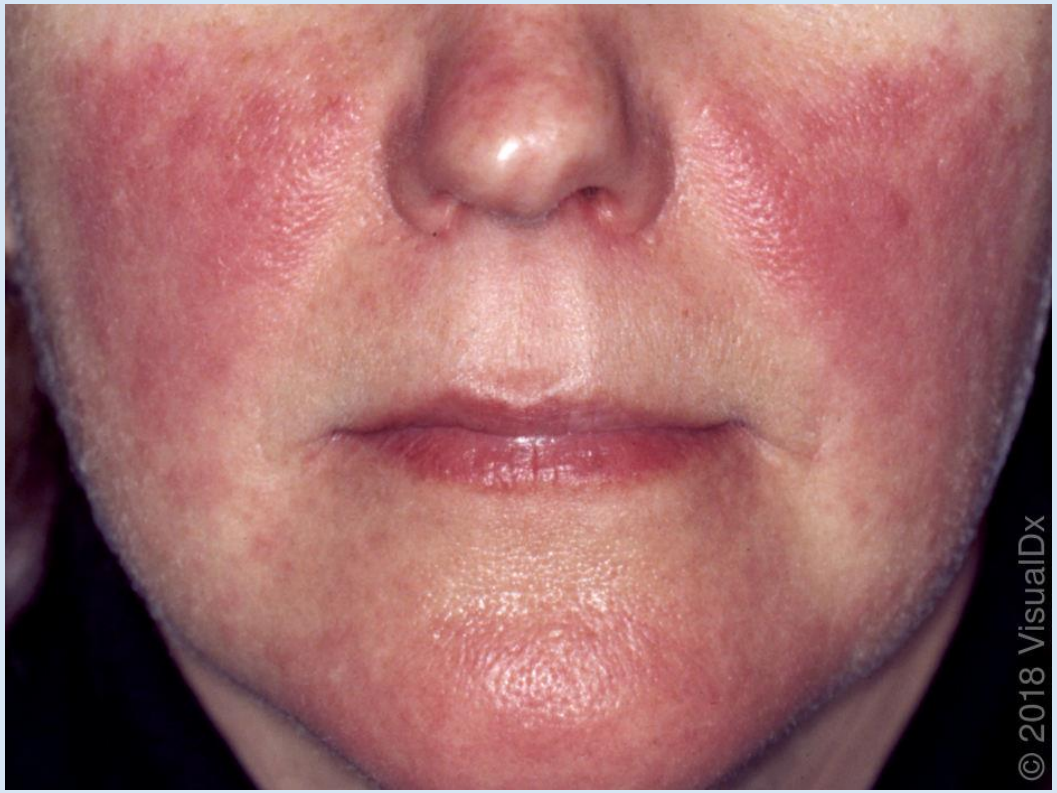




Image source: DermNetNZ.org

Erythema Infectiosum





Image source: DermNetNZ.org

Erysipelas





Tinea Faciei



https://www.aafp.org/afp/2013/0415/p579.html

Central vs. Peripheral

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

Tinea Versicolor





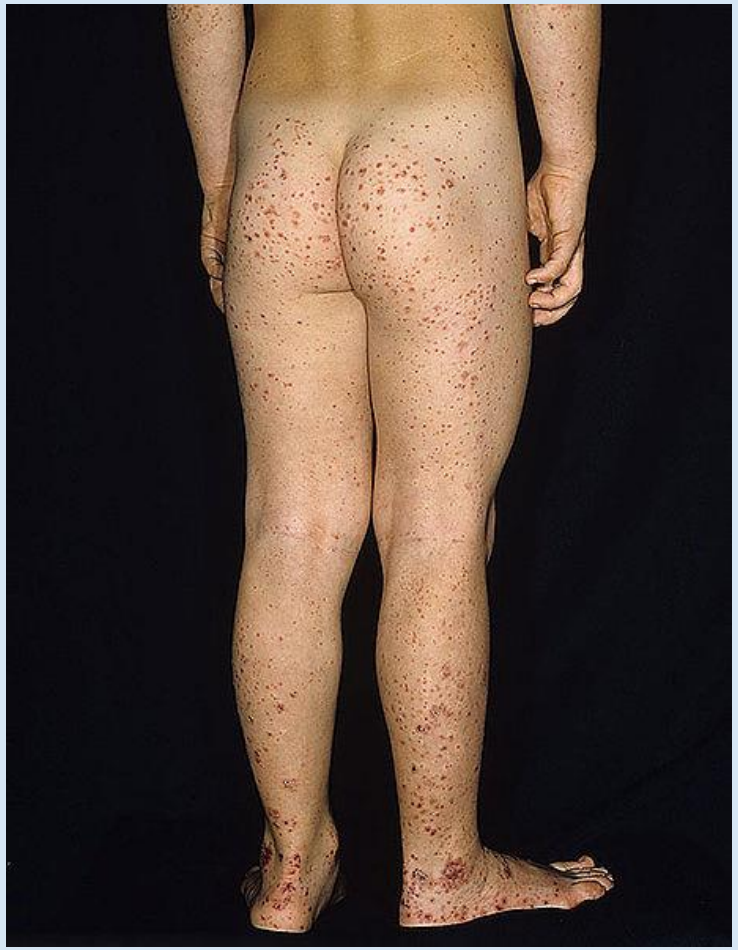
Figure 13-71 Tinea versicolor. The most common presentation with thin fawn-colored scaling papules on the upper chest.

Image source: DermNetNZ.org

Henoch–Schönlein Purpura (IgA Vasculitis)







http://en.wikipedia.org/wiki/File:Henoch-schonlein-purpura.jpg

Pompholyx/Dyshidrotic Eczema



http://www.suite101.com/view_image_articles.cfm/726364

Hand-Foot-Mouth Syndrome







Image source: DermNetNZ.org

Intertriginous Rashes: They Love the Folds

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

Tinea Cruris



http://www.healthhype.com/tag/tinea-cruris

Candidal Intertrigo

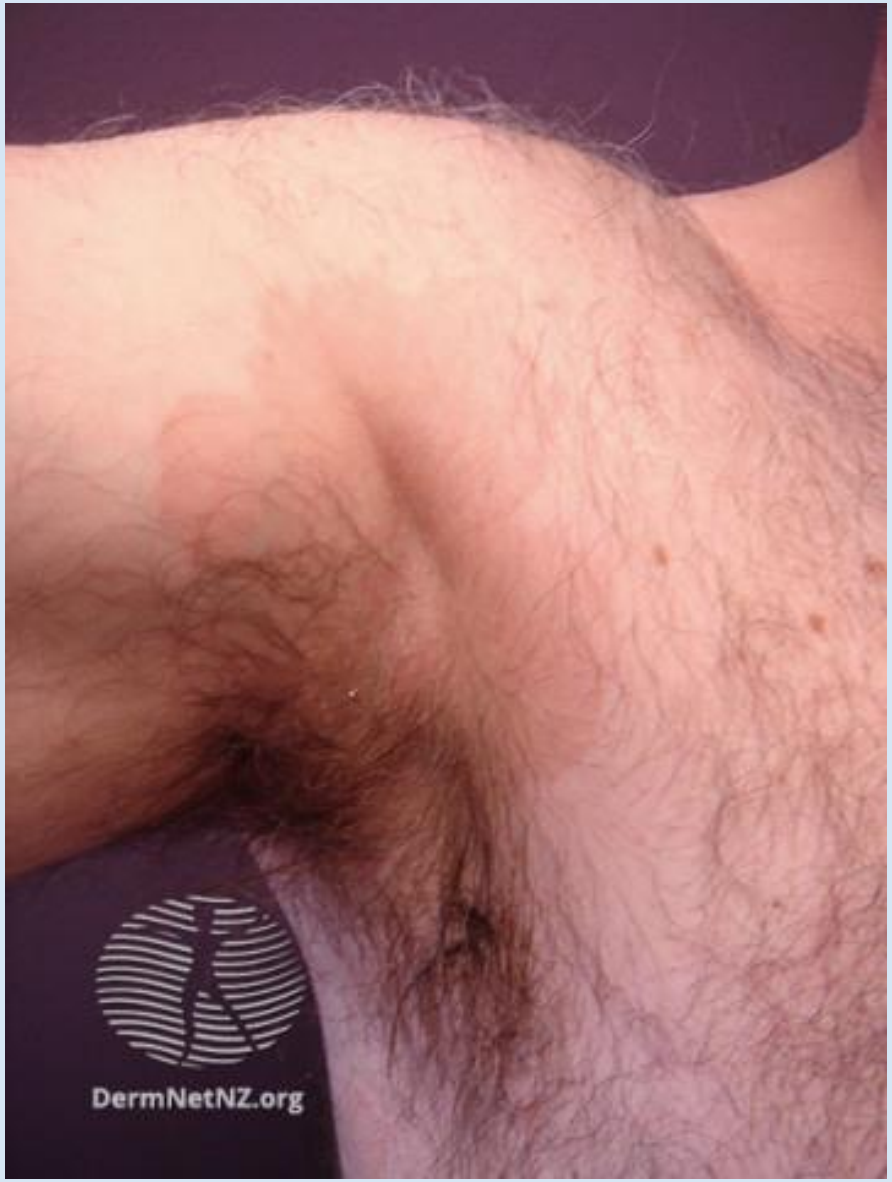






Image source: DermNetNZ.org

Erythrasma



Pastia Lines: Scarlet Fever



Image source: DermNetNZ.org

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

Seborrheic Dermatitis





http://www.clevelandclinicmeded.com/medicalpubs/diseasemanagement/dermatology/dermatologic-signs-of-systemic-disease/

Atopic Dermatitis





Figure 5-15 Atopic dermatitis. Classic appearance of confluent papules forming plaques in the antecubital fossae.

http://dermatlas.med.jhmi.edu/derm/indexDisplay.cfm?ImageID=1175628729

Hidradenitis Suppurativa





Image source: DermnetNZ.org

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



Image source: DermNetNZ.org

Photo-distribution

- Actinic keratosis
- Polymorphous light eruption
- Photosensitive drug reaction

Actinic Keratoses





Image source: DermNetNZ.org

Polymorphous Light Eruption





Image source: DermNetNZ.org

Photosensitive Drug Reaction



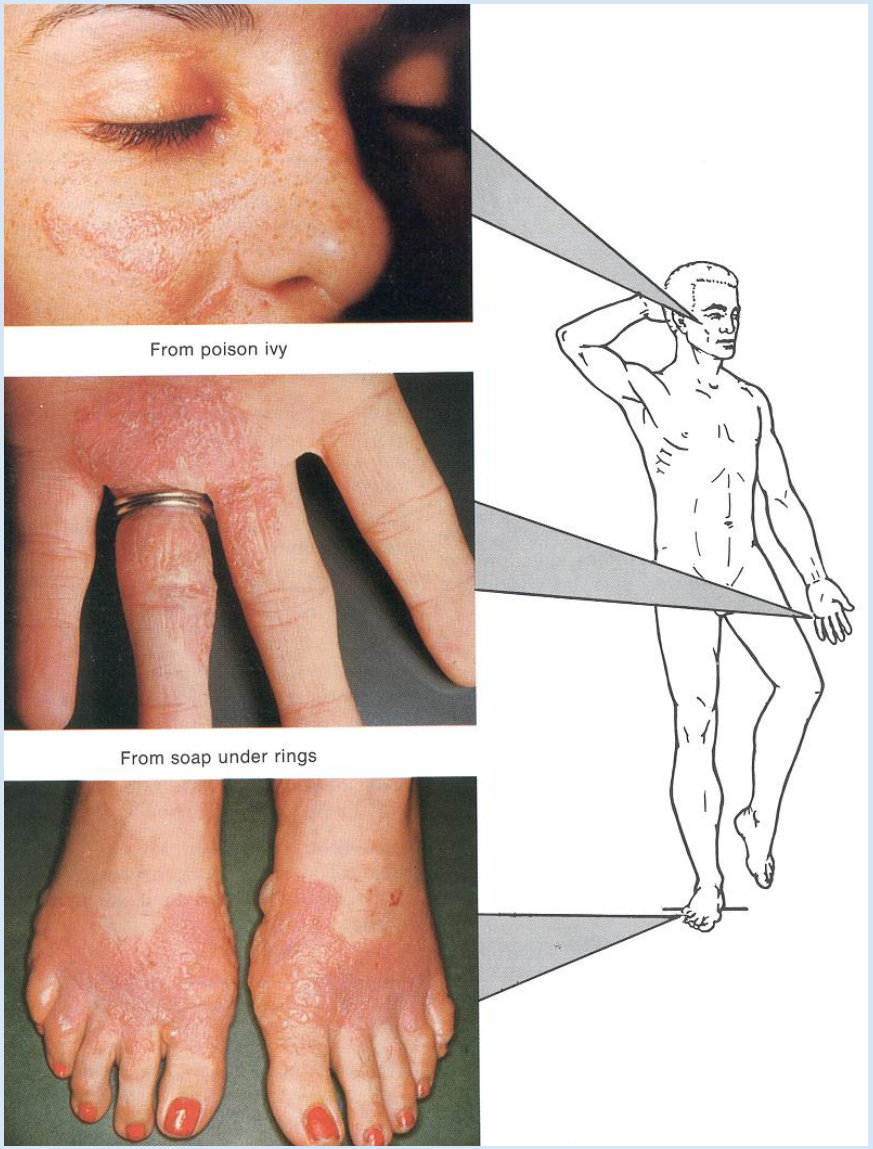


http://www.rxlist.com/script/main/art.asp?articlekey=113796

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

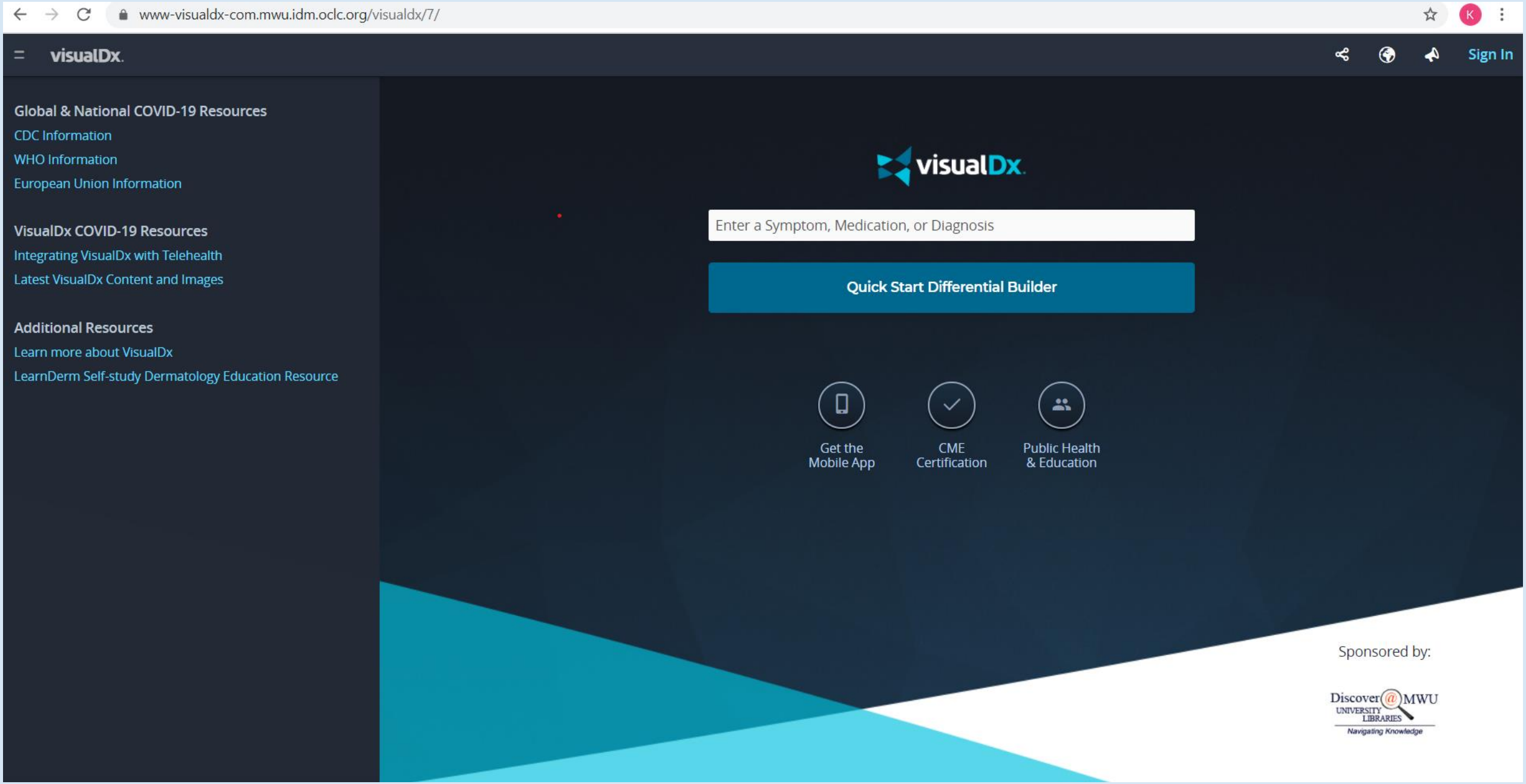
- Infectious
  - RMSF
  - Meningococcemia
  - Toxic Shock Syndrome/SSSS
  - Necrotizing fasciitis
- Hypersensitivity Reactions
  - Type I: Urticaria, angioedema, anaphylaxis
  - Steven-Johnson syndrome
  - Toxic epidermal necrolysis

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 – skin of color atlas
  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


www-visualdx-com.mwu.idm.oclc.org/visualdx/7/
visualDx.
Sign In
Global & National COVID-19 Resources
CDC Information
WHO Information
European Union Information
VisualDx COVID-19 Resources
Integrating VisualDx with Telehealth
Latest VisualDx Content and Images
Additional Resources
Learn more about VisualDx
LearnDerm Self-study Dermatology Education Resource
visualDx.
Enter a Symptom, Medication, or Diagnosis
Quick Start Differential Builder
Get the Mobile App
CME Certification
Public Health & Education
Sponsored by:
Discover@MWU
UNIVERSITY LIBRARIES
Navigating Knowledge

Sign In

visualDx

Enter a Symptom, Medication, or Diagnosis

Quick Start Differential Builder by Category

Start a differential by selecting a problem area

- General Symptoms
- Dermatology All Skin Types
- Dermatology Skin of Color
- Ophthalmology
- ENT / Oral Medicine
- Cardiac / Pulmonary
- Neurology / Psychiatric
- Genitourinary
- Gastrointestinal
- Drug Reactions

visualDx / Patient Findings

Sign In

Workup for Multiple skin lesions

DDX STRENGTH: WEAK

View this Differential

Enter additional findings and/or use the workup questions below

Additional Findings

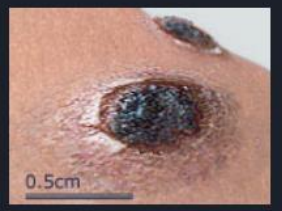
- Skin lesion type
- Location of skin finding
- Symptoms/signs
- Appearance of patient
- Onset of findings
- Exposures
- Medical history
- Travel history
- Negative findings
- Additional Findings



Smooth Papule / Plaque



Scaly Papule / Plaque



Eschar



Erythema / Erythroderma



Purpura / Petechiae



Flat / Macular



Vesicular / Pustular



Erosion / Ulcer / Atrophy


Gangrene

PATIENT INFO

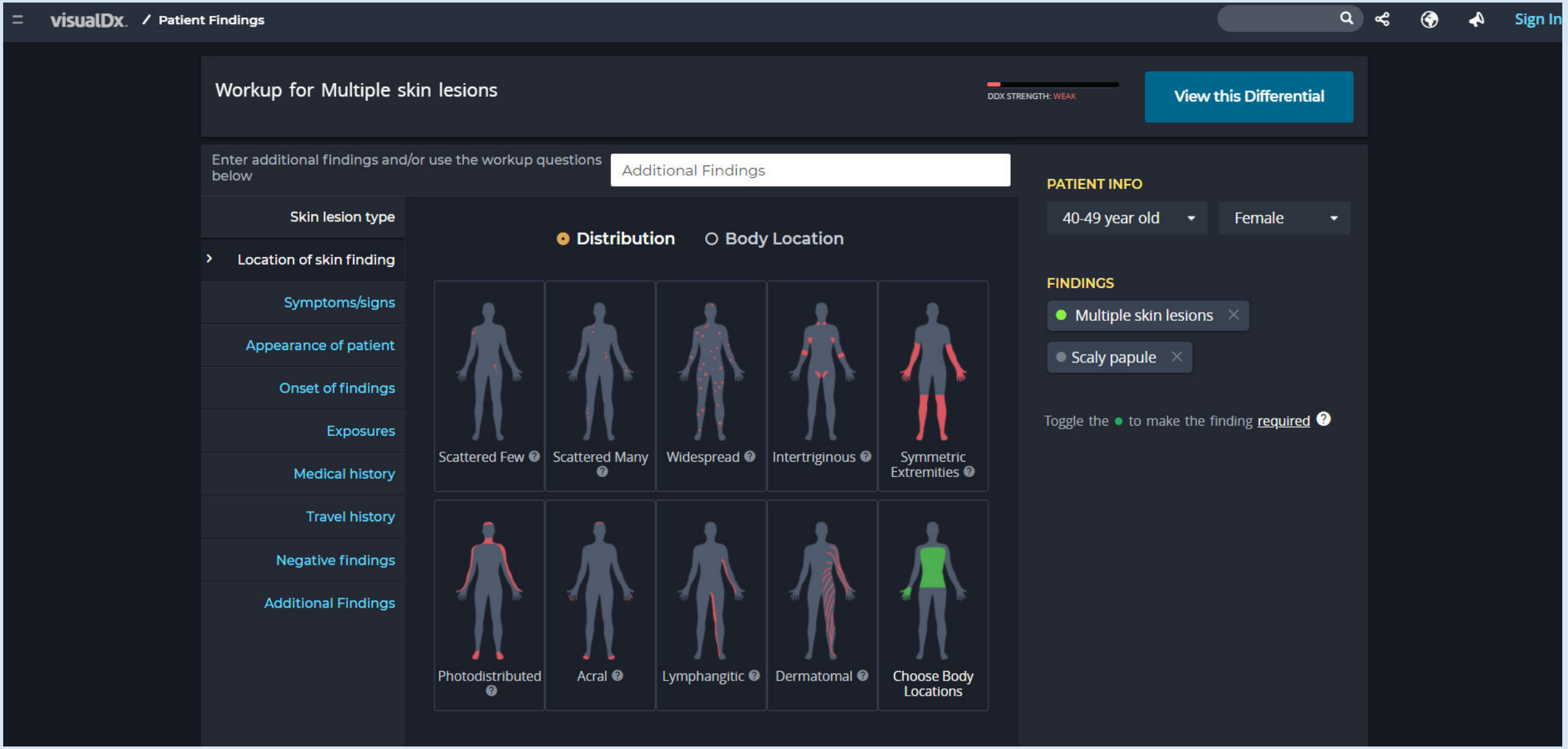
40-49 year old

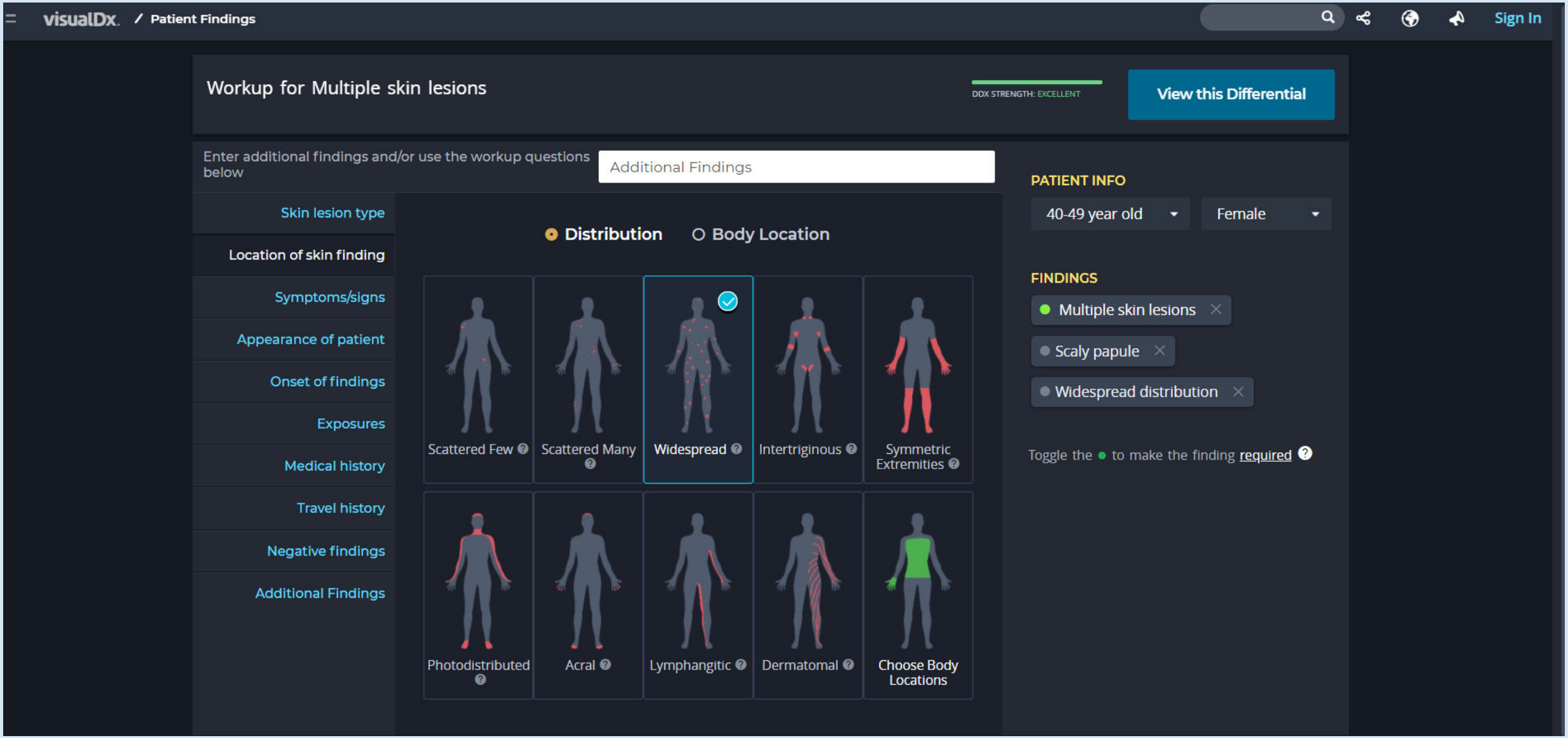
Female

FINDINGS

Multiple skin lesions

Toggle the ● to make the finding required


visualDx. / Patient Findings
Sign In
Workup for Multiple skin lesions
DDX STRENGTH: WEAK
View this Differential
Enter additional findings and/or use the workup questions below
Additional Findings
Skin lesion type
Location of skin finding
Symptoms/signs
Appearance of patient
Onset of findings
Exposures
Medical history
Travel history
Negative findings
Additional Findings
Distribution
Body Location
Scattered Few
Scattered Many
Widespread
Intertriginous
Symmetric Extremities
Photodistributed
Acral
Lymphangitic
Dermatomal
Choose Body Locations
PATIENT INFO
40-49 year old
Female
FINDINGS
Multiple skin lesions
Scaly papule
Toggle the to make the finding required


visualDx / Patient Findings
Sign In
Workup for Multiple skin lesions
DDX STRENGTH: EXCELLENT
View this Differential
Enter additional findings and/or use the workup questions below
Additional Findings
Skin lesion type
Location of skin finding
Symptoms/signs
Appearance of patient
Onset of findings
Exposures
Medical history
Travel history
Negative findings
Additional Findings
Distribution
Body Location
Scattered Few
Scattered Many
Widespread
Intertriginous
Symmetric Extremities
Photodistributed
Acral
Lymphangitic
Dermatomal
Choose Body Locations
PATIENT INFO
40-49 year old
Female
FINDINGS
Multiple skin lesions
Scaly papule
Widespread distribution
Toggle the to make the finding required

Differential Diagnosis

DDX STRENGTH: MODERATE

Multiple skin lesions, Scaly papule/plaque, Widespread distribution, 40-49 year old Female

Edit Findings

16 CONSIDER 1st | 44 CONSIDER 2nd | 10 EMERGENCIES | 24 INFECTIOUS | 22 DRUG INDUCED | 60 VIEW ALL | PHOTOS

Scabies



118

Viral exanthem



34

Guttate psoriasis



57

Psoriasis



242

Allergic contact dermatitis



314

Erythroderma



Matches 2 of 3 findings

Multiple skin lesions

~~Scaly papule/plaque~~

Widespread distribution

72

Pediculosis corporis



Exanthematous drug eruption



Urticaria



Human immunodeficiency virus pr...



Mononucleosis



⚠ Bacterial sepsis



16 CONSIDER 1st | 44 CONSIDER 2nd | 10 EMERGENCIES | 24 INFECTIOUS | 22 DRUG INDUCED | 60 VIEW ALL | PHOTOS

118 | 34 | 57 | 242 | 314 | 72









View All (118)

Scabies

A parasitic infestation resulting when the mite, *Sarcoptes scabiei var. hominis*, burrows into and just below the stratum corneum in the epidermis. It is transmitted most often via direct person-to-person contact and less frequently by fomites. Prevalence rates are higher in children, residents of long-term care facilities, and sexually active persons. A typical infestation has 10-20 mites over the entire skin, but most patients mount an intense hypersensitivity reaction resulting in a widespread and intensely pruritic skin eruption. The burrow of the female scabies mite is a fine, thread-like, serpiginous line with a terminal tiny (smaller than a pin head), black speck representing the mite itself.
More

See Full Article

Other Resources:

UpToDate PubMed

Matches 3 of 3 findings: Edit findings

- Multiple skin lesions ✓
- Scaly papule/plaque ✓
- Widespread distribution ✓

Pediculosis corporis



Exanthematous drug eruption



Urticaria



Human immunodeficiency virus pr...



Mononucleosis



▲ Bacterial sepsis



visualDx / Scabies

Sign In

Contents

- Synopsis
- Codes
- Look For
- Diagnostic Pearls
- Differential Diagnosis & Pitfalls
- Best Tests
- Management Pearls
- Therapy
- References

Information for Patients

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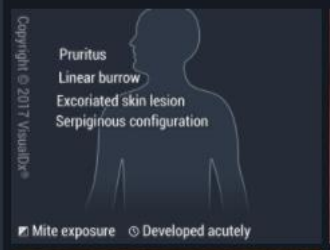
Other Resources

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Scabies

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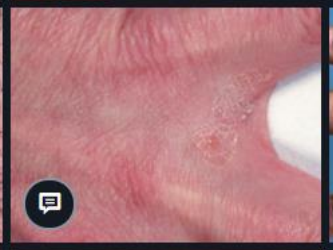




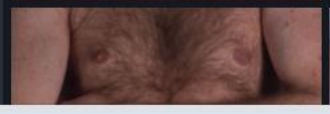




















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https://specialevents.nejm.org/impact-of-skin-color-and-ethnicity-on-clinical-diagnosis-and-research/



The Impact of Skin Color and Ethnicity on Clinical Diagnosis and Research

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4. Covid-19 Comorbidities and Cutaneous Manifestations of Systemic Diseases in Adults and Children: **Wednesday, December 2, 1:00-2:15 PM ET**