Top Dermatologic Issues in Primary Care

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EXPLORE HEALTHCARE SUMMIT

OU Health | Stephenson Cancer Center

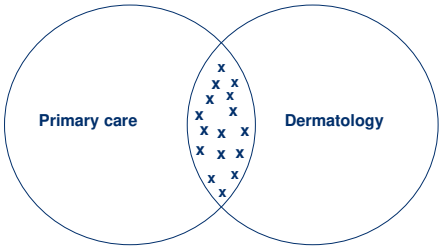
Disclosure

- I have served as a consultant for Castle Biosciences
- I have served as a consultant for Aegle Therapeutics

Goals of today's talk

- Emphasize dermatologic diagnoses in primary care setting
- NOT to review the entirety of relevant dermatology
- Emphasize the essential role of a biopsy in making a diagnosis

Scope of this talk



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Our why:

- **"Skin conditions are the most common reason for a new presentation to a primary care physician"***

*Roux E Le, Edwards PJ, Sanderson E, Barnes RK, Ridd MJ. The content and conduct of GP consultations for dermatology problems: A cross-sectional study. *Br J Gen Pract.* 2020;70(699):e723–30.

Grada et al. J Clin Aesthet Dermatol. 2022 May; 15(5): E82–E86.

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A quick tour through the world of dermatologic morphology

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What are the most common derm diagnoses in primary care?

Study in 2022: on the National Ambulatory Medical Care Survey (NAMCS) between 2007 and 2016, the most recent years available:

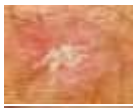
- The NAMCS is an ongoing survey which provides objective information about the use of ambulatory medical services in the United States.
- The survey is conducted annually by the National Center for Health Statistics (NCHS) at the Centers for Disease Control and Prevention (CDC).
- The NAMCS surveys a large, generalizable sample of physicians and non-physician providers and has achieved high response rates of up to 77%.

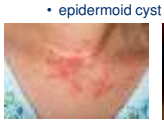
Ahn CS, Allen MM, Davis SA, Huang KE, Fleischer AB, Feldman SR. The National Ambulatory Medical Care Survey: A resource for understanding the outpatient dermatology treatment. J Dermatolog Treat. 2014;25(6):453–458.

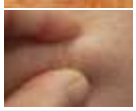
Arafa AE, Anzengruber F, Mostafa AM, Navarini AA. Perspectives of online surveys in dermatology. J Eur Acad Dermatol Venereol. 2019;33:511–520.

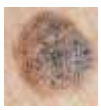
The most common skin diagnoses in primary care

- In the population-based, cross-sectional analysis using the National Ambulatory Medical Care Survey between 2007 and 2016:
  - The five most common skin diagnoses among all medical specialties were
    - contact dermatitis
    - acne vulgaris
    - actinic keratosis
    - “benign neoplasm” of the skin
    - epidermoid cyst









Other “Top” Dermatologic Issues *for* Primary Care

- Identify a skin malignancy
- Identify eczematous, psoriasiform, lichenoid, and drug-induced conditions
- Identify potential autoimmune connective tissue diseases
- Identify autoimmune bullous dermatoses

- Barriers to sampling the skin in primary care
  - Requires proper set up, equipment for procedures, photography/ triangulation of lesions, proper sample containers (ex. Michels media for direct immunofluorescence).

- Delay in referral / wait times for patients to be seen by dermatology
- Delay in diagnosis and treatment

A bit of a deeper dive into

The most common issues

- Acne vulgaris
- Epidermoid cyst
- "Benign" neoplasms of the skin
- Actinic keratosis
- Contact dermatitis

Other top issues

- Cutaneous malignancy
  - Basal cell carcinoma
  - Squamous cell carcinoma
  - Melanoma
- Refractory inflammatory dermatoses
  - Eczematous
  - Psoriasiform
  - Lichenoid
- Autoimmune connective tissue diseases
  - Ex. cutaneous lupus
- Autoimmune bullous diseases
  - Ex. bullous pemphigoid

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Acne vulgaris vs rosacea – diagnosis

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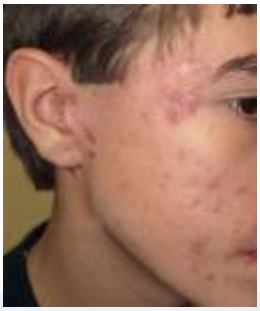
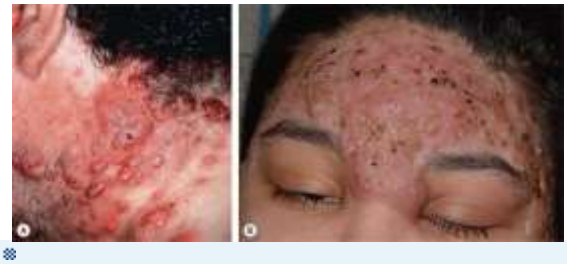
acne



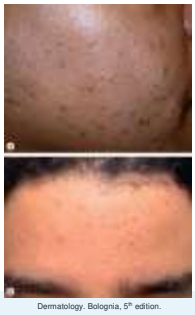
acne

Acne – severe, cystic



Acne

- Multifactorial of pilosebaceous unit
- Psychosocial impact
  - likelihood of self-consciousness, social isolation, anxiety disorders, depression, and even suicidal ideation
- Acne vulgaris affects ~40–50 million individuals each year in the US alone, leading to an estimated annual cost in the US of at least $2.5 billion
- peak incidence during adolescence, acne affects ~85% of young people between 12 and 24 years of age

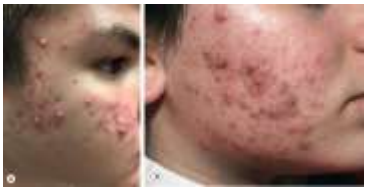


Dermatology. Bologna, 5th edition.

Risk factors for more severe acne

- Individuals at increased risk for the development of acne include:
  - those with an XYY karyotype
  - or endocrine disorders
    - Polycystic ovarian syndrome
    - Hyperandrogenism
    - Hypercortisolism
    - Precocious puberty

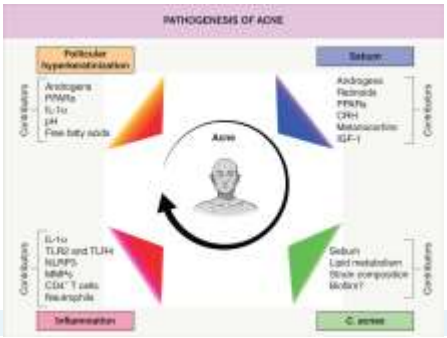
      Patients with these conditions tend to have more severe acne that is less responsive to standard therapy

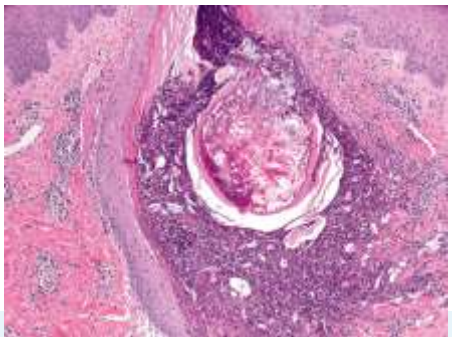


Genes found to have a possible link to acne via genome-wide association studies (GWAS) and other methods include those encoding components of the tumor transforming growth factor-β (TGF-β) pathway, other inflammatory mediators, and regulators of androgen metabolism

Dietary factors for acne?

- The relationship between diet and acne remains controversial.
- Several observational studies in different ethnic groups have found that the intake of milk, especially ***skim milk***, is positively associated with acne prevalence and severity.
- Exacerbation of acne with the use of ***whey protein supplements for bodybuilding*** has also been reported.
- ***Vitamin B12 supplementation*** can potentially trigger the development of acne or an acneiform eruption by altering the transcriptome of skin microbiota, leading to increased production of proinflammatory porphyrins by ***Cutibacterium acnes***.





Treatment of acne

Treatment of acne

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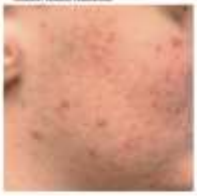

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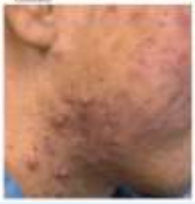
Treatment of acne



[illegible]	[illegible]	[illegible]

Birth control and acne

[illegible]

Oral contraceptive(s)	Estrogen (mcg)/progestin (mg)
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[illegible]	[illegible]
[illegible]	[illegible]
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Summary pearls (acne)

- Topical Rx (most common) – benzoyl peroxide, topical clindamycin, retinoid (adapalene, tretinoin, tazarotene)
- Oral Rx (most common) – Doxycycline, spironolactone or isotretinoin
- Prior to referral to dermatology
  - If isotretinoin candidate, discuss abstinence or birth control methods for people who can get pregnant
  - If suspect strong hormonal component, consider referral to endocrinology
    - Polycystic ovarian syndrome, Hyperandrogenism, Hypercortisolism, Precocious puberty

Acne vs Rosacea

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Acne vulgaris vs rosacea – treatment

Acne

- Daily wash with benzoyl peroxide-containing wash (Ex. CeraVe with benzoyl peroxide) or salicylic acid wash
- Topical clindamycin solution, gel, or lotion
- Daily retinoid (ex. OTC adapalene gel, or tretinoin creams) – a pea-sized amount only across entire face at night
- Oral medications: doxycycline 100 mg BID (or minocycline) for up to 1 month, can consider refills for flares
- Hormonal driven: start with spironolactone 50 mg daily, increase to 100 mg daily as tolerated (consider checking potassium; warn of side effects; not for use in woman trying to get pregnant)
  - Also consider topical Winlevi (clascoterone) – androgen receptor inhibitor

Rosacea

- Start topical metronidazole gel
  - If fails, consider topical ivermectin (Soolantra)
- Dermatologist: can perform lasers (example PDL to target hemoglobin in telangiectasias)
- Wash with sensitive skin cleaners (Cetaphil, CeraVe, Vanicream, etc).
- Can consider long-term, low dose doxycycline 50 mg daily, or 40 mg Oracea (slow-release)
- Can consider vasoconstrictors (topical brimonidine – a2 adrenergic receptor agonist)
- Identify and reduce triggers as much as possible (alcohol, spicy foods, heat, stress, etc)
- Refer to ophthalmology if ocular involvement

Isotretinoin for severe cases

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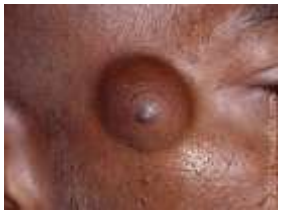
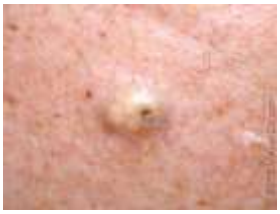
Epidermoid inclusion cysts - diagnosis

Beware of the "cyst" – if deeper with no punctum, it may not be a "cyst"

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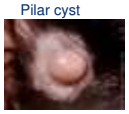
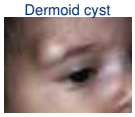
Epidermoid inclusion cysts - differential

Pilar cyst

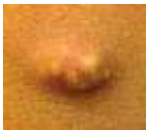


Dermoid cyst



Lipoma

Pilomatricoma



Ganglion cyst

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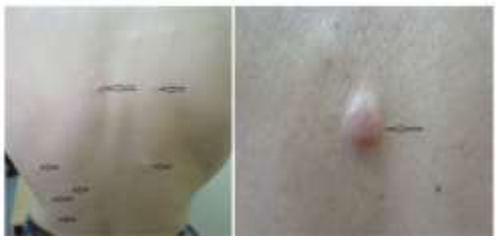
Cysts? Unfortunately not.



Pajaziti, L., Hapçiu, S.R., Dobruna, S. et al. Skin metastases from lung cancer: a case report. BMC Res Notes 8, 139 (2015). https://doi.org/10.1186/s13104-015-1105-0

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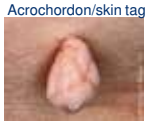
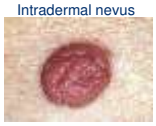
Benign neoplasms of the skin (examples)

Acrochordon/skin tag



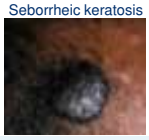
Intradermal nevus



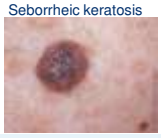
Dermatofibroma

Neurofibroma

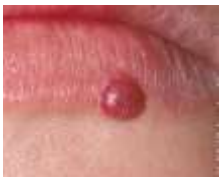
Seborrheic keratosis



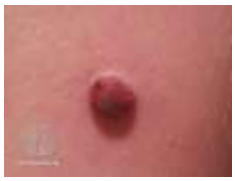
Seborrheic keratosis



"Pyogenic granuloma" (lobular capillary hemangioma) vs other?

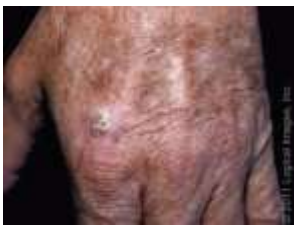


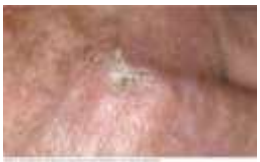
Lobular capillary hemangioma



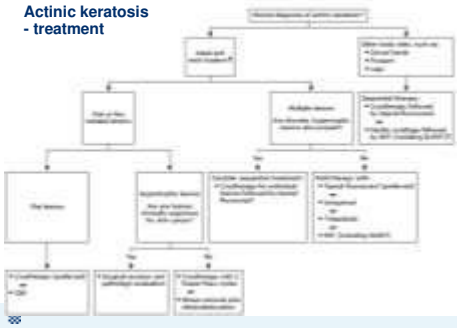
Spitzoid melanoma

Actinic keratoses





Actinic keratosis - treatment



In office treatment with liquid nitrogen

freezing time 5 to 10 seconds or more, depending upon lesion size and thickness, with the "ice ball" extending at least 1 mm beyond the clinical margin of the lesion

single freeze-thaw cycle is adequate for thin lesions, while a double freeze-thaw cycle is required for thicker lesions

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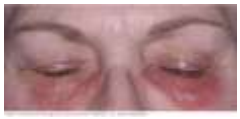
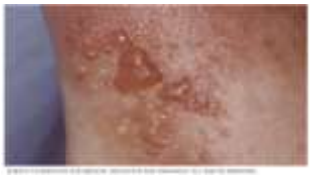
Contact dermatitis - diagnosis





- Common contact allergens include plant allergens, metals, fragrances, acrylates, medicaments, and preservatives.

History and geometric distribution are important

Useful resource: Contact Dermatitis Institute (www.contactdermatitisinstitute.com)

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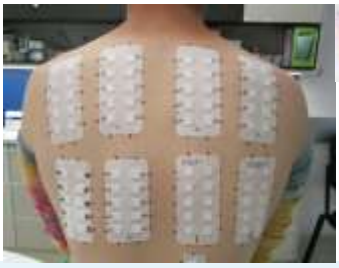
Contact dermatitis – treatment/ avoidance



www.contactdermatitisinstitute.com

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The other "Top" issues

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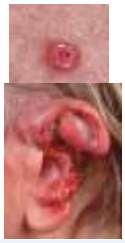
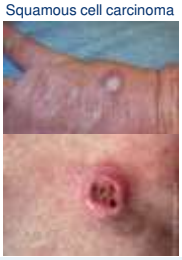
Skin cancer – The "big 3" – diagnosis - clinical

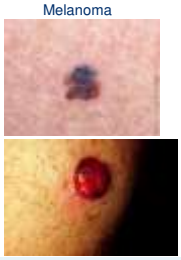
Basal cell carcinoma



Squamous cell carcinoma



Melanoma



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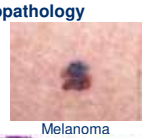
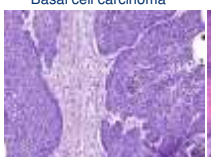
Skin cancer – The "big 3" – diagnosis - dermatopathology

Basal cell carcinoma

Squamous cell carcinoma

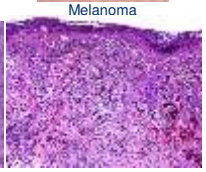
Melanoma





Ber-EP4+

P40 +, Ber-EP4 -



Sox-10+, PRAME+

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Skin cancer/BCC - treatment

Appropriate Use Criteria for Mohs

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Skin cancer/SCC - treatment

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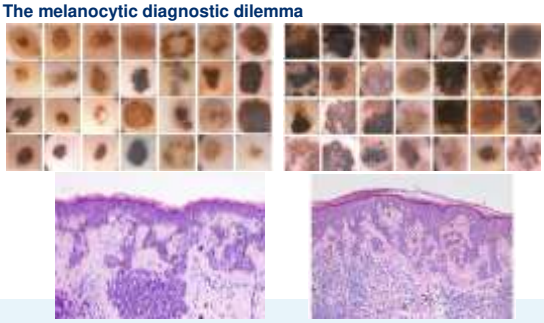
The melanocytic diagnostic dilemma



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Melanoma- staging

Definition of Primary Tumor (T) - AJCC 8th Edition

T Category	Thickness	Ulceration status
Tis (melanoma in situ)	Not applicable	Not applicable
T1	≤1.0 mm	Unknown or unspecified
T1a	<0.8 mm	Without ulceration
T1b	<0.8 mm 0.8–1.0 mm	With ulceration With or without ulceration
T2	>1.0–2.0 mm	Unknown or unspecified
T2a	>1.0–2.0 mm	Without ulceration
T2b	>1.0–2.0 mm	With ulceration
T3	>2.0–4.0 mm	Unknown or unspecified
T3a	>2.0–4.0 mm	Without ulceration
T3b	>2.0–4.0 mm	With ulceration
T4	>4.0 mm	Unknown or unspecified
T4a	>4.0 mm	Without ulceration
T4b	>4.0 mm	With ulceration

Melanoma- treatment

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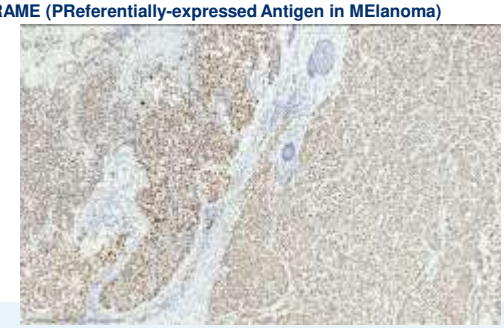
PRAME (PReferentially-expressed Antigen in MElanoma)



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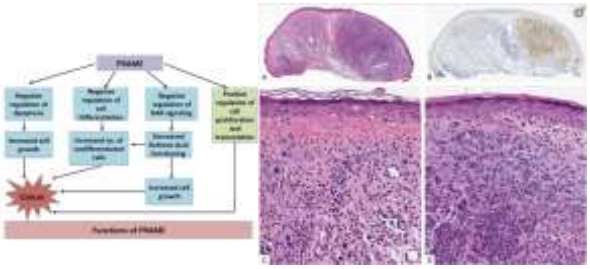
PRAME in melanoma



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Eczematous vs psoriasiform vs lichenoid - diagnosis

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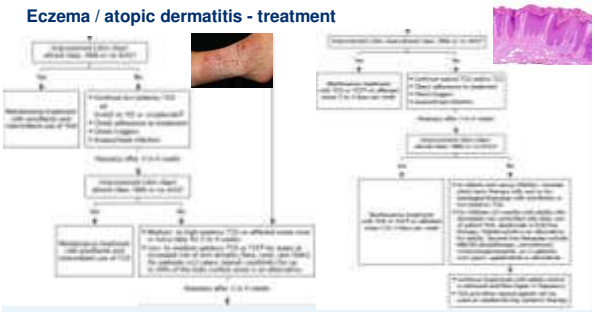
Eczema / atopic dermatitis - treatment



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Top pediatric dermatology issues

Chronic or Severe Eczema (Atopic Dermatitis)

Chronic or Difficult-to-Treat Acne

Psoriasis

Chronic Urticaria

Vascular Birthmarks and Hemangiomas

Pigmented Lesions and Nevi

Suspected Skin Infections

Rare or Unusual Skin Conditions:
- Uncommon genetic or autoimmune skin disorders (e.g., epidermolysis bullosa, ichthyosis, lupus).

Alopecia (Hair Loss):

Hyperpigmentation or Hypopigmentation Disorders:

Genodermatoses

Atopic dermatitis

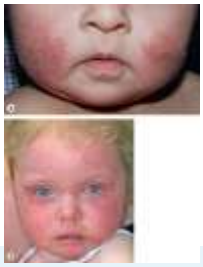
Trimodal distribution in atopic dermatitis

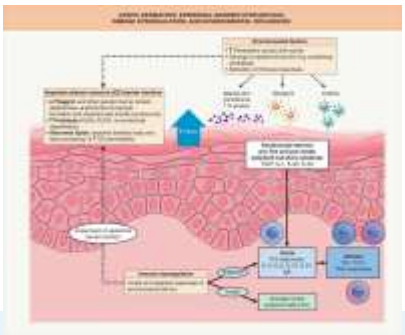
- early-onset AD:
  - defined as AD beginning in the first 2 years of life
  - most common type of AD - first 6 months of life in 45% of affected individuals, during the first year of life in 60%, and before 5 years of age in 85%.
  - Approximately half of children with disease onset during the first 2 years of life develop allergen-specific IgE antibodies by 2 years of age
  - About 60% of infants and young children with AD go into remission by 12 years of age, including a group with resolution by 4–6 years of age
- late-onset AD: starts after puberty

  Approximately 30% of AD patients overall are in the non-IgE-associated category
- AD in the elderly: a subset of AD that begins after 60 years of age

Atopic dermatitis (“eczema”)

- Atopic dermatitis (AD) is the most common chronic inflammatory skin disease, and its increasing prevalence presents a major public health problem worldwide
- Characteristic features of AD include pruritus and a chronic or chronically relapsing course, usually beginning during infancy (early onset) but occasionally first developing in adulthood (late onset)

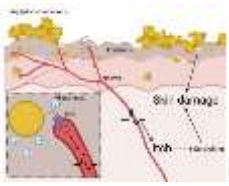




Staph in atopic dermatitis

- IL-31 is a Th2 cytokine that is highly expressed in lesional skin and serum of patients with AD as well as in other pruritic skin disorders such as prurigo nodularis.
- Cutaneous exposure to staphylococcal superantigen rapidly induces IL-31 expression in atopic individuals, establishing a link between staphylococcal colonization of the skin and pruritus.
- The heterodimeric receptor for IL-31 is expressed by keratinocytes, eosinophils, activated macrophages, cutaneous C nerve fibers, and dorsal root ganglia

- Staphylococcus aureus *colonization* of the skin affects lipid composition and contributes to epidermal barrier impairment
- The S. aureus extracellular V8 protease, which has a sequence similar to those of S. aureus exfoliative toxins, is also thought to degrade Dsg1

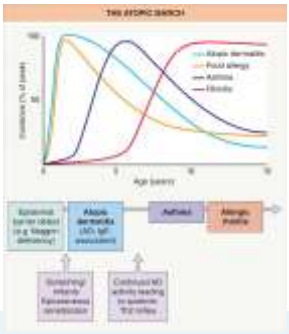


Microbiome in atopic dermatitis

- More than 90% of patients with AD have skin colonized with S. aureus, compared to about 5% of unaffected individuals, presumably reflecting the disrupted acid mantle, decreased antimicrobial peptides (e.g. cathelicidins, defensins), and altered cytokine milieu of AD skin.
- During AD flares, bacterial diversity decreases and the proportion of the microbiome accounted for by Staphylococcus spp. increases from ~35% to ~90%. Conversely, normalization of the microbial population correlates with clinical improvement in AD.
- Superantigens can promote the development of a Th2 immune response, and exotoxins with superantigenic properties are produced by up to 65% of the S. aureus strains that colonize AD patients.
- Compared to unaffected controls, an IgE response to the S. aureus superantigens enterotoxin A and enterotoxin B occurs more frequently in patients with AD. The S. aureus δ-toxin also stimulates mast cell degranulation and Th2 inflammation.

Microbiome in atopic dermatitis

- In addition, filaggrin deficiency increases the susceptibility of keratinocytes to S. aureus α-toxin-induced cytotoxicity. Lastly, Malassezia spp. may also contribute to inflammation in AD, and adults with severe head and neck disease often display IgE reactivity to Malassezia antigens.
- Alterations in the skin microbiome of AD patients related to the use of cleansers and topical immunomodulatory or antimicrobial agents may have potential effects on cutaneous inflammation and barrier function.
- Topical administration of coagulase-negative Staphylococcus strains with antimicrobial activity or the Gram-negative commensal Roseomonas mucosa has been shown to markedly reduce S. aureus colonization in AD patients.
- R. mucosa application was also associated with decreased AD severity and topical corticosteroid requirement, providing the basis for bacteriotherapy as a potential AD treatment.
- In addition, treatment with UVB has been shown to reduce S. aureus colonization of the skin in AD patients.



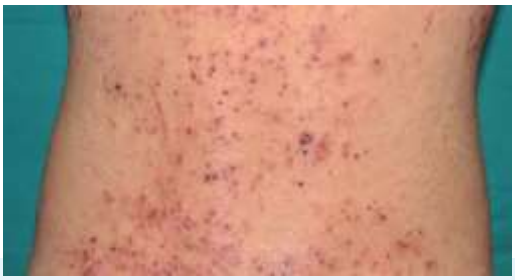
Genetics and AD

SELECTED CANDIDATE GENES FOR ATOPIC DERMATITIS	
Candidate gene(s)	Defective protein(s)
Genes encoding epidermal proteins	
FLG	Filaggrin (loss-of-function variants; ancient)
FLG2	Filaggrin family member 2
SPINK5	Serine protease inhibitor LETI
KLK5/KLK7, KLK5/SCTE	Stratum corneum tryptic/chymotryptic enzymes
CLDN1	Claudin-1
SPRR3	Small proline-rich protein 3
TMEM79	Transmembrane protein 79 (matted)
KIF3A	Kinesin family member 3A
Genes encoding immunologic proteins	
FCER1A	Fc fragment of IgE, high affinity I, receptor for; α chain
TLR2, 4, 6, 9	Toll-like receptor 2, 4, 6, and 9
IRF1	Interferon regulatory factor 1
IL4, 5, 10, 13, 18, 31	Interleukin 4, 5, 10, 13, 18, and 31
IL4Rα, IL7Rα, IL13Rα1	Interleukin 4, 7, and 13 receptor, α subunits
GM-CSF	Granulocyte-macrophage colony-stimulating factor
CD14	Monocyte differentiation antigen CD14
DEFB1	β-defensin 1

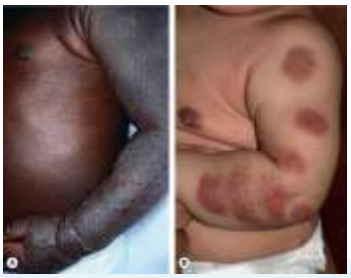
Genetic associations with atopic dermatitis (continued)

GSTP1	Glutathione S-transferase P1
CMA1	Mast cell chymase
CCL5/RANTES	Chemokine (C-C motif) ligand 5/RANTES
TSLP	Thymic stromal lymphopoietin
CARD11, CARD14	Caspase recruitment domain family members 11 and 14
ALOX	Keratin
MIF	Macrophage migration inhibitory factor
VDR	Vitamin D receptor
CYP27A1, CYP24A1	Cytochrome p450 family members 27A1 and 24A1

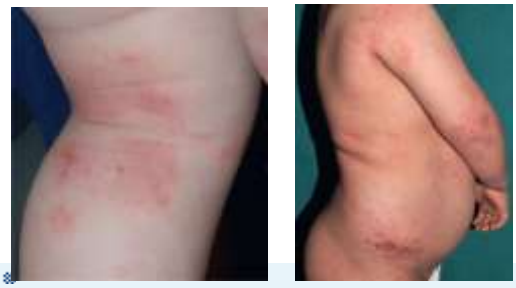
Common presentation in atopic dermatitis



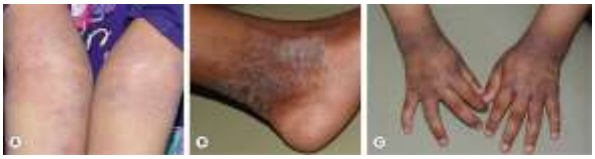
Variation in clinical presentation



Atopic dermatitis

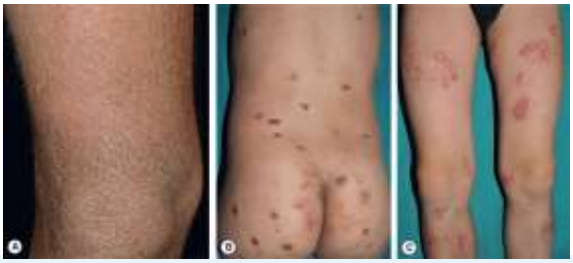


Chronic atopic dermatitis, lichenification

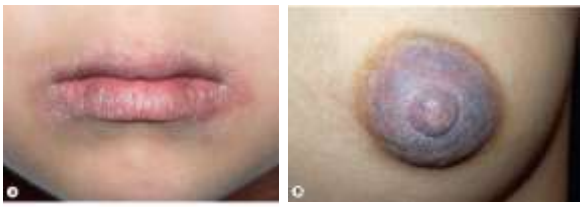


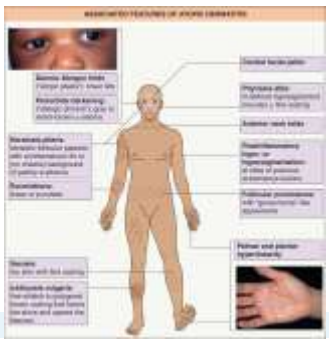
Atopic dermatitis - lichenification

Variation in atopic dermatitis



Other common sites of involvement



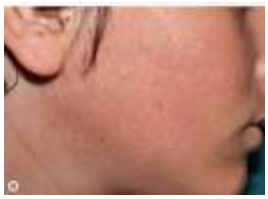


Triggers/exposures in atopic dermatitis

Triggers

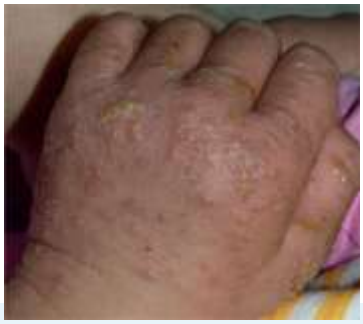
- Climate: extremes of temperature (winter or summer), low humidity
- Irritants: wool/rough fabrics, perspiration, detergents, solvents
- Infections: cutaneous (e.g. *Staphylococcus aureus*, molluscum contagiosum, herpes simplex) or systemic (e.g. URI)
- Environmental allergies: e.g., to dust mites, pollen, contact allergens
- Food allergies
- Trigger in small minority of AD patients, e.g. 10%–30% of those with moderate to severe, refractory AD
- Common allergens: egg > milk, peanuts/tree nuts, (shellfish, soy, wheat
- Detection of allergen-specific IgE (via blood and skin prick tests) does not necessarily mean that allergy is triggering the patient's AD

Keratosis pilaris co-existence with atopic dermatitis

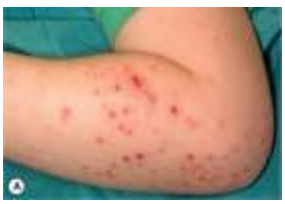


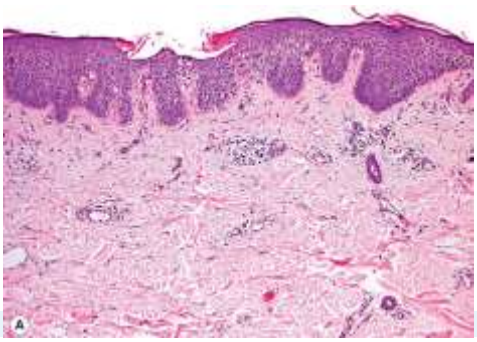
Pityriasis alba

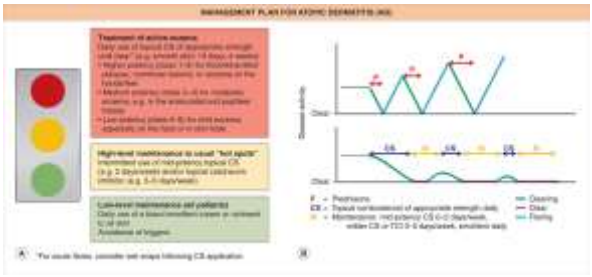
Superinfection



Eczema herpeticum





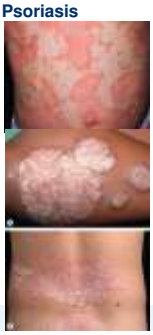

MANAGEMENT PLAN FOR ATOPIC DERMATITIS (AD)
Treatment of active eczema
High-level maintenance to usual "best again"
Low-level maintenance set point(s)
Disease activity
Clear
Clear
Clearing
Clear
Flaring


THERAPEUTIC LADDER FOR ATOPIC DERMATITIS (AD)

My checklist in atopic dermatitis treatment

- 1. Skin cleanser
- 2. Detergent type
- 3. Anti-staph/bacterial strategy; “microbiome” strategy
- 4. Anti-inflammatory strategy
- 5. Emollient strategy
- 6. Anti-itch/pruritus strategy

Psoriasis



Labs: CBC, CMP, Hep panel, Quant TB

Biologics

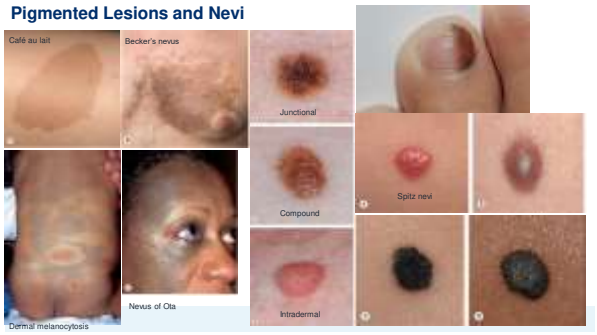
- Etanercept (anti-TNF): Approved for people 4 years and older
- Ustekinumab (anti-IL-12/23): Approved for people 12 years and older
- Secukinumab (anti-IL-17): Approved for people 6 years and older
- Ixekizumab (anti-IL-17): Approved for children 6 years and older
- FDA Approves Arcutis’ ZORYVE® (roflumilast) Cream 0.3% for Treatment of Psoriasis in Children Ages 6 and older

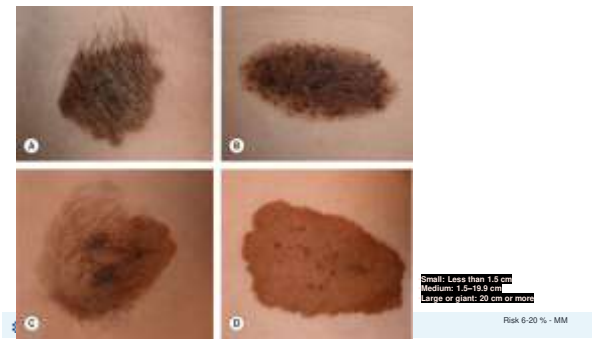
Chronic Urticaria

Labs: IgE levels; tryptase levels

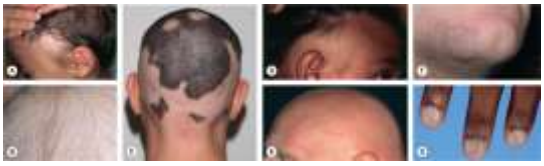
Vascular Birthmarks and Hemangiomas

Pigmented Lesions and Nevi





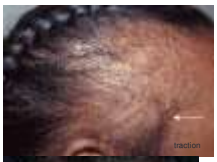
Alopecia (Hair Loss):



Alopecia areata

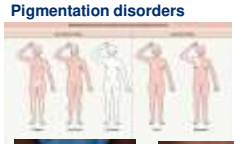
- JAK inhibitors are making waves.
- Ritlecitinib (Litfulo) has been drastic in improving in our patient population

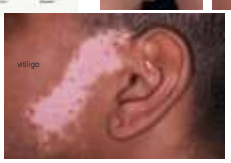
*Beware of syphilis

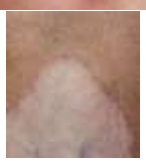


trichotillomania

Pigmentation disorders



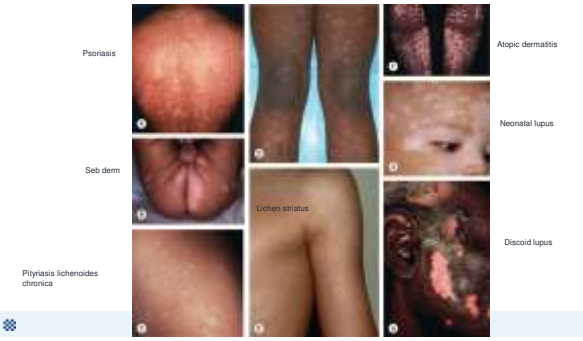




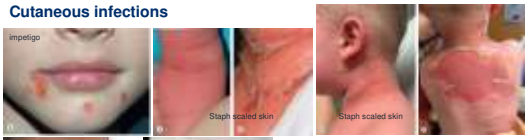
- ruxolitinib cream or by its brand name Opzelura, is the first and only FDA-approved topical JAK inhibitor for treating vitiligo in people ages 12 and older.

Linear nevoid hypopigmentation

Nevus depigmentosus



Cutaneous infections



Paronychia (staph)

abscess

Peri-anal strep

Necrotizing fasciitis (Grp A b-hem strep)

Overall pearls prior to referral

- History in referral (duration, associated symptoms, previous treatments, family history)
- Photography in referral (far away and close up); measurement of sizes of lesion serves as comparison and can help determine growth
- Treatments: including OTC or at-home remedies, along with Rx treatments
- Consider hormonal imbalance as contributing factors (endocrinology)
- Birth control discussion prior to isotretinoin referral vs abstinence

Psoriasis – treatment - biologics

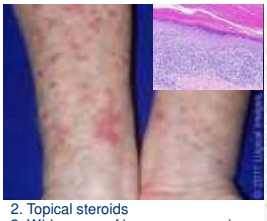
https://www.skintherapyletter.com/psoriasis/education-tool-biologics/ 92

Psoriasis – treatment - biologics

https://www.skintherapyletter.com/psoriasis/education-tool-biologics/ 93

Drug-induced lichenoid dermatitis – treatment

1. Eliminate potential drug causes



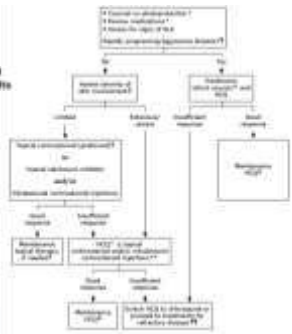
2. Topical steroids
3. Wide range of immunosuppresives

Autoimmune connective tissue disease - diagnosis

Acute cutaneous lupus | Subacute cutaneous lupus | Discoid lupus | Tumid lupus

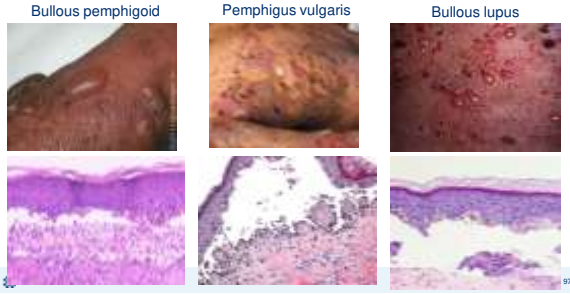
Autoimmune connective tissue disease - treatment

Management of discoid lupus erythematosus and subacute cutaneous lupus erythematosus in adults



Autoimmune bullous dermatoses, examples - diagnosis

Bullous pemphigoid | Pemphigus vulgaris | Bullous lupus



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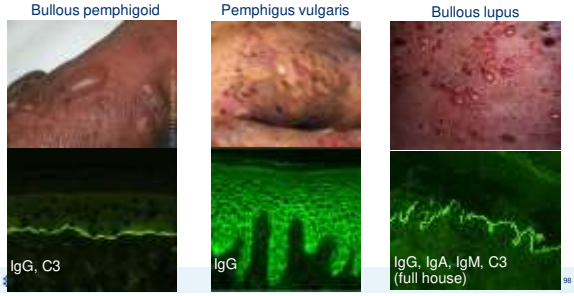
Autoimmune bullous dermatoses, examples - diagnosis

Bullous pemphigoid | Pemphigus vulgaris | Bullous lupus



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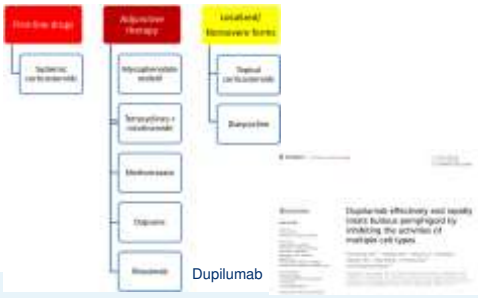
Treatment – autoimmune bullous disease – BP as an example



Dupilumab

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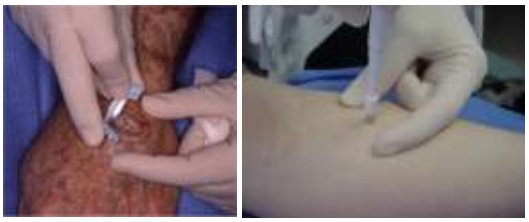
Basic dermatologic procedures

Shave biopsy **Punch biopsy**



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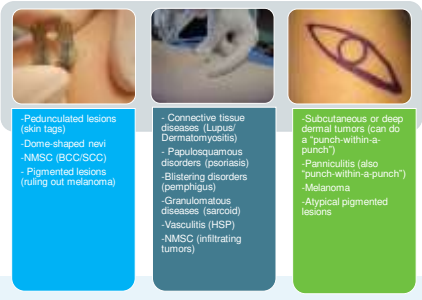
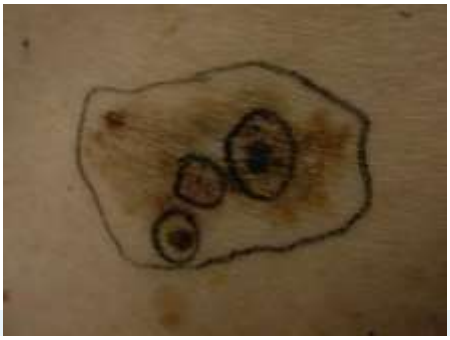
Types of Biopsies and Indications





Biopsy Site Selection

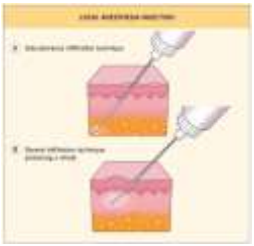
BIOPSY SITE SELECTION	
Lesion/disorder	**Appropriate site**
Tumor	Thickest portion; avoid necrotic tissue
Blister	Edge of lesion, including perilesional skin (see Fig. 0.11)
Ulcerated/necrotic lesion	Edge of ulcer or necrosis plus adjacent skin
Generalized polymorphous eruption	Characteristic lesion of recent onset (± more developed lesion)
Small vessel vasculitis	Characteristic lesion of recent onset

Patient Preparation

- Determine the type of biopsy
- Informed consent: bleeding, discomfort, infection, and scarring
- Site preparation:
  - Identification and marking
  - Time Out
  - Photograph
    - Close up for lesional details
    - Distant for identification of landmarks

Anesthesia Techniques

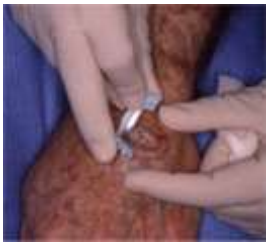
- Lidocaine 1% with or with out epinephrine
- Small lesions: direct infiltration of anesthetic into lesion
- Larger lesions: a field block by placing a ring of anesthesia around surgical site
- Bevel up
- Use small gauge needle (30), insert quickly at a 45° angle
- Slow injection to create an intradermal wheal, then may proceed to subcutaneous injection depending on shave vs. punch
- Additional sticks should be done through areas that are already numb
- Use smaller syringes – require lower pressure for injection
- Warm anesthetic to body temperature
- Slow injection
- Verbal and tactile distraction



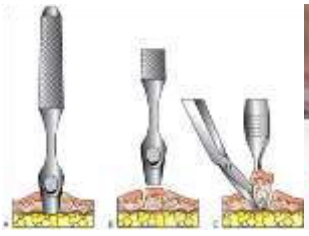
Bolognia et al. Dermatology

Patient Preparation Continued

- Prep
  - ETOH swab
  - Iodine
  - Chlorhexidine
- Anesthesia
  - Plane of injection
- Procedure
  - Hemostasis: Aluminum chloride, hemostatic sponge, compression, cautery, suture, ferric subsulfate
  - Label specimen bottle with formalin

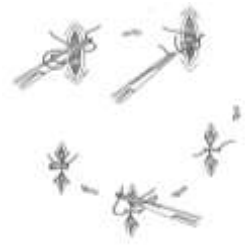


Punch Biopsy



Instrument tie

- Needle holder is held parallel to the wound incision
- Needle end of suture is looped twice around the holder before grasping the free end of suture
- The free and needle end of the suture exchange sides across the wound
- Additional throws are done in a similar manner, except with one loop



Biopsy for direct immunofluorescence

Elston DM, Stratman EJ, Miller SJ. Skin biopsy: Biopsy issues in specific diseases.

J Am Acad Dermatol. 2016 Jan;74(1):1-16; quiz 17-8. doi: 10.1016/j.jaad.2015.06.033.

Billing/coding

Code	Description
11102	Tangential biopsy of skin (e.g., shave, scoop, saucerize, curette) single lesion
+11103	each separate/additional lesion (List separately in addition to code for primary procedure)
11104	Punch biopsy of skin (including simple closure, when performed) single lesion
+11105	each separate/additional lesion (List separately in addition to code for primary procedure
11106	Incisional biopsy of skin (e.g., wedge) (including simple closure, when performed) single lesion
+11107	each separate/additional lesion (List separately in addition to code for primary procedure)

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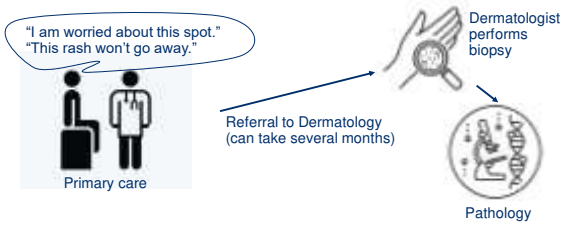
Dermatology in the Primary Care Setting

Primary care providers are in a prime position to take care of dermatologic issues.



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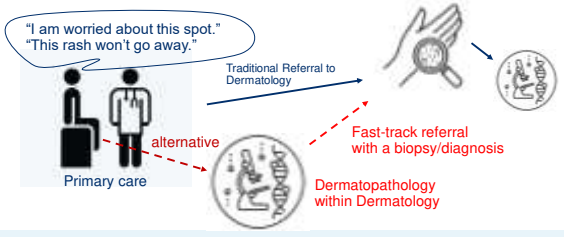
Dermatology in the Primary Care Setting

Primary care providers are in a prime position to take care of dermatologic issues.



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Thank you for your attention.

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Contact Dermatitis Institute (www.contactdermatitisinstitute.com

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