


**Atopic Dermatitis: Treatment and care**

**Victor Czerkasij,**  
DNP, APRN-BC, FNP-C

1



**Victor Czerkasij**  
DNP, MSN, MA, FNP-C

---

**Faculty,** Fitzgerald Health Education Associates, Lawrence, MA  
**Doctor of Nursing Practice,** Skin Cancer & Cosmetic Dermatology, PC. Cleveland and Chattanooga, TN  
**Adjunct Associate Professor,** Southern Adventist University, Collegedale, TN  
**Editorial Board,** *The Nurse Practitioner Journal*

2

**Disclosures**

- Speaker's Bureau for Abbvie, Beiersdorf, Eli Lilly, Janssen, Sanofi Genzyme, Sanofi-Aventis/Regeneron®, and Sun Pharma
- Strategic Advisor and Medical Board Member: Arcutis Biotherapeutics, Incyte Labs, Leo Pharma, and Novartis.
- No experimental or investigational use of drugs or devices will be presented.

3


**Objectives**

- At the end of this presentation, the participant will be able to:

1. Recognize symptoms and causes of atopic dermatitis.
2. Review the tests and exams necessary for immediate treatment, diagnosis and care.
3. Outline and implement follow-up care.
4. Demonstrate understanding of recent updates on the latest research, trials, and interventions.

4

### Tips



- References
  - Listed throughout and at the end of the presentation
- To facilitate your learning
  - Specific tables/images can be viewed full page at the end of your handout.

5

### Classic Atopic Dermatitis



Image source: Heilman, J. (2010). Atopy. <https://commons.wikimedia.org/wiki/index.php?curid=10428479> | CC BY-SA 3.0.

6

5

6

### Atopic Dermatitis: Sometimes Obvious, Other Times a Bit Faint




Image sources: Used with permission from Czerkasj, V.

7

7

### A Brief Introduction to Atopic Dermatitis (AD)

- One of the most common chronic skin disorders in America affecting nearly 30% of people with past history or current AD.
- Prevalence of this condition has risen dramatically during the last three decades.
- Affected 7% of children circa 1960, but 25% today
- 35 million Americans have active AD, and the incidence continues to grow.

8

8

### The Severity of Atopic Dermatitis



Image source: Used with permission from Czerkasij, V.

Service Date: 01/13/2022

9

9

### Atopic Dermatitis in Children – Face



Image source: Used with permission from Czerkasij, V.

10

10

### Atopic Dermatitis Notes from the World

- Prevalence of AD is very high world-wide.
- Often associated with asthma, allergic rhinitis and food allergies
- The strongest genetic risk factor for developing AD is in European-descent peoples; but African-Americans tend to have the most serious cases.
- Black children have higher risk for asthma and lower risk of allergic rhinitis and food allergy; while completely opposite for White children.

11

11



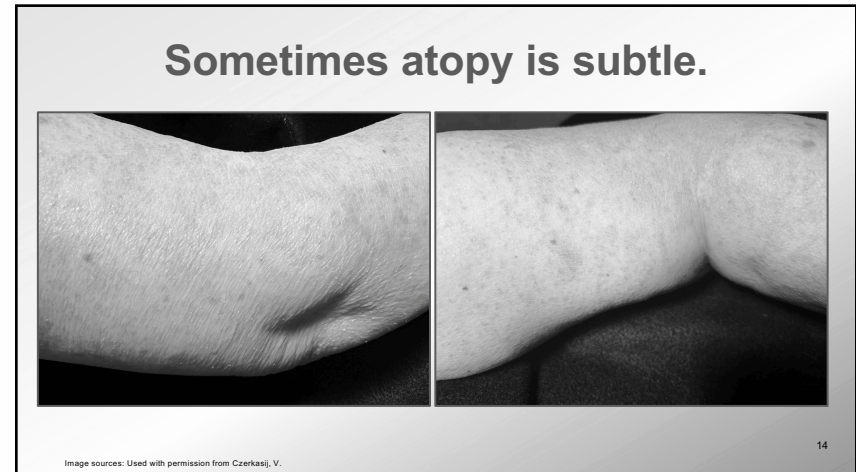
Image source: (2011). Dermatitis of the eyelids. Hellenic Dermatological ATLAS. For Health professionals and public. <http://www.hellenicdermatas.com/en/viewpicture/2801/>

12

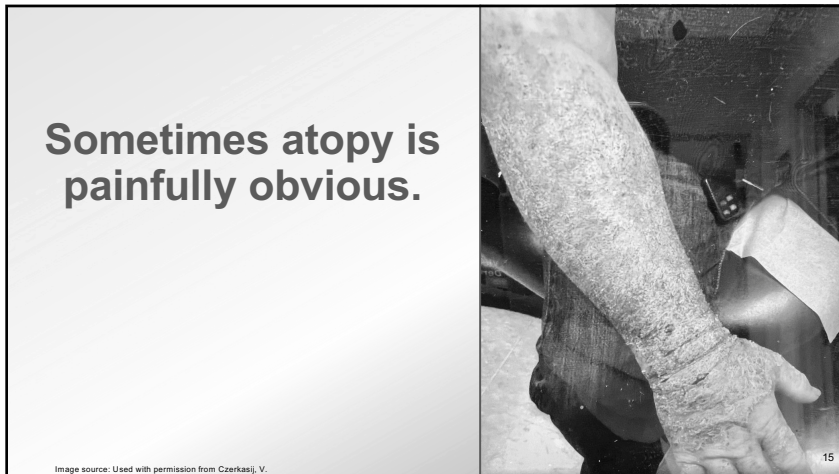
12



13



14



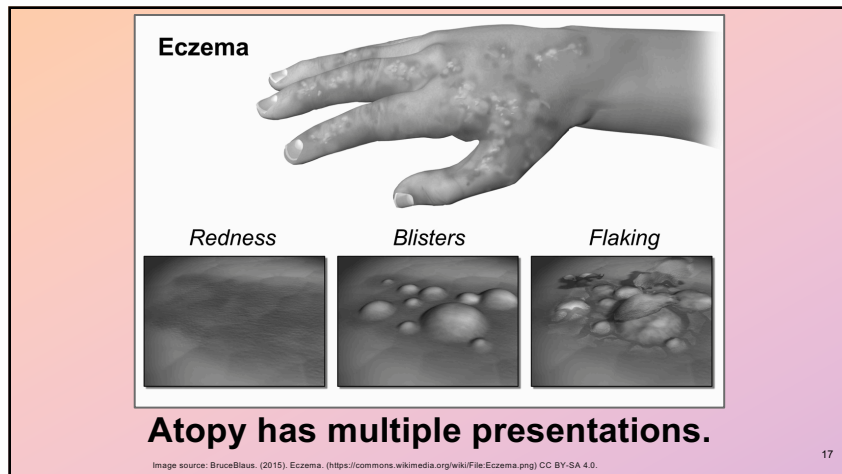
15

### The Official Definition

- A genetically predisposed condition manifesting as exaggerated responses (vasodilation, pruritus, bronchoconstriction, IgE production) to environmental stimuli (irritants, allergens, drugs) predominately in the integument
- In dermatology, we believe that this is “asthma of the skin”, or a cutaneous manifestation of deeper, systemic, inflammatory responses either endogenous/exogenous, or a combination of both.

16

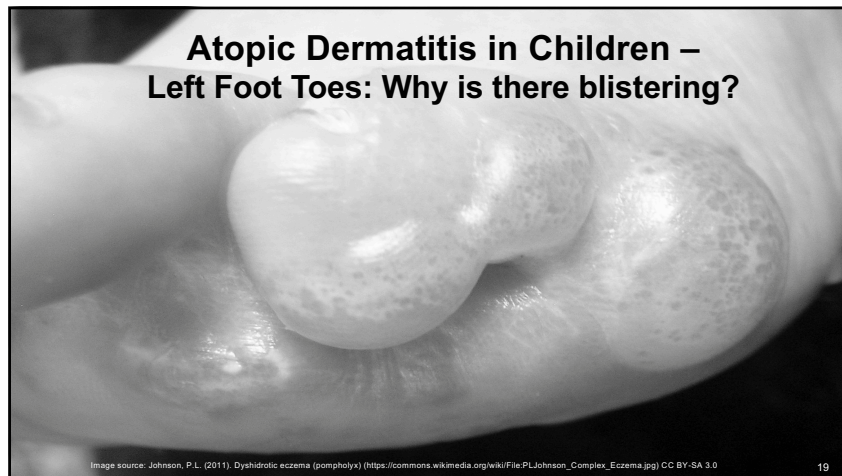
16



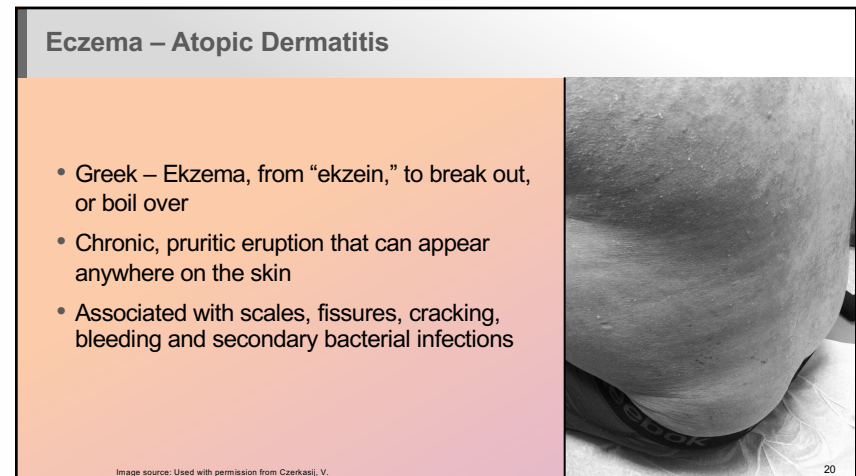
17



18




19



20

### 1933 Wise and Sulzberger



- Introduced the new term and concept of atopy, “out of place” or “strange”
- They observed a connection with asthma, hay fever and food allergies.

Image source: Jambula at English Wikipedia. (2006). Eczema-arms (https://commons.wikimedia.org/wiki/File:Eczema-arms.jpg) In the public domain.

21

21

### Major Features of Atopic Dermatitis

- Intense pruritus
- Primarily the facial and bilateral involvement of extensors
- Chronic, relapsing
- Personal and family history
- Heavy scale, micro blisters, irregular borders
- Skin texture and color changes

22

22

### Left Foot, Atopic Dermatitis

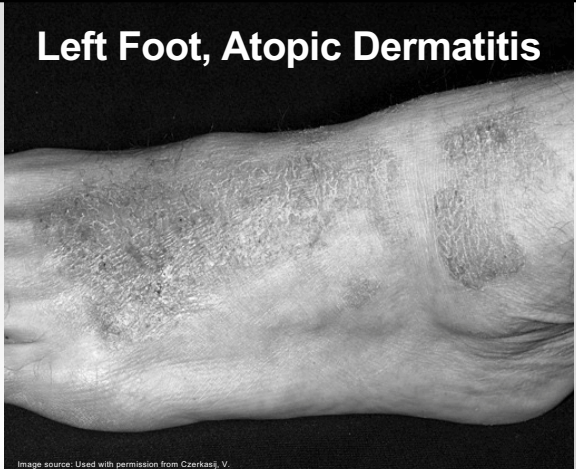


Image source: Used with permission from Czerkaski, V.

23

23

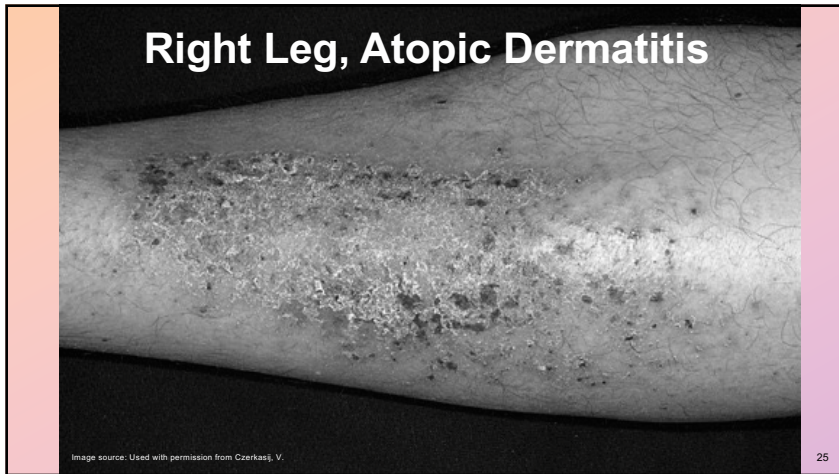
### Multiple Forms of Atopic Dermatitis

- Keratosis pilaris
- Nummular eczema
- Eczema herpeticum
- Dishydrotic dermatitis
- Discoid dermatitis
- Venous (stasis) dermatitis
- Lichen simplex dermatitis
- Id reactions
- Prurigo nodularis (neurotic excoriation)

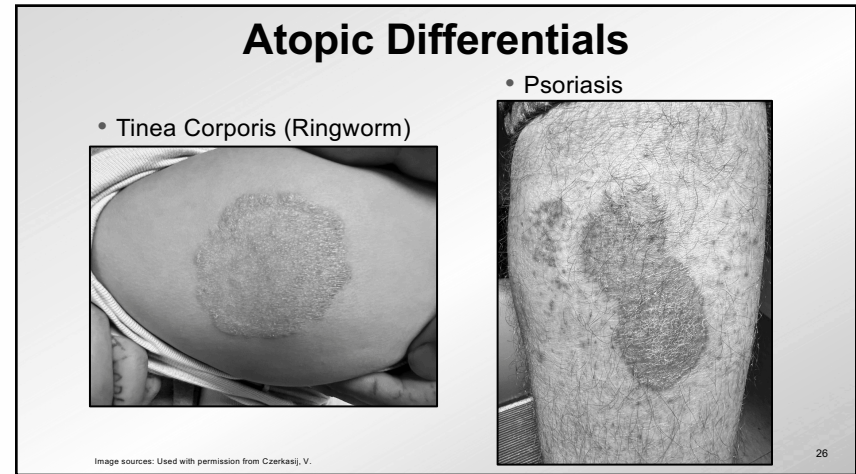
Image source: QuarterNotes. (2020). Keratosis pilaris. (https://commons.wikimedia.org/wiki/File:Keratosis\_pilaris\_(moderate).jpg) CC BY-SA 4.0

24

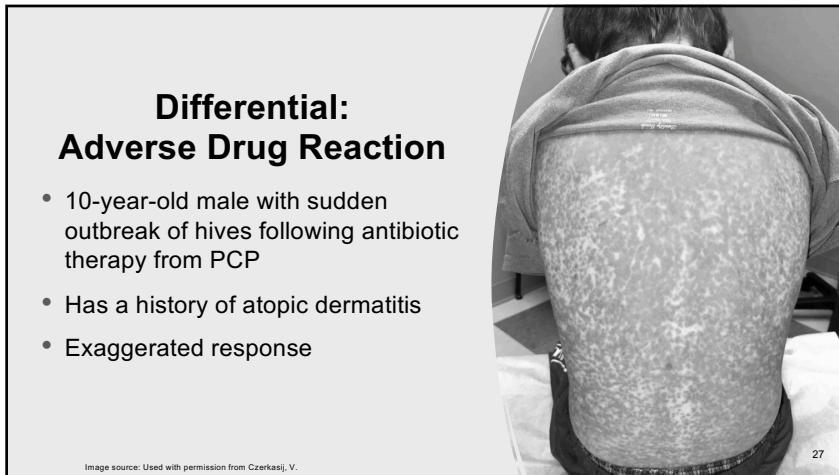
24



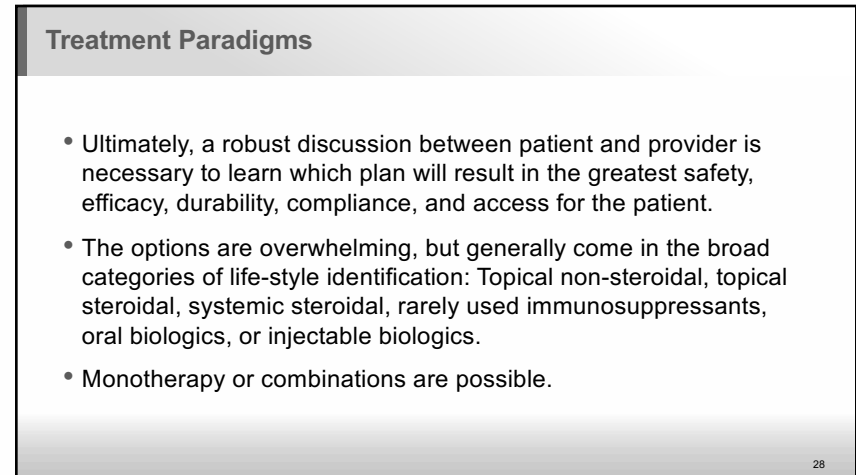
25



26



27



28

**Many atopic dermatitis cases require attention to detail and only OTC care.**

- Cooler, quicker showers
- Moisturizing cleansers and soaps
- Use OTC lotions, creams, and ointments within 3 minutes after a shower to trap residual moisture.
- Look up the “3-minute rule” and other great resources at the National Eczema Association website: <https://nationaleczema.org>

29

29

**Many atopic dermatitis cases require attention to detail and only OTC care. (continued)**

- Look for products that contain ceramides, oatmeal, filaggrin, dimethicone, petrolatum, glycerin, and humectants.
- Products that are dye-free, PABA-free, paraben-free, fragrance-free, and are labelled as hypo-allergenic are generally well-tolerated.
- Patients sometimes appreciate lifestyle changes first.

30

30

**Many atopic dermatitis cases require attention to detail and only OTC care. (continued)**

- To prevent eczema flares, the Barrier Enhancement for Eczema Prevention (BEEP) trial did not show that use of OTC moisturizers or bathing prevented the development of eczema in infants, but patients did not worsen when compared to those who avoided moisturizers and bathing.

31

31

**Classic Irritants**

- Alcohol-based hand gels
- Repeated washing of hands
- Strong soaps, detergents, disinfectants and home remedies
- Occupational settings
- Residual laundry detergents
- Nickel
- Neomycin topical ointment

32

32



## Derm drama can be found everywhere.

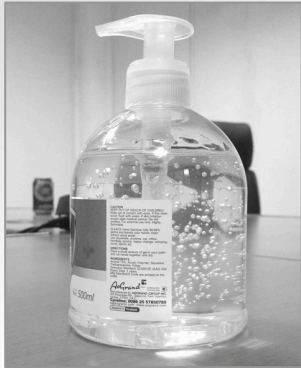


Image source: Adocam. (2020). ([https://commons.wikimedia.org/wiki/File:COVID-19\\_aui\\_Benin\\_facons\\_de\\_get\\_hydroalcoolique\\_sur\\_une\\_table1.jpg](https://commons.wikimedia.org/wiki/File:COVID-19_aui_Benin_facons_de_get_hydroalcoolique_sur_une_table1.jpg)) CC BY-SA 4.0



Image source: (2020). Laundry detergent. ([https://en.wikipedia.org/wiki/Laundry\\_detergent](https://en.wikipedia.org/wiki/Laundry_detergent)) CC BY-SA 4.0

33

33

## The Bleach Bath Controversy

- On the “pro” side, ¼ cup to forty gallons (59.1 mL–151.4 L) seem to seriously lessen MRSA infections and result in clearer skin.
- On the “con” side, limited studies, can cause serious irritation to some, and odor is repulsive.
- The American Academy of Dermatology no longer recommends.
- The opinion is that some individuals may have low-level staph colonization on their skin excreting irritating toxins, and the diluted bleach may destroy this bacteria.

34

34

## Wet Wrap Therapy

- Generally effective approach of wrapping a person’s body in cool, wet towels to relieve itching, burning, and inflammation
- Facilitates removal of scale
- Increases penetration of topical medication in stratum corneum: “soak and seal”
- Best reserved for acute episodes
- Inexpensive, safe, and absolutely organic
- Time-consuming and inconvenient

35

35

## Wet-Wrap Therapy

- Details from a spa in Hot Springs Arkansas
- The wooden object over the tub is to help handicapped or obese people to enter the bathtub.
- Also known as a “Hubbard” tub

Image source: Beckers, W. (2006). Hydrotherapy. (<https://en.wikipedia.org/wiki/Hydrotherapy>) GNU Free Documentation License v 1.2



36

36

### Phototherapy

- Controversial in studies – While sunlight is somewhat beneficial, heat and humidity trigger exacerbations for many patients.
- Erythema, skin pain, pruritus and irregular pigmentation results
- Very difficult to find this therapy
- Insurance usually does not reimburse.
- Different wavelength from psoriasis treatment

37

37

### Irritant Management

- Swimming hydrates skin.
  - Chlorinated pools have been observed as helpful as bleach baths.
- Consider whole house humidifiers: Optimal setting at 40–60% humidity
- Where possible, swimming until the skin has lightly “pruned,” or wrinkled, is evidence of maximum water absorption.
- “I went to Florida, and my eczema disappeared!”

38

38

### Sleep quality disturbance in children with atopic dermatitis affects quality of life for all.

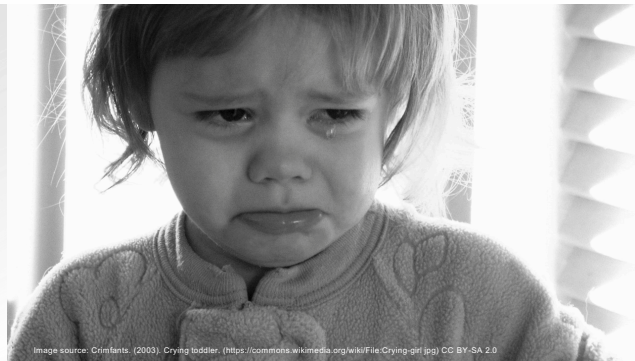


Image source: Crimfants. (2003). Crying toddler. ([https://commons.wikimedia.org/wiki/File:Crying\\_girl.jpg](https://commons.wikimedia.org/wiki/File:Crying_girl.jpg)) CC BY-SA 2.0

39

39

### Foods as AD Trigger

- Aeroallergens (i.e., dust mites, animal danders, molds and pollens) are classic AD exacerbators.
- Foods as AD exacerbators undergoing intense studies, particularly dairy and sugar.



Image source: NIAID. (2017). Milk. ([https://commons.wikimedia.org/wiki/File:Glass\\_of\\_Milk\\_\(33657535532\).jpg](https://commons.wikimedia.org/wiki/File:Glass_of_Milk_(33657535532).jpg)) CC BY 2.0

40

40

## Foods as AD Trigger (continued)

Milk, egg, peanut, soy, wheat, fish and chocolate account for 90% of allergens thought to exacerbate AD.



Image source: Kallerna. (2022). Wheat. (<https://en.wikipedia.org/wiki/Wheat>) CC BY-SA 4.0



Image source: (2004). Soybean. (<https://en.wikipedia.org/wiki/Soybean>) In the public domain.

41

41

## Sugar – The Less, the Better

- Sugar is an enormous culprit responsible for inflammatory processes throughout the body.
- See reference: Intakes and sources of dietary sugars and their association with metabolic and inflammatory markers. *Clin Nutr.* 2018;37(4):1313-1322.

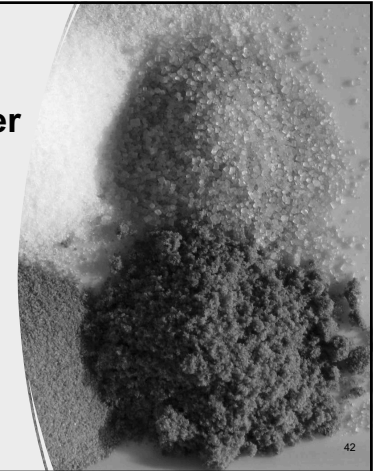


Image source: Behar, R. (2008). Sugar. (<https://en.wikipedia.org/wiki/Sugar>) In the public domain.

42

42

## Topical Non-Corticosteroidal Agents for Atopic Dermatitis

- Referred to as “medical device creams,” approved by FDA for treatment of atopic dermatitis
- Medical device designation means that there is no active drug in the formulation.
- Non-corticosteroidal, lipid-rich, fragrance-free emulsion (Eletone<sup>®</sup>)
  - 70% oil dispersed in 30% water, and provides an ointment’s occlusion yet feels like a cream

43

43

## Topical Non-Corticosteroidal Agents for Atopic Dermatitis (continued)

- Topical non-corticosteroidal skin cream (Mimyx<sup>®</sup>)
  - Contains palmitamide MEA, lipid improver
- These products require prescription.
- They do not have generic name designations.

44

44

### Topical JAK Inhibitor Non-Steroidal Cream

- Ruxolitinib cream 1.5% is indicated for topical short-term and non-continuous chronic treatment of mild to moderate atopic dermatitis in non-immunocompromised patients 12 years of age and older.
- Labelling states that this product is not to be used with other Janus kinase (JAK) inhibitors or immunosuppressants.
- JAK inhibitors may cause serious infections, respiratory tract infections and not recommended in patients with active hepatitis B or hepatitis C.

45

45

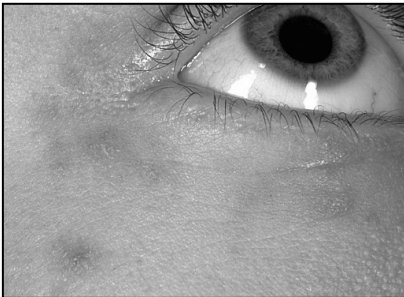
### Topical JAK Inhibitor Non-Steroidal Cream (continued)

- May be used anywhere on the body every day for up to one-month
- This product is very helpful for periorbital, perioral, axilla, under breasts, groin and inguinal folds, where steroids would not be appropriate.

46

46

### The Challenge of Location Treatment



- What would be your strategy when atopic dermatitis is present where skin is naturally thin, and absorption is to be avoided?
- What do you anticipate your patient's questions would be?

Image source: Used with permission from Czerkasij, V.

47

47

### Topical Non-Steroidal Ointment: Crisaborole

- Prescription non-corticosteroidal topical ointment for mild-to-moderate atopic dermatitis
- PDE4 anti-inflammatory action
- Approved age two years or older
- Apply twice a day for up to one-month.
- Most common adverse effect burning, itching, swelling at application site.
- Often best to refrigerate the product to use as a cooling agent on sensitive skin.

48

48

## Perioral Atopic Dermatitis



Image source: (2011). Atopic Dermatitis. Hellenic Dermatological ATLAS. For Health professionals and public. <http://www.hellenicdermatias.com/en/viewpicture/184/>

49

49

## Topical Non-Corticosteroidal Agents: Topical Calcineurin Inhibitors (TCIs)

- Original non-corticosteroidal milestone
  - Tacrolimus ointment 0.03%
  - Pimecrolimus cream 1%
- Strong safety profile for current length and difficult skin areas
- Boxed warning for lack of long-term (4+ years) safety data

50

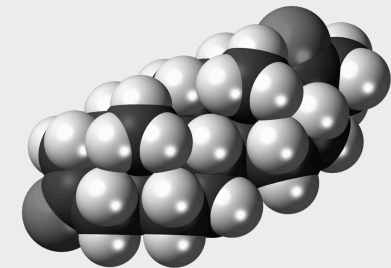
50

## Topical Non-Corticosteroidal Agents: Topical Calcineurin Inhibitors (TCIs) (continued)

- Back in 2006, TCIs had been given a “boxed” warning of possible malignancies occurring if used regularly over four years.
- No published study has proven the validity of this warning.
- Carefully weigh theoretical risks against benefits.

51

51



## History of Corticosteroids

Along with antibiotics and the revelation of DNA, one of the 20th centuries greatest medical discoveries

Image source: Jynto (2011). Space-filling model of the 5α-Dihydroprogesterone molecule, a steroid hormone. (<https://en.wikipedia.org/wiki/Steroid>) In the public domain.

52

52

### Topical Corticosteroids

- Important tool to gain control of AD
  - 30 g covers entire skin of adult once
- Seven potency classes based on vasoconstrictor assay.
  - The lower the number, the longer the use allowed.
- Creams and ointments preferred as gels have drying glycol base.
- Good clinical skills required to balance potency and adverse effects.

53

53

### Topical Corticosteroids (continued)

- Adverse effects are both local and systemic.
  - Atrophy and adrenal suppression
- Studies do include children as young as age three months.
- Good example of a low potency corticosteroid include hydrocortisone 1% and desonide 0.05% creams.
- Midpotency is triamcinolone 0.1%.
- Super potent is clobetasol 0.05% or betamethasone 0.1%.

54

54

### Topical Corticosteroids (continued)

- Corticosteroids have anti-inflammatory, antipruritic, and vasoconstrictive properties.
  - The complete mechanism of activity of topical corticosteroids is unclear.
- Thought to act by inducing increase of lipocortins to lessen inflammation

55

55

### Corticosteroids and Absorption

Cutaneous absorption of topical corticosteroids is determined by many factors, especially the integrity of the epidermal barrier.



Image source: Cruz Roja. (2014). Topical medication. ([https://en.wikipedia.org/wiki/Topical\\_medication#Cream](https://en.wikipedia.org/wiki/Topical_medication#Cream)) CC BY 3.0



Image source: Used with permission from Czerkasi, V.

56

56

### When Corticosteroids Attack: Interesting Observations from the Front Line

- Paradoxically, some patients will suffer from inflammatory episodes caused directly from topical corticosteroids.
- Multiple supporting studies find that midpotency clocortolone pivalate 0.1% has lowest potential to cause allergic reaction.

57

57

### Generalized Atrophy

Image source: Used with permission from Czerkasi, V.

58

58

### Generalized Striae

Image source: Used with permission from Czerkasi, V.

59

59

### Steroid Ulceration

Image source: CorinnaKennedy, (2018), Steroid-induced skin atrophy. ([https://en.wikipedia.org/wiki/Steroid-induced\\_skin\\_atrophy](https://en.wikipedia.org/wiki/Steroid-induced_skin_atrophy)) CC BY-SA 4.0

60

60

### A Curious Comment from the NEA on Honey

- Medical-grade honey processed by gamma irradiation and filtration in a lab-setting and filtered from impurities or contaminants, is recommended if used topically for eczema.
- Available OTC
- Manuka honey, found in Australia and New Zealand from the nectar of the Manuka tree, has unique antimicrobial properties.

61

61

### A Sweet Option for Atopic Dermatitis

- Do not use raw honey from the beehive for topical use.
- Recognized for sealing in moisture, well-tolerated
- Excellent wound healing product for cracks and fissures.

Image source: Chiswick Chap. (2013). Long-tongued Amegilla bee on long tube of Acanthuz ilicifolius flower. (<https://en.wikipedia.org/wiki/Bee>) CC BY-SA 4.0



62

62

### The Treatment Landscape: New Non-steroidal Oral Options – Upadacitinib

- 15 mg or 30 mg tablet 1 by mouth every day
- Treatment for patients ages 12 years and older with moderate to severe atopic dermatitis.
- JAK inhibitor that requires CBC, CMP, lipid and TB screening prior to initiation and again three months later and then annually.
- Fast-acting on itching in trials, with results in one day.
- Significant safety panel includes increased infections, blood clots, stroke, and cardiovascular events.

63

63

### The Treatment Landscape: New Non-steroidal Oral Options – Abrocitinib

- 100–200 mg tablet one by mouth every day
- Treatment for patients ages 18 years and older with moderate to severe atopic dermatitis.
- AK inhibitor that requires CBC, CMP, lipid, Hep B and C and TB screening prior to initiation and then annually or after dose increase.
- Effective medication in trials for scale and itching
- Significant safety panel includes increased infections, mortality, malignancies, blood clots, and cardiovascular events.

64

64



### The Treatment Landscape: Injectable Non-steroidal – Dupilumab Targets IL-4 and IL-13

- Dupilumab – An FDA approved biologic for atopic dermatitis age  $\geq 6$  months.
- Most common adverse effects include allergic reactions, cold sores, and inflammation of the cornea.
- Does not require prior labs or testing, nor does it interact with any known disease or medication.
- Initial subq injection for adults 18 years of age and older is 300 mg  $\times$  2, followed by 300 mg every other week for maintenance.

65

65

### The Treatment Landscape: Injectable Non-steroidal – Dupilumab Targets IL-4 and IL-13 (continued)

- Pediatric and adolescent dosing is determined by age and weight.
- Can be used concurrently with corticosteroids if warranted
- Highly effective on pruritus

66

66

### The Treatment Landscape: Injectable Non-steroidal – Tralokinumab Targets IL-13

- Most common adverse effects include allergic reactions, cold sores, and inflammation of the cornea.
- Does not require prior labs or testing, nor does it interact with any known disease or medication.

67

67

### The Treatment Landscape: Injectable Non-steroidal – Tralokinumab Targets IL-13 (continued)

- Initial subq injection for adults 18 years of age and older is 150 mg  $\times$  4, followed by 150 mg  $\times$  2 every other week for maintenance
- Flexible dosing of q2w and q4w on patients less than 220 lb (100 kg)
- Can be used concurrently with corticosteroids if warranted
- Highly effective on pruritus

68

68

### Don't Underestimate the Severity of AD on Quality of Life in Younger Patients?



Image sources: Used with permission from Czerkasij, V.

69

### Atopic Dermatitis

- Prevention is foundational.
- Early on, distribution is generalized.
- Pruritus first hallmark
- Increased risk of secondary impetigo, generalized herpes and varicella in severe cases

70

### Nummular Eczema: Annular Shape



Image source: Used with permission from Czerkasij, V.

71



Image source: Used with permission from Czerkasij, V.

72

### Is it really atopic dermatitis?

- A few classic differentials: Psoriasis, seborrheic dermatitis, allergic urticaria, adverse drug reaction, discoid lupus erythematosus, scabies infestation, or subclinical fungal infection
- Always ask for a robust patient history of condition and treatment.
- Don't be shy to biopsy the site.
- Always be aware of what the condition is not.
- Don't accept what the patient tells you they have: **YOU** are the professional.

73

73

### Lichen Simplex Chronicus



- Unusual case of 14-year-old Hispanic male who had an enlarging left areola over one year.
- Stated that it had slight itching, treated with anti-fungal by PCP.
- Punch biopsy revealed severe atopic dermatitis with components of lichen simplex chronicus.
- Class one steroid BID x 2 weeks completely resolved it.

Image source: Used with permission from Czerkasj, V.

74

74

### Common Keratosis Pilaris: Cooler Showers, Moisturizing Soap and OTC Daily Lotion

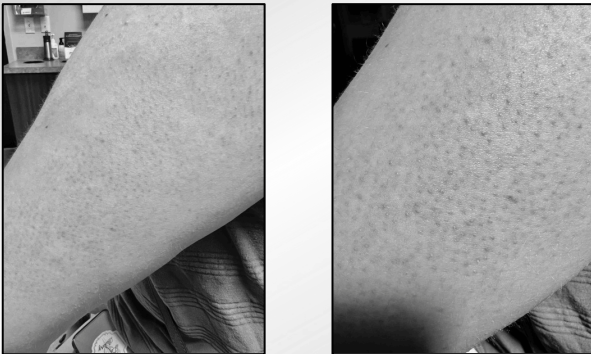


Image sources: Used with permission from Czerkasj, V.

75

75

### On the Horizon: Novel Treatments for AD Still in Trials

- Microbiome modulation: Exploring the *Staphylococcus aureus* theory of colonization on the skin and combining a topical bacterial "cocktail"
- Difelikefalin (DFK): A novel selective kappa-opioid receptor (KOR) agonist, on itching and lesional severity
  - Oral tablet
- Novel, oral, selective sphingosine 1-phosphate receptor modulator of etrasimod, once daily 1 mg or 2 mg tablet

76

76

End of Presentation  
Thank you for your time and attention.

Victor Czerkasij,  
DNP, MSN, MA, FNP-C

[www.fhea.com](http://www.fhea.com)

[victor@fhea.com](mailto:victor@fhea.com)

77

77

### Topical Corticosteroids Potency Chart

- National Psoriasis Foundation® Potency Chart, available at [https://www.psoriasis.org/sublearn03\\_mild\\_potency](https://www.psoriasis.org/sublearn03_mild_potency)
- The Dermatologist, available at <https://www.hmpglobelearningnetwork.com/site/thederm>  
***These are continuously updated to reflect generic and brand names.***

78

78

### References

- American Academy of Dermatology Association (AAD), available at <http://www.aad.org/dermatology-a-to-z/diseases-and-treatments/e---h/eczema>
- Rady Children's Specialists Dermatology. <https://www.rchsd.org/programs-services/dermatology/eczema-and-inflammatory-skin-disease-center/>
- Broderick, C., Ziehfrend, S., van Bart, K., Arents, B., Eyerich, K., Weidinger, S., Rastrick, J., Zink, A., Flohr, C., & BIOMAP Consortium. (2023). Biomarkers associated with the development of comorbidities in patients with atopic dermatitis: A systematic review. *Allergy*, 78(1), 84–120. <https://pubmed.ncbi.nlm.nih.gov/36366871/>
- Chiricozzi, A., Maurelli, M., Calabrese, L., Peris, K., & Girolomoni, G. (2023). Overview of Atopic Dermatitis in Different Ethnic Groups. *Journal of clinical medicine*, 12(7), 2701. <https://pubmed.ncbi.nlm.nih.gov/37048783/>
- Chong, A. C., Visitsunthorn, K., & Ong, P. Y. (2022). Genetic/Environmental Contributions and Immune Dysregulation in Children with Atopic Dermatitis. *Journal of asthma and allergy*, 15, 1681–1700. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9701514/>

79

79

### References (continued)

- Fasseeh, A. N., Elezbawy, B., Korra, N., Tannira, M., Dalle, H., Aderian, S., Abaza, S., & Kaló, Z. (2022). Burden of Atopic Dermatitis in Adults and Adolescents: a Systematic Literature Review. *Dermatology and therapy*, 12(12), 2653–2668. <https://pubmed.ncbi.nlm.nih.gov/36197589/>
- Lugović-Mihic, L., Meštrović-Štefekov, J., Potočnjak, I., Cindrić, T., Ilić, I., Lovrić, I., Skalicki, L., Bešlić, I., & Pondeljak, N. (2023). Atopic Dermatitis: Disease Features, Therapeutic Options, and a Multidisciplinary Approach. *Life (Basel, Switzerland)*, 13(6), 1419. <https://www.mdpi.com/2075-1729/13/6/1419>
- Mesjasz, A., Zawadzka, M., Chałubiński, M., & Trzeciak, M. (2023). Is Atopic Dermatitis Only a Skin Disease? *International journal of molecular sciences*, 24(1), 837. <https://doi.org/10.3390/ijms24010837>
- National Eczema Association, available at <http://nationaleczema.org/>
- O'Connor, L., Imamura, F., Brage, S., Griffin, S.J., Wareham, N.J., Forouhi, N.G. (2018). Intakes and sources of dietary sugars and their association with metabolic and inflammatory markers. *Clin Nutr.*, 37(4):1313-1322. <https://pubmed.ncbi.nlm.nih.gov/28711418/>

80

80

## References (continued)

- Papapostolou, N., Xepapadaki, P., Gregoriou, S., & Makris, M. (2022). Atopic Dermatitis and Food Allergy: A Complex Interplay What We Know and What We Would Like to Learn. *Journal of clinical medicine*, 11(14), 4232. <https://doi.org/10.3390/jcm11144232>
- Radi, G., Campanti, A., Diotallevi, F., Martina, E., Marani, A., & Offidani, A. (2022). A Systematic Review of Atopic Dermatitis: The Intriguing Journey Starting from Physiopathology to Treatment, from Laboratory Bench to Bedside. *Biomedicines*, 10(11), 2700. <https://doi.org/10.3390/biomedicines10112700>
- Wollenberg, A., Werfel, T., Ring, J., Ott, H., Gieler, U., & Weidinger, S. (2023). Atopic Dermatitis in Children and Adults—Diagnosis and Treatment. *Deutsches Arzteblatt international*, 120(13), 224–234. <https://doi.org/10.3238/arztebl.m2023.0011>
- Zuberbier, T., Beck, L. A., Bedbrook, A., de Bruin-Weller, M., Bousquet, J., Cork, M., Douladiris, N., Kato, N., Mortz, C. G., Werfel, T., Wojciech, F., Wollenberg, A., Siemens, K., Stevanovic, K., Worm, M., & AD-ICPs Working Group (2023). Developing integrated care pathways for atopic dermatitis-Challenges and unmet needs. *Clinical and translational allergy*, 13(3), e12236. <https://europepmc.org/article/pmc/10040953>

Unless noted, image sources are from Shutterstock, used with permission from Colibri Healthcare license.

81

81

## Copyright Notice

Copyright by Fitzgerald Health Education Associates  
All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording or any information storage and retrieval system, without permission from Fitzgerald Health Education Associates.

Requests for permission to make copies of any part of the work should be mailed to:

Fitzgerald Health Education Associates  
15 Union Street, Suite 512  
Lawrence, MA 01840

82

82

## Statement of Liability

- The information in this program has been thoroughly researched and checked for accuracy. However, clinical practice and techniques are a dynamic process and new information becomes available daily. Prudent practice dictates that the clinician consult further sources prior to applying information obtained from this program, whether in printed, visual or verbal form.
- Fitzgerald Health Education Associates disclaims any liability, loss, injury or damage incurred as a consequence, directly or indirectly, of the use and application of any of the contents of this presentation.
- All websites listed active at the time of publication.

83

83

## Fitzgerald Health Education Associates

15 Union Street, Suite 512  
Lawrence, MA 01840  
978.794.8366 Fax-978.794.2455  
Website: fhea.com  
Learning & Testing Center: fhea.com



[https://www.instagram.com/fitzgerald\\_health\\_ed/](https://www.instagram.com/fitzgerald_health_ed/)



[www.facebook.com/fitzgeraldhealth](https://www.facebook.com/fitzgeraldhealth)



@npcert

84

84