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# Accurate Diagnosis, Evidence-Based Treatment, and Long-Term Management in Persons of Color with Atopic Dermatitis (AD)

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Zelma C. Chiesa Fuxench, MD, MSCE

Assistant Professor of Dermatology

Department of Dermatology

University of Pennsylvania Perelman School of Medicine

Philadelphia, PA

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Candrice Heath, MD

Assistant Professor of Dermatology

Lewis Katz School of Medicine at Temple University

Philadelphia, PA

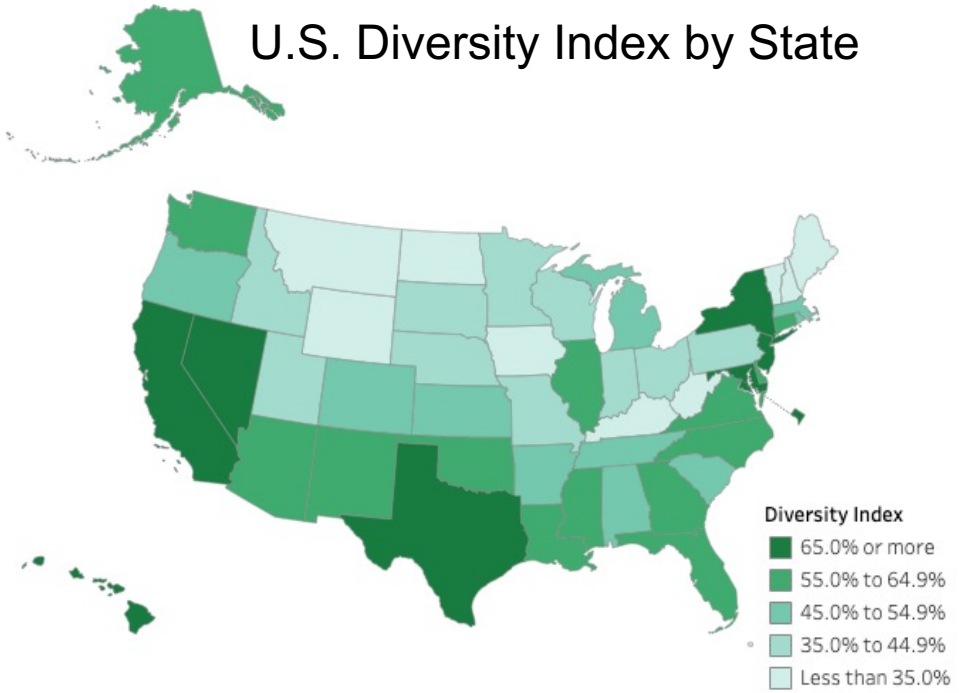
# Why We're Here

I am Latina and I have darker skin. I think there was some initial **misdiagnosis** as to what was going on. They thought maybe **dry skin**…and this was through my general practitioner. It was not until I went to the dermatologist that they were able to give me an **accurate** description.

I do not feel like my dermatologist or primary care physicians over the years have been skilled in diagnosing **skin disorders in persons of color**. I don't think that they get adequate education in **medical school**, and **continuing education** is lacking in how these issues present on darker skin for persons of color.

# Changing Demographics of the U.S. Population

- U.S. Diversity Index of 61.1% is the probability that two people chosen at random will be from different race and ethnic groups[1]
- As of 2020, the majority of children in the United States are children of color[2]
- Racial and ethnic composition of younger cohorts is expected to change more quickly than for older cohorts[2]




1. 2020 Census Redistricting Data Summary File. https://www.census.gov/library/visualizations/interactive/racial-and-ethnic-diversity-in-the-united-states-2010-and-2020-census.html. Accessed September 14, 2021. 2. Vespa J, et al. U.S. Department of Commerce, U.S. Census Bureau. Revised 2020. https://www.census.gov/content/dam/Census/library/publications/2020/demo/p25-1144.pdf. Accessed September 14, 2021.

# Skin of Color (SoC): Disparities in Medical Education

- Only 15 SoC or ethnic skin centers in the U.S.
- Residents from less ethnically diverse regions agreed 1-5 hrs of education in multi-ethnic skin is needed monthly[1,2]
- Only 14.3%-14.6% of chief residents and program directors stated they had access to an expert in SoC[3]
- Education in pediatric SoC especially lacking

*"Investing in educational content is the basis for health care disparity reduction in the future"*[1]

1. Silverberg NB, Jacob S, Heath C, et al. *Pediatr Dermatol.* 2021 Aug 21. [Epub ahead of print]. 2. Cline A, et al. *Cutis.* 2020;105(6):310-313. 3. Nijhawan RI, et al. *Am AJ Acad Dermatol.* 2008;59(4):615-618.

# SoC and Disparities in AD Care

- **AD/eczema** U.S. prevalence:
  - Pediatric: up to 20%[1]; adults: 10.2%[2]
  - Highest among African American/Black pediatric population[3]
- Black individuals more likely to have untreated or treatment-resistant AD
- AD in patients with SoC is compounded by comorbidities and other health disparities[4]

1. Silverberg JI, et al. *Ann Allergy Asthma Immunol*. 2021;126(4):417-428.e2. 2. McGregor SP, et al. *J Drugs Dermatol.* 2017;16(3):250-255. 3. Margolis DJ, et al. *J Investig Dermatol*. 2018;138(7):1501-1506. 4. Buster KJ, et al. *Dermatol Clin.* 2012;30:53-59.

# More Than Skin Deep: Psychosocial Burden

- Post-inflammatory **hyperpigmentation** due to AD in SoC may increase distress[1]
- Chronic moderate to severe AD can be debilitating; linked to **mental health** across **all races**
- Adults with AD more likely to develop[2]:
  - 14% ↑ depression
  - 17% ↑ anxiety
- Review of patients with AD in 15 studies:
  - 44% ↑ suicidal ideation
  - 36% ↑ suicide attempts[3]

1. Eckert L, et al. *J Am Acad Dermatol*. 2017;77(2):274-279.e3. 2. Schonmann Y, et al. *J Allergy Clin Immunol Pract*. 2020;8(1):248-257.e16.
3. Armstrong A, et al. *JAMA Dermatol*. 2019;155(2):178-187. Image: Natalie Abbey-Allan/Getty

# Disparities in Pediatric AD Care

- In comparison to White children, Black and Hispanic children with AD are:
  - More likely to have **primary care** and **emergency visits**[1]
  - More likely to have school and activity **absences**[2]
- Black children with poorly controlled AD significantly less likely to see a **dermatologist** than White children with similarly poorly controlled AD[1]


1. Wan J, et al. *J Invest Dermatol.* 2019;139(9):1906-1913. 2. Wan J, et al. *JAMA Dermatol.* 2019;155(8):973-975.
Image: Nationaleczema.org

# Odds Ratios of Socioeconomic Risk Factors for Moderate to Severe AD Stratified by Race/Ethnicity

**Family earns < $30,000/yr**
Black child: 4.19
Latinx child: 2.15
White child: 0.159

**Education of caregiver less than high school diploma**
Black child: 0.354
Latinx child: 4.98
White child: 1.446

**≥ 1 smoker(s) in home**
Black child: 2.89
Latinx child: 0.559
White child: 0.512

**Child lives between 2 homes**
Black child: 2.32
Latinx child: 0.857
White child: 0.570


**Renting home**
Black child: 4.80
Latinx child: 1.97
White child: 0.214

Tackett KJ, et al. *Pediatr Dermatol*. 2020;37(1):142-146.

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# Learning Objective 1

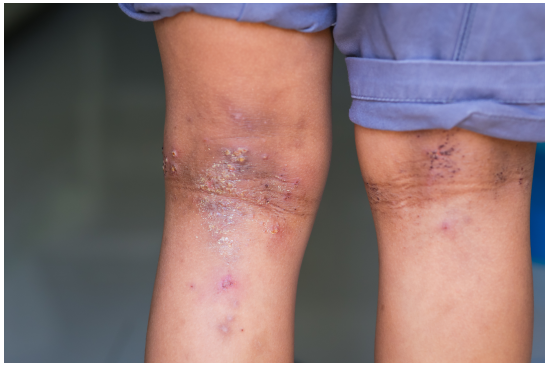
Integrate appropriate tools in the assessment of AD in patients of color.

# Patient Case: Brayden

- 8-year-old boy who has had AD since infancy that has become progressively more difficult to treat as he has gotten older
- Pruritus impacts his sleep and has begun to negatively impact his school performance
- Severity of his seasonal allergies peaked later in the season than in the past
- He recently moved to a new rental apartment with his mother and there is carpet in the home
- He is not exposed to smoking or pets

# Clinical Presentation: Brayden

- Involvement of the flexor surfaces of the right antecubital fossa on the right arm and both legs
- Lesions more papular, follicular prominence of the skin
- Body surface area (BSA): 30%

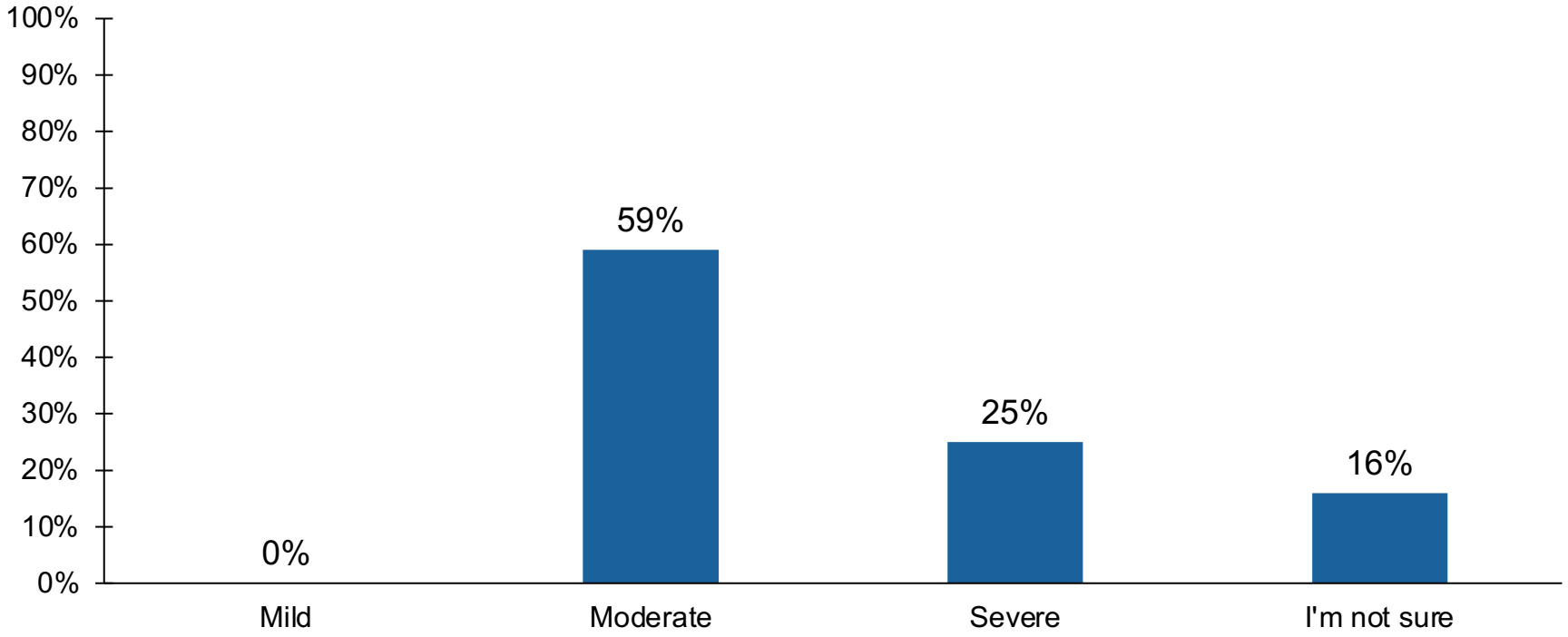


# Audience Response

**How would you characterize Brayden's AD disease severity?**

A. Mild
B. Moderate
C. Severe
D. I'm not sure

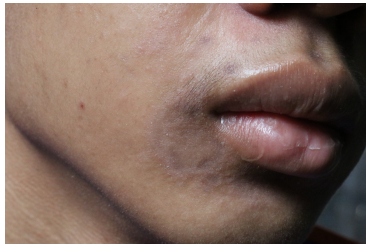
# How would you characterize Brayden's AD disease severity?




Results recorded on September 21, 2021.

# Patient Case: Cecily

- 27-year-old woman who has had AD since she was a child
- Over the years, symptoms waxed and waned, typically successfully treated with increased emollient use and topical steroids during a flare
- She was referred to a dermatologist following a recent resistant flare and the development of darker “scars” on her face causing her to be very self-conscious about her appearance

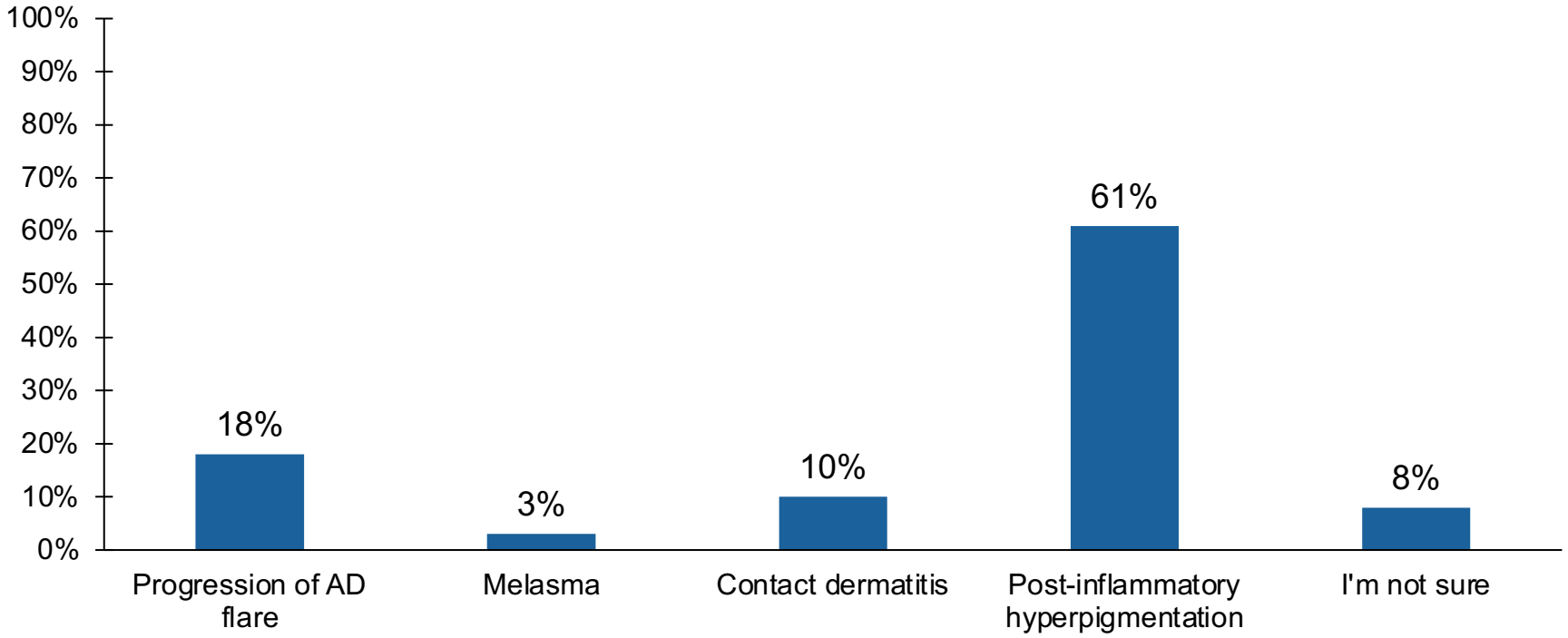


# Audience Response

**What would be your diagnosis for Cecily?**

A. Progression of AD flare
B. Melasma
C. Contact dermatitis
D. Post-inflammatory hyperpigmentation
E. I’m not sure

# What would be your diagnosis for Cecily?




Results recorded on September 21, 2021.

# Properties of Black Skin That Contribute to Itch Severity

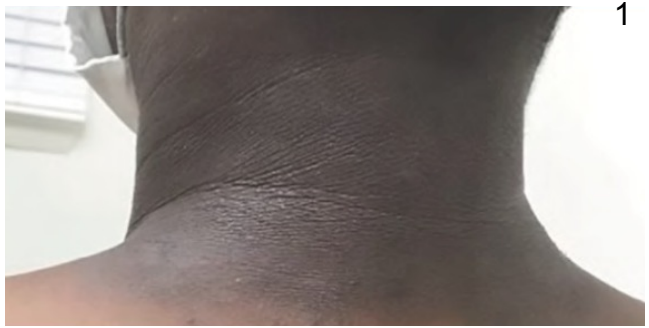
| Property | Consequence |
|---|---|
| Increase in *trans*-epidermal water loss | Reduction of water-based skin barrier |
| Lower pH in stratum corneum | Enhanced function and integrity of the stratum corneum |
| Larger mast cells | Increased cell-specific inflammatory reactions |
| Mrgpr polymorphisms | Increased severity of chloroquine induced itch |
| Increased microflora | *C. Albicans* colonization |
| Variation in TRPV receptors | Limited reaction to capsaicin |
| FLG mutation differences | Increased incidence and severity of AD |

FLG = filaggrin; Mrgpr = mass-related G protein-coupled receptor; TRPV = transient receptor potential vanilloid

McColl M, et al. *J Natl Med Assoc*. 2021;113(1):30-38.

# AD Can Appear Differently on SoC

- Descriptions based on White skin presentation: salmon-colored, shades of pink to red with plaques affecting flexor surfaces
- SoC has greater propensity for papulation, lichenification affecting extensor surfaces
- AD-related erythema can be more difficult to detect on non-White skin
- Erythema on darker skin may appear:
  - Grayish violet, ashen, red-brown, or very dark brown
- Hyperpigmented/hypopigmented



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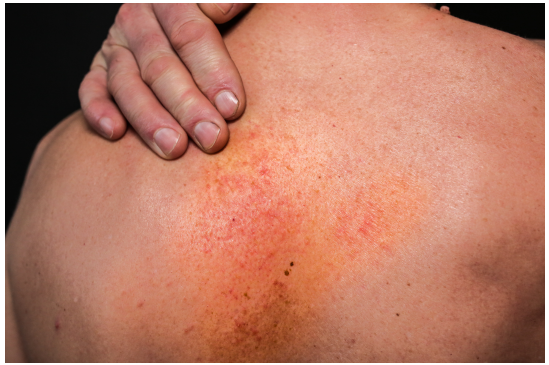
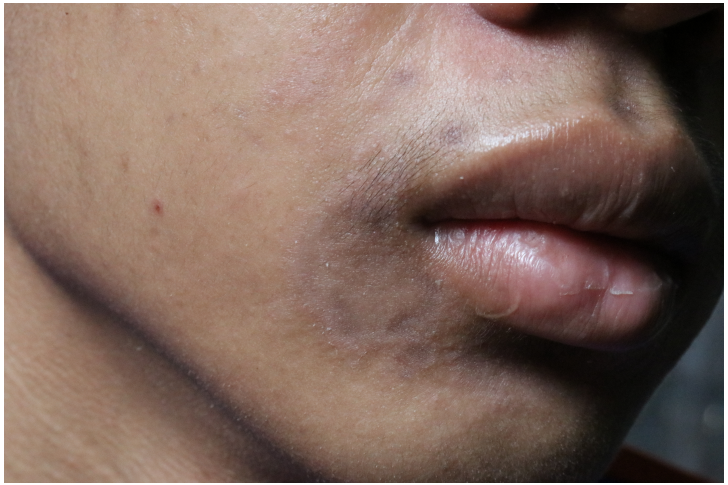


1. Sangha AM. *J Clin Asethet Dermatol.* 2021;14(3 Suppl 1):S20-S22. 2. National Eczema Society. https://eczema.org/information-and-advice/living-with-eczema/skin-pigmentation/. Accessed September 17, 2021.

# Post-Inflammatory Hyperpigmentation

- AD and post-inflammatory hyperpigmentation (PIH) are among the top five chief complaints in patients with SoC
- PIH has psychosocial impairments and a negative impact on quality of life (QoL)
- Chronic inflammation results in ↑ melanocyte density, hyperplasia, and hypertrophy
- More persistent and clinically visible in darker skin tones, often confused with erythema

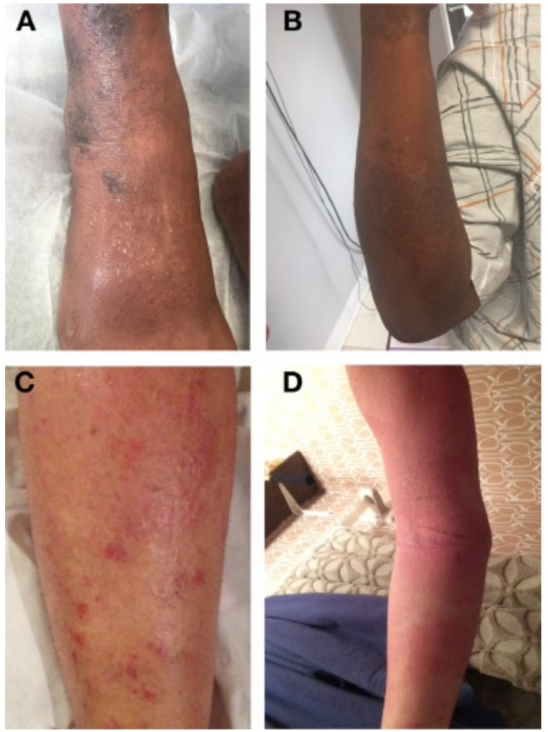


DLQI = **D**ermatology **L**ife **Q**uality **I**ndex

Grayson C, Heath CR. *J Drugs Dermatol.* 2020;19(7):776-778. Maymore MBC, et al. *J Am Acad Dermatol*. 2017;77:775-778.

# Not Seeing Red: Impact on AD Scores

- **Erythema** scores may mask AD severity in SoC
  - Assessment challenges due to skin pigmentation
  - Skew visual diagnosis/assessment and use of SCORAD index/other tools (redness = intensity)
- Also used as clinical sign in some patient-reported outcome (**PRO**) tools
  - Three Item Severity (TIS) score: excoriations, erythema, and edema/papulation[2]
- Study: Significantly **increased** risk for severe AD in Black children after **adjusting** for erythema score[1]
- **Compare** lesions to non-lesioned skin for more accurate AD assessment




Images representative of Black (A, B) and White (C, D) patients with AD

1. Ben-Gashir MA. *Br J Dermatol*. 2002;147(5):920-925. 2. Charman C, et al. *Arch Dermatol.* 2005;141(9):1146-1151.
Images from Sanyal RD, et al. *Ann Allergy Asthma Immunol*. 2019;122(1):99-110.e6.

# Assessment of Disease Severity and Clinical Outcomes in AD

- Measures of disease severity
  - **SCORAD: SCOR**ing **A**topic **D**ermatitis Index
  - **EASI: E**czema **A**rea and **S**everity **I**ndex
  - **IGA: I**nvestigator's **G**lobal **A**ssessment
- Measures of impact on QoL
  - **DLQI: D**ermatology **L**ife **Q**uality **I**ndex/Children's Dermatology Quality of Life Index
- Symptom-specific
  - **POEM: P**atient-**O**riented **E**czema **M**easure
  - **PP-NRS (itch):** Peak Pruritis Numerical Rating Scale
    - Includes pain and sleep on a scale of 1-10
- Mental health
  - **HADS: H**ospital **A**nxiety and **D**epression **S**cale
  - **PHQ-2 or PHQ-9: P**atient **H**ealth **Q**uestionnaire

Eichenfield LF, et al. *J Am Acad Dermatol.* 2014;70:338-351.

# Matching Measures to Symptoms

| Clinical Inquiry | Tool/Measure | Value Proposition |
|---|---|---|
| Are you having a lot of flares? | SCORAD, POEM, IGA | • Ongoing measurement of PROs can activate and engage patients in a holistic approach to their care<br>• Use of tools offers benchmarks to adjust treatment as needed<br>• Scales/tools provide a baseline and change related to disease severity<br>• A documented measure describing therapeutic failure for insurance coverage when seeking step-up treatment |
| Is your AD impacting your mood? | PHQ-2 or PHQ-9 | |
| In the past 24 hours, on a scale of 1-10, what is your worse or your average score? | PP-NRS (itch, sleep) | |
| Are you experiencing pain? | NRS (skin pain) | |
| How would you rate your QoL? | DLQI | |

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# Learning Objective 2

Apply the latest evidence to the optimal management of AD based on disease severity in collaboration with patients.

# Clinical Presentation: Brayden

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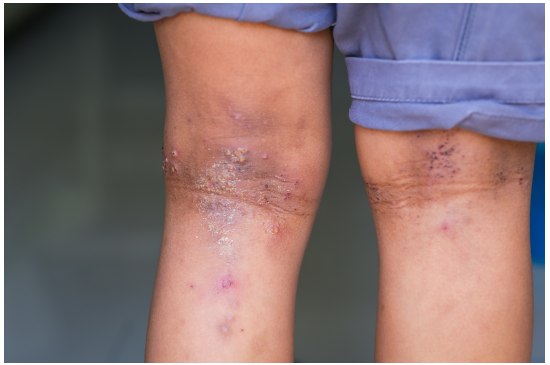
- Lesions more papular, follicular prominence of the skin
- BSA: 30%



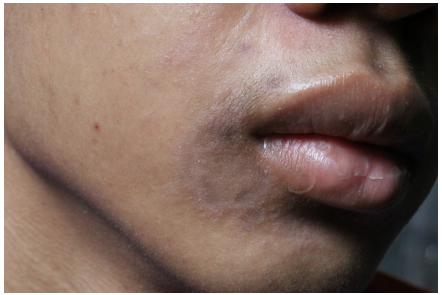
# Audience Response

## What would be your treatment choice for Brayden?

A. Crisaborole ointment
B. Tacrolimus and topical steroids
C. Systemic therapy (methotrexate, azathioprine, mycophenolate mofetil, corticosteroids)
D. Phototherapy
E. Dupilumab
F. I’m not sure

# Patient Case: Cecily

- She was referred to a dermatologist following a recent resistant flare and the development of darker “scars” on her face causing her to be very self-conscious about her appearance



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E. Dupilumab
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# Stepping Up from Moderate to Severe AD

Patient is symptomatic despite aggressive course of topical prescription therapy (corticosteroid, calcineurin inhibitor, crisaborole) for ≥ 3 weeks and following basic management recommendations for skin care, antiseptic treatment, and avoidance of allergens and irritants, and particularly when there is severe and negative impact on daily activities, psychosocial health, and QoL*

- Phototherapy
- Dupilumab
- Systemic immunosuppressant therapy
  - Cyclosporine†
  - Methotrexate†
  - Mycophenolate mofetil†
  - Azathioprine†
  - Corticosteroids‡

3-month therapeutic trial with reassessment at 4-8 weeks

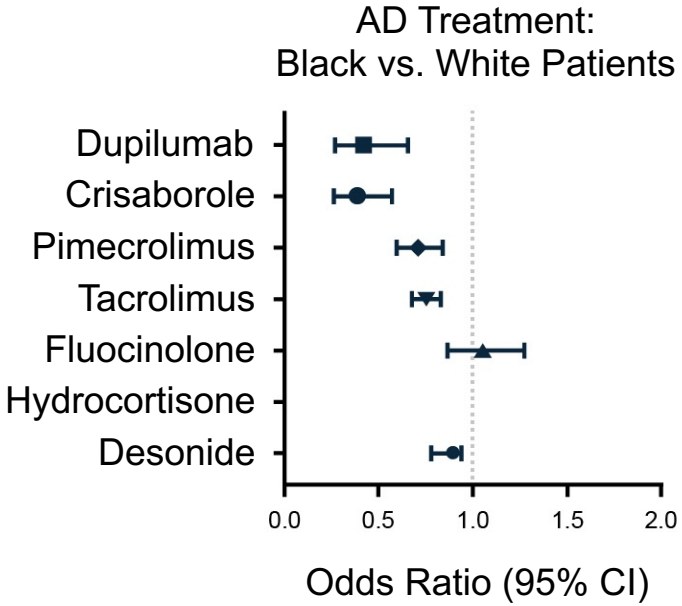
- Refer to specialist or interdisciplinary care
- Consider acute treatment to help control:
  - Wet wrap therapy
  - Hospitalization

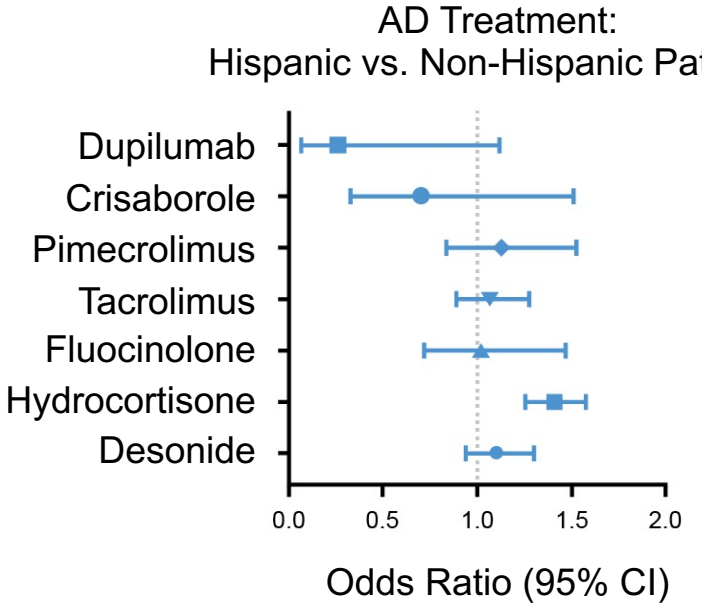
*Before stepping up therapy, assess for nonadherence, potential comorbidities, and other factors that might negatively affect response to therapy;
†Not FDA-approved; ‡FDA-approved but should be used only in acute flares or as rescue therapy

Boguniewicz M, et al. *Ann Allergy Asthma Immunol*. 2018;120(1):10-22.

# Recognize Disparities in AD Treatment

- Black adults with AD less likely than White adults to be treated with non-steroidal topicals and dupilumab




Bell MA, et al. *J Natl Med Assoc.* 2020;112(6):650-653.

# Dupilumab: Safety and Efficacy in SoC

- Pooled analysis of three trials assessed **efficacy** and **safety** of dupilumab for adults with moderate to severe AD by **race**[1]
  - Improved all assessed outcomes in White and Asian subgroups
  - In smaller Black subgroup, significantly ($p < .0001$) improved EASI endpoints, mean changes in Peak Pruritus NRS and DLQI
  - Well-tolerated, acceptable safety profile in all subgroups

Alexis AF, et al. *J Drugs Dermatol*. 2019;18(8):804-813.

# Emerging Data for Dupilumab in Children Age 6 Months to 5 Years*: LIBERTY AD PRESCHOOL

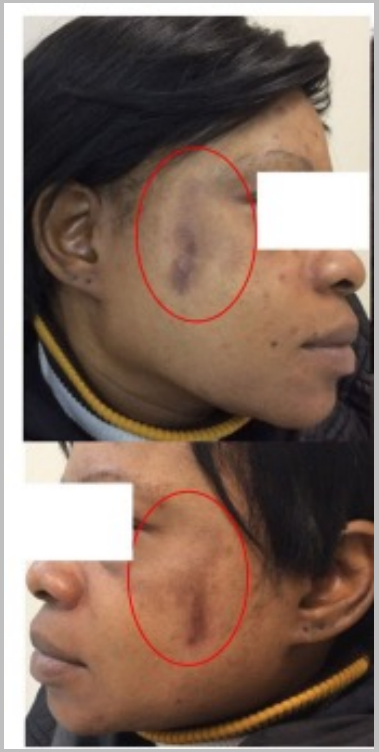
- 16-wk phase III trial of dupilumab + standard-of-care corticosteroids (TCS) reduced overall disease severity and improved skin clearance, itch, and health-related QoL vs. TCS alone
  - **28%** clear or almost-clear skin with dupilumab vs. 4% with TCS ($p < .0001$)
  - **53%** achieved ≥ 75% overall baseline disease improvement vs. 11% with TCS ($p < .0001$)
  - **70%** vs. 20% improvement from baseline in overall disease severity ($p < .0001$)
  - **49%** vs. 2% improvement from baseline in itch ($p < .0001$)

*Dupilumab is not FDA-approved in children under age 6 years

Intrado GlobeNewswire Website. 2021. https://www.globenewswire.com/news-release/2021/08/30/2288011/0/en/Dupixent-dupilumab-pivotal-trial-meets-all-primary-and-secondary-endpoints-becoming-first-biologic-medicine-to-significantly-reduce-signs-and-symptoms-of-moderate-to-severe-atopic-.html. Accessed September 13, 2021.

# Treatment Options for PIH

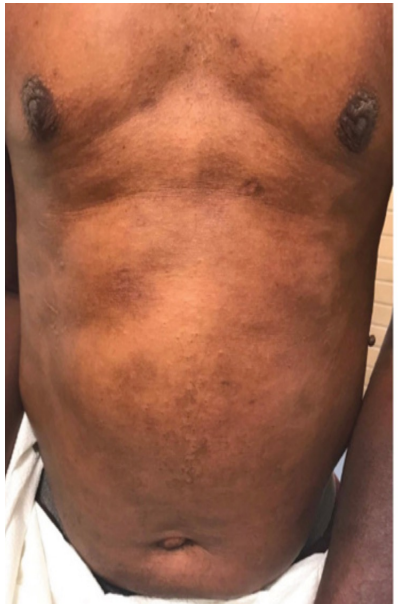
- PIH can be especially difficult to treat in SoC due to increased epidermal melanin content
- Treatment can be cumbersome and often exacerbates the problem
- Common treatment approaches
  - Non-ablative fractional lasers
  - Chemical peels
  - Topical treatments
  - Hydroquinone-based combination treatments

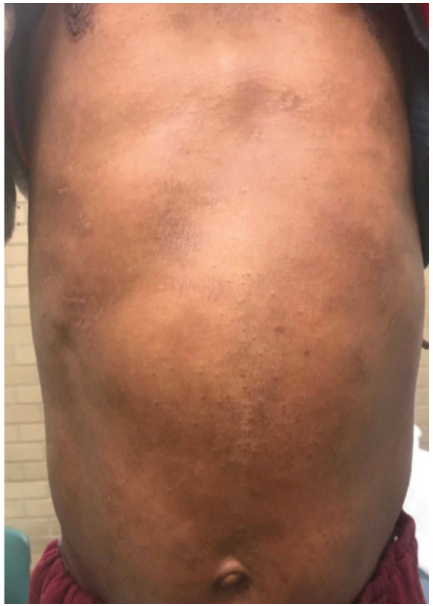


Bae YC, et al. *Lasers Surg Med.* 2020;52(1):7-12.

# Case Report: Dupilumab Improved Post-Inflammatory Hyperpigmentation

- 53-year-old Black male with 1-year history of worsening pruritic rash diagnosed with **moderate to severe** AD
  - Received 600 mg loading dose
  - 2 weeks later, 200 mg dose subcutaneous every 2 weeks
- Improvement of all symptoms, including hyperpigmentation during treatment





Grayson C, Heath CR. *J Drugs Dermatol.* 2020;19(7):776-778.

# Agents in Phase III Development for AD*

| Drug | Main Target | Delivery Vehicle |
|---|---|---|
| Abrocitinib | JAK1 inhibitor | Oral |
| Baricitinib | JAK1/JAK2 inhibitor | Oral |
| Lebrikizumab | IL-13 inhibitor | Subcutaneous injection |
| Roflumilast | PDE4 inhibitor | Topical cream |
| Ruxolitinib | JAK1/JAK2 inhibitor | Topical cream |
| Tralokinumab | IL-13 inhibitor | Subcutaneous injection |
| Upadacitinib | JAK1 inhibitor | Oral |

IL = interleukin; JAK = Janus kinase; PDE4 = phosphodiesterase-4
*Not currently FDA-approved for AD
Nezamololama N, et al. *Drugs Context.* 2020;9:2020-8-5.

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# Learning Objective 3

Develop a long-term management plan in patients with moderate to severe AD that includes routine assessment and monitoring.

# Contributors to Loss of Disease Control

- Environmental exposures
- Comorbid conditions
- Difficulty applying topical medications
- Poor adherence
- Fear of adverse events
- Belief that medication does not help or is not necessary
- Treatment is needed only when symptoms and disease become noticeable
- Inconvenience
  - Multiple medications
  - Having to apply topical treatments
  - Need to avoid certain types of clothing and materials
- Dislike of provider
- Distrust of medical establishment
- Cost, including lack of insurance or treatment not covered by insurance
- Lack of access to health care
- Insufficient medication prescribed

Boguniewicz M, et al. *Ann Allergy Asthma Immunol*. 2018;120(1):10-22.

# Team-Based Care in the Long-Term Management of AD

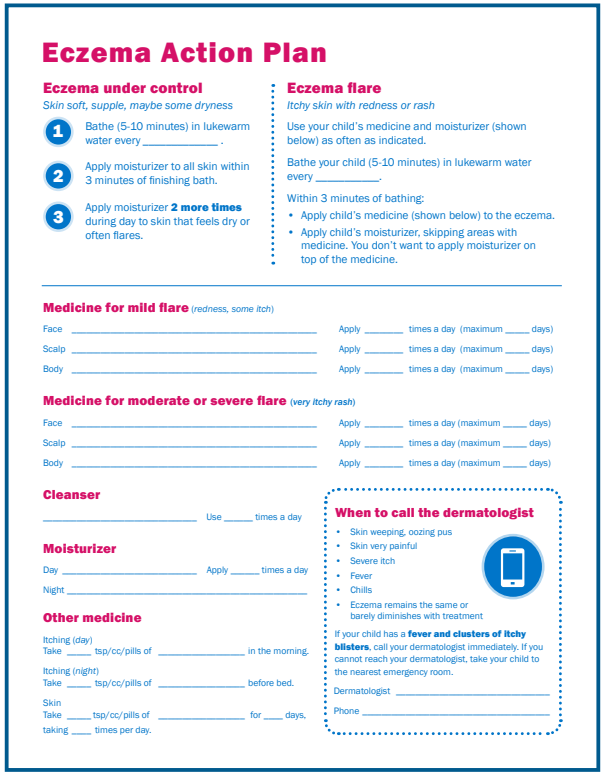
- Multidisciplinary and interdisciplinary teams play a central role in the long-term management of AD
- Physicians, nurses, nurse practitioners, PAs, pharmacists, and mental health professionals all play a role in educating patients/caregivers, supporting self-management, and monitoring AD disease

Von Os-Medendorp H, et al. *BMC Nurs*. 2020;19:102.

# Flare Management Plans


- Develop an eczema action plan
- Provide patients with access to resources and videos

- Patient/caregiver education should be used as an adjunct to treatment
  - Next steps if the condition changes
  - What to do if you have a flare
  - What to do if you have a great couple of weeks



## Eczema Action Plan

**Eczema under control**
*Skin soft, supple, maybe some dryness*

1. Bathe (5-10 minutes) in lukewarm water every _____ .
2. Apply moisturizer to all skin within 3 minutes of finishing bath.
3. Apply moisturizer **2 more times** during day to skin that feels dry or often flares.

**Eczema flare**
*Itchy skin with redness or rash*

Use your child's medicine and moisturizer (shown below) as often as indicated.

Bathe your child (5-10 minutes) in lukewarm water every _____.

Within 3 minutes of bathing:
- Apply child's medicine (shown below) to the eczema.
- Apply child's moisturizer, skipping areas with medicine. You don't want to apply moisturizer on top of the medicine.

**Medicine for mild flare** (*redness, some itch*)

Face _____ Apply _____ times a day (maximum _____ days)
Scalp _____ Apply _____ times a day (maximum _____ days)
Body _____ Apply _____ times a day (maximum _____ days)

**Medicine for moderate or severe flare** (*very itchy rash*)

Face _____ Apply _____ times a day (maximum _____ days)
Scalp _____ Apply _____ times a day (maximum _____ days)
Body _____ Apply _____ times a day (maximum _____ days)

**Cleanser**

_____ Use _____ times a day

**Moisturizer**

Day _____ Apply _____ times a day
Night _____

**Other medicine**

Itching (*day*)
Take _____ tsp/cc/pills of _____ in the morning.

Itching (*night*)
Take _____ tsp/cc/pills of _____ before bed.

Skin
Take _____ tsp/cc/pills of _____ for _____ days,
taking _____ times per day.

**When to call the dermatologist**

- Skin weeping, oozing pus
- Skin very painful
- Severe itch
- Fever
- Chills
- Eczema remains the same or barely diminishes with treatment

If your child has a **fever and clusters of itchy blisters**, call your dermatologist immediately. If you cannot reach your dermatologist, take your child to the nearest emergency room.

Dermatologist _____

Phone _____

# Patient Case: Brayden

- 8-year-old boy who has had AD since infancy that has become progressively more difficult to treat as he has gotten older

# Patient Case: Cecily

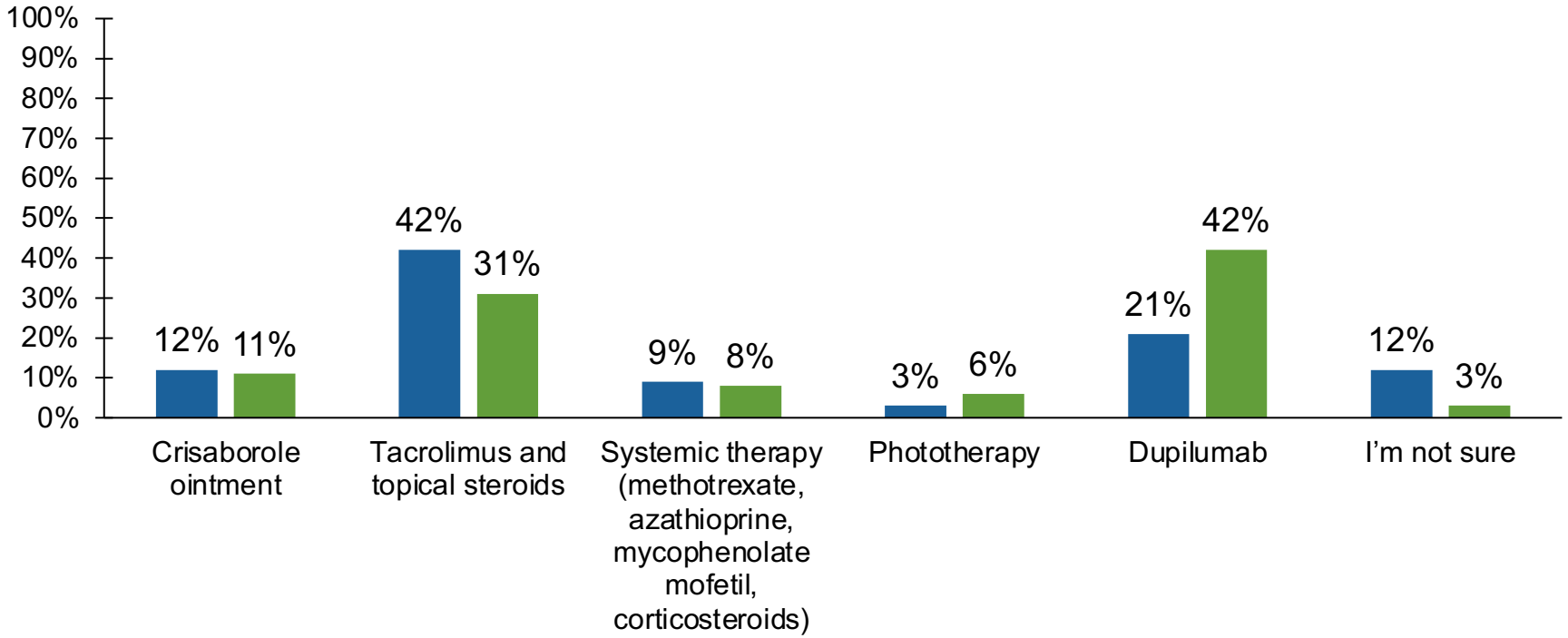
- 27-year-old woman who has had AD since she was a child
- She was referred to a dermatologist following a recent resistant flare and the development of darker “scars” on her face causing her to be very self-conscious about her appearance

# Audience Response

## What would be your treatment choice for Brayden?

A. Crisaborole ointment
B. Tacrolimus and topical steroids
C. Systemic therapy (methotrexate, azathioprine, mycophenolate mofetil, corticosteroids)
D. Phototherapy
E. Dupilumab
F. I’m not sure

# What would be your treatment choice for Brayden?



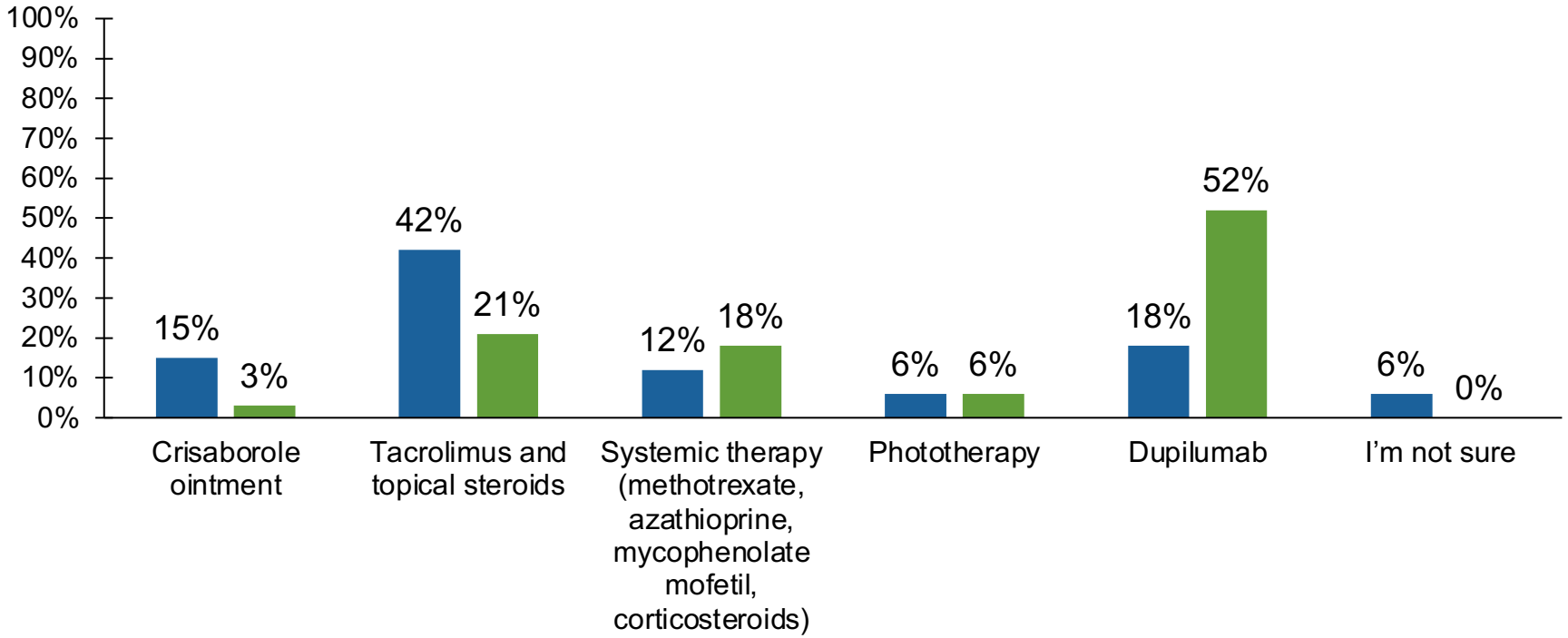

Results recorded on September 21, 2021.

# Audience Response

**What would be your treatment choice for Cecily?**

A. Crisaborole ointment
B. Tacrolimus and topical steroids
C. Systemic therapy (methotrexate, azathioprine, mycophenolate mofetil, corticosteroids)
D. Phototherapy
E. Dupilumab
F. I'm not sure

# What would be your treatment choice for Cecily?




Results recorded on September 21, 2021.

# SMART Goals

## Specific, Measurable, Attainable, Relevant, Timely

- Recognize the role that structural racism and health inequities play in the diagnosis and management of AD in children and adults of color
- Differentiate the clinical features and presentation of AD in SoC
- Utilize validated tools to measure disease severity as part of treatment decision-making in patients of color
- Develop evidence-based AD treatment plans for children and adults
- Support patients/caregivers with education to prepare them to self-manage their AD through flares and periods of disease control

CME OUTFITTERS

*Visit the*

# Dermatology Hub

Free resources and education to educate health care providers and patients on AD

**https://www.cmeoutfitters.com/dermatology-hub/**

# To Receive Credit

To receive CME/CE credit for this activity, participants must complete the post-test and evaluation online.

Participants will be able to download and print their certificate immediately upon completion.

CME OUTFITTERS

# Supplemental Slides

# Odds Ratios (95% CI) of Socioeconomic Risk Factors for Moderate to Severe AD Stratified by Race/Ethnicity

| Risk Factor | Odds Child Is Black (95% CI) | Odds Child Is Latino (95% CI) | Odds Child Is White (95% CI) |
|---|---|---|---|
| Family earns < $30,000/yr | 4.16 (2.16-8.01) | 2.15 (1.01-4.56) | 0.159 (0.0694-0.364) |
| Highest education of caregiver is less than high school degree | 0.354 (0.113-1.11) | 4.98 (1.86-13.34) | 1.446 (0.5402-3.868) |
| Child lives between 2 addresses | 2.32 (1.02-5.30) | 0.857 (0.304-2.42) | 0.570 (0.228-1.43) |
| ≥ 1 smoker(s) in home | 2.89 (1.37-6.09) | 0.559 (0.202-1.55) | 0.512 (0.224-1.17) |
| Renting home | 4.80 (2.52-9.15) | 1.97 (0.960-4.04) | 0.214 (0.109-0.417) |
| Single-family home | 0.312 (0.172-0.558) | 0.610 (0.30-1.26) | 3.80 (1.98-7.55) |

CI = confidence interval

Tackett KJ, et al. *Pediatr Dermatol*. 2020;37(1):142-246.