# Updates in Pediatric Dermatology

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- I have no conflicts of interest to report
- I will be talking about off-label use of medications

# Outline

- Acne
  - Things to watch out for
- Atopic dermatitis
  - Topical steroids
  - Non-steroid topicals
  - IL 4/13
  - JAK
- Psoriasis
  - New topical
  - Biologics approved for kids
  - Other considerations
- Alopecia areata



Dietary Supplement for teens, women and men

### 30 Tablets

Addrena LLC. • 2200 Kings HWY 3-L Suite 159 Port Charlotte, Florida 33980

# Supplement Facts

Serving Size: 1 Tablet Servings Per Container: 30

### Amount Per Serving %DV†

Vitamin A (as Retinyl Acetate)	860 mcg	 96%
Niacin (as Niacinamide)	25mg	 156%
Biotin (as D-Biotin)		
Pantothenic Acid (as D-Calcium Pantothenate)		
Selenium (as Selenium Amino Acid Chelate)		
Chromium (as Chromium Amino Acid Chelate)	60 mcg	 171%

† Percent Daily Values based on a 2000 calorie diet.
† Daily Value not established.

Other Ingredients: Microcrystalline Cellulose, Stearic Acid, Dicalcium Phosphate, Croscarmellose Sodium, Magnesium Stearate, Silicon Dioxide, and Pharmaceutical Glaze.

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Click image to open expanded view

Nutriissa

	mount Per Serving	3 5-07
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spierary Diesd. Servyme OM, Disperime (Fruit Extract) openne (Fruit Extract)	50mg 10mg	-
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#### NATURAL • HOLISTIC • HEALING

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### **Supplement Facts**

Serving Size: 3 Vegetarian Softgels Serving Per Container: 30

	Amount Per Se	erving %DV
Vitamin A (as Retinyl Acetate)	1000 mcg(500	0 IU) 100%
Niacin (Vitamin B-3) (as Niacinamide)	20 mg	100%
Pantothenic Acid (as D-Calcium Pantothenate)	2000 mg	20,000%
Biotin (as D-Biotin)	300 mcg	100%
Selenium (as Selenomethionine)	2000 mcg	286%
Chromium (as Chromium Polynicotinate)	120 mcg	100%
L-Carnitine (as L-carnitine tartrate)	500 mg	**
Proprietary Blend:		
Co-enzyme Q10 (std.99%)	50 mg	
Bioperine (Fruit Extract)	10 mg	**

\*\* Daily Value not Established

Other Ingredients: Carrageenan, Glycerol, Water, Sorbitol Bioperine ® is a registered trademark of Sabinsa Corporation

# Recommended daily allowance (RDA) of vitamin A

Life Stage	<b>Recommended Amount</b>
Birth to 6 months	400 mcg RAE
Infants 7-12 months	500 mcg RAE
Children 1–3 years	300 mcg RAE
Children 4-8 years	400 mcg RAE
Children 9–13 years	600 mcg RAE
Teen males 14–18 years	900 mcg RAE
Teen females 14–18 years	700 mcg RAE
Adult males	900 mcg RAE
Adult females	700 mcg RAE
Pregnant teens	750 mcg RAE
Pregnant adults	770 mcg RAE
Breastfeeding teens	1,200 mcg RAE
Breastfeeding adults	1,300 mcg RAE

Acnetame = 860 mcg

Acnetane = 1000 mcg

### **RDA** Selenium

 Table 1: Recommended Dietary Allowances (RDAs) for Selenium [6]

Age	Male	Female	Pregnancy	Lactation
Birth to 6 months	15 mcg*	15 mcg*		
7–12 months	20 mcg*	20 mcg*		
1-3 years	20 mcg	20 mcg		
4-8 years	30 mcg	30 mcg		
9-13 years	40 mcg	40 mcg		
14-18 years	55 mcg	55 mcg	60 mcg	70 mcg
19-50 years	55 mcg	55 mcg	60 mcg	70 mcg
51+ years	55 mcg	55 mcg		

Selenium toxicity = nausea, vomiting, loss/brittleness of hair and nails, fatigue, irritability, "garlic breath" Acnetame = 100 mcg (182%)

Acnetane = 2000 mcg (286%)

- Even if this was 200 mcg it would still be 363%
- If it's truly 2000 mcg it would be 3,636% of RDA

Table 3: Tolerable	e Upper Intak	e Levels (ULs)	) for Selenium [6]*
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Age	Male	Female	Pregnancy	Lactation
Birth to 6 months	45 mcg	45 mcg		
7–12 months	60 mcg	60 mcg		
1-3 years	90 mcg	90 mcg		
4-8 years	150 mcg	150 mcg		
9–13 years	280 mcg	280 mcg		
14–18 years	400 mcg	400 mcg	400 mcg	400 mcg
19+ years	400 mcg	400 mcg	400 mcg	400 mcg

### What does this mean for us?

- Make sure you ask about anything they may be using
- Stop all other acne treatments, especially when starting isotretinoin



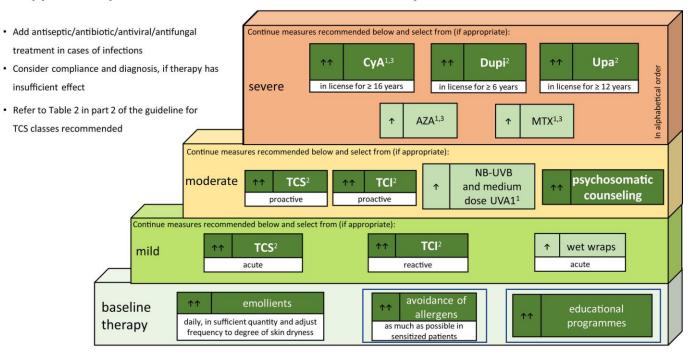
### Atopic Dermatitis







#### Stepped-care plan for children and adolescents with atopic eczema



<sup>1</sup> refer to guideline text for restrictions, <sup>2</sup> licensed indication, <sup>3</sup> off-label treatment

 $\uparrow\uparrow$  (dark green) strong recommendation for the use of an intervention /  $\uparrow$  (light green) weak recommendation for the use of an intervention

For definitions of disease severity, acute, reactive, proactive see section 'VII' and section 'Introduction to systemic treatment' of the EuroGuiDerm Atopic Eczema Guideline

AZA=azathioprine; CyA=ciclosporin; Dupi=dupilumab; MTX=methotrexate; TCI=topical calcineurin inhibitors; TCS= topical corticosteroids; Upa=upadacitinib; UVA1=ultraviolet A1; NB-UVB=narrow-band ultraviolet B



Symbols	Implications (adapted from GRADE 1)
11	We believe that all or almost all informed people would make that choice.
Ť	We believe that most informed people would make that choice, but a substantial number would not.
0	We cannot make a recommendation.
Ļ	We believe that most informed people would make a choice against that intervention, but a substantial number would not.
44	We believe that all or almost all informed people would make a choice against that choice.
	No recommendation.

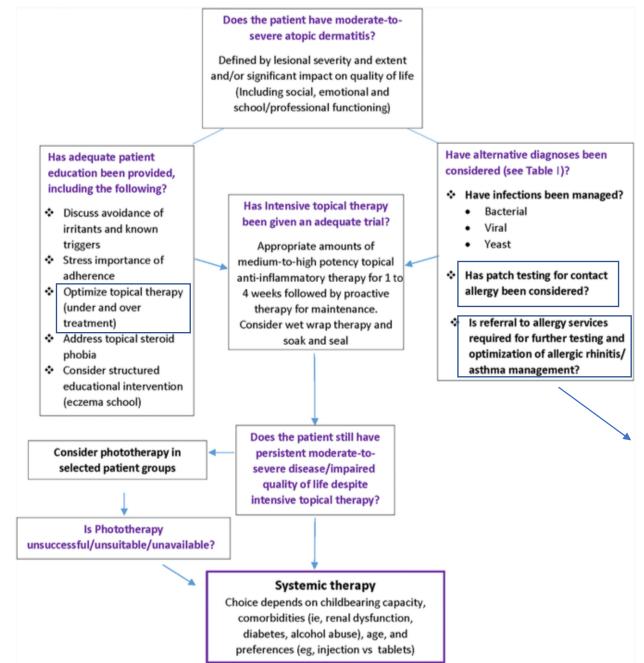
Wollenberg, A., Kinberger, M., Arents, B., Aszodi, N., Avila Valle, G., Barbarot, S., Bieber, T., Brough, H.A., Calzavara Pinton, P., Christen-Zäch, S., Deleuran, M., Dittmann, M., Dressler, C., Fink-Wagner, A.H., Fosse, N., Gáspár, K., Gerbens, L., Gieler, U., Girolomoni, G., Gregoriou, S., Mortz, C.G., Nast, A., Nygaard, U., Redding, M., Rehbinder, E.M., Ring, J., Rossi, M., Serra-Baldrich, E., Simon, D., Szalai, Z.Z., Szepietowski, J.C., Torrelo, A., Werfel, T. and Flohr, C. (2022), European guideline (EuroGuiDerm) on atopic eczema: part I – systemic therapy. J Eur Acad Dermatol Venereol, 36: 1409-1431. https://doi.org/10.1111/jdv.18345

### When should you use systemic therapy?

• Panel of expert recommendations October 2017

### "It doesn't work"

- They put it on and nothing changed
  - Do you have the correct diagnosis?
  - Do you need a much stronger treatment?
- The cream helped but it didn't completely go away
  - Stronger treatment
- Rash improved but it came back when they stopped using it
  - Expectation management



**Fig 1.** Algorithm to decide when systemic immunomodulatory therapy is warranted in patients with atopic dermatitis.

- Once daily use
- Treat texture, not time
- Daily moisturizer is a must

- 1. Specific concern
  - 2. List of "allergies"
  - 3. Nothing else is working<sup>\*</sup>
  - 4. Formula fed
  - 5. LEAP

Drug (in alphabetical order)	Approved for AD?	Estimated efficacy (% reduction in composite severity scores)	Dose range	Common or serious side effects	Monitoring required*
Azathioprine	No	26%-39% <sup>5</sup>	Adult: 1-3 mg/kg/day; Pediatric: 1-4 mg/kg/day	Hematologic abnormalities, skin and other malignancies, hepatosplenic lymphoma, and CNS infections such as PML	CBC, CMP, thiopurine methyltransferase
Cyclosporine	No in United States, yes in Europe	53%-95% <sup>5</sup>	Adult and pediatric: 2.5-5 mg/kg	Renal insufficiency, hypertension, and drug interactions	CBC, CMP, magnesium, uric acid, lipids, and blood pressure
Dupilumab	Yes	<b>73%</b> <sup>62</sup>	Adult: 600 mg loading followed by 300 mg/wk	Injection site reactions and conjunctivitis	None
Methotrexate	No	42% <sup>5</sup>	Adult: 7.5-25 mg weekly Pediatrics: 0.2-0.7 mg/kg weekly	Hepatoxicity, hematologic abnormalities, teratogen, gastrointestinal intolerance, nausea, and fatigue	CBC, CMP
Mycophenolate	No	Unknown	1.0-1.5 g orally twice daily Pediatric: 30-50 mg/kg daily	Gastrointestinal, teratogen	CBC, CMP

#### Table II. Most common on-label and off-label systemic therapies in AD

AD, Atopic dermatitis; CBC, complete blood count with differential and platelets; CMP, complete metabolic panel with basic chemistries and liver function tests; CNS, central nervous system; PML, progressive multifocal leukoencephalopathy.

"See published review by Sidbury et al<sup>7</sup> for more complete and detailed information regarding dosing and drug monitoring.

Drug	Duration	Dose	Disease severity reduction, % (scoring system)	P value
Cyclosporine	1 year	5 mg/kg/d	56 (Six Area, Six Sign Atopic Dermatitis)	<.001*
	12 weeks	2.5-5 mg/kg/d	35-44 (Scoring Atopic Dermatitis); 46 (Six Area, Six Sign Atopic Dermatitis)	<.001*; NS <sup>†</sup>
Flunisolide	2 weeks	7.5 mg/wk	54 (Total clinical severity)	<.001 <sup>‡</sup>
Methotrexate	12 weeks	640-1200 $\mu$ g	49 (Scoring Atopic Dermatitis)	$NS^{\dagger}$
Montelukast Omalizumab	4 weeks 24 weeks	Not specified 150-375 mg Q2-4W	42 (Six Area, Six Sign Atopic Dermatitis) 26 (Scoring Atopic Dermatitis)	<.05* <sup>‡§</sup> NR

### Table II. Drug efficacy in pediatric clinical trials

NS, Not significant; Q2-4W, every 2-4 weeks.

\*Compared with baseline.

<sup>†</sup>No difference between methotrexate and cyclosporine.

<sup>‡</sup>Compared with placebo.

<sup>§</sup>NS with crossover group.

### Non-steroid topicals

- Pimecrolimus cream
  - 3 months and older
  - Do not use occlusive dressings
- Tacrolimus ointment
  - 0.03% 2-15 years old
  - 0.1% 16 and up
- Burning is a common side effect
- Black box warning "skin malignancies and lymphoma reported"

#### - Box 1

#### Clinical situations in which topical calcineurin inhibitors may be preferable to topical steroids

Recalcitrance to steroids

Sensitive areas (eg, face, anogenital, skin folds)

Steroid-induced atrophy

Long-term uninterrupted topical steroid use

Some will use these in areas to prevent flares

Not very strong

### Crisaborole ointment

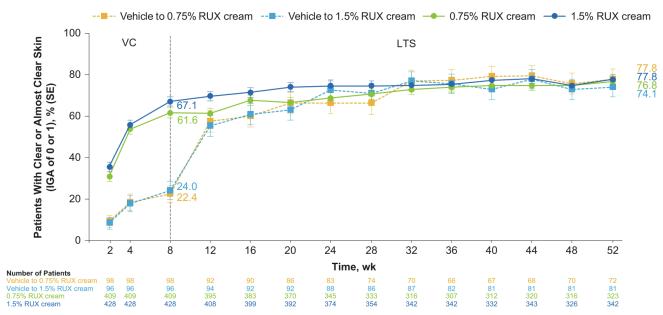
- Mild-moderate atopic dermatitis
- 3 months and older
- Burning is a common side effect

### Ruxolitinib 1.5% cream

- Brand name Opzelura
- Atopic dermatitis 12 years and older
  - No more than 20% BSA
  - Reassess at 8 weeks
  - Also approved for vitiligo (though only 10% BSA)
- JAK 1 and 2 inhibitor
- Multiple black box warnings
  - Infection
  - MI/stroke
  - Lymphoma and other malignancies
  - Thrombosis

### Safety

1072 patients between two trials; ages 12 and up



**Fig 1.** Proportion of patients with clear or almost clear skin (IGA 0/1) for the 52-week study period.\**IGA*, Investigator's Global Assessment; *LTS*, long-term safety; *RUX*, ruxolitinib; *VC*, vehicle controlled. \*Among patients who continued into the LTS period.

Papp K, Szepietowski JC, Kircik L, et al. Long-term safety and disease control with ruxolitinib cream in atopic dermatitis: Results from two phase 3 studies. J Am Acad Dermatol 2023;88:1008-16.

- No serious drug-related adverse events
- Plasma concentrations were "low"

Medication	GoodRx Cost*
Triamcinolone 0.1% ointment	\$6.29
Clobetasol ointment	\$11.59
Tacrolimus 0.03% ointment	\$23.72
Pimecrolimus cream	\$47.49
Crisaborole ointment (60g)	\$709.16
Ruxolitinib cream (60g)	\$1938.49

# Dupilumab

- IL 4/13 inhibitor
  - Tralokinumab (IL 13 inhibitor) approved for 18 and older only
- Prefilled syringe and Pen
  - Pen approved for age 2 and up
- FDA approved down to the age of 6 months
  - Moderate to severe atopic dermatitis
  - Moderate to severe asthma with concurrent moderate to severe atopic dermatitis
    - 6 years and older

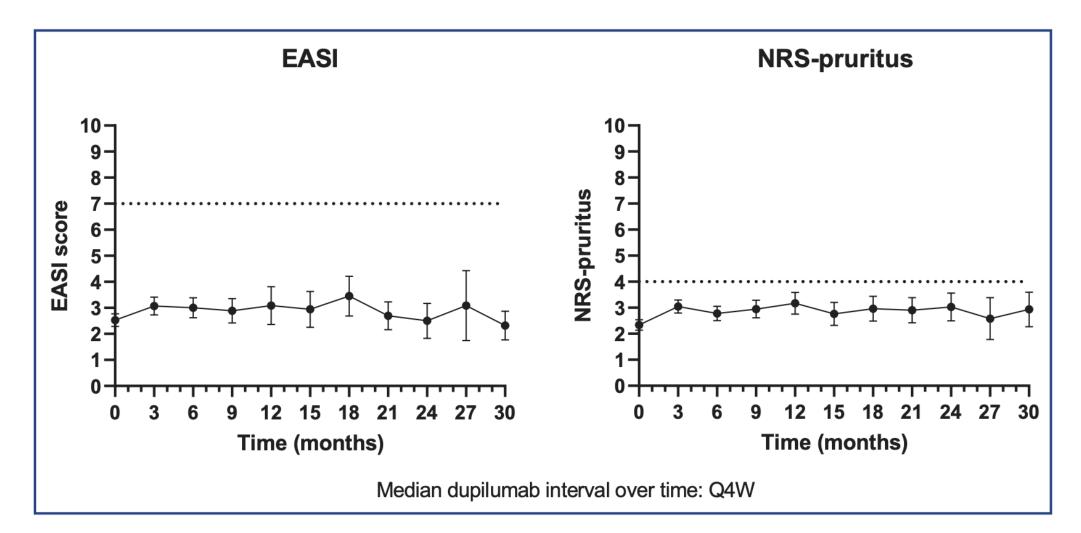
# Any increased risk of infection?

- 612 total patients
  - 205 placebo
  - 407 dupilumab
- Infection rates were lower in the group treated with dupilumab vs placebo

### Do you need to be on it forever?

- Patients treated with dupilumab for more than 1.3 years
- 595 total patients (all adults), 401 who tapered on their medication
- 88.3% successfully tapered their dose while maintaining their good result

### How did the 401 do?



Bottom line- it's worth considering decreasing the frequency in patients who are doing well

### My experience

- Itch vs rash
  - Itch tends to improve first
  - Rash with time
- Expectation management
  - Still need steroid creams
  - Don't get lazy

### Oral JAK inhibitors

- Upadacitinib
  - JAK 1,2,3 inhibitor
  - 12 and older, >40 kg
- Abrocitinib
  - JAK 1 inhibitor
  - 12 and older, >25 kg
  - Reassess at 12 weeks
- Black box warnings
  - Infection
  - CV death
  - Malignancy
  - Thrombosis

### Safety

### • Review of 3 randomized clinical trials, 552 patients age 12-17

#### Table 1.

**Demographics and Baseline Characteristics for Adolescents** 

Characteristic	No. (%)								
	Upadacitini	b 15 mg		Upadacitinib 30 mg			Placebo		
	Measure	Measure	AD Up	Measure	Measure	AD Up	Measure	Measure	AD Up
	Up 1	Up 2		Up 1	Up 2		Up 1	Up 2	
No.	64	58	60	64	62	60	61	60	63
Sex									
Female	34 (53)	38 (66)	27 (45)	36 (56)	26 (42)	25 (42)	33 (54)	35 (58)	36 (57)
Male	30 (47)	20 (34)	33 (55)	28 (44)	36 (58)	35 (58)	28 (46)	25 (42)	27 (43)
Age, mean (SD), y	15.5 (2.0)	15.2 (1.8)	15.4 (1.7)	15.7 (1.6)	15.8 (1.7)	15.3 (1.9)	15.1 (1.7)	15.5 (1.7)	15.1 (1.9)
Weight, mean (SD), kg	61.1 (12.2)	60.0 (13.5)	64.1 (18.0)	61.8 (14.8)	64.0 (14.0)	63.9 (18.5)	64.0 (17.0)	66.0 (15.9)	61.4 (16.4
Race									
Asian	12 (19)	5 (9)	13 (22)	10 (16)	12 (19)	6 (10)	10 (16)	6 (10)	14 (22)
Black	6 (9)	5 (9)	5 (8)	0	3 (5)	6 (10)	6 (10)	7 (12)	5 (8)
White	45 (70)	42 (72)	41 (68)	50 (78)	46 (74)	46 (77)	41 (67)	45 (75)	44 (70)
Other <sup>a</sup>	1 (2)	6 (10)	1 (2)	4 (6)	1 (2)	2 (3)	4 (7)	2 (3)	0

Paller A, Ladizinski B, Mendes-Bastos P, et al. Efficacy and Safety of Upadacitinib Treatment in Adolescents With Moderate-to-Severe Atopic Dermatitis. JAMA Dermatol. 2023 May; 159(5): 526–535.

	UP 15mg			UP 30mg			Placebo		
Any Serious AEs, (n (%)	1 (2)	2 (3)	1 (2)	0	0	0	1 (2)	3 (5)	0
Infections and infestations, n (%) Cellulitis	0	0	0	0	0	0	0	1 (2)	0
Impetigo	1 (2)	0	0	0	0	0	0	ò́	0
Subcutaneous abscess	ò́	0	0	0	0	0	0	1 (2)	0
Injury, poisoning and procedural complications, n (%)									
Ligament rupture	0	0	1 (1.7)	0	0	0	0	0	0
Nervous system disorders, n (%)									
Migraine	0	0	0	0	0	0	0	1 (2)	0
Psychiatric disorders, n (%)									
Suicide attempt <sup>b</sup>	0	1 (2)	0	0	0	0	0	0	0
Respiratory, thoracic and mediastinal disorders, n (%)									
Pneumomediastinum	0	1 (2)	0	0	0	0	0	0	0
Skin and subcutaneous tissue disorders, n (%)									
Dermatitis atopic	0	1 (2)	0	0	0	0	1 (2)	1 (2)	0
Eczema	0	0	0	0	0	0	0	0	0
Any AE Leading to Discontinuation, n (%)	0	2 (3)	1 (2)	1 (2)	0	0	1 (2)	1 (2)	1 (2)
Hepatobiliary disorders, n (%)									
Hepatic function abnormal	0	0	1 (2)	0	0	0	0	0	0
Immune system disorders, n (%)									
Drug hypersensitivity	0	0	0	0	0	0	1 (2)	0	0
Respiratory, thoracic and mediastinal disorders, n (%)									
Asthma	0	1 (2)	0	0	0	0	0	0	0
Skin and subcutaneous tissue disorders, n (%)									
Acne	0	0	0	1 (1.6)	0	0	0	0	0
Dermatitis atopic	0	0	0	0	0	0	0	1 (2)	1 (2)
Pruritus	0	1 (2)	0	0	0	0	0	0	0

	Patients, n (%)				
	Upadacitinib 15 mg	Upadacitinib 30 mg	Placebo		
Parameter	(n = 182)	(n = 186)	(n = 183)		
Any acne AE, n (%)	22 (12.1)	28 (15.1)	4 (2.2)		
Predisposing factors, n (%)	n = 22	n = 28	n = 4		
Medical history of acne	9 (40.9)	4 (14.3)	4 (100)		
Family history of acne	11 (50.0)	12 (42.9)	2 (50.0)		
Concomitant medication associated with acne	0	0	0		
Other predisposing factors for acne	5 (22.7)	11 (39.3)	1 (25.0)		
Discontinuation of study due to acne AE, n (%)	0	1 (0.5)	0		
Recurrence of acne AE, n (%)	1 (0.5)	1 (0.5)	0		
Time to onset of first acne event, median	51.5 (11, 103)	47.5 (1, 102)	41.5 (8, 96)		
(range), days	(n = 22)	(n = 28)	(n = 4)		
Duration of first acne event, median (range), days	104.5 (29, 564) (n = 6)	84.0 (23, 505) (n = 13)	21.0 (21, 21) (n = 1)		
Medications used to treat acne, n (%)	n = 22	n = 28	n = 4		
None	5 (22.7)	11 (39.3)	1 (25.0)		
Topical	12 (54.5)	13 (46.4)	3 (75.0)		
Oral <sup>b</sup>	2 (9.1)	0	0		
Missing	5 (22.7)	4 (14.3)	0		
Areas of acne involvement <sup>c</sup> , n (%)	n = 22	n = 28	n = 4		
Face	21 (95.5)	27 (96.4)	4 (100)		
Trunk	13 (59.1)	10 (35.7)	1 (25.0)		
Extremities	0	0	0		
Morphology of acne <sup>c</sup> , n (%)	n = 22	n = 28	n = 4		
Inflammatory papules	18 (81.8)	22 (78.6)	4 (100)		
Comedones	12 (54.5)	16 (57.1)	3 (75.0)		
Pustules	9 (40.9)	7 (25.0)	1 (25.0)		
Scarring	3 (13.6)	1 (3.6)	0		
Inflammatory nodules and cysts	0	0	0		

#### eTable4. Characterization of Acne Adverse Events in Adolescents<sup>a</sup>

Abbreviation: AE, adverse event.

<sup>a</sup>Acne adverse events refer to investigator identified events from Measure Up 1, Measure Up 2, and AD Up.

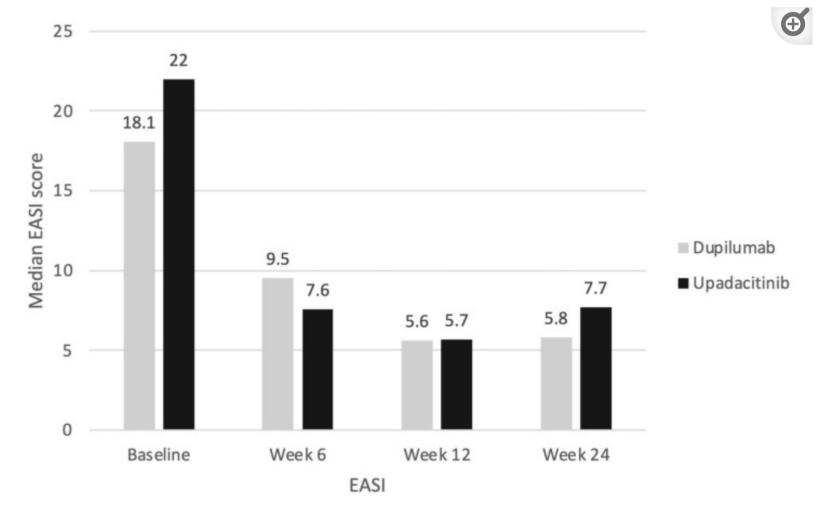
<sup>b</sup>Included retinoid (1 patient) and tetracycline (1 patient).

°Percentages calculated out of the number of patients experiencing acne, not the total population.

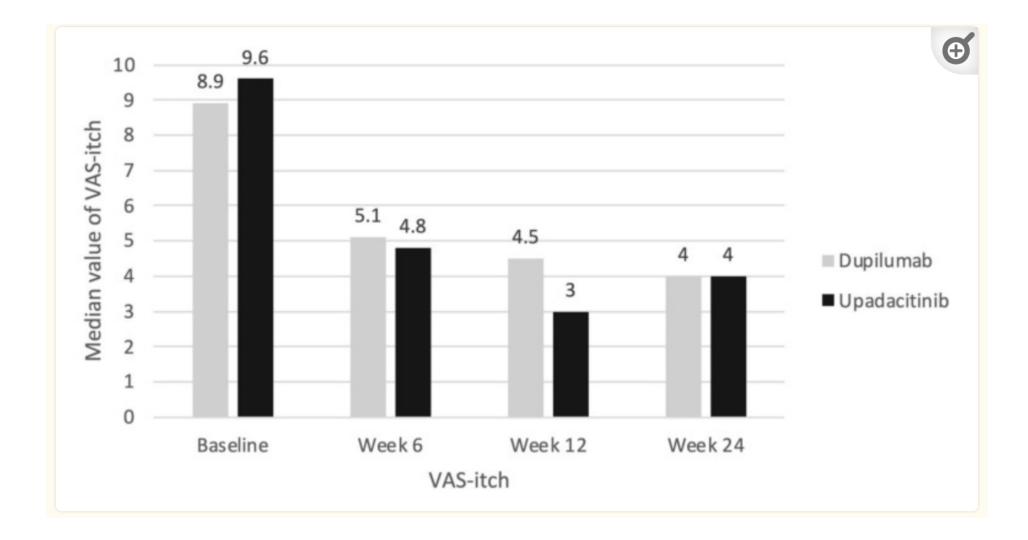
### My experience

- They can work very well and quickly
- Side effects are a concern for parents but it seems safe in younger patients
- Don't be surprised if you see worsening acne

### Head-to-head

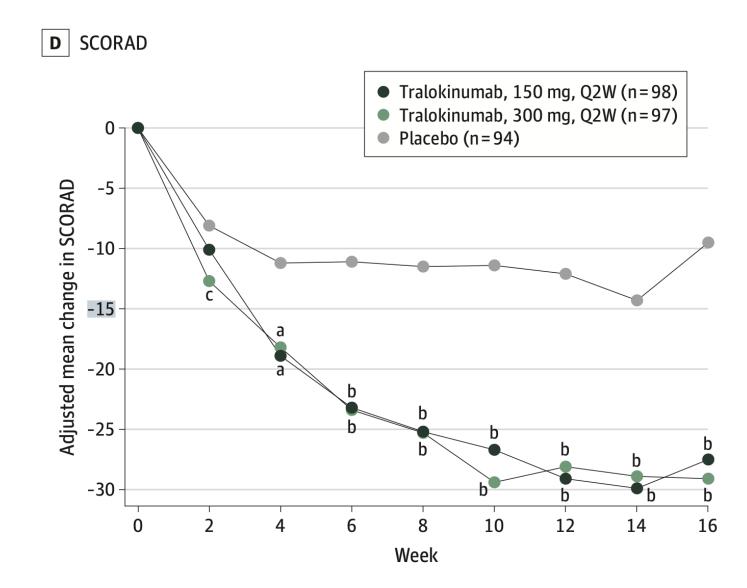


Kiefer S, König A, Gerger V, Rummenigge C, Müller AC, Jung T, Frank A, Tassopoulos G, Laurent E, Kaufmann R, Pinter A. Efficacy and Treatment Satisfaction of Different Systemic Therapies in Children and Adolescents with Moderate-to-Severe Atopic Dermatitis: A Real-World Study. J Clin Med. 2023 Feb 1;12(3):1175. doi: 10.3390/jcm12031175. PMID: 36769820; PMCID: PMC9917393. Bottom line = expectation management is key



# Tralokinumab

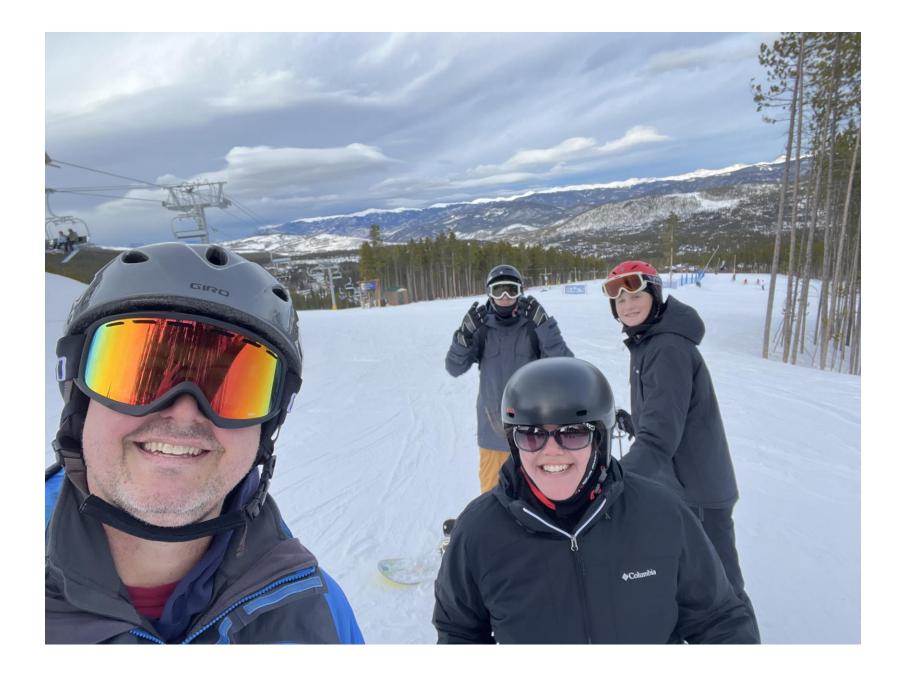
- FDA approved in the US for adults only
- 289 patients age 12-17 completed the 52 week trial



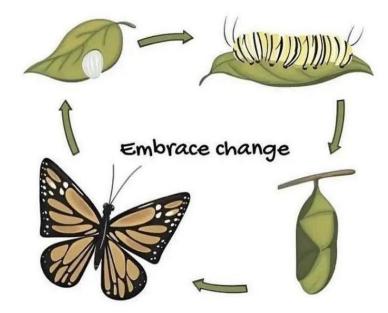
# Overall

- Start with topical steroids
- Other topicals exist but aren't nearly as strong
  - More expensive
- Systemic immunosuppressives don't work very well
- Newer systemic medications
  - Work well
  - Very expensive
  - Expectation management



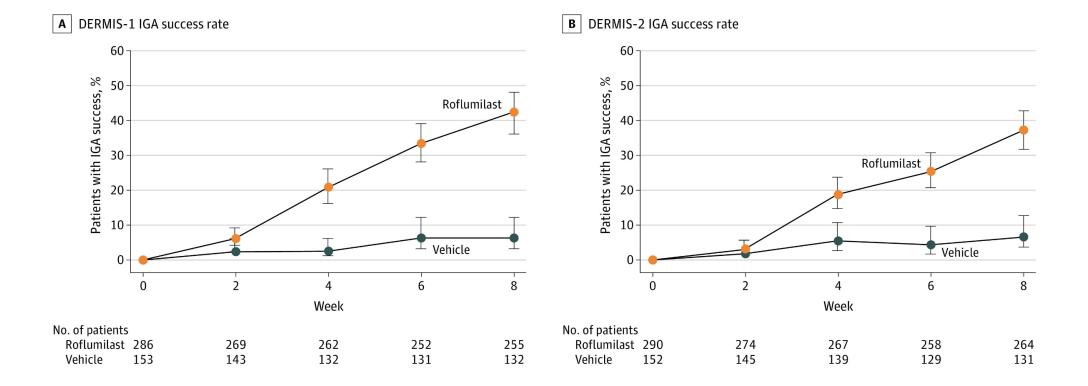


### Psoriasis

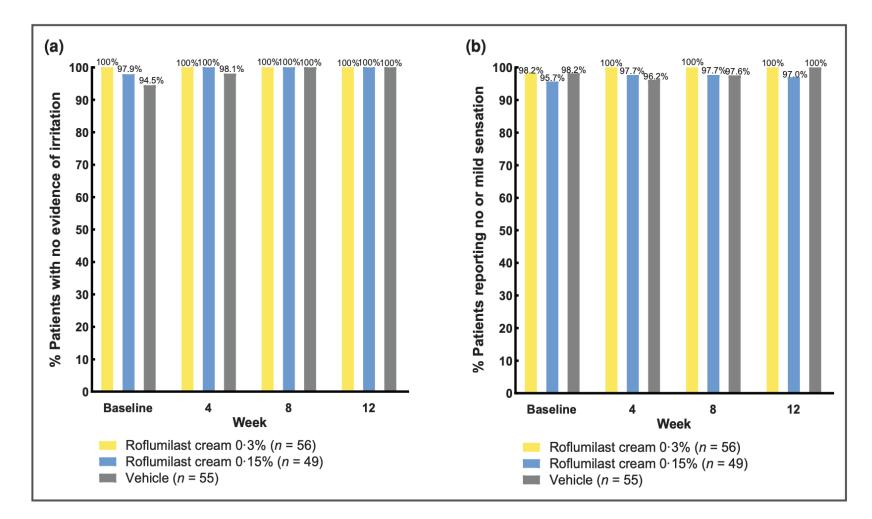


### Roflumilast cream 0.3%

- FDA approved (as of 7/29/2023) for 12 and up
- Once daily dosing



Lebwohl MG, Kircik LH, Moore AY, et al. Effect of Roflumilast Cream vs Vehicle Cream on Chronic Plaque Psoriasis. JAMA. 2022 Sep 20; 328(11): 1073–1084.



**Figure 1** (a) Percentages of patients with psoriasis involving the face and/or intertriginous areas who had no evidence of irritation on investigatorrated local tolerability assessments. (b) Percentages of patients with psoriasis involving the face and/or intertriginous areas who had scores of 'no sensation' or 'slight warm, tingling sensation; not really bothersome' on patient-rated assessments of local tolerability in the 10–15 min postapplication.

Draelos ZD, Adam DN, Hong HC, et al. Efficacy and safety of roflumilast cream for chronic plaque psoriasis with facial/neck and intertriginous area involvement: a post hoc analysis from a randomized controlled trial. Br J Dermatol. 2023 May 24;188(6):810-812.

# Comorbidities

• Metanalysis...very data dense

#### FIGURE 4 Forest plot showing significant association between childhood psoriasis and elevated waist-to-height ratio

	Mean	oriasis SD		Mean	Contro SD		Weight	Mean Difference IV, Random, 95% CI	Mean Difference IV, Random, 95% CI
Study or Subgroup BMI	mean	00	Total	mean	00	Total	rreight	14, Randoni, 55/6 61	IV, Randoll, Joke of
Ergun 2016	20	4.24	289	18.33	3.7	151	11.3%	1.67 [0.90, 2.44]	
Goldminz 2013	22.7	5.7	20	22.5	5.4	20	0.6%	0.20 [-3.24, 3.64]	
Jensen 2014	20.3	0.6	30	18.7	0.5	30	85.1%	1.60 [1.32, 1.88]	
Tom 2015	23.5	6.1	44	21.4	4	44	1.4%	2.10 [-0.06, 4.26]	
Torres 2014	23.5	4	20	19	2.9	27	1.6%	2.10 [0.03, 4.17]	
Subtotal (95% CI)	21.1	4	403	19	2.8		100.0%	1.62 [1.36, 1.87]	•
1 1	0.00	- 1.00		VD - 0	003-12		100.070	1.02 [1.30, 1.07]	•
Heterogeneity: Tau <sup>2</sup> = Test for overall effect:					90); 1-	= 0%			
reactor overall enect.	2 - 12.2	.0 (1 ~	0.001						
HDL									
Ferretti 1993	1.39	0.26	15	1.13	0.28	16	4.8%	0.26 [0.07, 0.45]	
Goldminz 2013	1.15	0.25	20	1.29	0.23	20	7.3%	-0.14 [-0.29, 0.01]	-
Jensen 2014	1.25	0.05	30	1.29	0.06	30	34.8%	-0.04 [-0.07, -0.01]	•
Koebnick 2011		0.08	439		0.07	132831	39.9%	0.00 [-0.01, 0.01]	•
Tom 2015	1.28	0.35	44	1.3	0.27	44	9.0%	-0.02 [-0.15, 0.11]	+
Torres 2014		0.26	20	1.42		27	4.3%	-0.03 [-0.23, 0.17]	+
Subtotal (95% CI)		0120	568		0	132968	100.0%	-0.01 [-0.06, 0.03]	
Heterogeneity: Tau <sup>2</sup> =	0.00; $\chi^2$	= 18.0	8, df =	5 (P = 0	0.003)	I <sup>2</sup> = 72%			
Test for overall effect:					,				
LDL									
Ferretti 1993	2.79	0.67	15	2 69	0.46	16	10.6%	0.10 [-0.31, 0.51]	
Goldminz 2013	2.46	0.84	20	2.46	0.5	20	10.0%	0.00 [-0.43, 0.43]	
Jensen 2014	2.40	0.04	30	2.40	0.1	30	26.5%	, . ,	
								-0.10 [-0.15, -0.05]	
Koebnick 2011 Tom 2015	2.69	0.11	439 44	2.54 2.43		132831 44	27.2% 14.9%	0.15 [0.14, 0.16]	
Torres 2014			20				14.9%	0.22 [-0.08, 0.52]	
Subtotal (95% CI)	2.43	0.61	568	2.35	0.8	27 132968	10.8%	0.08 [-0.32, 0.48] 0.07 [-0.10, 0.24]	
							10010 10	otor fortiol others	ř
1 1	0.03-12	- 00 9		5 /P < (	001				
Heterogeneity: Tau <sup>2</sup> =			3, df =	5 (P < 0	).001);				
Heterogeneity: Tau <sup>2</sup> = Test for overall effect:			3, df =	5 (P < (	).001);				
Heterogeneity: Tau <sup>2</sup> =			3, df =	5 (P < (	).001);				
Heterogeneity: Tau <sup>2</sup> = Test for overall effect:	Z = 0.76		3, df =		0.001); 0.22		7.4%	0.08 [-0.22, 0.38]	_
Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Triglycerides	Z = 0.76	6 (P = 0	3, df = ).45)			I <sup>z</sup> = 94%	7.4% 16.7%	0.08 [-0.22, 0.38] 0.11 [-0.05, 0.27]	÷.
Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Triglycerides Ferretti 1993	Z = 0.76 0.88 0.77	0.56 (P = 0	3, df = ).45) 15	0.8	0.22	l² = 94% 16			Ţ
Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Triglycerides Ferretti 1993 Goldminz 2013	Z = 0.76 0.88 0.77	0.56 0.3	3, df = ).45) 15 20	0.8 0.66 0.95	0.22	l² = 94% 16 20	16.7%	0.11 [-0.05, 0.27]	
Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Triglycerides Ferretti 1993 Goldminz 2013 Jensen 2014	Z = 0.76 0.88 0.77 0.96 1.29	0.56 0.3 0.09	3, df = ).45) 15 20 30	0.8 0.66 0.95 1.14	0.22 0.2 0.1	² = 94% 16 20 30	16.7% 28.9%	0.11 [-0.05, 0.27] 0.01 [-0.04, 0.06]	
Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Triglycerides Ferretti 1993 Goldminz 2013 Jensen 2014 Koebnick 2011	Z = 0.76 0.88 0.77 0.96 1.29	0.56 0.3 0.09 0.19	3, df = ).45) 15 20 30 439	0.8 0.66 0.95 1.14	0.22 0.2 0.1 0.16	² = 94% 16 20 30 132831	16.7% 28.9% 31.0%	0.11 [-0.05, 0.27] 0.01 [-0.04, 0.06] 0.15 [0.13, 0.17]	
Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Triglycerides Ferretti 1993 Goldminz 2013 Jensen 2014 Koebnick 2011 Tom 2015	Z = 0.76 0.88 0.77 0.96 1.29 1	0.56 0.3 0.09 0.19 0.34	3, df = 0.45) 15 20 30 439 44 548	0.8 0.66 0.95 1.14 0.96	0.22 0.2 0.1 0.16 0.44	<sup>2</sup> = 94% 16 20 30 132831 44 132941	16.7% 28.9% 31.0% 16.1%	0.11 [-0.05, 0.27] 0.01 [-0.04, 0.06] 0.15 [0.13, 0.17] 0.04 [-0.12, 0.20]	
Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Triglycerides Ferretti 1993 Goldminz 2013 Jensen 2014 Koebnick 2011 Tom 2015 Subtotal (95% CI)	Z = 0.76 0.88 0.77 0.96 1.29 1 0.01; χ <sup>2</sup>	0.56 0.3 0.09 0.19 0.34 = 29.9	3, df = ).45) 15 20 30 439 44 548 9, df =	0.8 0.66 0.95 1.14 0.96	0.22 0.2 0.1 0.16 0.44	<sup>2</sup> = 94% 16 20 30 132831 44 132941	16.7% 28.9% 31.0% 16.1%	0.11 [-0.05, 0.27] 0.01 [-0.04, 0.06] 0.15 [0.13, 0.17] 0.04 [-0.12, 0.20]	
Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Triglycerides Ferretti 1993 Goldminz 2013 Jensen 2014 Koebnick 2011 Tom 2015 Subtotal (95% CI) Heterogeneity: Tau <sup>2</sup> = Test for overall effect:	Z = 0.76 0.88 0.77 0.96 1.29 1 0.01; χ <sup>2</sup>	0.56 0.3 0.09 0.19 0.34 = 29.9	3, df = ).45) 15 20 30 439 44 548 9, df =	0.8 0.66 0.95 1.14 0.96	0.22 0.2 0.1 0.16 0.44	<sup>2</sup> = 94% 16 20 30 132831 44 132941	16.7% 28.9% 31.0% 16.1%	0.11 [-0.05, 0.27] 0.01 [-0.04, 0.06] 0.15 [0.13, 0.17] 0.04 [-0.12, 0.20]	
Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Triglycerides Ferretti 1993 Goldminz 2013 Jensen 2014 Koebnick 2011 Tom 2015 Subtotal (95% CI) Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Total cholesterol	Z = 0.76 0.88 0.77 0.96 1.29 1 0.01; $\chi^2$ Z = 1.66	0.56 0.3 0.09 0.19 0.34 = 29.9 5 (P = 0	3, df = 0.45) 15 20 30 439 44 548 9, df = 0.10)	0.8 0.66 0.95 1.14 0.96 4 (P < 0	0.22 0.2 0.1 0.16 0.44	1 <sup>2</sup> = 94% 16 20 30 132831 44 <b>132941</b> ; I <sup>2</sup> = 87%	16.7% 28.9% 31.0% 16.1% 100.0%	0.11 [-0.05, 0.27] 0.01 [-0.04, 0.06] 0.15 [0.13, 0.17] 0.04 [-0.12, 0.20] 0.08 [-0.01, 0.17]	
Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Triglycerides Ferretti 1993 Goldminz 2013 Jensen 2014 Koebnick 2011 Tom 2015 Subtotal (95% CI) Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Total cholesterol Ferretti 1993	Z = 0.76 0.88 0.77 0.96 1.29 1 0.01; $\chi^2$ Z = 1.66 4.44	0.56 0.3 0.09 0.19 0.34 = 29.9 5 (P = 0 0.78	3, df = 0.45) 15 20 30 439 44 548 9, df = 0.10)	0.8 0.66 0.95 1.14 0.96 4 (P < 0 4.03	0.22 0.2 0.1 0.16 0.44 0.001):	² = 94% 16 20 30 132831 44 132941 ;  ² = 87%	16.7% 28.9% 31.0% 16.1% 100.0%	0.11 [-0.05, 0.27] 0.01 [-0.04, 0.06] 0.15 [0.13, 0.17] 0.04 [-0.12, 0.20] 0.08 [-0.01, 0.17]	
Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Triglycerides Ferretti 1993 Goldminz 2013 Jensen 2014 Koebnick 2011 Tom 2015 Subtotal (95% CI) Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Total cholesterol Ferretti 1993 Goldminz 2013	Z = 0.76 0.88 0.77 0.96 1.29 1 0.01; $\chi^2$ Z = 1.66 4.44 4	0.56 0.3 0.09 0.19 0.34 = 29.9 6 (P = 0 0.78 0.93	3, df = 0.45) 15 20 30 439 44 548 9, df = 0.10) 15 20	0.8 0.66 0.95 1.14 0.96 4 (P < 0 4.03 4.04	0.22 0.2 0.1 0.16 0.44 0.001): 0.58 0.62	² = 94% 16 20 30 132831 44 132941 ;  ² = 87% 16 20	16.7% 28.9% 31.0% 16.1% 100.0%	0.11 [-0.05, 0.27] 0.01 [-0.04, 0.06] 0.15 [0.13, 0.17] 0.04 [-0.12, 0.20] 0.08 [-0.01, 0.17] 0.41 [-0.08, 0.90] -0.04 [-0.53, 0.45]	
Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Triglycerides Ferretti 1993 Goldminz 2013 Jensen 2014 Koebnick 2011 Tom 2015 Subtotal (95% CI) Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Total cholesterol Ferretti 1993 Goldminz 2013 Jensen 2014	Z = 0.76 0.88 0.77 0.96 1.29 1 0.01; $\chi^2$ Z = 1.66 4.44 4 3.8	0.56 0.3 0.09 0.19 0.34 = 29.9 6 (P = 0 0.78 0.93 0.1	3, df = ).45) 15 20 30 439 44 548 9, df = ).10) 15 20 30 30	0.8 0.66 0.95 1.14 0.96 4 (P < 0 4.03 4.04 3.9	0.22 0.2 0.1 0.16 0.44 0.001) 0.58 0.62 1.4	<sup>2</sup> = 94% 16 20 30 132831 44 132941 ;   <sup>2</sup> = 87% 16 20 30	16.7% 28.9% 31.0% 16.1% 100.0% 0.0% 0.0%	0.11 [-0.05, 0.27] 0.01 [-0.04, 0.06] 0.15 [0.13, 0.17] 0.04 [-0.12, 0.20] 0.08 [-0.01, 0.17] 0.04 [-0.08, 0.90] -0.04 [-0.53, 0.45] -0.10 [-0.60, 0.40]	
Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Triglycerides Ferretti 1993 Goldminz 2013 Jensen 2014 Koebnick 2011 Tom 2015 Subtotal (95% CI) Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Total cholesterol Ferretti 1993 Goldminz 2013 Jensen 2014 Koebnick 2011	Z = 0.76 0.88 0.77 0.96 1.9 1 0.01; $\chi^2$ Z = 1.66 4.44 4 3.8 2.69	0.56 0.3 0.09 0.19 0.34 = 29.9 5 (P = 0 0.78 0.93 0.1 0.11	3, df = ).45) 15 20 30 439 44 548 9, df = ).10) 15 20 30 439 439	0.8 0.66 0.95 1.14 0.96 4 (P < 0 4.03 4.04 3.9 2.54	0.22 0.2 0.1 0.16 0.44 0.001) 0.58 0.62 1.4 0.09	<sup>2</sup> = 94% 16 20 30 132831   <sup>2</sup> = 87% 16 20 30 132831	16.7% 28.9% 31.0% 16.1% 100.0% 0.0% 0.0% 99.7%	0.11 [-0.05, 0.27] 0.01 [-0.04, 0.06] 0.15 [0.13, 0.17] 0.04 [-0.12, 0.20] 0.08 [-0.01, 0.17] 0.04 [-0.08, 0.90] -0.04 [-0.53, 0.45] -0.10 [-0.60, 0.40] 0.15 [0.14, 0.16]	
Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Ferretti 1993 Goldminz 2013 Jensen 2014 Koebnick 2011 Tom 2015 Subtotal (95% CI) Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Total cholesterol Ferretti 1993 Goldminz 2013 Jensen 2014 Koebnick 2011 Tom 2015	Z = 0.76 0.88 0.77 0.96 1.29 1 0.01; $\chi^2$ Z = 1.66 4.44 4 3.8 2.69 4.34	0.56 0.3 0.09 0.19 0.34 = 29.9 5 (P = 0 0.78 0.93 0.1 0.11 0.89	3, df = 0.45) 15 20 30 439 44 548 9, df = 0.10) 15 20 30 439 44 44 30 44 44 44 44 44 44 44 44 44 4	0.8 0.66 0.95 1.14 0.96 4 (P < 0 4.03 4.04 3.9 2.54 4.17	0.22 0.2 0.1 0.44 0.001) 0.58 0.62 1.4 0.09 0.77	<sup>2</sup> = 94% 16 20 30 132831 44 132941 ;   <sup>2</sup> = 87% 16 20 30 132831 44	16.7% 28.9% 31.0% 16.1% 100.0% 0.0% 0.0% 99.7% 0.1%	0.11 [-0.05, 0.27] 0.01 [-0.04, 0.06] 0.15 [0.13, 0.17] 0.04 [-0.12, 0.20] 0.08 [-0.01, 0.17] 0.41 [-0.08, 0.90] -0.04 [-0.53, 0.45] -0.10 [-0.60, 0.40] 0.15 [0.14, 0.16] 0.17 [-0.18, 0.52]	
Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Triglycerides Ferretti 1993 Goldminz 2013 Jensen 2014 Koebnick 2011 Tom 2015 Subtotal (95% CI) Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Total cholesterol Ferretti 1993 Goldminz 2013 Jensen 2014 Koebnick 2011 Tom 2015 Torres 2014	Z = 0.76 0.88 0.77 0.96 1.29 1 0.01; $\chi^2$ Z = 1.66 4.44 4 3.8 2.69 4.34	0.56 0.3 0.09 0.19 0.34 = 29.9 5 (P = 0 0.78 0.93 0.1 0.11	3, df = 15 20 30 439 44 548 9, df = 0.10) 15 20 30 439 44 20 30 44 20 439 44 20 30 44 20 30 439 44 20 30 439 44 20 30 439 44 548 548 548 548 548 548 548	0.8 0.66 0.95 1.14 0.96 4 (P < 0 4.03 4.04 3.9 2.54	0.22 0.2 0.1 0.44 0.001) 0.58 0.62 1.4 0.09 0.77	<sup>2</sup> = 94% 16 20 30 132831 44 132941 ; l <sup>2</sup> = 87% 16 20 30 132831 44 27	16.7% 28.9% 31.0% 16.1% 100.0% 0.0% 0.0% 99.7% 0.1% 0.0%	0.11 [-0.05, 0.27] 0.01 [-0.04, 0.06] 0.15 [0.13, 0.17] 0.04 [-0.12, 0.20] 0.08 [-0.01, 0.17] 0.41 [-0.08, 0.90] -0.04 [-0.53, 0.45] -0.10 [-0.60, 0.40] 0.15 [0.14, 0.16] 0.17 [-0.18, 0.52] 0.07 [-0.40, 0.54]	
Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Triglycerides Ferretti 1993 Goldminz 2013 Jensen 2014 Koebnick 2011 Tom 2015 Subtotal (95% CI) Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Total cholesterol Ferretti 1993 Goldminz 2013 Jensen 2014 Koebnick 2011 Tom 2015 Torres 2014 Subtotal (95% CI)	Z = 0.76 0.88 0.77 0.96 1.29 1 0.01; $\chi^2$ Z = 1.66 4.44 4 3.8 2.69 4.34 4.15	0.56 0.3 0.09 0.19 0.34 = 29.9 6 (P = 0 0.78 0.78 0.93 0.11 0.89 0.82	3, df = 15 20 30 439 44 548 9, df = 0.10) 15 20 30 439 44 548 9, df = 20 30 439 44 20 568	0.8 0.66 0.95 1.14 0.96 4 (P < 0 4.03 4.04 3.9 2.54 4.17 4.08	0.22 0.2 0.1 0.16 0.44 0.001); 0.58 0.62 1.4 0.09 0.77 0.82	<sup>2</sup> = 94% 16 20 30 132831 44 132941 ; <sup>12</sup> = 87% 16 20 30 132831 44 27 132968	16.7% 28.9% 31.0% 16.1% 100.0% 0.0% 0.0% 99.7% 0.1%	0.11 [-0.05, 0.27] 0.01 [-0.04, 0.06] 0.15 [0.13, 0.17] 0.04 [-0.12, 0.20] 0.08 [-0.01, 0.17] 0.41 [-0.08, 0.90] -0.04 [-0.53, 0.45] -0.10 [-0.60, 0.40] 0.15 [0.14, 0.16] 0.17 [-0.18, 0.52]	
Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Triglycerides Ferretti 1993 Goldminz 2013 Jensen 2014 Koebnick 2011 Tom 2015 Subtotal (95% CI) Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Total cholesterol Ferretti 1993 Goldminz 2013 Jensen 2014 Koebnick 2011 Tom 2015 Torres 2014	Z = 0.76 0.88 0.77 0.96 1.29 1 0.01; $\chi^2$ Z = 1.66 4.44 4 3.8 2.69 4.34 4.15 0.00; $\chi^2$	0.56 0.3 0.09 0.19 0.34 = 29.9 6 (P = 0 0.78 0.78 0.93 0.1 0.89 0.82 = 2.75	3, df = 15 20 30 439 439 548 9, df = 5 20 30 439 43 43 20 30 439 43 44 42 20 30 439 43 43 43 44 20 30 30 43 9, df = 15 20 30 30 30 30 30 30 30 30 30 30 30 30 30	0.8 0.66 0.95 1.14 0.96 4 (P < 0 4.03 4.04 3.9 2.54 4.17 4.08 (P = 0.	0.22 0.2 0.1 0.16 0.44 0.001); 0.58 0.62 1.4 0.09 0.77 0.82	<sup>2</sup> = 94% 16 20 30 132831 44 132941 ; <sup>12</sup> = 87% 16 20 30 132831 44 27 132968	16.7% 28.9% 31.0% 16.1% 100.0% 0.0% 0.0% 99.7% 0.1% 0.0%	0.11 [-0.05, 0.27] 0.01 [-0.04, 0.06] 0.15 [0.13, 0.17] 0.04 [-0.12, 0.20] 0.08 [-0.01, 0.17] 0.41 [-0.08, 0.90] -0.04 [-0.53, 0.45] -0.10 [-0.60, 0.40] 0.15 [0.14, 0.16] 0.17 [-0.18, 0.52] 0.07 [-0.40, 0.54]	
Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Triglycerides Ferretti 1993 Goldminz 2013 Jensen 2014 Koebnick 2011 Tom 2015 Subtotal (95% Cl) Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Total cholesterol Ferretti 1993 Goldminz 2013 Jensen 2014 Koebnick 2011 Tom 2015 Torres 2014 Subtotal (95% Cl) Heterogeneity: Tau <sup>2</sup> =	Z = 0.76 0.88 0.77 0.96 1.29 1 0.01; $\chi^2$ Z = 1.66 4.44 4 3.8 2.69 4.34 4.15 0.00; $\chi^2$	0.56 0.3 0.09 0.19 0.34 = 29.9 6 (P = 0 0.78 0.78 0.93 0.1 0.89 0.82 = 2.75	3, df = 1 15 20 30 439 439 548 9, df = 5 20 30 439 439 44 20 30 439 44 20 568 4, df = 5	0.8 0.66 0.95 1.14 0.96 4 (P < 0 4.03 4.04 3.9 2.54 4.17 4.08 (P = 0.	0.22 0.2 0.1 0.16 0.44 0.001); 0.58 0.62 1.4 0.09 0.77 0.82	<sup>2</sup> = 94% 16 20 30 132831 44 132941 ; <sup>12</sup> = 87% 16 20 30 132831 44 27 132968	16.7% 28.9% 31.0% 16.1% 100.0% 0.0% 0.0% 99.7% 0.1% 0.0%	0.11 [-0.05, 0.27] 0.01 [-0.04, 0.06] 0.15 [0.13, 0.17] 0.04 [-0.12, 0.20] 0.08 [-0.01, 0.17] 0.41 [-0.08, 0.90] -0.04 [-0.53, 0.45] -0.10 [-0.60, 0.40] 0.15 [0.14, 0.16] 0.17 [-0.18, 0.52] 0.07 [-0.40, 0.54]	
Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Triglycerides Ferretti 1993 Goldminz 2013 Jensen 2014 Koebnick 2011 Tom 2015 Subtotal (95% Cl) Heterogeneity: Tau <sup>2</sup> = Test for overall effect: Total cholesterol Ferretti 1993 Goldminz 2013 Jensen 2014 Koebnick 2011 Tom 2015 Torres 2014 Subtotal (95% Cl) Heterogeneity: Tau <sup>2</sup> =	Z = 0.76 0.88 0.77 0.96 1.29 1 0.01; $\chi^2$ Z = 1.66 4.44 4 3.8 2.69 4.34 4.15 0.00; $\chi^2$	0.56 0.3 0.09 0.19 0.34 = 29.9 6 (P = 0 0.78 0.78 0.93 0.1 0.89 0.82 = 2.75	3, df = 1 15 20 30 439 439 548 9, df = 5 20 30 439 439 44 20 30 439 44 20 568 4, df = 5	0.8 0.66 0.95 1.14 0.96 4 (P < 0 4.03 4.04 3.9 2.54 4.17 4.08 (P = 0.	0.22 0.2 0.1 0.16 0.44 0.001); 0.58 0.62 1.4 0.09 0.77 0.82	<sup>2</sup> = 94% 16 20 30 132831 44 132941 ; <sup>12</sup> = 87% 16 20 30 132831 44 27 132968	16.7% 28.9% 31.0% 16.1% 100.0% 0.0% 0.0% 99.7% 0.1% 0.0%	0.11 [-0.05, 0.27] 0.01 [-0.04, 0.06] 0.15 [0.13, 0.17] 0.04 [-0.12, 0.20] 0.08 [-0.01, 0.17] 0.41 [-0.08, 0.90] -0.04 [-0.53, 0.45] -0.10 [-0.60, 0.40] 0.15 [0.14, 0.16] 0.17 [-0.18, 0.52] 0.07 [-0.40, 0.54]	

# What do the guidelines say?

- They recommend screening for obesity and other cardiovascular risk factors
  - Either we do it or send them back to PCM
- AAP recommends screening with lipid panel between ages of 9-11 and again at 17 and 21
- AAP recommends screening for hypertension annually starting at 3
- Patients who are obese or have psoriasis should be screened for diabetes every three years at the onset of puberty or age 10, whichever is sooner
  - Glucose, A1C, free insulin

# Other comorbidities

- Arthritis
  - Screen for joint pain and morning joint stiffness
  - Nail involvement (pitting)
- Uveitis
  - Has not been reported in patients with skin disease only; worth screening if they have arthritis
  - Eye pain, redness, visual changes, photophobia

# Treatment

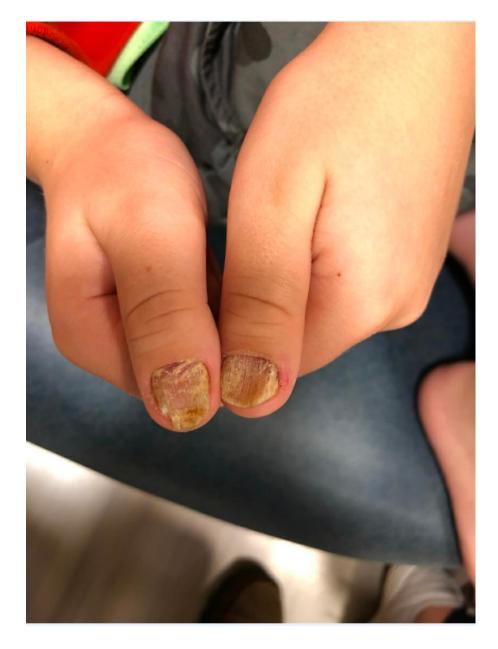
- How many topical medications are FDA approved for the treatment of psoriasis in kids?
  - Calcipotriene (12 and up)
  - Tazarotene (12 and up with less than 20% BSA)
- Which biologic agents are approved for use in kids?
  - Etanercept (4 and up)
  - Ustekinumab (6 and up)
  - Ixekizumab (6 and up)
  - Secukinumab (6 and up)

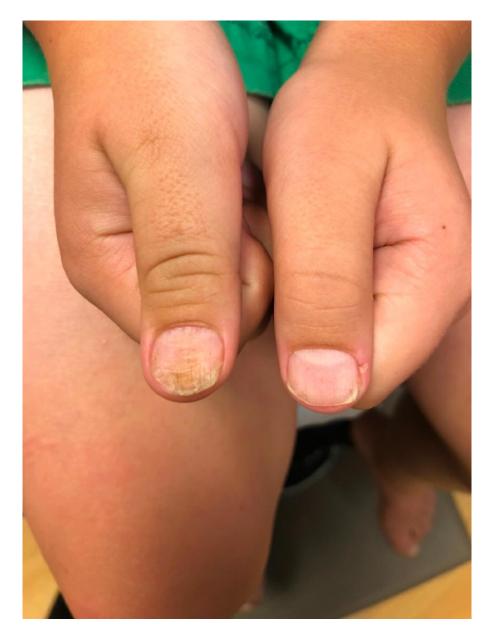
Expectation management!

# Location, location, location...

### • Treatment of:

- Nail involvement?
- Scalp?
- Inverse areas?





11/2020

06/2021

# Scalp

- Clobetasol solution nightly as needed
  - Need to get rid of scale first
  - Dawn liquid dish detergent
- Fluocinolone oil
  - Ask if they would use an oil first
- Clobetasol foam
  - Careful in those who wash their hair less often

# Inverse/intertriginous areas

- Topical steroids
- Roflumilast cream
- Topical calcineurin inhibitors
- Systemic therapy

# Pustular psoriasis





# DIRA and DITRA

- DIRA (deficiency of the interleukin-1 receptor antagonist)
  - IL-1 consistently activated
  - Presents in the first few days of life with pustulosis and inflammation
  - Fever usually not present
  - Treat with IL-1 receptor antagonist (anakinra, rilonacept)
    - Canakinumab inhibits IL-1B, not the receptor
- DITRA (deficiency of IL-36 receptor antagonist)
  - Generalized pustular psoriasis
  - Inflammation and fever
  - Median onset 7 months (avg age of diagnosis was 55 months)



### Alopecia areata

- Ritlecitinib approved for ages 12 and up with "severe" alopecia areata as of 6/23/2023
- JAK 3 inhibitor, also inhibits tyrosine kinase expressed in hepatocellular carcinoma (TEC) kinases
- Same black box warnings as other oral JAKs
- 50 mg daily

### Salt score

#### • Ranges

- No hair loss = 0%
- Limited = 1-20%
- Moderate = 21-49%
- Severe = 50-94%
- Very severe = 95-100%

Race, <i>n</i> (%) White 14 (70.0) 9 (47.4) 12 (66.7) 15 (75.0) 5 (55.6) 9	tinib ritlecitinib i0 mg 50 mg 0) (n = 9)
Female, n (%)         7 (35.0)         14 (73.7)         6 (33.3)         9 (45.0)         6 (66.7)         6           Race, n (%)	
Race, <i>n</i> (%) White 14 (70.0) 9 (47.4) 12 (66.7) 15 (75.0) 5 (55.6) 9	(60.0) 6 (66.7
White         14 (70.0)         9 (47.4)         12 (66.7)         15 (75.0)         5 (55.6)         9	
	(90.0) 8 (88.9
Asian 5 (25.0) 7 (36.8) 3 (16.7) 3 (15.0) 2 (22.2) 0	0
Black or African American         1 (5.0)         1 (5.3)         3 (16.7)         1 (5.0)         2 (22.2)         1	(10.0) 1 (11.1
American Indian or Alaska Native01 (5.3)0000	0
Multiracial 0 1 (5.3) 0 1 (5.0) 0 0	0
Weight, mean (SD), kg         63.1 (16.0)         63.2 (21.0)         63.6 (17.8)         63.3 (15.6)         60.5 (18.3)         56.9	(12.5) 51.2 (12.5
Height, mean (SD), cm 167.8 (10.9) 163.5 (8.3) 167.4 (12.0) 164.9 (11.1) 169.3 (7.3) 161.5	(8.2) 156.1 (15.5
Patients with AT or AU, n (%) <sup>a</sup> 8 (40.0)         9 (47.4)         8 (44.4)         8 (40.0)         3 (33.3)         5	(50.0) 4 (44.4
AT 5 (25.0) 6 (31.6) 7 (38.9) 5 (25.0) 2 (22.2) 1	(10.0) 3 (33.3
AU 2 (10.0) 2 (10.5) 1 (5.6) 3 (15.0) 1 (11.1) 4	(40.0) 1 (11.1
Not specified 1 (5.0) 1 (5.3) 0 0 0 0	0
Baseline SALT score	
All adolescent patients, mean (SD) 93.2 (10.9) 89.1 (16.9) 92.3 (13.9) 89.9 (13.9) 86.0 (17.7) 92.8	(13.2) 90.6 (12.3
Adolescent patients with 88.6 (12.2) 79.2 (18.5) 86.2 (16.3) 83.2 (14.5) 79.1 (18.0) 85.7 non-AT/AU <sup>a</sup> AA, mean (SD)	(16.2) 84.0 (11.9
Patients without normal EBA score, 16 (80.0) 16 (84.2) 12 (66.7) 16 (80.0) 8 (88.9) 9 n (%)	(90.0) 7 (77.8
Patients without normal ELA score, 14 (70.0) 13 (68.4) 11 (61.1) 14 (70.0) 6 (66.7) 8 n (%)	(80.0) 6 (66.7
Disease duration since diagnosis,         6.8 (4.4)         7.7 (4.7)         5.8 (4.5)         6.4 (4.0)         5.9 (4.0)         5.6           mean (SD), years         5.8 (4.4)         5.7 (4.7)         5.8 (4.5)         5.4 (4.0)         5.9 (4.0)         5.6	(4.9) 6.7 (5.2)
Duration of current AA episode,         3.3 (3.0)         3.7 (3.2)         2.3 (2.0)         3.1 (2.2)         1.8 (1.6)         2.5           mean (SD), years	(1.6) 2.3 (2.3)
	(70.0) 6 (66.7

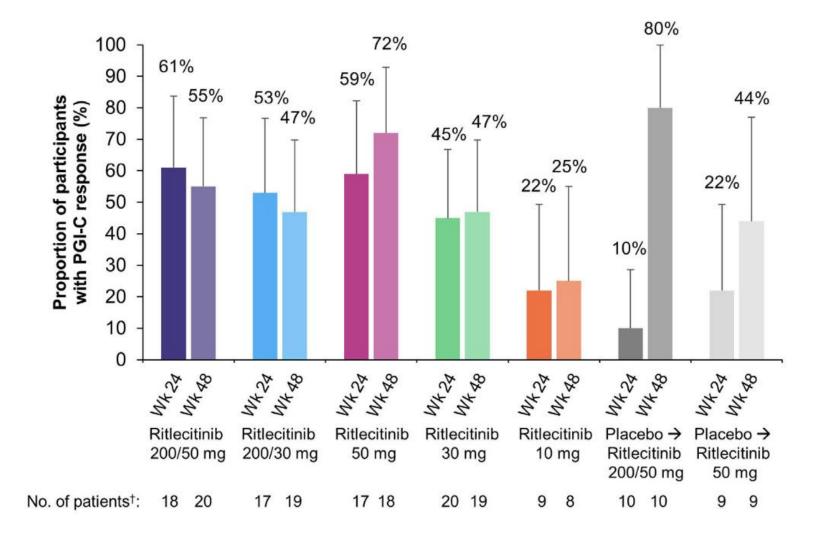
**TABLE 1** Baseline demographic and disease characteristics in adolescent patients (*N* = 105).

Abbreviations: AA, alopecia areata; AT, alopecia totalis; AU, alopecia universalis; EBA, Eyebrow Assessment; ELA, Eyelash Assessment; SALT, Severity of Alopecia Tool.

<sup>a</sup>Participants in the AT/AU category had a SALT score of 100 (complete scalp hair loss) at baseline as assessed by the investigator (regardless of the category in the AA history case report form).

Hordinsky M, Hebert AA, Gooderham M, et al. Efficacy and safety of ritlecitinib in adolescents with alopecia areata: Results from the ALLEGRO phase 2b/3 randomized, double-blind, placebo-controlled trial. Pediatr Dermatol. 2023;1-7.

Percent of patients who reported a response of "moderately improved" or "greatly improved"



- Most common averse events: headache, acne, and nasopharyngitis
- Two total patients discontinued
  - Urticaria
  - Eczema

# One more

- 718 patients with at least 50% scalp hair loss
  - Excluded those who had AA for more than 10 years
- Oral ritlecitinib daily for 24 weeks vs. placebo with a 24 week extension
- "23% of patients treated had 80% or more scalp hair coverage after 6 months of treatment"
- Most common side effects
  - Headache
  - Diarrhea
  - Acne

King B, Xingqi Z, Harcha WG, Szepietowski JC, Shapiro J, Lynde C, et al. Efficacy and safety of ritlecitinib in adults and adolescents with alopecia areata: a randomised, double-blind, multicentre, phase 2b–3 trial. Lancet <u>VOLUME 401, ISSUE 10387</u>,

# Bottom line

- It seems safe
- Effective for some but not for all
- Better than anything else we have

