

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

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Outline

- Atopic dermatitis
 - Ruxolitinib
 - Topical roflumilast
 - Injectables
 - JAK
- Psoriasis
 - Biologics approved for kids
 - Apremilast
- Alopecia areata
- Molluscum contagiosum

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Atopic Dermatitis

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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)
 - **Remember to document that it's non-segmental**
- JAK 1 and 2 inhibitor
- Multiple black box warnings
 - Infection
 - MI/stroke
 - Lymphoma and other malignancies
 - Thrombosis

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Medication	GoodRx Cost*
Triamcinolone 0.1% ointment (30g)	\$8.45
Clobetasol ointment (30g)	\$10.36
Tacrolimus 0.03% ointment (30g)	\$18.86
Pimecrolimus cream (30g)	\$62.05
Crisaborole ointment (60g)	\$745.25
Ruxolitinib cream (60g)	\$1984

GoodRx price as of 10/2/2024 in 17033 zip code

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Dupilumab

- IL 4/13 inhibitor
- 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

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What about vaccines in younger patients?

- Administration of live vaccines was not allowed during clinical trials
- 9 patients who did get either MMR or MMR and varicella
 - 5 had a gap of 1-7 weeks between dupilumab and vaccination
 - 4 had a gap of more than 12 weeks
- No adverse events or infections reported
- Antibody titers were not evaluated post vaccine

Siegfried EC, Wine Lee L, Spergel JM, et al. A case series of live attenuated vaccine administration in dupilumab-treated children with atopic dermatitis. *Pediatr Dermatol.* 2024;41(2):204-209. doi:10.1111/pde.15518

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- No consensus on what to do with dupilumab before and after administration of live vaccines
- Some data in adults that it won't impact antibody development
- You could always check titers
- My personal opinion:
 - Hold for 4 weeks before administration
 - Do not restart for 4 weeks after

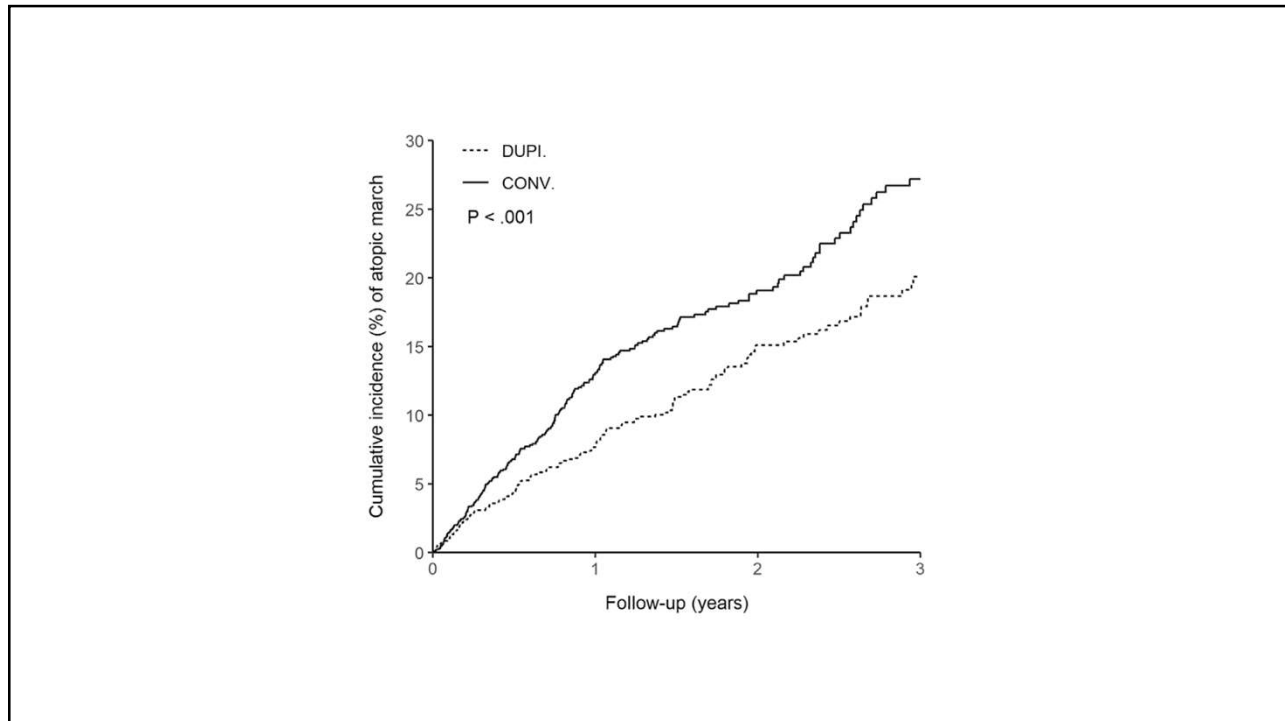
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Does it prevent atopic march?

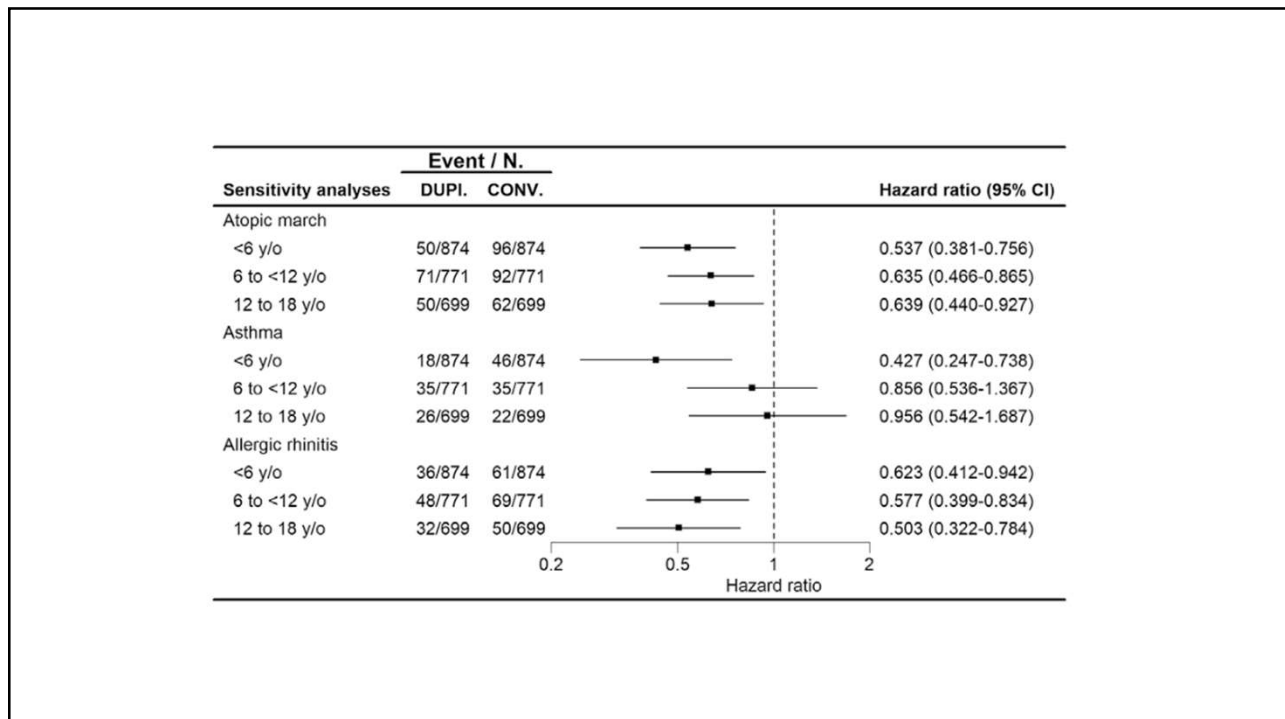
- 2192 patients in Taiwan
- Compared patients under 18 who were treated with or without dupilumab
- Followed for 3 years
 - Asthma
 - Allergic rhinitis

Lin T, Fan y, Fan K, et al. Reduced atopic march risk in pediatric atopic dermatitis patients prescribed dupilumab versus conventional immunomodulatory therapy: A population-based cohort study. J Am Acad Dermatol 2024;91:466-73

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My experience

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

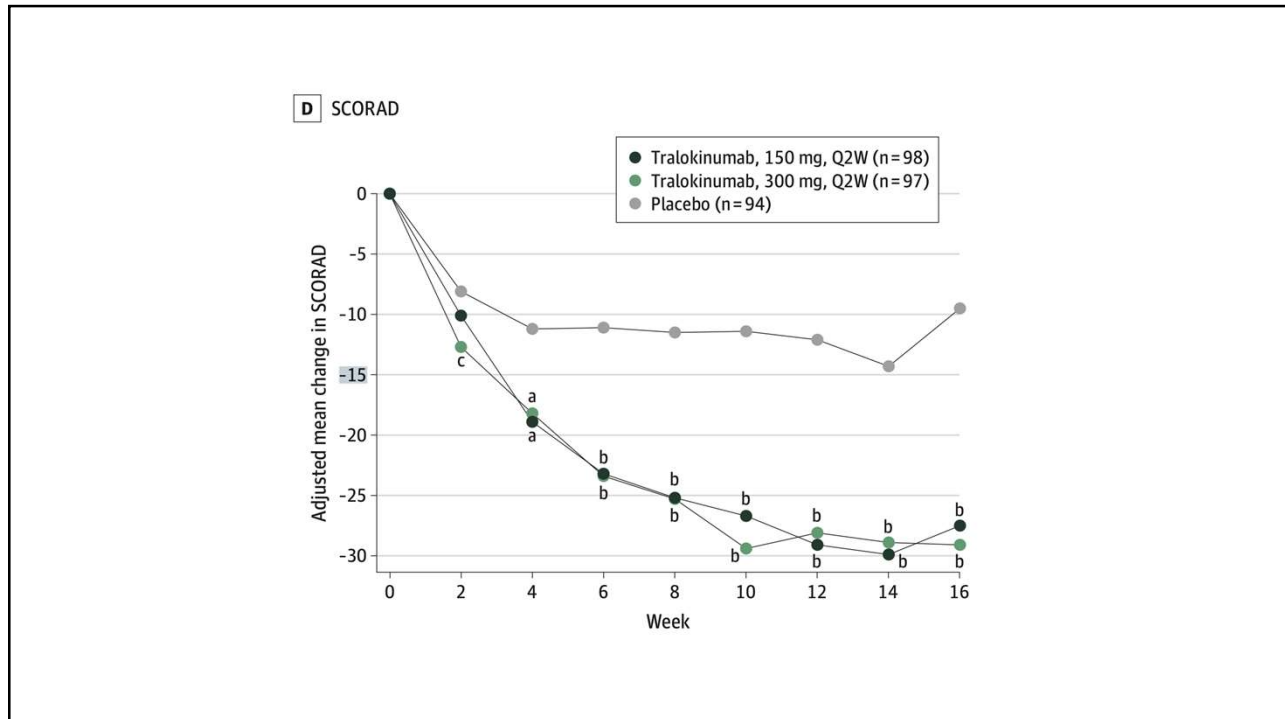
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Tralokinumab-ldrm

- FDA approved in the US for 12 and up
 - Moderate to severe atopic dermatitis
 - Loading dose of 300 mg followed by 150 mg every two weeks
- In adults – can consider 300 mg every 4 weeks after week 16 as long as the patient weighs less than 100 kg
- 289 patients age 12-17 completed the 52 week trial

Paller A, Flohr C, Cork M, et al. Efficacy and Safety of Tralokinumab in Adolescents With Moderate to Severe Atopic Dermatitis The Phase 3 ECZTRA 6 Randomized Clinical Trial. JAMA Dermatology June 2023 Volume 159, Number 6

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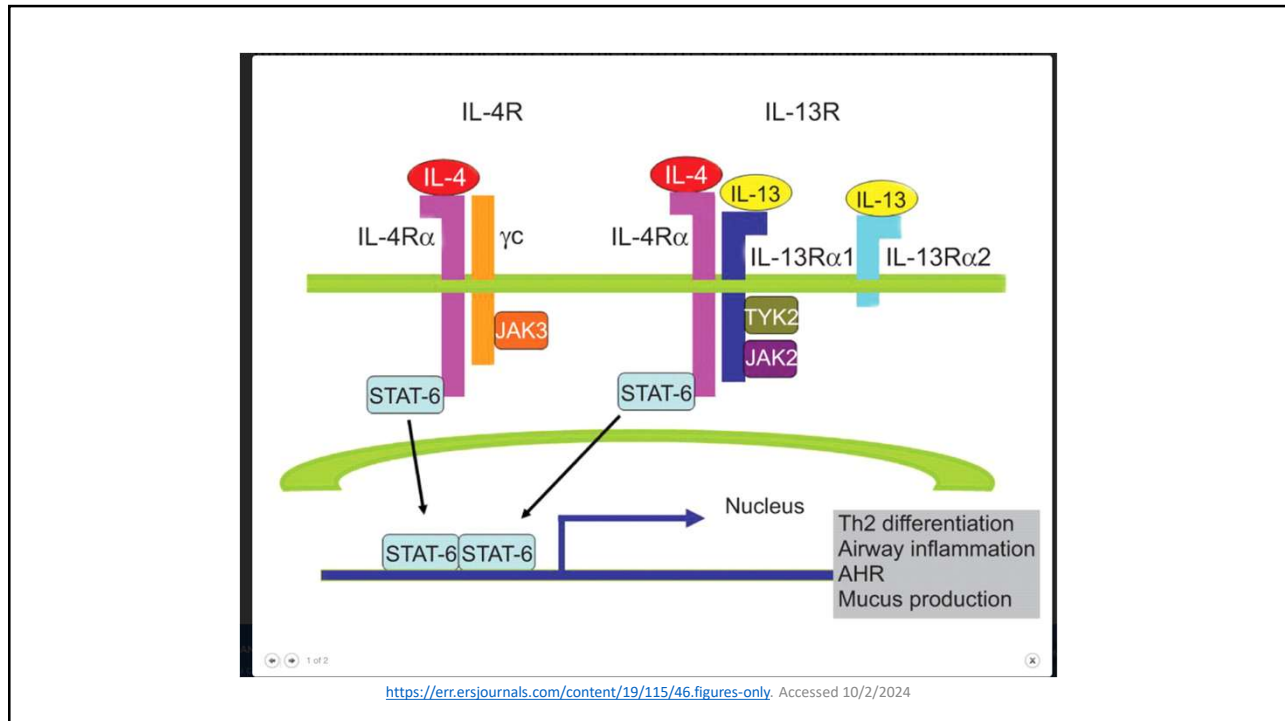


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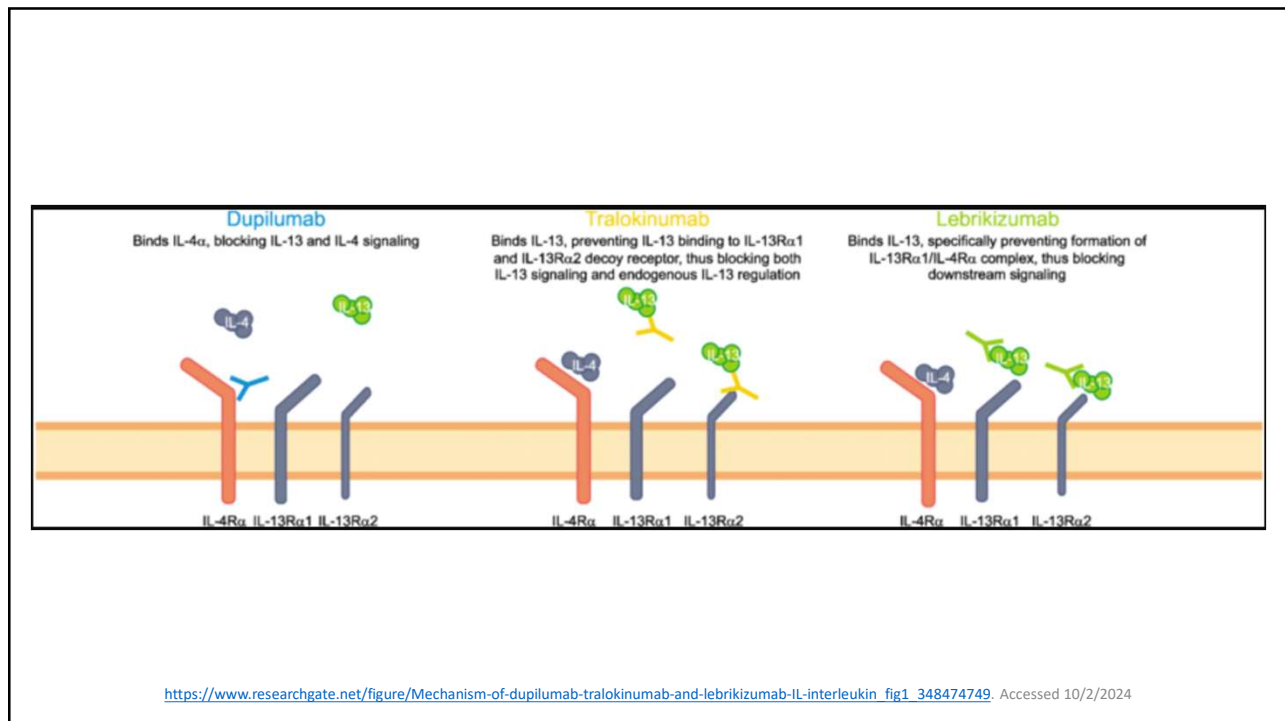
Lembrikizumab-lbkz

- Approved for atopic dermatitis in patients 12 and up on 9/13/2024
- IL-13 inhibitor
- 500 mg at weeks 0 and 2
 - Then 250 mg every 2 weeks until week 16 or when “adequate clinical response is achieved”
 - Maintenance is then 250 mg every four weeks
- Not yet commercially available

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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

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Safety

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

Table 1.
Demographics and Baseline Characteristics for Adolescents

Characteristic	No. (%)								
	Upadacitinib 15 mg			Upadacitinib 30 mg			Placebo		
	Measure Up 1	Measure Up 2	AD Up	Measure Up 1	Measure Up 2	AD Up	Measure Up 1	Measure Up 2	AD Up
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 ^a	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.

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	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	0	0
Subcutaneous abscess	0	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 ^b	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

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eTable4. Characterization of Acne Adverse Events in Adolescents^a

Parameter	Patients, n (%)		
	Upadacitinib 15 mg (n = 182)	Upadacitinib 30 mg (n = 186)	Placebo (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 (range), days	51.5 (11, 103) (n = 22)	47.5 (1, 102) (n = 28)	41.5 (8, 96) (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 ^b	2 (9.1)	0	0
Missing	5 (22.7)	4 (14.3)	0
Areas of acne involvement ^c , 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 ^c , 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

Abbreviation: AE, adverse event.
^aAcne adverse events refer to investigator identified events from Measure Up 1, Measure Up 2, and AD Up.
^bIncluded retinoid (1 patient) and tetracycline (1 patient).
^cPercentages calculated out of the number of patients experiencing acne, not the total population.

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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

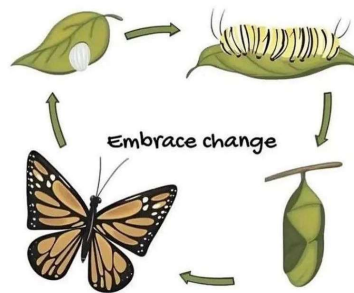
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Overall

- 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

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Psoriasis



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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)
 - Roflumilast (6 and up)
- 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!

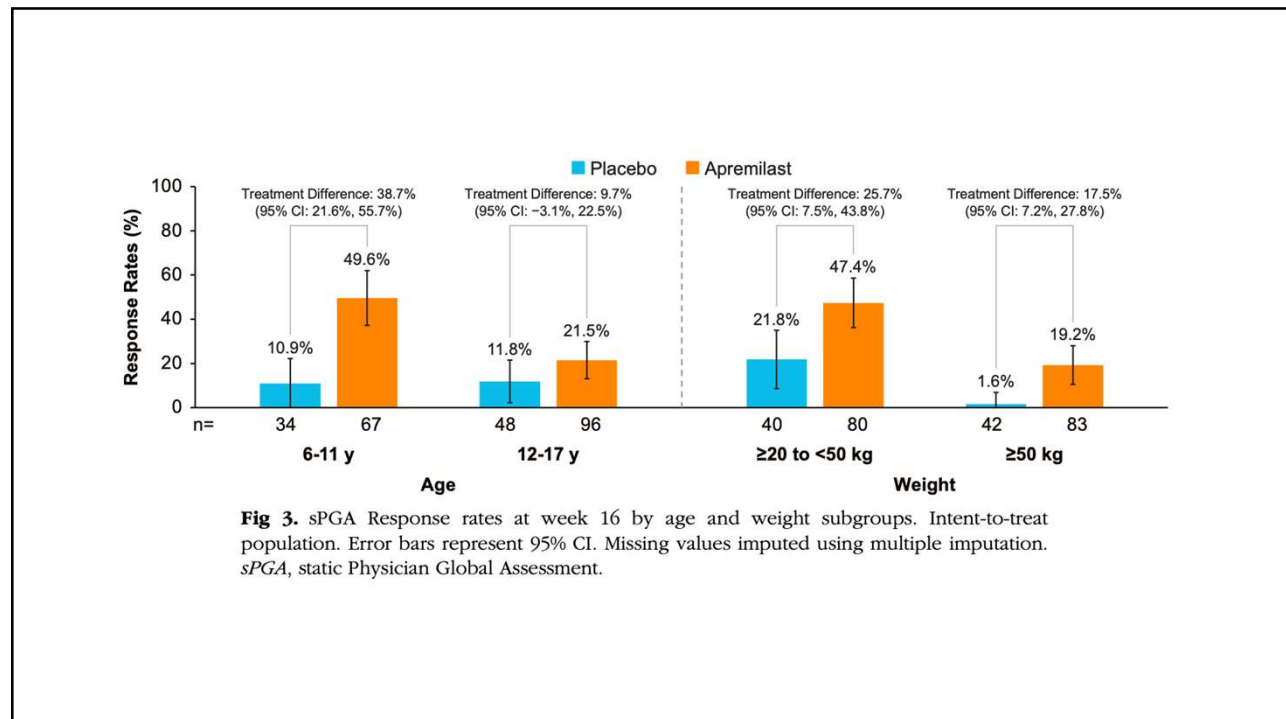
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Apremilast

- Patients over 6 with moderate-severe plaque psoriasis
 - 20-49.9 kg = titrate up to 20 mg twice daily
 - >50 kg = 30 mg twice daily
- Cannot be cut, crushed, or chewed
- Starter packs “convenience packs” are available

Fiorillo L, Becker E, de Lucas R, et al. Efficacy and safety of apremilast in pediatric patients with moderate-to-severe plaque psoriasis: 16-week results from SPROUT, a randomized controlled trial. *J Am Acad Dermatol* 2024;90:1232-9.

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Alopecia areata

- Ritlecitinib approved for ages 12 and up with “severe” alopecia areata as of 6/23/2023
 - ***Be sure to document a SALT score of more than 50***
- JAK 3 inhibitor, also inhibits tyrosine kinase expressed in hepatocellular carcinoma (TEC) kinases
- Same black box warnings as other oral JAKs
- 50 mg daily

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Salt score

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

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Bottom line

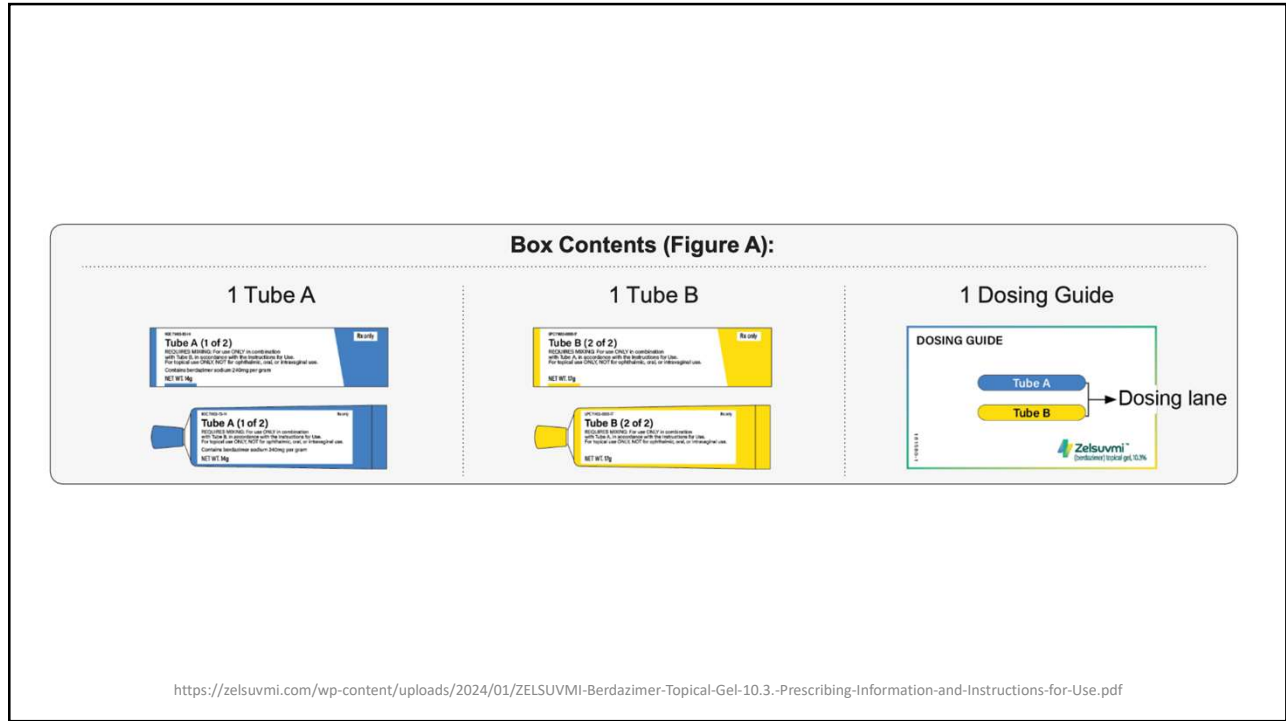
- It seems safe
- Effective for some but not for all
- Better than anything else we have

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Molluscum

- Berdazimer gel 10.3%
- For use in patients over 12 months old
- Apply once daily for up to 12 weeks
- Approved in January 2024 but not yet commercially available

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	Trial 1		Trial 2	
	ZELSUVMi (N=444)	Vehicle (N=447)	ZELSUVMi (N=237)	Vehicle (N=118)
Complete Clearance Rate at Week 12 (Primary Endpoint)	32.4%	19.7%	30.0%	20.3%
Treatment Difference (95% Confidence Interval)	12.8% (7.1%, 18.6%)		9.2% (-0.04%, 18.4%)	
Complete Clearance Rate at Week 8 (Secondary Endpoint)	19.6%	11.6%	13.9%	5.9%
Treatment Difference (95% Confidence Interval)	7.5% (3.0%, 12.0%)		7.8% (1.8%, 13.8%)	

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Summary

- A lot of new medications or new indications
- Cost should always be a consideration
- Insurance plans are starting to exclude certain classes of medications