Dermatology Week

May 14–17, 2025
October 22–25, 2025

Dermatology Week

Targeting TYK2: Innovative Strategies to Advance Psoriasis Care and Outcomes

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Disclosures

- **Alice Bendix Gottlieb, MD PhD**: Research funding – Alice B. Gottlieb received research/educational grants from Bristol-Myers Squibb, Janssen, Moonlake, and UCB Pharma, (all paid to Mount Sinai School of Medicine until May 1, 2025). At UTSW she is Sub I on studies from Janssen, BMS and UCB**;** honoraria/speaker fees – Alice B. Gottlieb has received honoraria as an advisory board member and consultant for Amgen, BMS, Eli Lilly, Janssen, Novartis, Oruka, Sanofi, SunPharma, Takeda, Teva, UCB

- **Jeffrey Cohen, MD:** Data and safety monitoring board – Advarra; consultant – Logical Images, Inc.; Novartis, Takeda, GSK, Sanofi

- This presentation will discuss therapeutic agents that are not yet FDA-approved

Learning Objectives

- Describe the clinical burden of PsO and the current understanding of its pathogenesis, including the role of TYK2 in its underlying pathophysiology
- Evaluate the most recent data on TYK2 inhibition in PsO, including the safety and efficacy data of current and emerging TYK2 inhibitors
- Implement effective evidence-based and personalized approaches to PsO management that consider newer therapies where appropriate

PsO = psoriasis; TYK2 = tyrosine kinase 2.

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Psoriasis: Overview and Emerging Therapies

Jeffrey M. Cohen, MD, MPH

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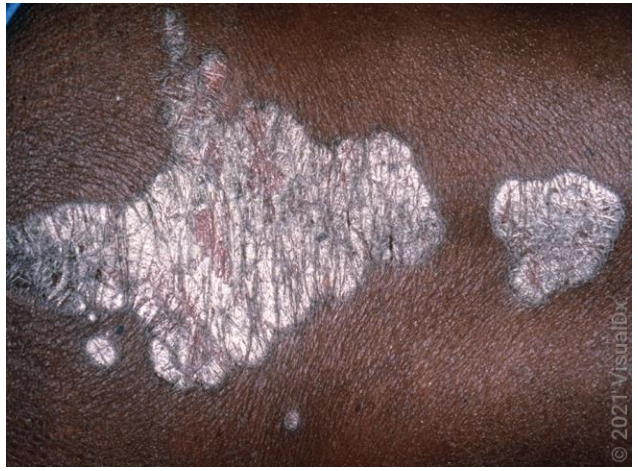
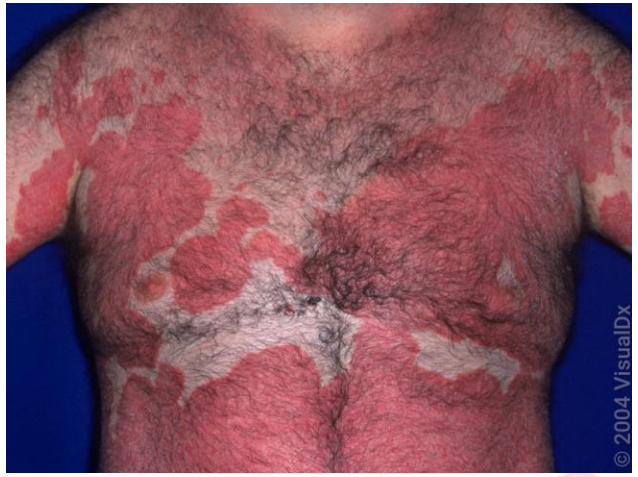
Psoriasis Overview

Psoriasis

- Inflammatory skin and systemic disease
- Impacts ~125 million individuals globally, amounting to 2-3% of global population
- Incidence is roughly equal in men and women
- Can occur at any age, but generally there are two peaks of incidence
  - ~16-22 years
  - ~55-60 years



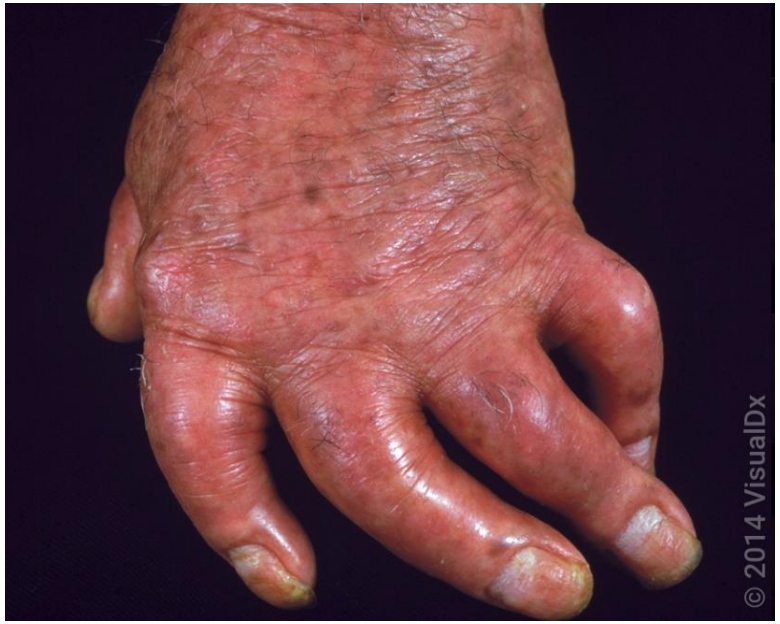


Griffiths CEM, et al. *Lancet*. 2021;397(10281):1301-1315. National Psoriasis Foundation (NPF). Accessed September 5, 2025. https://www.psoriasis.org/psoriasis-statistics/.

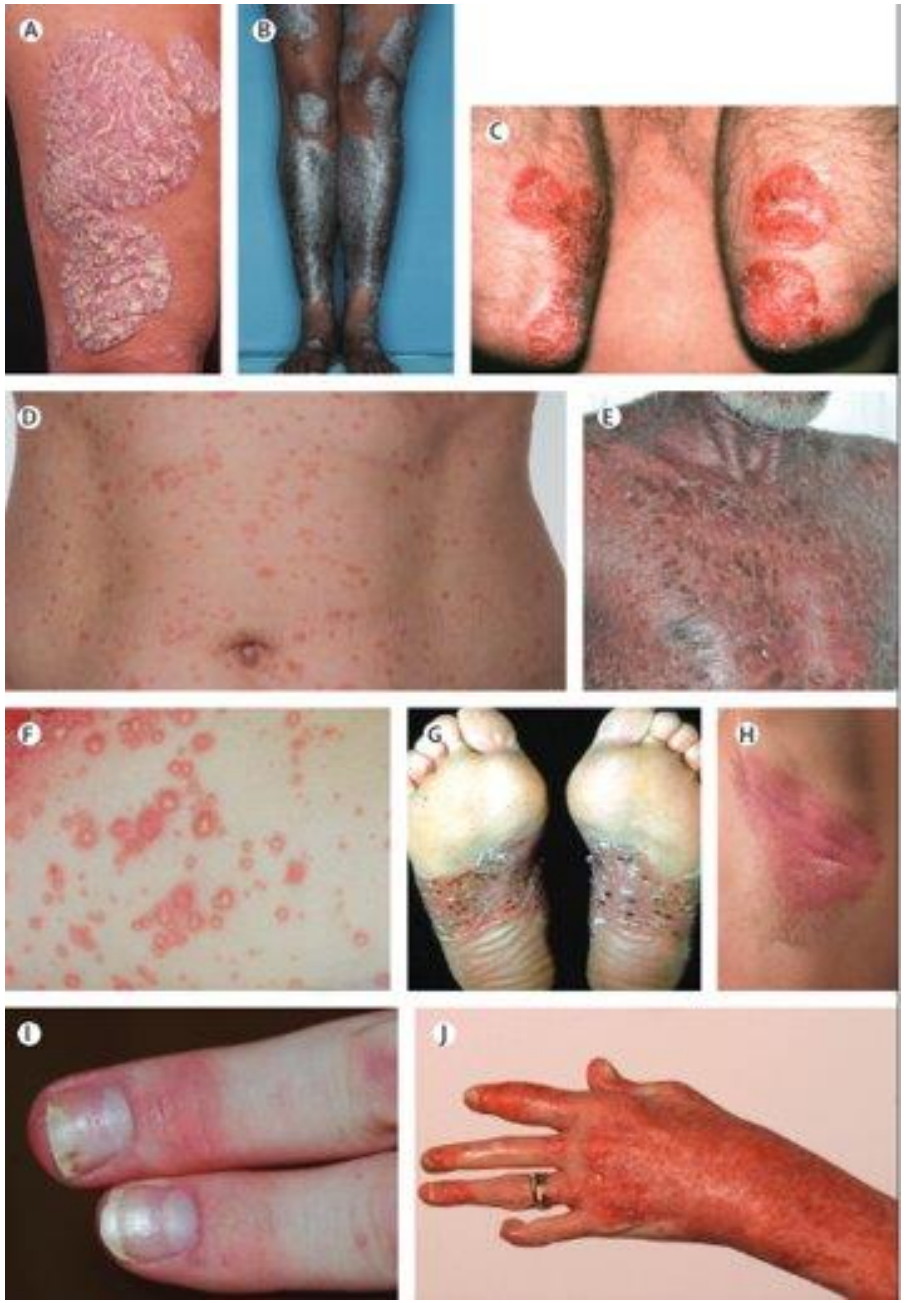
Psoriasis

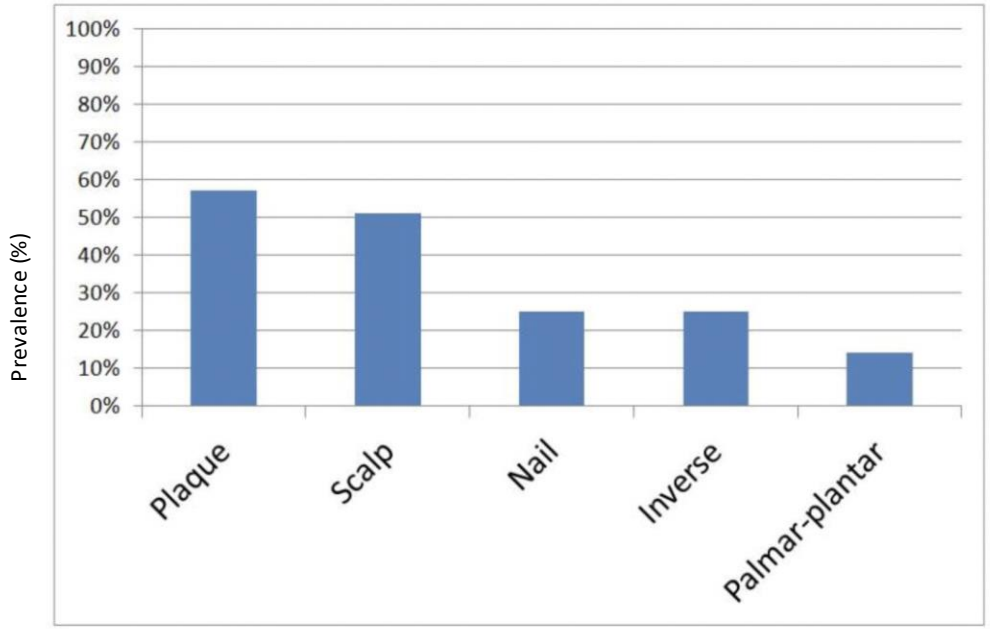
- Multiple important comorbidities have been associated with psoriasis
  - Psoriatic arthritis
  - Inflammatory bowel disease
  - Cardiovascular disease
  - Diabetes mellitus
  - Psychiatric comorbidities

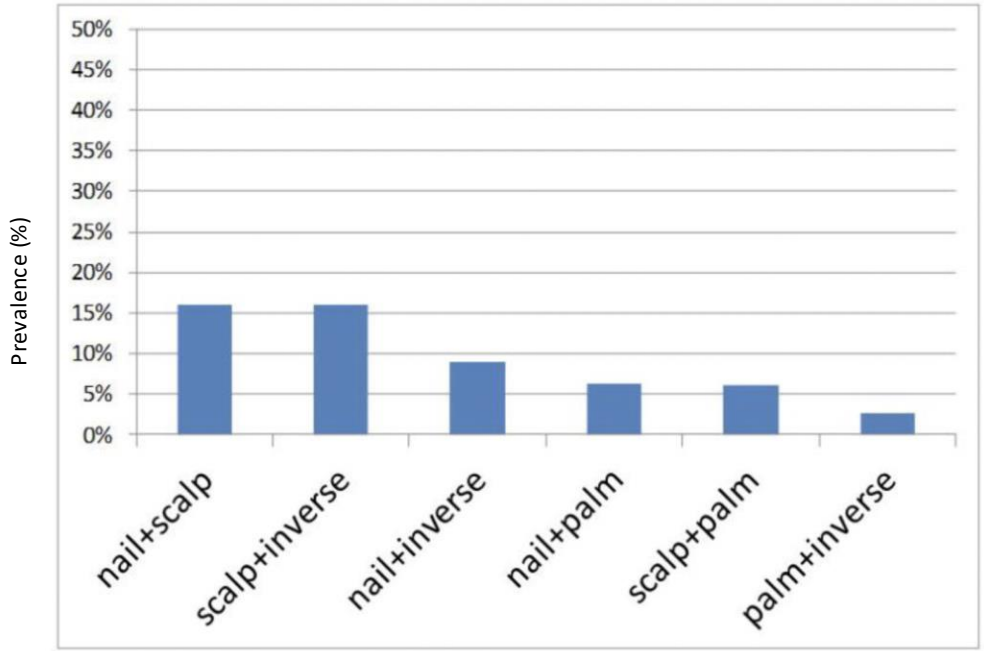
- Psoriasis associated with decreased quality of life



Griffiths CEM, et al. *Lancet*. 2021;397(10281):1301-1315.







Merola JF, et al. *Clin Exp Dermatol*. 2016;41(5):486-489. Griffiths CEM, et al. *Lancet*. 2021;397(10281):1301-1315.

Barriers to Care for Psoriasis

- Several important treatment barriers exist
  - Cost of care
  - Availability of dermatologists
  - Insurance coverage for therapy
  - Concerns about safety of highly effective medications

Feng H, et al. *J Dermatolog Treat*. 2019;30(3):237-239. Nock MR, et al. *J Am Acad Dermatol*. 2023;88(3):568-576. Feng H, et al. *JAMA Dermatol*. 2018;154(11):1265-1271. Lebwohl MG, et al. *Am J Clin Dermatol*. 2016;17(1):87-97. Vazquez T, et al. *Arch Dermatol Res*. 2023;315(5):1401-1403.

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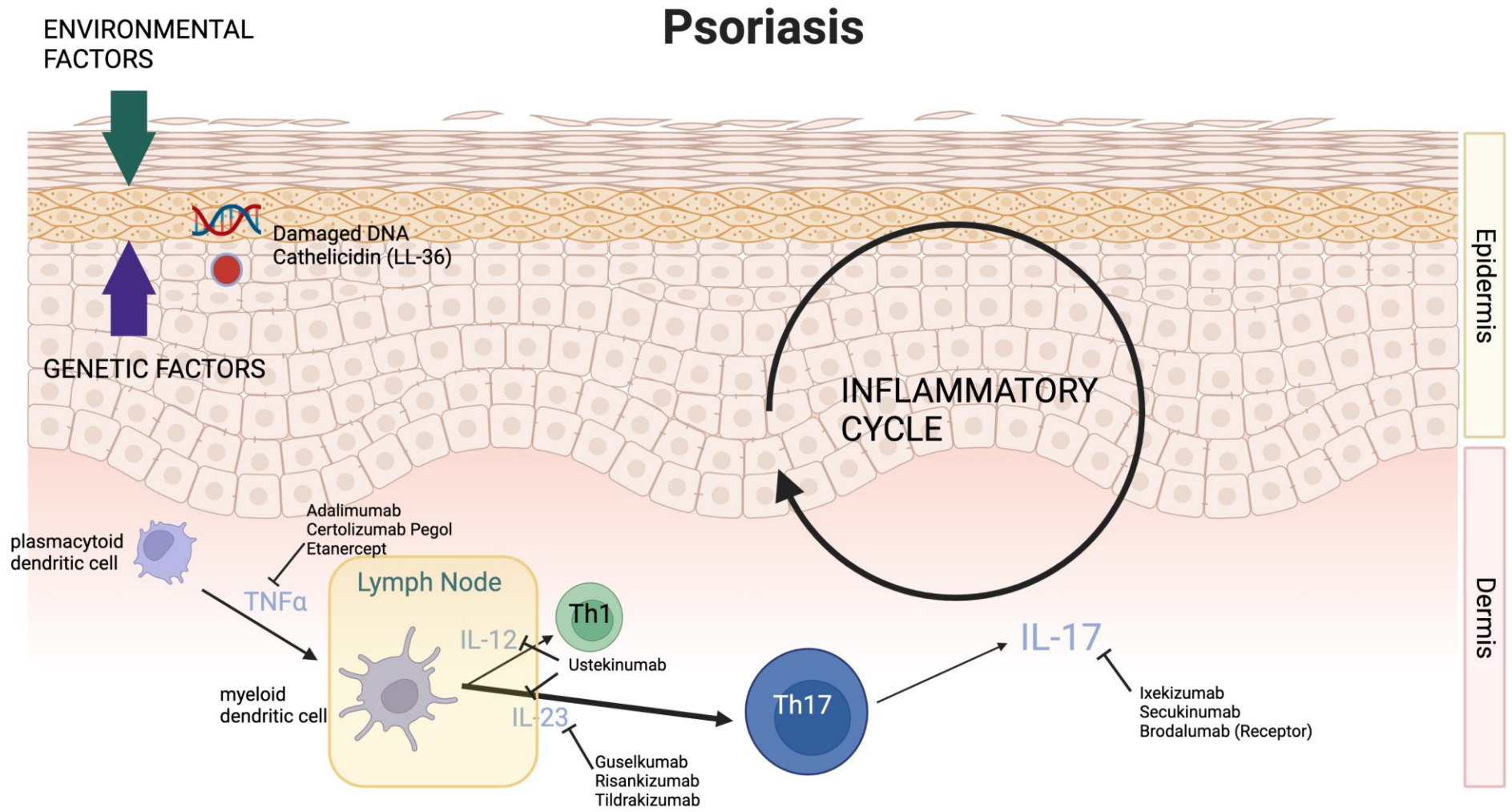
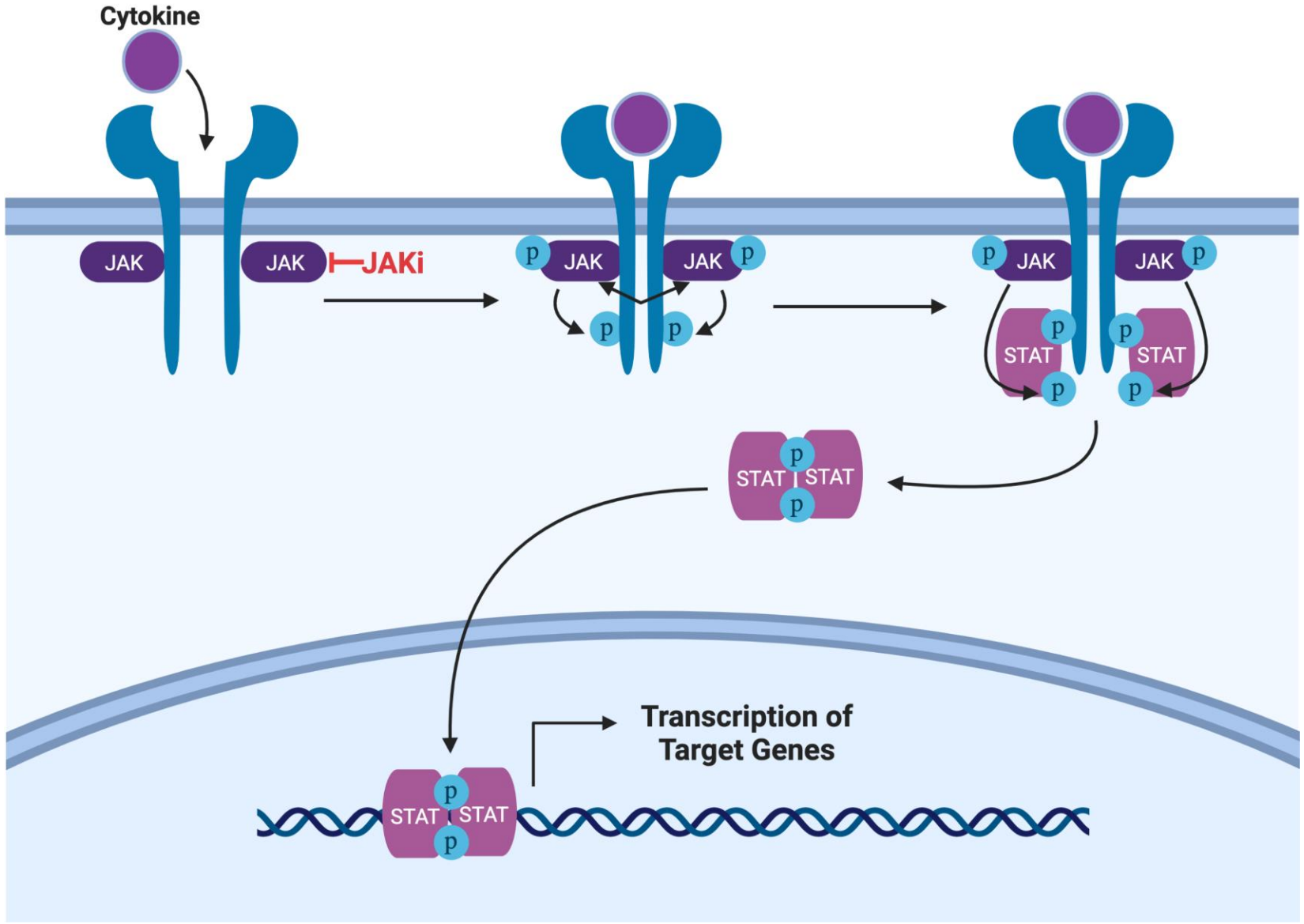
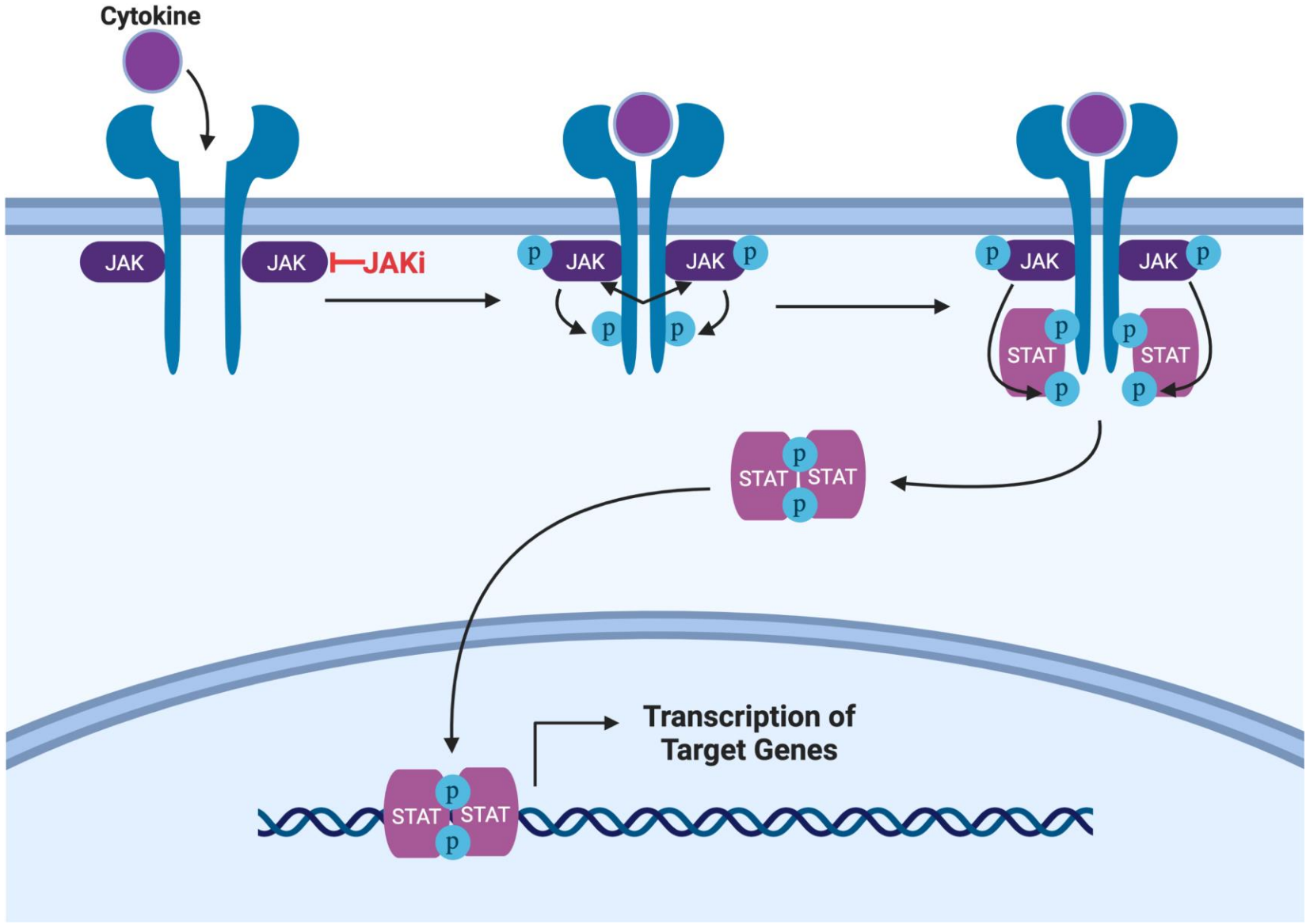
Pathophysiology and Newer Ways to Target Inflammation



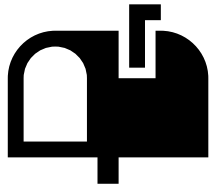
TNF = tumor necrosis factor; IL = interleukin.
Created with BioRender.com



JAK = Janus kinase.
Created with BioRender.com. Courtesy William Damsky, MD, PhD (Yale).



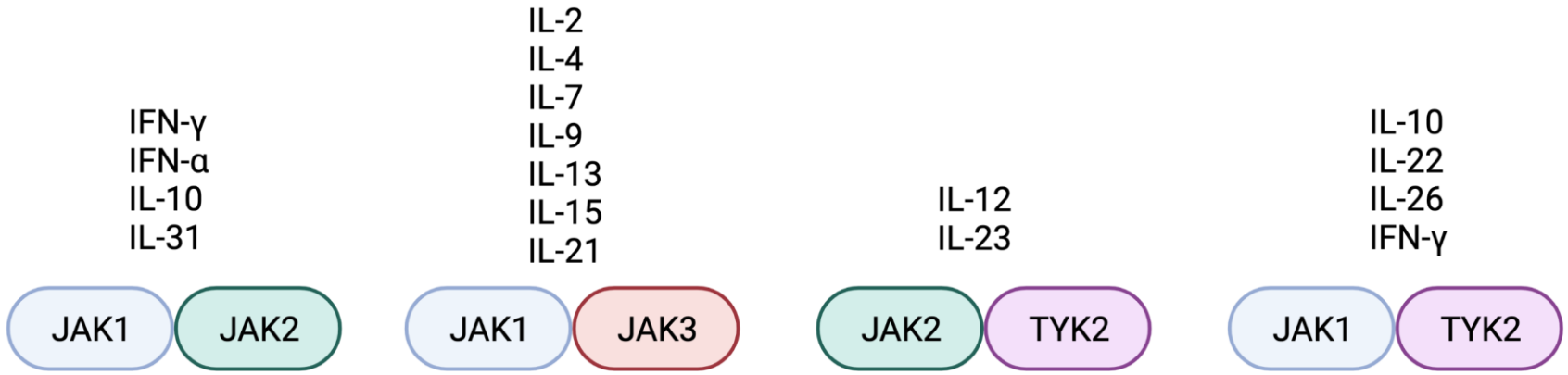
Mail Analogy



Created with BioRender.com. Courtesy William Damsky, MD, PhD (Yale)

JAK Inhibitors

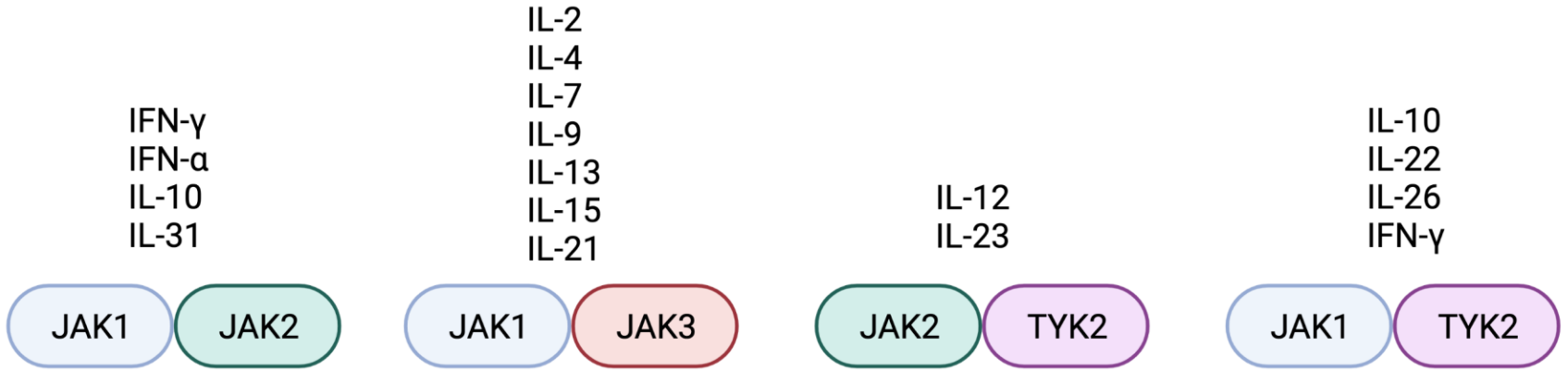
- Many common cytokines that are central to the pathophysiology of inflammatory skin diseases (including PsO) signal through JAK-STAT system
- By inhibiting one JAK, the activity of several cytokines is inhibited
- JAK1, JAK2, TYK2 ubiquitous; JAK3 hematopoietic tissue



STAT = signal transducer and activator of transcription.

Samuel C, et al. *Dermatol Ther (Heidelb).* 2023;13(3):729-749. Created with BioRender.com.

JAK Inhibitors

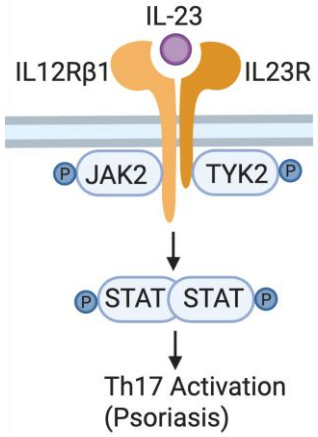


Important Functions	Th1 Differentiation Macrophage and NK cell activation	Lymphoid cell maturation and function	Th17 differentiation	Anti-viral immunity NK cell activation

NK = natural killer.

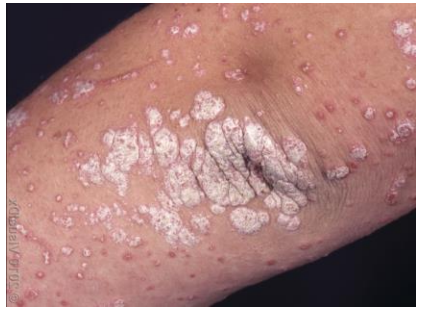
Samuel C, et al. *Dermatol Ther (Heidelb).* 2023;13(3):729-749. Krueger JG, et al. *J Am Acad Dermatol*. 2022;86(1):148-157. Baker KF, et al. *Ann Rheum Dis*. 2018;77(2):175-187. Created with BioRender.com.

JAK/TYK2 Inhibitors in Psoriasis



Psoriasis

	IFN-γ IFN-α IL-10 IL-31	IL-2 IL-4 IL-7 IL-9 IL-13 IL-15 IL-21	IL-12 IL-23	IL-10 IL-22 IL-26 IFN-γ
	JAK1 JAK2	JAK1 JAK3	JAK2 TYK2	JAK1 TYK2
Important Functions	Th1 Differentiation Macrophage and NK cell activation	Lymphoid cell maturation and function	Th17 differentiation	Anti-viral immunity NK cell activation



Samuel C, et al. *Dermatol Ther (Heidelb).* 2023;13(3):729-749. Krueger JG, et al. *J Am Acad Dermatol*. 2022;86(1):148-157. Baker KF, et al. *Ann Rheum Dis*. 2018;77(2):175-187. Created with BioRender.com.

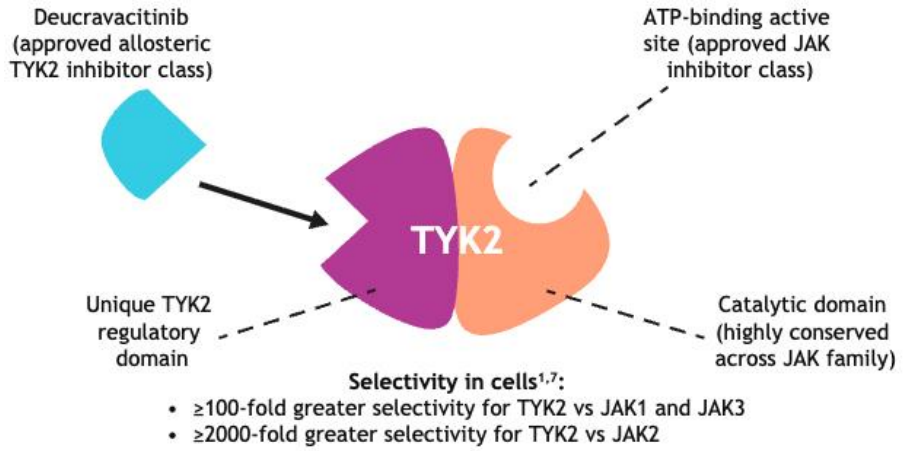
Genetic Association between TYK2 and Psoriasis

- Studies have shown genetic associations between members of the JAK-STAT pathway and PsO susceptibility
- The single nucleotide polymorphism (SNP) rs34536443 in TYK2 has been associated with PsO susceptibility
- Homozygous mutation in this SNP results in near complete loss of function of TYK2 and is protective against PsO
- Does not appear to be associated with increased risk of infection, cardiovascular disease, malignancy

Patel HA, et al. *Int J Mol Sci*. 2023;24(15):12310. Elyoussfi S, et al. *Expert Rev Clin Pharmacol*. 2023;16(6):549-558. Dai B, et al. *Psoriasis (Auckl)*. 2025;15:361-372. Mehrotra S, et al. *J Invest Dermatol*. 2025:S0022-202X(25)00531-7.

Differentiating between JAK Inhibition and TYK2 Inhibition

- Distinct inhibitory profiles with allosteric TYK2 inhibitors having very little impact on JAK signaling
- This allows for fewer off target adverse events
  - JAK inhibitors for inflammatory skin disease (eg. atopic dermatitis) have black box warning; TYK2 inhibitor does not
- Dyslipidemia, thromboembolic events, severe infections observed with JAK inhibitors not seen with TYK2 inhibitors



Martin G. *Dermatol Ther (Heidelb).* 2023;13(2):417-435. Rusiñol L, Puig L. *Int J Mol Sci*. 2023;24(4):3391. Merola JF, et al. *J of Skin*. 2024;8(6):s428. Mehrotra S, et al. *J Invest Dermatol*. 2025:S0022-202X(25)00531-7.

Key Learning Points

- Psoriasis is a common inflammatory skin disease
- Systemic therapy has revolutionized treatment of psoriasis
- JAK/STAT signaling directly involves TYK2, contributing to pathogenesis of psoriasis
- TYK2 inhibitors prevent downstream signaling of the IL-23 inflammatory pathway, preventing activation of T_H17 cells
- Allosteric inhibition of TYK2 is highly effective at blocking TYK2 signaling with little impact on JAK 1/2/3 signaling
- TYK2 inhibition represents a new treatment target for psoriasis

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Psoriasis Therapies: Mechanistic Focus

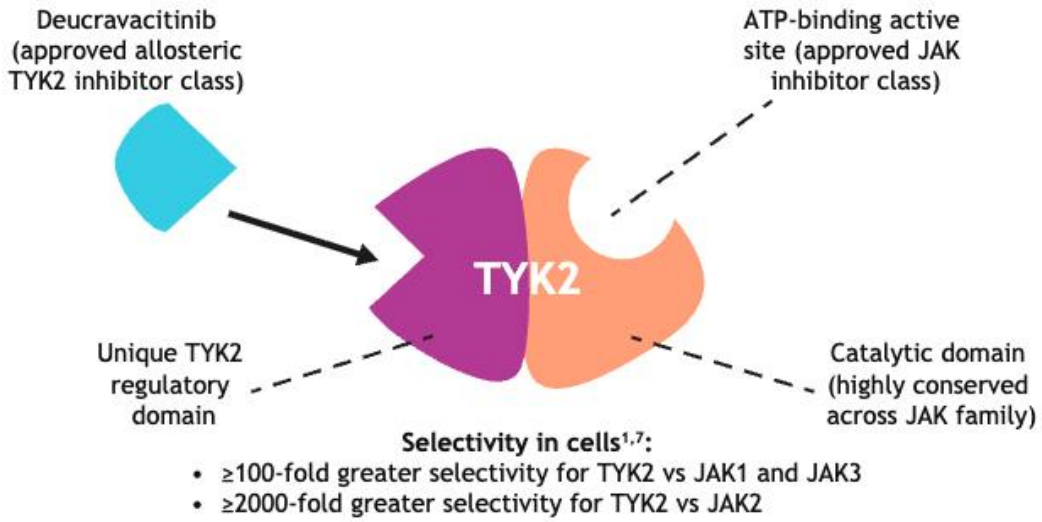
TYK2 Inhibitors

- Deucravacitinib
- Zasocitinib
- ESK-001
- TYK2 inhibitors add to the growing number of oral targeted therapies for PsO
  - Data suggests that some patients prefer oral over injectable medications for PsO
  - Interestingly, some studies suggest that patients currently using injectable medications display some of the strongest preference for an oral agent

Armstrong AW, et al. *Dermatol Ther (Heidelb).* 2024;14(2):421-439. Myers JT, et al. *Patient Prefer Adherence.* 2024:18:1547-1562. Feldman SR, et al. *J Health Econ Outcomes Res.* 2016;4(2):141-157.

Deucravacitinib

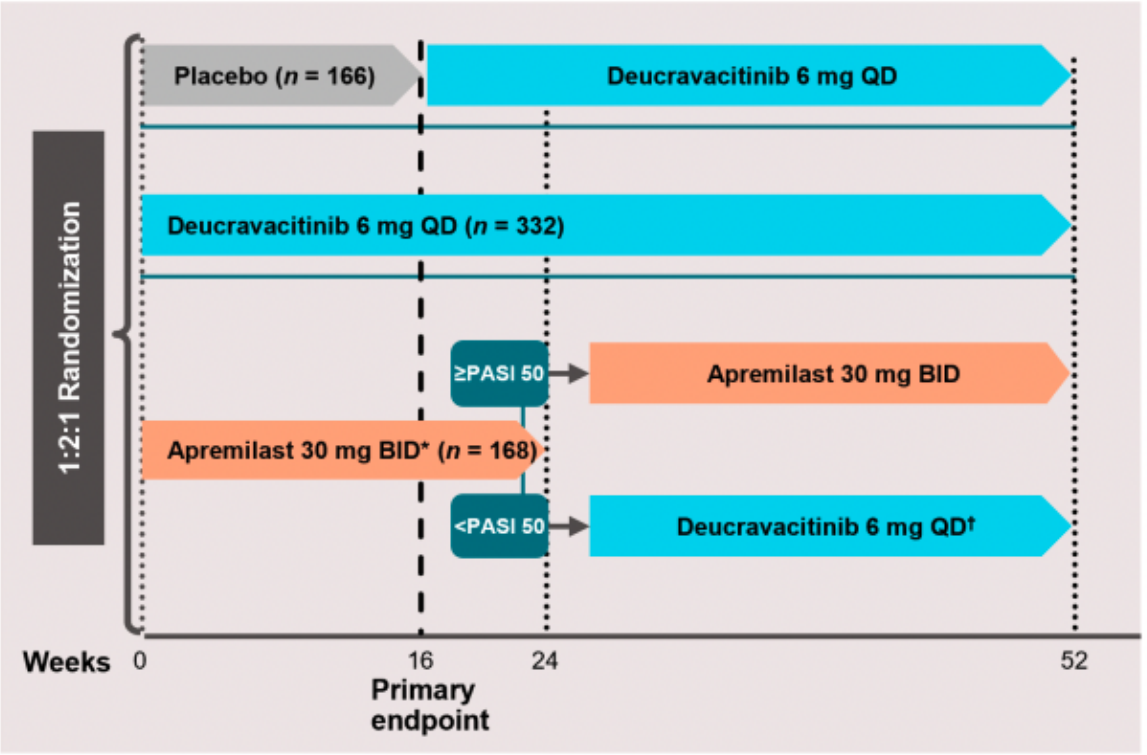
- Allosteric inhibitor that inactivates TYK2 by binding regulatory domain
- Selective against TYK2; almost no impact on JAK 1/2/3
- Approved by the FDA in September 2022



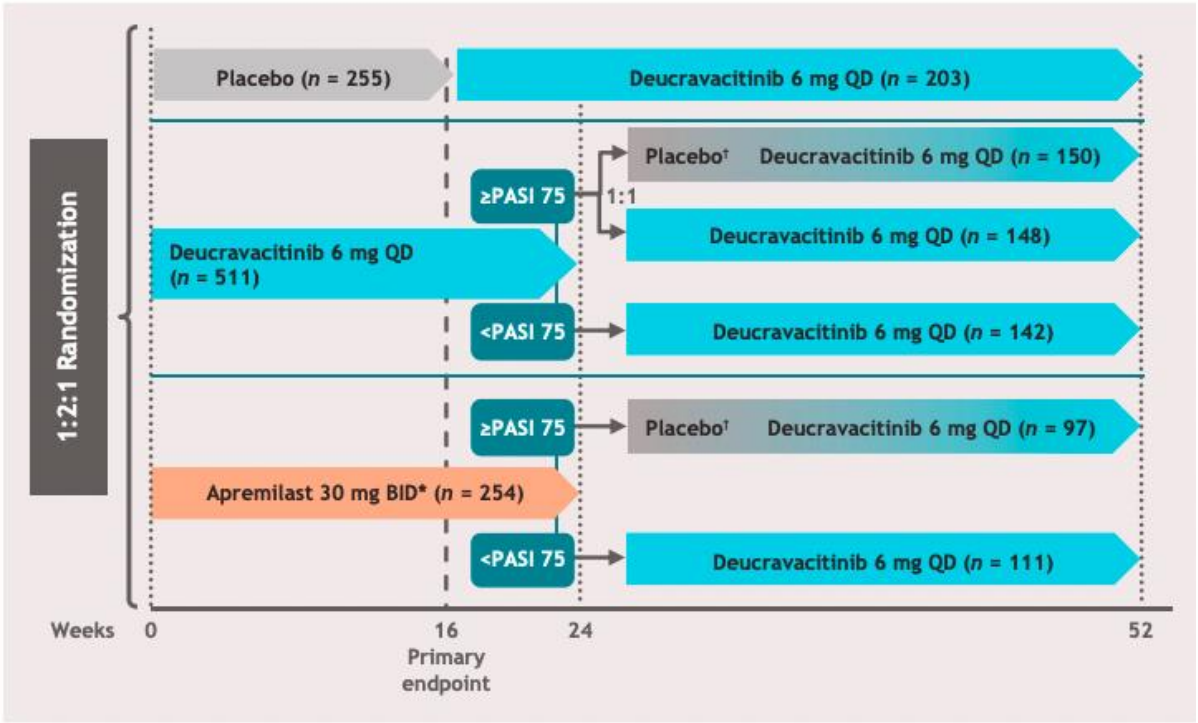
FDA = Food and Drug Administration.

Krueger JG, et al. *J Am Acad Dermatol*. 2022;86(1):148-157; Merola JF, et al. *J of Skin*. 2024;8(6):s428.

POETYK PSO-1 (*N* = 666)



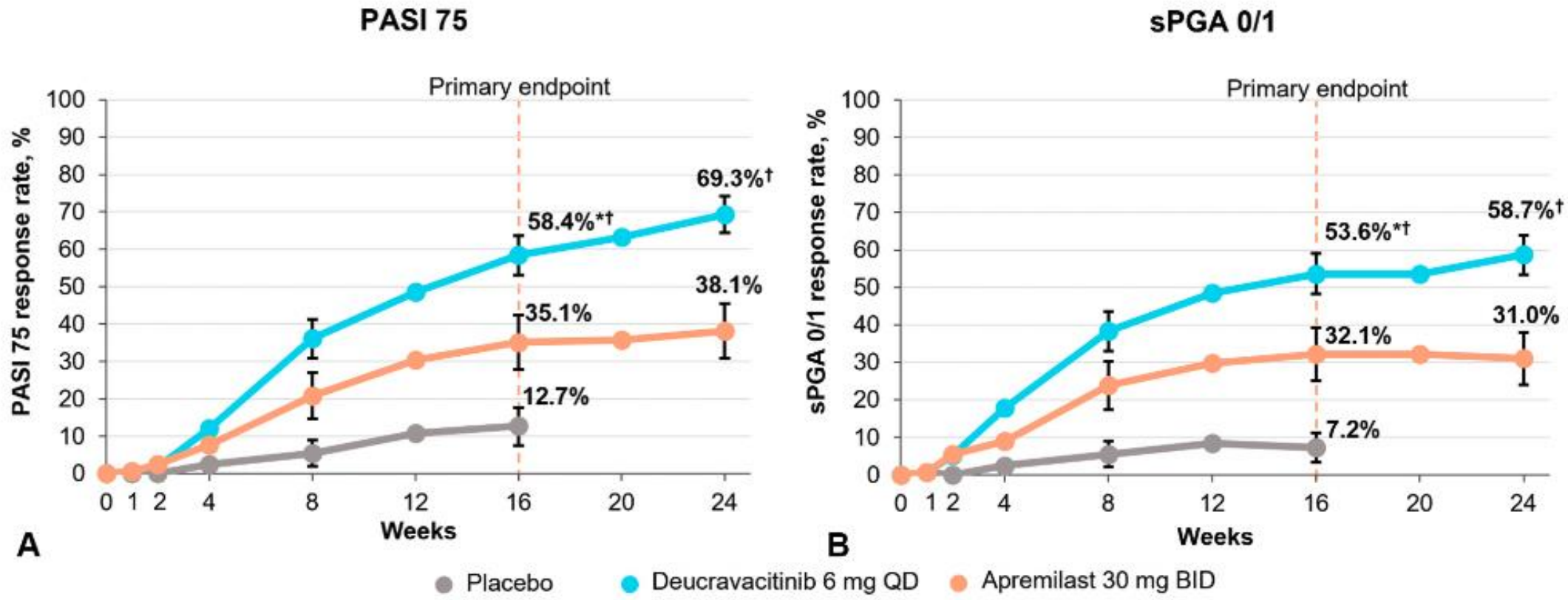
POETYK PSO-2 (N=1020)



BID = twice a day.

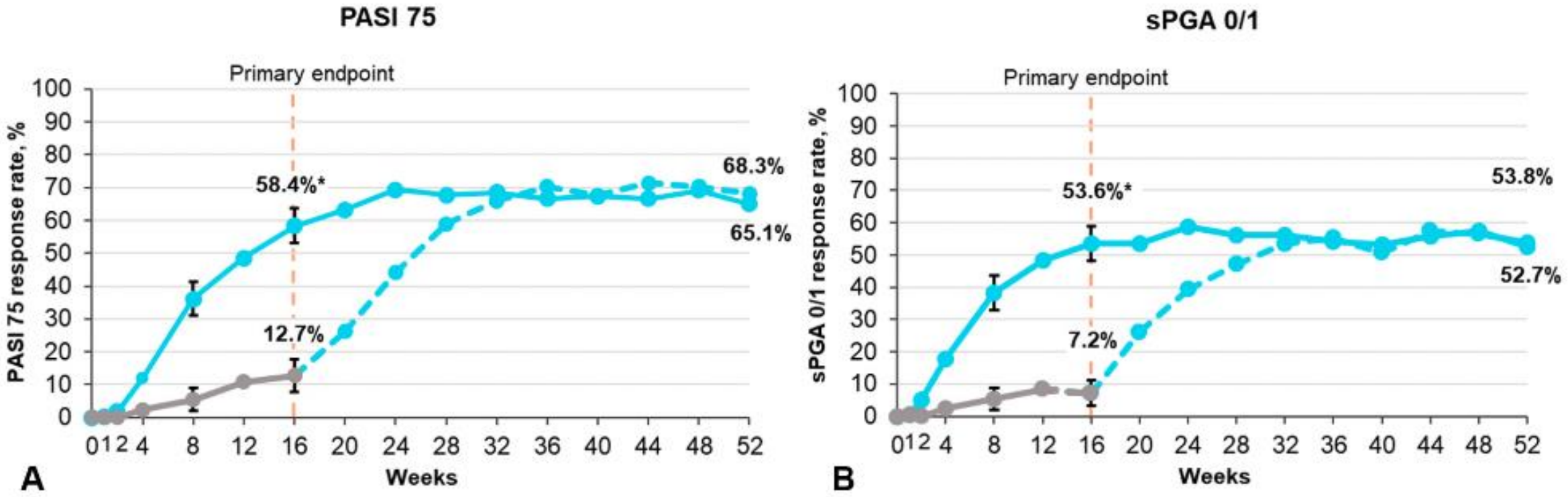
Armstrong AW, et al. *J Am Acad Dermatol*. 2023;88(1):29-39. Strober B, et al. *J Am Acad Dermatol*. 2023;88(1):40-51.

POETYK PSO-1



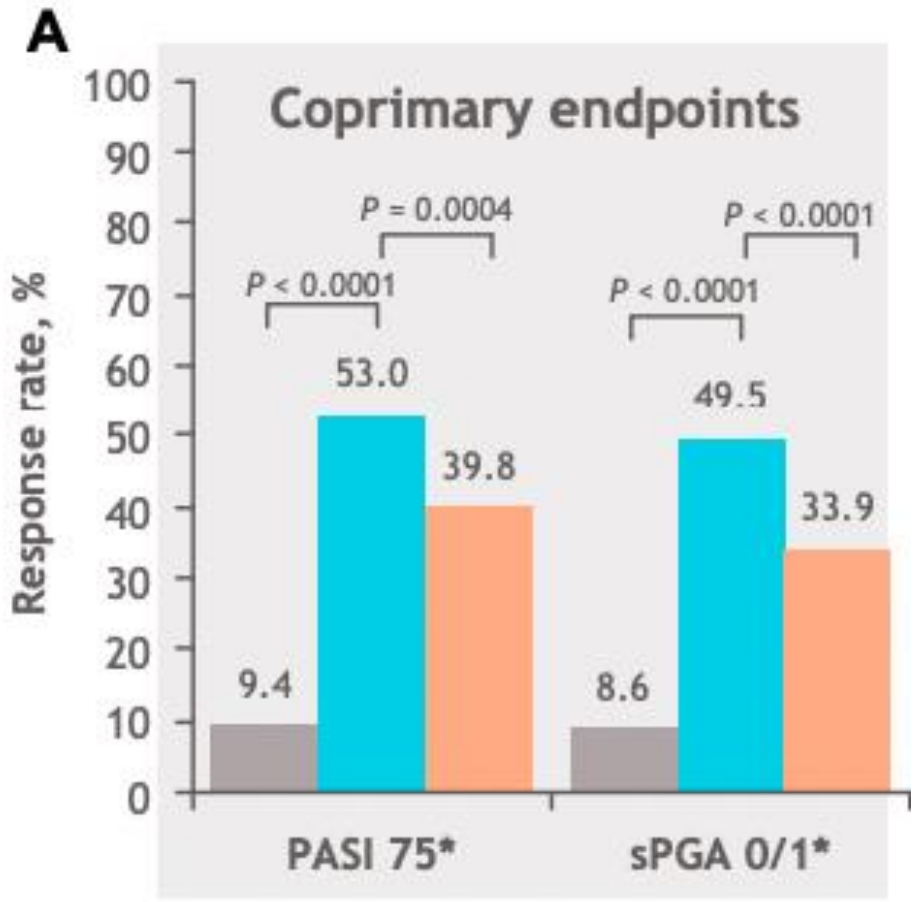
PASI = Psoriasis Area Severity Index; PGA = Physician Global Assessment.
Armstrong AW, et al. *J Am Acad Dermatol*. 2023;88(1):29-39.

POETYK PSO-1



Armstrong AW, et al. *J Am Acad Dermatol*. 2023;88(1):29-39.

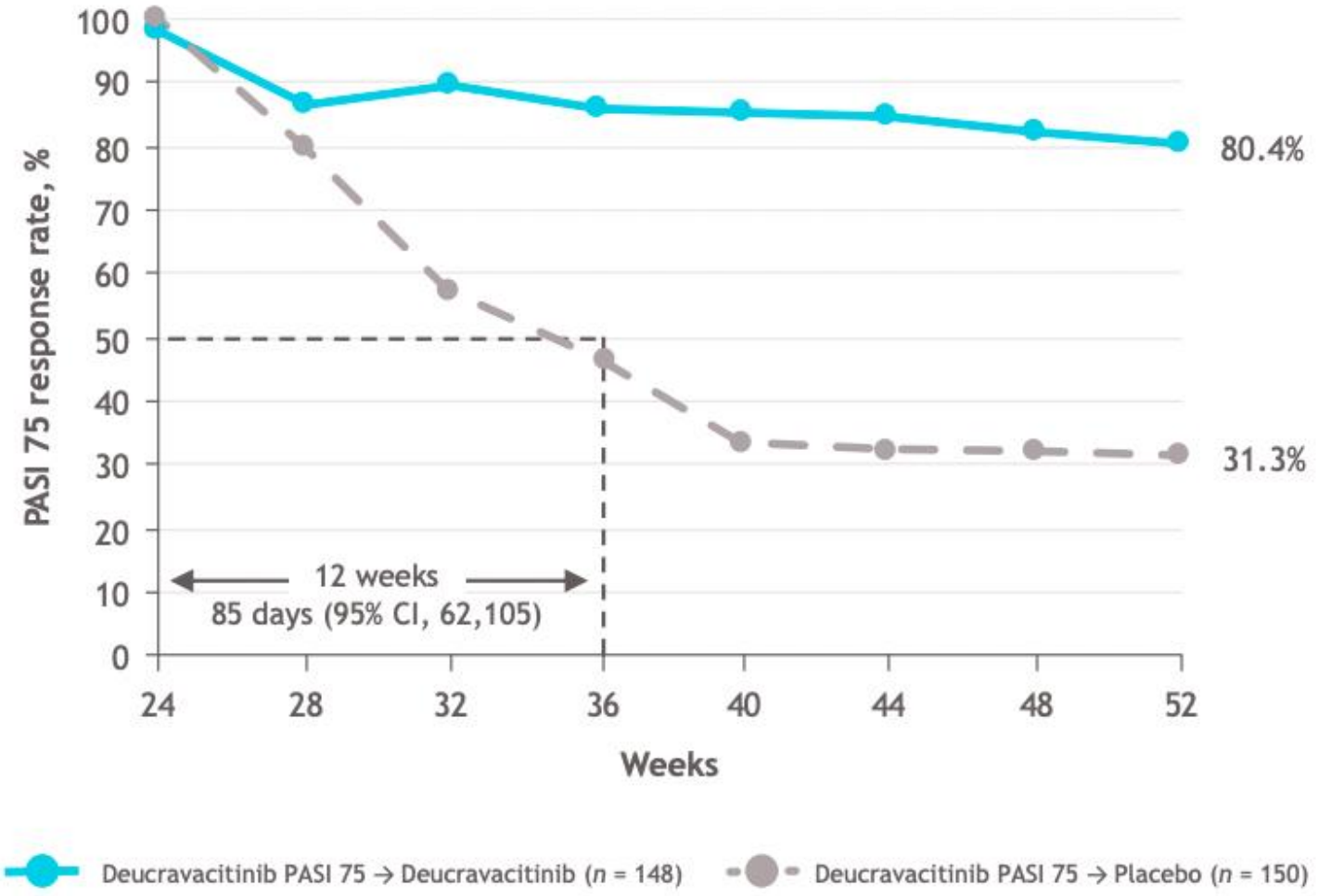
POETYK PSO-2



Week 16

Strober B, et al. *J Am Acad Dermatol*. 2023;88(1):40-51.

POETYK PSO-2



Strober B, et al. *J Am Acad Dermatol*. 2023;88(1):40-51.

POETYK PSO-1

	Weeks 0-16		
AE category	Placebo (n = 165), n (%)	Deucravacitinib (n = 332), n (%)	Apremilast (n = 168), n (%)
Any AE	70 (42.4)	176 (53.0)	93 (55.4)
Serious AEs	9 (5.5)	7 (2.1)	4 (2.4)
Treatment-related AEs	20 (12.1)	65 (19.6)	36 (21.4)
AE leading to discontinuation	7 (4.2)	6 (1.8)	10 (6.0)
Deaths	1* (0.6)	0 (0.0)	0 (0.0)
Most common AEs†			
Nasopharyngitis	7 (4.2)	21 (6.3)	14 (8.3)
Upper respiratory tract infection	6 (3.6)	21 (6.3)	3 (1.8)
Headache	5 (3.0)	16 (4.8)	17 (10.1)
Diarrhea	6 (3.6)	13 (3.9)	17 (10.1)
Nausea	4 (2.4)	7 (2.1)	19 (11.3)

AE = adverse event.
Armstrong AW, et al. *J Am Acad Dermatol*. 2023;88(1):29-39.

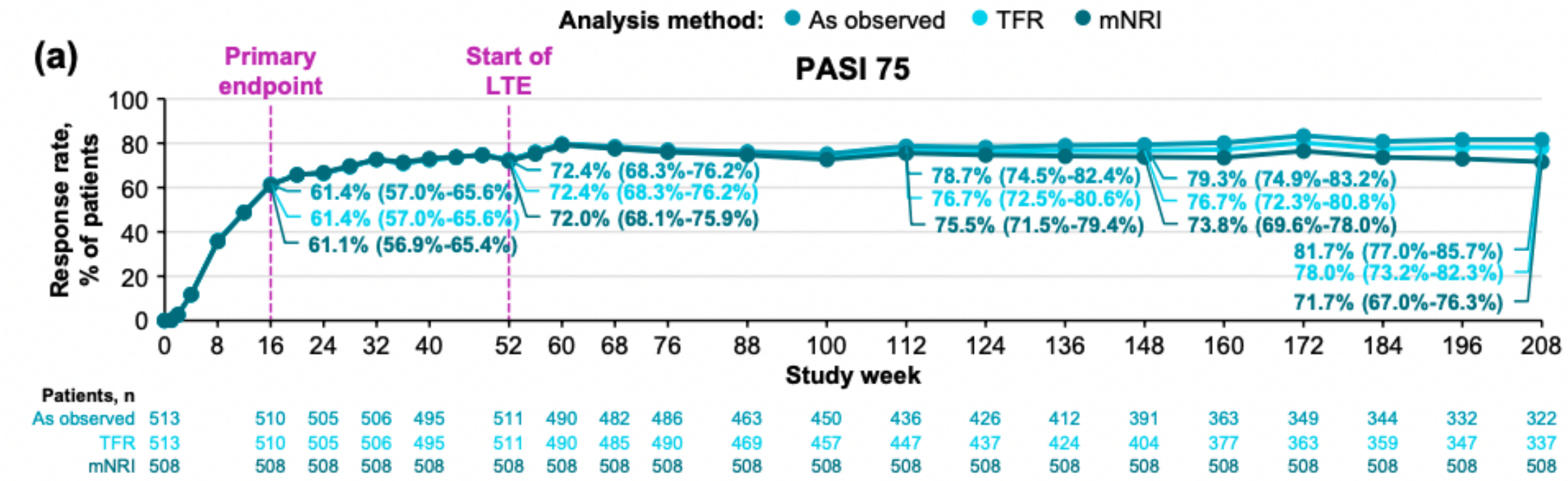
POETYK PSO-2

Table II. Overall safety summary

AE category	Weeks 0-16		
	Placebo (n = 254), n (%)	Deucravacitinib (n = 510), n (%)	Apremilast (n = 254), n (%)
Any AEs	138 (54.3)	293 (57.5)	150 (59.1)
Serious AEs	3 (1.2)	8 (1.6)	1 (0.4)
Treatment-related AEs	45 (17.7)	99 (19.4)	73 (28.7)
AEs leading to discontinuation	9 (3.5)	14 (2.7)	12 (4.7)
Deaths	0	1 (0.2)*	1 (0.4)†
Most common AEs‡			
Nasopharyngitis	29 (11.4)	55 (10.8)	23 (9.1)
Upper respiratory tract infection	11 (4.3)	25 (4.9)	14 (5.5)
Headache	14 (5.5)	22 (4.3)	28 (11.0)
Diarrhea	19 (7.5)	24 (4.7)	33 (13.0)
Nausea	3 (1.2)	7 (1.4)	23 (9.1)

Strober B, et al. *J Am Acad Dermatol*. 2023;88(1):40-51.

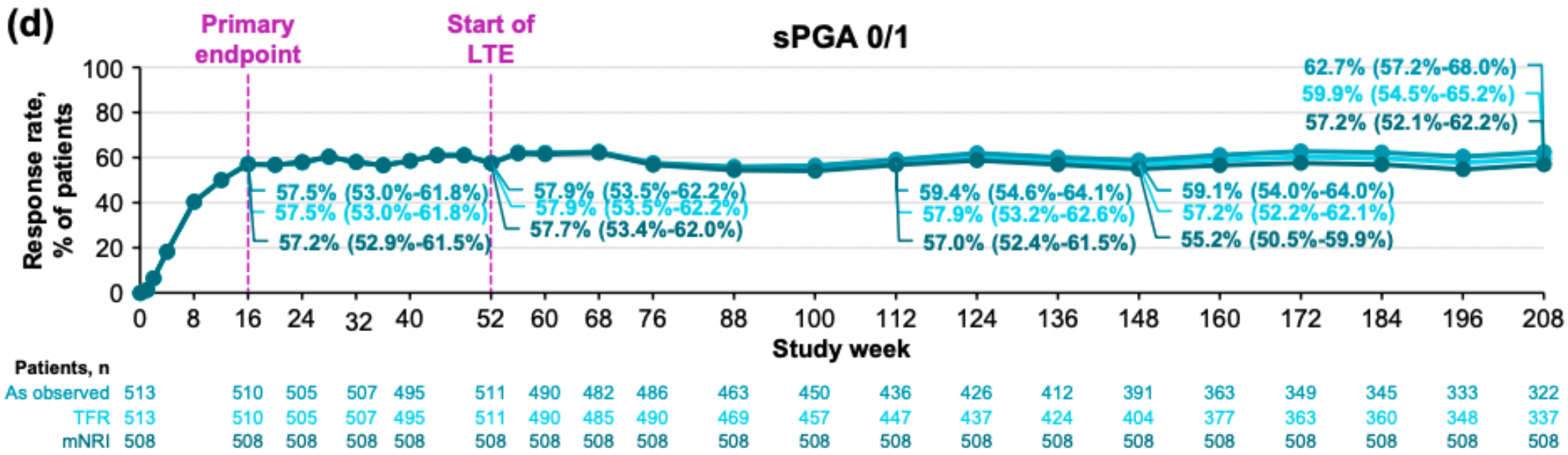
POETYK LTE: 4 Year Data



TFR = treatment failure rules; mNRI = modified nonresponder imputation; LTE = long-term extension.

Armstrong AW, et al. *J Eur Acad Dermatol Venereol*. 2025;39(7):1336-1351.

POETYK LTE: 4 Year Data



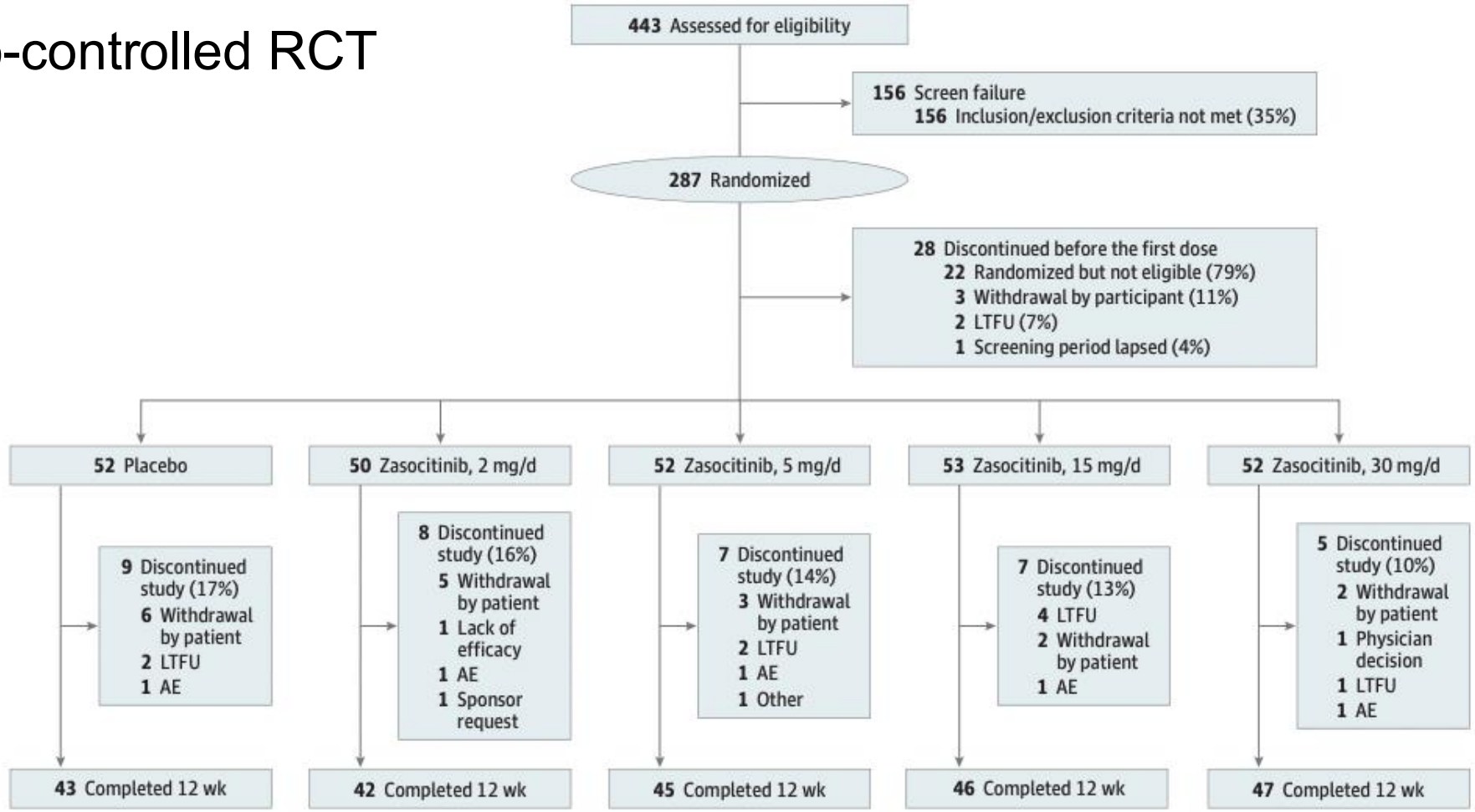
Armstrong AW, et al. *J Eur Acad Dermatol Venereol*. 2025;39(7):1336-1351.

Zasocitinib

- Investigational oral selective allosteric TYK2 inhibitor
- Data suggests may be more potent than deucravacitinib at inhibiting TYK2
- Almost no impact on JAK 1/2/3
- Phase 2 trial complete; Phase 3 trial (comparing to deucravacitinib) recruiting

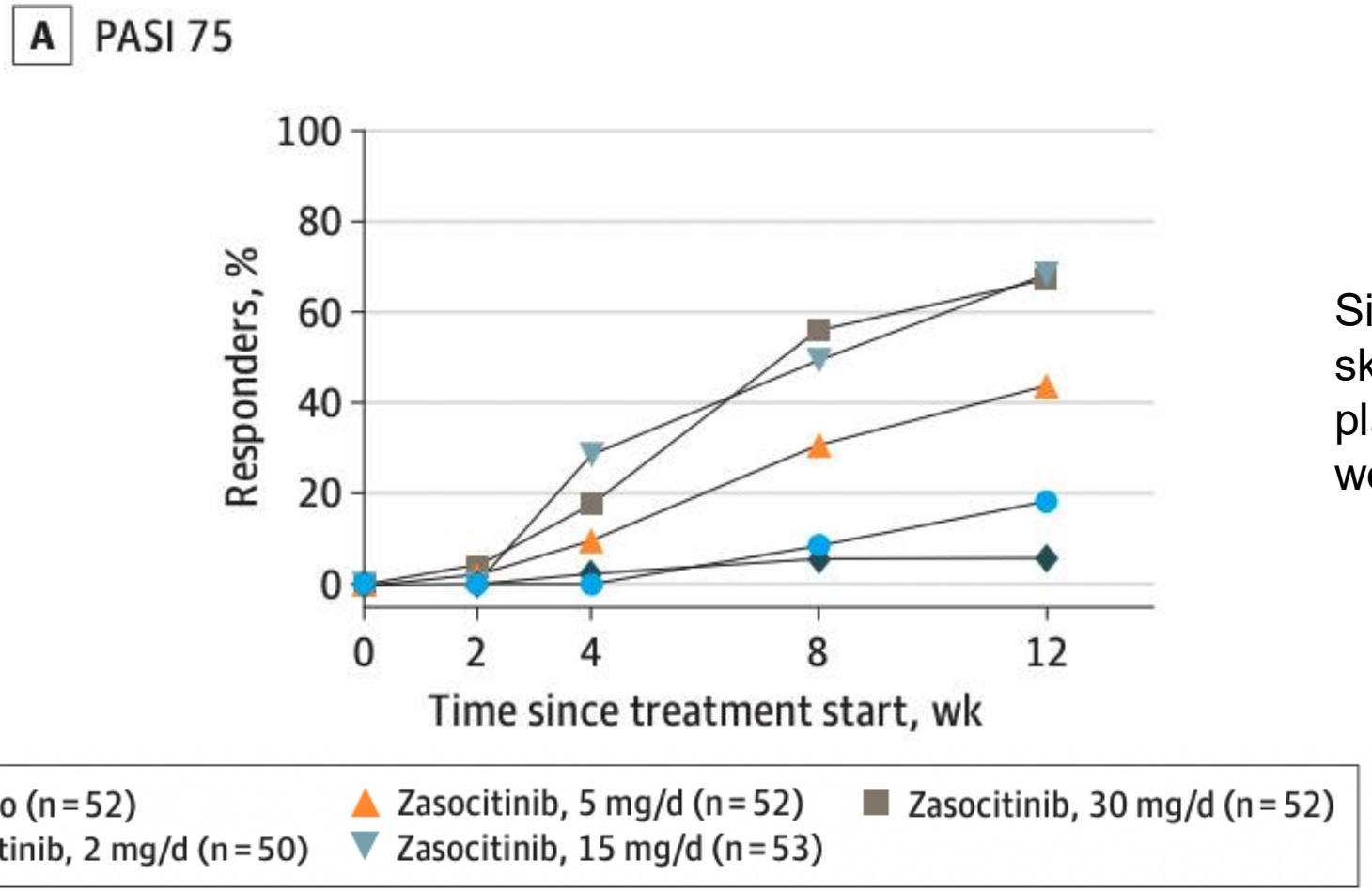
Mehrotra S, et al. *J Invest Dermatol*. 2025:S0022-202X(25)00531-7. Armstrong AW, et al. *JAMA Dermatol*. 2024;160(10):1066-1074. National Institute of Health. Accessed September 17, 2025. https://clinicaltrials.gov/study/NCT06973291.

- Phase 2b placebo-controlled RCT
- Four doses
  - 2 mg/d
  - 5 mg/d
  - 15 mg/d
  - 30 mg/d



RCT = randomized controlled trial; LTFU = lost to follow-up.
Armstrong AW, et al. *JAMA Dermatol*. 2024;160(10):1066-1074

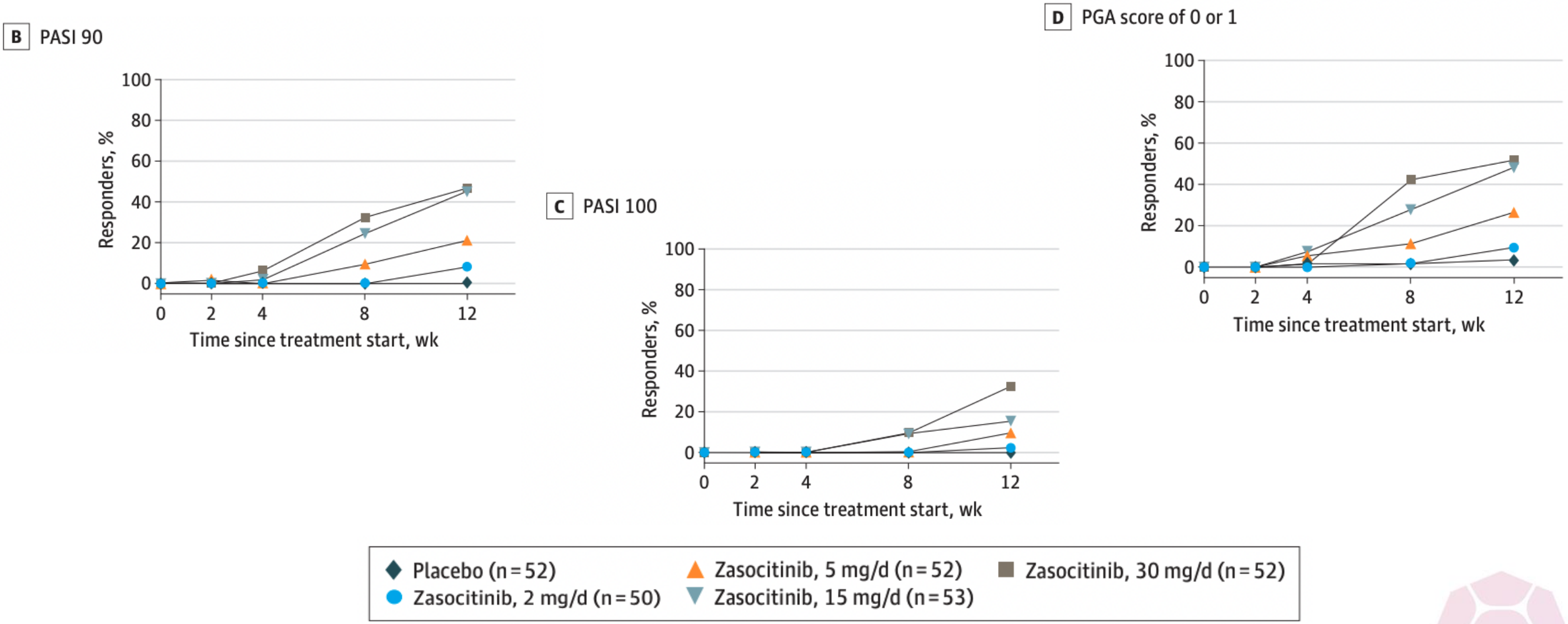
Zasocitinib PASI75 (Primary Endpoint)



Significantly greater skin clearance than placebo over 12 weeks

Armstrong AW, et al. *JAMA Dermatol*. 2024;160(10):1066-1074

Zasocitinib: Secondary Endpoints



Armstrong AW, et al. *JAMA Dermatol*. 2024;160(10):1066-1074

Zasocitinib: Post-Hoc Data

- Post-hoc analysis of data suggests that zasocitinib response relatively consistent despite baseline patient characteristics
  - Weight
  - Sex
  - Age
  - Race
  - Disease duration
  - Prior biologic therapy
  - PASI at baseline

Winkelman et al. Zasocitinib (TAK-279), an oral, allosteric, selective TYK2 inhibitor, in moderate-to-severe plaque psoriasis: efficacy analysis by baseline characteristics from a randomized phase 2b trial. Poster presented at the 2025 American Academy of Dermatology Annual Meeting. March 7-11. Orlando, FL.

Zasocitinb Safety

Table 3. Summary of Harms in Patients With Moderate to Severe Psoriasis in a Phase 2b Study for Zasocitinib

	No. (%)				
		Zasocitinib, once daily			
Adverse Event	Placebo (n = 52)	2 mg (n = 50)	5 mg (n = 52)	15 mg (n = 53)	30 mg (n = 52)
Deaths	0	0	0	0	0
SAEs	0	0	0	1 (2)	0
TEAEs	23 (44)	31 (62)	28 (54)	28 (53)	31 (60)
TEAEs leading to study treatment discontinuation[a]	1 (2)	1 (2)	1 (2)	1 (2)	2 (4)
Most frequent TEAEs[b]					
COVID-19[c]	1 (2)	6 (12)	4 (8)	6 (11)	7 (14)
Acne[c]	0	0	1 (2)	3 (6)	2 (4)
Acneiform dermatitis[c]	0	0	1 (2)	1 (2)	3 (6)
Diarrhea[c]	1 (2)	3 (6)	1 (2)	1 (2)	0

SAE = serious AE; TEAE = treatment-emergent AE.

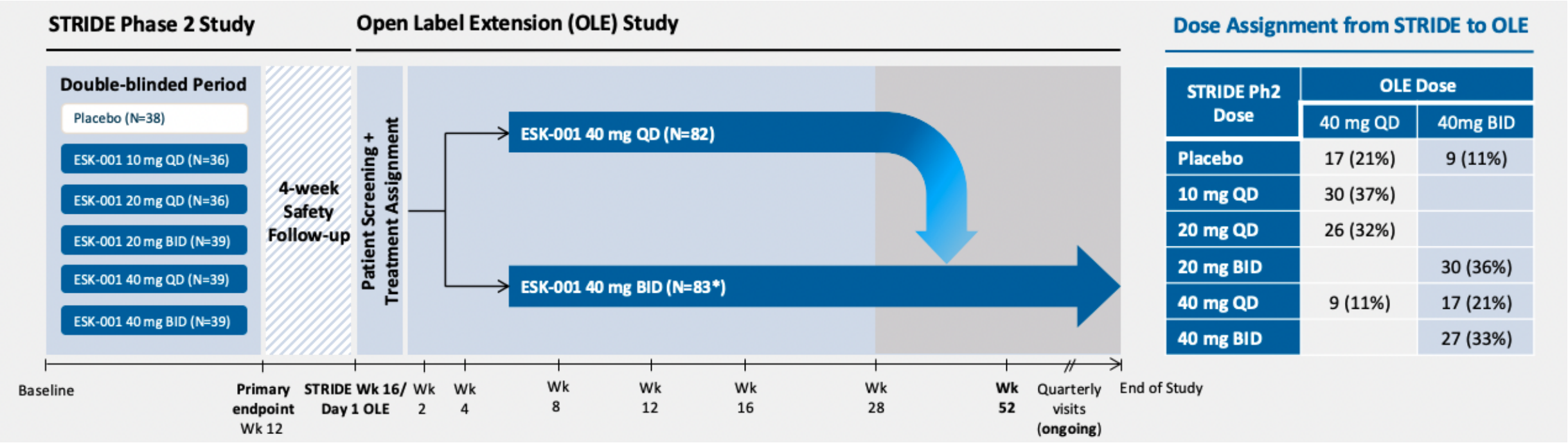
Armstrong AW, et al. *JAMA Dermatol*. 2024;160(10):1066-1074

ESK-001

- Investigative oral highly selective allosteric TYK2 inhibitor
- Has been investigated in phase 2 program (STRIDE Trial)
- Ongoing phase 3 study (ONWARD Trial)

Blauvelt A, et al. Presented at: American Academy of Dermatology (AAD) Annual Meeting, March 7-11, 2025; Orlando, FL. AB266.
Narayan NH, et al. Presented at: AAD Annual Meeting, March 7-11, 2025; Orlando, FL. AB196.

ESK-001 STRIDE

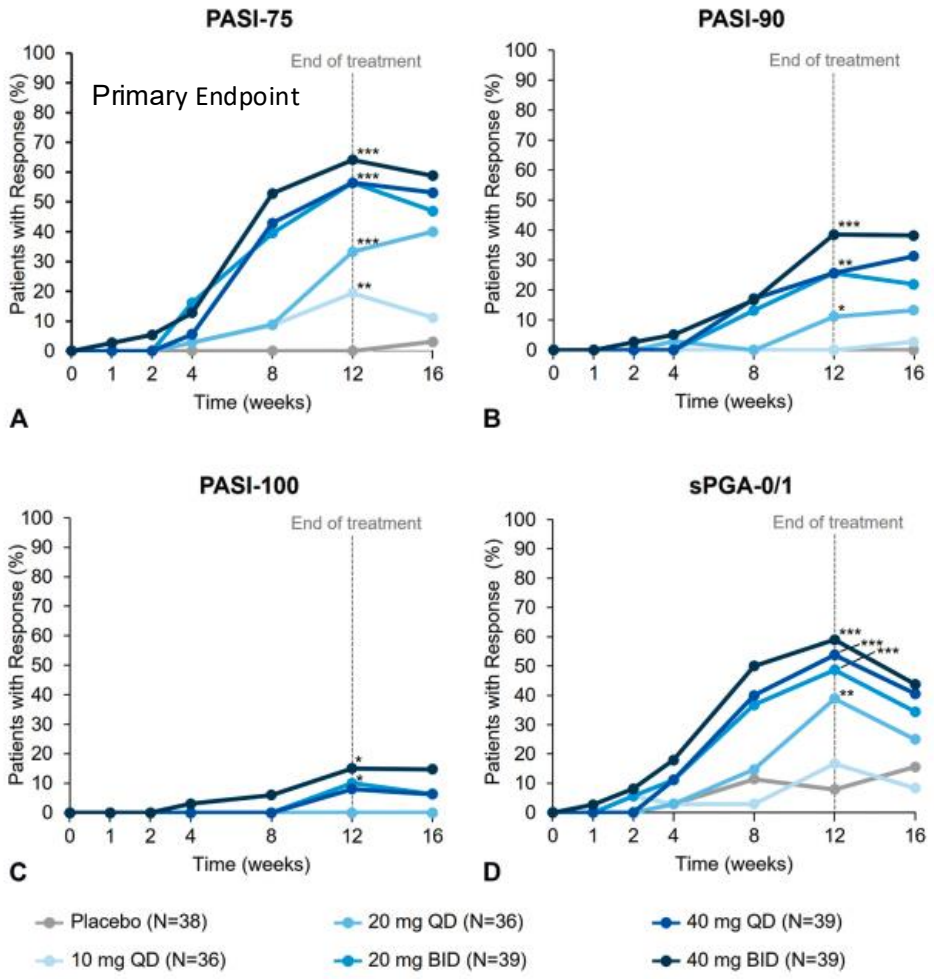


Dose Assignment from STRIDE to OLE

STRIDE Ph2 Dose	OLE Dose	
	40 mg QD	40mg BID
Placebo	17 (21%)	9 (11%)
10 mg QD	30 (37%)	
20 mg QD	26 (32%)	
20 mg BID		30 (36%)
40 mg QD	9 (11%)	17 (21%)
40 mg BID		27 (33%)

Blauvelt A, et al. Presented at: AAD Annual Meeting, March 7-11, 2025; Orlando, FL. AB266.

ESK-001: STRIDE Trial



Blauvelt A, et al. *J Am Acad Dermatol*. 2025:S0190-9622(25)02466-1.

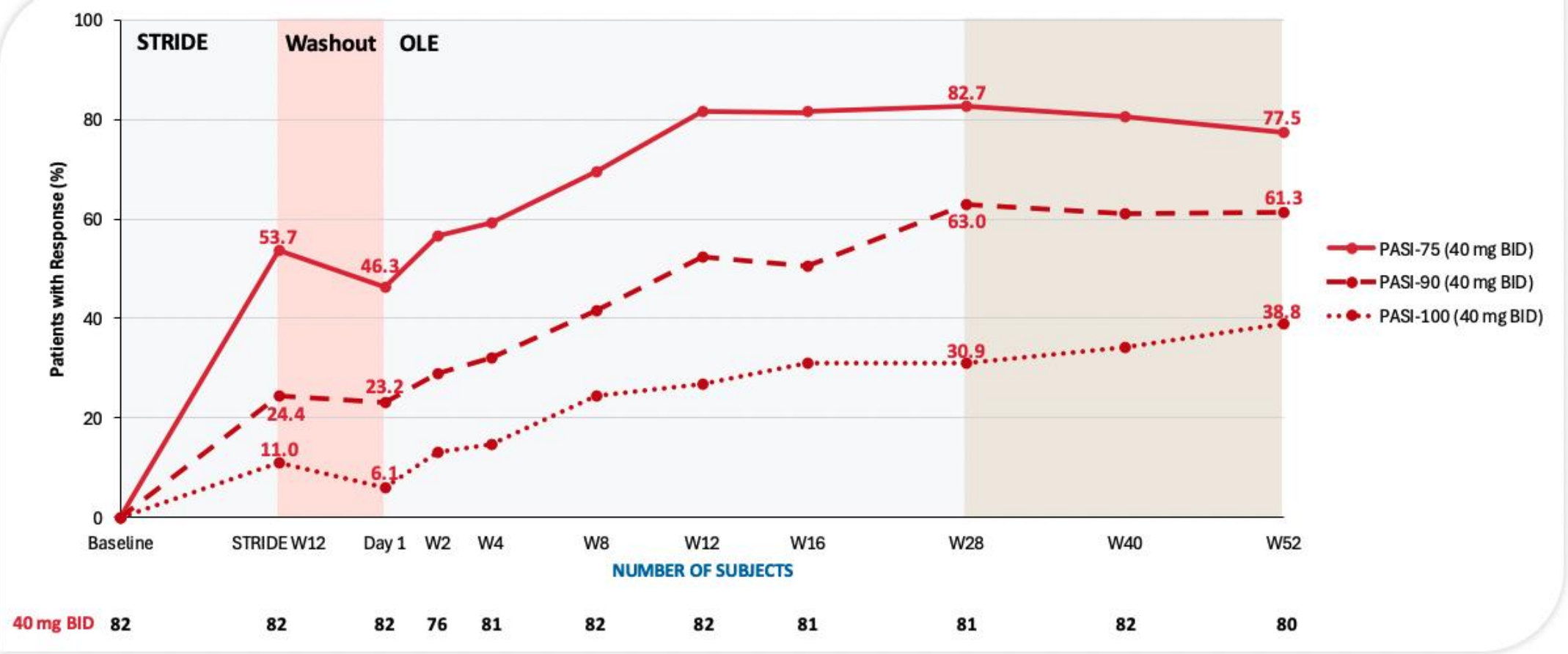
ESK-001: STRIDE Trial

Table III. Summary of TEAEs in STRIDE study (safety analysis set)

		ESK-001					
	Placebo (*N* = 38)	10 mg QD (*N* = 36)	20 mg QD (*N* = 36)	20 mg BID (*N* = 39)	40 mg QD (*N* = 39)	40 mg BID (*N* = 39)	ESK-001 pooled (*N* = 189)
TEAEs, *n* (%)	15 (39.5)	19 (52.8)	14 (38.9)	18 (46.2)	19 (48.7)	25 (64.1)	95 (50.3)
TEAEs leading to treatment discontinuation, *n* (%)*	0 (0.0)	0 (0.0)	2 (5.6)	0 (0.0)	2 (5.1)	1 (2.6)	5 (2.6)
TEAEs ≥ grade 3, *n* (%)	0 (0.0)	3 (8.3)	1 (2.8)	3 (7.7)	3 (7.7)	0 (0.0)	10 (5.3)
TEAEs related to study drug, *n* (%)	5 (13.2)	3 (8.3)	3 (8.3)	5 (12.8)	7 (17.9)	9 (23.1)	27 (14.3)
Most frequent TEAEs, *n* (%)†							
Headache‡	2 (5.3)	0 (0.0)	2 (5.6)	3 (7.7)	4 (10.3)	3 (7.7)	12 (6.3)
Upper respiratory tract infection§	0 (0.0)	2 (5.6)	2 (5.6)	1 (2.6)	2 (5.1)	3 (7.7)	10 (5.3)
Nasopharyngitis§	3 (7.9)	2 (5.6)	0 (0.0)	1 (2.6)	1 (2.6)	3 (7.7)	7 (3.7)
SAEs, *n* (%)‖	0 (0.0)	1 (2.8)	0 (0.0)	3 (7.7)	1 (2.6)	0 (0.0)	5 (2.6)
Deaths, *n* (%)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

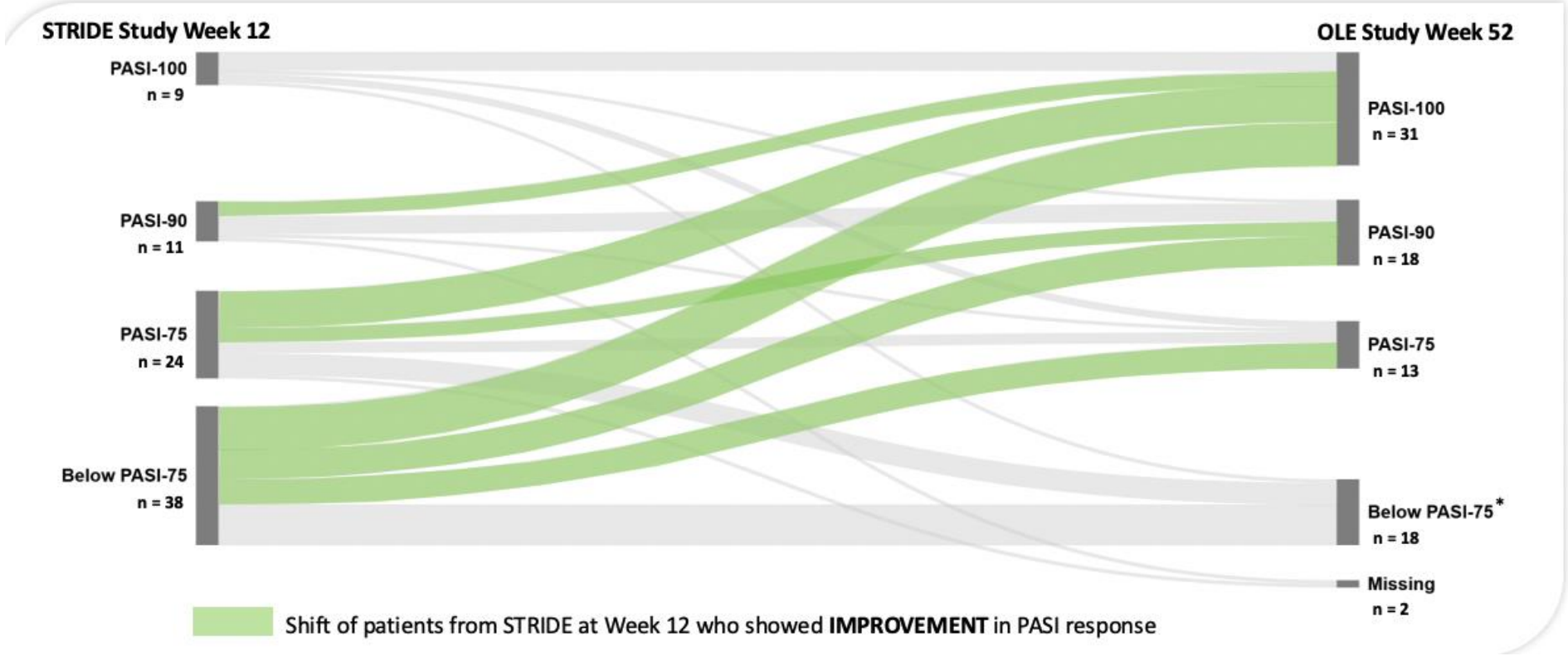
Blauvelt A, et al. *J Am Acad Dermatol*. 2025:S0190-9622(25)02466-1.

ESK-001: STRIDE OLE



Blauvelt A, et al. Presented at: AAD Annual Meeting, March 7-11, 2025; Orlando, FL. AB266.

ESK-001: STRIDE OLE



- 62% continued improvement in PASI score at week 52 as compared to week 12
- 80% of PASI75+ maintained response at week 52

Blauvelt A, et al. Presented at: AAD Annual Meeting, March 7-11, 2025; Orlando, FL. AB266.

ESK-001: STRIDE OLE

	ESK-001 40 mg QD (N=82)		ESK-001 40 mg BID* (N=147)		Overall (N=164)	
	n (%)	EAIR	n (%)	EAIR	n (%)	EAIR
Subjects with ≥ 1 TEAE	50 (61)	122.76	73 (50)	102.33	108 (66)	108.18
Subjects with ≥ 1 TE SAE[1]	2 (2)	3.10	4 (3)	3.39	6 (4)	3.29
Subjects with TEAE related to study drug	12 (15)	20.19	15 (10)	13.83	26 (16)	15.70
Subjects with SAE related to study drug	2 (2)	3.10	2 (1)	1.67	4 (2)	2.17
Subjects with TEAE leading to death	0	-	0	-	0	-
Subjects with TEAE leading to study drug discontinuation[2]	1 (1)	1.55	5 (3)	4.19	6 (4)	3.26
Subjects with TEAE ≥ Grade 3	3 (4)	4.66	6 (4)	5.12	8 (5)	4.42
Most frequent TEAEs (≥5% in any treatment group)						
Nasopharyngitis	10 (12)	16.88	6 (4)	5.15	14 (9)	8.09
Upper respiratory tract infection	3 (4)	4.71	13 (9)	11.66	16 (10)	9.20
Headache	5 (6)	8.28	5 (3)	4.28	10 (6)	5.71
COVID-19	3 (4)	4.74	8 (5)	6.88	11 (7)	6.17

Blauvelt A, et al. Presented at: AAD Annual Meeting, March 7-11, 2025; Orlando, FL. AB266.

Key Learning Points

- TYK2 is a novel target for the treatment of psoriasis
- Inhibiting TYK2 prevents signaling from IL-12 and IL-23 (which activates T_H17 cells – central to psoriasis)
- Oral TYK2 inhibitors have been evaluated for psoriasis. Deucravacitinib is the only FDA-approved TYK2 inhibitor for psoriasis, but there is recent emerging data for zasocitinib and ESK-001
- These newer TYK2 inhibitors may have higher binding affinity for TYK2 and may be more effective
- It is likely that additional TYK2 inhibitors will be approved for psoriasis in the coming years

Dermatology Week

Thank You

Dermatology Week

Psoriasis: Diagnosis, Management, Evidence-Based Practice and Communications

Alice Bendix Gottlieb, MD PhD

Dermatology Week

Psoriasis Diagnosis and Management

Dermatology Week

AAD/NPF Psoriasis Treatment Guidelines (2019–2021)

Scope of Guidelines

- Joint effort: American Academy of Dermatology (AAD) + National Psoriasis Foundation (NPF)
- Sections published 2019–2021
  - Biologics (2019)
  - Comorbidities (2019)
  - Phototherapy (2019)
  - Systemic non-biologics (2020)
  - Topical therapy, severity measures, alternative medicine (2021)
- Future updates on biologics and non-biologics are expected around 2026

Assessing Disease Severity

- Quantitative tools: Body surface area (BSA), PASI, PGA
- Patient-reported outcomes (PROs): Dermatology Life Quality Index (DLQI), Skindex
- Severity not only %BSA—consider special sites (scalp, face, genitals, palms/soles, nails)
- Escalation beyond topicals: Significant QoL impairment, inadequate topical response, rapid progression

QoL = quality of life.

Topical Therapy (2021)

- First-line for mild to moderate disease
  - Topical corticosteroids (low, mid, high potency tailored to site)
  - Vitamin D (VD) analogs (calcipotriol) and corticosteroid + VD analog combos
  - Topical retinoid: Tazarotene
  - New topicals since then: Tapinarof, roflumilast
- Alternative/adjuncts
  - Calcineurin inhibitors (tacrolimus/pimecrolimus) for face, folds, genitals
  - Salicylic acid and other keratolytics
  - Anthralin, coal tar in select cases
- Emollients universally recommended to maintain barrier and adherence

Elmets CA, et al. *J Am Acad Dermatol*. 2021;84(2):432-470. Ghani H, et al. *Skin Res Technol*. 2024;30(9):e70041.

Phototherapy (2019)

- Narrowband UVB: Most effective and safest, first-line for widespread plaque
- Broadband UVB: Option if NB-UVB unavailable
- Targeted phototherapy: Excimer laser/lamp for localized resistant plaques
- PUVA: Effective but higher long-term skin cancer risk, reserved for select patients
- Combination therapy with acitretin or methotrexate improves response
- Avoid in patients with melanoma history; caution with photosensitizing meds

UVB = ultraviolet B; PUVA = psoralen ultraviolet A.
Elmets CA, et al. *J Am Acad Dermatol*. 2019;81(3):775-804.

Systemic Non-Biologics (2020)

- Methotrexate
  - Indicated for moderate-severe psoriasis
  - Less effective for skin than adalimumab/infliximab but useful if PsA present
  - Supplement folate; use non-invasive fibrosis tests instead of routine biopsy
- Cyclosporine
  - Potent, rapid onset. Used for severe, unstable, erythrodermic, pustular forms
  - Nephrotoxicity and hypertension are major limits—short-term use preferred
- Acitretin
  - Useful for pustular/palmoplantar psoriasis and with phototherapy
  - Teratogenic—avoid in pregnancy and for 3 years post-cessation
- Apremilast
  - Oral PDE4 inhibitor; moderate efficacy, favorable safety profile
  - Adverse effects: Diarrhea, nausea, weight loss, depression risk
- New: Deucravacitinib
  - TYK2 inhibitor
  - Adverse events: Acne
- Other systemic agents (less commonly used)
  - Tofacitinib, upadacitinib (JAK inhibitor, not FDA approved for psoriasis)
  - Fumaric acid esters, hydroxyurea, leflunomide, MMF, azathioprine, thioguanine

PsA = psoriatic arthritis; MMF = mycophenolate mofetil.

Menter A, et al. *J Am Acad Dermatol*. 2020;82(6):1445-1486. Kingston P, et al. *J Psoriasis Psoriatic Arthritis*. 2023;8(4):156-165.

Biologic Therapies (2019)

- TNF-alpha inhibitors
  - Adalimumab, etanercept, infliximab, certolizumab, biosimilars
- IL-12/23 inhibitor
  - Ustekinumab, biosimilars
- IL-17 inhibitors
  - Secukinumab, ixekizumab, brodalumab; new: Bimekizumab
- IL-23 inhibitors
  - Guselkumab, risankizumab, tildrakizumab
- General recommendations
  - Screen for TB, hepatitis B/C, HIV
  - Consider comorbidities: Avoid TNF in CHF, demyelinating disease; avoid IL-17 in IBD
  - IL-17 and IL-23 inhibitors achieve highest PASI90/100 rates
  - Shared decision-making essential (route, frequency, cost, efficacy, safety)

TB = tuberculosis; CHF = congestive heart failure; IBD = inflammatory bowel disease.

Menter A, et al. *J Am Acad Dermatol*. 2019;80(4):1029-1072. Burshtein J, et al. *Dermatol Ther (Heidelb)*. 2024;14(2):323-339.

Special Populations & Sites

- Special sites
  - Scalp, nails, palms/soles, genital psoriasis often require systemic therapy despite low BSA
- Pediatric patients
  - Topicals are first-line; phototherapy and methotrexate for moderate–severe disease (Faculty does not agree with MTX as first line)
  - FDA-approved biologics by age: Etanercept ≥4y, ustekinumab ≥6y, secukinumab ≥6y, ixekizumab ≥6y
  - Pregnancy
  - Safe: NB-UVB, certolizumab pegol (minimal placental transfer)
  - Avoid: MTX, acitretin, tazarotene, JAK inhibitors
- Faculty's opinion: The elderly (not in guidelines then)

MTX = methotrexate.

Firek A, Castelo-Soccio L. *JAAD Rev*. 2025;3:51-56. Ferreira C, et al. *Drugs Context*. 2020;9:2019-11-6.

Comorbidity Screening (2019)

- Psoriatic arthritis: Screen every visit with Psoriasis Epidemiology Screening Tool (PEST) questionnaire; refer rheumatology if positive
- Cardiovascular risk: Monitor obesity, hypertension, dyslipidemia, diabetes
- Metabolic syndrome, NAFLD are common; counsel lifestyle changes
- Mental health: Screen for depression, anxiety, suicidality
- Other: Smoking, alcohol, IBD, malignancy screening

- Work with PCPs and other specialties where indicated

NAFLD = non-alcoholic fatty liver disease.
Elmets CA, et al. *J Am Acad Dermatol*. 2019;80(4):1073-1113.

Treatment Selection Framework

- Initial treatment
  - Mild: Topical therapy ± targeted phototherapy
- Escalation
  - Moderate–severe or refractory: Systemic non-biologic or biologic
- Decision factors
  - Disease phenotype (plaque, pustular, erythrodermic)
  - Comorbidities and contraindications
  - Monitoring requirements and lab burden
  - Patient preference, convenience, cost, and access
  - Faculty/IPC: High-impact areas
  - Faculty's opinion: Effect on QoL, daily tasks of living, etc.

IPC = International Psoriasis Council.

Strober B, et al. *J Am Acad Dermatol*. 2020;82(1):117-122.

Monitoring & Safety

- Baseline tests before systemic/biologic therapy
  - CBC, CMP, lipids, hepatitis panel, HIV, TB testing, pregnancy test as indicated
  - Vaccination update: Avoid live vaccines on biologics

- On-therapy monitoring
  - Methotrexate: CBC, CMP q1-3 months
  - Cyclosporine: BP, creatinine monthly
  - Acitretin: Lipids, LFTs
  - Biologics: Periodic labs, infection vigilance

CBC = complete blood count; CMP = comprehensive metabolic panel; BP = blood pressure; LFT = liver function tests.

Practical Pearls

- Reassess after 12–16 weeks of therapy; target PASI75 or PGA 0/1; NPF suggests BSA ≤ 1%; PASI 100/ PGA 0 defines remission
- Consider drug rotation or combination to optimize efficacy and safety
- Shared decision-making and PRO tracking improve adherence and satisfaction
- Document disease severity, QoL, comorbidities consistently

Armstrong AW, et al. *J Am Acad Dermatol.* 2017;76(2):290-298. Armstrong AW, et al. *JAMA Dermatol*. 2025;161(8):863-869.

Systemic Therapies: Efficacy

FDA-Approved Treatment by Domains of Disease

Mechanism	Peripheral Arthritis	Skin and Nail Disease	Axial Disease*	Dactylitis	Enthesitis	GI / IBD
NSAIDs	✓		✓			
Intra-articular steroids	✓					
Topicals		✓				
Psoralen UVA/UVB		✓				
DMARDs (MTX, CsA, SSZ, Lef)	✓	✓				
Apremilast	✓	✓	?	✓	✓	?
Anti-TNF[d]	+++	++	✓	✓	✓	✓
Anti-IL12/23	+	++	X	✓	✓	✓
Anti-IL23 (p19)	++	+++	?	✓	✓	✓
Anti-IL17[d]	+++	+++	✓[c]	✓	✓	X
JAK inhibitors[d]	++	++	✓[a]	✓	✓	✓[b]
Tyk2 inhibitor	(Ph 3; ++)	++	?	? ✓	? ✓	?

***Based on data from ankylosing spondylitis trials (used as surrogate for axial PsA); [a]Based on tofacitinib and upadacitinib ankylosing spondylitis data, upadacitinib FDA approved ank sp.; [b]Ulcerative colitis and Crohn's; [c]Dedicated axial PsA study (MAXIMISE); [d]Inhibition of radiographic progression (upadacitinib).**
DMARD = disease-modifying antirheumatic drugs; CsA = cyclosporin A; SSZ = sulphasalazine.
Adapted from JF Merola.

Dermatology Week

Systemic Therapies: Adverse Events

Mechanism	Skin	GI/Hepatic/Lab	Bone Marrow	Cardiac/Pulm.	Renal	Neurologic	Infections	Malignancy
NSAIDs		✓	✓		✓			
Topicals/Intra-lesional cs	✓						uncommon	
PUVA/UVB	✓	✓						✓
Orals (MTX, CsA, SSZ, Lef, Acetretin)	✓	✓	✓	✓	✓	✓	esp CsA	Esp. CsA
Apremilast		✓				✓		
Anti-TNF[4]	Rare PsO flare	rare	rare	Rare CHF		Rare MS	TB, others	✓
Anti-IL12/23							Rare TB	
Anti-IL23 (p19)							Tinea, rare TB	
Anti-IL17[4]		✓					Candida, rare TB	
JAK inhibitors	✓	✓	✓	✓			Zoster, others	✓
Tyk2 inhib.	✓	⇑ CPK , Trig.					Zoster,? TB	

Biologics for Patients on Medicare

- Tildrakizumab
  - 100 mg sq at weeks 0, 4 then q 12 weeks
- Infliximab
  - 5 mg/kg IV at weeks 0, 2, 6 then q 8 weeks
- Golimumab IV (PsA)
  - 2 mg/kg given as an IV infusion over 30 minutes at weeks 0 and 4, then every 8 weeks thereafter
- Certolizumab lyophilized
  - 400 mg sq q 2 weeks at weeks 0, 2, 4 and then either 400 mg sq q 4 weeks, or 200 mg sq q 2 weeks. For psoriasis can use 400 mg sq q 2 weeks for maintenance
- IV secukinumab
  - 6 mg/kg IV loading dose; 1.75 mg/kg IV q 4 weeks maintenance dose (max 300 mg)

Drugs@FDA: FDA-Approved Drugs. Accessed September 24, 2025. https://www.accessdata.fda.gov/drugsatfda_docs/label/2024/761067s018lbl.pdf; https://www.accessdata.fda.gov/drugsatfda_docs/label/2021/103772s5401lbl.pdf; https://www.accessdata.fda.gov/drugsatfda_docs/label/2025/125289Orig1s155,125433Orig1s036Correctedlbl.pdf; https://www.accessdata.fda.gov/drugsatfda_docs/label/2024/125160s275lbl.pdf; https://www.accessdata.fda.gov/drugsatfda_docs/label/2025/125504Orig1s088,761349Orig1s008correctedlbl.pdf

Key Learning Points

- Consider psoriasis and its comorbidities when choosing treatments for psoriasis
- Severity of psoriasis is determined by both the patient and health care provider and is not solely defined by body surface area involvement
- We have highly effective and safe treatments for psoriasis
- Access/affordability is a major hurdle
- HCP prior authorization processes are major hurdles

Dermatology Week

Strategies for Effective Shared Decision-Making and Patient/Provider Communications

Spend the Time to Talk and Listen to Our Patients

- They will tell us how severe their disease is for them and what kinds of treatments they will be willing to use

Streamlining Psoriatic Arthritis Screening and Management Using the IDEOM Clinical Framework: A Quality Improvement Initiative

Sarah Romanelli, Gretchen D Ball, Hassan Hamade, Melissa P Zundell, Sangyoon Shin, Thami Senthilkumaran, Angela Lamb, Saakshi Khattri, Lourdes Perez-Chada, Joseph F Merola, Alice B Gottlieb

Romanelli S, et al. *J Drugs Dermatol*. 2025;24(8):777-781.

Reasons Why PsA Is SO Important to Diagnose and Treat

- PsA is common and easy to diagnose in many cases
- PsA is disabling
- PsA frequently goes undiagnosed (up to 41%)
- Cutaneous disease can precede arthritis by 10-12 years
- Dermatologists can be the first to detect arthritis
- TNF and IL-17 blockers currently inhibit X-ray progression. IL-23 blockade may be next
- Dermatologists can prevent disability by initiating treatment early on
- It is essential in the treatment of psoriasis to know first if the patient also has PsA
- Presence of PsA is independent of presenting psoriasis severity

Gottlieb A, Merola JF. J *Dermatolog Treat*. 2020;31(7):662-679. Romanelli S, et al. *J Drugs Dermatol*. 2025;24(8):777-781.

PEST and PsAID-12 Instruments

Psoriasis Epidemiology Screening Tool (PEST)

Please answer the questions below and score 1 point for each question answered 'Yes'

	Yes	No
1. Have you ever had a swollen joint (or joints)?	☐	☐
2. Has a doctor ever told you that you have arthritis?	☐	☐
3. Do your finger nails or toenails have holes or pits?	☐	☐
4. Have you had pain in your heel?	☐	☐
5. Have you had a finger or toe that was completely swollen and painful for no apparent reason?	☐	☐
Total	**/ 5**	

A total score of 3 or more out of 5 is positive and indicates a referral to rheumatology should be considered

Psoriatic Arthritis Impact of Disease 12-item questionnaire (PsAID-12)

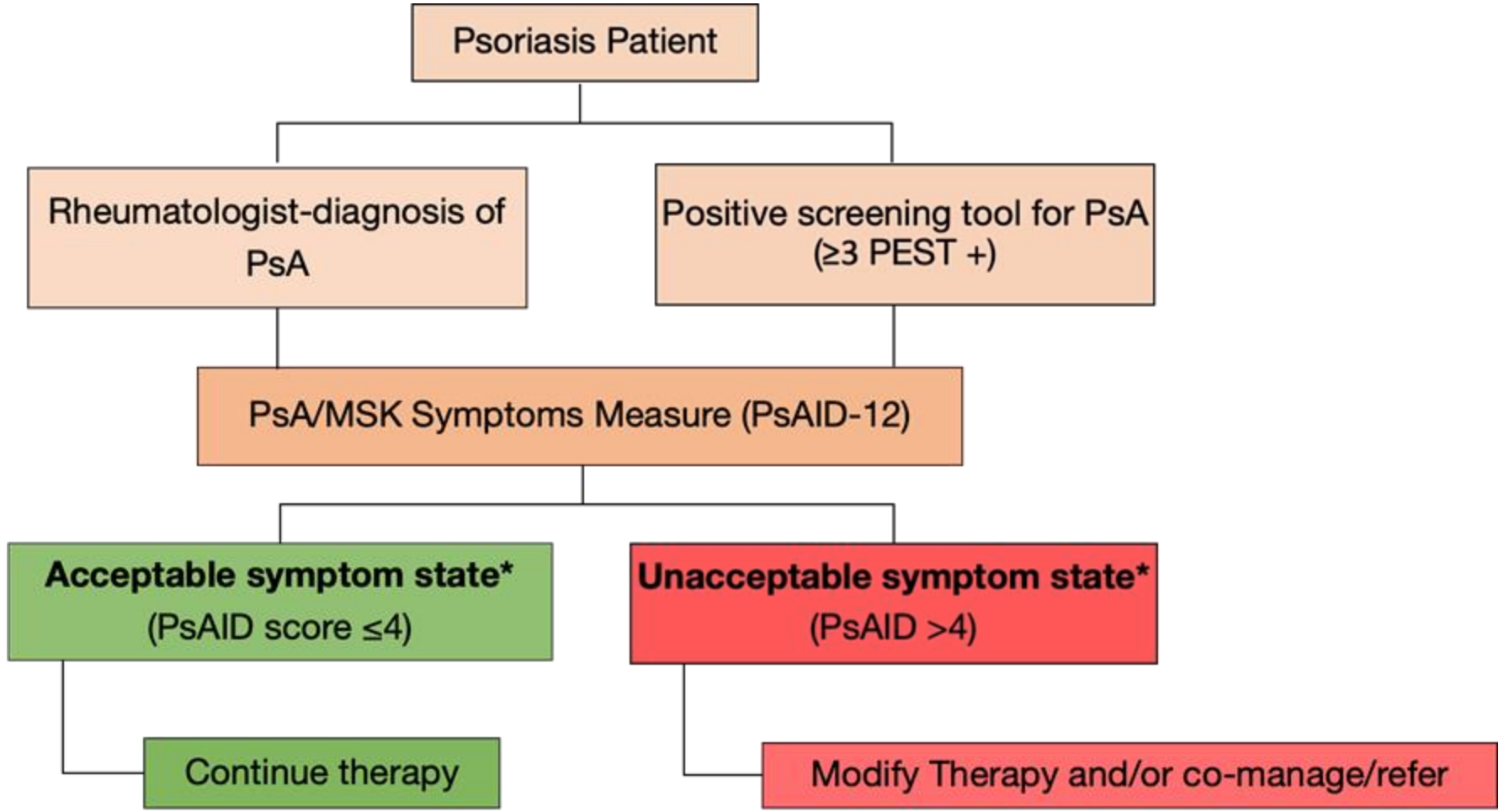
Please indicated how much your psoriatic arthritis has impacted each of the following areas over the past week on a scale from 0 (no impact) to 10 (high impact).

1. Pain
2. Fatigue
3. Skin problems
4. Work and/or leisure activities
5. Functional capacity
6. Discomfort
7. Sleep disturbances
8. Coping
9. Anxiety
10. Embarrassment and/or shame
11. Social participation
12. Depression

Each domain is scored from 0 to 10 and then weighted accordingly. A total score >4 suggests high disease impact.

Romanelli S, et al. *J Drugs Dermatol*. 2025;24(8):777-781.

Framework for the Clinical Measurement of MSK Symptoms in PsO

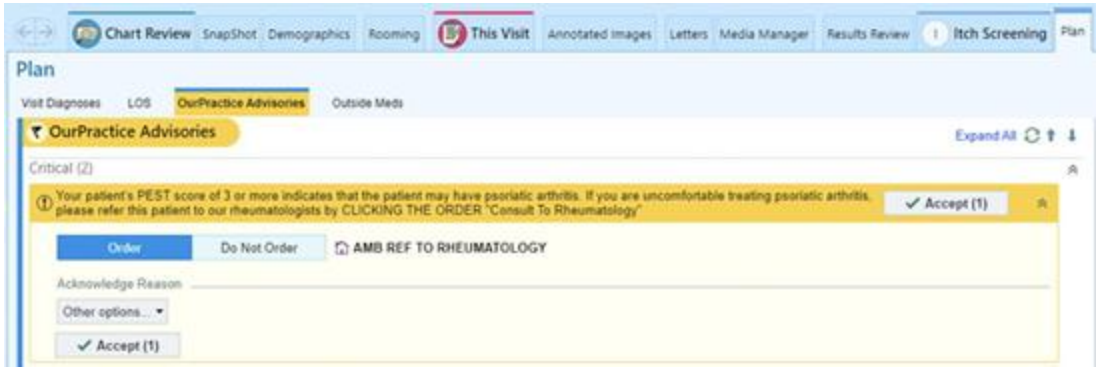


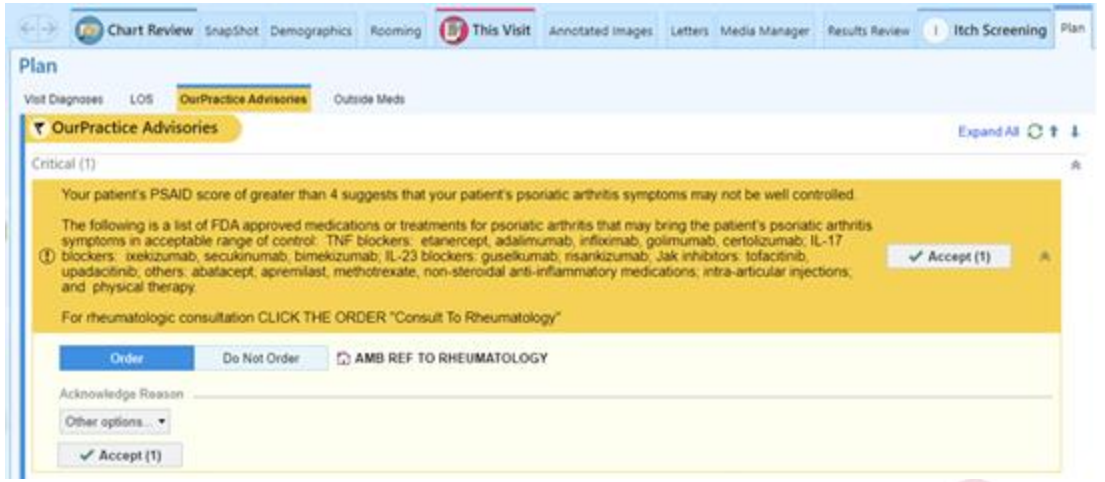
MSK = musculoskeletal.

Perez-Chada LM, et al. *J Rheumatol Suppl*. 2021;97:10-16.

Quality Improvement: Design

- The PEST and PsAID-12 were integrated into EHR system
  - Prior to each clinic visit, patients were prompted to complete the PEST and/or PsAID-12 via the patient portal. Upon completion, scores were automatically calculated and recorded in EHR system
- When HCP opens EHR system chart, the following appears
  - If PEST score ≥3 , a drop-down menu states that the patient may have PSA. A rheumatology consult appointment is a click away
  - In patients with a PEST score ≥3, they will be given the PsAID-12. If PsAID-12 score >4, a drop-down menu states that the patient is in unacceptable control of PsA. A rheumatology consult appointment is a click away and a list of FDA-approved drugs for PsA is shown





EHR = electronic health record; HCP = healthcare provider.
Romanelli S, et al. *J Drugs Dermatol*. 2025;24(8):777-781.

Participants

- Eligible participants: Individuals with a diagnosis code of either PsO or PsA (ICD-10 code: L40.0 and L40.5, respectively) who presented to any dermatology clinic within one healthcare system from October 2022 to March 2025
- We compared questionnaire data for patients with PsO and PsO + PsA between their first visit and most recent visit

Patient Demographics

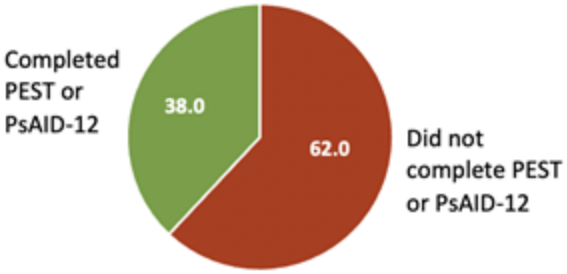
Category	Number	Percentage
Race		
American Indian or Alaskan	13	0.17%
Asian	420	5.3%
Black or African	582	7.4%
Native Hawaiian or Other Pacific Islander	19	0.24%
White	4599	58.4%
Other	1242	15.8%
Unknown	944	11.9%
Patient Declined	58	0.70%
Ethnicity		
Hispanic or Latino	1071	13.6%
Not Hispanic or Latino	4679	59.4%
Unknown	2061	26.2%
Patient Declined	66	0.84%
Sex		
Male	3726	47.3%
Female	4151	52.7%

Romanelli S, et al. *J Drugs Dermatol*. 2025;24(8):777-781.

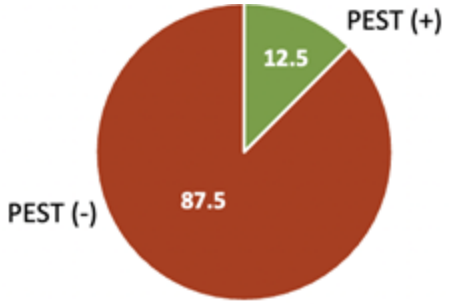
Visit 1 Clinical Framework Data

- Over 29 months, 7,877 patients with PsO were encountered by dermatology providers, with 1,253 (15.9%) having a baseline diagnosis of PsA
- Of the 6,635 patients with PsO without a PsA diagnosis, 2,523 (38.0%) completed the PEST; 316 (12.5%) scored ≥3 and subsequently completed the PsAID-12
- Of those who took the PsAID-12 at visit 1, 239 (75.6%) scored ≤4, indicating effective symptom management
- Of the 77 patients not on target, 19 (24.6%) received rheumatology referrals

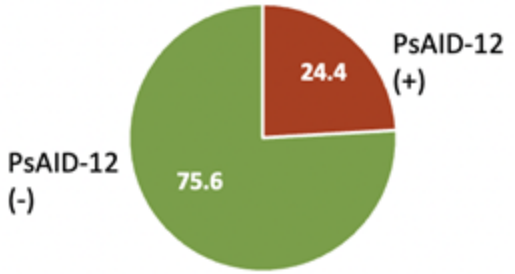
Visit 1 Questionnaire Complete Rate



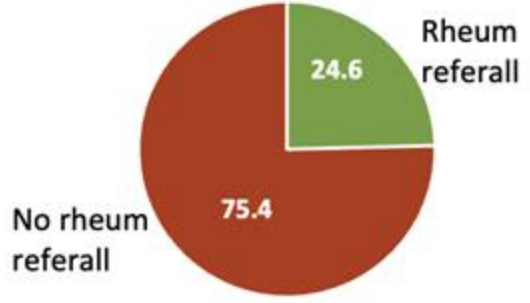
Visit 1 PEST Results



Visit 1 PsAID-12 Results



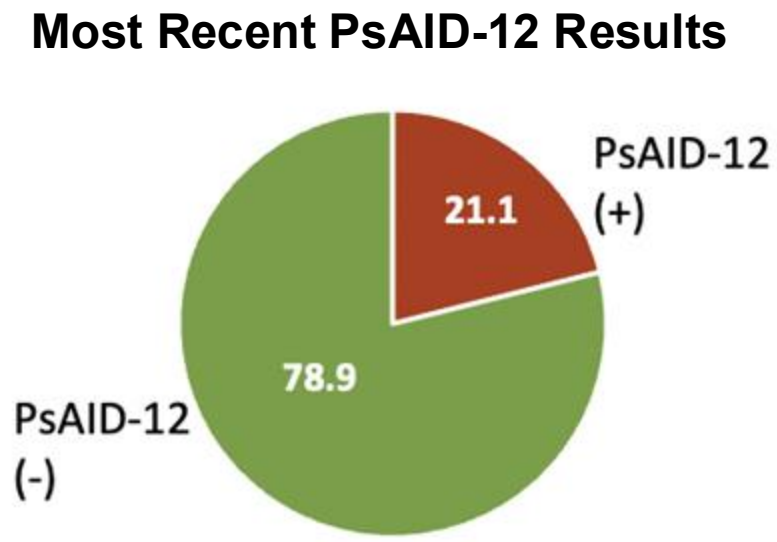
Visit 1 PsAID-12 (+) with Rheum Referral



Romanelli S, et al. *J Drugs Dermatol*. 2025;24(8):777-781.

Most Recent Follow-Up Data

- Of the patients referred to rheumatology, 44.4% received a diagnosis of PsA
- 506 patients completed the PsAID-12 at least twice
- Average visit 1 PsAID-12 score = 2.81
- Average most recent visit PsAID-12 score = 2.52
- Average amount of time passed between first visit and most recent visit = 331 days
- **Mean PsAID-12 score change = -0.29**
  - ***p* < 0.0001**



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Assess Patient Satisfaction with Treatment

JAMA Dermatology | Brief Report

Validation of DermSat-7 for Assessing Treatment Satisfaction in Patients With Psoriasis

April W. Armstrong, MD, MPH; Kathryn Lee, MD; Danielle Yee, MD; Michael Woodbury, MD; Melissa Zundell, MD; Caterina Zagona-Prizio, MD; Jenna Yousif, MD; Carly Grant, MD; Ali Shields, MD; Peichi Chou, BA; Kristina Callis Duffin, MD, MS; Alice B. Gottlieb, MD, PhD; Joseph F. Merola, MD, MMSc; Lourdes Perez-Chada, MD, MMSc

- The DermSat-7 is a seven-item self-administered instrument with a recall period of 14 days that assesses patient satisfaction with their treatments across various inflammatory dermatology diseases, including psoriasis

Armstrong AW, et al. *JAMA Dermatol*. 2025;161(4):416–420.

DermSat-7 (7-Item Dermatology Treatment Satisfaction Instrument)

Instructions: We would like to hear about your satisfaction with one skin medicine/treatment currently used to treat one skin condition. Please think about your satisfaction with the medicine/treatment over the past seven days.

Please enter the name of the skin treatment and how often you use it (Example: Medication A 1% cream, twice a day):

_____

Please enter the name of the skin condition for which you are using this medicine/treatment (Example: psoriasis):

_____

1. How satisfied are you with this treatment's ability to treat your skin condition?

- ☐1 Not Satisfied
- ☐2 Slightly Satisfied
- ☐3 Somewhat Satisfied
- ☐4 Mostly Satisfied
- ☐5 Completely Satisfied

2. How satisfied are you with this treatment's ability to improve how your skin looks (example: reduced redness, discoloration, crust, scaling)?

- ☐1 Not Satisfied
- ☐2 Slightly Satisfied
- ☐3 Somewhat Satisfied
- ☐4 Mostly Satisfied
- ☐5 Completely Satisfied

3. How satisfied are you with this treatment's ability to improve how your skin feels (example: reduced itch, pain, stinging)?

- ☐1 Not Satisfied
- ☐2 Slightly Satisfied
- ☐3 Somewhat Satisfied
- ☐4 Mostly Satisfied
- ☐5 Completely Satisfied

4. How satisfied are you with storing, preparing, or planning for this treatment (example: refrigerate for storage, mix prior to use, travel to doctor's office to receive treatment)?

- ☐1 Not Satisfied
- ☐2 Slightly Satisfied
- ☐3 Somewhat Satisfied
- ☐4 Mostly Satisfied
- ☐5 Completely Satisfied

5. How satisfied are you with the ease of taking or using this treatment (example: apply creams, swallow pills, give and receive injections)?

- ☐1 Not Satisfied
- ☐2 Slightly Satisfied
- ☐3 Somewhat Satisfied
- ☐4 Mostly Satisfied
- ☐5 Completely Satisfied

6. How satisfied are you with how often you take or use this treatment (example: daily, twice a week, or once every 2 months)?

- ☐1 Not Satisfied
- ☐2 Slightly Satisfied
- ☐3 Somewhat Satisfied
- ☐4 Mostly Satisfied
- ☐5 Completely Satisfied

7. Consider all aspects of this treatment. Overall, how satisfied are you with this treatment for your skin condition?

- ☐1 Not Satisfied
- ☐2 Slightly Satisfied
- ☐3 Somewhat Satisfied
- ☐4 Mostly Satisfied
- ☐5 Completely Satisfied

Thank you for completing DermSat-7!

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Key Learning Points

- Choice of treatments depends upon multiple factors
- Access is an issue in bringing the best treatments to patients
- We have patient-facing, easily available instruments that can lead to the earlier diagnosis and improved treatment of PsA
  - Example: Patients scoring higher than 4 on PsAID-12 might benefit from modified therapy
- Treatment satisfaction with treatment, not process, can now be assessed