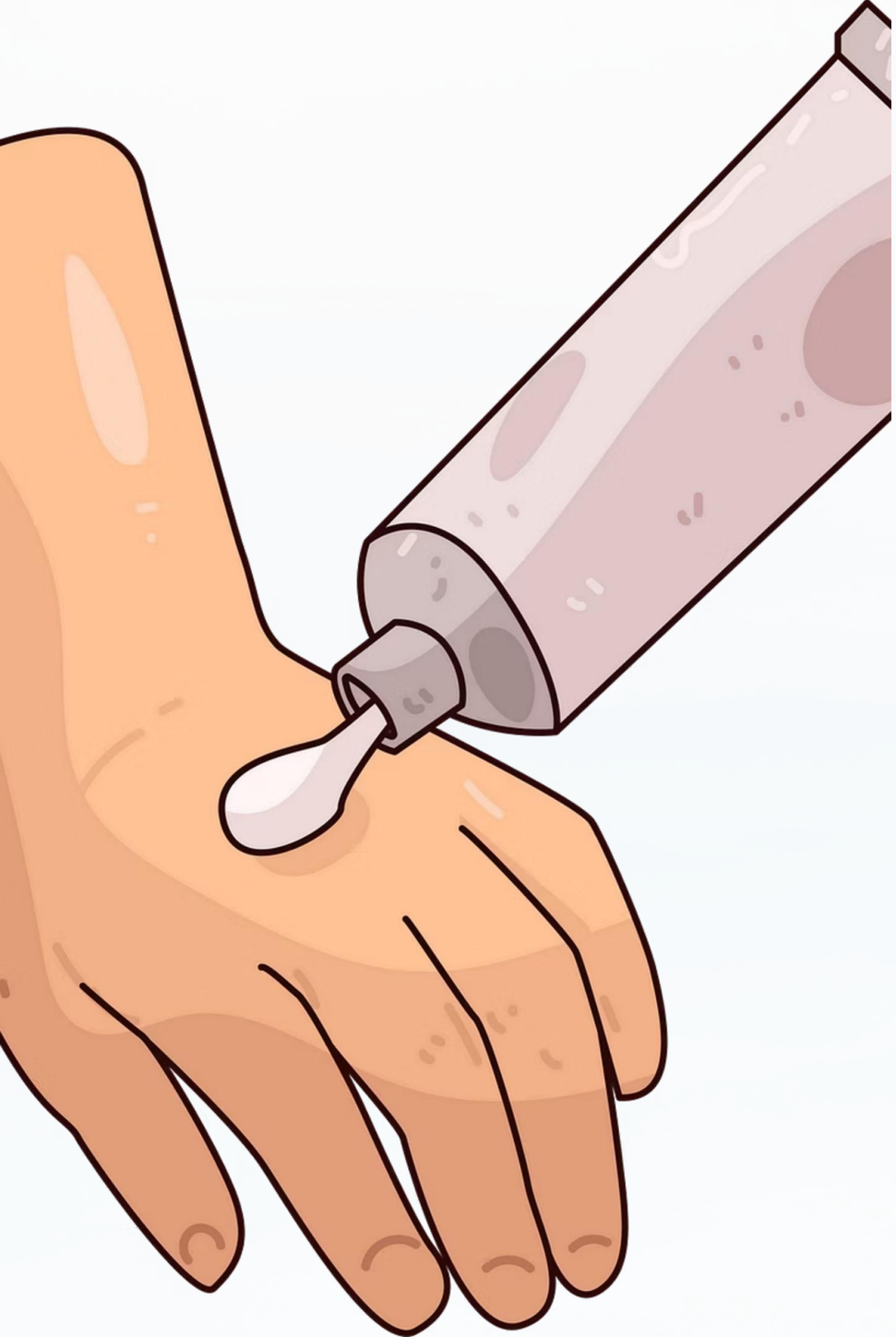
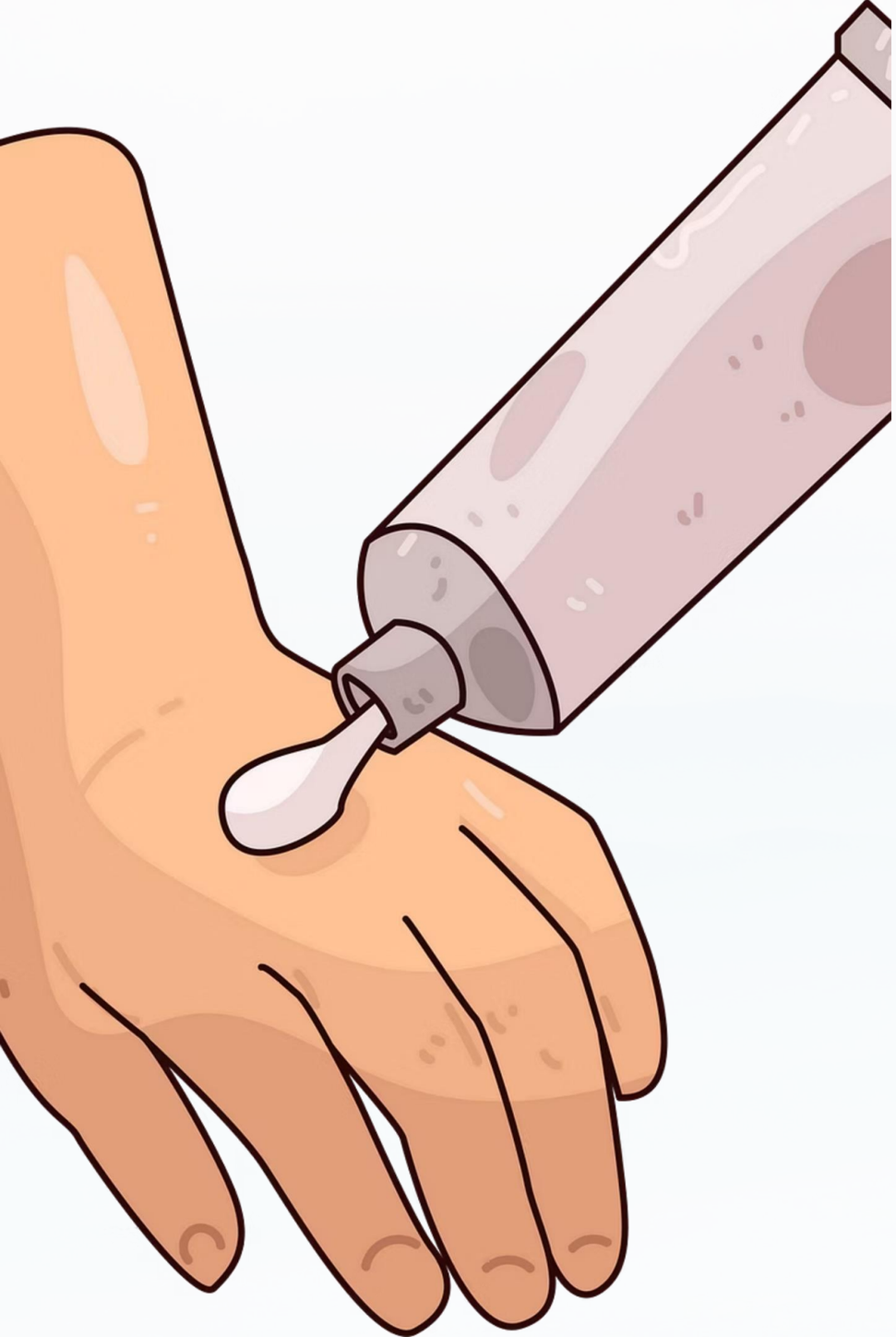


Drugs in Dermatology: What's Old, What's New, What's Tried and True!

Laura P. Bush DMSc, PA-C

Skin, Bones, Hearts & Private Parts



Drugs in Dermatology: What's Old, What's New, What's Tried and True!

1.0 hour total CME

Skin, Bones, Hearts & Private Parts

01

Classic Topical Therapies

Corticosteroids, antibiotics, and foundational treatments

02

Systemic Medications

Oral antibiotics, antifungals, and immunomodulators

03

Advanced Biologics

Targeted therapies for psoriasis, atopic dermatitis, and beyond

04

Special Populations

Pregnancy, pediatrics, and elderly considerations

Why This Matters in Primary Care

- Dermatological conditions are common (up to 30% of PC visits).
- Accurate diagnosis and treatment improve patient outcomes and reduce specialist referrals.
- Early recognition provides faster relief and prevents complications.
- Knowing treatment options enables confident patient management.
- Proper medication selection minimizes trial-and-error prescribing.



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Topicals:
Cornerstone of Dermatologic Therapy

1

First-Line Treatment

Most dermatologic conditions respond best to topical therapy as initial management, offering targeted relief with minimal systemic effects

2

Potency Matters

Matching corticosteroid strength to body location and condition severity is critical for efficacy and safety

3

Vehicle Selection

Ointments, creams, lotions, and gels have distinct penetration profiles and patient acceptance factors

Common prescribing pitfalls: Using superpotent steroids on facial skin, applying low-potency agents to thick plaques, or failing to educate patients on proper application techniques.

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Corticosteroids: Tried & True Workhorses

Low Potency

Sites: Face, eyelids, intertriginous areas, children

Examples: Hydrocortisone 1-2.5%, desonide 0.05%

Safety: Safest for prolonged use

Medium Potency

Sites: Trunk, arms, legs (most body areas)

Examples: Triamcinolone 0.1%, mometasone 0.1%

Use: First-line for most conditions

High/Superpotent

Sites: Thick plaques, palms, soles, scalp

Examples: Clobetasol 0.05%, betamethasone dipropionate

Caution: Time-limit to 2-4 weeks

Critical Safety Point: Avoid chronic continuous use of potent topical steroids—this leads to skin atrophy, telangiectasias, striae, and potentially systemic absorption.

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Topical Steroids: Understanding What Determines Strength

Not all corticosteroids are created equal.

7-Class System

Topical steroids are classified from Class I (superpotent) to Class VII (least potent) based on vasoconstrictor assays

Class I Example

Clobetasol propionate 0.05%—reserved for short-term use on resistant, thick lesions

Class VII Example

Hydrocortisone 1% (OTC)—safe for facial use and pediatric patients

The classification helps standardize prescribing but must be combined with clinical judgment about site, disease, and patient factors.

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Four Key Determinants of Steroid Potency

The Molecule Itself

Intrinsic anti-inflammatory properties vary by chemical structure

Concentration & Vasoconstriction

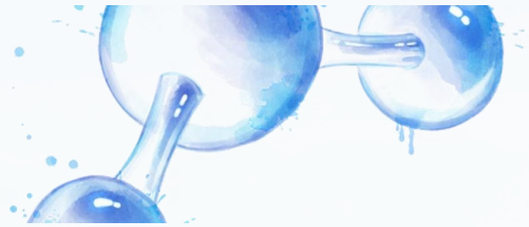
Higher concentration doesn't always mean greater potency—molecular activity matters more

Vehicle Formulation

Ointments > creams > lotions > gels for drug penetration

Application Site

Anatomic differences in absorption dramatically affect efficacy and safety







Molecular Structure & Concentration

The Molecule Itself

Different corticosteroid molecules possess different anti-inflammatory strength, independent of concentration.

- **Clobetasol:** Superpotent fluorinated steroid
- **Triamcinolone:** Mid-potency workhorse
- **Hydrocortisone:** Low potency, safest profile

Concentration Isn't Everything

A common misconception is that higher percentage equals stronger effect. In reality, potency depends on vasoconstrictor assays, not just concentration.

- Clobetasol 0.05% >> Hydrocortisone 1%
- Vasoconstriction testing defines true potency
- Molecular activity matters more than percent strength

Vehicle & Application Site Impact

Vehicle Matters

The base formulation dramatically affects drug penetration and potency:

- **Ointments:** Occlusive, greasy, maximum penetration—best for thick or dry lesions
- **Creams:** Less greasy, good penetration, most popular with patients
- **Lotions:** Thin, spreadable, convenient for large areas or hairy sites
- **Gels/Solutions/Foams:** Non-greasy, good for scalp, but can drying

Clinical pearl: Same steroid in ointment form is more potent than cream form.

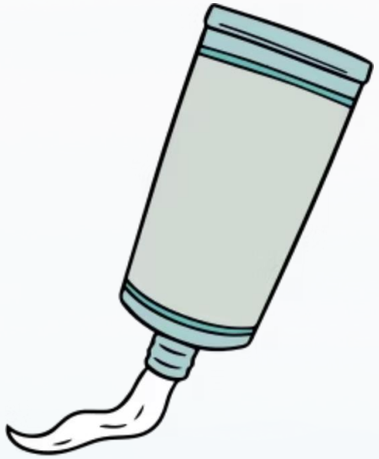
Anatomic Absorption Varies

Skin thickness and anatomy determine absorption rates:

- **Thin skin** (face, eyelids, genitals): High absorption → use lower potency
- **Thick skin** (palms, soles): Low absorption → requires higher potency
- **Intertriginous areas** (axilla, groin): Natural occlusion increases penetration and atrophy risk

Safety consideration: Facial absorption can be 300x greater than forearm skin.

Dosing: How Much, How Often, How Long?



Fingertip Unit (FTU)

One fingertip of cream from fingertip to first crease ≈ 0.5 grams, covers approximately 2 adult handprints of skin surface area.

Application Frequency

Typically **once or twice daily**. More frequent application does NOT improve efficacy and increases risk of side effects and tachyphylaxis.



Duration Guidelines

- **Superpotent steroids:** Maximum 2-3 weeks for localized areas
- **Medium potency:** Up to 6-8 weeks with monitoring
- **Low potency:** Longer-term use acceptable for face, folds, pediatrics

Pro tip: Taper frequency (alternate days, weekends only) rather than stopping abruptly to prevent rebound. Avoid giving large quantities/refills.

Side Effects: What Can Go Wrong



Local Adverse Effects

- **Skin atrophy:** Thinning with visible veins, fragility
- **Telangiectasias:** Permanent dilated blood vessels
- **Striae:** Stretch marks, especially in intertriginous areas

- **Perioral dermatitis:** Papules around mouth from facial steroid use
- **Tachyphylaxis:** Decreased response over time
- **Steroid rosacea:** Worsening facial redness



Systemic Effects (Rare)

- **HPA axis suppression:** Occurs with prolonged use over over large surface areas or under occlusion
- **Cushing syndrome:** With extensive, long-term potent steroid use
- **Growth suppression:** Children at higher risk
- **Hyperglycemia:** In predisposed patients

High-risk scenarios: Infants, occlusive dressings, widespread application, prolonged courses of Class I-II steroids.

Clinical Case: Choosing the Right Steroid

> A 34-year-old teacher presents with new-onset psoriasis affecting her elbows and knees. She has been using an over-the-counter counter moisturizer without improvement. She requests "something stronger" but expresses concern about skin thinning she read read about online.
>
> **Your task:** Which potency and vehicle would you choose for this location and disease severity? What counseling points would you emphasize to balance efficacy with safety?

Consider: Anatomic site, disease characteristics, vehicle preference, safety profile, treatment duration, and patient education needs.

Case Discussion: Optimal Management Strategy

1

Potency Selection

High-potency steroid: **clobetasol 0.05%** or **betamethasone dipropionate 0.05%**

Thicker stratum corneum on elbows/knees requires requires stronger anti-inflammatory action to penetrate and break the inflammatory cycle.

2

Vehicle Choice

Ointment if skin is very scaly—drives penetration and softens scale

Cream acceptable if patient prefers less greasy feel and better cosmetic acceptance

3

Duration & Taper

Apply **twice daily for 2-4 weeks**, then taper to weekends only or switch to steroid-sparing agent once plaques flatten

Avoid abrupt discontinuation to prevent rebound

Critical Counseling Points

- **Atrophy risk is LOW** on elbows/knees compared to face or folds—reassure patient
- Prescribe **finite quantity** (e.g., 60g tube) with specific duration instructions
- Educate on taper strategy and consider adding non-steroid maintenance (calcipotriene, moisturizer)
- Set realistic expectations: improvement in 1-2 weeks, maximum effect by 4 weeks
- Schedule follow-up to assess response and adjust therapy

Combination Products: Synergistic Therapy





Clotrimazole-Betamethasone (Lotrisone)

Combines antifungal with mid-potency corticosteroid for suspected fungal infections with inflammation.

Indications: Tinea with secondary inflammation, suspected fungal infections in moist areas

Caution: Should not be first-line—confirm diagnosis first. Risk of masking fungal infection or causing steroid-induced tinea incognito. Limited to 2-4 week courses.

Better approach: Treat with antifungal alone first; add steroid separately if needed for symptomatic relief during initial treatment phase.

Steroid Stewardship:Preventing Topical Steroid Withdrawal Syndrome

Topical steroid withdrawal syndrome (also called topical steroid addiction or red skin syndrome) is a debilitating condition that can develop after prolonged use of moderate-to-potent topical corticosteroids, especially on the face.

Pathophysiology

1

Chronic steroid use leads to skin dependency, vasoconstriction rebound, and barrier dysfunction. When steroids are stopped, severe inflammatory flare occurs.

Clinical Presentation

2

Intense burning, redness, skin sensitivity, and rebound flare days to weeks after steroid discontinuation. Can persist for months.

Prevention Strategies

3

Use lowest effective potency, avoid facial potent steroids, duration, taper gradually, employ steroid-sparing agents early, educate patients thoroughly.

Non-Steroidal Topicals



Calcineurin Inhibitors

Tacrolimus 0.03%, 0.1% and **pimecrolimus 1%**

- Steroid-sparing
- facial/intertriginous areas
- No atrophy risk
- Initial burning common, resolves with continued use

PDE-4 Inhibitors

Crisaborole 2% (atopic dermatitis) and **roflumilast 0.3%** (psoriasis, atopic dermatitis)

- non-steroidal
- good safety
- well tolerated

Aryl Hydrocarbon Receptor Agonist

Tapinarof 1% cream

- Novel mechanism for plaque psoriasis and atopic dermatitis
- Once-daily application
- No systemic absorption
- Safe long-term

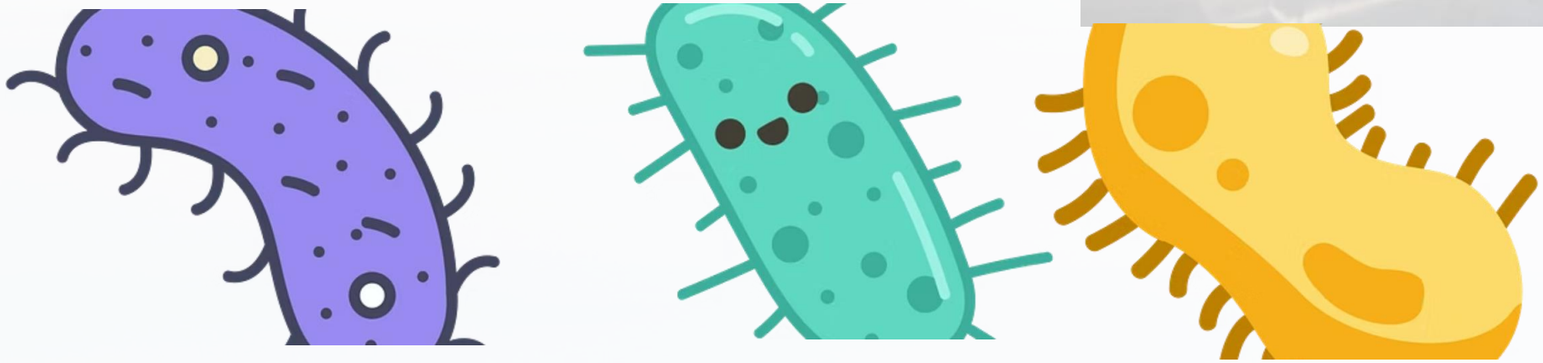
Vitamin D Analog

Calcipotriene 0.005%

- Effective for psoriasis, often combined with steroids
- Can cause irritation
- Monitor calcium in extensive use
- Risk of photo-degradation
- apply at night

Topical Antibiotics & Antiseptics





Mupirocin

2% ointment or cream

Excellent staphylococcal and streptococcal coverage for impetigo, secondarily infected dermatoses, and nasal MRSA decolonization. Apply TID for 5-10 days.

Topical Clindamycin

1% gel, lotion, solution

First-line for mild-to-moderate acne vulgaris and folliculitis. Always combine with benzoyl peroxide to prevent resistance. Apply once or twice daily.

Benzoyl Peroxide

2.5-10% wash, gel, cream

Kills C. acnes without inducing resistance. Reduces antibiotic resistance when combined with topical or oral antibiotics. Bleaches fabrics—counsel patients.

Antiseptic Adjuncts

Bleach baths, chlorhexidine, antimicrobial washes

Dilute bleach baths (¼-½ cup per tub) reduce staph colonization in atopic dermatitis. Hibiclens and athletic washes help prevent recurrent folliculitis and body odor.



Topical Antifungals

Established Agents

- **Ketoconazole 2%:** Cream, shampoo—broad spectrum, good for tinea and seborrheic dermatitis
- **Terbinafine 1%:** Cream-fungicidal, excellent for tinea pedis/cruris/corporis, once or or twice daily
- **Ciclopirox 0.77%:** Cream, gel, shampoo-broad antifungal plus anti-inflammatory properties
- **Clotrimazole 1%:** OTC cream-effective for most superficial dermatophyte infections

Treatment duration: Continue 1-2 weeks beyond clinical clearing to prevent recurrence.

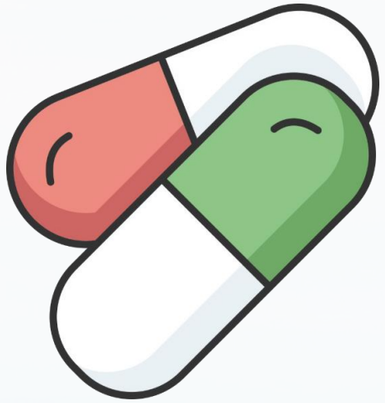
Newer Nail Solutions

- **Efinaconazole 10%:** Solution for onychomycosis, once-daily for 48 weeks, better penetration than older topicals
- **Tavaborole 5%:** Solution for onychomycosis, once-daily for 48 weeks, boron-based antifungal
- **Luliconazole 1%:** Cream for tinea infections, once-daily application, newer imidazole with excellent tissue retention

Cost consideration: Newer agents are significantly more expensive; reserve for refractory cases or when oral therapy contraindicated.

Success rates: Topical nail therapies have modest cure rates (15-30%); oral therapy remains more effective for severe onychomycosis.

Oral Antibiotics in Dermatology





Tetracyclines: Workhorses of Dermatology

Doxycycline and minocycline serve dual roles: antimicrobial and anti-inflammatory, making them ideal acne vulgaris and rosacea.

- **Acne:** 100 mg daily or twice daily for 8-12 weeks, paired with topical retinoid and benzoyl peroxide
- **Rosacea:** 40 mg modified-release doxycycline-subantimicrobial dose with pure anti-inflammatory benefit, no resistance risk
- **Advantages:** Well-tolerated, anti-inflammatory properties extend beyond infection control
- **Side effects:** GI upset, photosensitivity, esophagitis (take with water, stay upright 30 min)

Sarecycline: The Narrow-Spectrum Option

FDA-approved specifically for acne, designed to minimize gut flora disruption and reduce C. difficile risk.

Oral Antifungals



Terbinafine: First-Line for Dermatophytes

Indications: Onychomycosis (nail fungus), extensive tinea corporis, tinea capitis

Dosing: 250 mg daily for 6 weeks (fingernails) or 12 weeks (toenails); continuous therapy for severe tinea infections

Advantages: Fungicidal, high cure rates for onychomycosis (70-80% for toenails), minimal drug interactions

Monitoring: Baseline and 4-6 week LFTs—rare but serious hepatotoxicity

Fluconazole: The Yeast Specialist

Indications: Candidiasis, pityriasis versicolor

Dosing: Varies by condition

Critical concern: Extensive CYP2C9 and CYP3A4 interactions—check drug-drug interactions carefully (warfarin, statins, many others)



Antihistamines: Pruritus & Urticaria

Non-Sedating Antihistamines

Cetirizine 10 mg, loratadine 10 mg, fexofenadine 180 mg—once daily

First-line for chronic urticaria, allergic contact dermatitis, and pruritus. Safe for daily long-term use. Can safely up-dose to 4x the standard dose for refractory urticaria (e.g., (e.g., cetirizine 10 mg QID).

Advantages: No sedation, no anticholinergic effects, safe in most patients including elderly

Sedating First-Generation Agents

Hydroxyzine 25-50 mg at bedtime or TID-QID as needed

Potent antipruritic and anxiolytic effects. Reserve for nighttime use when sedation is desirable for sleep disruption from severe itch. Also useful for acute urticaria or anxiety-anxiety-associated pruritus.

Cautions: Sedation, dry mouth, urinary retention—avoid in elderly due to anticholinergic effects and fall risk

Chronic Urticaria Management Pearl

If standard-dose non-sedating antihistamines fail to control chronic urticaria after 2 weeks, off label you can escalate dose up to 4-fold (e.g., cetirizine 10 mg QID or fexofenadine 180 mg BID-QID). If still refractory, consider omalizumab or other advanced therapies BTK inhibitor.

Traditional Immunomodulators



Methotrexate & Cyclosporine

Highly effective immunosuppressants for moderate-to-severe psoriasis, atopic dermatitis, and other inflammatory dermatoses when when topicals fail.

Efficacy: Both provide substantial disease control with proper dosing and monitoring

Dermatology oversight: Initiation and dose titration typically managed by dermatology specialists

Primary Care Provider's Critical Role

- **Laboratory monitoring:** Regular CBC, comprehensive metabolic panel, liver function tracking per protocol
- **Infection surveillance:** Screen for TB, hepatitis before initiation; monitor for opportunistic infections during therapy
- **Vaccination coordination:** Ensure age-appropriate vaccines current before starting; avoid live vaccines during therapy

- **Drug interaction management:** Both have significant interactions-methotrexate with NSAIDs/TMP-SMX, cyclosporine with many medications
- **Side effect recognition:** Nausea, fatigue, renal dysfunction, hypertension-early identification prevents complications

Small Molecule Systemics: The Oral Revolution

Apremilast

Mechanism: Oral PDE-4 inhibitor

Indications: Psoriasis, psoriatic arthritis

Key monitoring: Screen for depression history and mood changes—dose-related depression risk. Requires dose reduction in severe renal impairment (CrCl <30).

Advantages: No lab monitoring required, oral administration, moderate efficacy

JAK Inhibitors

Agents: Upadacitinib, abrocitinib, baricitinib

Indications: Atopic dermatitis (FDA-approved), psoriasis, alopecia areata, vitiligo

Monitoring: CBC, CMP, lipid panel at baseline and periodically. Screen for TB, hepatitis B/C. Monitor for infections, MACE, thrombosis, malignancy.

Black box warnings: Serious infections, malignancy, thrombosis, cardiovascular events

TYK2 Inhibitor

Agent: Deucravacitinib (Sotyktu)

Indication: Moderate-to-severe plaque psoriasis

Advantages: Selective TYK2 inhibition (IL-23/IL-12 pathway), **no routine lab monitoring required**, oral once-daily dosing, favorable safety profile

Game-changer: Highly effective with excellent safety—no labs needed unlike JAK inhibitors

PCP Role: Coordinate screening labs, ensure vaccination status current, monitor for infections and cardiovascular risk factors, maintain open communication with prescribing dermatologist.

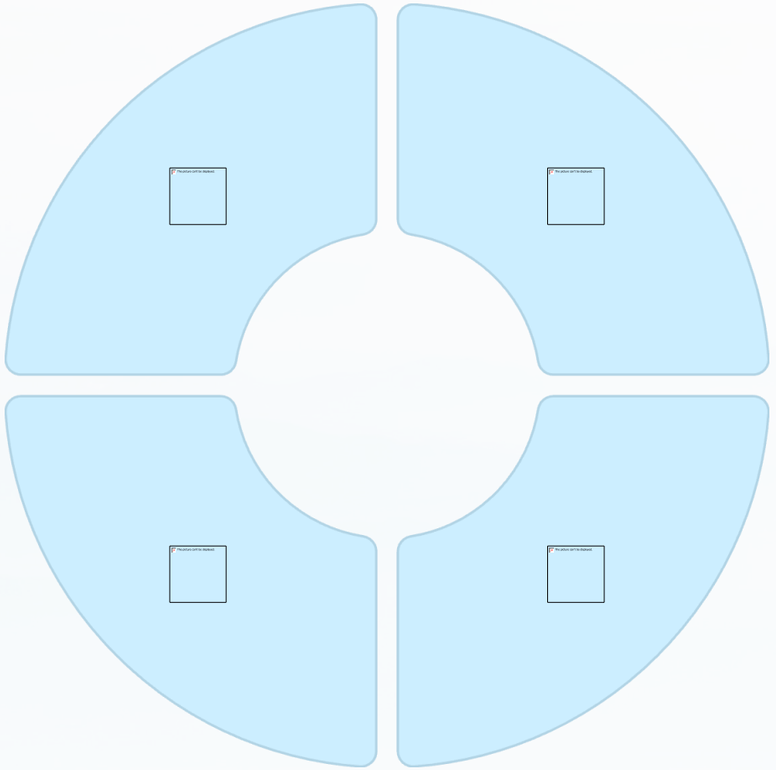
Biologics: Targeted, Disease-Modifying Therapy

Targeted Therapy

Biologics target specific immune pathways TNF-α, IL-17, IL-23, IL-4/13 providing precise disease modification

Screening Required

All patients need pre-treatment TB testing (QuantiFERON or PPD) and hepatitis B serology before initiation



High Efficacy

Dramatically improve quality of life with clearance rates often exceeding 75-90% for psoriasis and significant improvement in atopic dermatitis

Long-Term Control

Sustained disease suppression with maintenance therapy-injectable every 1-12 weeks depending on agent

The biologics revolution: These agents have transformed management of moderate-to-severe inflammatory dermatoses, allowing patients to to achieve clear or nearly clear skin with favorable long-term safety profiles when properly screened and monitored.

Psoriasis Biologics: A Crowded, Effective Field

1 TNF-α Inhibitors (First Generation)

Adalimumab, etanercept, infliximab, certolizumab

Established efficacy, broader indications - psoriasis, psoriatic arthritis
Higher infection risk and immunogenicity than newer agents.

2 IL-12/23 Inhibitor

Ustekinumab (Stelara)

Targets both IL-12 and IL-23 pathways. Excellent efficacy with convenient dosing every 12 weeks after loading. Biosimilars now available reducing cost.

3 IL-17 Inhibitors

Secukinumab (IL-17A), ixekizumab (IL-17A), bimekizumab (IL-17A/F), brodalumab (IL-17 receptor)

Rapid onset, high clearance rates. IL-17A/F dual blockade (bimekizumab) shows superior efficacy. Watch for candida infections and IBD in susceptible patients.

4 IL-23 Inhibitors (Newest Class)

Guselkumab, risankizumab, tildrakizumab

Highest efficacy and durability with excellent safety profiles.
Dosing every 8-12 weeks.
Risankizumab and guselkumab show outstanding long-term clearance. Rapidly becoming preferred first-line biologics.

5 Biosimilars

Now available for adalimumab, etanercept, infliximab, ustekinumab - dramatically reducing costs and improving access to biologic therapy.

Atopic Dermatitis Biologics: IL-4/IL-13 or IL-13 Pathway

Dupilumab

Mechanism: Dual IL-4 and IL-13 receptor antagonist

Indication: Moderate-to-severe atopic dermatitis (age 6 months and up), also approved for asthma, chronic rhinosinusitis with nasal polyps, eosinophilic esophagitis, prurigo nodularis, chronic spontaneous urticaria

Dosing: Subcutaneous every 2 weeks after loading dose

Efficacy: 60-70% achieve significant improvement; reduces itch rapidly

Key side effects: Conjunctivitis (10-15%), injection site reactions, transient eosinophilia (typically benign)

Management pearl: Conjunctivitis usually responds to artificial tears or mild topical steroids; rarely requires discontinuation

Tralokinumab

Mechanism: Selective IL-13 inhibitor

Indication: Moderate-to-severe atopic dermatitis

Dosing: Every 2 weeks after loading, can extend to every 4 weeks in some responders

Potential advantage: Selective IL-13 blockade may have lower conjunctivitis rate

Lebrikizumab

Mechanism: Selective IL-13 inhibitor

Indication: Moderate-to-severe atopic dermatitis

Dosing: Every 2 weeks

Newest option: Recently FDA-approved, adding to therapeutic armamentarium with similar efficacy and safety profile to other IL-13 inhibitors

Nemolizumab: The Itch-Specific Biol

IL-31 Receptor Antagonist

Mechanism: Blocks IL-31, a key cytokine driving itch in atopic dermatitis and prurigo nodularis

FDA Indications: Prurigo nodularis, atopic dermatitis

Dosing: Subcutaneous injection every 4 weeks

What Makes It Unique

- **Itch-focused:** Rapidly reduces pruritus, often within days to weeks-patients report dramatic relief
- **Non-refrigerated storage:** Room temperature stable
- **Well-tolerated:** Minimal side effects, primarily injection site reactions



https://dermnetnz.org/imagedetail/3729-nodular-prurigo

Hidradenitis Suppurativa: Complex Disease, Growing Options

Multifaceted Management Approach

Topical Foundation:

- **Benzoyl peroxide washes:** 5-10% wash to reduce bacterial colonization
- **Chlorhexidine:** 4% wash for antiseptic effect
- **Topical clindamycin 1% gel:** Anti-inflammatory and antimicrobial—apply to affected areas twice daily





Photo courtesy of Laura Bush PA-C Fayette Area Dermatology

Systemic Options:

- Oral antibiotics (tetracyclines, combination rifampin/clindamycin)
- TNF-α inhibitors: **adalimumab**
- IL-17 inhibitors: **secukinumab IL 17A** and **bimikizumab IL17A/F**

Patient Support

HS Foundation provides education, support groups, and resources. Disease carries significant psychosocial burden—comprehensive care includes addressing mental health impact.

Chronic Urticaria: Beyond Antihistamines





https://dermnetnz.org/imagedetail/6601-urticaria

Biologic Options for Refractory Disease

01

Omalizumab

Mechanism: Anti-IgE antibody

Indication: Chronic spontaneous urticaria unresponsive to antihistamines

Dosing: 150-300 mg subcutaneous every 4 weeks

Efficacy: 60-70% achieve complete or near-complete response—often dramatic improvement within weeks

02

Dupilumab

Mechanism: IL-4/IL-13 antagonist

Recently approved: Chronic spontaneous urticaria, expanding its already broad dermatologic portfolio

Advantage: Option for patients who fail omalizumab with concurrent atopic conditions

03

Remibrutinib

Mechanism: Oral BTK (Bruton's tyrosine kinase) inhibitor

Newest option: Recently FDA-approved for chronic spontaneous urticaria

Advantage: Oral administration, expanding options for antihistamine-refractory disease

Dermatology in Pregnancy: Safety First

Safe Topical Options

- **Azelaic acid 15-20%:** Safe for melasma, acne, rosacea-Category B
- **Topical clindamycin:** Safe for acne-Category B
- **Topical erythromycin:** Safe for acne-Category B
- **Low-potency corticosteroids:** Hydrocortisone safe for inflammatory conditions-use lowest potency, avoid high-potency on large areas
- **Benzoyl peroxide:** Limited data but generally considered risk for acne
- **Topical antifungals:** Most are safe (clotrimazole, nystatin)

Avoid at All Costs

- **Isotretinoin:** Category X-highly teratogenic, mandatory contraception programs
- **Tetracyclines:** All tetracyclines contraindicated-affect fetal bone and tooth development
- **Methotrexate:** Category X-teratogenic and abortifacient
- **Retinoids (topical):** Tretinoin, adapalene, tazarotene avoid
- **Finasteride:** Category X for androgenetic alopecia
- **Spironolactone:** Feminization risk in male fetuses

PCP's critical role: Careful medication review and contraception counseling before prescribing any dermatologic medication in women of reproductive age. Verify pregnancy status when indicated.

Elderly Patients: Fragile Skin, Complex Needs

Skin Vulnerability in Aging

Elderly patients have thinner epidermis, reduced barrier function, decreased sebum production, and compromised wound healing

Corticosteroid concerns:

- Avoid high-potency topical steroids-very high risk of purpura, skin tearing, atrophy
- Even medium-potency agents can cause significant bruising and fragility
- Use lowest effective potency for shortest duration
- Counsel patients about skin fragility and bruising risk



Photo courtesy of Laura Bush PA-C Fayette Area Dermatology

Polypharmacy & Drug Interactions

Elderly patients often take multiple medications, increasing interaction risk with dermatologic agents.

High-risk interactions:

- **Oral antifungals:** Fluconazole interacts with warfarin (INR elevation), statins (myopathy), many others-check interactions
- **Immunosuppressants:** Methotrexate interacts with NSAIDs (especially in renal impairment); cyclosporine has extensive CYP3A4 interactions
- **Systemic corticosteroids:** Hyperglycemia in diabetics, osteoporosis, hypertension, GI bleeding risk with NSAIDs

Best practice: Always use drug interaction checker, review complete medication list, consider renal/hepatic function in dosing, start low and go slow.

Pediatric Dermatology: Expanding Options & Safety



General Principles

Less is more: Children absorb medications more readily through thinner skin with higher surface-area-to-weight ratio

Low-potency steroids: Hydrocortisone 1-2.5%, desonide 0.05% preferred for most conditions

Avoid high-potency steroids: Risk of HPA axis suppression, growth effects

Non-Steroidal Options

Tacrolimus/pimecrolimus: Safe for facial and sensitive-area atopic dermatitis—no atrophy approved age 2+

Crisaborole 2%: PDE-4 inhibitor for mild-to-moderate atopic dermatitis, age 3 months+

Recent Pediatric Approvals

Tapinarof (age 2+): Atopic dermatitis/eczema—once daily, well-tolerated

Roflumilast 0.05% (age 2-5): Atopic dermatitis

Roflumilast 0.15% (age 6+): Atopic dermatitis-lower strength for younger children

Roflumilast 0.3% (age 6+): Plaque psoriasis-once daily PDE-4 inhibitor

Ruxolitinib (age 2+): Topical JAK inhibitor for atopic dermatitis-rapid itch relief, twice daily

Expanding options: The pediatric dermatology armamentarium has grown significantly, offering effective steroid-sparing alternatives for young patients

Molluscum Contagiosum: New Treatments



https://dermnetnz.org/assets/Uploads/viral/s/molluscum5.jpg

Cantharidin 0.7% Topical Solution

Mechanism: Blistering agent derived from blister beetles

Application: Provider applies in-office, "paints on" individual lesions, washed off after 6-24 hours depending on body site

Efficacy: Effective with single or repeat applications, induces blister formation leading to lesion resolution

Advantages: Non-painful application, effective for children who won't tolerate other destructive methods

Caution: Can cause significant blistering—careful application technique and patient counseling essential

Berdazimer Topical Gel

Mechanism: Nitric oxide-releasing with antiviral properties

Application: Prescription home-use gel with unique mixing and application application procedure

Dosing: Applied once daily to individual lesions for up to 12 weeks

Advantages: At-home treatment option, painless application, well-tolerated

Special consideration: Requires specific mixing instructions-patient education critical for proper use

Efficacy: Gradual improvement over weeks, suitable for motivated families preferring home management

Clinical context: Both agents offer alternatives to traditional destructive methods (cryotherapy, curettage) which can be painful and distressing for pediatric patients. Choice depends on provider comfort, number of lesions, patient preference, and compliance ability.

Methotrexate: Overview & Clinical Use

Mechanism & Indications

Weekly dosing: Provides anti-inflammatory benefit

Teratogenic: Absolutely contraindicated in pregnancy—verify contraception in women of childbearing potential

FDA Indications in Dermatology:

- Moderate-to-severe plaque psoriasis
- Psoriatic arthritis (often managed with rheumatology)

Off-label uses: Severe atopic dermatitis, cutaneous lupus, other inflammatory dermatoses when biologics unavailable

Why It Still Matters

Despite the biologic revolution, methotrexate remains valuable:

- Cost-effective alternative when biologics inaccessible
- Excellent for psoriasis with joint involvement
- Rapid onset compared to some alternatives
- Oral or injectable options

Dosing & Administration

Weekly, never daily—critical patient education to prevent fatal errors

Typical dosing:

- Start: 10-15 mg weekly (oral or subcutaneous)
- Target: 15-25 mg weekly based on response and tolerability
- Can split same-day dose (e.g., 7.5 mg twice, 12 hours apart) if GI upset

Folic acid supplementation: 1 mg daily or 5 mg once weekly—dramatically reduces side effects, **never skip this**

Consider injectable: If oral causes nausea or absorption concerns—better bioavailability, often better tolerated

Efficacy Timeline

Improvement typically takes **6-12 weeks**

Methotrexate: Side Effects & Drug Interactions

Common Side Effects (Manageable)

- **Nausea, fatigue, headache:** Most common, often dose-related
- **GI upset, mouth sores:** Folic acid dramatically reduces these
- **Mild hair thinning:** Transient, usually improves
- **Elevated liver enzymes:** Monitor regularly, dose-dependent
- **Cytopenias:** Rare with appropriate monitoring

Management: Folic acid, split dosing, bedtime administration, injectable if oral poorly tolerated

Serious Risks (Rare but Critical)

- **Hepatotoxicity:** Chronic use can lead to fibrosis—monitor LFTs, limit alcohol, consider FibroScan in long-term use
- **Bone marrow suppression:** Rare at dermatologic doses but monitor CBC regularly
- **Pulmonary toxicity:** Persistent cough or dyspnea requires immediate evaluation—potentially fatal pneumonitis
- **Teratogenicity:** Absolute contraindication in pregnancy

Critical Drug Interactions

- **Trimethoprim-sulfamethoxazole:** Avoid—increased bone marrow suppression risk
- **NSAIDs:** Use caution, especially in renal impairment—can increase methotrexate levels
- **Alcohol:** Significantly increases hepatotoxicity risk—patients should minimize or avoid
- **Proton pump inhibitors:** May increase methotrexate levels, monitor closely

Melanoma Immunotherapy: Checkpoint Inhibitors

Immune checkpoint unleash the immune system to recognize and attack melanoma cells by blocking inhibitory pathways.

Anti-PD-1 Monotherapy

Pembrolizumab and Nivolumab

- Standard first-line therapy for unresectable or metastatic melanoma and adjuvant treatment for high-risk resected disease
- Block PD-1 receptor, preventing tumor immune evasion

Anti-CTLA-4 Therapy

Ipilimumab

- Used in combination with nivolumab for advanced melanoma
- Enhances T-cell activation
- Higher efficacy in combination but increased immune-related toxicity

Combination Therapy

Nivolumab + Ipilimumab

- Higher response rates and progression-free survival compared to monotherapy
- But significantly increased risk of immune-related adverse events requiring careful monitoring and management

Newer Combination

Nivolumab + Relatlimab

- Recently approved
- Improves progression-free survival versus nivolumab alone with distinct toxicity profile
- offers alternative dual checkpoint blockade

Immunotherapy Side Effects: Cutaneous

Cutaneous Toxicities (Most Common)

Skin reactions are the most frequently reported immune-related adverse events with checkpoint inhibitors.

Common presentations:

- **Rash:** Maculopapular, pruritic eruptions-most common, usually mild
- **Pruritus:** Can occur with or without visible rash, sometimes severe and limiting quality of life
- **Vitiligo:** Depigmentation, paradoxically associated with better tumor response
- **Rare severe reactions:** Stevens-Johnson syndrome, toxic epidermal necrolysis—life-threatening, require immediate drug discontinuation

Management:

- Grade 1-2: Topical corticosteroids, oral antihistamines, continue immunotherapy
- Grade 3-4: Hold therapy, systemic corticosteroids, dermatology consult

Prognosis: Most cutaneous reactions are mild (grade 1-2) and manageable without treatment interruption. Severe reactions requiring systemic therapy are uncommon.

Immunotherapy Side Effects: GI Toxicities

Gastrointestinal Side Effects

GI toxicity ranges from mild diarrhea to life-threatening colitis.

Presentations:

- **Diarrhea:** Increased stool frequency, may be watery
- **Colitis:** Inflammatory bowel inflammation-abdominal pain, bloody diarrhea, fever
- **Higher risk:** Ipilimumab (anti-CTLA-4) and combination regimens have significantly higher rates than PD-1 monotherapy

Management:

- Grade 1: Loperamide, dietary modification, monitor closely
- Grade 2: Hold therapy, systemic steroids (prednisone 0.5-1 mg/kg/day), colonoscop if persistent
- Grade 3-4: Hospitalization, high-dose IV steroids, GI consult, rule out infection, consider infliximab if steroid-refractory

Critical action: Colitis can be life-threatening-early recognition and aggressive management prevent perforation and mortality. Low threshold for colonoscopy to confirm diagnosis and assess severity.

Immunotherapy Side Effects: Endocrine, Hepatic, Pulmonary

Endocrine Disorders

Endocrinopathies are common, often permanent, and require lifelong hormone replacement.

- **Thyroid dysfunction:** Hypothyroidism most common (up to 10%), also hyperthyroidism and thyroiditis—monitor TSH, FT4 every 4-6 weeks
- **Hypophysitis:** Pituitary inflammation causing ACTH, TSH, LH/FSH deficiency—headache, fatigue, nausea. Requires MRI and endocrine workup
- **Adrenal insufficiency:** Primary or secondary—life-threatening if unrecognized. Fatigue, hypotension, hyponatremia
- **Diabetes mellitus:** Sudden-onset type 1 DM possible—monitor glucose, check autoantibodies

Key point: Many endocrinopathies are permanent and require lifelong replacement therapy—patients need education and appropriate specialist referral.

Hepatic Toxicity

Immune-mediated hepatitis with elevated liver enzymes, sometimes progressing to hepatic failure if not recognized.

- **Presentation:** Often asymptomatic elevation of AST/ALT. Symptomatic patients report fatigue, jaundice, RUQ pain
- **Monitoring:** LFTs with every treatment cycle—early detection critical
- **Management:** Hold immunotherapy if grade 2+, systemic corticosteroids for grade 3-4, hepatology consult for severe cases
- **Rule out:** Viral hepatitis, drug-induced liver injury from other medications

Pulmonary Toxicity

Pneumonitis is less common but potentially fatal—requires high index of suspicion.

- **Symptoms:** New or worsening dyspnea, cough, chest discomfort—can be subtle initially
- **Imaging:** CT chest shows ground-glass opacities, infiltrates—pattern can vary
- **Management:** Hold immunotherapy immediately, high-dose corticosteroids (1-2 mg/kg prednisone), pulmonology consult. Severe cases may require hospitalization and supplemental oxygen
- **Risk factors:** Prior lung disease, combination therapy
- **Important:** Rule out infection (bacterial, viral, fungal PJP) before attributing symptoms to drug

Dermatology: Innovation

The past year brought remarkable expansion of therapeutic options across multiple dermatologic conditions, with new mechanisms, extended indications, and improved delivery systems enhancing patient care.

1 Expanded Biologic Indications

Multiple existing biologics received new FDA approvals for additional dermatologic conditions-dupilumab for chronic urticaria, lebrikizumab approval for atopic dermatitis, and others expanding therapeutic reach.

2 Novel Small Molecules

Oral TYK2 inhibitors and JAK inhibitors expanded, offering convenient administration with strong efficacy for psoriasis, atopic dermatitis, alopecia areata, and vitiligo.

3 Pediatric Approvals

Multiple agents received approval for younger age groups—tapinarof, roflumilast, and ruxolitinib extending to age 2, providing steroid-sparing options for children.

4 Targeted Itch Therapy

Nemolizumab approval highlighted the evolution toward symptom-specific biologics beyond just treating inflammation.

5 **Targeted oral peptide**

Ikotrokinra- for psoriasis, first oral IL23

Reference: McGrath, L. N., McGrath, L. G., & Edminister, J. R. (2025). A year in review: new treatments and expanded indications in dermatology in 2024. *Journal of Dermatological Treatment*, 36(1). https://doi.org/10.1080/09546634.2025.2456528

Key Take-Home Messages

Match Potency to Location

Topical corticosteroid selection requires thoughtful consideration of anatomic site and disease severity—low potency for face/folds, high potency for thick plaques on hands/feet. Vehicle matters too.

Systemic Steroids: Short-Term Only

Oral corticosteroids should be time-limited, tapered carefully, and avoided for chronic management of dermatologic conditions. Seek steroid-sparing alternatives early.

PCPs Are Crucial Partners

Primary care providers play vital monitoring roles for patients on systemic immunosuppressants and biologics—lab surveillance, infection screening, vaccination coordination, and early recognition of adverse effects.

Know When to Refer

Refer when systemic therapy is needed, disease is refractory to topicals, diagnosis is uncertain, or quality of life is significantly affected. Early dermatology involvement improves outcomes.

Immune-Mediated = Systemic Treatment

Moderate-to-severe immune-mediated skin diseases (psoriasis, atopic dermatitis, hidradenitis suppurativa) require systemic therapy and often have comorbidities needing multidisciplinary PCP involvement.

JAK/TYK2: Oral Systemic Options and **targeted oral peptides IL23 and more new therapies on the horizon!**

Key resources

- DermNet NZ for clinical reference and images
- Drugs.com for interaction checking
- OpenEvidence AI for rapid evidence synthesis
- Collaboration between PCP and dermatology for optimal patient outcomes

Please feel free to reach out with questions or complex cases. Collaborative care between primary care and dermatology ensures patients receive timely, appropriate, evidence-based treatment for their skin conditions.





Thank you

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