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Psoriasis & the Hyperproliferative Plaque

A chronic, T-cell mediated autoimmune skin disorder marked by accelerated keratinocyte turnover, silvery scale, and systemic inflammation extending well beyond the skin.

INTEGUMENTARY · IMMUNE · PHARM

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Definition & Overview

WHAT IT IS · WHY IT MATTERS

- **Chronic autoimmune disorder** of the skin with accelerated epidermal turnover — skin cells regenerate every **3–5 days instead of 28–30**.
- **Not contagious.** Mediated by T-cells and the cytokines TNF-α, IL-17, and IL-23.
- **Systemic, not just skin:** linked to psoriatic arthritis (≈30%), cardiovascular disease, metabolic syndrome, and depression.
- **Lifelong:** relapsing-remitting; flares triggered by stress, infection, trauma, drugs, weather, and alcohol.

2–3%
US ADULT PREVALENCE

~30%
DEVELOP PSORIATIC ARTHRITIS

3–5d
SKIN TURNOVER (VS 28–30D)

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Pathophysiology

TRIGGER → T-CELL → CYTOKINE STORM → PLAQUE

STEP 1
Trigger
Stress · Strep · Trauma · Drugs

→

STEP 2
T-cell activation
in genetically primed host

→

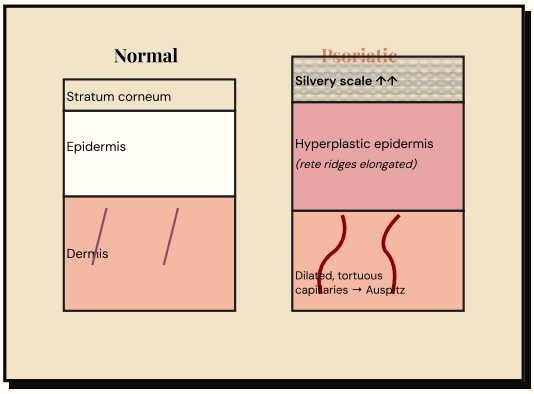
STEP 3
Cytokine release
TNF-α · IL-17 · IL-23

→

STEP 4
Keratinocyte hyperproliferation
+ dilated dermal vessels

→

STEP 5
Plaque + silvery scale
Auspitz sign · Koebner



Why the scale is silver — and why it bleeds

Rapid keratinocyte turnover (3–5 days) leaves cells **incompletely keratinized**, producing the loose, micaceous, silvery-white scale. Underneath, dermal capillaries are **dilated and tortuous** and sit close to the surface. Lift off the scale and you shear those vessels — producing the pinpoint bleeding called **Auspitz sign**. Trauma to *normal* skin can trigger fresh lesions at the injury site — the **Koebner phenomenon**.

Five Clinical Subtypes

Plaque
Well-defined erythematous plaques w/ silvery scale on elbows, knees, scalp, lower back.

80–90%

Guttate
Small, drop-like papules; sudden onset after **strep** infection — children/young adults.

~8%

Inverse
Smooth, red, shiny patches in skin folds (axilla, groin, under breasts). No scale.

3–7%

Pustular
Sterile pustules on red base. Generalized form = febrile, life-threatening.

~3%

Erythrodermic
Body-wide redness, scaling, peeling — temp dysregulation. **EMERGENCY.**

<3%

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Signs & Symptoms

CLASSIC FINDINGS · RED-FLAG EMERGENCIES

✓ Classic Findings

- **Silvery-white scale** on raised, erythematous, well-demarcated plaques
- **Symmetric distribution** — elbows, knees, scalp, sacrum, intergluteal cleft
- **Auspitz sign** — pinpoint bleeding when scale is removed
- **Koebner phenomenon** — new plaques appearing at sites of skin trauma
- **Nail changes** — pitting, onycholysis, "oil-drop" discoloration
- **Pruritus** — variable; not as severe as eczema
- **Joint pain** — DIP joints, dactylitis ("sausage digits") in PsA

! Red-Flag Forms

- **Erythrodermic psoriasis** — >90% body surface; *temperature dysregulation, fluid/protein loss, high-output heart failure*
- **Generalized pustular psoriasis** — fever, leukocytosis, hypocalcemia, sepsis-like picture
- **Psoriatic arthritis** with rapid joint destruction — refer early
- **Secondary infection** of excoriated plaques — Staph aureus most common
- **Biologic patient w/ new fever or cough** — rule out reactivated TB or serious infection

Erythrodermic and generalized pustular psoriasis are dermatologic emergencies — admit, IV fluids, temperature support, infection workup, and dermatology consult. Do NOT abruptly discontinue systemic steroids — this is a classic trigger.

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Priority Nursing Interventions

ABCS · SAFETY · NCLEX PRIORITIZATION

ASSESS Skin & system

- Map distribution, BSA involvement, scale thickness
- Inspect **nails & joints** — PsA screen
- Screen for **depression & suicidal ideation** — common comorbidity
- Baseline labs: CBC, LFTs, lipid panel, A1c (cardiometabolic risk)

PROTECT Skin barrier

- **Moisturize** liberally — thick emollients hold hydration
- Lukewarm baths · pat dry · oatmeal soaks for itch
- Avoid **scratching, scrubbing, picking** scale — triggers Koebner
- Soft cotton clothing; avoid wool and tight fabrics

ADMINISTER Topicals & systemics

- Apply **topical steroids** thinly to plaques — not normal skin
- **Rotate steroid potency** on face/folds (low) vs trunk/limbs (mid-high)
- Vitamin D analogs (calcipotriene) — *monitor calcium*
- Pre-biologic: PPD/QuantiFERON, hep B/C, HIV screen

MONITOR Triggers & complications

- Watch for **fever, chills, signs of infection** — esp on biologics
- Avoid sudden steroid withdrawal — can trigger pustular flare
- Check for **methotrexate toxicity** — liver, bone marrow, lungs
- Phototherapy: protect eyes with goggles; monitor cumulative dose

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Pharmacology

TOPICAL → PHOTOTHERAPY → SYSTEMIC → BIOLOGIC

CLASS / STEP	DRUG EXAMPLES	ACTION	KEY NURSING / SIDE EFFECTS
Topical Corticosteroids	**Triamcinolone, clobetasol, hydrocortisone**	Anti-inflammatory; reduce T-cell activity	Skin atrophy, striae, telangiectasia. **Low potency only on face/folds.** Limit duration on thin skin.
Vitamin D Analogs	**Calcipotriene (Dovonex)**	Slow keratinocyte proliferation	Skin irritation; **monitor serum calcium** if extensive use. Don't combine with salicylic acid.
Topical Retinoid	**Tazarotene**	Normalize keratinocyte differentiation	**Teratogenic** — confirm contraception. Photosensitivity. Skin dryness/peeling.
Calcineurin Inhibitor (topical)	**Tacrolimus, pimecrolimus**	Block T-cell cytokines	Burning at site. Steroid-sparing — preferred for face/genitals. Avoid sun.
Coal Tar / Anthralin	**Coal tar, anthralin**	Slow cell turnover; anti-inflammatory	Stains skin, hair, clothing. Photosensitivity. Strong odor. Apply only to plaques.
Phototherapy	**UVB, PUVA (psoralen + UVA)**	Induce T-cell apoptosis	**Goggles!** Increased skin-cancer risk over time. PUVA: avoid sun 24h post-tx, no food w/ furocoumarins beforehand.
Systemic — Methotrexate	**Methotrexate (weekly!)**	Folate antagonist; immunosuppressant	**Weekly** — never daily. Hepatotoxic, myelosuppression, pneumonitis. **Folic acid** daily. Teratogenic. Avoid alcohol & aspirin (↑toxicity).
Systemic — Cyclosporine	**Cyclosporine**	T-cell suppression	Nephrotoxic, HTN, gingival hyperplasia, ↑K^+. Monitor BP, BUN/Cr, K^+.
Oral Retinoid	**Acitretin**	Normalize keratinization	**Teratogenic ×3 years** after stop. ↑lipids, dry skin/lips, hair loss.
Biologic — TNF-α inhibitor	**Etanercept, adalimumab, infliximab**	Neutralize TNF-α	**Screen for TB & hep B before starting.** ↑infection risk, malignancy, demyelinating disease. Avoid live vaccines.
Biologic — IL-17 inhibitor	**Secukinumab, ixekizumab**	Block IL-17A signaling	Candidiasis risk (Th17 immunity ↓). IBD flare. Injection-site reactions. TB screening.
Biologic — IL-23 inhibitor	**Guselkumab, risankizumab, tildrakizumab**	Block IL-23 (upstream of IL-17)	Generally well-tolerated. URIs, headache. TB screen pre-tx.

CLASS / STEP	DRUG EXAMPLES	ACTION	KEY NURSING / SIDE EFFECTS
Oral small molecule	**Apremilast (PDE-4 inh.), deucravacitinib (TYK2 inh.)**	Modulate intracellular cytokine pathways	GI upset, weight loss, depression (apremilast — **screen mood**). No biologic-style screening required.

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NCLEX Test Traps

COMMON CONFUSIONS · PRIORITY PITFALLS

❌ **WRONG:** "Psoriasis is contagious — wear gloves and isolate the patient."

✅ **RIGHT:** Psoriasis is **autoimmune, not contagious.** Standard precautions only; isolation harms patient psychosocially.

❌ **WRONG:** "Scrub the plaques during the bath to remove scale."

✅ **RIGHT: Pat dry — never scrub.** Trauma triggers Koebner phenomenon (new lesions). Soak, then gently apply emollient.

❌ **WRONG:** "Methotrexate is taken every day for psoriasis."

✅ **RIGHT:** Methotrexate for psoriasis is **WEEKLY**. Daily dosing = severe toxicity / death. Folic acid daily; alcohol prohibited.

❌ **WRONG:** "Apply potent steroid (clobetasol) to the face and groin."

✅ **RIGHT: Only low-potency steroids** on face, groin, axilla. High potency causes atrophy and striae on thin skin.

❌ **WRONG:** "Stop all systemic steroids abruptly when skin clears."

✅ **RIGHT:** Abrupt withdrawal can **precipitate pustular or erythrodermic flare**. Taper systemic agents under provider guidance.

❌ **WRONG:** "Coal tar is fine to apply right before going outside in the sun."

✅ **RIGHT:** Coal tar & PUVA cause **photosensitivity** — sun exposure → severe burn. Apply at night; use SPF.

❌ **WRONG:** "No special workup is needed before starting a biologic."

✅ **RIGHT:** Always screen for **latent TB (PPD/QuantiFERON), hepatitis B/C, HIV** before TNF or IL inhibitors. Update vaccines first — no live vaccines once on biologic.

❌ **WRONG:** "Itch isn't bad in psoriasis, so it's mostly cosmetic."

✅ **RIGHT:** Psoriasis carries high rates of **depression, suicidal ideation, CV disease, metabolic syndrome.** Screen mood & CV risk routinely.

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Patient & Family Education

SKIN · LIFESTYLE · ADHERENCE

Daily Skin Care

- Lukewarm (not hot) baths, 10–15 min
- Mild, fragrance-free cleansers
- Pat — never rub — dry
- Moisturize within 3 minutes of bathing
- Use prescribed topicals as directed

Avoid Triggers

- Manage stress (mindfulness, sleep)
- Avoid skin trauma (Koebner)
- Limit alcohol; quit smoking
- Treat strep infections promptly
- Beware drug triggers: lithium, beta-blockers, NSAIDs, antimalarials

Lifestyle & Mental Health

- Heart-healthy diet; weight management
- Routine BP, lipid, A1c checks
- Seek support — depression is common
- It's **not contagious** — educate family
- Sun: moderate, regular exposure may help; avoid sunburn

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Memory Boosters

MNEMONICS · PATTERN RECOGNITION

"SCALES" — classic exam picture

S · C · A · L · E · S

- **S**ilvery scale
- **C**oebner (new lesions at trauma) — Koebner
- **A**uspitz sign (pinpoint bleeding)
- **L**arge symmetric plaques (extensor surfaces)
- **E**lbows, knees, scalp, nails
- **S**ystemic — PsA, CV risk, depression

"PSORIASIS" triggers

P · S · O · R · I · A · S · I · S

- **P**hysical trauma (Koebner)
- **S**tress
- **O**besity / metabolic
- **R**x — lithium, β-blockers, NSAIDs, antimalarials
- **I**nfection — strep (guttate)
- **A**lcohol
- **S**moking
- **I**cy/dry weather
- **S**teroid withdrawal

Pattern Recognition — "Eczema vs Psoriasis"

- **Location:** Eczema = *flexor* (inner elbow, behind knee). Psoriasis = *extensor* (outer elbow, front of knee).
- **Itch:** Eczema = severe ("itch that rashes"). Psoriasis = mild–moderate.
- **Scale:** Eczema = thin, weepy. Psoriasis = thick, silvery.
- **Onset:** Eczema = infancy/childhood. Psoriasis = teen–young adult; second peak 50s–60s.

"TIME" Biologic safety check

- **T**B screening (PPD/QuantiFERON)
- **I**nfections — rule out active infection
- **M**alignancy history?
- **E**nsure vaccines updated (no live vaccines once on biologic)

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NCJMM Clinical Judgment

NEXT GENERATION NCLEX · SIX-STEP MODEL

SCENARIO

A 42-year-old client with a 15-year history of plaque psoriasis arrives in clinic for a 6-week follow-up after starting **adalimumab** injections. The client reports plaques have improved by ~70%. However, today the client reports a 3-day history of low-grade fever (38.3°C / 101°F), dry cough, night sweats, and a 2-kg unintentional weight loss over the past month. The client immigrated from a high-TB-prevalence region 4 years ago. Vital signs: BP 122/76, HR 96, RR 22, SpO_2 95% on room air. Chest is clear on auscultation. Skin shows residual faint pink plaques on elbows and knees; injection sites are unremarkable.

STEP 1

Recognize Cues

Fever, cough, night sweats, weight loss × weeks in a client on **TNF-α inhibitor** from a high-TB-prevalence region. Mild tachypnea and tachycardia. Pulmonary symptoms in an immunosuppressed host.

STEP 2

Analyze Cues

Classic **reactivated tuberculosis** picture. TNF-α is essential for granuloma maintenance — its blockade unmasks latent TB. Pre-biologic TB screen may have been false-negative or skipped. Differential: opportunistic infection, lymphoma.

STEP 3

Prioritize Hypotheses

#1 Reactivated pulmonary TB (immediate priority — airborne, public-health). #2 Other opportunistic infection. #3 Drug-related malaise. #4 Lymphoproliferative disorder. TB takes priority for immediate protection of staff and other patients.

STEP 4

Generate Solutions

Place in **airborne isolation (N95)**. **Hold adalimumab.** Obtain CXR, sputum AFB ×3, IGRA. Notify provider & infection control. Update PPD/QuantiFERON. Begin RIPE therapy if confirmed. Address hep B reactivation risk if positive serologies.

STEP 5

Take Action

Mask the client and move to a negative-pressure room. Don N95. Hold biologic dose; notify dermatology and primary provider. Collect sputum samples and draw IGRA. Educate the client on isolation, treatment duration, and adherence. Report to public health.

STEP 6

Evaluate Outcomes

Resolution of fever, cough, night sweats; weight regained; negative follow-up sputum cultures; CXR improvement. Coordinate **re-initiation of psoriasis therapy** only after TB therapy is well underway and with infectious-disease clearance.