From Kaposi to Candidiasis: The Changing Face of HIV Dermatology in the ART Era

Dermatologic disease as a window into immune evolution in treated HIV

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Citywide HIV Rounds
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Why this topic matters

- Dermatologic disease affects most people living with HIV at some point
- Skin findings can be the earliest clue to immune dysfunction, treatment toxicity, or malignancy
- In the ART era, the burden shifts toward chronic inflammation, oncologic vigilance, and aging-related disease

Objectives

- Contrast pre-ART vs ART-era HIV dermatology
- Recognize common inflammatory and oncologic conditions in treated HIV
- Identify red flags that require urgent biopsy or referral

Pre-ART era: dermatology as a staging tool

- Strong correlation between cutaneous disease and CD4 decline
- Opportunistic infections were common and often severe
- AIDS-defining malignancies (notably Kaposi sarcoma) were prominent
- Dermatology often preceded lab confirmation of immune collapse

ART era (1996 and beyond) changes everything

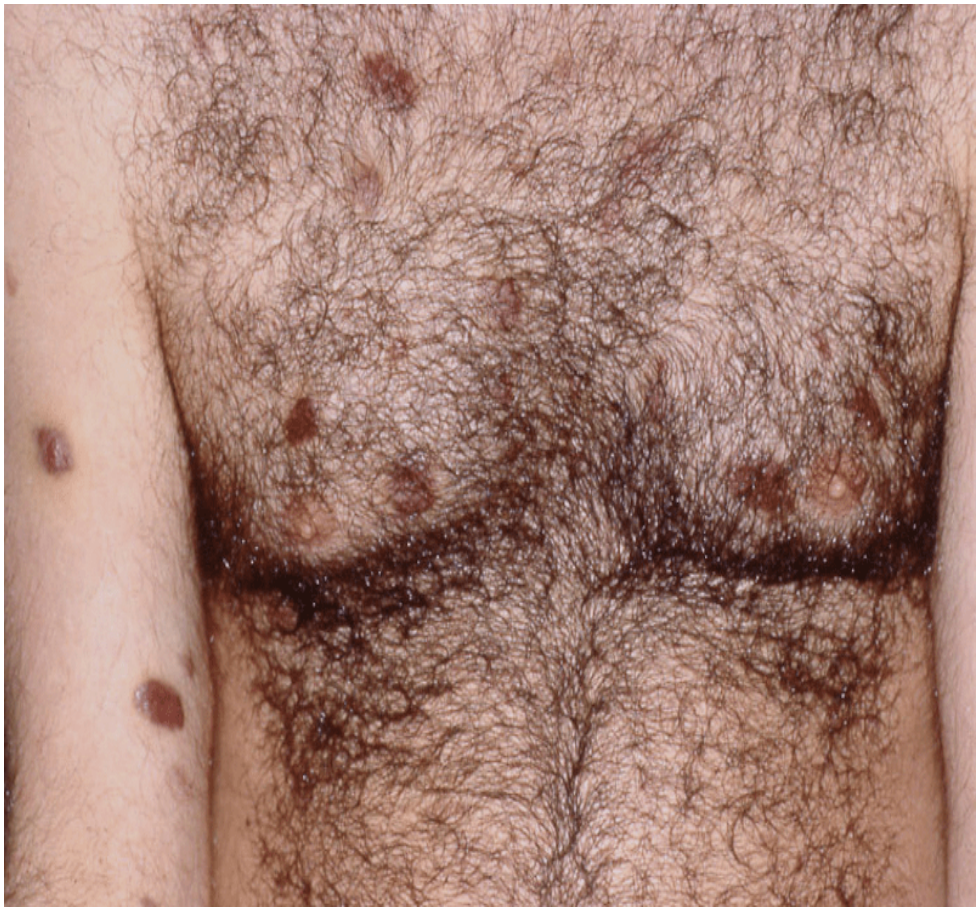
- Combination ART → durable viral suppression
- Dramatic reductions in many opportunistic infections
- AIDS-defining KS declines substantially in high-income settings
- Near-normal life expectancy → aging and chronic disease dominate

Viral suppression ≠ immune normalization

- Persistent immune activation and inflammation despite ART
- T-cell exhaustion and altered cytokine signaling
- Incomplete immune reconstitution in some patients
- Clinical expression: inflammatory dermatoses, malignancy risk, aging phenotype

Kaposi sarcoma (KS): the classic image of AIDS

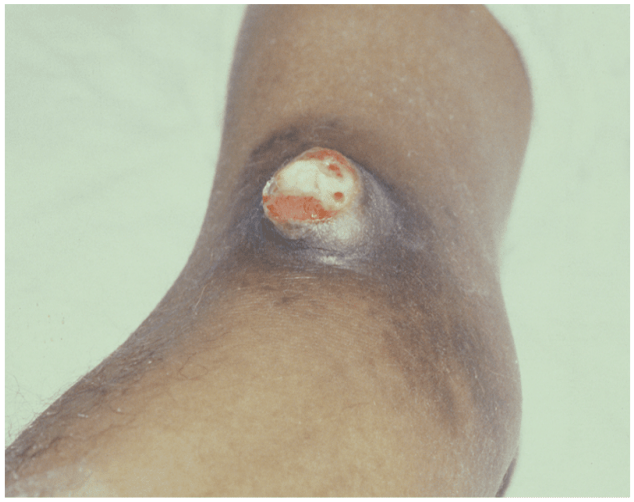
- HHV-8–associated vascular tumor
- Violaceous macules, plaques, nodules; may involve oral mucosa
- Often associated with advanced immunosuppression (historically CD4 <200)
- Cutaneous disease may signal visceral involvement → staging needed
- Biopsy required
- ART is cornerstone of therapy



Source: https://www.hiv.uw.edu/custom/primary-care/cutaneous-manifestations/6

Bacillary Angiomatosis

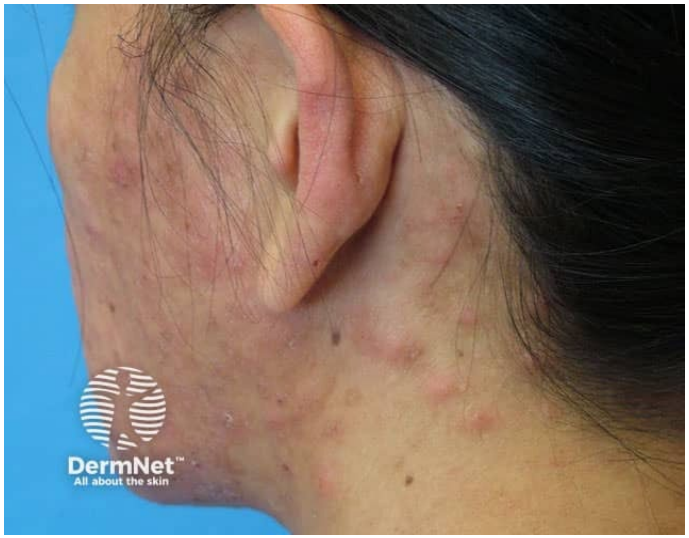
- Caused by *Bartonella henselae* or *B. quintana*
- Occurs with CD4 <100 cells/mm^3
- Vascular skin lesions → mimic Kaposi sarcoma
- May involve liver, spleen, bone, endocardium
- Diagnosis: biopsy (Warthin-Starry stain or PCR)
- Treat ≥3 months with doxycycline



Source: https://www.hiv.uw.edu/custom/primary-care/cutaneous-manifestations/6

Eosinophilic Folliculitis

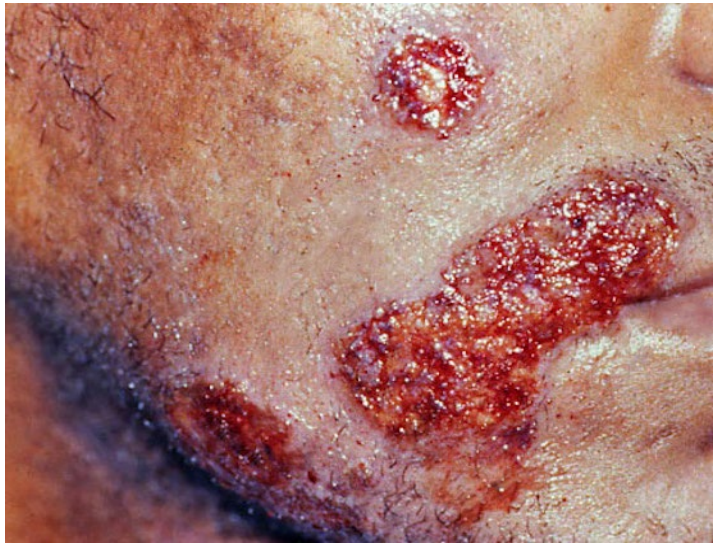
- Occurs with CD4 <250 cells/mm^3
- Marker of advanced immune suppression
- Intensely pruritic perifollicular papules
- Distribution: face, upper chest/back, upper arms
- Palms/soles spared
- Improves with ART



Source: https://dermnetnz.org/topics/eosinophilic-pustular-folliculitis

Herpes Simplex Virus

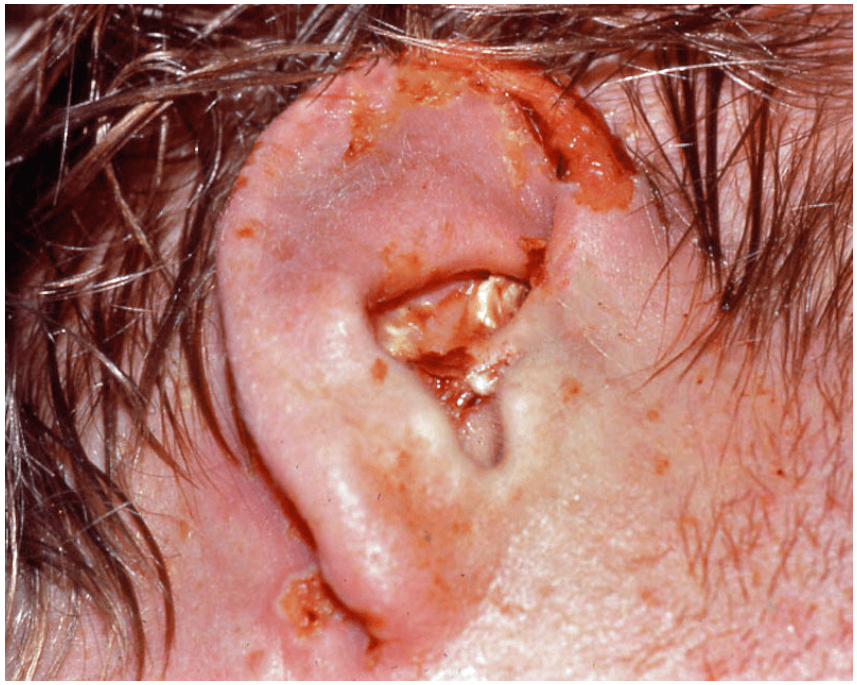
- 95% of persons with HIV HSV-seropositive
- HSV-1 and HSV-2 both cause genital disease
- More severe & chronic disease in HIV
- Increased asymptomatic shedding
- HSV reactivation ↑ HIV replication



Source: https://www.hiv.uw.edu/custom/primary-care/cutaneous-manifestations/6

HSV (Clinical Manifestations)

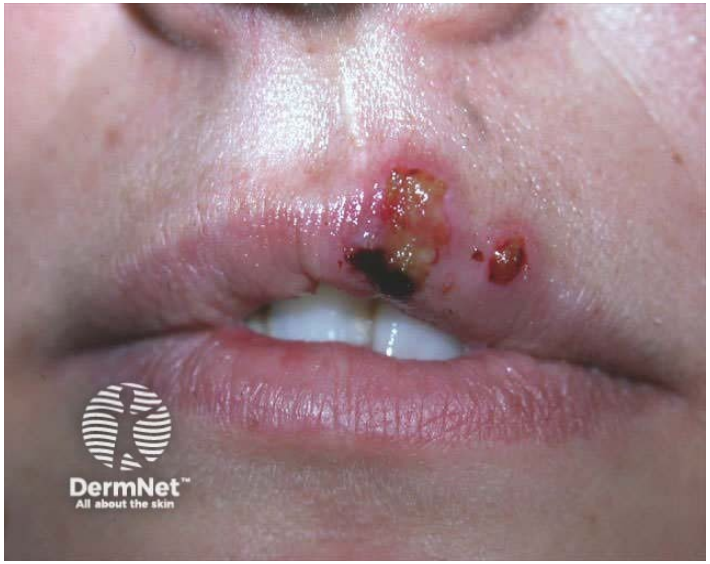
- Prodrome → papule → vesicle → crust
- Untreated: 5–10 days
- CD4 <100: chronic, deep, non-healing ulcers
- May occur anywhere (face, genitals, ears)
- Can present as IRIS after ART initiation



Source: https://www.hiv.uw.edu/custom/primary-care/cutaneous-manifestations/6

HSV (Diagnosis)

- Clinical exam insufficient
- HSV PCR = most sensitive test
- Culture or antigen testing alternative
- Consider syphilis in differential



Source: https://dermnetnz.org/cme/viral-infections/herpes-simplex

HSV (Treatment)

Initial or recurrent genital lesions (5–10 days):

- Valacyclovir 1 g PO BID
- Famciclovir 500 mg PO BID
- Acyclovir 400 mg PO TID

Severe disease:

- Acyclovir 5 mg/kg IV q8h

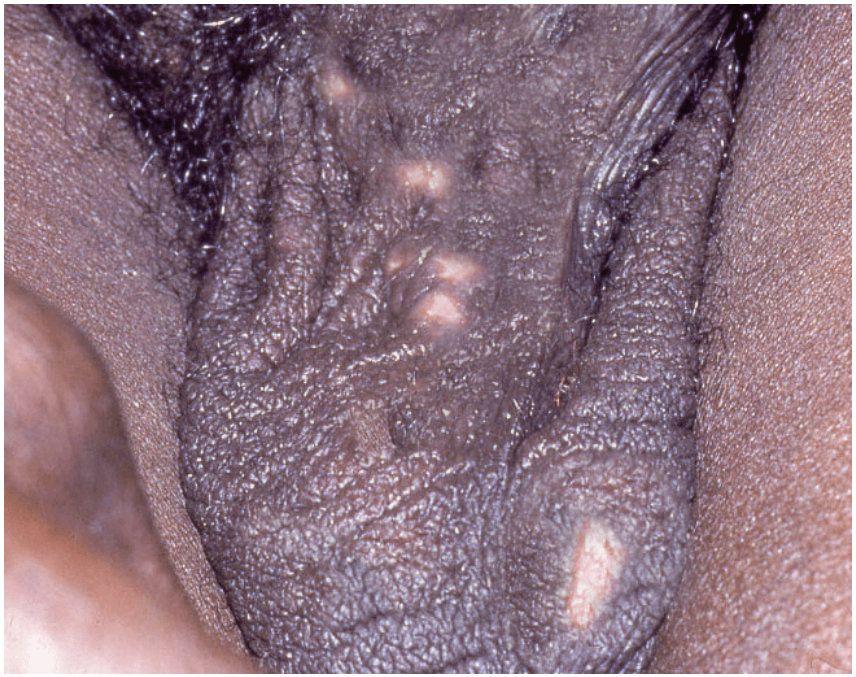
HSV (Suppressive Therapy)

Indications:

- Severe recurrences
- Patient preference
- CD4 <250 starting ART

Regimens:

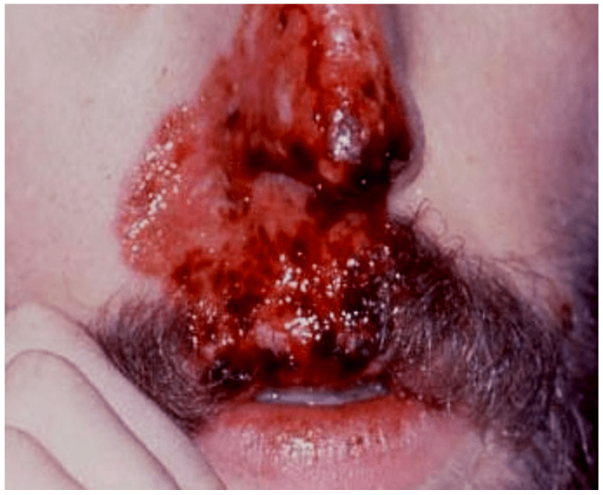
- Valacyclovir 500 mg BID
- Famciclovir 500 mg BID
- Acyclovir 400 mg BID



Source: https://dermnetnz.org/cme/viral-infections/herpes-simplex

Acyclovir-Resistant HSV

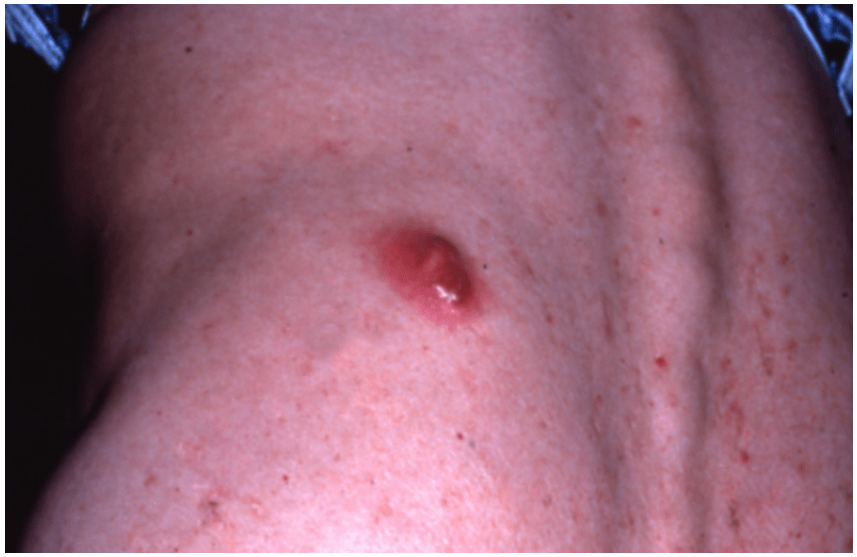
- Occurs in advanced immunosuppression
- Suspect if no response after 7–10 days
- Chronic destructive ulcers
- Preferred: IV foscarnet
- Monitor renal function & electrolytes



Source: https://www.hiv.uw.edu/custom/primary-care/cutaneous-manifestations/6

Skin and Soft Tissue Infections (MRSA/MSSA)

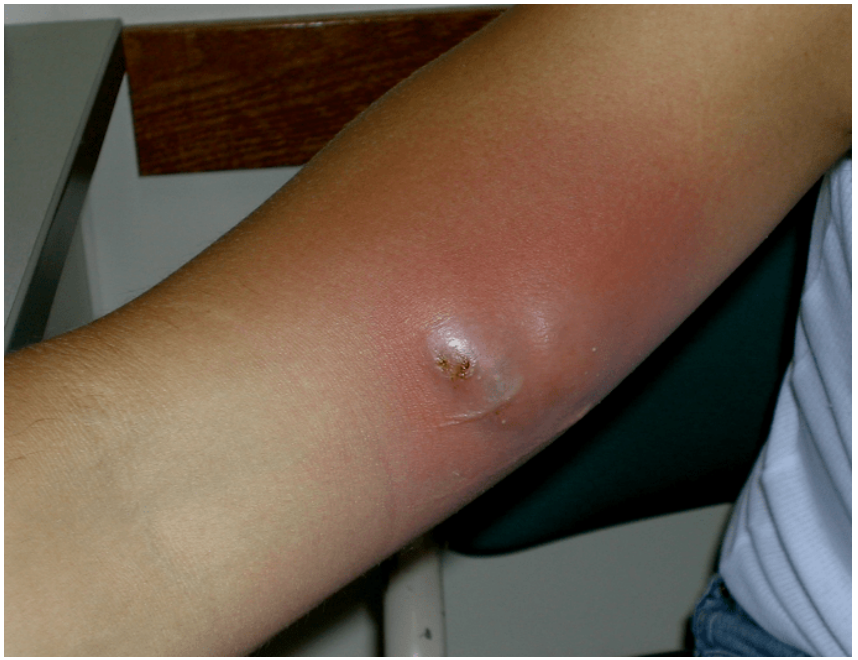
- 6–18× higher rates vs general population
- More severe & recurrent infections
- Risk factors: IVDU, multiple partners
- Ongoing burden despite stabilization



Source: https://www.hiv.uw.edu/custom/primary-care/cutaneous-manifestations/6

Skin and Soft Tissue Infections (Clinical Presentation & Diagnosis)

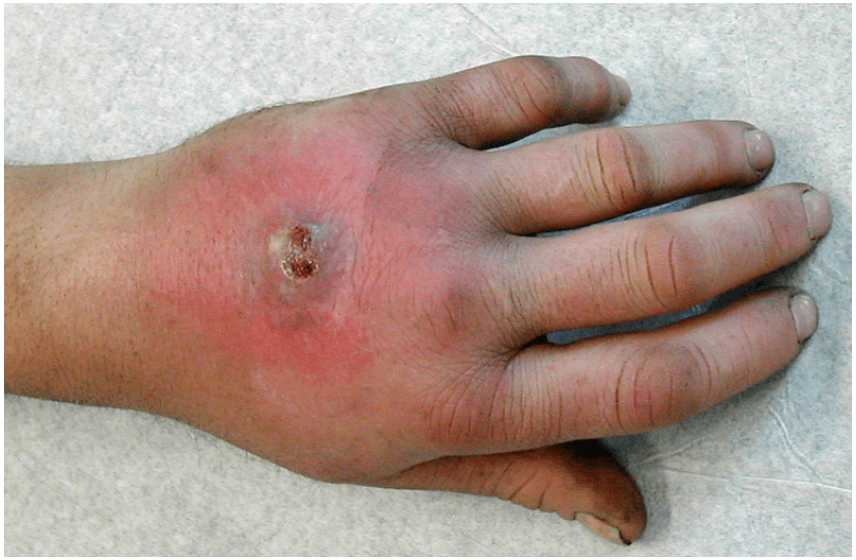
- Furuncle, abscess, cellulitis
- Often mimics “spider bite”
- May progress to invasive disease
- Diagnosis: culture + susceptibility testing
- mecA gene detection confirms MRSA



Source: https://www.hiv.uw.edu/custom/primary-care/cutaneous-manifestations/6

Skin and Soft Tissue Infections (Outpatient Management)

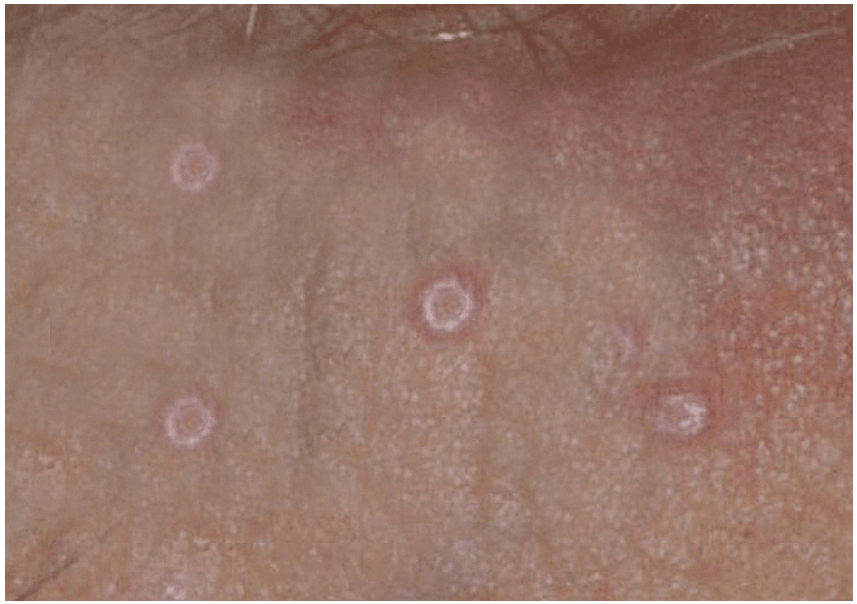
- Incision & drainage = primary therapy
- Antibiotics if severe, systemic, or immunocompromised
- First-line oral options:
  - TMP-SMX
  - Doxycycline
  - Clindamycin
- Typical duration: 5–10 days



Source: https://www.hiv.uw.edu/custom/primary-care/cutaneous-manifestations/6

Molluscum Contagiosum

- Caused by molluscum contagiosum virus (Poxviridae)
- Pearly papules with central umbilication
- 5–18% of untreated HIV patients affected
- Higher risk with CD4 <200
- Advanced HIV: numerous, facial & genital predominance
- Giant molluscum → large, coalescent lesions
- May lack umbilication in severe cases
- More extensive & refractory in advanced HIV



Source: https://www.hiv.uw.edu/custom/primary-care/cutaneous-manifestations/6

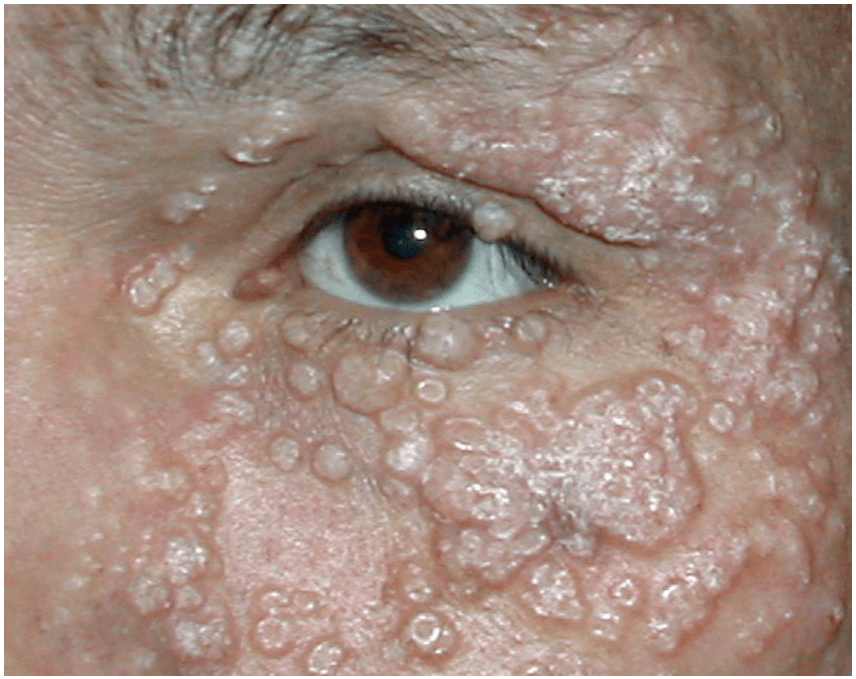
MC (Diagnosis & Treatment)

Diagnosis:

- Clinical appearance
- Biopsy if atypical → molluscum bodies

Treatment:

- ART is primary therapy
- May worsen transiently (IRIS)
- Persistent lesions:
  - Cryotherapy
  - Curettage
  - Imiquimod



Source: https://www.hiv.uw.edu/custom/primary-care/cutaneous-manifestations/6

Scabies

- Caused by *Sarcoptes scabiei*
- Transmitted via prolonged skin contact
- Crusted scabies → severe, highly contagious
- Associated with advanced immunosuppression
- Can present as IRIS

Source: https://www.hiv.uw.edu/custom/primary-care/cutaneous-manifestations/6

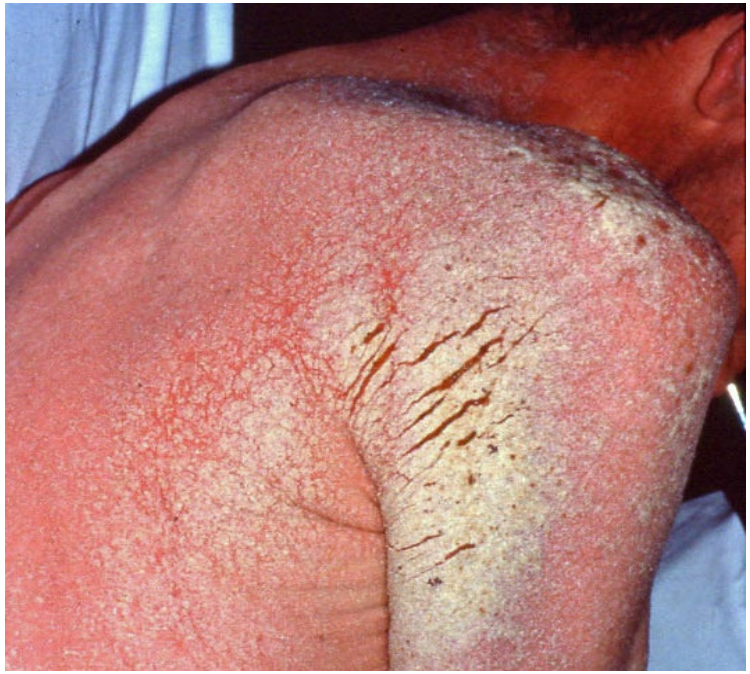
Scabies (Clinical Manifestations)

Classic scabies:

- Intense pruritus (worse at night)
- Erythematous papules
- Thin, wavy burrows
- Typical sites: interdigital spaces, wrists, genitals

Crusted scabies:

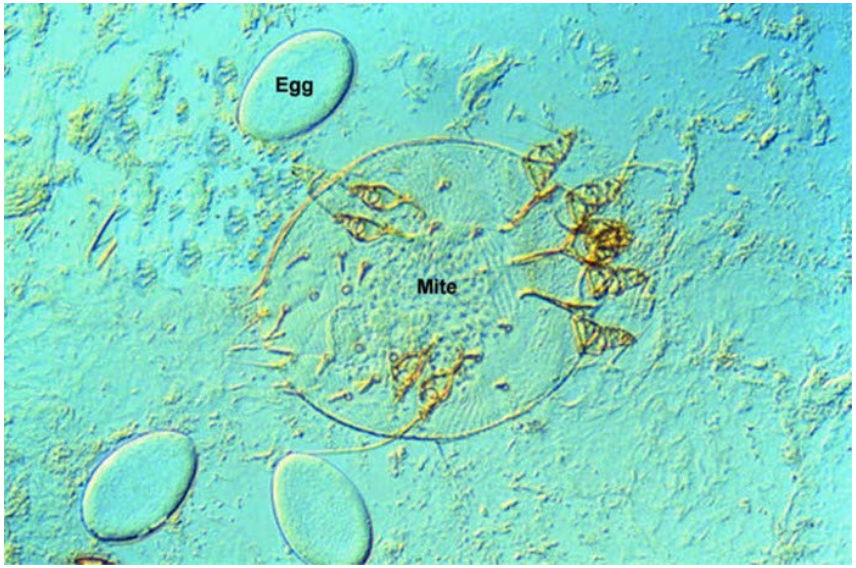
- Thick plaques with scale & crust
- May resemble psoriasis
- High mite burden
- Highly infectious



Source: https://www.hiv.uw.edu/custom/primary-care/cutaneous-manifestations/6

Scabies (Diagnosis)

- Clinical suspicion: nocturnal pruritus + typical distribution
- Confirm with skin scraping (mites/eggs)
- Crusted scabies → abundant mites
- Biopsy rarely required



Source: https://www.hiv.uw.edu/custom/primary-care/cutaneous-manifestations/6

Scabies (Treatment)

Classic scabies:

- Permethrin 5% cream (neck down)
- Repeat in 7–14 days
- Oral ivermectin alternative

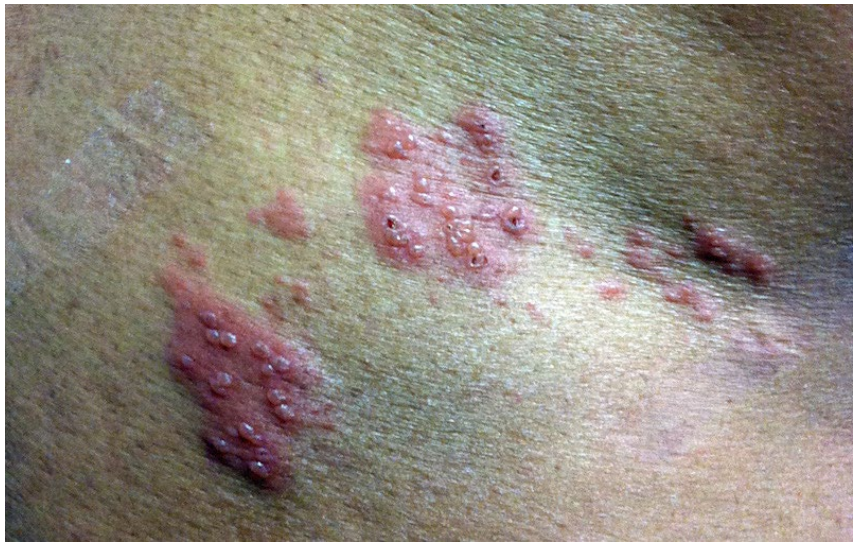
Crusted scabies:

- Topical permethrin + oral ivermectin
- Multiple ivermectin doses
- Infection control essential

Treat close contacts simultaneously

Herpes Zoster

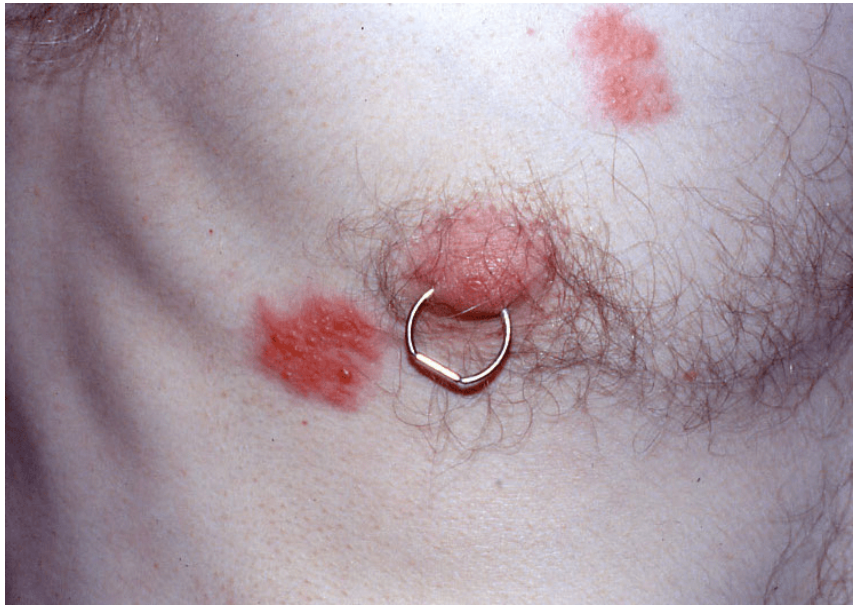
- VZV reactivation
- ≥15× higher incidence pre-ART
- Highest risk with CD4 <200
- Increased risk early after ART (IRIS)
- Long-term ART ↓ risk



Source: https://www.hiv.uw.edu/custom/primary-care/cutaneous-manifestations/6

HZ (Clinical Manifestations)

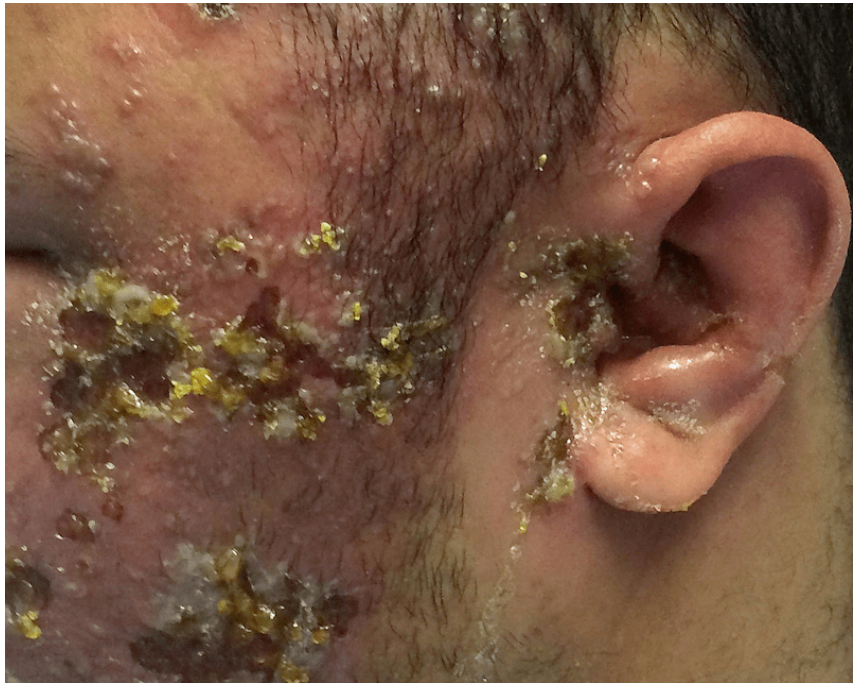
- Prodrome: dysesthesia, pain
- Vesicles on erythematous base
- Dermatomal distribution (thoracic most common)
- Complications:
  - Postherpetic neuralgia
  - Ophthalmic zoster
  - Disseminated disease



Source: https://www.hiv.uw.edu/custom/primary-care/cutaneous-manifestations/6

HZ (Diagnosis)

- Usually clinical diagnosis
- PCR from fresh lesion = most sensitive
- DFA or culture alternative
- Crusted lesions → lower sensitivity



Source: https://www.hiv.uw.edu/custom/primary-care/cutaneous-manifestations/6

HZ (Treatment)

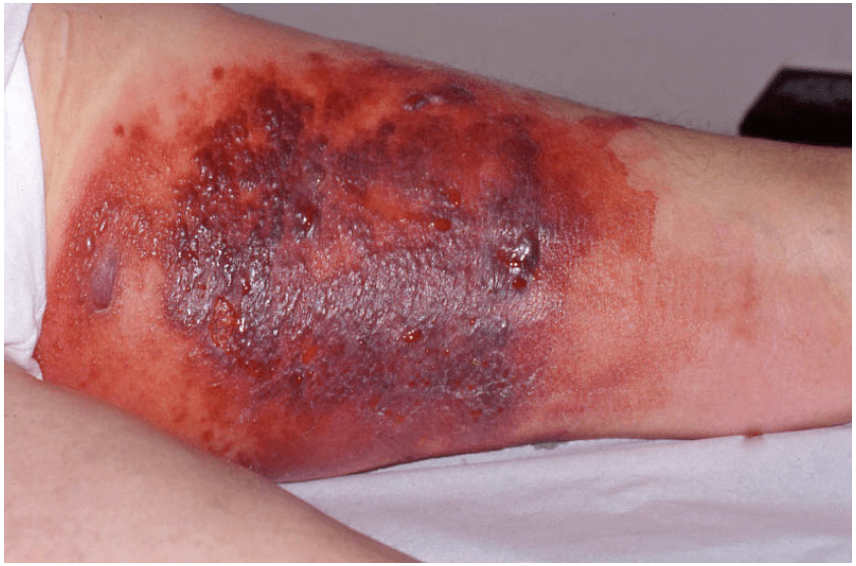
Localized zoster (7–10 days):

- Valacyclovir 1 g TID (AII)
- Famciclovir 500 mg TID (AII)
- Acyclovir 800 mg 5×/day (BII)

Severe/disseminated:

- Acyclovir 10 mg/kg IV q8h

No corticosteroids in HIV



Source: https://www.hiv.uw.edu/custom/primary-care/cutaneous-manifestations/6

HZ (Prevention)

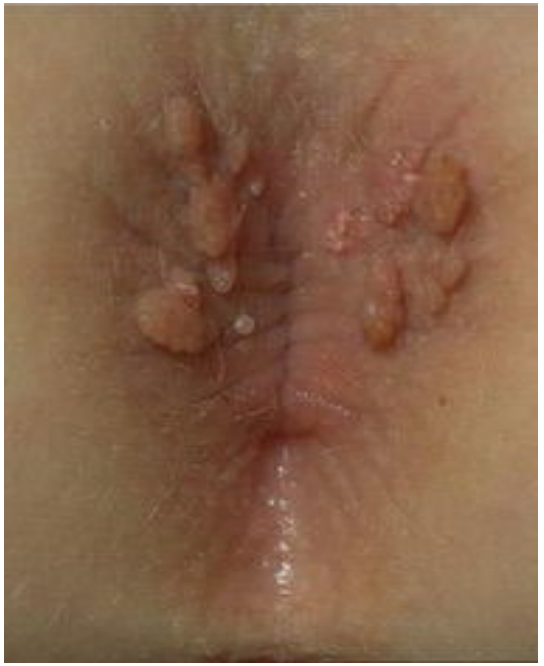
- Recombinant zoster vaccine (RZV)
- 2 doses, 2–6 months apart
- Do not vaccinate during acute zoster
- Post-exposure: VZIG if nonimmune

Warts (Anogenital)

- Caused by HPV (types 6 & 11 → ~90%)
- Most common viral STI
- Very common in HIV
- More recalcitrant in advanced immunosuppression
- ART does not eliminate risk

Anogenital Warts (Clinical Manifestations)

- Flesh-colored papules
- Smooth or verrucous
- May coalesce into plaques
- Often asymptomatic
- Extensive disease → pain, burning, pruritus



Source: https://www.hiv.uw.edu/custom/primary-care/cutaneous-manifestations/6

Anogenital Warts (Diagnosis & Treatment)

Diagnosis:

- Clinical inspection
- Biopsy if atypical

Treatment options:

- Patient-applied therapy
- Provider-administered destruction
- Surgical removal

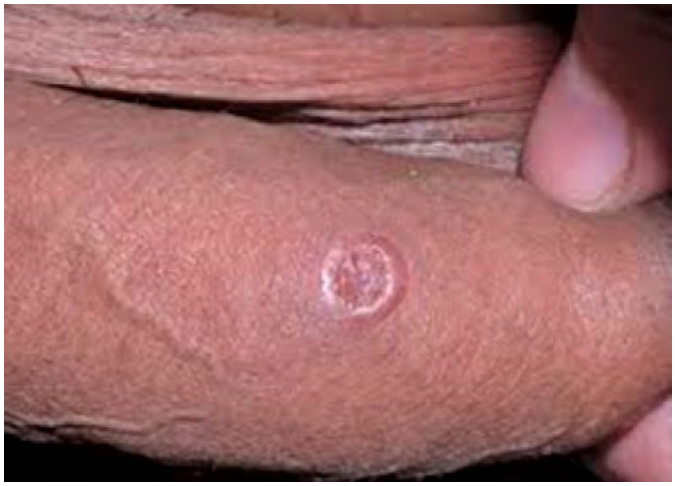
High recurrence rates

Anogenital Warts (Prevention)

- 9-valent HPV vaccine (9vHPV)
- Covers HPV 6, 11, 16, 18 + 5 others
- Does not treat existing infection

Syphilis

- Caused by *Treponema pallidum*
- Known as “the great imitator”
- Rising incidence globally and in the U.S.
- High rates of HIV coinfection
- Syphilis increases HIV acquisition and transmission



Source: https://stdcenterny.com/syphilis-symptoms-and-signs.html

Syphilis (stages)

Primary syphilis

- Painless chancre

Secondary syphilis

- Diffuse rash (often palms and soles)
- Condylomata lata

Latent syphilis

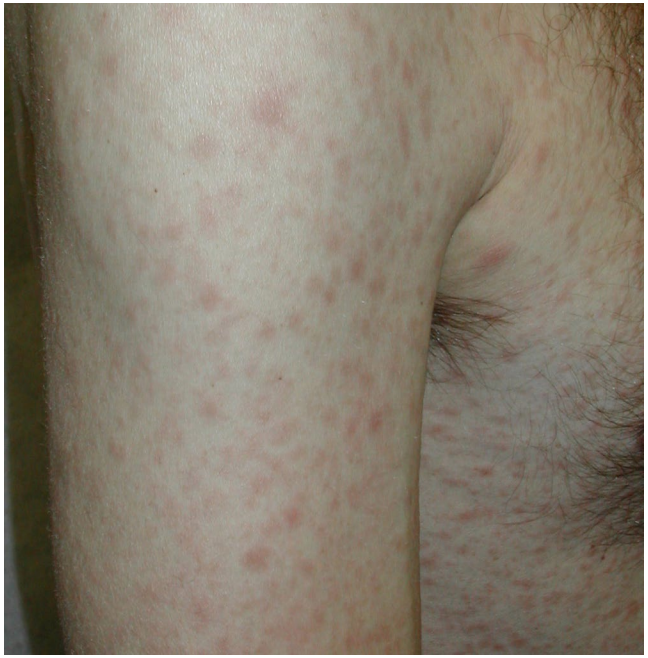
- Asymptomatic infection

Tertiary syphilis

- Cardiovascular, neurologic, and gummatous disease

Cutaneous Manifestations of Secondary Syphilis

- Diffuse maculopapular rash
- Often involves palms and soles
- Condylomata lata in genital/perianal folds
- Patchy “moth-eaten” alopecia
- Generalized lymphadenopathy
- Lesions highly infectious



Source: https://www.hiv.uw.edu/go/co-occurring-conditions/sexually-transmitted-diseases-infections/core-concept/all#syphilis

Moth-eaten alopecia in secondary Syphilis

Source: https://www.cmaj.ca/content/185/1/61

Syphilis (Treatment)

Early syphilis

- Benzathine penicillin G
- 2.4 million units IM ×1

Late latent syphilis

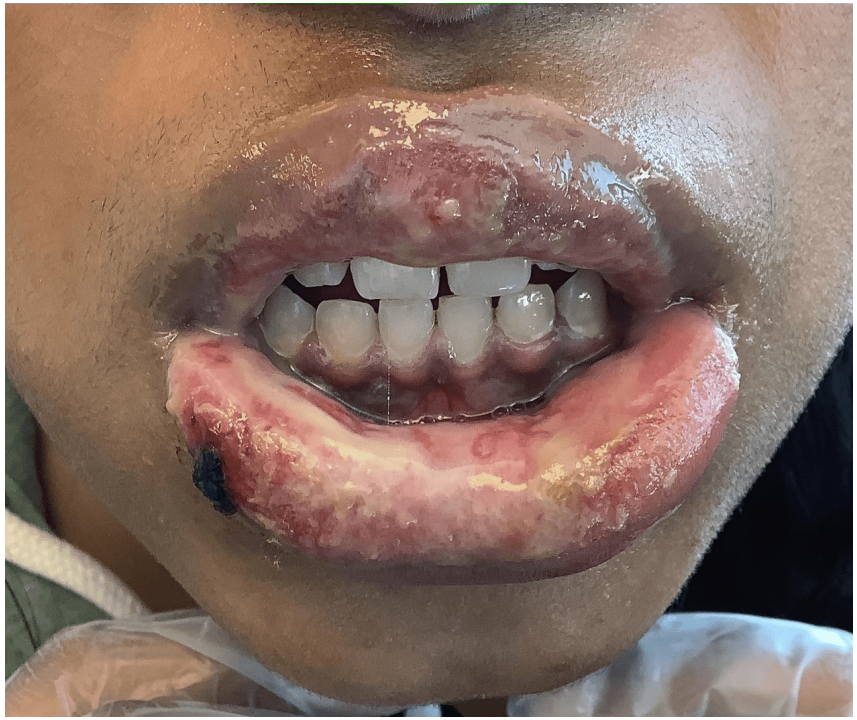
- Benzathine penicillin G
- 2.4 million units IM weekly ×3

Neurosyphilis/ocular /otosyphilis

- IV penicillin G for 10–14 days

Mpox

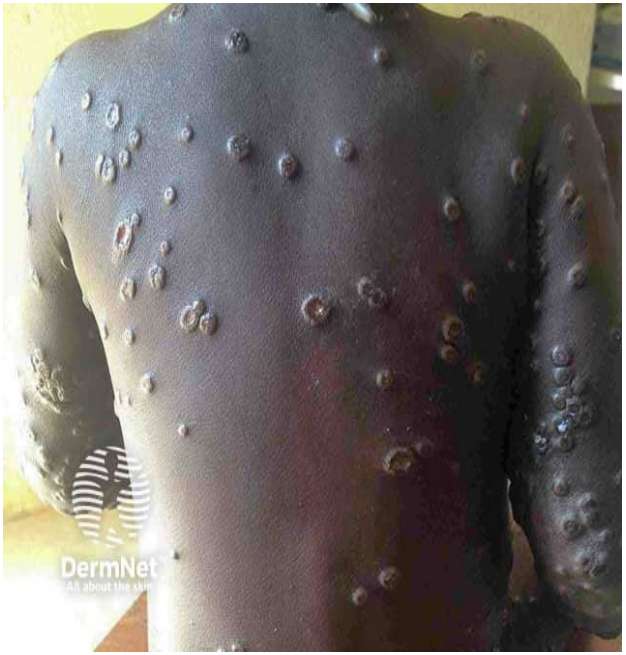
- DNA orthopoxvirus related to variola (smallpox) and vaccinia
- Transmitted via skin/mucosal contact and respiratory droplets
- 2022 outbreak: majority MSM, ~40% occurred in people with HIV
- Prodrome: fever, chills, myalgia → followed by skin and mucosal lesions



Source: https://www.hiv.uw.edu/custom/primary-care/cutaneous-manifestations/6

Mpox (Diagnosis & Treatment)

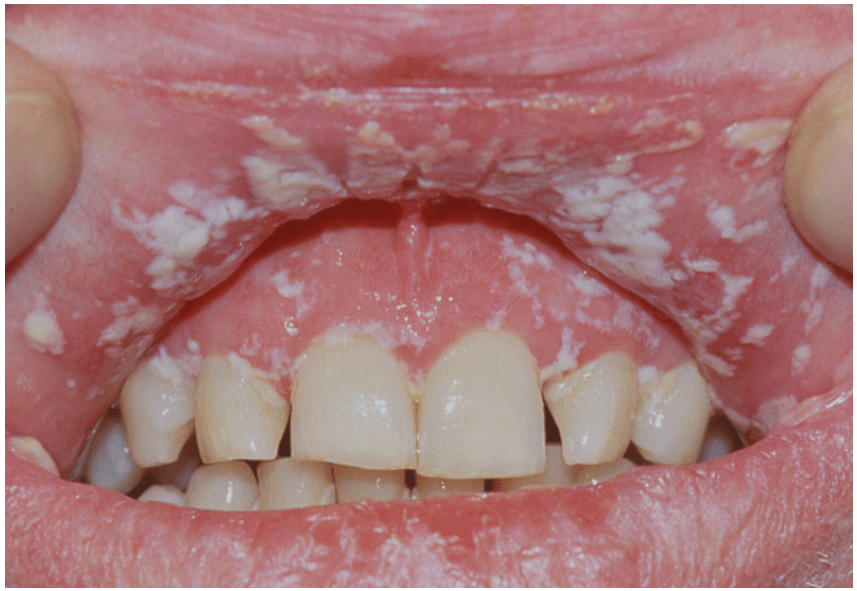
- Lesions progress macules → papules → vesicles → pustules → crusts
- Common sites: genital, perianal, rectal, oral lesions
- PCR testing from lesion swab confirms diagnosis
- Tecovirimat used for severe disease or high-risk patients (including advanced HIV)
- Prevention: Mpox vaccine, 2 doses 1 month apart



Source: https://dermnetnz.org/topics/mpox

Oral Candidiasis

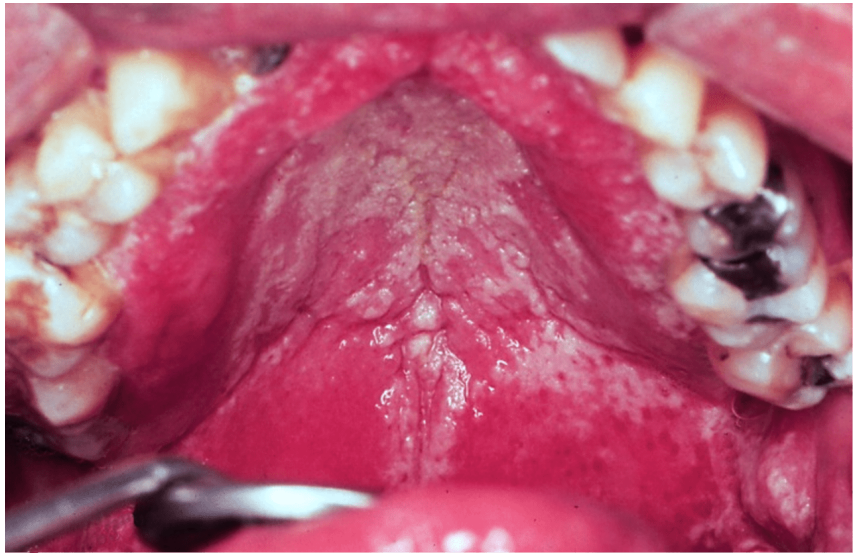
- Common opportunistic infection in HIV; typically occurs with CD4 <200 cells/mm^3
- Candida albicans most common; non-albicans species also possible
- Risk factors: advanced HIV, antibiotics, corticosteroids, chemotherapy, diabetes
- Clinical forms: pseudomembranous (thrush), erythematous, angular cheilitis, hyperplastic



Source: https://www.hiv.uw.edu/go/co-occurring-conditions/sexually-transmitted-diseases-infections/core-concept/all#syphilis

Oral Candidiasis (Diagnosis & Treatment)

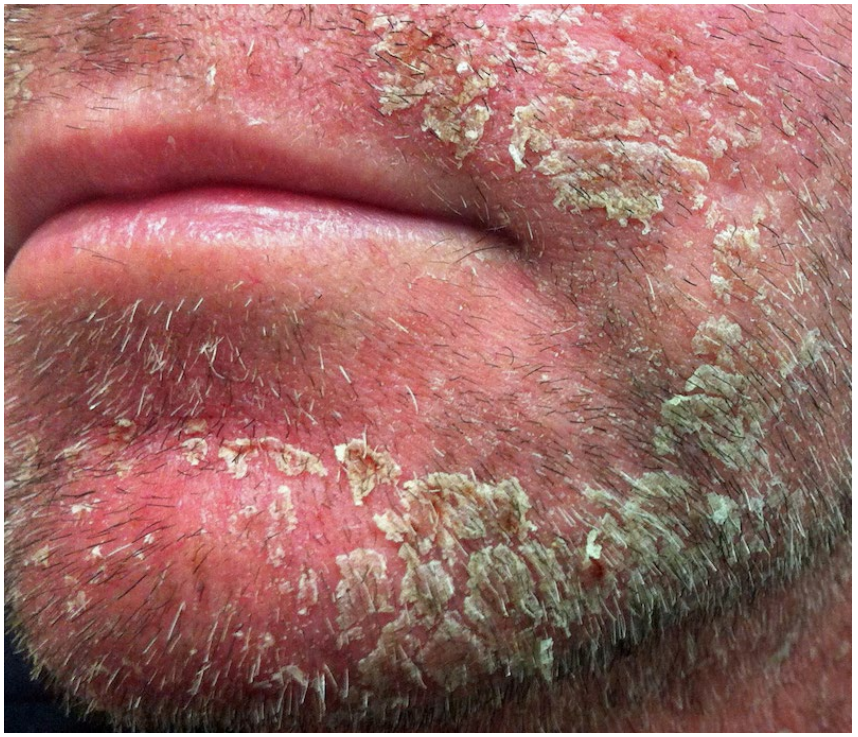
- Symptoms may include oral burning, altered taste
- Diagnosis usually clinical; confirm with KOH smear or fungal staining if uncertain
- Fluconazole (7–14 days) is preferred; ART immune restoration prevents recurrence



Source: https://www.hiv.uw.edu/go/co-occurring-conditions/sexually-transmitted-diseases-infections/core-concept/all#syphilis

Seborrheic Dermatitis

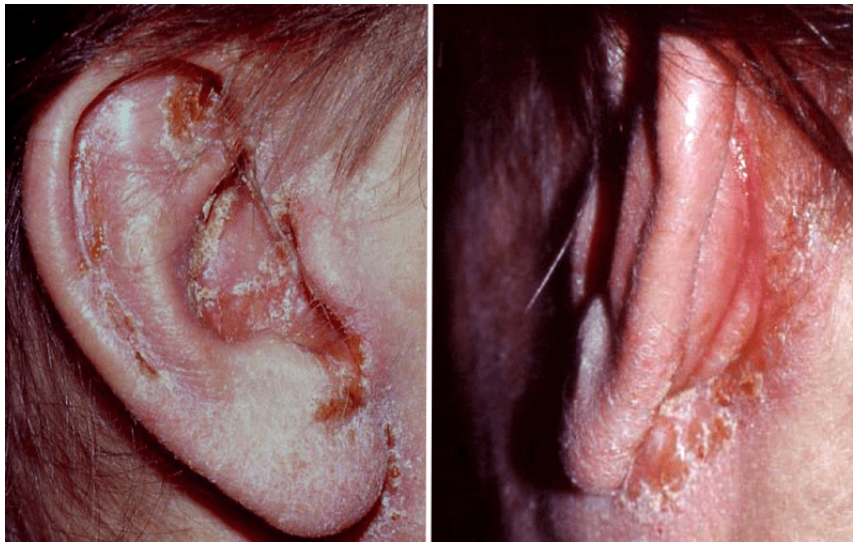
- Affects 34–83% of persons with HIV
- 1–3% prevalence in general population
- More frequent & severe with advanced immunosuppression
- Linked to immune dysregulation
- Associated with *Malassezia* species



Source: https://www.hiv.uw.edu/custom/primary-care/cutaneous-manifestations/6

SD (Clinical Manifestations)

- Flaky, erythematous patches or plaques
- Greasy white/yellow scale
- Common sites:
  - Scalp
  - Nasolabial folds
  - Beard area
  - Eyebrows
  - Ears
  - Upper chest
- Advanced HIV → diffuse involvement



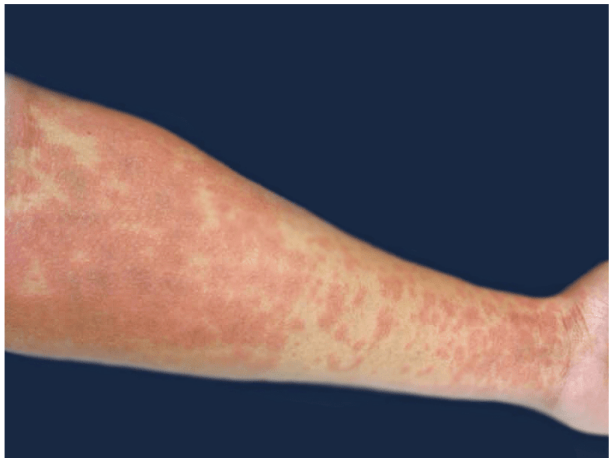
Source: https://www.hiv.uw.edu/custom/primary-care/cutaneous-manifestations/6

SD (Diagnosis & Treatment)

- Diagnosis:
  - Clinical
  - Biopsy rarely required
- Treatment:
  - Topical antifungals (ketoconazole)
  - Oral antifungals if severe
  - Short-term topical steroids
  - Improves with ART

Cutaneous Drug Eruptions

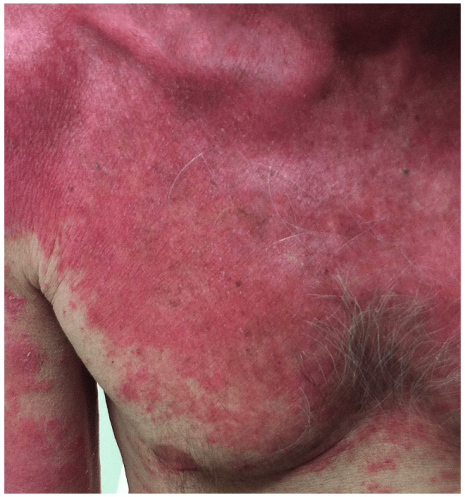
- Increased risk in persons with HIV
- Spectrum: mild morbilliform → SJS/TEN
- Common culprits: ARVs, TMP-SMX, dapsone
- Timing is critical for diagnosis
- Always consider secondary syphilis
- Severe reactions → stop drug immediately



Source: https://www.hiv.uw.edu/custom/primary-care/cutaneous-manifestations/6

Psoriasis

- Similar prevalence as general population
- More severe with advanced immunosuppression
- Higher risk of treatment-refractory disease
- Increased psoriatic arthritis
- Immune dysregulation central



Source: https://www.hiv.uw.edu/custom/primary-care/cutaneous-manifestations/6

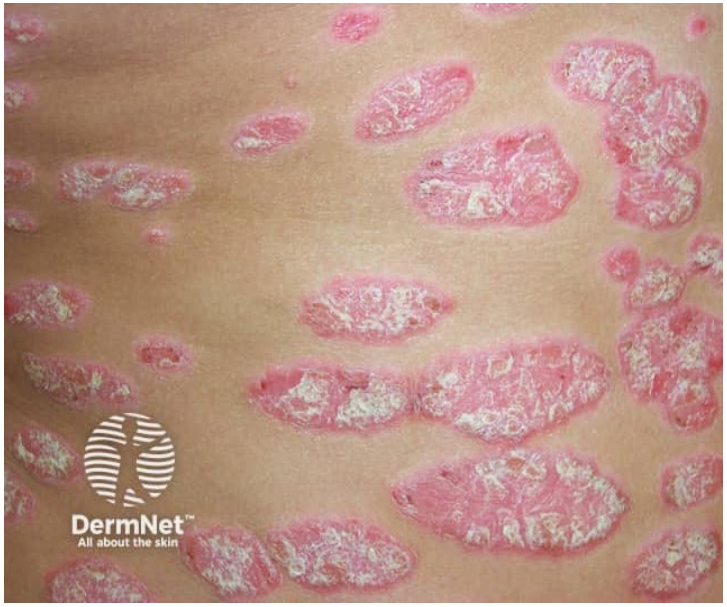
Psoriasis (Clinical Manifestations)

General population:

- Symmetric salmon plaques
- Silver scale
- Extensor surfaces

In HIV:

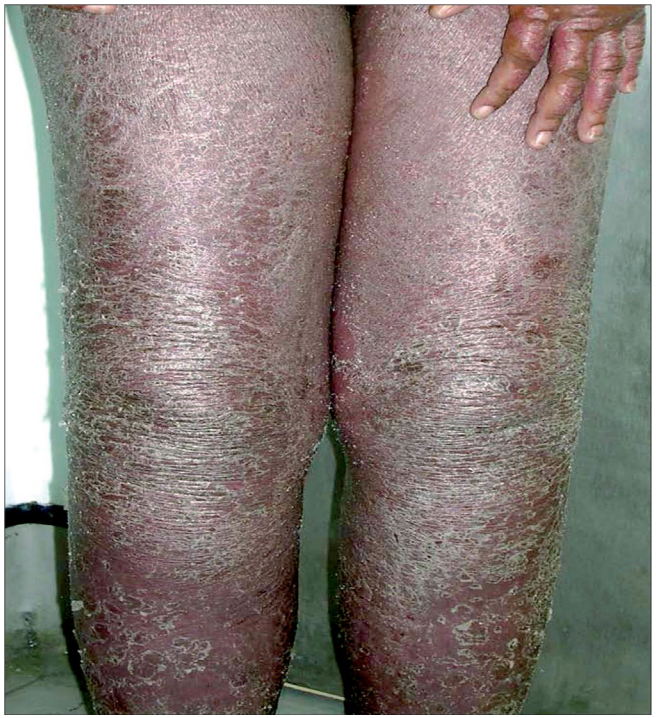
- Guttate psoriasis
- Inverse psoriasis
- Erythrodermic psoriasis
- Multiple morphologies simultaneously



Source: https://dermnetnz.org/topics/psoriasis

Psoriasis (Diagnosis)

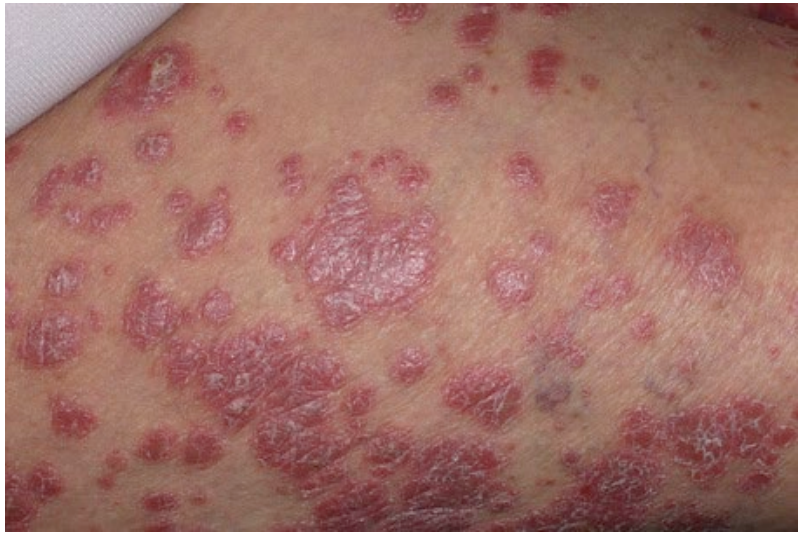
- Clinical diagnosis
- Biopsy if uncertain
- Histology:
  - Keratinocyte hyperproliferation
  - Parakeratosis
  - Neutrophils in the stratum corneum
  - Dilated dermal capillaries



Source: https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(10)70101-8/abstract

Psoriasis treatment approach in HIV

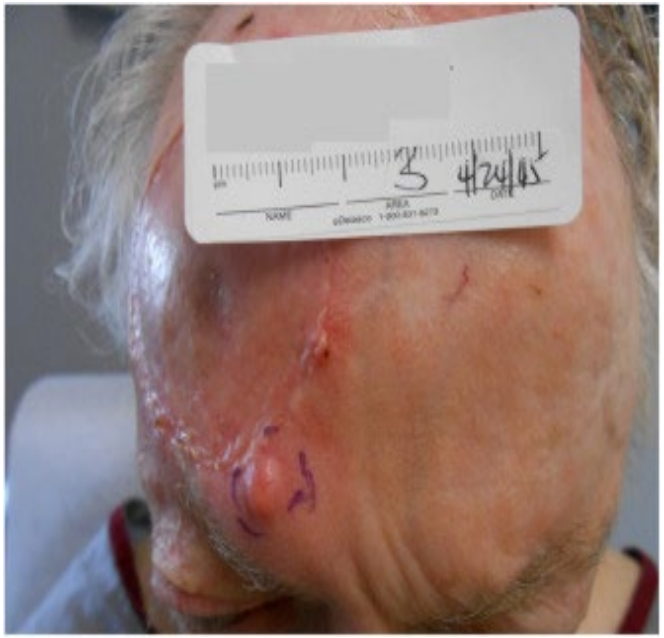
- Optimize ART first
- Mild disease → topical therapy
- Moderate–severe → systemic agents
- Severe cases → dermatology referral
- Biologics are reserved for refractory disease



Source: https://basicmedicalkey.com/human-immunodeficiency-virus-hiv-and-acquired-immunodeficiency-syndrome-aids-associated-cutaneous-diseases/

Skin Cancer in PLWH

- Skin cancer is the most common malignancy worldwide
- PLWH increasingly develop non-AIDS defining cancers
- ART has reduced Kaposi sarcoma, but other skin cancers remain important
- Most relevant cancers in HIV:
  - Squamous cell carcinoma (SCC)
  - Basal cell carcinoma (BCC)
  - Merkel cell carcinoma
  - Melanoma



Kosche et al. (2025)

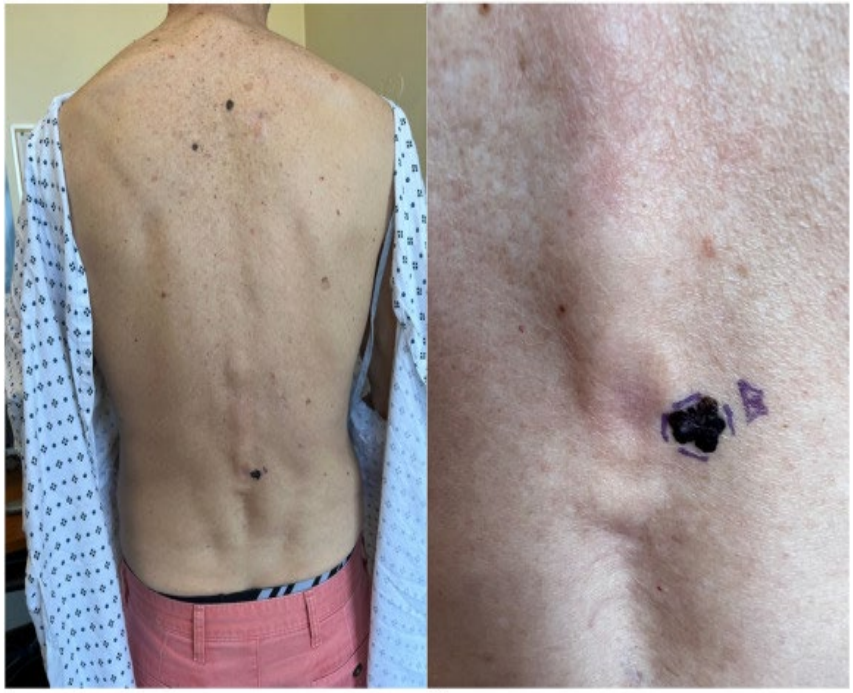
Major Skin Cancers Associated with HIV

Keratinocyte carcinomas

- Squamous cell carcinoma (↑ risk ~2–3×)
- Basal cell carcinoma (↑ risk ~2×)

Other malignancies

- Merkel cell carcinoma (up to 13× higher risk)
- Sebaceous carcinoma (increased incidence)
- Melanoma (risk data mixed)



Kosche et al. (2025)

Why Skin Cancer Risk Is Increased in HIV

- Immunosuppression
  - Lower CD4 counts are associated with higher SCC risk
- Chronic immune dysregulation
- Photosensitivity
  - HIV itself and some antiretrovirals
- Ultraviolet exposure
- Oncogenic viruses

Kosche et al. (2025)

Clinical Implications for HIV Care

- Maintain a low threshold for biopsy
- Early dermatology referral for suspicious lesions
- Treatment similar to the general population

Kosche et al. (2025)

Key take-home messages

- HIV dermatology has shifted from opportunistic disease to chronic patterns
- Inflammatory disease and chronic viral coinfections are common despite suppression
- Oncologic vigilance is essential: biopsy early
- Skin disease reflects survivorship, aging, and persistent immune activation

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THANK YOU

Any Questions?