**AIDS Infectious Dermatoses**

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Dr. Strowd is from Clinical Associates at Reisterstown, Maryland. The author reports no conflict of interest.

### Fast Facts for Board Review

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<th>Disease Category</th>
<th>Condition</th>
<th>HIV/AIDS Stage of Initial Presentation</th>
<th>Clinical Cutaneous Features</th>
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<tr>
<td>Bacterial infections</td>
<td>Bacillary angiomatosis</td>
<td>AIDS; CD4 count, &lt;250 cells/mm³</td>
<td>Red and purple vascular-appearing papules and nodules</td>
<td>Macrolides or tetracycline for a minimum of 2 months</td>
<td>Bartonella henselae or Bartonella quintana infection; can have visceral and bone involvement</td>
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<td>Botryomycosis</td>
<td>AIDS; CD4 count, &lt;250 cells/mm³</td>
<td>Classic, solitary, ulcerated plaque on the head/neck or atypical presentation of clustered papules and nodules</td>
<td>Antibiotics that target <em>Staphylococcus</em> (eg, tetracyclines), heat therapy, laser treatment, surgical excision</td>
<td><em>Staphylococcus aureus</em> infection; <em>S aureus</em> is most common bacterial infection in HIV patients; decolonization typically is temporary</td>
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<td>Miliary tuberculosis</td>
<td>AIDS; CD4 count, &lt;250 cells/mm³</td>
<td>Variable lesions; widespread papules, nodules, ulcers</td>
<td>Multidrug therapy with rifampin, isoniazid, ethambutol, pyrazinamide</td>
<td>Skin involvement is rare, even in AIDS patients</td>
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<td>Mycobacterial infection</td>
<td>Advanced AIDS; CD4 count, &lt;50 cells/mm³</td>
<td>Erythematous papules, nodules, ulcers, verrucous lesions</td>
<td>HAART and antimycobacterial agents (eg, rifampin, ethambutol, clofazimine)</td>
<td><em>Mycobacterium avium-intracellulare</em> complex, <em>Mycobacterium haemophilum</em>, <em>Mycobacterium fortuitum</em></td>
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<td>Syphilis</td>
<td>HIV</td>
<td>Small erythematous papules and macules; involvement of the palms and soles; pustules; ulcerative nodules</td>
<td>Penicillin</td>
<td>Caused by the bacterium <em>Treponema pallidum</em>; higher risk for CNS involvement; all HIV patients should be tested for syphilis</td>
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<td>Fungal infections</td>
<td>Candidiasis</td>
<td>HIV; CD4 count, &lt;500 cells/mm³</td>
<td>Burning pain, altered taste sensation, dysphagia, vaginal pruritus, urodyntia; mucocutaneous candidiasis presents with oropharyngeal, esophageal, and/or vulvovaginal manifestations; oral candidiasis presents with white plaques on the buccal mucosa and tongue; vaginal candidiasis presents with watery or curdlike, thick, white discharge</td>
<td>Most patients will respond to any of the numerous oral and topical antifungal medications; for fluconazole-resistant <em>Candida</em>, IV amphotericin B can be administered</td>
<td>Oropharyngeal candidiasis may be a presenting sign of HIV infection; <em>Candida dubliniensis</em> is more commonly identified in HIV-infected individuals</td>
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<td>Coccidioidomycosis</td>
<td>AIDS; CD4 count, &lt;250 cells/mm³</td>
<td>Variable papules, nodules, and ulcers; can have erythema multiforme or erythema nodosum lesions</td>
<td>IV amphotericin B</td>
<td>N/A</td>
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<td><strong>Fungal infections (continued)</strong></td>
<td>Cryptococcosis</td>
<td>AIDS; CD4 count, &lt;250 cells/mm³</td>
<td>Papules, pustules, plaques, molluscumlike lesions, and ulcerations</td>
<td>IV amphotericin B</td>
<td>Most common systemic fungal infection in HIV patients</td>
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<td><strong>Dermatophytosis</strong></td>
<td>HIV</td>
<td>Well-defined scaling and erythematous plaques on the skin; thickening and discoloration of the nails; proximal white subungual onychomycosis is associated with HIV infection</td>
<td>Can use standard topical and oral antifungals; amphotericin B or caspofungin can be used for refractory cases; itraconazole cannot be administered with protease inhibitors due to CYP450 interactions</td>
<td>Rate of dermatophyte infection is similar among HIV and non-HIV patients but is more severe in HIV patients and often is atypical and refractory to treatment; <em>Trichophyton rubrum</em> and <em>Trichophyton mentagrophytes</em> are the most common causes of dermatophytosis in HIV patients</td>
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<td><strong>Histoplasmosis</strong></td>
<td>AIDS; CD4 count, &lt;250 cells/mm³</td>
<td>Progressive systemic disease with papules, ulcers, and erythema multiforme–like lesions</td>
<td>IV amphotericin B</td>
<td>N/A</td>
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<td><strong>Pneumocystis jiroveci</strong> (formerly <em>Pneumocystis carinii</em>)</td>
<td>AIDS; CD4 count, &lt;200 cells/mm³</td>
<td>Molluscumlike lesions, bluish plaques, and abscess formation</td>
<td>TMP-SMX or pentamidine</td>
<td>Initially thought to be a protozoan infection, now considered a fungus</td>
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<td><strong>Parasitic infections/infestations</strong></td>
<td>Leishmaniasis (protozoa)</td>
<td>HIV</td>
<td>Ulcerated nodules on the arms and legs, mucosal ulcerations; ulcerations are painless</td>
<td>Amphotericin B or pentavalent antimony</td>
<td>Transmitted by <em>Lutzomyia</em> and <em>Phlebotomus</em> sandflies</td>
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<td>Scabies (Sarcoptes mite)</td>
<td>HIV</td>
<td>Classic burrows and hand/wrist involvement may be absent; instead see involvement of face and widespread crusted hyperkeratotic plaques</td>
<td>Oral ivermectin, permethrin cream 5%</td>
<td>Most common skin infestation in HIV patients</td>
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<td>Strongyloidiasis (nematode)</td>
<td>HIV</td>
<td>Violaceous, reticulated patches mimicking livedo reticularis; purpuric thumbprint lesions</td>
<td>Ivermectin; in HIV patients increased risk for dissemination with poor response to medication</td>
<td>Strongyloides stercoralis, classic presentation is larva currens</td>
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<td><strong>Viral infections</strong></td>
<td>Acute retroviral syndrome</td>
<td>Initial infection with HIV; CD4 count, &gt;500 cells/mm³</td>
<td>Morbilliform eruption sparing the palms and soles</td>
<td>HAART</td>
<td>Often appears before detectable levels of HIV antibodies</td>
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<td>CMV infection</td>
<td>AIDS; CD4 count, &lt;200 cells/mm³</td>
<td>Perineal ulcers, squamous metaplasia of eccrine ducts</td>
<td>N/A</td>
<td>Retinitis, colitis, and esophagitis are more common than cutaneous manifestations of CMV infection</td>
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</tbody>
</table>
### Herpes zoster

**Stage of Initial Presentation**
- HIV; CD4 count, <500 cells/mm³

**Clinical Cutaneous Features**
- Erythematous papules, vesicles, and ulcers that are extremely painful to touch; dermatomal or disseminated distribution

**Treatment**
- IV acyclovir

**Notes**
- In HIV patients, VZV outbreaks often occur before development of an AIDS-defining illness; can be complicated by fatal pulmonary involvement

### HPV

**Stage of Initial Presentation**
- HIV

**Clinical Cutaneous Features**
- Flesh-colored verrucous papules on the face, limbs, and genitals that can be quite large

**Treatment**
- Imiquimod, podophyllotoxin, trichloroacetic acid, cryotherapy, CO₂ laser, ED&C

**Notes**
- High risk for transformation into CINs and AINs

### Molluscum contagiosum

**Stage of Initial Presentation**
- HIV/AIDS; CD4 count, <250 cells/mm³

**Clinical Cutaneous Features**
- Classic lesions are small, flesh-colored or white, umbilicated papules; HIV patients can develop giant lesions (>15 mm in diameter), larger numbers of lesions, and lesions that are more resistant to standard therapy

**Treatment**
- Therapies that aim to boost the immune system (eg, intralesional interferon) have proven most effective in HIV patients; imiquimod; topical cidofovir

**Notes**
- Patients with severe HIV/AIDS can have widespread facial molluscum lesions

### Oral and anogenital HSV

**Stage of Initial Presentation**
- HIV

**Clinical Cutaneous Features**
- Sharply demarcated, punched-out ulcers on the oral mucosa, scrotum, penile shaft, and vagina; can be associated with esophagitis, hepatitis, pneumonitis, meningoencephalitis, and acute retinal necrosis

**Treatment**
- May not respond to treatment with acyclovir or valacyclovir; may require cidofovir or foscarnet

**Notes**
- HHV-1 has increasingly been shown to cause genital ulcers in HIV patients; transmission of HSV is increased in HIV patients

### Oral hairy leukoplakia

**Stage of Initial Presentation**
- HIV; CD4 count, >500 cells/mm³

**Clinical Cutaneous Features**
- White corrugated plaques with hairlike growths; cannot be removed with toothbrush or scraper

**Treatment**
- HAART

**Notes**
- Caused by Epstein-Barr virus; no malignant transformation seen

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**Abbreviations:**
- HIV, human immunodeficiency virus
- HAART, highly active antiretroviral therapy
- CNS, central nervous system
- IV, intravenous
- N/A, not applicable
- CYP450, cytochrome P450
- TMP-SMX, trimethoprim-sulfamethoxazole
- CMV, cytomegalovirus
- VZV, varicella-zoster virus
- HPV, human papillomavirus
- ED&C, electrodesication and curettage
- CIN, cervical intraepithelial neoplasia
- AIN, anal intraepithelial neoplasia
- HSV, herpes simplex virus
- HHV-1, human herpesvirus 1.

*Kaposi sarcoma typically is thought to be caused by human herpesvirus 8 but is considered a noninfectious malignancy in the context of this fact sheet.*
Practice Questions

1. **What is the most common treatment of invasive fungal infections in immunocompromised patients?**
   a. caspofungin
   b. griseofulvin
   c. intravenous amphotericin B
   d. itraconazole
   e. terbinafine

2. **What mucosal infection is caused by Epstein-Barr virus and can be seen in human immunodeficiency virus and AIDS patients?**
   a. aphthous stomatitis
   b. Kaposi sarcoma
   c. median rhomboid glossitis
   d. oral hairy leukoplakia
   e. thrush

3. **Which infection can cause thumbprint purpura and often is fatal in immunocompromised patients?**
   a. botryomycosis
   b. coccidioidomycosis
   c. invasive candidiasis
   d. Kaposi sarcoma
   e. strongyloidiasis

4. **Which infection classically presents in advanced AIDS cases with a CD4 count less than 50 cells/mm\(^3\)?**
   a. crusted scabies
   b. giant molluscum
   c. herpes zoster
   d. leishmaniasis
   e. *Mycobacterium avium-intracellulare complex*

5. **Which antifungal medication should be avoided in patients taking protease inhibitors?**
   a. caspofungin
   b. griseofulvin
   c. itraconazole
   d. micafungin
   e. terbinafine

*Fact sheets and practice questions will be posted monthly. Answers are posted separately on www.cutis.com.*