

Infestations: scabies and pediculosis

By Zeinah Z. AlHalees, MD, and AlReem A. AlNabti, MD

Epidemiology	Pathogenesis	Clinical	Diagnosis	Treatment
Scabies				
<ul style="list-style-type: none"> - Worldwide - Higher incidence with overcrowding - Higher prevalence: <ul style="list-style-type: none"> • Children • Among families • Sexually active individuals <p><u>Crusted scabies</u></p> <ul style="list-style-type: none"> - Elderly - HIV - HTLV- 1 - Solid organ transplant recipients - Iatrogenic immunosuppression - Leprosy - Paraplegia 	<p>Infestation with <i>Sarcoptes scabiei var hominis</i></p> <p><u>Transmission</u></p> <ul style="list-style-type: none"> - Direct close contact - Indirect via fomites <p><u>Incubation period</u></p> <ul style="list-style-type: none"> - 1st-time ~2-6 weeks - Subsequent infestations ~24-48 hrs <p><u>Pathogenesis</u></p> <ul style="list-style-type: none"> - Cutaneous hypersensitivity reaction to mites & products - Life cycle ~10-15 days - Can live ~3 days off host (up to 7 days in crusted scabies) <p><u>Mite load</u></p> <ul style="list-style-type: none"> - 5-15 mites in classic - High mite burden <4700 mites/gram of shed skin in crusted scabies <p>- Not a known vector for systemic disease</p>	<p><u>Classic scabies</u></p> <ul style="list-style-type: none"> - Intensely pruritic erythematous papules, excoriations & burrows involving web spaces, wrists, axillae, waist, umbilicus, ankles, feet, buttocks, & genitals <p><u>Atypical scabies</u></p> <ul style="list-style-type: none"> - Scalp - Nodular - Bullous - Crusted: marked hyperkeratosis <p><u>Differential diagnoses</u></p> <ul style="list-style-type: none"> - Arthropod bites - AD & other eczematous eruptions - Id reaction - DH - BP - LCH - Infants: acropustulosis of infancy, inflammatory stage of IP <p><u>Complications</u></p> <ul style="list-style-type: none"> - Secondary bacterial infection - Post-scabetic itch ≥ 2-4 weeks 	<p><u>Beside tests</u></p> <ul style="list-style-type: none"> - Ink spot test - Dermoscopy delta-wing jet sign - Microscopy + transparent adhesive tape or mineral oil prep of skin scrapings <p><u>Histopathology</u></p> <ul style="list-style-type: none"> - Dermal patchy-diffuse mixed infiltrate with prominent eosinophils +/- mite exoskeleton in epidermis 	<ul style="list-style-type: none"> - Topical 5% Permethrin - 1st line <ul style="list-style-type: none"> • FDA-approved ≥2 months of age • Safe in pregnancy - Oral Ivermectin 200µg/kg/dose <ul style="list-style-type: none"> • Not used in pregnancy, children <5 yrs, individuals <15kg <p><u>Other options</u></p> <ul style="list-style-type: none"> - 2-10% Sulfur: Safe in infants & pregnancy - 10% Crothamiton: FDA-approved - 0.5% Malathion - 10%-25% Benzyl benzoate (not available in US & CA) - 1% Lindane: FDA-approved, contraindicated in infants, pregnancy, & breast feeding <p><u>General measures</u></p> <ul style="list-style-type: none"> - Wash all clothes/linens in hot water & dry on high heat or store in a bag x10 days - Treat all family members & close contacts
Head lice				
<ul style="list-style-type: none"> - Worldwide - Highest incidence 3-11yrs of age - More frequent in girls - Less common in African-Americans 	<p>Infestation with <i>Pediculus capitis</i></p> <p><u>Transmission</u></p> <ul style="list-style-type: none"> - Head-to-head contact - Indirect via fomites <p><u>Pathogenesis</u></p> <ul style="list-style-type: none"> - Live only on scalp hairs & feed on host blood - Live for ~30 days - Rarely survive for >36 hrs away from host, but nits can live up to 10 days <p>- Not a known vector for systemic disease</p>	<ul style="list-style-type: none"> - Scalp pruritus with secondary excoriations, erythema & scaling - With bacterial superinfection: scalp pyoderma, low-grade fever & LAD <p><u>Differential diagnosis</u></p> <ul style="list-style-type: none"> - Dandruff - Dried hair products/casts - Hair shaft nodules (white/black piedra, trichorrhexis nodosa) <p><u>Complications</u></p> <ul style="list-style-type: none"> - Secondary bacterial infection - IDA in chronic infestation 	<ul style="list-style-type: none"> - Definitive diagnosis → identification of nits &/or adult louse on scalp hair <p><u>Histopathology</u></p> <p>Nonspecific inflammation</p>	<ul style="list-style-type: none"> - Topical pediculicides: <ul style="list-style-type: none"> • Pyrethrins 0.33% with piperonyl butoxide • 1% & 5% Permethrin • 0.5% Carbaryl shampoo • 5% Benzyl alcohol lotion • 4% Dimethicone • 0.9% Spinosad-ovicidal • 0.5% Malathion-ovicidal • 0.5% Ivermectin lotion • 1% Lindane (not used) - Oral Ivermectin <p><u>General measures</u></p> <ul style="list-style-type: none"> - Wash all clothes/linens - Screen family members - American Academy of Pediatrics recommends against school no-nit policies



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Epidemiology	Pathogenesis	Clinical	Diagnosis	Treatment
Pubic lice				
<ul style="list-style-type: none"> - Worldwide - Prevalence higher in sexually active individuals 	Infestation with <i>Pthirus pubis</i> <u>Transmission</u> <ul style="list-style-type: none"> - Close/sexual contact - Indirect via fomites <u>Pathogenesis</u> <ul style="list-style-type: none"> - Louse attach to human hairs & ambulate on body affecting any hair bearing site - Live up to 10 days - Survive ~36 hrs away from host <ul style="list-style-type: none"> - Not a known vector for systemic disease, but may coexist with other STIs 	<ul style="list-style-type: none"> - Pruritic perifollicular erythema & excoriations involving any hair-bearing site +/- louse at base of hairs - Macula caerulea in chronic lice - Eyelash infestation → resembles flecks of mascara - 60% have at least 2 hair-bearing sites involved <u>Differential diagnosis</u> <ul style="list-style-type: none"> - Scabies - Arthropod bites - In pubic/axillae: white piedra & trichomycosis <u>Complications</u> <ul style="list-style-type: none"> - Secondary bacterial infection 	<ul style="list-style-type: none"> - Diagnosed clinically <u>Histopathology</u> <p>Nonspecific inflammation in epidermis & dermis</p>	<ul style="list-style-type: none"> - Topical pediculicides: <ul style="list-style-type: none"> • 1% & 5% Permethrin → 1st line & FDA-approved • 0.5% Ivermectin – FDA-approved • Pyrethrin shampoo • Lindane 1% (not used) - Oral Ivermectin: 2nd line, good in eyelash/perianal infestation <u>General measures</u> <ul style="list-style-type: none"> - Petrolatum jelly useful in eyelash infestation - Shaving hair bearing sites not sufficient - Treat sexual partner - Screen for STIs
Body lice				
<ul style="list-style-type: none"> - Worldwide - Risk factors: <ul style="list-style-type: none"> • Poor hygiene • Poverty • Overcrowding • Victims of war & natural disasters 	Infestation of humans + clothing with <i>Pediculus humanus var. corporis</i> <u>Transmission</u> <ul style="list-style-type: none"> - Insects do not live/lay eggs on humans, rather in clothing <u>Pathogenesis</u> Requires: <ol style="list-style-type: none"> 1. Infestation of humans + clothing 2. Inability to wash & change clothes Primary vector for: <ul style="list-style-type: none"> - Epidemic typhus (<i>Rickettsia prowazekii</i>) - Relapsing fever (<i>Borrelia recurrentis</i>) - Trench fever, bacillary angiomatosis, & endocarditis (<i>Bartonella quintana</i>) 	<ul style="list-style-type: none"> - Pruritic small erythematous macules & papules with secondary crusts & excoriations involving the neck, shoulders, back, & waist - Louse & nits → found on clothing & along clothing seams <u>Differential diagnosis</u> <ul style="list-style-type: none"> - AD & other eczematous dermatitides - Pruritus secondary to systemic diseases/medications - Arthropod bites - Scabies <u>Complications</u> <ul style="list-style-type: none"> - Secondary bacterial infection - IDA in chronic/severe infestation 	<ul style="list-style-type: none"> - Diagnosed clinically <u>Histopathology</u> <p>Nonspecific inflammation in epidermis & dermis</p>	<ul style="list-style-type: none"> - Topical insecticides similar to scabies → eradicate body louse adherent to hairs - Incineration of clothing/bedding - If incineration not possible → fumigate clothing/bedding or wash with hot water ≥50°C & dry on high heat <u>General measures</u> <ul style="list-style-type: none"> - Strict avoidance of infested items x2 weeks - Mass delousing measures may be needed

Abbreviations: AD: atopic dermatitis, BP: bullous pemphigoid, DH: dermatitis herpetiformis, HIV: human immunodeficiency virus, HTLV-1: human T-cell lymphotropic virus type, IDA: iron deficiency anemia, IP: incontinentia pigmenti, LAD: lymphadenopathy, LCH: Langerhans cell histiocytosis, STI: sexually transmitted infection, TBSE: total body skin exam

References:

- 1) Bologna J, Schaffer JV, Cerroni L. Dermatology. 4th edition ed: Philadelphia, Pa.: Elsevier; 2018 9th November 2017. 2880 p.
- 2) Thomas C, Coates SJ, Engelman D, Chosidow O, Chang AY. Ectoparasites: Scabies. J Am Acad Dermatol. 2020 Mar;82(3):533-548. doi: 10.1016/j.jaad.2019.05.109. Epub 2019 Jul 13. PMID: 31310840.
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