

Table 1. Red penile dermatoses – organised by the mnemonic ‘RED-PENIS’





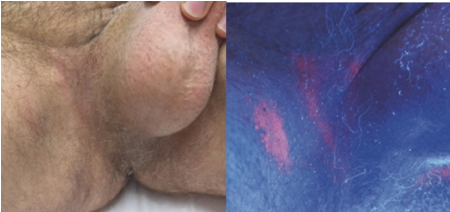
Condition	Examples ^A	Aetiology	Clinical features	Treatment
1.1 Reactive arthritis		<ul style="list-style-type: none"> Likely autoimmune with genetic predisposition Associated with HLA-B27 positivity¹ 	<ul style="list-style-type: none"> Urethritis, arthritis, conjunctivitis with cutaneous involvement (1/3 genital) Scaly psoriasiform plaques Might have ulcers/erosions Might crust and be tender 	<ul style="list-style-type: none"> Usually self-limiting within 12 months Might relapse Analgesia/NSAIDs Corticosteroids (topical and oral) DMARDs
1.2 Eczema/dermatitis <ul style="list-style-type: none"> Irritant/contact Allergic contact Atopic 		<ul style="list-style-type: none"> Often no clear allergen/irritant 	<ul style="list-style-type: none"> Asymptomatic Balanoposthitis – red macules, plaques and patches with poorly defined erythema Intractable itch Chronic – skin thickening 	<ul style="list-style-type: none"> Minimising irritants Emollients Cool (sitz) baths Low-moderate potency topical corticosteroids
1.3 Drug reaction <ul style="list-style-type: none"> NSAIDs Antibiotics Sulfasalazine Paracetamol 		<ul style="list-style-type: none"> Exact mechanism unclear – drug likely combines with protein to cause an immunological reaction 	<ul style="list-style-type: none"> Commonly on limbs, but on genitals in 20% of patients Asymptomatic Might have itching, swelling, tenderness and lower urinary tract symptoms (urethritis) Solitary erythematous/hyperpigmented patch/plaque (+/- red halo) 	<ul style="list-style-type: none"> Recognition and avoidance of the causative drug (after skin biopsy to confirm diagnosis) Moderate potency topical corticosteroid
1.4 Psoriasis <ul style="list-style-type: none"> Chronic plaque Inverse (flexural) 		<ul style="list-style-type: none"> Immunological basis with a genetic predisposition, influenced by environmental factors¹⁴ Risk factors: diabetes, immunocompromised, other skin disease, age, obesity, antibiotic use 	<ul style="list-style-type: none"> Red scaly plaques Might be confined to genitals Flat red macules in uncircumcised men Affects other parts of body – skin/nails 	<ul style="list-style-type: none"> Minimising irritants, use of emollients 6-week trial of high-potency topical corticosteroids Systemic psoriasis treatment (biologics, immunosuppressants)¹⁵
1.5 Erythrasma <ul style="list-style-type: none"> <i>Corynebacterium minutissimum</i> (gram-positive skin commensal) in flexures 		<ul style="list-style-type: none"> Benign intertriginous eruption associated with diabetes, hyperhidrosis, obesity and immunosuppression 	<ul style="list-style-type: none"> Symmetrical scaly red-brown plaques in flexures Can be itchy Fluoresces under Wood's lamp examination Involvement of other intertriginous sites 	<ul style="list-style-type: none"> Avoidance of skin irritants Reduction of sweating Topical/systemic antibiotic treatments (clindamycin, fusidic acid, erythromycin, mupirocin)¹⁶

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Condition	Examples ^A	Aetiology	Clinical features	Treatment
1.6 Neoplasia				
1.6.1 PIN (erythroplasia of Queyrat)		<ul style="list-style-type: none"> Risk factors: uncircumcised men, HPV infection, lichen sclerosis, smoking, immunocompromise¹⁷ 	<ul style="list-style-type: none"> Solitary, slow growing, discoloured plaque, and might have itch, crusting or tenderness 	<ul style="list-style-type: none"> Urgent referral to a urologist is required Local treatments can include shave excision, cryogenic/laser therapy, topical treatments (5-fluorouracil, imiquimod), surgical excision HPV vaccination
1.6.2 Penile SCC		<ul style="list-style-type: none"> Risk factors: history of phimosis/chronic inflammatory conditions (eg lichen sclerosis), previous UVA treatments/exposure, smoking and high-risk HPV infection (HPV subtypes 16 and 18)¹⁷ 	<ul style="list-style-type: none"> Asymptomatic Itchy, painful, bleeding, malodorous lesions Progressive erythematous skin lesion/palpable nodule on glans, coronal sulcus or foreskin Invasive: exophytic ulcerated/eroded nodules fungating locally destructive lesions Can cause voiding dysfunction 	<ul style="list-style-type: none"> Early urgent referral to a urologist and histopathological diagnosis Surgical excision +/- sentinel lymph node biopsy, radiotherapy
1.7 Infectious				
1.7.1 Candidiasis <ul style="list-style-type: none"> Mostly <i>Candida albicans</i> 		<ul style="list-style-type: none"> Risk factors: diabetes, immunocompromised 	<ul style="list-style-type: none"> Balanoposthitis with itch, pain, weeping/white discharge Might spread to groin/thigh regions Uncommon in circumcised men 	<ul style="list-style-type: none"> Cooling baths Topical/oral azole treatment Low-potency topical corticosteroids
1.7.2 Genital warts <ul style="list-style-type: none"> Condyloma accuminata Clinical +/- skin biopsy 		<ul style="list-style-type: none"> Mostly caused by HPV types 6 and 11 (low risk) Note: infected individuals are ALSO at risk of co-infection with subclinical high-risk HPV types, mostly 16 and 18 	<ul style="list-style-type: none"> Warts in the genital/inguinal and anal region Might be recurrent 	<ul style="list-style-type: none"> Spot cryotherapy + imiquimod cream/podophyllotoxin Regular review for resolution and follow-up for malignant change
1.7.3 Genital herpes <ul style="list-style-type: none"> Dry swab for PCR 		<ul style="list-style-type: none"> Herpes simplex virus-2 	<ul style="list-style-type: none"> Primary infection - asymptomatic Reactivation - severe pain/dysuria/discharge with acute red papules +/- blisters/ulceration 	<ul style="list-style-type: none"> Oral antiviral therapy to reduce severity of flares (acyclovir/valaciclovir/famciclovir) Analgesia, topical local anaesthetic Avoid sexual activity during symptomatic/acute phase

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Condition	Examples ^A	Aetiology	Clinical features	Treatment
1.7.4 Syphilis • Syphilis serology		<ul style="list-style-type: none"> • <i>Treponema pallidum</i> 	<ul style="list-style-type: none"> • Primary: painless ulcer/chancre (urethral, anogenital, oral) • Secondary: skin/ mucous membranes – macules/papules (palms/soles) • Tertiary (neurosyphilis) 	<ul style="list-style-type: none"> • Intramuscular penicillin – benzathine benzylpenicillin 2.4 million units • Long-term monitoring of serology
1.8 Sclerosis 1.8.1 Lichen planus • Hyperkeratotic • Annular • Lace pattern • Erosive		<ul style="list-style-type: none"> • Might be T-cell mediated¹⁸ 	<ul style="list-style-type: none"> • Asymptomatic • Multifocal itchy papules +/- erosions, weeping • Erosive lesions can be painful 	<ul style="list-style-type: none"> • High-potency topical corticosteroids for control • Needs monitoring for malignant change
1.8.2 Plasma cell balanitis (Zoon’s)		<ul style="list-style-type: none"> • Mild trauma/ irritation of the subpreputial space 	<ul style="list-style-type: none"> • Solitary moist orange-red heterogenous plaque of the glans and/or foreskin (+/- mirroring) 	<ul style="list-style-type: none"> • Combination topical antibiotic + corticosteroids
1.8.3 Genital dysaesthesia		<ul style="list-style-type: none"> • Unknown • Neuropathy, inflammation, neurovascular, iatrogenic (steroids), allergic 	<ul style="list-style-type: none"> • Might not have any signs • Uniformly red scrotal +/- genital skin with sensation change 	<ul style="list-style-type: none"> • Avoid irritants/remove triggers (alcohol/ caffeine) • Use emollients • Low-dose amitriptyline/ SSRIs

^AAll images have been reproduced from Hall A. Atlas of male genital dermatology. Springer Nature Switzerland AG, 2019, doi: 10.1007/978-3-319-99750-6, with permission from Springer Nature Switzerland AG.³⁹

DMARDs, disease-modifying antirheumatic drugs; HLA-B27, human leukocyte antigen B27; HPV, human papillomavirus; NSAIDs, non-steroidal anti-inflammatory drugs; PCR, polymerase chain reaction; PIN, penile intraepithelial neoplasia; SCC, squamous cell carcinoma; SSRIs, selective serotonin re-uptake inhibitors; UVA, ultraviolet A.