2025 Heartland Hospital Medicine Conference

Dermatological Emergencies

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DISCLOSURE SLIDE

No relevant financial relationships or conflicts of interest to disclose

Why This Matters – A Case from Rural Kentucky

47-YEAR-OLD MAN PRESENTS WITH PAINFUL, RAPIDLY SPREADING RASH

EMERGENCY DEPARTMENT TEAM CALLS FOR HELP

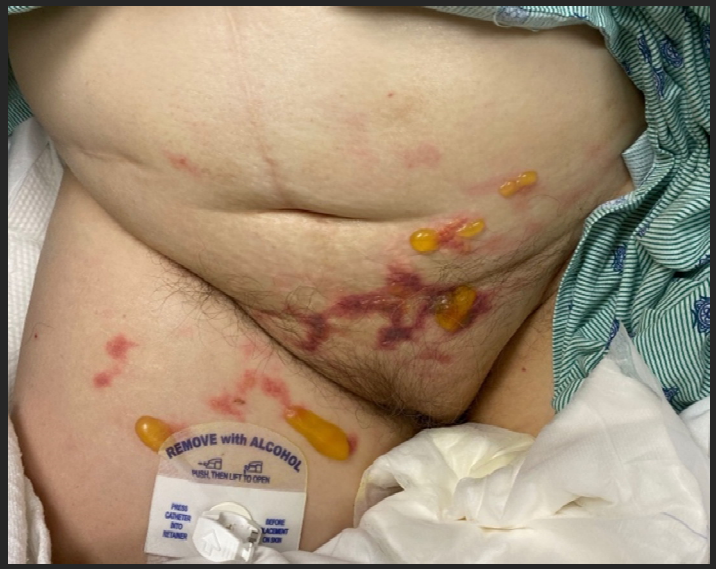
MEDICINE ACCEPTS PATIENT


The Skin Game

Case 1

A 65-year-old female with a history of cirrhosis presents with altered mental status, fever, and hypotension.

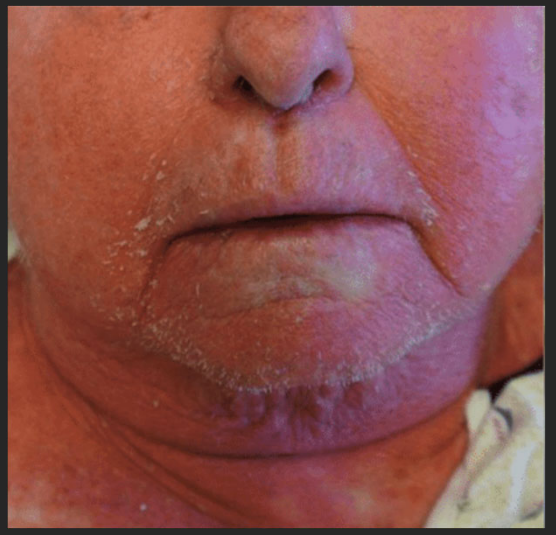
- **VS**: Temp 38.9˚C (102˚F), HR 118 bpm, BP 86/48 mmHg, RR 24, O2 sat 95% on room air
- **Physical exam**: tense vesicles and bullae mixed with faint pink to dull red retiform papules and plaques on the abdomen and upper thighs
- **Laboratory studies**: WBC 15,200/mm^3, platelet count of 38,000/mm^3, INR of 2.4, fibrinogen level of 95 mg/dL, and a D-dimer of 5,800 ng/mL, Blood cultures are pending

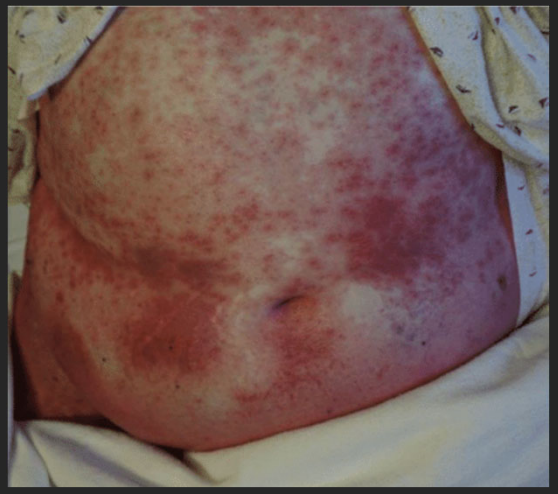


Case 2

A 58-year-old woman with a history of stage 4 chronic kidney disease and uncontrolled type 2 diabetes presents with fever, malaise, and painful skin changes.

- **VS**: Temp 39.2°C (102.6°F), HR 110 bpm, BP 102/64 mmHg
- **Physical exam**: diffuse erythema with superficial desquamation, especially in the skin folds, and a positive Nikolsky sign. Mucous membranes are spared.
- **Laboratory studies**: WBC 16,800/mm^3, hgb 9.2 g/dL, platelet count 112,000/mm^3, sodium 128 mmol/L, BUN 48 mg/dL, and creatinine 3.9 mg/dL

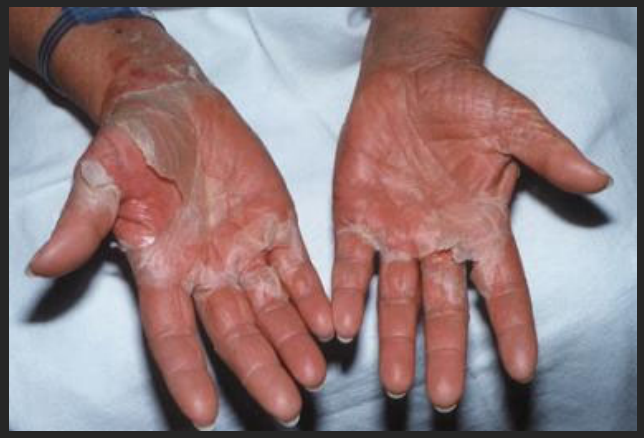


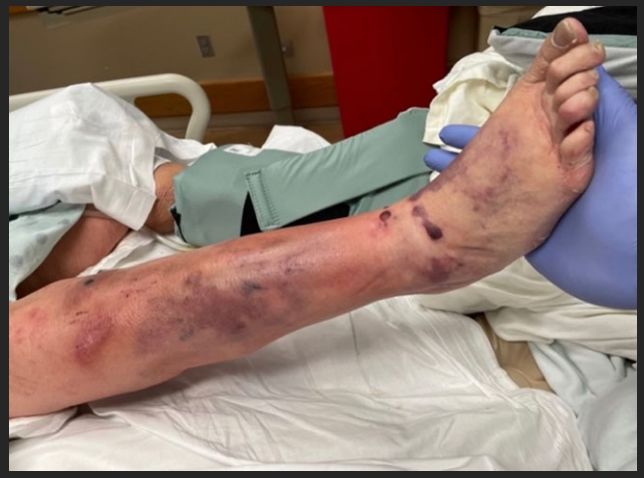


Case 3

A 34-year-old woman presents with fever, diffuse rash, and altered mental status. She's been feeling unwell for two days.

- **VS**: Temp 39.5°C (103.1°F), HR 124 bpm, BP 84/50 mmHg, and RR 26
- **Physical exam**: diffuse erythema resembling a sunburn, particularly on the trunk and extremities, with early signs of desquamation. Mucosal membranes appear injected but intact
- **Laboratory studies**: creatinine 2.6 mg/dL, lactate of 4.1 mmol/L, AST of 112 U/L, and ALT of 98 U/L. Blood cultures are pending

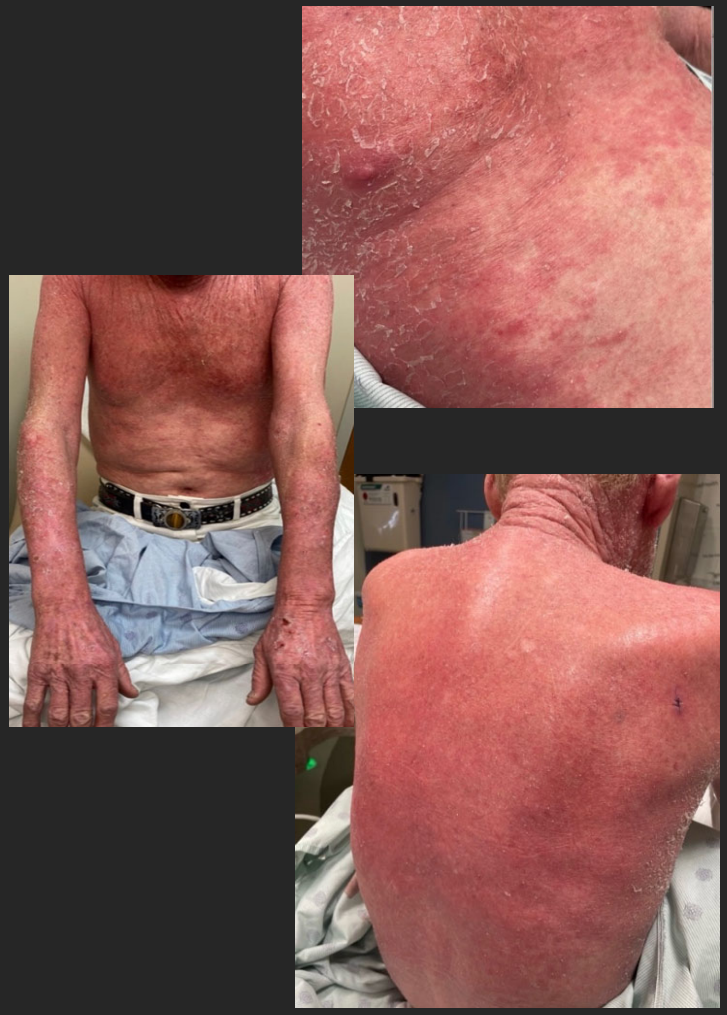




Case 4

A 72-year-old man with a history of psoriasis and hypertension presents with progressive fatigue, fever, intense pruritus and diffuse skin redness. He began feeling unwell a week ago. Recently started on carbamazepine for trigeminal neuralgia.

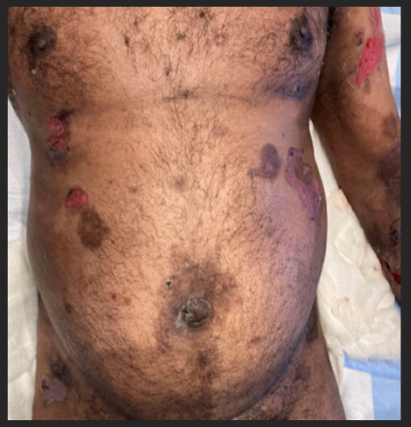
- **VS**: Temp 38.7°C (101.7°F), HR 102 bpm, BP 110/68 mmHg, RR 24
- **Physical exam**: Diffuse erythematous plaques with a few heme-crusted papules involving over 90% BSA with fine scaling and superficial desquamation. Notable cervical and axillary lymphadenopathy, nail dystrophy
- **Laboratory studies**: WBC 13,200/mm^3, creatinine 2.1 mg/dL

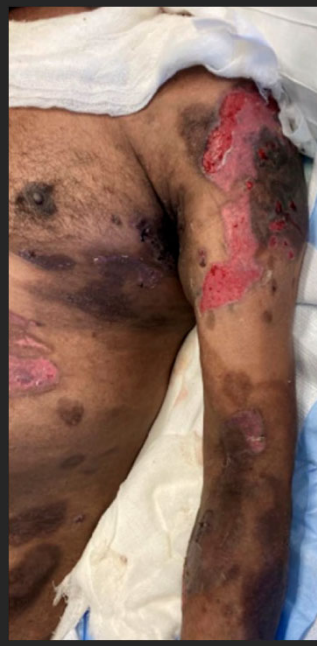


Case 5

A 61-year-old man presents with a two-week history of painful oral ulcers and a rapidly spreading blistering rash. He reports difficulty swallowing, hoarseness, and shortness of breath. He was recently diagnosed with diffuse large B-cell lymphoma.

- **VS:** Temp 38.5°C (101.3°F), HR 118 bpm, BP 95/60 mmHg, RR 24
- **Physical Exam:** Extensive erosions and flaccid blisters on an erythematous base involving the trunk, extremities, and oral mucosa. Positive Nikolsky sign. Conjunctival injection and crusting of the lips noted. No involvement of palms or soles.
- **Laboratory Studies:** WBC 14,500/µL, CRP 60 mg/L, creatinine 1.1 mg/dL
- **Imaging:** Chest CT shows diffuse bronchiolar wall thickening and air trapping suggestive of bronchiolitis obliterans.

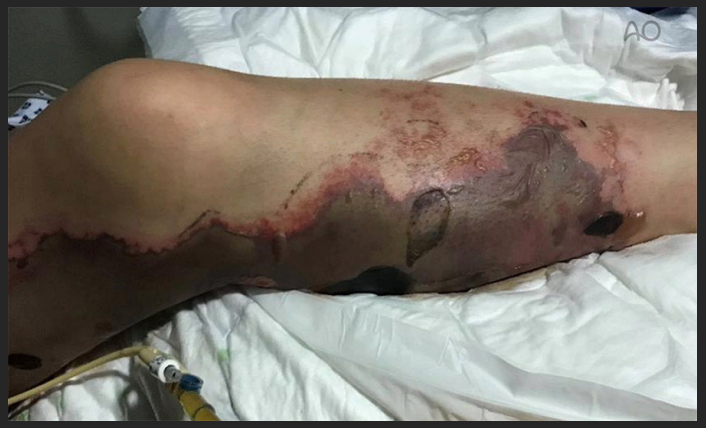




Case 6

A 58-year-old man with history of poorly controlled type 2 diabetes and chronic kidney disease presents with rapidly worsening pain and swelling in his left thigh over the past 24 hours. He reports fever, chills, and severe pain.

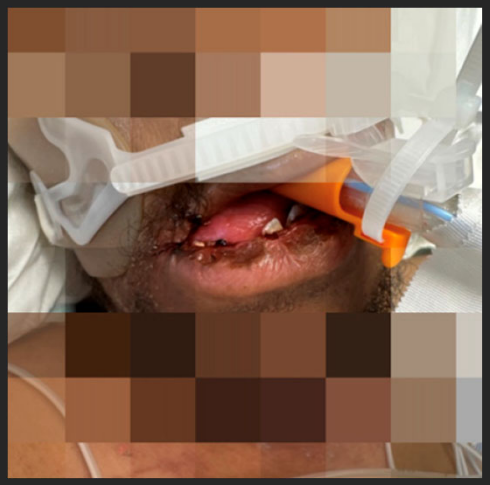
- **VS:** Temp 39.1°C (102.4°F), HR 125 bpm, BP 88/54 mmHg, RR 26
- **Physical Exam:** Left thigh is erythematous, edematous, and tender with areas of ecchymosis and hemorrhagic bullae. Crepitus is noted on palpation. Pain is severe even in areas of minimal visible skin disruption
- **Laboratory Studies:** WBC 18,000/µL, CRP 120 mg/L, creatinine 2.0 mg/dL, lactate 4.5 mmol/L

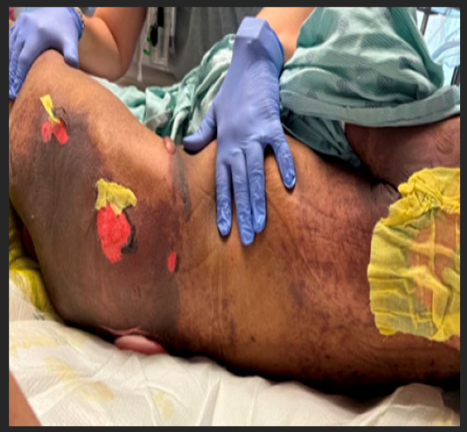


Case 7

A 51-year-old man presents with a 2-day history of fever, malaise, and rapidly spreading painful skin lesions. He was started on cefepime 10 days ago for a urinary tract infection. He now reports severe oral pain, difficulty swallowing, and skin peeling.

- **VS:** Temp 39.3°C (102.7°F), HR 122 bpm, BP 92/58 mmHg, RR 24
- **Physical Exam:** Large areas of dusky, necrotic epidermis with sloughing and desquamation involving the right lower lip, left arm, right leg, and back. + Nikolsky sign. Extensive mucosal involvement of the oral cavity and conjunctiva
- **Laboratory Studies:** WBC 9,800/µL, creatinine 1.5 mg/dL, BSA involvement around 35%

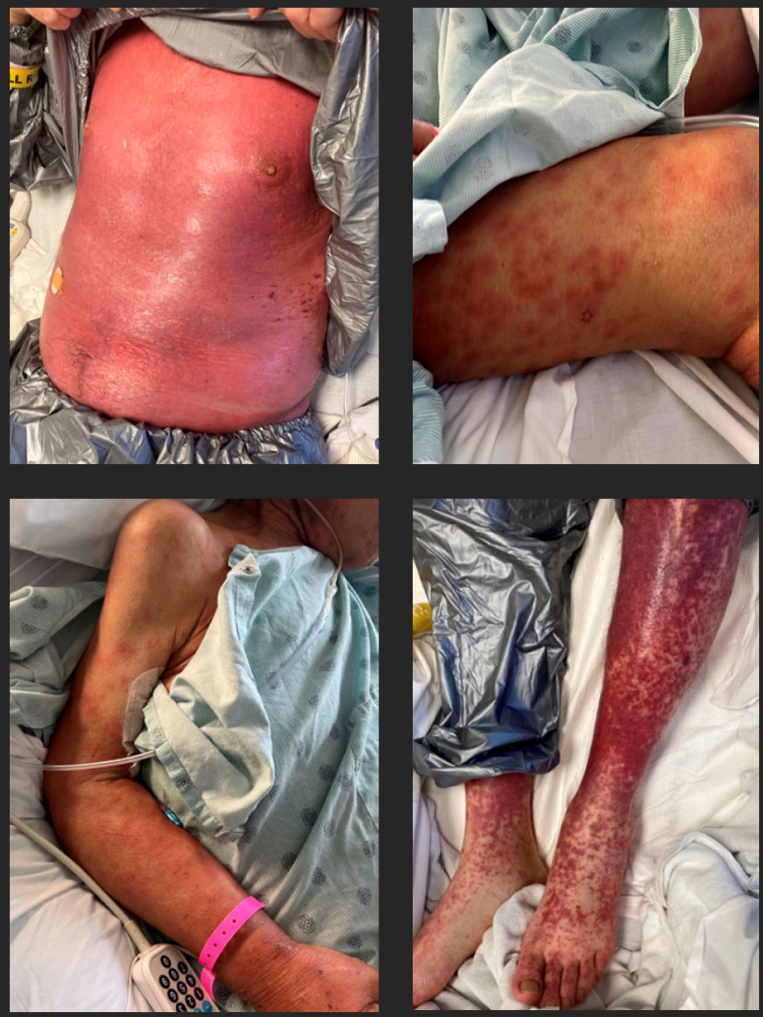




Case 8

A 46-year-old woman presents with a 5-day history of fever, facial swelling, and a widespread itchy rash. 4 weeks ago she was admitted to hospital for management of community acquired pneumonia. She reports feeling fatigued and has noticed dark red patches spreading across her trunk and limbs.

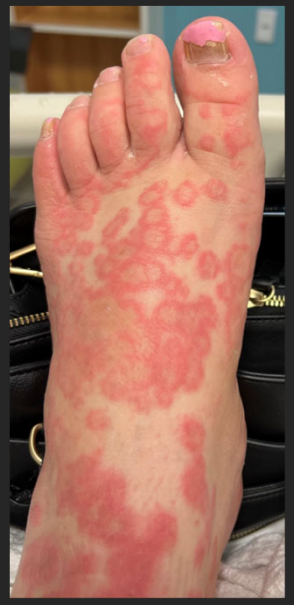
- **VS:** Temp 38.7°C (101.7°F), HR 108 bpm, BP 105/68 mmHg, RR 20
- **Physical Exam:** Diffuse dull erythematous patches with heme-crusted excoriations on the left flank, lower legs, and right arm. Coalescing dark red macules and papules involving over 50% of BSA. Periorbital and facial edema noted. No mucosal involvement.
- **Laboratory Studies:** WBC 14,200/µL with 18% eosinophils, creatinine 1.6 mg/dL, ALT 145 U/L, AST 110 U/L.

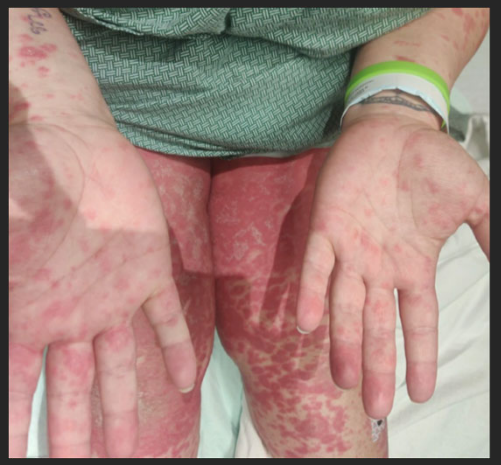


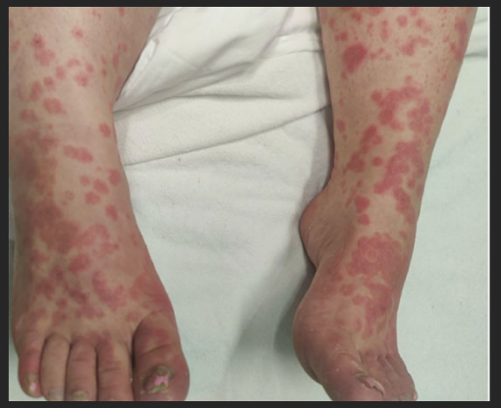
Case 9

A 29-year-old female presents to the emergency department with a 3-day history of fever, sore throat, and a new rash on her hands and feet. She has a history of recurrent herpes simplex virus (HSV) outbreaks and reports a recent episode one week ago.

- **VS:** Temp 38.3°C (100.9°F), HR 102 bpm, BP 118/72 mmHg, RR 18
- **Physical Exam:** Erythematous targetoid papules with central clearing and dusky centers on the bilateral palms, dorsal feet, and lower legs. Some lesions coalescing into plaques. Mild oral mucosal erythema without ulceration.
- **Laboratory Studies:** WBC 9,200/µL, normal renal and liver function. HSV PCR positive.



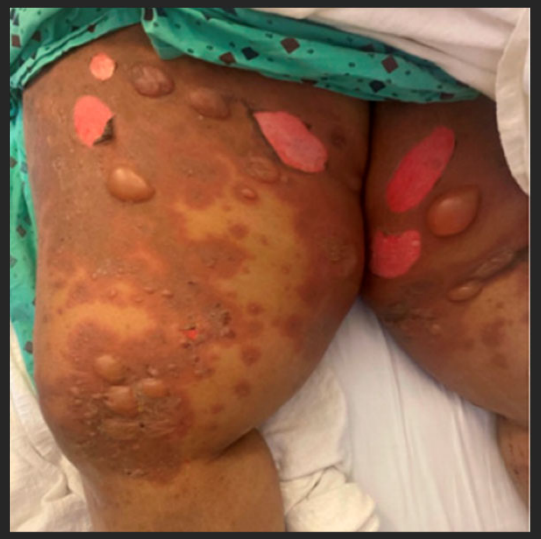


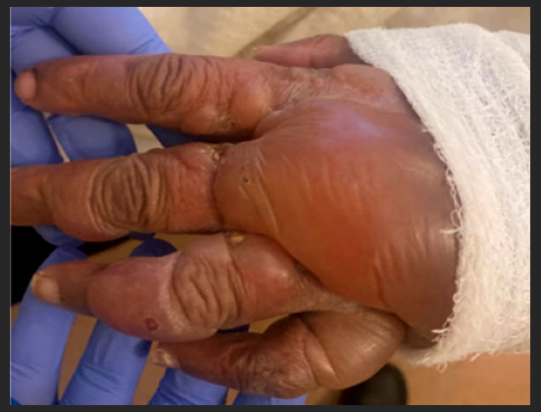


Case 10

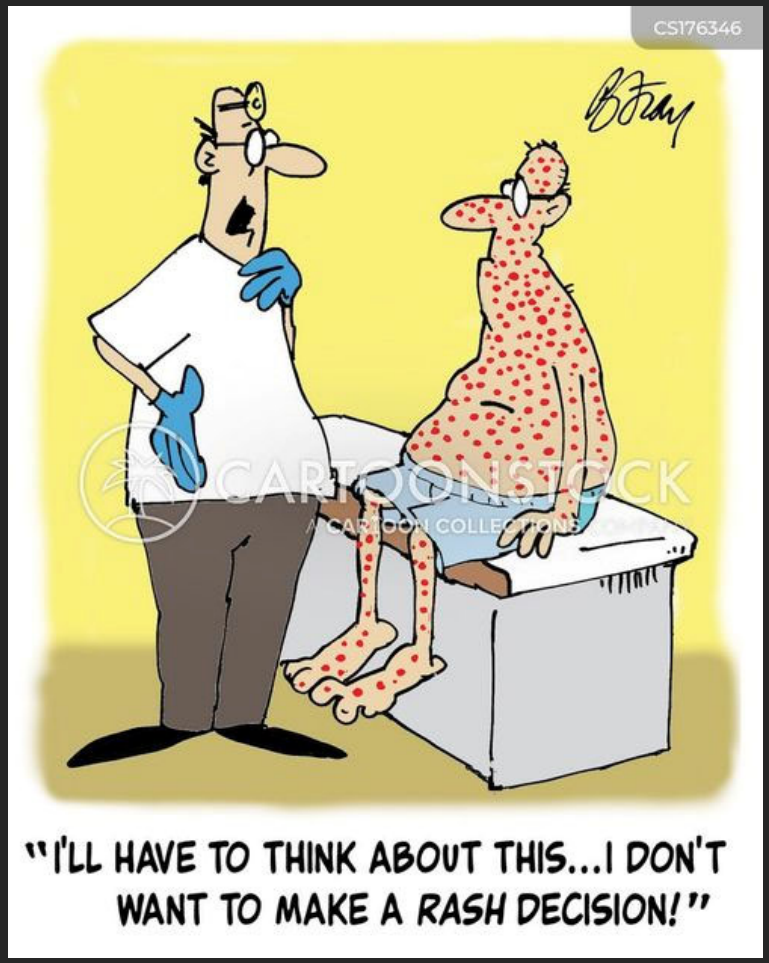
A 55-year-old man presents with a 1-week history of intensely itchy skin and new blister formation. He recently started furosemide for lower extremity edema. He denies mucosal pain or systemic symptoms.

- **VS:** Temp 37.2°C (99°F), HR 88 bpm, BP 132/76 mmHg, RR 16
- **Physical Exam:** Scattered large, tense bullae on an erythematous and urticarial base, admixed with eroded pink plaques on the bilateral lower extremities. A large intact bulla is noted on the dorsal right hand. No mucosal involvement.
- **Laboratory Studies:** WBC 10,500/µL, eosinophils 6%, creatinine 1.0 mg/dL.





Cases Review



Case 1

A 65-year-old female with a history of cirrhosis presents with altered mental status, fever, and hypotension.

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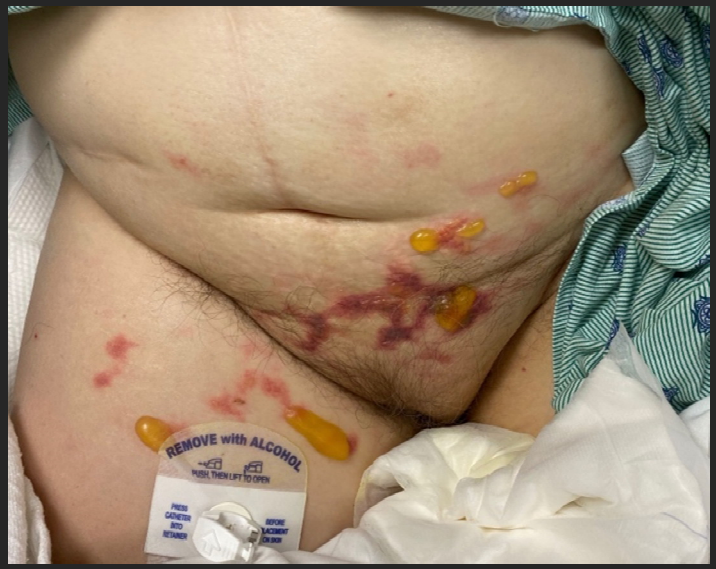
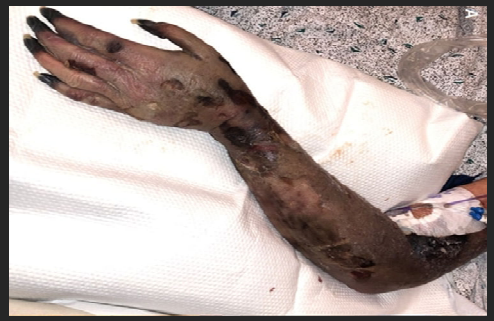
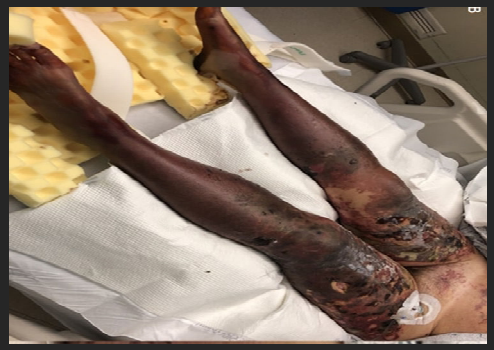


Purpura Fulminans

- **Etiology**: DIC and dermal vascular thrombosis (*gram-negative endotoxin*)
- **Pathophysiology**:
  - Protein C deficiency → microvascular thrombosis
  - Occlusion of dermal vessels → hemorrhagic infarction
- **Clinical Features**:
  - Painful, well-demarcated erythematous macules → hemorrhagic necrosis, vesicles/bullae
  - Rapid progression to full-thickness necrosis in 24–48h
- **Management**:
  - Surgical: Debridement, fasciotomy, amputation if needed
  - Temporary wound coverage: Allografts/xenografts
  - Coagulation support: Protein C concentrate, FFP, anticoagulation
  - Requires burn unit care





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A 58-year-old woman with a history of stage 4 chronic kidney disease and uncontrolled type 2 diabetes presents with fever, malaise, and painful skin changes.

- **VS**: Temp 39.2°C (102.6°F), HR 110 bpm, BP 102/64 mmHg
- **Physical exam**: diffuse erythema with superficial desquamation, especially in the skin folds, and a positive Nikolsky sign. Mucous membranes are spared.
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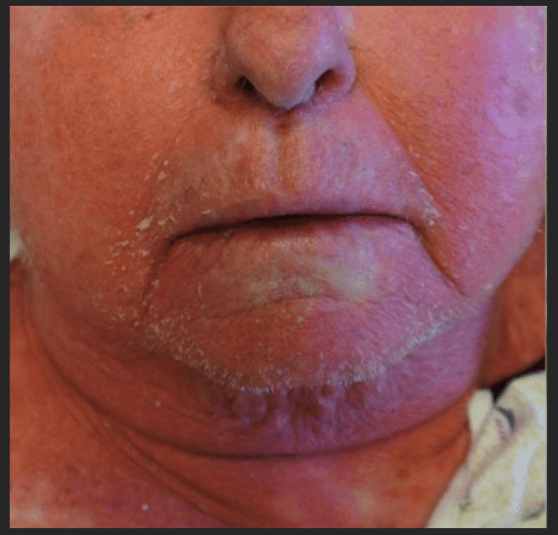
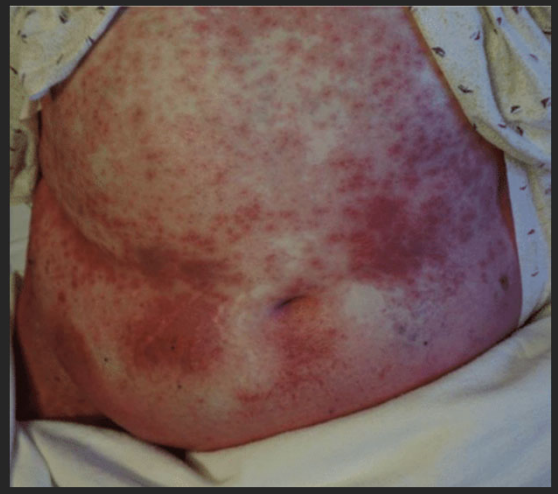
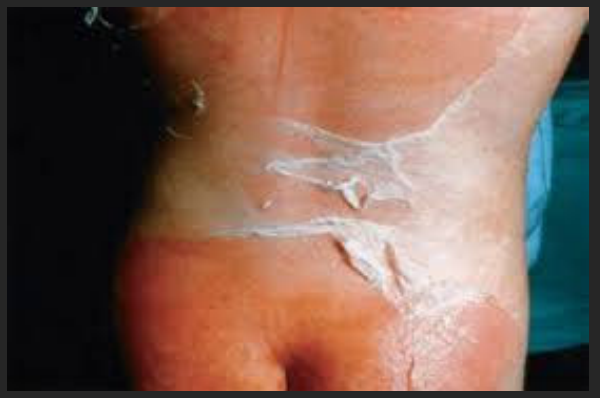
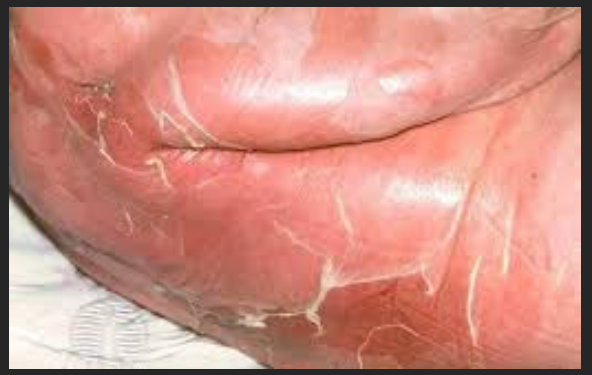




Staphylococcus Scalded Skin Syndrome

- **Etiology**: *S. aureus* epidermolytic toxins → skin denudation
- **Risk factors**: Renal dysfunction, immunosuppression, malignancy
- **Clinical Features**:
  - Starts at skin folds with edema + erythema
  - Progresses to fever, flaccid bullae, superficial desquamation
  - Nikolsky's sign +ve
  - Mucous membranes spared
- **Management**:
  - IV antibiotics, fluids, electrolytes
  - Wound care for peeling skin
  - Requires ICU or burn unit care





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A 34-year-old woman presents with fever, diffuse rash, and altered mental status. She's been feeling unwell for two days.

- **VS**: Temp 39.5°C (103.1°F), HR 124 bpm, BP 84/50 mmHg, and RR 26
- **Physical exam**: diffuse erythema resembling a sunburn, particularly on the trunk and extremities, with early signs of desquamation. Mucosal membranes appear injected but intact
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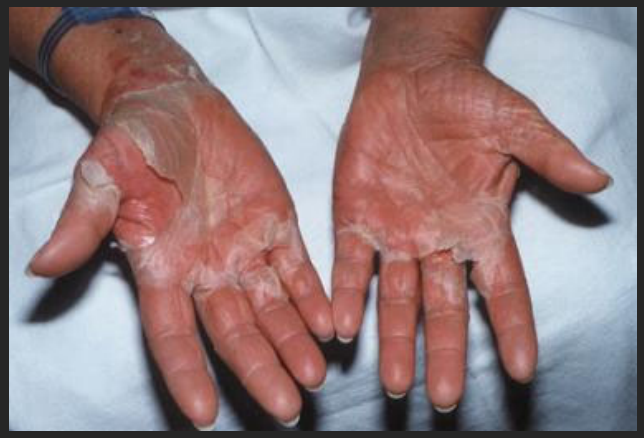
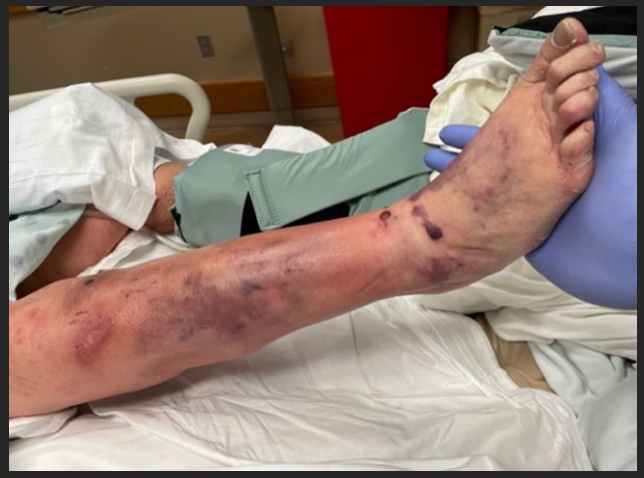
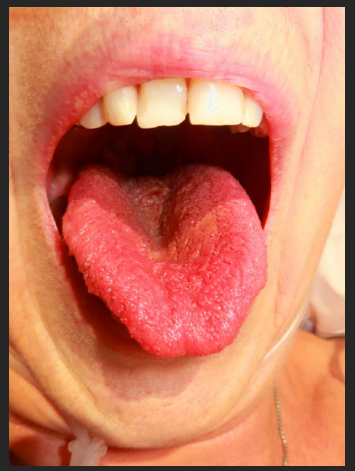
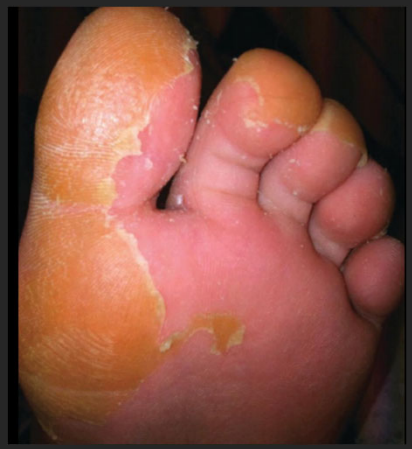




Toxic Shock Syndrome



- **Etiology**: Exotoxins from *Staphylococcus aureus* or *Group A Streptococcus*
- **Pathophysiology**:
  - Toxins act as superantigens → cytokine storm
  - Leads to hypotension, organ failure, hypercoagulability
- **Risk factors**: tampons, nasal packing, surgical wounds
- **Clinical Features**:
  - Fever, diffuse desquamating rash, +/- mucosal involvement
  - Signs of end-organ damage: AKI, transaminitis
- **Management**:
  - Blood cultures, IV antibiotics
  - Consider corticosteroids or IVIG for severe shock
  - Requires ICU-level care



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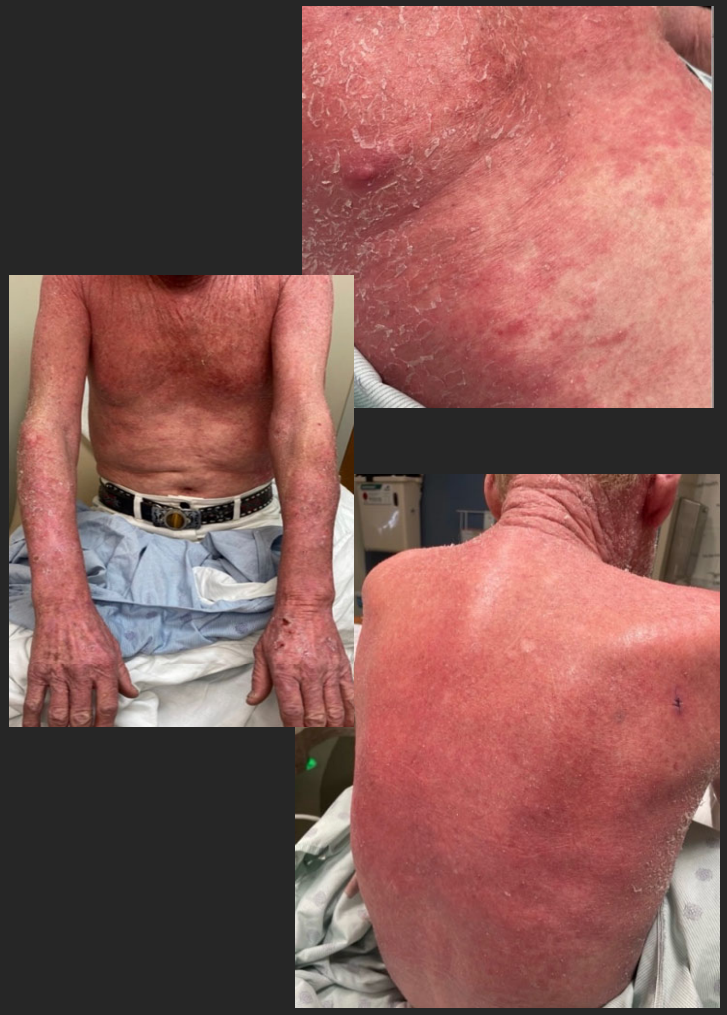
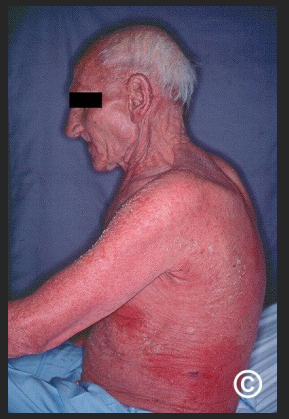
A 72-year-old man with a history of psoriasis and hypertension presents with progressive fatigue, fever, intense pruritis and diffuse skin redness. He began feeling unwell a week ago. Recently started on carbamazepine for trigeminal neuralgia.

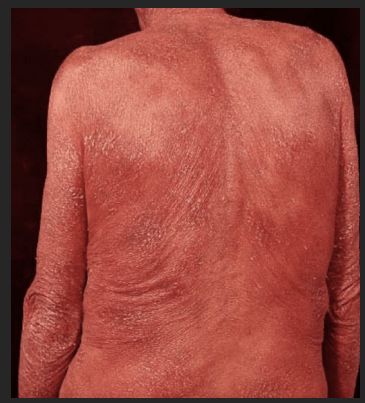
- **VS**: Temp 38.7°C (101.7°F), HR 102 bpm, BP 110/68 mmHg, RR 24
- **Physical exam**: Diffuse erythematous plaques with a few heme-crusted papules involving over 90% BSA with fine scaling and superficial desquamation. Notable cervical and axillary lymphadenopathy, nail dystrophy
- **Laboratory studies**: WBC 13,200/mm^3, creatinine 2.1 mg/dL

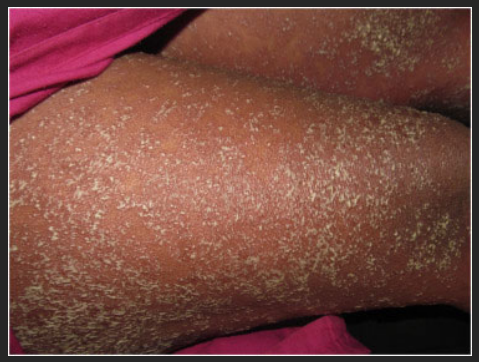


Erythroderma

- **Definition**: Widespread inflammatory skin condition (>80% BSA)
- **Risk factors**: Preexisting dermatoses, drugs (e.g., carbamazepine, penicillin)
- **Clinical Features**:
  - Erythema → exfoliative scaling over 2–6 days
  - Associated with pruritus, fever, fatigue, lymphadenopathy, nail dystrophy
- **Management**:
  - Topical corticosteroids, emollients, wet wraps, anti-pruritics
  - Avoid oral steroids in psoriasis (risk of rebound flare)
  - May require ICU/burn center care







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A 61-year-old man presents with a two-week history of painful oral ulcers and a rapidly spreading blistering rash. He reports difficulty swallowing, hoarseness, and shortness of breath. He was recently diagnosed with diffuse large B-cell lymphoma.

- **VS:** Temp 38.5°C (101.3°F), HR 118 bpm, BP 95/60 mmHg, RR 24
- **Physical Exam:** Extensive erosions and flaccid blisters on an erythematous base involving the trunk, extremities, and oral mucosa. Positive Nikolsky sign. Conjunctival injection and crusting of the lips noted. No involvement of palms or soles
- **Laboratory Studies:** WBC 14,500/µL, CRP 60 mg/L, creatinine 1.1 mg/dL
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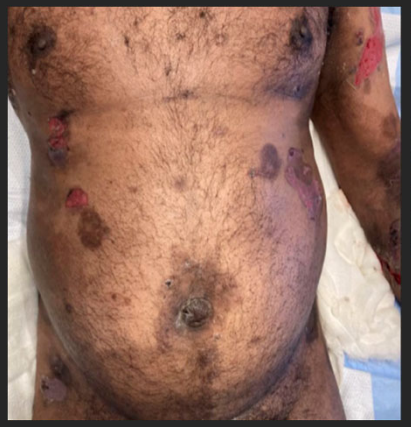
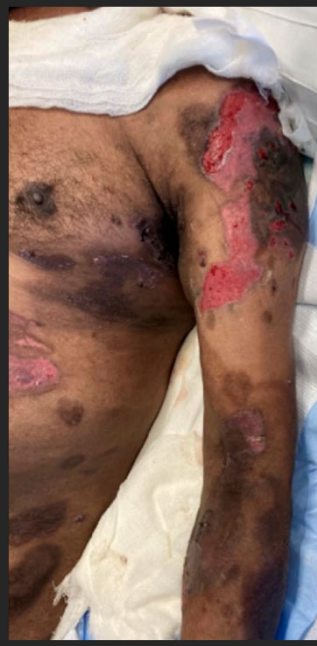
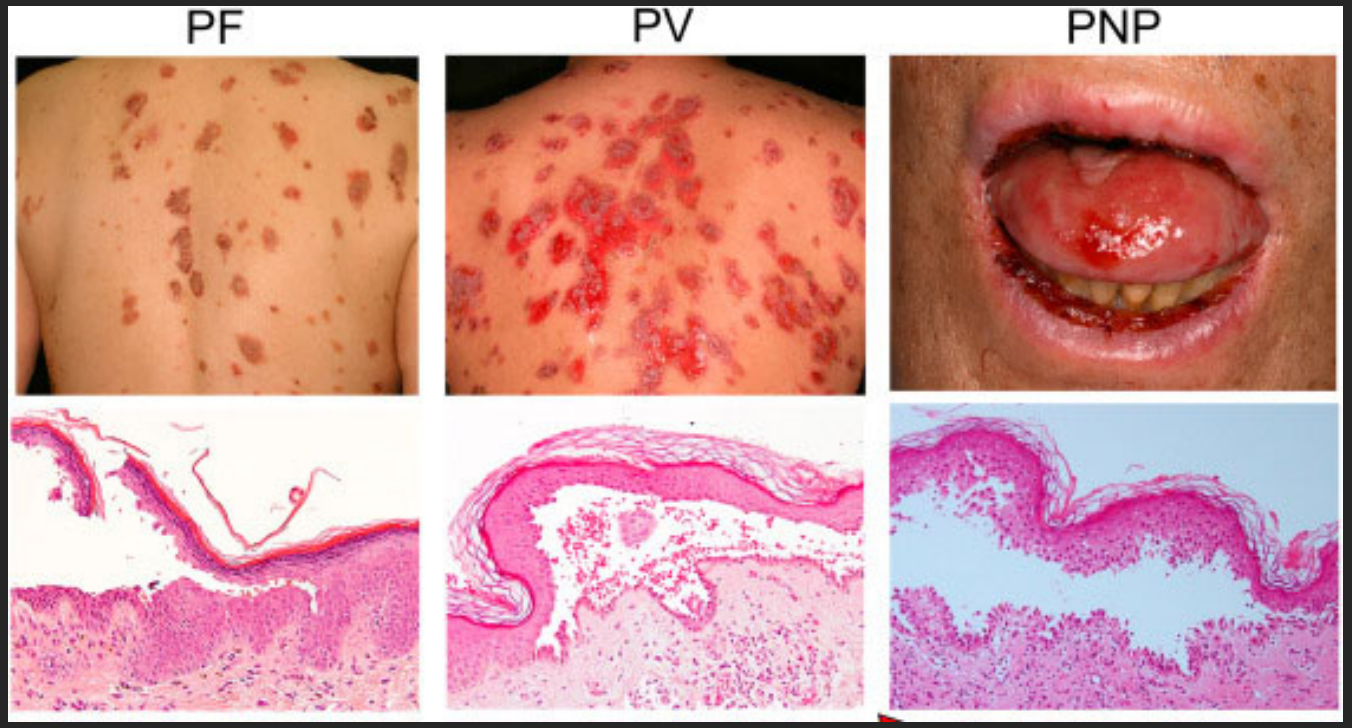




Pemphigus

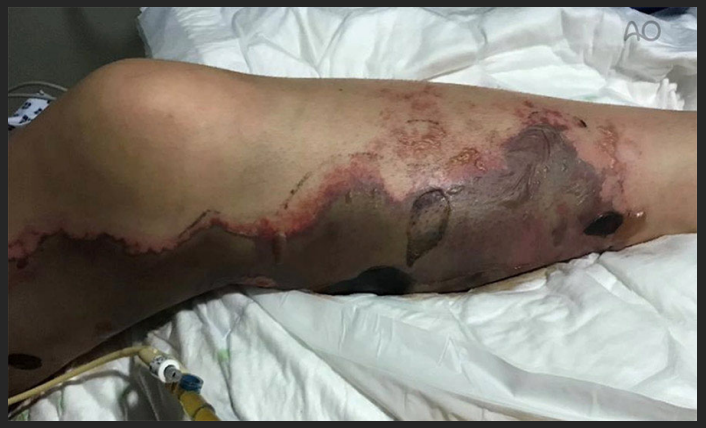
	PEMPHIGUS VULGARIS	PARANEOPLASTIC PEMPHIGUS	PEMPHIGUS FOLIACEUS
Etiology	**Autoimmune**	**Autoimmune + underlying malignancy**	**Autoimmune**
Mucosal Involvement	**+**	**+**	**-**
Skin Involvement	**Often >80%, painful erosions**	**Variable, often severe**	**Scaly, crusted lesions, less extensive**
Associated Conditions	**_**	**Malignancy**	**Often idiopathic**
Mortality	**5–30%**	**>90%**	**Low**
Treatment	**Steroids, rituximab, immunosuppressant**	**Treat malignancy + PV-like regimen**	**Topical steroids**
Level of Care	**ICU, Burn unit**	**ICU, Burn unit**	**Outpatient or medical floor**


PF
PV
PNP

Case 6

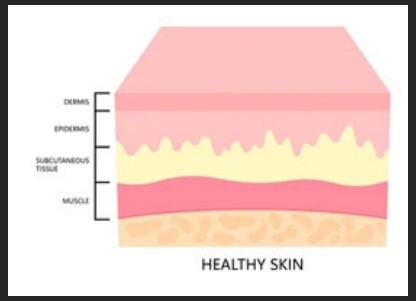
A 58-year-old man with history of poorly controlled type 2 diabetes and chronic kidney disease presents with rapidly worsening pain and swelling in his left thigh over the past 24 hours. He reports fever, chills, and severe pain.

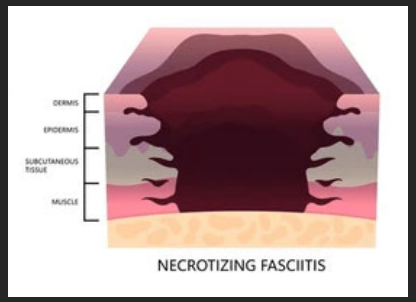
- **VS:** Temp 39.1°C (102.4°F), HR 125 bpm, BP 88/54 mmHg, RR 26
- **Physical Exam:** Left thigh is erythematous, edematous, and tender with areas of ecchymosis and hemorrhagic bullae. Crepitus is noted on palpation. Pain is severe even in areas of minimal visible skin disruption.
- **Laboratory Studies:** WBC 18,000/µL, CRP 120 mg/L, creatinine 2.0 mg/dL, lactate 4.5 mmol/L.



Necrotizing Fasciitis

- **Etiology**: Rapid bacterial invasion of muscle fascia → thrombosis → widespread necrosis
- **Common Organisms**: *Strep*, *Staph*, gram-negative rods, anaerobes
- **Risk factors:** Diabetes, CKD, Alcohol use disorder
- **Clinical Features:**
  - Pain out of proportion to exam
  - Hemorrhagic bullae, erythema, ecchymosis, +/- crepitus
- **Diagnosis**: Clinical suspicion, LRINEC score may aid screening, confirm by surgical exploration
- **Management**:
  - Surgical emergency → urgent debridement
  - Broad-spectrum antibiotics (Carbapenem or pip-tazo + Vancomycin or daptomycin (MRSA) + Clindamycin (toxin suppression))
  - Requires ICU-level of care

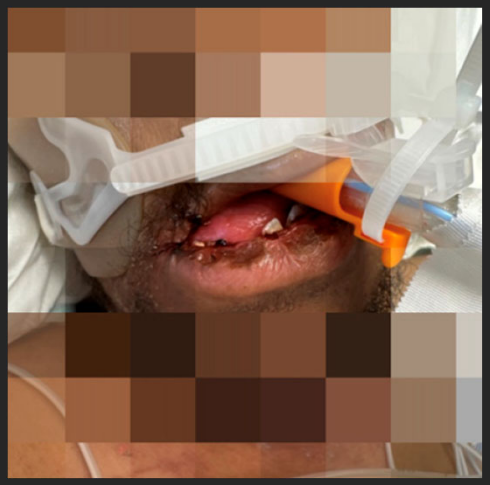


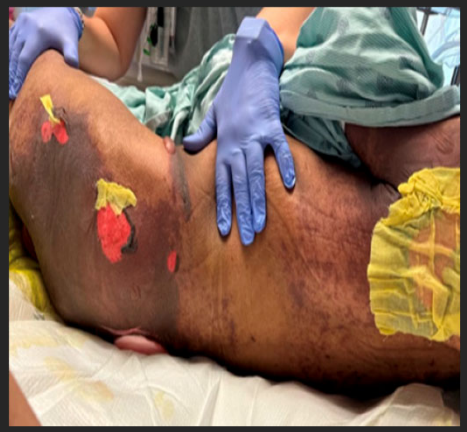


Case 7

A 51-year-old man presents with a 2-day history of fever, malaise, and rapidly spreading painful skin lesions. He was started on cefepime 10 days ago for a urinary tract infection. He now reports severe oral pain, difficulty swallowing, and skin peeling.

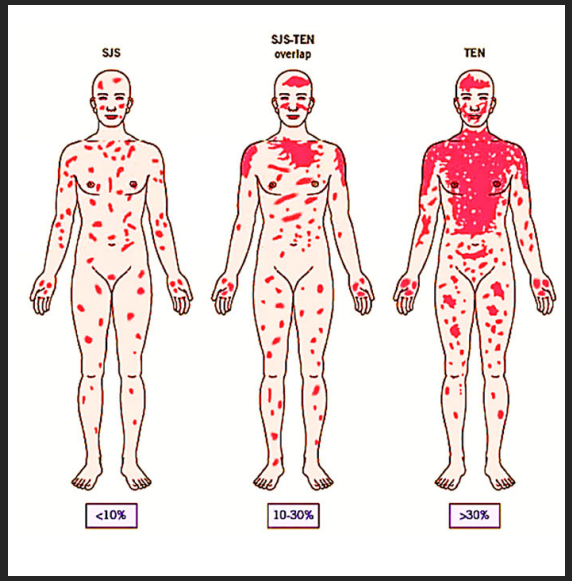
- **VS:** Temp 39.3°C (102.7°F), HR 122 bpm, BP 92/58 mmHg, RR 24
- **Physical Exam:** Large areas of dusky, necrotic epidermis with sloughing and desquamation involving the right lower lip, left arm, right leg, and back. + Nikolsky sign. Extensive mucosal involvement of the oral cavity and conjunctiva
- **Laboratory Studies:** WBC 9,800/µL, creatinine 1.5 mg/dL, BSA involvement around 35%





Stevens-Johnson Syndrome & Toxic Epidermal Necrolysis

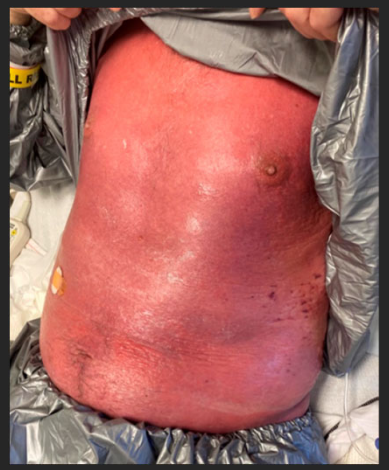
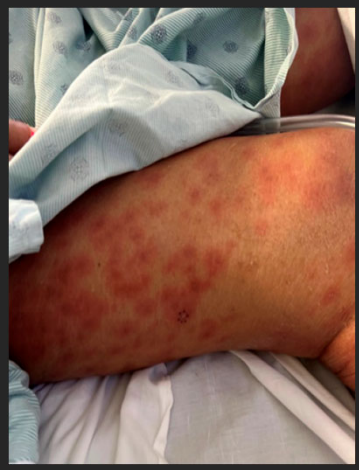
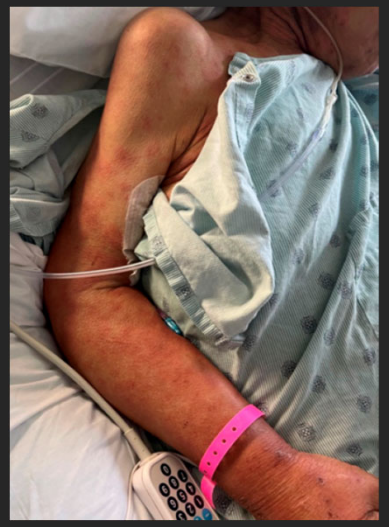
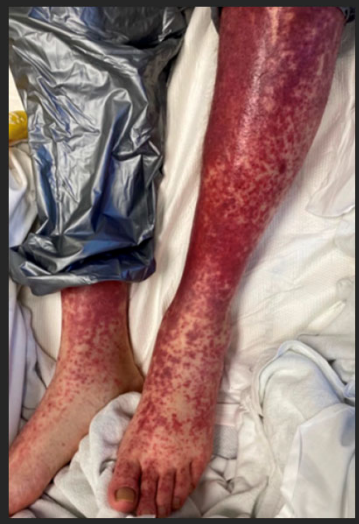
- **Etiology**: Severe Type IV hypersensitivity reaction, usually drug-induced
- **Triggers**: NSAIDs, allopurinol, anticonvulsants, sulfonamides, antiretrovirals or Mycoplasma pneumoniae
- **Onset**: 4–28 days after drug initiation
- **Clinical Features**:
  - Mucosal involvement: oral, ocular, genital
  - Epidermal detachment, painful rash, blistering
  - Risk of sepsis, pneumonia, hypovolemic shock
- **Management**:
  - Stop offending agent immediately
  - Supportive care + ophthalmology/gynecology consults
  - Consider IV steroids + IVIG in severe cases
  - Requires Burn unit care



Case 8

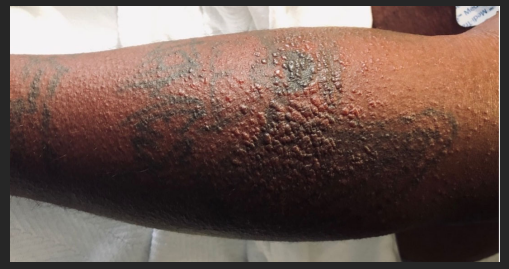
A 46-year-old woman presents with a 5-day history of fever, facial swelling, and a widespread itchy rash. 4 weeks ago she was admitted to hospital for management of community acquired pneumonia. She reports feeling fatigued and has noticed dark red patches spreading across her trunk and limbs.

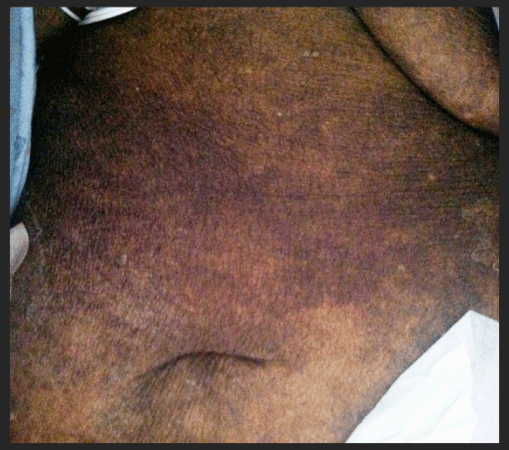
- **VS:** Temp 38.7°C (101.7°F), HR 108 bpm, BP 105/68 mmHg, RR 20
- **Physical Exam:** Diffuse dull erythematous patches with heme-crusted excoriations on the left flank, lower legs, and right arm. Coalescing dark red macules and papules involving over 50% of BSA. Periorbital and facial edema noted. No mucosal involvement.
- **Laboratory Studies:** WBC 14,200/µL with 18% eosinophils, creatinine 1.6 mg/dL, ALT 145 U/L, AST 110 U/L.

Drug Reaction with Eosinophilia and Systemic Symptoms Syndrome (DRESS)

- **Etiology**: Type IV drug-induced hypersensitivity reaction
- **Triggers**: Allopurinol, vancomycin, carbamazepine, sulfamethoxazole
- **Onset**: 3–6 weeks after drug exposure; may worsen after discontinuation
- **Clinical Features**:
  - Polymorphous rash (often morbilliform), facial edema ~ 50% BSA
  - Visceral Involvement: liver, kidneys, heart
- **Diagnosis**: Clinical + DRESS validation score (RegiSCAR)
- **Management**:
  - Mild: Topical steroids, oral antihistamines
  - Severe: Systemic corticosteroids
  - Requires ICU/burn unit level of care

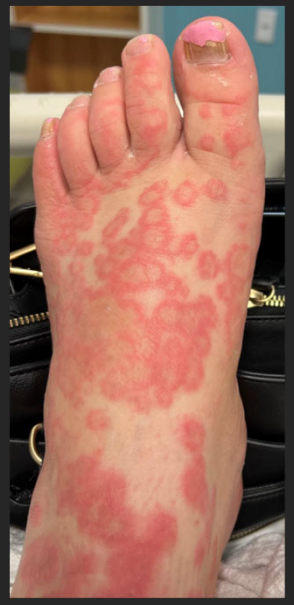


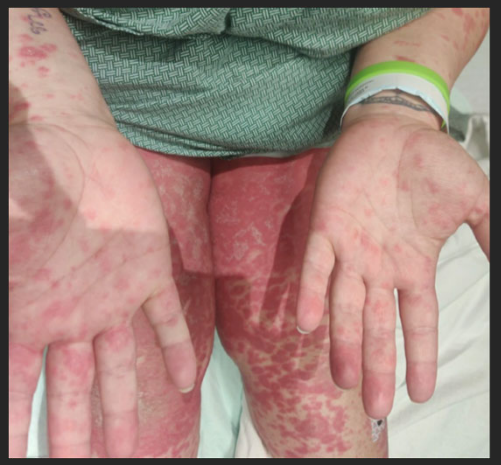


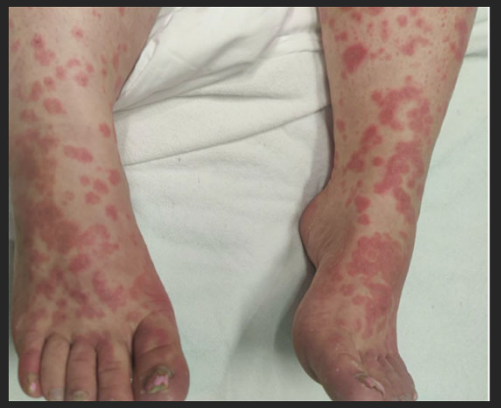
Case 9

A 29-year-old female presents to the emergency department with a 3-day history of fever, sore throat, and a new rash on his hands and feet. She has a history of recurrent herpes simplex virus (HSV) outbreaks and reports a recent episode one week ago.

- **VS:** Temp 38.3°C (100.9°F), HR 102 bpm, BP 118/72 mmHg, RR 18
- **Physical Exam:** Erythematous targetoid papules with central clearing and dusky centers on the bilateral palms, dorsal feet, and lower legs. Some lesions coalescing into plaques. Mild oral mucosal erythema without ulceration.
- **Laboratory Studies:** WBC 9,200/µL, normal renal and liver function. HSV PCR positive.

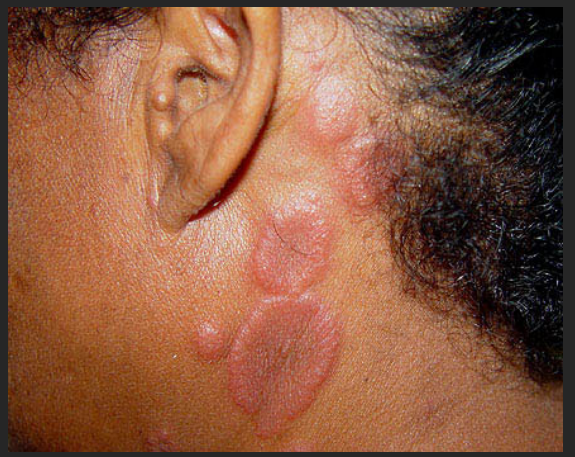


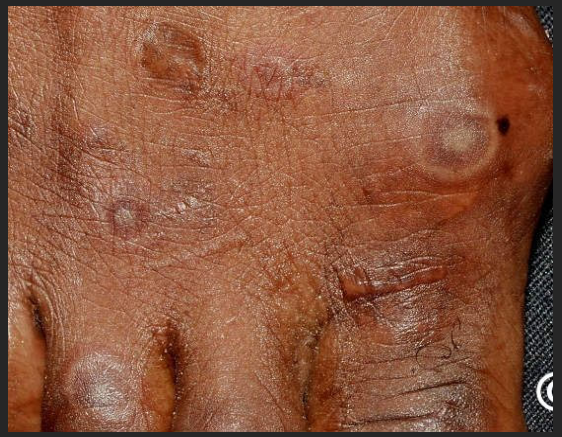




Erythema Multiforme

- **Etiology**: Immune-mediated reaction, triggered by: HSV, *Mycoplasma pneumoniae*, or medications
- **Clinical Features**:
  - Symmetric target lesions, typically on extremities
  - +/- mucosal involvement (oral, ocular, genital)
  - Less systemic involvement than SJS/TEN
- **Clinical Features**: Diffuse target lesions
- **Management**:
  - Mild: Topical corticosteroids, antihistamines
  - HSV-associated EM: Add antivirals

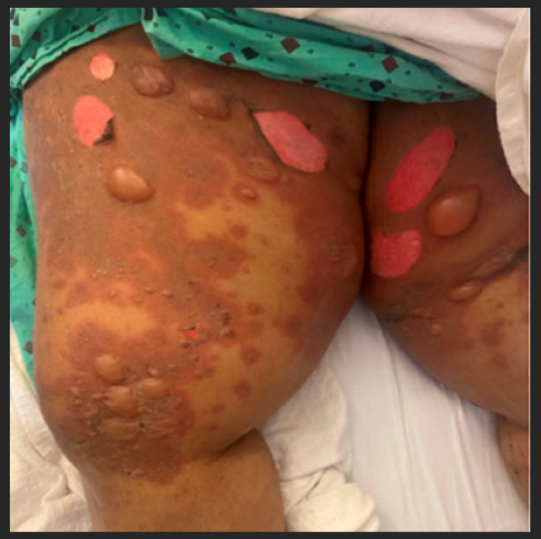


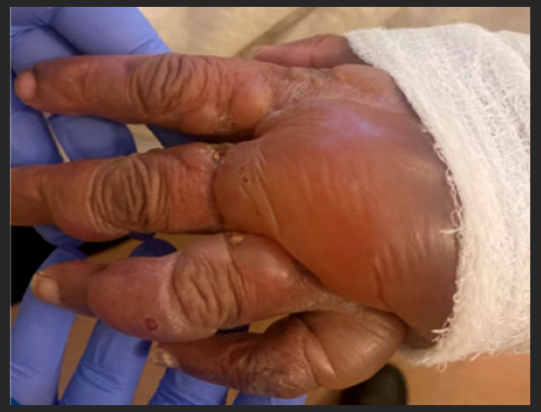


Case 10

A 55-year-old man presents with a 1-week history of intensely itchy skin and new blister formation. He recently started furosemide for lower extremity edema. He denies mucosal pain or systemic symptoms.

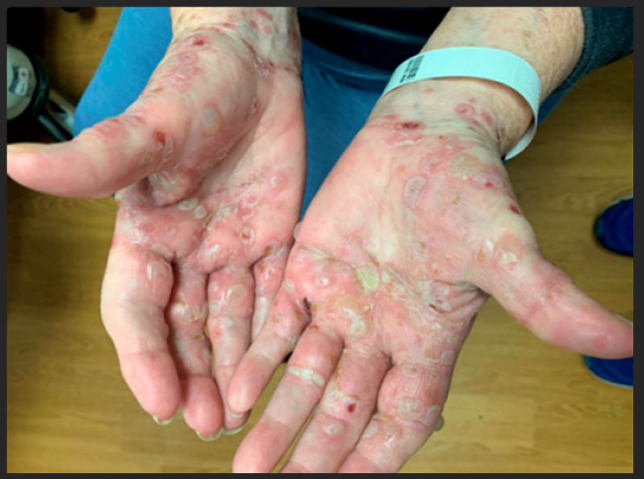
- **VS:** Temp 37.2°C (99°F), HR 88 bpm, BP 132/76 mmHg, RR 16
- **Physical Exam:** Scattered large, tense bullae on an erythematous and urticarial base, admixed with eroded pink plaques on the bilateral lower extremities. A large intact bulla is noted on the dorsal right hand. No mucosal involvement.
- **Laboratory Studies:** WBC 10,500/µL, eosinophils 6%, creatinine 1.0 mg/dL.

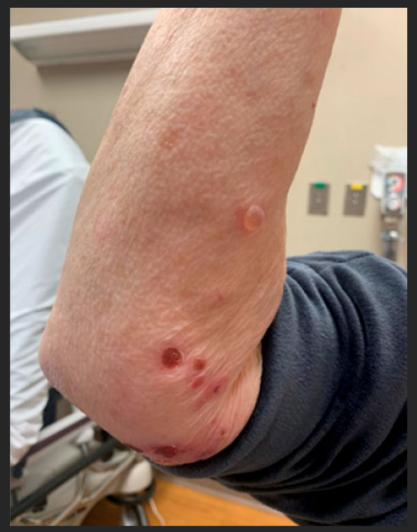


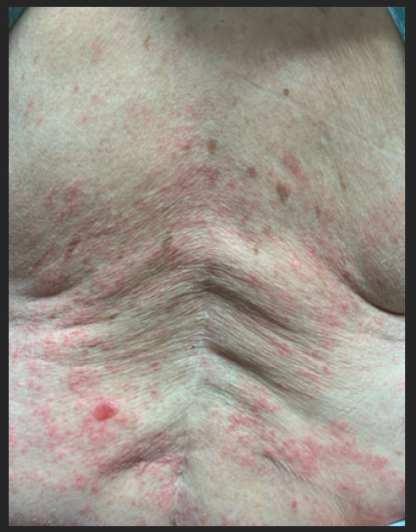


Bullous Pemphigoid

- **Etiology:** Autoantibodies against hemi-desmosomal proteins (BP180, BP230) → loss of dermo-epidermal adhesion
- **Clinical Features:**
  - Pruritic, nonpainful, tense bullae on erythematous or urticarial plaques (often trunk, extremities, axillae, groin)
  - Mucosal involvement uncommon (10–30%)
- **Management:**
  - Topical/systemic corticosteroids
  - +/- doxycycline, dapsone, or steroid-sparing immunosuppressants
  - Often requires outpatient or general floor with dermatology consult



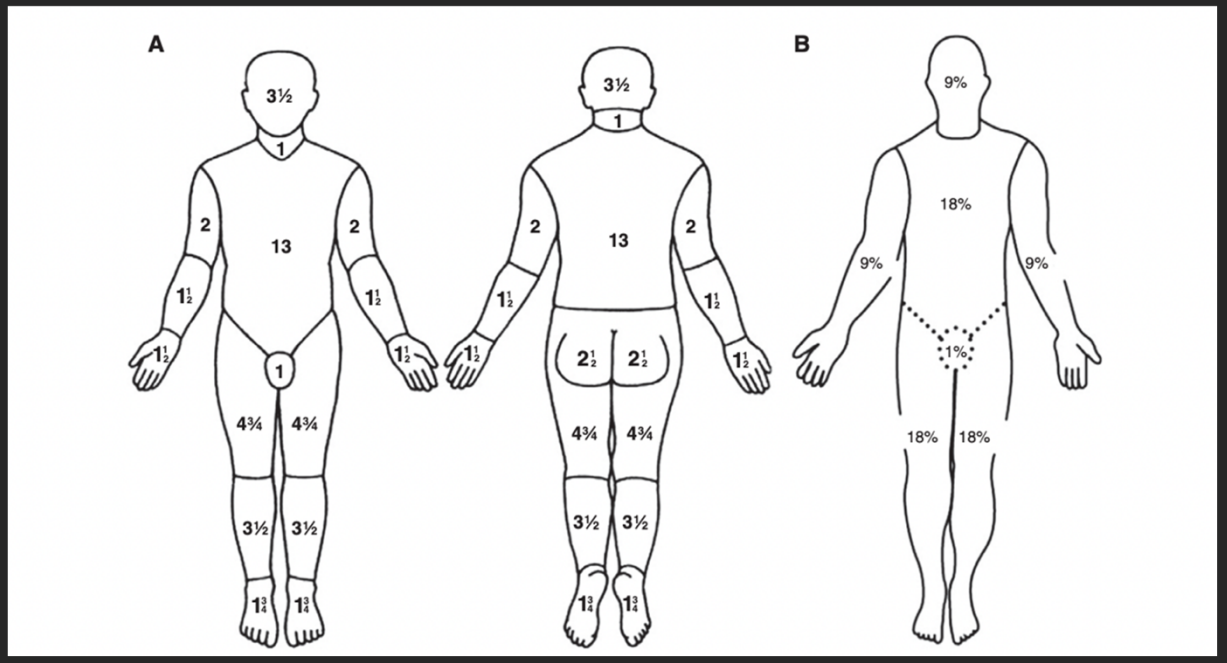




Criteria for transfer of patients with non-burn skin emergencies to a burn center

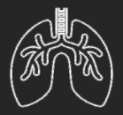
	Triage recommendations	Comments
>25% BSA Detachment +/- Airway involvement or ICU indications	Admit to burn unit	Severe cases requiring specialized care and monitoring
<25% BSA Detachment + Airway involvement or ICU indications	Admit to ICU with burn consult	Includes patients with systemic complications or rapid clinical deterioration
<25% BSA Detachment + No airway involvement or ICU indications	Admit to hospitalist service with burn consult	Close monitoring is essential to detect and respond to any worsening

Defining TBSA



A General Approach to Non-burn Skin Emergencies

Initial Assessment



Airway Management

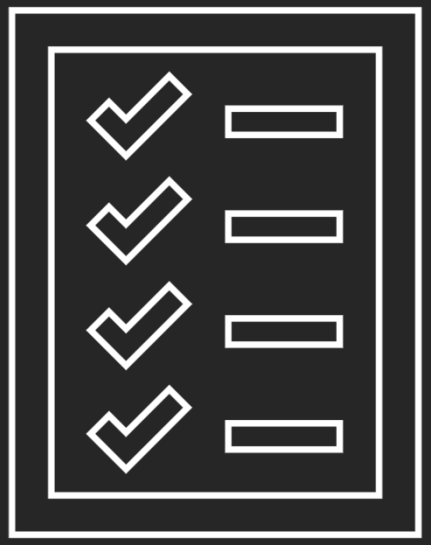
Fluid Resuscitation

Nutritional Considerations

Impaired Thermoregulation

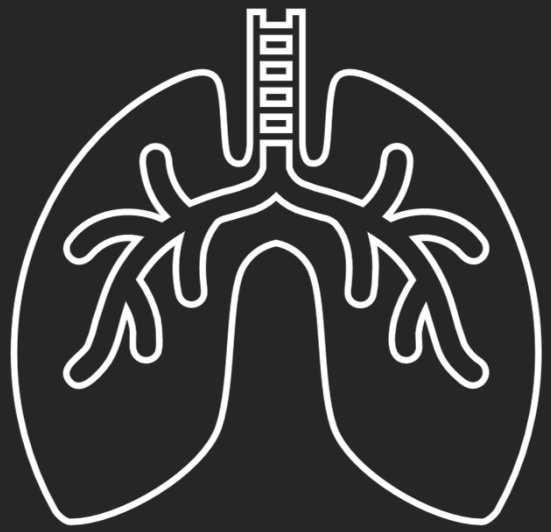
Wound care

Initial Assessment



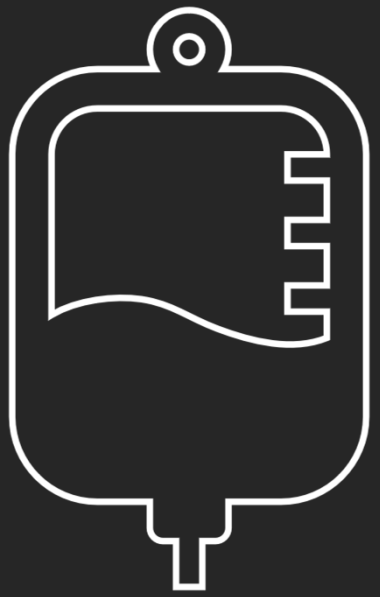
- Onset, progression, distribution
- BSA involvement
- Mucosal involvement, systemic symptoms
- Recent exposures: medications, infections, travel
- Comorbidities
- Stop all nonessential medications

Airway Management



- Significant otolaryngological involvement
- Extensive BSA detachment (> 70%)
- Rapid BSA detachment progression (15% over 2 d)
- Bronchial epithelial lesions
- Neurologic conditions affecting airway protection

Fluid Resuscitation



- Normal skin loss: ~400 mL/day
- >50% BSA loss: up to 4 L/day
- Non-burn skin failure requires ~30% less fluid than burns
- Preferred fluid: crystalloids > colloids

Nutritional Considerations

- Initial energy goal: 1,500–2,000 kcal/day
  ↑ Increase by 500 kcal/day up to 3,500–4,000 kcal/day
- If PO tolerated: High-protein enteral nutrition (2–3 g/kg/day)
- If PO not tolerated: Initiate tube feeds

Impaired Thermoregulation

- Maintain ambient temperature ~30°C
- Avoid external warming devices on denuded skin
- Use moist wound dressings

Wound Care

- Goal: Prevent infection, minimize trauma, promote healing
- Stepwise approach:
  1. Gentle cleansing
  2. Apply primary dressing
  3. Cover with absorbent secondary dressing

Thank you!

Scan QR code to read the full paper!