
PRESSURE ULCER/INJURY RECURRENCE

CLINICAL GUIDE FOR ASSESSING NUTRITIONAL DEFICIENCIES THROUGH PHYSICAL SIGNS



This guide offers a structured approach for healthcare professionals to identify physical signs of nutritional deficiencies and conduct comprehensive clinical assessments.

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1. Protein deficiency

Clinical signs

- Dry, flaky skin
- Depigmentation or discoloration (e.g., Kwashiorkor in severe cases)
- Poor wound healing
- Oedema (swelling, especially in lower extremities due to low albumin).

Assessment approach

- Check for signs of muscle wasting and generalised oedema
- Assess wound healing status (slow healing = possible protein deficiency)
- Review dietary intake of protein sources (meat, fish, eggs, dairy, legumes)
- Consider serum albumin and prealbumin tests for protein status.

2. Vitamin A deficiency

Clinical signs

- Dry, rough, scaly skin (xerosis)
- Follicular hyperkeratosis (gooseflesh-like bumps, especially on arms and thighs)
- Increased risk of infections (due to compromised skin barrier).

Assessment approach

- Inspect skin for keratinized papules
- Check for night blindness (Vitamin A also affects vision)
- Review dietary intake of orange and yellow vegetables, liver, dairy, and fish oils
- Consider serum retinol levels.

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3. Vitamin B complex deficiencies

B2 (Riboflavin) deficiency

Clinical signs

- Cracks at the corners of the mouth (angular cheilitis)
- Seborrheic dermatitis-like rash, especially around the nose and mouth
- Glossitis (swollen, reddened tongue).

Assessment approach

- Examine mucous membranes for inflammation
- Ask about burning sensation in the mouth
- Check dietary intake of milk, eggs, green leafy vegetables, whole grains.

B3 (Niacin) deficiency – pellagra

Clinical signs

- Dermatitis in sun-exposed areas (reddened, hyperpigmented, scaly rash)
- Casal's necklace (dark, scaling rash around the neck).

Assessment approach

- Check for the 3 D's of Pellagra: dermatitis, diarrhea, dementia
- Review dietary intake of meat, poultry, fish, peanuts, and fortified grains
- Consider urinary N-methyl nicotinamide levels.

B6 (Pyridoxine) deficiency

Clinical signs

- Seborrheic dermatitis-like rash
- Cheilitis (cracks in lips)
- Glossitis (red tongue with burning sensation).

Assessment approach

- Assess neurological symptoms (irritability, depression, confusion)
- Review dietary intake of poultry, bananas, potatoes, fortified cereals
- Check serum pyridoxal phosphate levels.

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B7 (Biotin) deficiency

Clinical signs

- Scaly red rash around the eyes, nose, and mouth
- Hair thinning and loss (alopecia).

Assessment approach

- Check for neurological symptoms (depression, hallucinations, numbness)
- Review dietary intake of eggs, nuts, whole grains, dairy
- Consider biotin levels in blood tests.

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4. Vitamin C deficiency (Scurvy)

Clinical signs

- Fragile skin with easy bruising
- Petechiae (tiny red spots due to capillary fragility)
- Corkscrew hairs and follicular hyperkeratosis
- Slow wound healing.

Assessment approach

- Look for bleeding gums, loose teeth, joint pain
- Review dietary intake of citrus fruits, bell peppers, leafy greens, tomatoes
- Consider plasma ascorbic acid levels.

5. Vitamin D deficiency

Clinical signs

- Dry, thin skin
- Increased risk of eczema, psoriasis, and infections
- Delayed wound healing.

Assessment approach

- Review sun exposure and dietary intake of fortified dairy, fatty fish, egg yolks
- Consider serum 25-hydroxyvitamin D levels.

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6. Vitamin E deficiency

Clinical signs

- Dry, scaly skin
- Poor wound healing
- Neurological symptoms (tingling, loss of coordination).

Assessment approach

- Review dietary intake of nuts, seeds, vegetable oils
- Consider plasma alpha-tocopherol levels.

7. Vitamin K deficiency

Clinical signs

- Easy bruising and prolonged bleeding
- Purpura (purple skin discoloration)
- Petechiae (tiny pinpoint haemorrhages).

Assessment approach

- Check for prolonged clotting times (prothrombin time, partial thromboplastin time, international normalised ratio)
- Review dietary intake of leafy greens, fermented foods, fish
- Consider Vitamin K1 levels.

8. Iron deficiency (Anaemia)

Clinical signs

- Pale skin (pallor)
- Koilonychia (spoon-shaped nails)
- Angular cheilitis.

Assessment approach

- Look for fatigue, dizziness, brittle nails
- Consider, iron saturation levels, serum ferritin, haemoglobin, and transferrin saturation.

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9. Zinc deficiency

Clinical signs

- Eczema-like rash (around mouth, eyes, anus)
- Delayed wound healing
- Hair thinning or loss.

Assessment approach

- Review diarrhoea, poor appetite, immune dysfunction
- Consider serum zinc levels. 15.

10. Essential fatty acid deficiency (Omega-3 & Omega-6 deficiency)

Clinical signs

- Scaly, rough skin (dermatitis)
- Increased risk of skin infections
- Follicular keratosis (chicken skin texture).

Assessment approach

- Review dietary intake of fatty fish, flaxseeds, nuts, vegetable oils
- Consider plasma fatty acid profile.

Summary table for quick reference

Deficiency	Clinical signs
Protein	Flaky skin, depigmentation, poor healing, oedema
Vitamin A	Dry skin, follicular hyperkeratosis, infections
B2 (Riboflavin)	Cheilitis, seborrheic rash, glossitis
B3 (Niacin)	Pellagra (dermatitis in sun-exposed areas)
B6 (Pyridoxine)	Seborrheic rash, cheilitis, glossitis
B7 (Biotin)	Red scaly rash, hair loss
Vitamin C	Fragile skin, petechiae, corkscrew hairs
Vitamin D	Dry skin, infections, poor healing
Vitamin E	Dry scaly skin, slow healing
Vitamin K	Easy bruising, purpura, petechiae

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Deficiency	Clinical signs
Iron	Pale skin, koilonychia, angular cheilitis
Zinc	Eczema-like rash, delayed healing, hair loss
Essential Fatty Acids	Scaly skin, infections, keratosis

If you notice any of these signs whilst observing the patient, contact the patient's physician and dietitian.

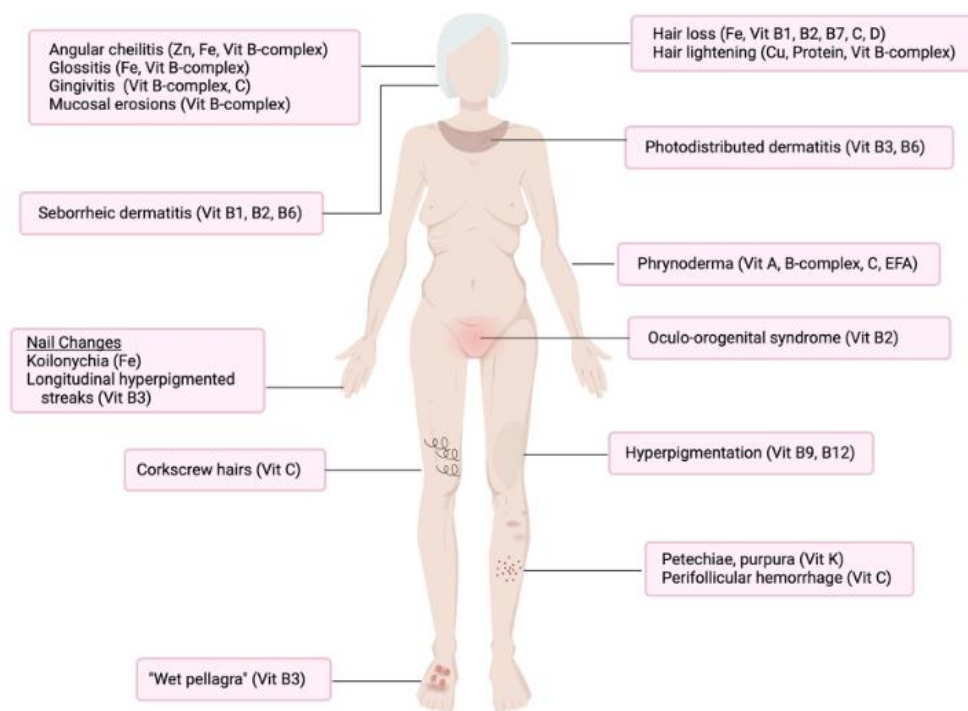


Figure 1. Key skin findings of nutritional deficiencies and select differential diagnoses. Abbreviations: Vit, vitamin; EFA, essential fatty acid, Cu, copper; Fe, iron; Zn, zinc. Created with BioRender.com. Picture from: Vol.:(0123456789) Current Geriatrics Reports (2024) 13:189–199. <https://doi.org/10.1007/s13670-024-00425-8>. Published under CC-BY License 4.0.