

# General physical examination

INTRODUCTORY COURSE 2024

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# Greetings

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I request the following in my lectures:

1. You can interrupt me for questions by raising your hand.

# General principles of physical examination

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- Your physical assessment of patients begins as soon as you see them.
- Your ability to perform a clinical examination can only be improved by frequent bedside practice.
- You can imagine:
  - The history taking as a polite smart interrogation.
  - The physical examination as an investigation; searching for clues to find the disease.

# Preparing for physical examination

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- Always introduce yourself to the patient, shake hands (*which may provide diagnostic clues*) and seek permission to conduct the consultation.
- Make sure you have the **relevant equipment available** and that you **have observed local hand hygiene policies**.
- Privacy is essential when assessing a patient.
- At the very least, ensure screens or curtains are fully closed around a ward bed.

# Preparing for physical examination

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- Ask for a chaperone where appropriate to prevent misunderstandings and to provide support and encouragement for the patient.

# Equipment required for a full examination

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- Disposable gloves.
- Face mask.
- Watch (seconds).
- Stethoscope.
- Torch.
- Measuring tape.
- Tendon hammer.

- Tuning fork
- Wooden spatula

## **Measuring vital signs:**

- Thermometer
- Sphygmomanometer
- Weighing scales
- Height-measuring device

### 3.1 Information gleaned from a handshake

Features	Diagnosis
Cold, sweaty hands	Anxiety
Cold, dry hands	Raynaud's phenomenon
Hot, sweaty hands	Hyperthyroidism
Large, fleshy, sweaty hands	Acromegaly
Dry, coarse skin	Regular water exposure Manual occupation Hypothyroidism
Delayed relaxation of grip	Myotonic dystrophy
Deformed hands/fingers	Trauma Rheumatoid arthritis Dupuytren's contracture

# Preparing for physical examination

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- Regardless of whether the patient is the same gender as the doctor or not, chaperones are always appropriate for intimate (breast, genital or rectal) examination.
- Chaperones are also advised if the patient is especially anxious or vulnerable, if there have been misunderstandings in the past, or if religious or cultural factors require a different approach to physical examination.
- Record the chaperone's name and presence. If patients decline the offer, respect their wishes and record this in the notes.

# Preparing for physical examination

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- Tactfully invite relatives to leave the room before physical examination unless the patient is very apprehensive and requests that they stay.
- A parent or guardian should always be present when you examine children.
- The room should be warm and well lit; subtle abnormalities of complexion, such as mild jaundice, are easier to detect in natural light.

# Preparing for physical examination

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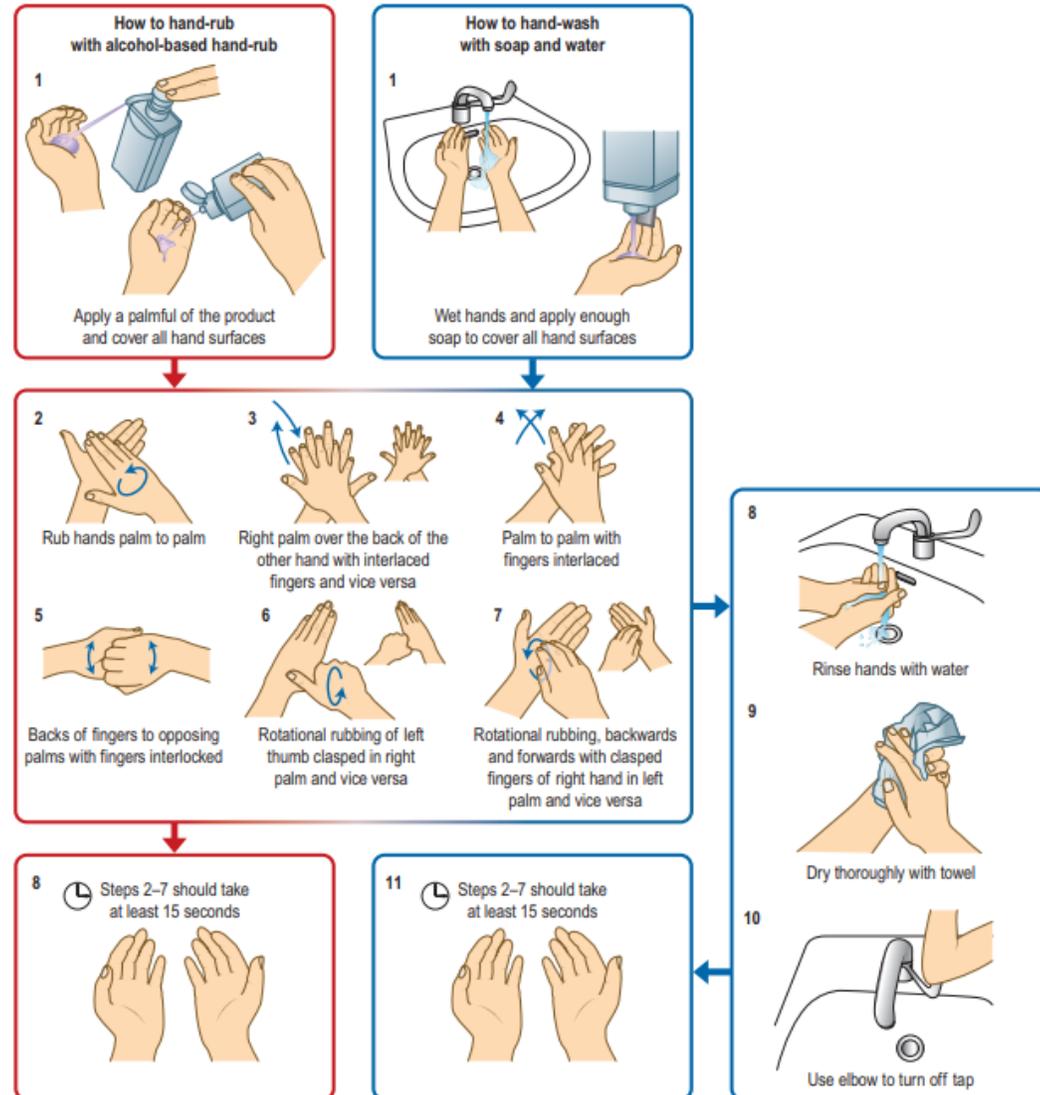
- The height of the examination **couch or bed should be adjustable, with a step to enable patients to get up easily.**
- An **adjustable backrest is essential**, particularly for breathless patients who cannot lie flat. It is usual practice to examine a recumbent patient from the right-hand side of the bed.
- Ensure the patient is comfortably positioned before commencing the physical examination.
- Seek permission and sensitively, but adequately, expose the areas to be examined; cover the rest of the patient with a blanket or sheet to ensure that they do not become cold.

# A quick review:

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## From the foot of the bed.

- ◎ Introduce yourself.
- ◎ Ask the patient about his/her name.
- ◎ Take permission.
- ◎ Tell the patient what will you be doing.
- ◎ Ensure the privacy; we maintain a private and quiet environment.
- ◎ Check Temperature and Light; we maintain a good room temperature & lighting.
- ◎ Hand hygiene and Temperature.
- ◎ Check if you need a chaperone.
- ◎ Exposure.
- ◎ Position.



**Fig. 3.1 Techniques for hand hygiene.** From WHO Guidelines on Hand Hygiene in Health Care First Global Patient Safety Challenge Clean Care is Safer Care; [http://www.who.int/gpsc/clean\\_hands\\_protection/en/](http://www.who.int/gpsc/clean_hands_protection/en/) © World Health Organization 2009. All rights reserved.

# Environment

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- Quite, warm, clean room.
- Privacy.
- Good illumination.
- Chaperon.
- Hand disinfectant

# Beginning the examination

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- Introduce your self.
- Hand-shake?
- **Take permission for every step.**
- **Always explain what you are doing.**
- Wash your hands before and after

# Initial observation

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- Begins as soon as you see the patient.
- **Recognize deteriorating, critically ill patient's.**
- Early warning scoring systems are helpful assessing severity of the situation.
- They include assessment of **vital signs**: pulse, blood pressure, respiratory rate and oxygen saturations, temperature, conscious level and pain score.

# Sequence for performing a physical examination:

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1. Inspection
2. Palpation
3. Percussion
4. Auscultation

## Please consider the following:

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If the patient is NOT stable:

- GO for ABCDE.

If the patient is stable:

- GO for History & Physical Examination.

# If the patient is stable:

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- 1- General look:
  - Do they look well?
  - Are they in stress, or pain?
- 2- Clothing's:
  - Socio-economic status?
  - Trauma?
  - Self or family neglect?



Fig. 3.4 Scars from deliberate self-harm (cutting).

# If the patient is stable:

- 3- Attached medical equipment?
  - Canula?
  - Chest tube?
  - Face mask?
  - Walking aid?
  - Subcutaneous devices?



Fig. 3.2 Tattoos can be revealing.

# If the patient is stable:

- 4- Gait & Posture:
  - Stable gait? Or there's imbalance?
  - Is there a limp?
  - Is the posture symmetrical?
  - Is there a length discrepancy in limb?
  - Abnormal spine structure?

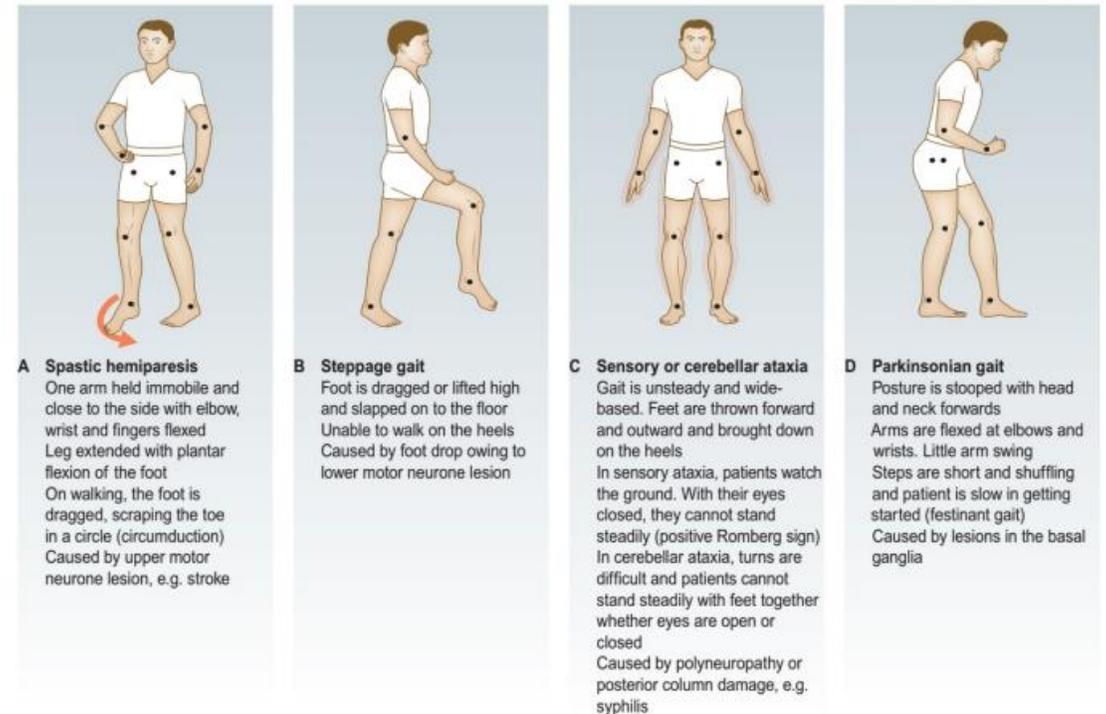


Fig. 7.17 Abnormalities of gait.

# If the patient is stable:

- 5- Facial expression
  - Anxiety, anger, happiness, sadness?
  - Apathetic.
  - Facial deformities.
  - Mouth deviation.
  - Eyes, presence of epicanthal folds.
  - Central cyanosis.

3.3 Facial expression as a guide to diagnosis	
Features	Diagnosis
Poverty of expression	Parkinsonism
Startled expression	Hyperthyroidism
Apathy, with poverty of expression and poor eye contact	Depression
Apathy, with pale and puffy skin	Hypothyroidism
Agitated expression	Anxiety, hyperthyroidism, hypomania

# If the patient is stable:

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- 6- Speech:
  - Comment on:
    - Tone.
    - Presence of hoarseness.
    - Stridor.
    - Articulation of speech; dysarthria.
    - Language; dysphasia.
    - Speed.

# If the patient is stable:

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- 7- Hands:
  - Look:
    - Deformities.
    - Signs of trauma.
    - Color: peripheral cyanosis, tobacco stains, coal stain.
    - Swellings.
    - Nails.

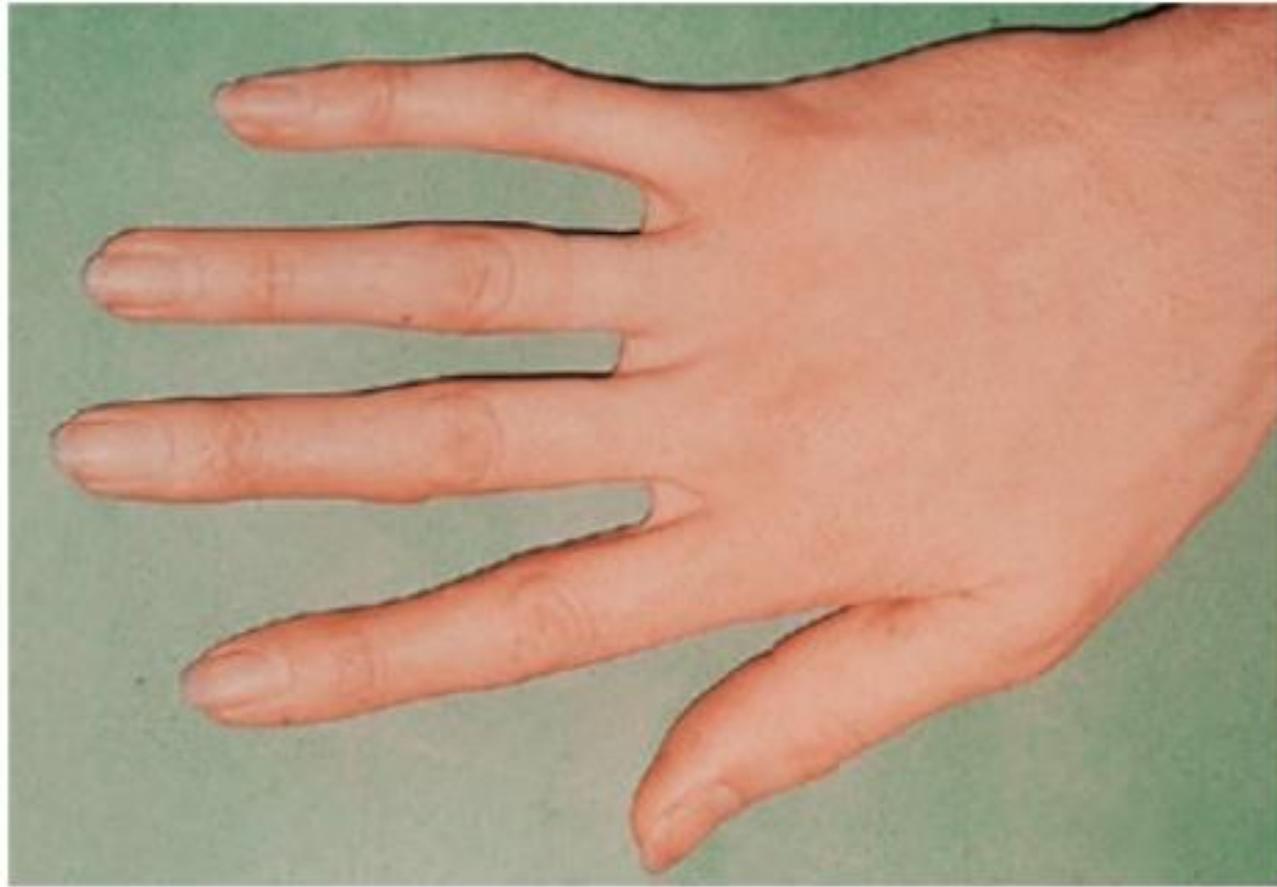


**Fig. 13.22 Advanced rheumatoid arthritis.** Small muscle wasting, subluxation and ulnar deviation at the metacarpophalangeal joints, boutonnière deformities at the ring and little fingers, and swelling and deformity of the wrist.



**Fig. 3.5 Dupuytren's contracture.**

**Dupuytren's contracture** is a thickening of the palmar fascia causing fixed flexion deformity, and usually affects the little and ring fingers



**Arachnodactyly (long, thin fingers) is typical of Marfan's syndrome**



**Fig. 5.8** Tobacco 'tar'-stained finger.



**Fig. 3.6** Normal palms. African (left) and European (right).

### 3.4 The nails in systemic disease

Nail changes	Description of nail	Differential diagnosis
Beau's lines	Transverse grooves (see Fig. 3.7B)	Sequella of any severe systemic illness that affects growth of the nail matrix
Clubbing	Loss of angle between nail fold and nail plate (see Fig. 3.8)	Serious cardiac, respiratory or gastrointestinal disease (see Box 3.5)
Leuconychia	White spots, ridges or complete discoloration of nail (see Fig. 3.7C)	Trauma, infection, poisoning, chemotherapy, vitamin deficiency
Lindsay's nails	White/brown 'half-and-half' nails (see Fig. 12.7)	Chronic kidney disease
Koilonychia	Spoon-shaped depression of nail plate (see Fig. 3.7D)	Iron deficiency anaemia, lichen planus, repeated exposure to detergents
Muehrcke's lines	Narrow, white transverse lines (see Fig. 12.6)	Decreased protein synthesis or protein loss
Nail-fold telangiectasia	Dilated capillaries and erythema at nail fold (see Fig. 14.13B)	Connective tissue disorders, including systemic sclerosis, systemic lupus erythematosus, dermatomyositis
Onycholysis	Nail separates from nail bed (see Fig. 3.7A)	Psoriasis, fungal infection, trauma, thyrotoxicosis, tetracyclines (photo-onycholysis)
Onychomycosis	Thickening of nail plate with white, yellow or brown discoloration	Fungal infection
Pitting	Fine or coarse pits in nail (see Fig. 3.7A)	Psoriasis (onycholysis, thickening and ridging may also be present), eczema, alopecia areata, lichen planus
Splinter haemorrhages	Small red streaks that lie longitudinally in nail plate (see Fig. 4.5B)	Trauma, infective endocarditis
Yellow nails	Yellow discoloration and thickening (see Fig. 14.13C)	Yellow nail syndrome



A



B



C



D

**Fig. 3.7 Nail abnormalities in systemic disease.** **A** Onycholysis with pitting in psoriasis. **B** Beau's lines seen after acute severe illness. **C** Leuconychia. **D** Koilonychia. (A) From Innes JA. *Davidson's Essentials of Medicine*. 2nd edn. Edinburgh: Churchill Livingstone; 2016.

# If the patient is stable:

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- 7- Hands:
  - Feel:
    - Always ask for presence of tenderness before!!
    - Temperature:
      - Cold: CHF, hypotension
      - Warm: COPD, hyperthyroidism
    - Lumps.
    - Tenderness.

# If the patient is stable:

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- Nails:
  - Shape.
  - Color; cyanosis, yellow nails, white nails.
  - Capillary refill.
  - Splinter hemorrhages.

# Clubbing

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- **Painless soft tissue swelling** of the terminal phalanges and increased **convexity** of the nail.
- **Many lung, liver, GI diseases causes clubbing.**
- ✓ First examine the phalangeal depth .
- ✓ Second examine the hyponychial angel.
- ✓ Third examine the schamroth window.
- ✓ Fourth assess for fluctuation.

## 3.5 Causes of clubbing

### **Congenital or familial (5–10%)**

### **Acquired**

- Thoracic (~70%):
  - Lung cancer
  - Chronic suppurative conditions: pulmonary tuberculosis, bronchiectasis, lung abscess, empyema, cystic fibrosis
  - Mesothelioma
  - Fibroma
  - Pulmonary fibrosis
- Cardiovascular:
  - Cyanotic congenital heart disease
  - Infective endocarditis
  - Arteriovenous shunts and aneurysms
- Gastrointestinal:
  - Cirrhosis
  - Inflammatory bowel disease
  - Coeliac disease
- Others:
  - Thyrotoxicosis (thyroid acropachy)
  - Primary hypertrophic osteoarthropathy

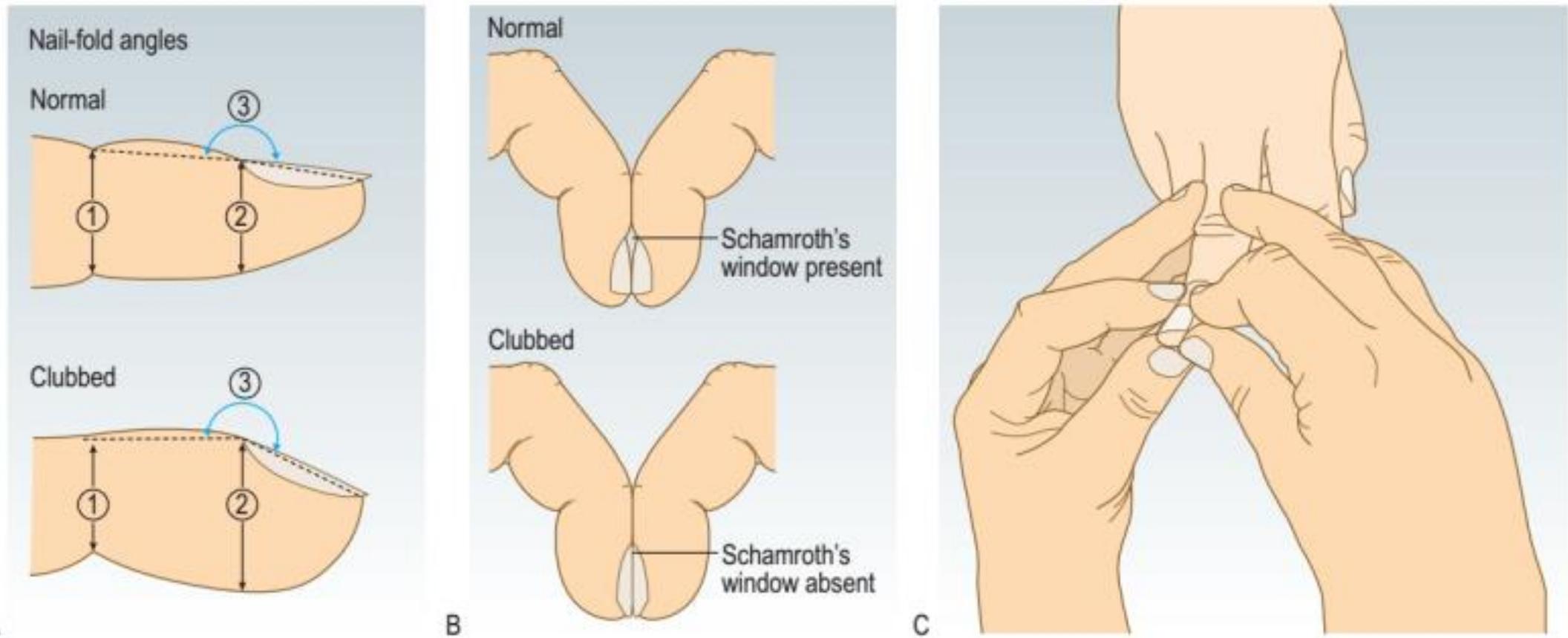


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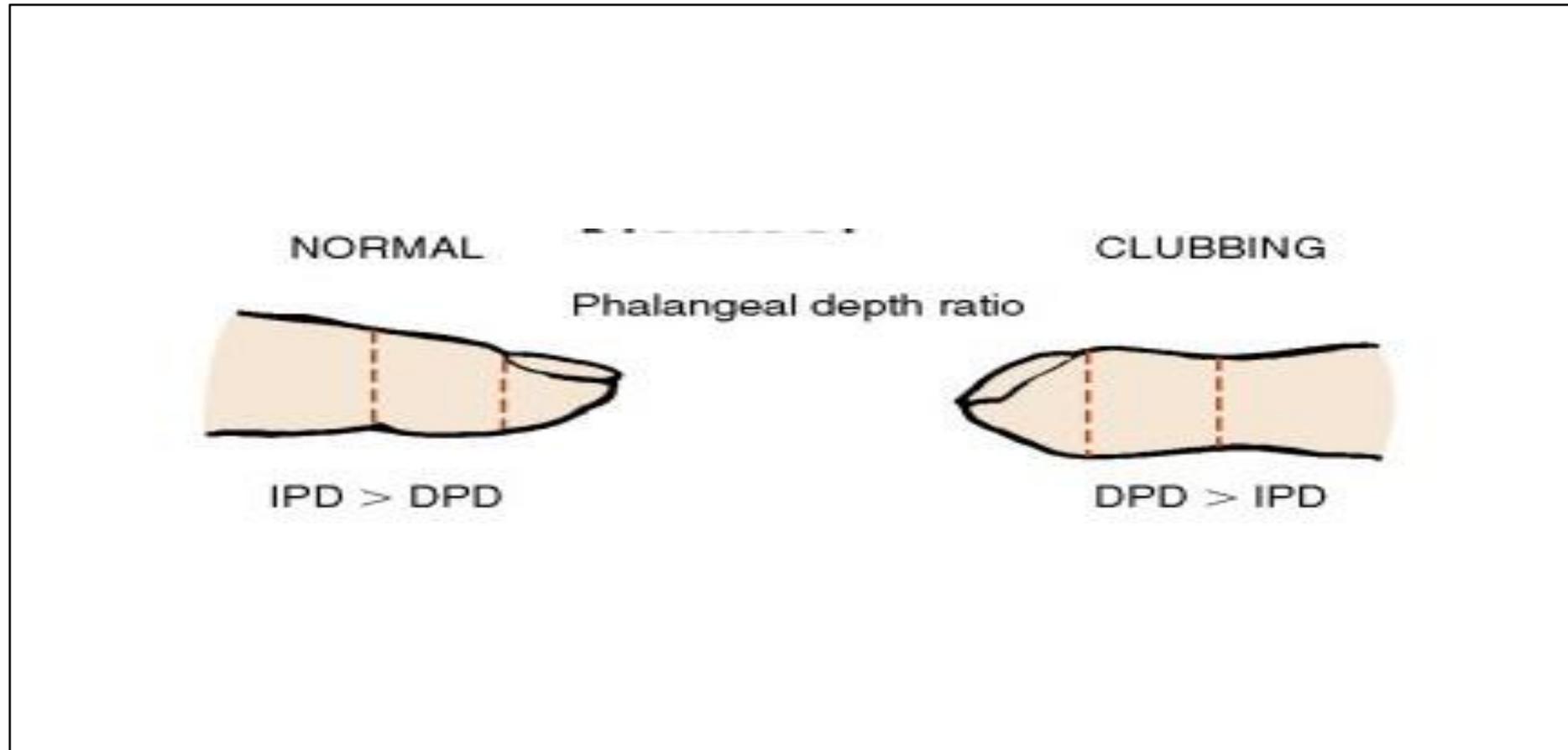
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**Fig. 3.8** Clubbing. **A** Anterior view. **B** Lateral view.

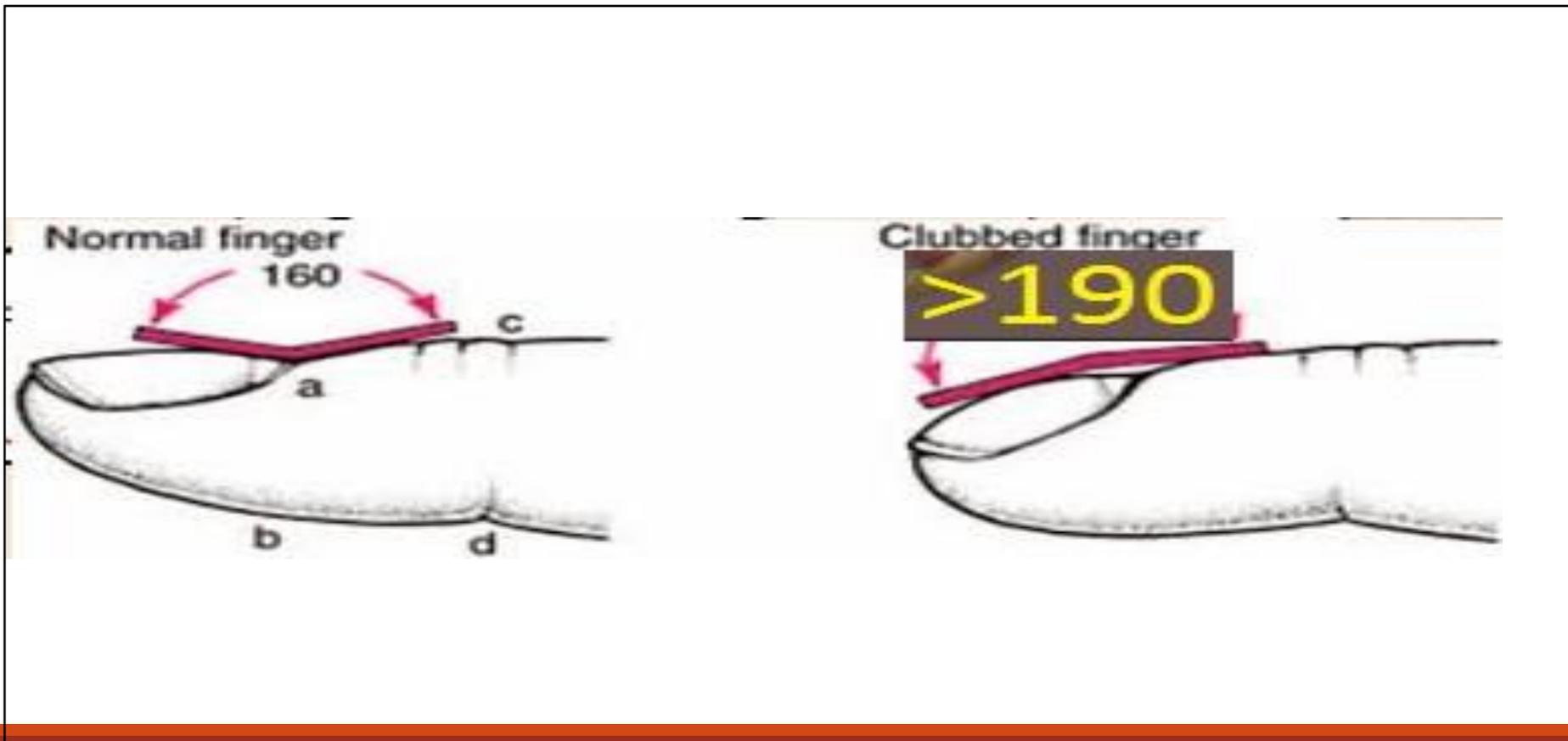


**Fig. 3.9 Examining for finger clubbing.** **A** Assessing interphalangeal depth at (1) interphalangeal joint and (2) nail bed, and nail-bed angle (3). **B** Schamroth's window sign. **C** Assessing nail-bed fluctuation.

# Phalangeal depth



# Hyponychial angel



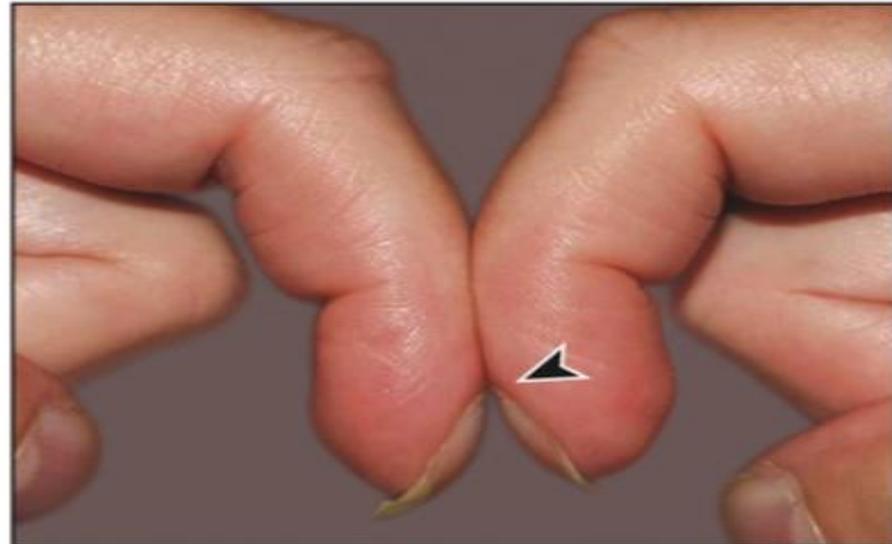
# Schamroth's window sign

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Normal



Clubbed



# If the patient is stable:

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- 8- Skin:
  - The skin should be exposed where appropriate and inspected carefully for any abnormalities of pigmentation.
  - Comment of abnormalities:
    - Ulcers, abnormal pigmentation, masses.
    - Jaundice, pallor, cyanosis.

# Jaundice

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- An abnormal yellow discoloration of the skin, sclera and mucous membranes.
- Best detected in the **covered part of sclera.**
- when serum bilirubin concentration *rises above 3 mg/dL due to pathology in metabolic pathways.*

# Cyanosis

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- A **blue discoloration of the skin and mucous**
- It occurs when the absolute concentration of **deoxygenated haemoglobin is increased more than 5 g/dl.**
- Where to detect:
  - ✓ Lips.
  - ✓ Mucous membranes.
  - ✓ Nose.
  - ✓ Cheeks.
  - ✓ Ears.
  - ✓ Hands and feet.

# Cyanosis

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- May be **absent** in anaemic or hypovolaemic patients despite the presence of hypoxia.
- Conversely cyanosis may manifest at **relatively mild levels of hypoxia in polycythaemic patients.**

# Peripheral cyanosis

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- Seen in the **distal extremities**
- Maybe due to **hypoxia** may simply be a result of **cold exposure**, when **prolonged peripheral capillary flow allows greater oxygen extraction and hence increased levels of deoxyhaemoglobin.**
- E.g. low cardiac output states, arterial disease and venous stasis or obstruction

# Central cyanosis

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- Cyanosis can be seen in the lips, tongue and buccal or sublingual mucosa.
- Can accompany any disease (usually cardiac or respiratory) that results in hypoxia and deoxyhaemoglobin concentration above (5g/dL).

# Cyanosis

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- Note :
  - Blue discoloration in the tongue : its central cyanosis.
  - Blue discoloration in lips and distal extrimities : its peripheral cyanosis.

# Pallor

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- Occurs due to:
  - Anaemia
  - Vasoconstriction due to cold exposure or sympathetic activation (e.g. hypotension).

# Pallor

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- Best sites to detect:
  - Conjunctiva specifically the anterior rim of lower eyelid.
  - Palmar skin creases
  - Face in general
  - Nail-bed pallor; although diagnostic value is poor.

# Tongue

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- Look and move, Don't feel.
- Smooth tongue
- Large tongue
- Masses
- Wasting
- Deviation
- Fasciculations

# Odors

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- The smell of alcohol, tobacco or cannabis may be readily apparent.
- Halitosis (bad breath): due to poor dental hygiene, gingivitis, stomatitis, atrophic rhinitis, tumours of the nasal passages or suppurative lung conditions such as lung abscess or bronchiectasis.
- ketones: a sweet smell (like nail varnish remover) due to acetone in diabetic ketoacidosis or starvation.

# Odors

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- **Fetor hepaticus**: the **stale 'mousy' smell of the volatile amine dimethylsulphide** in patients with **liver failure** **uraemic fetor**: a fishy or **ammoniacal smell on the breath in uraemia**.
- **Foul-smelling belching** in patients with **gastric outlet obstruction**.
- **Faecal smell** in patients with **gastrocolic fistula**.

# Body habitus

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- Weight
- Stature
- Hydration

# Weight

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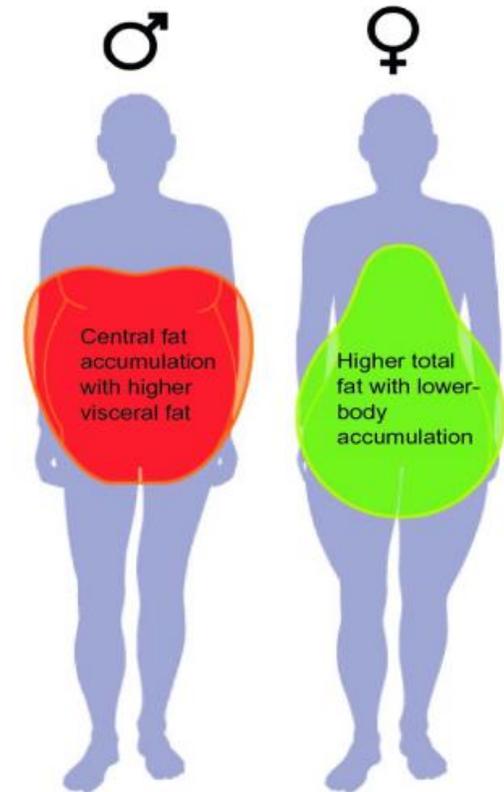
- Measured in kilograms
- For standardization; we use BMI

Nutritional status	BMI non-Asian	BMI Asian
Underweight	<18.5	<18.5
Normal	18.5–24.9	18.5–22.9
Overweight	25–29.9	23–24.9
Obese	30–39.9	25–29.9
Morbidly obese	≥40	≥30

# Obesity

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- Gluteal–femoral obesity or the ‘pear shape’ Has better prognosis than ‘apple-shaped’ obesity.



# Weight loss

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- Wt loss considered significant if :

**1 - 10% over 6 months**

**2- 5% over 3 months**

**3- 2% over 1 month**

# Stature

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- Long stature
- Short stature
- Abnormal stature

# HYDRATION

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- MUCOUS MEMBRANES
- AXILLA
- JVP
- URINE OUTPUT
- LOWER LIMBS

# Localized edema

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- Venous causes
- Lymphatic causes
- Allergic causes
- inflammation

# Angioedema



# Hand swelling due to inflammation

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# Lumps and lymph nodes

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- First ask few questions:
- Onset
- Duration
- associated pain
- Discharge
- Progression
- previous history

# Lumps (and Ulcers)

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- Site
- Shape
- Size
- Color
- Tenderness.
- Attachment to surrounding tissues?

# Consistency

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- Ranges from **soft** to **firm** to **hard**.
- compressible?
- Fluctuating?

# Edge (margin)

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- Defined Vs. ill defined
- Regular Vs irregular

# Surface and shape

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- Shape:  
shape of an organ, Vs rounded lump
- Surface:  
smooth, nodular, **irregular**.



# Position

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- Try to identify the source of the lump
- E.g. muscle, soft tissue.
- If it's deep or superficial to abdominal muscles.
- Thyroid masses moves with swallowing.

# Inflammation

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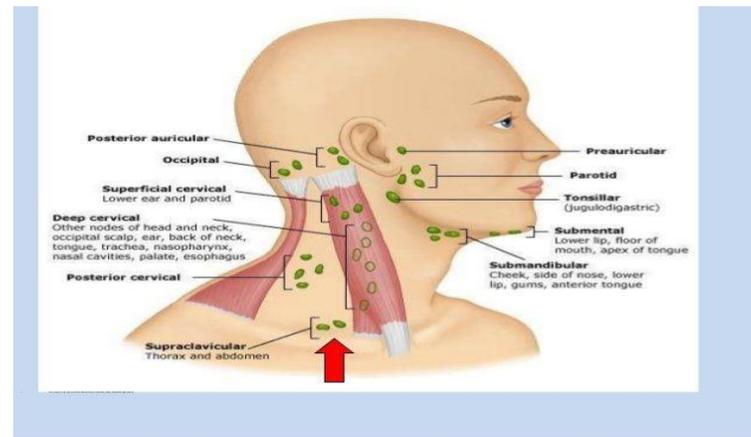
- Redness: vasodilatation.
- Warmth: vasodilatation.
- Swelling: increased capillary permeability.
- Pain/tenderness: cytokines.

# After that

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- Examine vascular systems
- The draining lymph nodes
- And general physical examination

# Lymph nodes





**Fig. 3.27 Palpation of the cervical glands.** [A] Examine the glands of the anterior triangle from behind, using both hands. [B] Examine for the scalene nodes from behind with your index finger in the angle between the sternocleidomastoid muscle and the clavicle. [C] Examine the glands in the posterior triangle from the front.



**Fig. 3.28 Palpation of the axillary, epitrochlear and inguinal glands.** [A] Examination for right axillary lymphadenopathy. [B] Examination of the left epitrochlear glands. [C] Examination of the left inguinal glands.

- If you find localised lymphadenopathy, examine the areas that drain to that site
- If generalized you should examine the liver and spleen + pulmonary crackles.

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**THANK YOU**