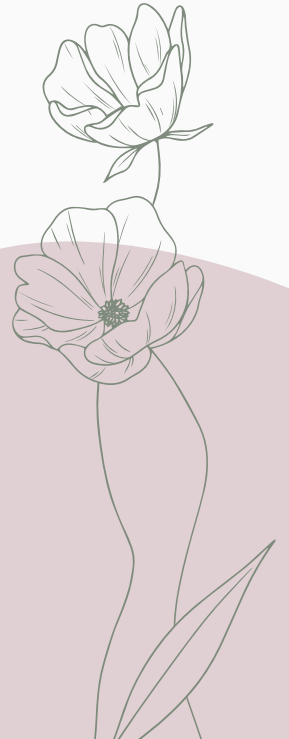
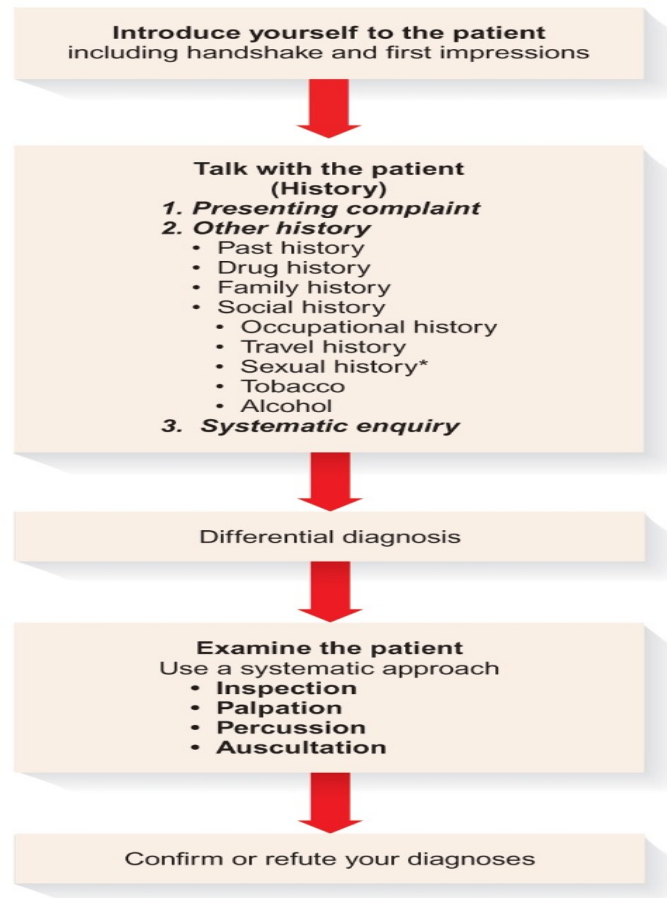


# General Physical Examination





\* if appropriate

**Figure 3.1:** Overall plan of clinical assessment.

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examination

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Exam

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Preparing for  
physical  
examination

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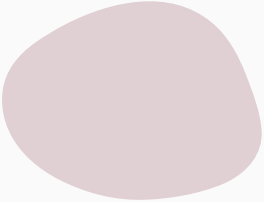

Spot diagnoses





1

# General principles of physical examination



Your physical assessment of patients undoubtedly begins as soon as you see them.

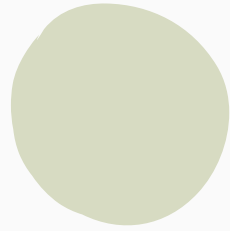
Thus by mastering structured skills in physical examination, clinicians can improve the reliability and precision of their clinical assessment, which, together with the appropriate diagnostic investigations, lead to accurate diagnosis.





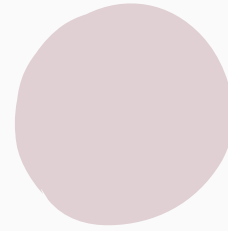
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# Preparing for physical examination



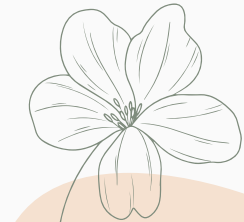
## Step 1

Preparing For Physical  
Exam



## Step 2

Sequance of Physical Exam



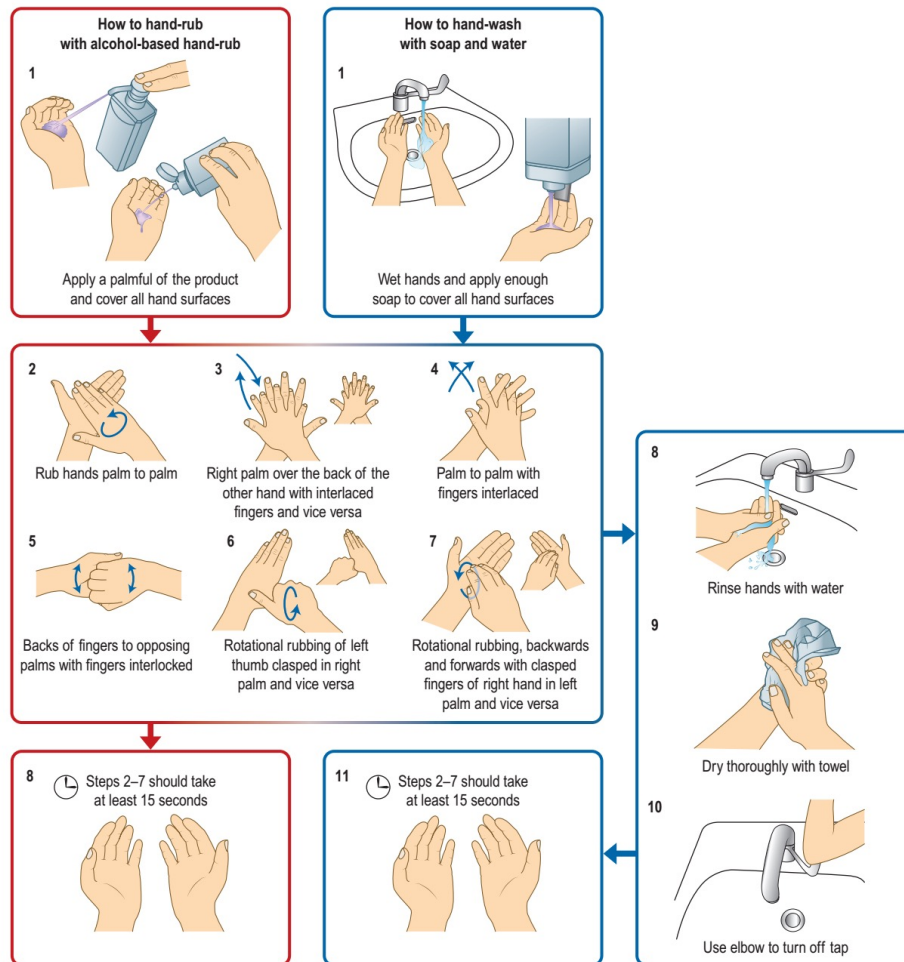
# WIPPER



1. **W**ash your Hand (soap or alcohol)
2. **I**ntroduction and check pt details +/- handshake\*
3. **P**ermission and Discuss the steps of exam with pt
4. **P**rivacy \*
5. **E**nvironment( Warm and well light room, free of intrusion and noise, Equipment, couch or bed should be adjustable )
6. **R**eposition of both patient and doctor **(the doctor is always on the RIGHT side)**
7. **A**sk for chaperon\*
8. **E**xposure the area of exam







**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.

### 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

# Sequence for performing a physical examination

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

The background features several decorative elements: a light green circle in the top-left containing a line-art flower; a large grey circle in the top-right; a cluster of small green dots in the upper-right; a purple circle in the middle-right containing a home icon and up/down arrows; a light orange circle in the bottom-left; and a purple circle in the bottom-right containing a line-art flower.

3

# General Exam



1. The physical appearance
2. The mental status (anxious, distress, confused)
3. Vital signs
4. Gait and posture
5. Facial Expressions
6. Body habitus and nutrition
7. Hydrational status \*





8. Complexion

9. Odders

10. The hands


9. The tongue

10. Lymph node examination

11. Mass and Lumb exam

12. Edema





# The physical apperance

- 1- Pt general looking (stable or generally well patient , unwell, ill , in pain, comfortable)
- 2- the position of the patient ( Are they sitting up , lying on bed)
- 3- Notice the patient's clothes.(gives many clues\*)
- 3- Often there will be clues to the patient's underlying medical condition either about the person \*
- 4- Patients may be wearing a medical identity bracelet or other jewellery alerting you to an underlying medical condition or life-sustaining treatment.
- 5- Note any tattoos or piercings, any venepuncture marks of intravenous drug use or linear (usually transverse) scars





**Fig. 3.3** The linear marks of intravenous injection at the right antecubital fossa.



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



Fig. 3.2 Tattoos can be revealing.



# Vital sign

# VITAL SIGNS

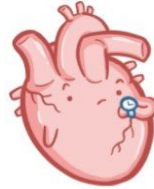
BODY  
TEMPERATURE



BLOOD  
PRESSURE



HEART  
RATE



RESPIRATORY  
RATE

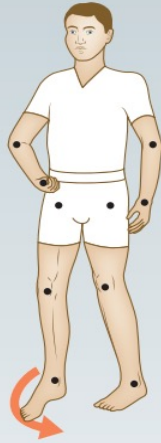


PAIN

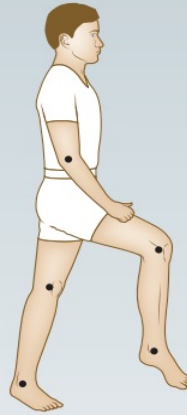




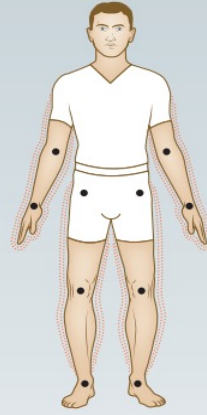
# Gait



- A Spastic hemiparesis**  
 One arm held immobile and close to the side with elbow, wrist and fingers flexed  
 Leg extended with plantar flexion of the foot  
 On walking, the foot is dragged, scraping the toe in a circle (circumduction)  
 Caused by upper motor neurone lesion, e.g. stroke



- B Steppage gait**  
 Foot is dragged or lifted high and slapped on to the floor  
 Unable to walk on the heels  
 Caused by foot drop owing to lower motor neurone lesion



- C Sensory or cerebellar ataxia**  
 Gait is unsteady and wide-based. Feet are thrown forward and outward and brought down on the heels  
 In sensory ataxia, patients watch the ground. With their eyes closed, they cannot stand steadily (positive Romberg sign)  
 In cerebellar ataxia, turns are difficult and patients cannot stand steadily with feet together whether eyes are open or closed  
 Caused by polyneuropathy or posterior column damage, e.g. syphilis



- D Parkinsonian gait**  
 Posture is stooped with head and neck forwards  
 Arms are flexed at elbows and wrists. Little arm swing  
 Steps are short and shuffling and patient is slow in getting started (festinant gait)  
 Caused by lesions in the basal ganglia

**Fig. 7.17** Abnormalities of gait.



# Facial Expressions



# Facial Expressions

## 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



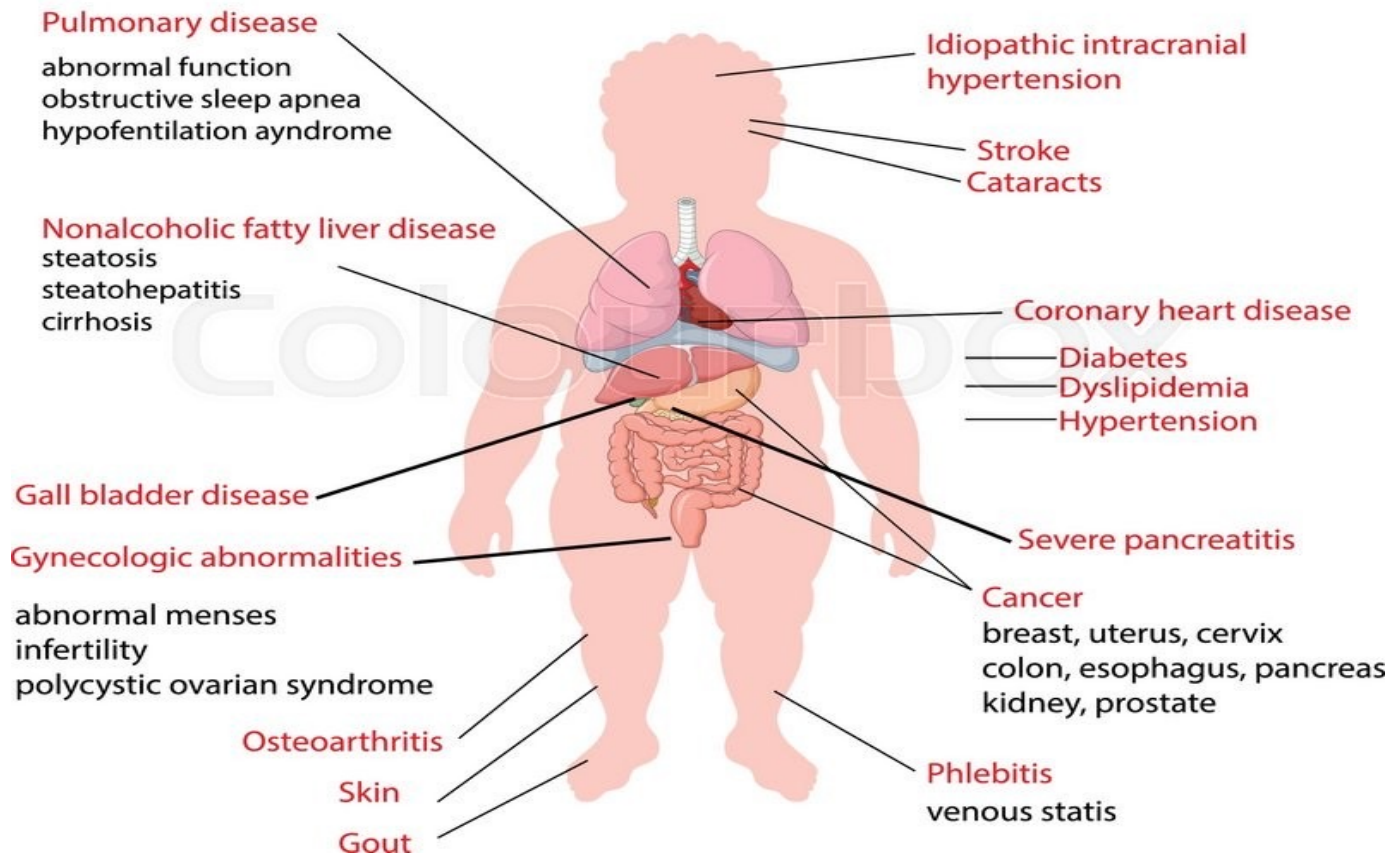
# Body habitus and nutrition

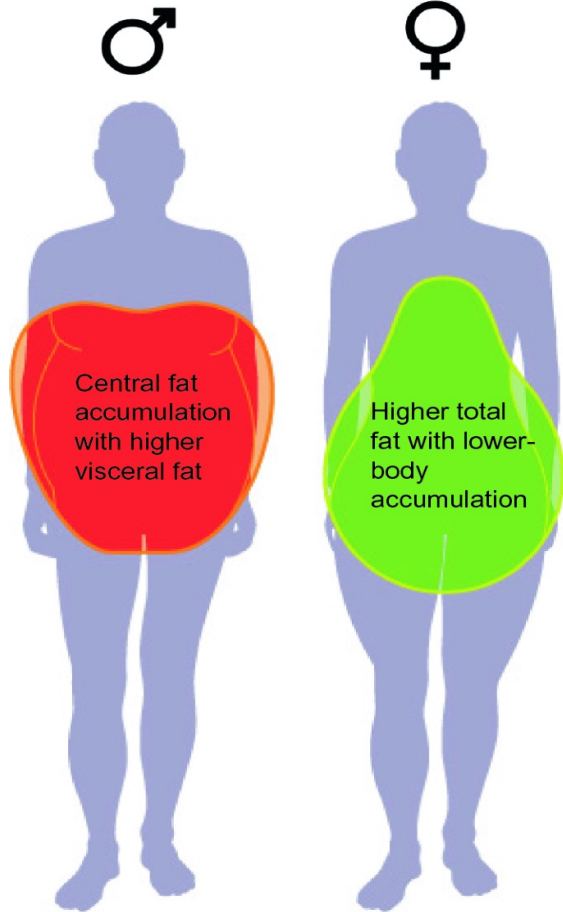
# Body habitus and nutrition

## 3.7 The relationship between body mass index (BMI), nutritional status and ethnic group

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

# Medical Complications of Obesity





**Waist-to-hip ratio can also be a useful assessment of adipose distribution:**

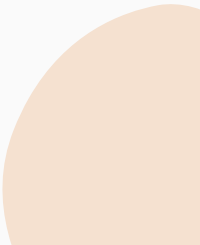
gluteal–femoral obesity or the ‘**pear shape**’ (waist:hip ratio of  $\leq 0.8$  in females or  $< 0.9$  in males) has a better prognosis,

whereas ‘**apple-shaped**’ patients with a greater waist:hip ratio have an increased risk of coronary artery disease and the ‘**metabolic syndrome**’

# Weight loss or malnutrition

1. Inadequate energy consumption or utilisation (such as malabsorption, anorexia, glycosuria)
2. Conditions in which nutritional demand is increased (such as fever, infection, thyrotoxicosis, malignancy, surgery).
3. Psychiatric disease and alcohol or drug dependency may also result in weight loss.

Useful markers of malnutrition include arm muscle circumference and grip strength.





# Stature

## Short stature

1. general nutritional state
2. significant illness during childhood
3. familial (ask about the height of the patient's parents and siblings)

Loss of height is part of normal ageing but is accentuated by compression fractures of the spine due to osteoporosis, particularly in women.

## Tall stature

( less common than short stature )

1. familial
2. Pathological causes of increased height include Marfan's syndrome, prepubertal hypogonadism and gigantism.







# Odours

## Odours can provide clues to a patient's social or behavioural habits

- the smell of alcohol, tobacco or cannabis may be readily apparent.
- Stale urine and anaerobic skin infections also produce distinctive smells.
- Halitosis (bad breath) can be 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
- 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
- a faecal smell in patients with gastrocolic fistula.





# Hand

deformity  
color  
temperature  
nail



**Fig. 13.22 Advanced rheumatoid arthritis.** Small muscle wasting, subluxation and ulnar deviation at the metacarpophalangeal joints, boutonniere 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.

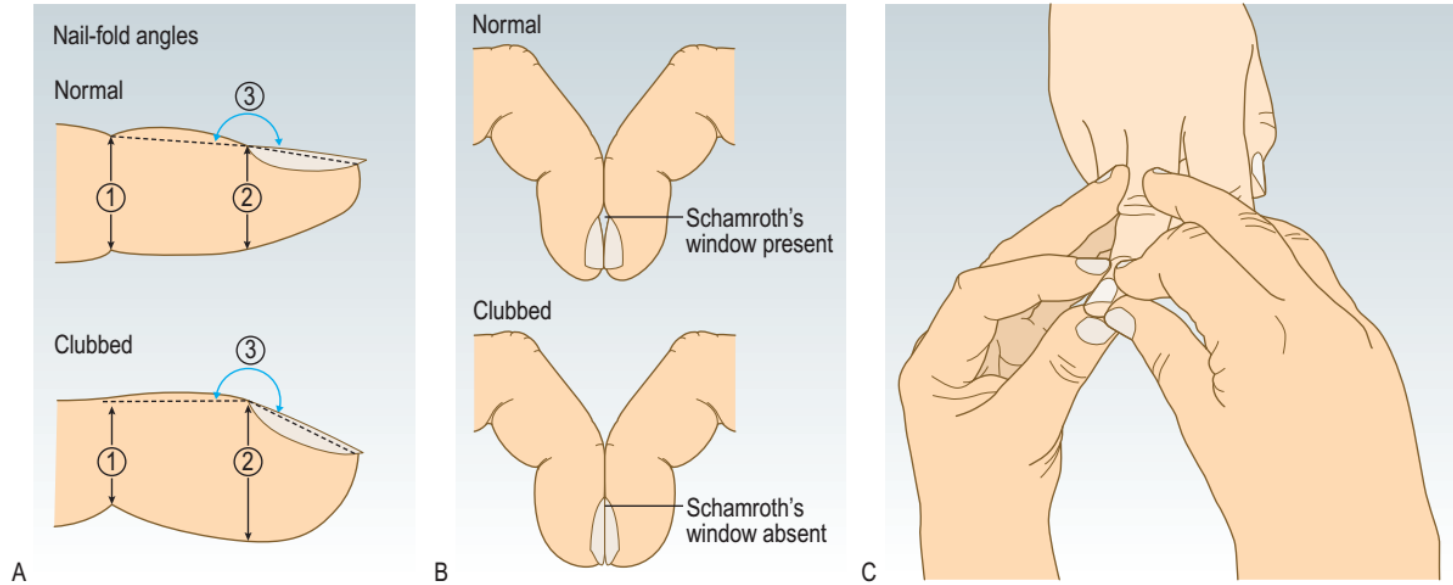


A



B

**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.

## 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



# skin

Discoloration

# Complexion

Unusual skin colors due to abnormal pigment deposition

- ✓ Oxyhaemoglobin/reduced heamoglobin
- ✓ Melanin
- ✓ Carotene
- ✓ Bilirubin
- ✓ Iron

# Abnormal pigment deposition of drugs

- ❑ Bluish tinge due to sulphaemoglobin or methaemoglobin
- ❑ Yellow by mepacrine
- ❑ Brownish black by clofazimine
- ❑ Bluish grey by amiodarone
- ❑ Slate grey by phenothiazines
- ❑ Yellow-brownish tinge in CRF



**Fig. 3.14** Phenothiazine-induced pigmentation.



# Pallor



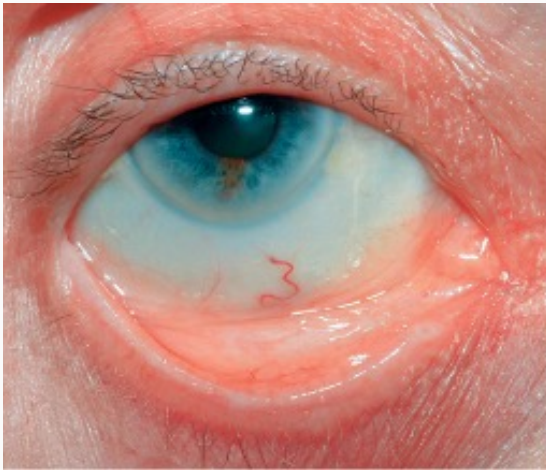
**causes:**

Aneamia

Conjunctiva, lips, tongue, nail bed

Vasoconstriction

Fear, vasovagal attack



## 3.6 Conditions associated with facial flushing

### Physiological

- Fever
- Exercise
- Heat exposure
- Emotional

**Drugs (e.g. glyceryl trinitrate, calcium channel blockers, nicotinic acid)**

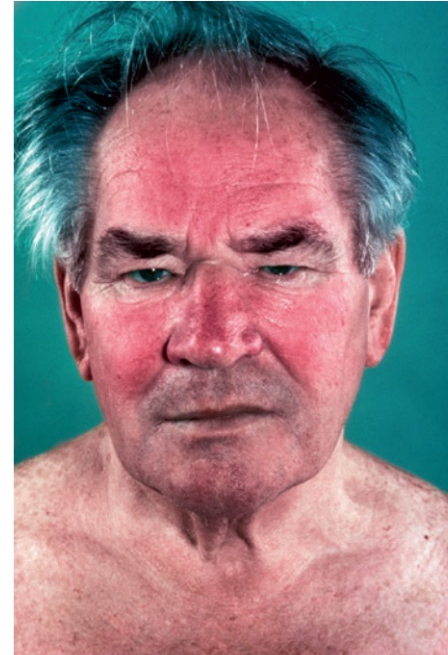
### Anaphylaxis

### Endocrine

- Menopause
- Androgen deficiency (in men)
- Carcinoid syndrome
- Medullary thyroid cancer

### Others

- Serotonin syndrome
- Food/alcohol ingestion
- Neurological (e.g. Frey's syndrome)
- Rosacea
- Mastocytoses



B

17 Flushing due to carcinoid syndrome. [A](#) Acute carcinoid

# CYANOSIS

blue discoloration of skin and mucous membranes (**deoxyHb >50g/l, O2 sat <90%**)

## Central

Seen in the lips, tongue and buccal or sublingual mucosa (Fig. 3.18; see Fig. 5.12), and can accompany any disease (usually cardiac or respiratory) that results in hypoxia

## Peripheral

Hands, feet, ears

Cold weather, poor peripheral circulation, venous obstruction, Raynaud's phenomenon





### 3.8 Causes of abnormal melanin production

Condition	Mechanism
<b>Underproduction</b> Vitiligo (patchy depigmentation)	Autoimmune destruction of melanocytes
Albinism	Genetic deficiency of tyrosinase
Hypopituitarism	Reduced pituitary secretion of melanotrophic peptides, growth hormone and sex steroids

**Overproduction**

Adrenal insufficiency  
(Addison's disease)

Increased pituitary secretion  
of melanotrophic peptides

Nelson's syndrome (may occur  
after bilateral adrenalectomy  
for Cushing's disease)

Increased pituitary secretion  
of melanotrophic peptides

Cushing's syndrome due to  
ectopic adrenocorticotrophic  
hormone secretion by tumours,  
e.g. small cell lung cancer

Ectopic release of  
melanotrophic peptides by  
dysregulated tumour cells

Pregnancy and oral  
contraceptives

Increased levels of sex  
hormones

Haemochromatosis

Iron deposition and  
stimulation of melanocytes

# Vitiligo



# Addison's Disease





# Hypercarotenaemia

yellowish discoloration of face, palms and soles, but NOT SCLERA

# Jaundice

serum bilirubin  $>3$  mg/dL

Sclera, mucous membranes and skin become yellow



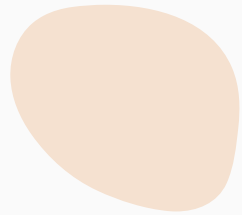
# Haemochromatosis



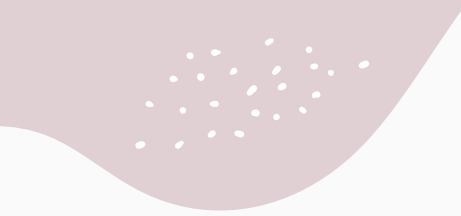
# Erythema ab igne



Douglas et al.:MacLeod's Clinical Examination 11e



tounge

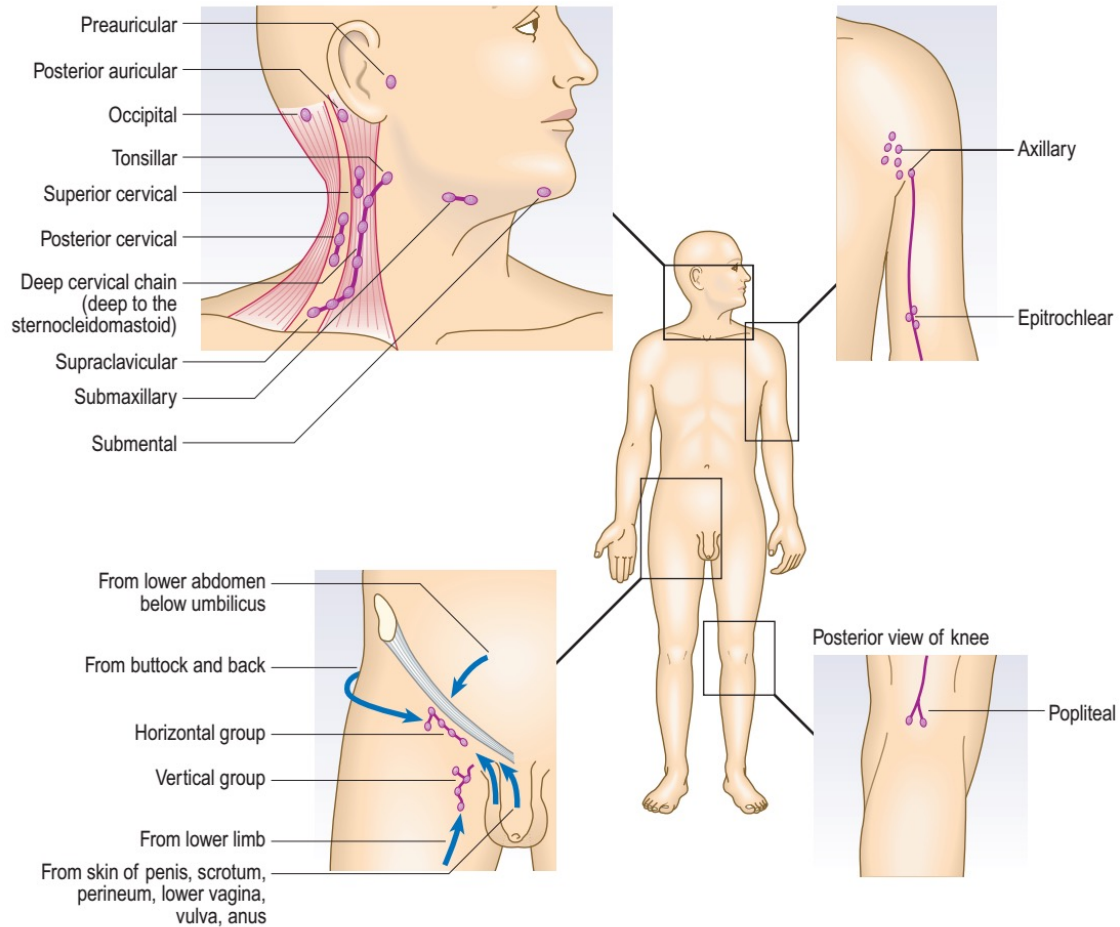




**Fig. 3.16** Smooth red tongue (glossitis) and angular stomatitis of iron deficiency.



# Lymph nodes



**Fig. 3.26** Distribution of palpable lymph glands.





A

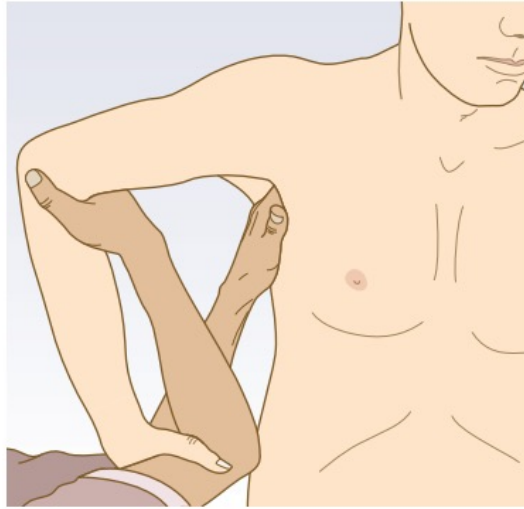


B

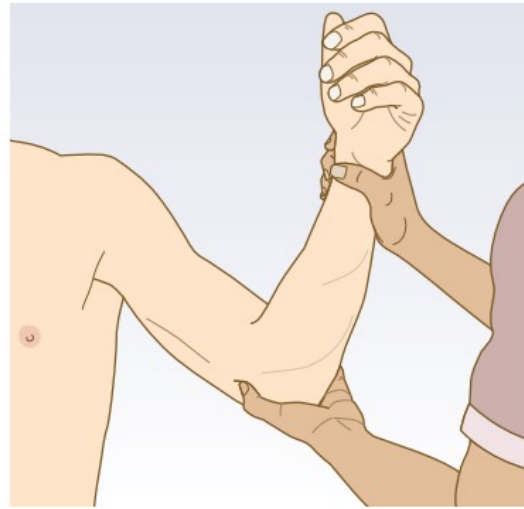


C

**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.



A



B



C

**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.



# Lumps



## 3.8 Features to note in any lump or swelling (SPACESPIT)

- Size
- Position
- Attachments
- Consistency
- Edge
- Surface and shape
- Pulsation, thrills and bruits
- Inflammation:
  - Redness
  - Tenderness
  - Warmth
- Transillumination



**Fig. 3.25** Blister on a leg.



# Edema

# Edema



A

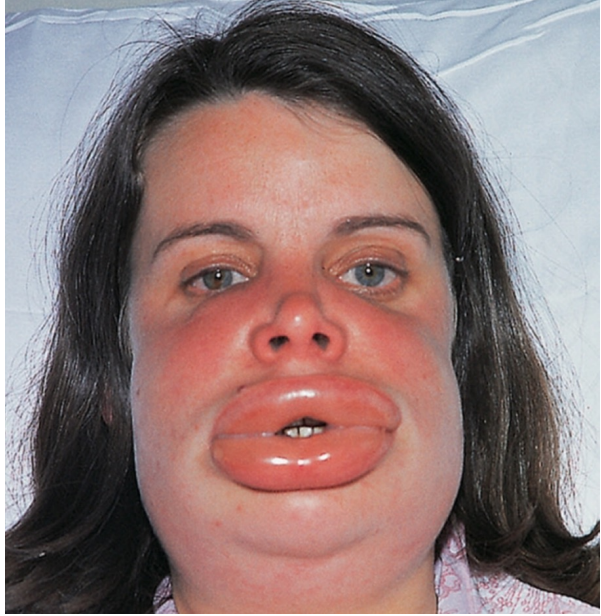
# Edema





# Causes of edema

- Generalized: low plasma oncotic pressure, increased hydrostatic pressure, increase capillary permeability, lymphatic obstruction
- Localized: venous , lymphatic, inflammatory or allergic causes.
- Postural edema





4

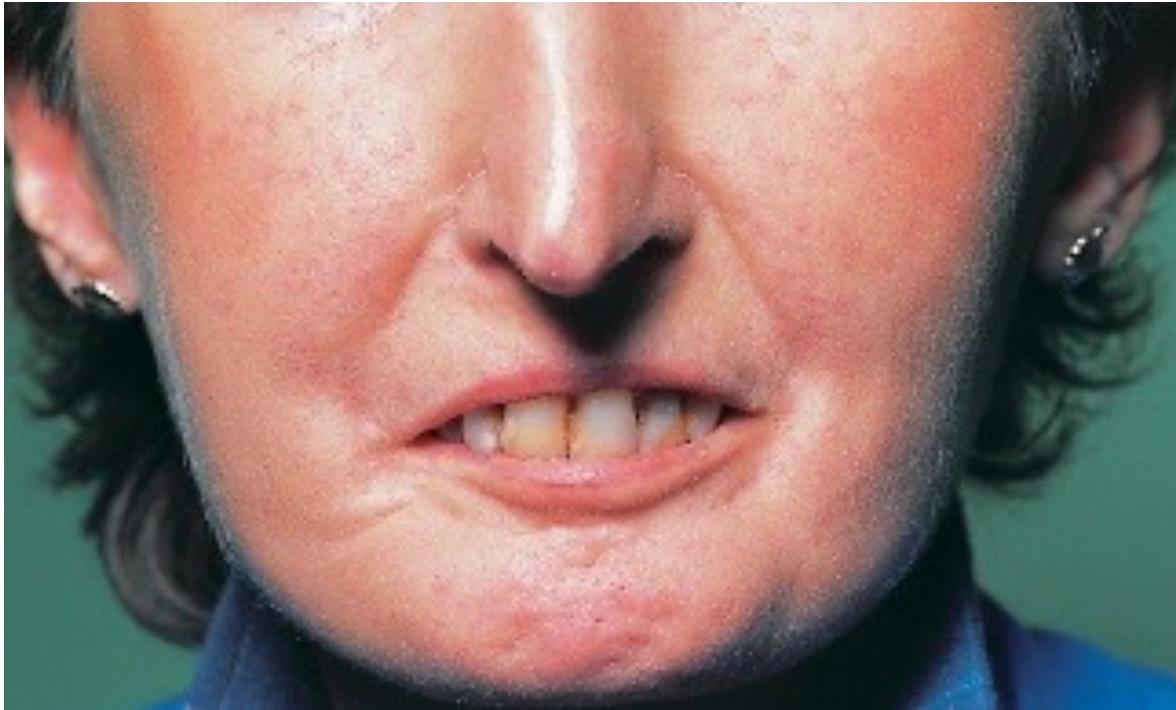
# Spot diagnosis

### 3.9 Conditions with characteristic facial appearances

Diagnosis	Facial features
Hypothyroidism (see Fig. 10.5)	Sparse, coarse hair and eyebrows, periorbital puffiness, dry, waxy skin, apathetic expression, macroglossia
Graves' disease (autoimmune thyrotoxicosis) (see Fig. 10.2A)	Staring appearance due to lid retraction, proptosis, evidence of weight loss
Hypopituitarism (see Fig. 10.10A)	Pale, often unwrinkled skin with loss of hair
Acromegaly (see Fig. 10.9A)	Thickened, coarse skin with enlarged nose and frontal bones, prognathism (lower jaw protrusion), widely spaced teeth, macroglossia
Cushing's syndrome (see Fig. 10.11A)	Moon-shaped plethoric facies
Osteogenesis imperfecta (see Fig. 3.30A)	Blue sclerae
Hereditary haemorrhagic telangiectasia (see Fig. 3.30B)	Telangiectasia on and around lips
Systemic sclerosis (see Fig. 3.30C)	Tight skin constricting mouth, 'beaking' of nose, loss of nasolabial folds
Myotonic dystrophy (see Fig. 3.30D)	Frontal balding, paucity of expression, bilateral ptosis
Down's syndrome (see Fig. 3.31)	Flat facial profile, up-slanting palpebral fissures, small, low-set ears, macroglossia, Brushfield spots in iris
Systemic lupus erythematosus	'Butterfly' erythematous rash on cheeks



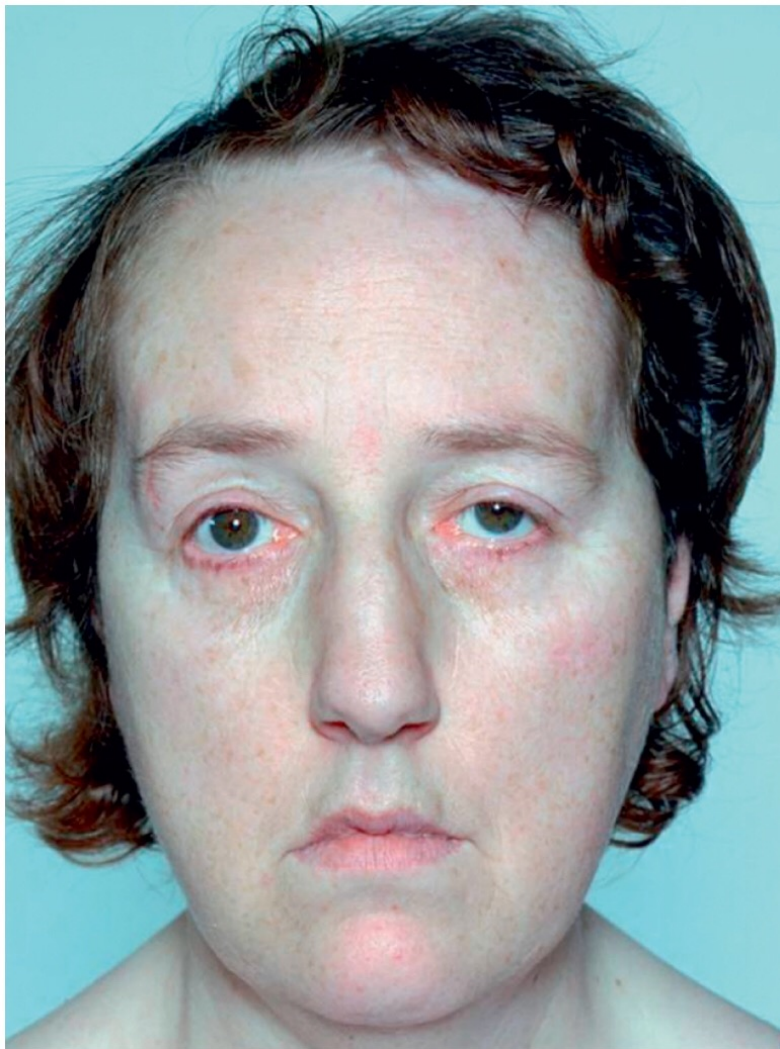
Blue sclerae of osteogenesis imperfecta.



Systemic sclerosis with 'beaking' of the nose and taut skin around the mouth



Telangiectasia around the mouth, typical of hereditary haemorrhagic telangiectasia.



Myotonic dystrophy  
with  
frontal balding and  
bilateral ptosis





hypothyroid



**Fig. 10.5** Typical facies in hypothyroidism.



PHOTO RESEARCHERS/BIOPHOTO ASSOCIATES

hyperthyroidism.



C

**Fig. 10.11** Cushing's syndrome. **A** Cushingoid fac



A



B



C

**Fig. 3.31** Down's syndrome.

**A** Typical facial appearance.

**B** Brushfield spots: grey–white areas of depigmentation in the iris.

**C** Single palmar crease.

*A From Kerryn Phelps, Craig Hassed; Genetic conditions.*

*In General Practice: The Integrative Approach, 1e,*

*Churchill Livingstone; 2011.*



**Fig. 3.32** Turner's syndrome. From Henry M. Seidel, Jane Ball, Joyce Dain, G. William Benedict. *Growth and measurement*. In: *Mosby's Guide to Physical Examination*, 6e; 2006.



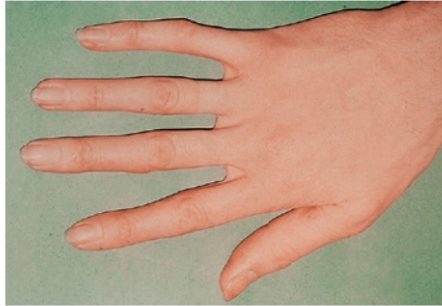
**Fig. 3.33** Child with achondroplasia. From Keith L. Moore, T. V. N. Persaud. *Congenital Anatomic Anomalies or Human Birth Defects*. in the *Developing Human: Clinically Oriented Embryology*, 8e; 2008.



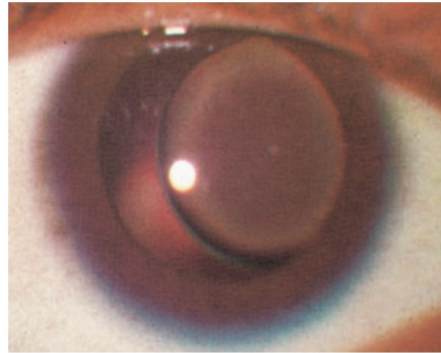
A



C



B



D

**Fig. 3.21 Marfan's syndrome, an autosomal dominant condition.** [A] Tall stature, with the torso shorter than the legs (note surgery for aortic dissection). [B] Long fingers. [C] High-arched palate. [D] Dislocation of the lens in the eye. (A–D) From Forbes CD, Jackson WF. *Color Atlas of Clinical Medicine*. 3rd edn. Edinburgh: Mosby; 2003.



# Thanks!



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