




Care of Children with Nutritional Disorders

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- 
- Children need food of appropriate **quantity** and **quality** for optimal growth and development
 - nutritional intake is inadequate → fail to grow in **weight** & subsequently **height**
 - Prolonged or severe nutritional deficiency → **malnutrition**

The nutritional vulnerability of infants and children

- Low nutritional stores - **poor stores of fat and protein**
- High nutritional demands for growth

rapid growth during 1st 6 months of life



If energy intake is low



affects the growth of the child



The nutritional vulnerability of infants and children contd...

- Rapid neuronal development
 - The brain grows rapidly during the first 2 years of life
- Recurrent acute illness or surgery
 - Reduce food intake
 - increase nutritional demands



Long-term outcome of early nutritional deficiency

- Low Linear growth

Height is adversely affected

- lower socioeconomic status and
- increasing number of children in families

- Chance of getting disease in adult life

- Increased incidences of coronary heart disease and stroke



Assessment of nutritional status

- Assessment of past and present dietary intake
 - Dietary recall
 - dietary diary
- Anthropometry
 - Weight & height
 - mid-arm circumference
 - skin fold thickness






Assessment of nutritional status contd....

- Laboratory assessments
 - Low plasma albumin
 - low concentrations of specific vitamins & minerals

- Immunodeficiency
 - Low lymphocyte count
 - Impaired cell-mediated immunity



| Normal | Wasted | Stunted |
|--|---|--|
|  An illustration of a healthy, well-nourished child. The child has a balanced, proportionate body with a visible belly button, clear facial features, and a healthy skin tone. The child is standing with hands on hips. |  An illustration of a child suffering from acute malnutrition (wasting). The child is extremely thin, with very little body fat and muscle. The ribs and spine are clearly visible through the skin. The child's face is gaunt and lacks normal features. |  An illustration of a child suffering from chronic malnutrition (stunting). The child is significantly shorter than the other two. The child has a large, protruding belly, which is a sign of protein deficiency. The child's facial features are somewhat flattened. |



Anthropometry

- Height for age
 - A measure of stunting
 - An index of chronic malnutrition
- Weight for height
 - A measure of wasting
 - An index of acute malnutrition
- Skin fold thickness
 - Assess subcutaneous fat stores
 - reflects short-term changes in body composition



Consequences of malnutrition

- Severe malnutrition
 - Impaired immunity
 - Delayed wound healing
 - Increased operative morbidity and mortality
 - Worsens the outcome of illness
 - Less active, less exploratory and more apathetic

- 
- prolonged and profound malnutrition



- may permanent delay in intellectual development



Nutritional Problems

- Failure to thrive
- Marasmus and kwashiorkor
- Vitamin D deficiency
- Rickets
- Vitamin A deficiency
- Obesity
- Dental caries



Failure to thrive

- Suboptimal weight gain in infants and toddlers
- Inadequate weight gain when plotted on a centile chart
 - Below the 2nd centile or more
 - Require repeated observations
- Height is compromised only by prolonged and severe FTT



Failure to thrive contd...

- **Causes for FTT**
 - Inadequate nutritional intake
 - Inadequate availability of foods
 - Psychosocial deprivation
 - Neglect or child abuse
 - Impaired suck or swallow
 - Chronic illness leading to anorexia
 - Inadequate retention of nutrients
 - Vomiting
 - Severe GI reflux



Failure to thrive contd...

- Causes for FTT contd...
 - Malabsorption
 - Coeliac disease, cystic fibrosis, cows' milk protein intolerance
 - Failure to utilize nutrients
 - Chromosomal disorders, IUGR, extreme prematurity, congenital infections, metabolic disorders
 - Increased nutrient requirement
 - Thyrotoxicosis, severe illnesses



Failure to thrive contd...

- **Diagnosis**
 - Studying the growth chart
 - History taking
 - Dietary history
 - Birth history (IUGR, prematurity, serious medical problems)
 - Growth of other family members & illnesses
 - Pattern of development
 - Psychosocial problems

Failure to thrive contd...

- Diagnosis contd...
 - Physical examination
 - Evidence of organic disease;
 - dysmorphic features
 - distended abdomen
 - thin buttocks and irritability in coeliac disease
 - respiratory signs and malabsorption in cystic fibrosis
 - evidence of nutritional deficiencies or evidence of chronic illness



Failure to thrive contd...

- **Diagnosis contd...**
 - Laboratory investigations
 - Full Blood Count
 - Serum ferritin
- **Management**
 - Assess eating behaviour and provide support
 - Paediatric dietician
 - For assessing the quantity and composition of food intake
 - recommending strategies for increasing energy intake



Failure to thrive contd...

- Management contd...
 - Support of speech and language therapist - specialist skills with feeding disorders
 - Support from psychologist and social services if necessary
 - Alleviating stress and assisting with feeding

Marasmus and kwashiorkor

- Marasmus
 - Due to severe protein-energy malnutrition
- Clinical features
 - Weight <60% of the mean for age
 - Wasted & wizened appearance
 - Markedly reduced skin-fold thickness and mid-arm circumference
 - Withdrawn and apathetic





Marasmus and kwashiorkor contd....

- **Kwashiorkor**
 - Due to severe protein malnutrition (energy intake is relatively well maintained)
- **Clinical features- Kwashiorkor**
 - body weight is 60-80% of expected
 - generalised oedema
 - skin rash with hyperkeratosis (thickened skin) and desquamation



Marasmus and kwashiorkor contd....

- Clinical features- Kwashiorkor contd...
 - distended abdomen and enlarged liver- due to fatty infiltration
 - angular stomatitis
 - sparse and depigmented hair
 - diarrhoea, hypothermia, bradycardia and hypotension
 - low plasma albumin, potassium, glucose and magnesium



Marasmus and kwashiorkor contd....

- Possible reasons- Kwashiorkor
 - Delay in weaning
 - Relatively high starch in subsequent diets
- Management – Kwashiorkor
 - Manage severe hypoglycaemia (associated with coma, hypothermia and infections)
 - Feeding 2- to 4-hourly, including during the night

Vitamin D deficiency

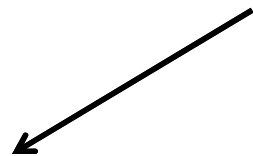
- Deficient intake or defective metabolism of vitamin D



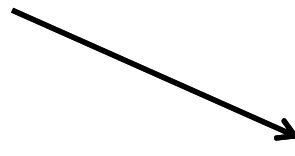
- Low serum calcium



parathyroid hormone



Bone demineralization to normalises the serum calcium



Renal losses of phosphate and consequently low serum phosphate levels



Further reduction of bone calcification



Vitamin D deficiency ctnd...

- Bone deformity & rickets
- Symptoms of hypocalcaemia
 - seizures, neuromuscular irritability (tetany), apnoea, stridor
 - more common before 2 years of age and in adolescence





Vitamin D deficiency ctnd...


- Rickets- in children
 - failure in mineralisation of the growing bone or osteoid tissue
- Osteomalacia- in adults
 - failure in mineralisation of the mature bones


Vitamin D deficiency ctnd...

- Causes of rickets
 - Nutritional (primary) rickets
 - Dark-skinned
 - Decreased exposure to sunlight
 - Maternal vitamin D deficiency
 - Diets low in calcium, phosphorus and vitamin D
 - Macrobiotic, strict vegan diets
 - High phytic acid diet
 - Intestinal malabsorption

- 
- Causes of rickets contd...
 - Target organ resistance to $1,25(\text{OH})_2\text{D}_3$
 - Clinical features
 - Ping-pong ball sensation of the skull
 - Costochondral junctions may be palpable
 - Wrists & ankles may be widened
 - Horizontal depression on the lower chest
 - Bowed legs

- 
- **Clinical features**
 - Sadness/ unhappiness
 - Failure to thrive/short stature
 - Frontal bossing of skull
 - Craniotabes
 - Delayed closure of anterior fontanelle
 - Delayed dentition
 - Rickety rosary

- 
- Clinical features contd...
 - Harrison's sulcus (Horizontal depression on the lower chest)
 - Expansion of metaphyses (especially wrist)
 - Bowing of weight-bearing bones
 - Hypotonia
 - Seizures (late)

- 
- **Diagnosis**
 - Low or normal serum calcium
 - Low serum phosphorus level
 - Markedly increased plasma alkaline phosphatase
 - Low 25-hydroxy vitamin D



- **Management**


- **Nutritional rickets**

- advice about a balanced diet,
- correction of predisposing risk factors
- daily administration of vitamin D3 (cholecalciferol)



Vitamin A deficiency

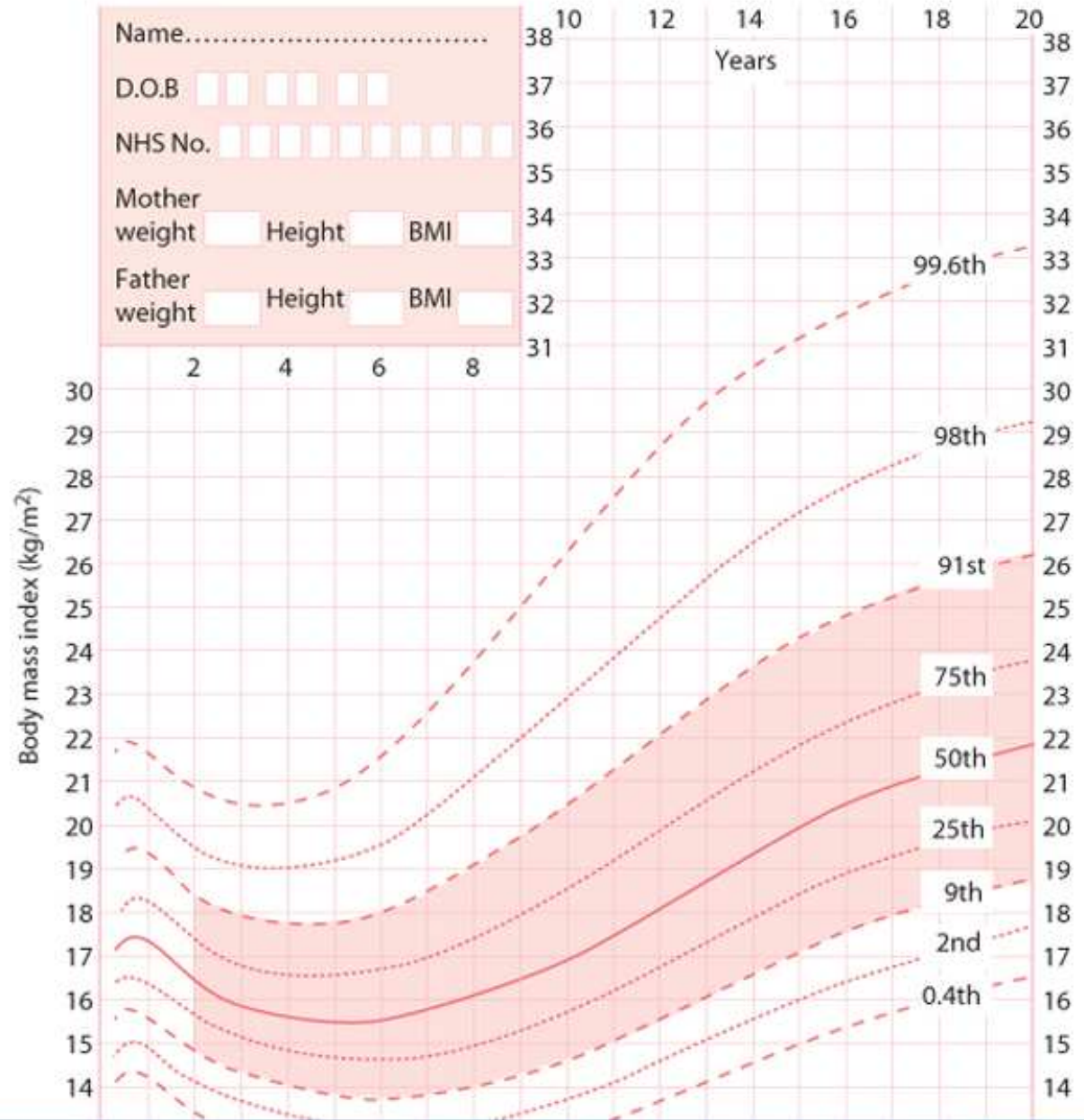
- **Causes**
 - Fat malabsorption
 - Inadequate supplementation
- **Clinical features**
 - Night blindness
 - Eye damage from corneal scarring
 - impairment of mucosal function
 - Infections by impaired immunity

- 
- **Management**
 - Increase dietary intake
 - Supplementation (vita. A megadose)



Obesity

- Very common
 - Definition
 - BMI >98th centile (Body mass index (BMI = weight in kg/height in metres²)
- Predicts;
- increased risk of persistence of obesity into adult life
 - abnormalities in blood lipids and blood pressure.






- **Causes**


- increased intake of energy-dense food (high-fat, energy-rich foods such as fast foods)
- Reduced exercise (sedentary lifestyle)
- Exogenous causes (rare)
 - hypothyroidism, Cushing's syndrome and some genetic syndromes



Complications of obesity

- Orthopaedic
 - Slipped upper femoral epiphysis
 - Tibia vara (bow legs)
 - Abnormal foot structure and function
- Benign intracranial hypertension (headaches, blurred optic disc margins)
- Hypoventilation syndrome (daytime somnolence; sleep apnoea; snoring; hypercapnia; heart failure)

- 
- Complications contd...
 - Gall bladder disease
 - Polycystic ovary disease
 - Hyperinsulinaemia and non-insulin-dependent diabetes mellitus
 - Hypertension
 - Abnormal blood lipids
 - Other medical sequelae
 - Asthma

- 
- Complications contd...
 - Psychological sequelae
 - Low self-esteem
 - Teasing
 - Depression
 - Body dissatisfaction



- **Management**

- **Weight maintenance by sustained changes in lifestyle**
 - **Healthier eating**
 - **Increase in habitual physical activity** to 30 to 60 minutes of moderate or vigorous physical activity per day
 - **Reduction in physical inactivity** (e.g. watching TV during leisure time to less than an average of 2 hours per day)



Dental caries

- Prevalence is increasing
- Causes
 - Exposure to organic acids produced by bacterial fermentation of carbohydrate (particularly sucrose)
- Prevention
 - reduction in plaque bacteria by brushing teeth
 - less frequent ingestion of carbohydrates



Dental caries contd...

- Prevention contd...
 - regular inspection by a dentist
 - optimal intake of fluoride up to puberty to improve the resistance of the tooth to damage
 - Discourage bottle feeding with fermentable liquid during bedtime at night



Care of Children with Respiratory Disorders



Respiratory Disorders

- Upper respiratory tract
 - oronasopharynx, the pharynx, the larynx, and the upper part of the trachea
- Lower respiratory tract
 - the lower trachea, the mainstem bronchi, the segmental bronchi, the bronchioles and the alveoli



Respiratory Disorders contd...

- Infections spread rapidly over the respiratory tract of children
 - Continuous nature of the mucosal lining
 - The airways of children are smaller in diameter and the distances between various respiratory structures short
- Quickly compromise a young child due to swelling of the airway passages and blockage due to mucous and secretions



Respiratory Disorders contd...

- Respiratory illnesses can be caused by viruses or bacteria
- Common viruses
 - respiratory syncytial virus, non-polio enteroviruses (coxsackie A&B), adenoviruses, parainfluenza viruses and metapneumoviruses



Respiratory Disorders contd...

- Common bacteria
 - Group A beta-hemolytic streptococci, staphylococci, Haemophilus influenza, Chlamydia trachomatis, Mycoplasma and pneumococci
 - Haemophilus influenza and 13 different strains of the pneumococci are prevented by vaccines



Respiratory Disorders contd...

- Full-term infants under 3 months of age - protection from infections from maternal antibodies.
- From 3-6 months - the protection begins to wane.
- From 6 months until five years of age - children experience numerous viral infections.



Respiratory Disorders contd...

- Factors which can affect a child's resistance to respiratory illness
 - Immune compromise, malnutrition, anemia, allergies, preterm birth, asthma, cystic fibrosis or cardiac anomalies
 - Environmental factors such as daycare attendance, environmental smoke can also affect respiratory infection rate



Signs and Symptoms of respiratory tract infection

- Fever
- Poor feeding, anorexia
- Vomiting
- Diarrhea
- Abdominal pain
- Nasal discharge, blockage
- Cough
- Respiratory sounds: cough, stridor, hoarseness, grunting, wheezing, crackles, absence of breath sounds
- Sore Throat
- Meningismus



Nursing Assessment

- Rate/Rhythm, depth, ease of respirations
- Breath sounds
- Observation of the child's color
- Vital signs



Nursing Actions

- Ease respiratory efforts - cool mist, steam
- Promote rest - decreased activity
- Promote comfort - nasal drops/ nasal sprays 2 as prescribed
- Prevent spread - hand washing, cover mouths, tissues,
- Reduce temperature - Antipyretics, cool liquids
- Promote hydration
- Provide nutrition – gelatin, soup



Symptoms of complications of a respiratory illnesses

- Earache
- Respiratory rate >50-60 breaths per minute
- Fever >101
- Listlessness
- Confusion
- Increased irritability
- Persistent cough for 2 days or more
- Crying
- Wheezing
- Restlessness
- Refusal to eat/drink
- Low output



Nasopharyngitis (common cold)

- Common
- Managed at home with supportive care
- Diagnosis based on history
- Better within 48-72 hours

- **Assessment**
 - Vital signs
 - Infants may have trouble eating due to congestion
 - Color and amount of secretions



Nasopharyngitis (common cold) contd...

- **Nursing diagnosis/Outcomes**
 - Ineffective airway/ patent airway
 - Deficient fluid volume/ output 1ml/kg/hr
 - Acute pain/ comfort



Nasopharyngitis (common cold) contd...

- **Treatment**

- Supportive care - rest, elevate head of bed
- Nonaspirin analgesics
- Humidifiers
- Saline drops, bulb suction
- Fluids - frequent rest periods
- Usually viral so no antibiotics

Pharyngitis

- 80-90% are viral
- Strep throat - at risk for scarlet fever, rheumatic fever, and acute glomerulonephritis
- **Clinical features**
 - tonsillar exudate,
 - headache,
 - fever, abdominal pain,
 - Strawberry tongue, a fine sandpaper rash,
 - clear nasal airways - more indicative of Strep
 - Manifestations subside in 3-5 days but can be complicated with a peritonsillar abscess or sinusitis
 - Acute glomerulonephritis can follow in 10 days or rheumatic fever in 18

Pharyngitis contd...

- **Treatment/Management**

- Supportive care for viral- Warm salt water gargles, Nonsapirin analgesics for the pain, throat lozenges, Soothing liquids for hydration, rest
- For bacterial - Penicillin G deep IM, Alternatively oral antibiotics, Erythromycin if allergic to penicillin
- Need to return if not significantly better in 24-48 hours



Tonsillitis

- Tonsils are masses of lymphoid tissue in the pharyngeal area
- Children have larger tonsils
- Tonsillitis often accompanies pharyngitis and most are viral
- Kissing tonsils makes swallowing difficult
- Inflammed Adenoids makes breathing through the nose difficult



Tonsillectomy

- Indications- three or more infections despite adequate therapy
- Not recommended if cleft palate, current infection or blood disorders
- Not recommended for child less than 3 years - possibility of excessive blood loss & lymphoid tissue can grow back



Tonsillectomy contd...

Tonsillectomy Care

- **Diagnosis/Outcomes**

- Risk for fluid deficit/ adequate hydration
- Pain/ minimize pain
- Risk for injury (bleeding) due to incision/
minimize injury (bleeding)



Tonsillectomy contd...

- **Interventions (after surgery)**
 - Placed **on side** post surgery to promote drainage
 - Soft liquid diet (cool, non carbonated, non-acidic)
 - popsicles or drinks which are **not red**
 - Cool mist vaporizer
 - Throat lozenges
 - Analgesics
 - Instruct child to - no coughing, no clearing throat, no blowing nose or no vigorous toothbrushing



Tonsillectomy contd...

- Membrane forms over operative site, starts to pull off between 4 and 10 days
- Hemorrhage may occur up to 10 days - sloughing of tissue
- **Frequent swallowing, restlessness, tachycardia can indicate bleeding**



Influenza

- Types A, B and C
- Common among school children
- Can be mild, moderate or severe
- Clinical features
 - Dry cough, throat, photophobia, myalgia, chills, fever, exhaustion

Influenza contd...

- **Treatment/Management**
 - Symptomatic care –antipyretics, analgesics
 - Follow droplet and standard precautions
 - Administer I.V. fluids as ordered
 - Encourage the patient to rest in bed and drink plenty of fluids.
 - Monitor the patient's fluid intake and output for signs of dehydration
 - Regularly monitor the patient's vital signs, including his temperature
 - Watch for signs and symptoms of developing pneumonia - Greatest danger secondary infection



Otitis Media

- Eustachian tubes
 - Promote drainage of middle ear secretions into the nasopharynx
 - Ventilation of middle ear and to equalize air pressure
 - Short, horizontal and function poorly in infants
- One of the most prevalent childhood diseases
- Often preceded by respiratory infection
- Most common at 6-12 months of age
- Factors affecting: Infections, feeding techniques, smoke exposure, daycare

Otitis Media contd...

- **Causative organisms**
 - viruses, especially RSV and rhinovirus
 - pneumococcus, *H. influenzae* and *Moraxella catarrhalis*
- **Clinical features**
 - Infant - fussy, crying, pulls ear, rolls head side to side, no appetite
 - Child – c/o pain, crying, irritability, lethargy, loss of appetite
 - Chronic – 3 or more in 6 months, can cause hearing loss, tinnitus, vertigo

Otitis Media contd...

- **Diagnosis**

- can only be diagnosed by examining the tympanic membrane
- tympanic membrane is seen to be bright red and bulging with loss of the normal light reflection



Otitis Media contd...

- If recurrent, many result in Otitis Media with Effusion (OME), which may cause hearing loss (later speech and learning difficulties)



The eardrum is seen to be dull and retracted, often with a fluid level visible

Otitis Media contd...

- **Treatment/Management**
 - Therapeutic antibiotics (Neither decongestants nor antihistamines are beneficial)
 - Pain management
 - Prevent complications
 - Education: feeding practices, smoking
 - Tympanostomy – surgical incision for drainage
 - Myringotomy – surgical placement of tubes (grommets)



Epiglottitis

- Severe life threatening emergency
- Often caused by Haemophilus influenza
- Prevention- vaccines administered at 2, 4, 6 months (Hib)
- **Clinical Features**
 - Sudden onset
 - Restlessness, high fever, sore throat
 - Dysphagia, drooling, muffled voice

Epiglottitis contd...

- **Treatment/ management**

No attempt to examine the throat of a child with suspected epiglottitis as it can cause a spasm and close the airway

Be prepared for a possible intubation or tracheostomy

- Prepare for hospitalization in the ICU
- Employ measures to decrease agitation
- Administer antibiotics as prescribed
- Maintain the child's positioning for optimum oxygenation (sitting)



Croup

- Mucosal inflammation and increased secretions affecting the larynx, trachea and bronchi
- Oedema of the subglottic area - critical narrowing of the trachea - potentially dangerous in young children
- Occurs from 6 months to 6 years of age but the peak incidence is at 2 years



Croup contd...

- **Causative organisms**
 - Parainfluenza viruses (commonest)
 - Metapneumovirus
 - RSV
 - Influenza virus
- **Diagnosis**
 - Based on history, CBC, x-rays

Croup contd...

- **Clinical features**
 - Barking cough, harsh stridor and hoarseness, usually preceded by fever and coryza
 - Chest retractions
 - The symptoms often start and are worse at night
- **Treatment/ Management**
 - Can usually be managed at home
 - Provide Rest
 - Oral dexamethasone, oral prednisolone and nebulised steroids (budesonide) reduce the severity and duration of croup

Croup contd...

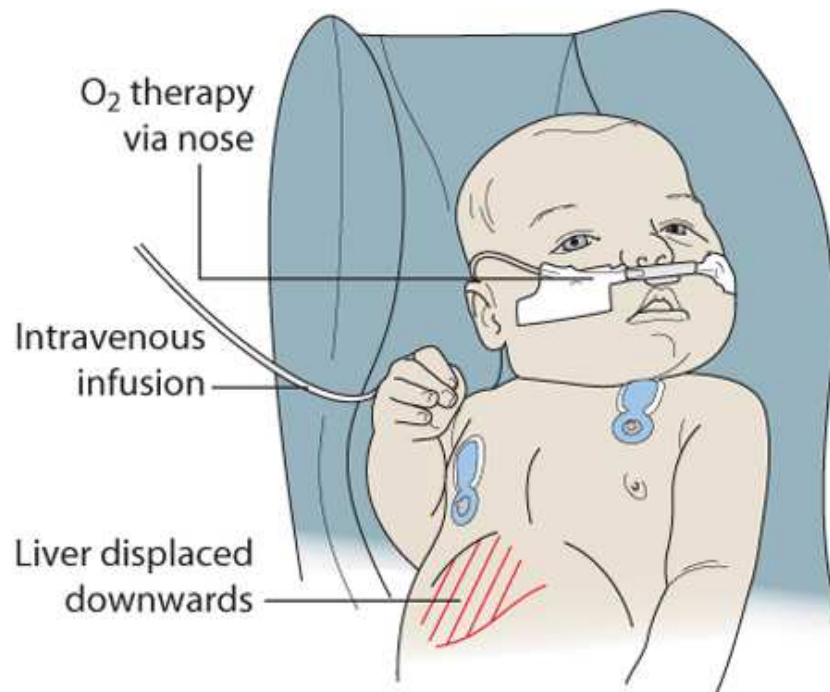
- **Treatment/ Management contd....**
 - Nebulised epinephrine (adrenaline) – to provide transient improvement in severe upper airways obstruction
 - If oxygen saturation of $< 93\%$ in air - nebulised epinephrine with oxygen by face mask and closely monitored
 - Antipyretics
 - Anxiety reduction
 - Few children may require **tracheal intubation** until steroid therapy starts

Bronchiolitis

- RSV (Respiratory Syncytial Virus) - most common cause of bronchiolitis in children < 1 yrs
- investigations
 - nasopharyngeal secretions, chest X-ray, Blood gas analysis
- **Clinical features**
 - sharp, dry cough
 - tachypnoea
 - subcostal and intercostal recession
 - hyperinflation of the chest
 - sternum prominent
 - liver displaced downwards
 - Poor feeding & fatigue
 - fine end-inspiratory crackles
 - high-pitched wheezes - expiratory > inspiratory
 - tachycardia
 - cyanosis or pallor.

Bronchiolitis contd...

Bronchiolitis



Apnoea in infants
<4 months

Sharp, dry cough

Cyanosis or pallor

Hyperinflation of the chest:

- sternum prominent
- liver displaced downwards

Subcostal and intercostal recession

Auscultation:

- fine end-inspiratory crackles
- prolonged expiration

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Figure 16.6 Clinical features of severe bronchiolitis in an infant.

Bronchiolitis contd...

- **Treatment & management**
 - Isolate - spread by droplet but contact isolation preferable
 - Monitor respiratory status
 - Clear the airway by using bulb syringe
 - Humidified oxygen is delivered via nasal cannulae or into a headbox
 - raise head of bed
 - Consolidate care (so frequent rest periods)



Bronchiolitis contd...

- **Treatment & management contd...**
 - Hydrate, IV/ NG for hydration or feeding with frequent rest periods
 - Monitor I &O
 - Mist or nebulized medications as needed (salbutamol or ipratropium)
 - Antiviral agent - Ribavirin

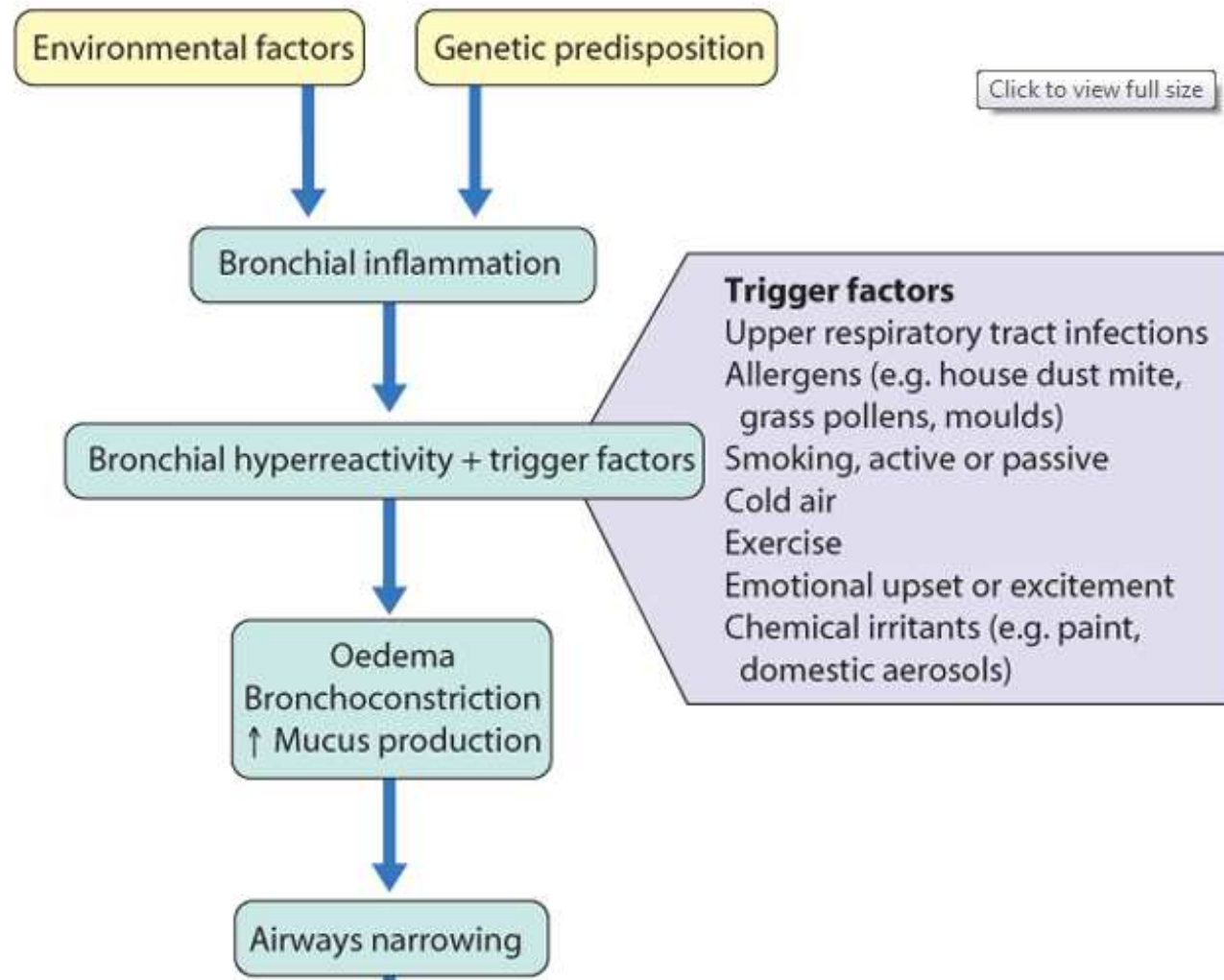


Asthma

- Most common chronic respiratory disorder in childhood
- Characterized by edematous airways clogged with mucous
- Smooth muscles of bronchi and bronchioles constrict
- Air trapping occurs
- Cause of school absenteeism, restricted activity and anxiety for the child and family

Asthma contd...

Pathophysiology



Asthma contd...

- May occur due to atopy or allergy-inherited predisposition to sensitisation to allergens
- **Diagnosis**
 - wheezing on more than one occasion (heard on auscultation by a health professional)
 - Exacerbations with viral respiratory infections
 - Chest examination- hyperinflation of the chest, generalised polyphonic expiratory wheeze and a prolonged expiratory phase
 - Evidence of eczema
 - nasal mucosa for allergic rhinitis



Asthma contd...

- **Diagnosis contd...**

- If asthma is severe- presence of a wet cough or sputum production, finger clubbing, or poor growth

- **Investigations**

- Skin prick testing for common allergens
- Recording peak expiratory flow rate (over age 5 yrs)- increased variability in peak flow- usually check the response to treatment

Asthma contd...

Assessment of the child with chronic asthma

Clinical features to check

Growth and nutrition

Peak flow/spirometry

Chest for:

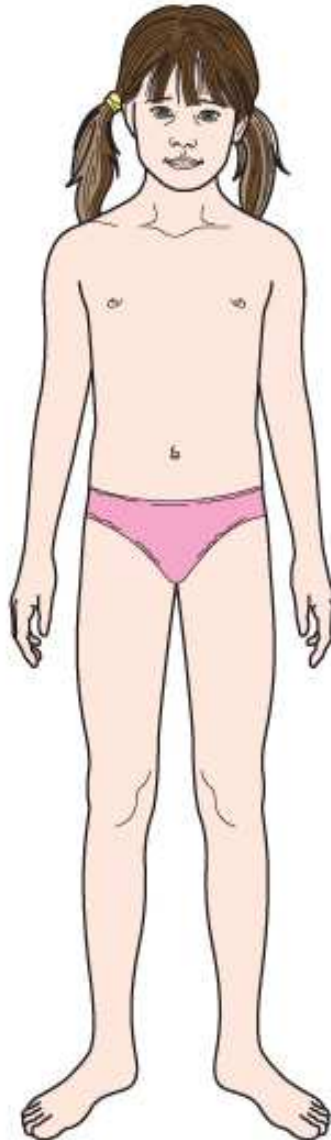
Hyperinflation
Harrison's sulcus
Wheeze

Are there other allergic disorders?

- Allergic rhinitis
- Eczema, etc.

If there is:

- Sputum
- Finger clubbing
- Growth failure
- If present, other causes should be sought



Monitor:

- Peak flow diary
- Severity and frequency of symptoms
- Exercise tolerance
- Interference with life, time off school
- Is sleep disturbed?
- Use of preventer and reliever medication – are they appropriate?
- Inhaler technique

Consider triggers:

- Allergic rhinitis needing treatment?
- Allergens - animal dander, etc.
- Stress

Asthma contd...

- **Clinical features- acute asthma**
 - Wheeze and tachypnoea
 - 2-5 yrs- RR >50 breaths/min
 - 5 yrs or over- >30 breaths/min
 - Increasing tachycardia
 - 2-5 yrs- >130 b/min
 - 5 yrs or over- >120 beats/min
 - The use of accessory muscles and chest recession
 - If breathlessness interferes with talking- severe
 - Cyanosis, fatigue and drowsiness - late signs of life-threatening asthma

Assessment of the child with acute asthma

Determine the severity of the attack

(see Fig 16.17)

- Mild
- Moderate
- Severe
- Life-threatening

Too breathless to talk or eat?

Increased work of breathing

- Tachypnoea – severe if >30 breaths/min

Chest recession:

- Moderate – some intercostal recession
- Severe – use of accessory neck muscles
- Life-threatening – poor respiratory effort

Auscultation:

- Wheeze
- Silent chest – poor air entry in life-threatening

Pulse:

- Severe – >120 beats/min



Level of consciousness – altered in life-threatening
Exhaustion

Tongue:

- Cyanosis in life threatening

Peak flow (% predicted):

- Moderate $>50\%$
- Severe $<50\%$
- Life-threatening $<33\%$

O₂ saturation:

- Moderate $>92\%$
- Severe or life-threatening $<92\%$

Is there a trigger for the attack?:

- URTI or other viral illness
- Pneumonia
- Allergen, e.g. animal dander
- Exercise
- Cold air

Asthma contd...

- **Treatment/ management**

- **Aims**

- controlling symptoms
- preventing exacerbations
- optimising pulmonary function, while minimising treatment and side-effects

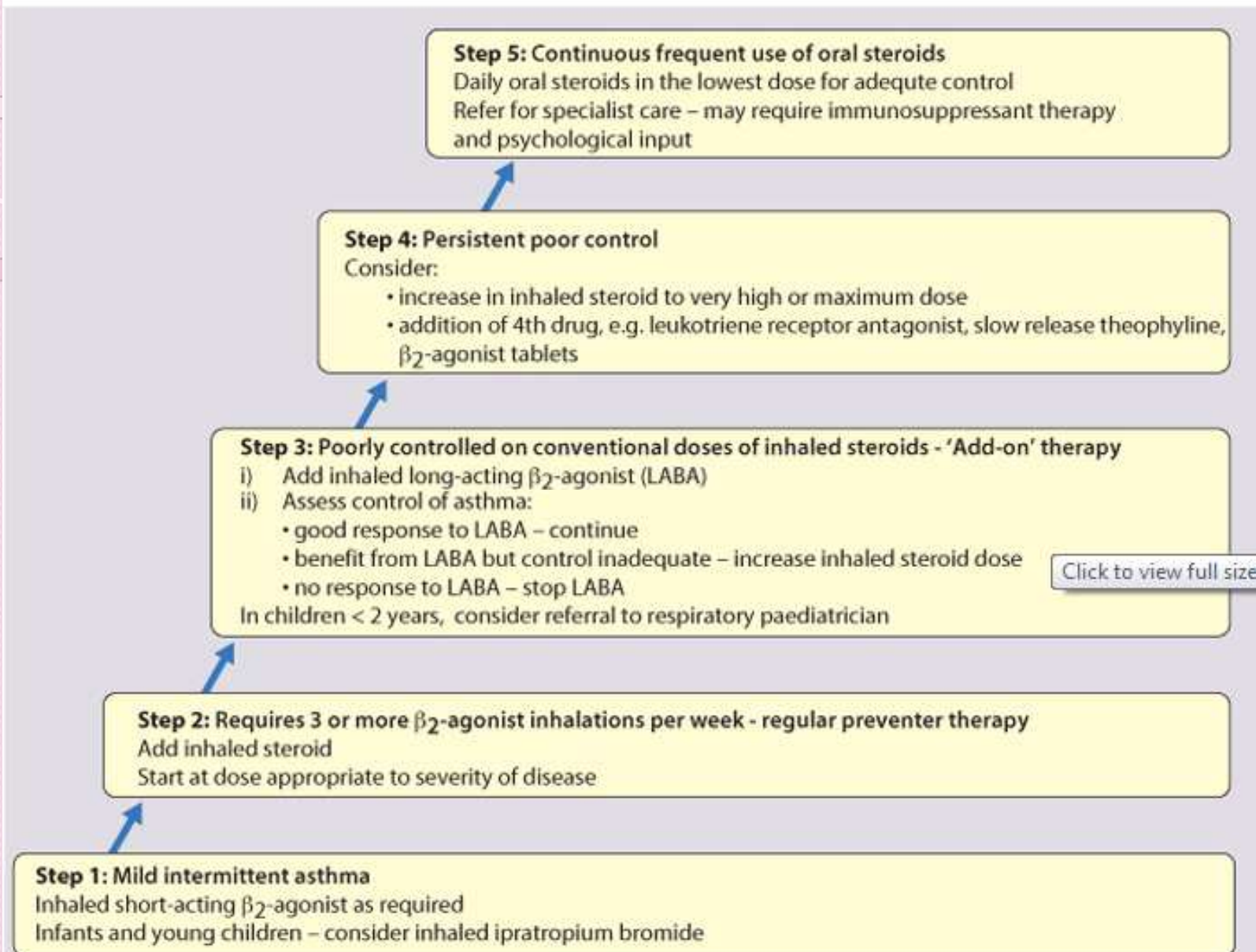
- **Drugs**

- Bronchodilators (β_2 -agonists , Anticholinergic bronchodilators)
- Preventatives/ prophylactics (Inhaled steroids, Long-acting β_2 -bronchodilators, Methylxanthines, Leukotriene inhibitors, Oral steroids)

Asthma contd...

- **Treatment/ management contd...**
 - Avoidance of the allergen
 - Psychological intervention in chronic severe asthma
- **Exercise-induced asthma**
 - Asthma induced only by vigorous exercise
 - short-acting β_2 -agonist bronchodilator immediately before exercise
 - if more marked symptoms- a long-acting β_2 -agonist in conjunction with an inhaled steroid

A stepwise approach to the treatment of chronic asthma



There is a logical stepwise progression to treatment. This is determined by the frequency and severity of symptoms and the response to treatment. The aim is to gain control of symptoms and to then step down treatment over the next few months.



THANK YOU