

## Coughs and Colds

- Differential diagnosis: viral cold, bacterial sinusitis, flu, hay fever, medication induced congestion e.g. with antihypertensives
- Common cold:
  - There is no cure, products may help with symptomatic relief
  - Upper respiratory tract infection caused by viruses
  - Adults have 2-4 colds/yr, children (2-6yo) have 5-10 /year (lower/developing immune response)
  - Symptoms include:
    - Dry or sore throat (often first sign)
    - Runny nose or blocked nose
    - Sneezing –to clear nasal passages (can also be a sign of allergies)
    - Cough –dry or productive, may persist for longer due to inflammation/irritation
    - Hoarseness –from swollen vocal chords
    - Headache –due to congestion
  - Symptoms last 4-14 days, generally resolve spontaneously (cough may persist for more than 14 days)
  - Coloured mucus –yellow/green discharge from nose or mouth is due to release of peroxidase by white blood cells–indicates immune response to either bacterial *OR* viral infection
    - Bacteria tend to have localised effects, viruses have field effects
    - Sore throats and URTIs are generally viral
  - Treatment options offer symptomatic relief –pain relievers, antipyretics, decongestants, expectorants, cough suppressants, anti-bacterial/anaesthetic lozenges and gargles
  - Non-pharmacological: rest, fluid intake, adequate nutrition
  - Aim to: avoid antibiotics, provide realistic expectations for medication effectiveness and provide self-care information
- Influenza:
  - Viral infection
  - Symptoms: fever (>38°C), fatigue, irritation in lungs/throat, dry cough, shiver, sweating, muscle aches
  - Annual preventative vaccinations available
- Sinusitis:
  - Inflammation of the sinuses
  - Active bacterial sinusitis may follow upper (viral) respiratory tract infections in 0.5–5% of cases
    - More than 7-10 days of mucopurulent discharge
    - Facial and dental pain/tenderness due to pressure
    - Poor response to decongestants (nasal spray, pseudoephedrine)
  - Will resolve without antibiotics in about two weeks
  - Antibiotics may slightly shorten symptom duration
- Rhinitis (may be allergic or viral):
  - Inflammation of nasal lining causing congestion, runny nose, sneezing and itching
  - Infectious rhinitis - usually of viral origin (no itching)
    - No proven treatments
    - Symptomatic relief: nasal decongestants (vasoconstrictors), saline nasal sprays, steam
    - Antihistamines are common in night-time medications and intranasal corticosteroids –cause drowsiness, may also have anticholinergic effects (dry mouth, urinary retention, blurred vision)
  - Allergic rhinitis (hayfever)
    - Know triggers
    - Intermittent (irregular) or persistent
    - 4 cardinal signs: rhinorrhoea, nasal congestion, sneezing, nasal itching. May develop a rash.
    - Patients generally have personal and family history of allergies (asthma, eczema)
    - Symptom severity dependent on allergen exposure
    - First line treatment: antihistamines and corticosteroids
- Tonsillitis:
  - Bacterial throat infection → very inflamed lymph nodes
  - Fever (> 38°C) but no cough
  - Tender cervical lymphadenopathy (enlargement of lymph nodes) and tonsillar exudates (pus)
  - Generally do not require antibiotics, but benzyl penicillin used if severe

## Cold and flu product options

- Pain/fever: analgesics and antipyretics, e.g. aspirin and ibuprofen –anti-inflammatories (contraindicated in hypertensive patients and stomach or kidney conditions).
  - Must be paired with adequate hydration as fever causes sweating
- Congestion: two types → nasal congestion (rhinorrhoea) and sinus congestion. Treatments include:
  - Topical decongestants (nasal sprays) –oxymetazoline, tramazoline, xylometazoline
    - Safer than oral decongestants due to little systemic absorption
    - Contraindication with MAOIs
    - Prolonged use can cause rebound congestion – use for 3-5 days maximum
  - Oral decongestants –pseudoephedrine and phenylephrine (do not cause rebound congestion)
    - Work on all  $\alpha$  receptors of SNS to cause vasoconstriction
    - Contraindicated in hypertension, heart disease and MAOI users
    - Avoid in pregnancy, caution during breastfeeding
    - SE: nervousness, insomnia, ↑ HR and BP, affected blood glucose control
    - Patients with hyperthyroidism are more prone to the side effects
    - Avoid taking medication just before sleeping
    - Pseudoephedrine = precursor to amphetamines (CNS stimulant)
  - Steam inhalation and saline sprays –moisturise and clear nasal passages. Saline sprays are very safe especially for children, and are used to make patient feel more comfortable. Steam is unsafe for children; can cause burns.
  - Oral analgesics: if sinus congestion causes headache
  - Corticosteroids: not ideal as they dampen the immune system
- Sore throat:
  - Analgesics = paracetamol, aspirin, ibuprofen (may take ~ 20 mins for effect)
  - Povidone-iodine (betadine) gargle: oral anti-septic, kills all microbes, relief is not instantaneous. Avoided in pregnancy and lactation
  - Anti-bacterial agents
  - Anti-inflammatory or anaesthetic gargles, sprays, lozenges: only if severe
  - Non-medicated treatments including honey and lozenges
  - Sore throat should resolve within 2-3 days on its own
- Cough: either dry or productive (chesty)
  - Cough suppressants including pholcodeine, codeine and dextromethorphan, all opioid respiratory depressants (avoided in asthmatics)
  - Generally counterintuitive to suppress cough as it is a natural body reflex – avoid using cough suppressants unless post-viral or irritating
  - For chesty coughs, use an expectorant (e.g. Guafenesin) or a mucolytic (e.g. Bromhexine)
  - Increase in fluid intake and rest
- Other remedies include Zinc, Echinacea (exacerbates asthma) and high doses of vit C (↓ duration by 1-2 days)
- For allergic rhinitis –intra-nasal corticosteroids, ideal for moderate to severe persistent allergic rhinitis. Act as an immunosuppressant to prevent overreaction to allergies. All agents have similar but slow onset of action (4 days for full effect). If possible, try to initiate treatment one week prior to allergen exposure.
  - Consider fast acting medication (decongestant, antihistamine) for the first 3-5 days of starting intra-nasal corticosteroids
  - Antihistamines have a faster onset of action but are less effective than the corticosteroids. However, they are effective against runny nose, sneezing and itching
  - E.g. cetirizine, loratadine, fexofenadine
  - Individual response to specific agents/brands of antihistamines varies

#### When to refer?

- Possibility of serious disease –identified sign/ symptoms or inability to exclude
- Not confident/competent to make a decision
- Further investigation would it be in the patient's interest
- Persistent symptoms –sore throat cough, ear aches, chest pain, nocturnal cough
  - Dysphagia (difficulty swallowing), dyspnoea (shortness of breath), suspected dehydration, tonsillar exudate, blood in sputum
  - Fever > 38°C or higher for more than three days
  - Cold causing exacerbation of asthma
  - Suspected lower respiratory tract infection

## Bowel Diseases

- Dehydration: body requires correct internal balance of water and electrolytes –derived from food/fluids and depend on absorption and transport to distribute them throughout the body
  - The body is two thirds made up of water
- Groups of people that are more prone to dehydration are the elderly and babies
  - Babies have higher water content which they can lose easily
  - Elderly due to wrinkled skin
- There is a continuous loss of water and electrolytes from the body in urine, breath, secretions etc.
- The body has good mechanisms to maintain the internal water and electrolytes levels constant within certain limits but under extreme conditions these mechanisms cannot cope
- Dehydration = when body levels of water/electrolytes become sub-optimal for normal functioning and well-being
- Diahoerra also causes loss of fluid hence balance is upset
- Fluid requirements in children:
  - At birth, water accounts for 75% of the infant's body weight
  - This reduces throughout childhood to 60% in the adult
  - The higher water requirement in infants is due to high evaporative loss from the large surface area of the skin and lungs (large SA:mass ratio)
- Factors modifying fluid requirements:
  - Extra fluid is required during:
    - Fever (because of sweat lost)
    - Hyperventilation
    - High ambient temperatures
    - Extreme activity
    - Other abnormal fluid losses
  - Less fluid required during:
    - Hypothermia
    - Very high humidity
    - Oliguria or anuria
    - Extreme inactivity
    - Fluid retention
    - Excessive secretion of ADH
- Causes of dehydration: gastroenteritis (diarrhoea/vomiting), diabetes, chemotherapy, fever, excessive sweating and lack of fluid input
- To prevent dehydration: drink fluids, dress appropriately in heat, replace lost fluids and avoid caffeine (caffeine and alcohol are dehydrating as they inhibit ADH)

**Case:** Mrs. Coleman enters your pharmacy with her 10 month old (Tara). She tells you that Tara has not been feeding as much as normal today, and that she is irritable. She says she threw up her breakfast and has done 4 sloppy poos in her nappy already.

- WHAT STOP GO protocol for Tara:
  - We know who the patient is as we have been informed
  - Need to know how long it has been and what other symptoms she has
  - Medical conditions and medications
  - Should we refer?
- Signs of dehydration: **biggest concern during diahoerra is dehydration which can be lethal**
  - Weight loss of 5-10% (weigh baby)
  - Lethargy
  - Dry lips, eyes, tongue
  - Increased thirst
  - Sunken eyes
  - Sunken fontanelle
  - Loss of skin rigidity (skin returning to normal state after being disturbed)
  - Rapid pulse
  - Dark urine (more waste products than water)
- Levels of dehydration –Signs:
  - Body weight loss
  - Appearance
  - Mucous membranes
  - Skin turgor
  - Blood pressure
  - Pulse and urine output
- Mild dehydration: above signs are all < 5% with no other clinical signs
- Moderate dehydration: above signs are 5-10% + lethargy, dry mucous membranes, loss of skin turgor, sunken eyes and sunken fontanelle, rapid pulse and decreased urine output (normal blood pressure)
- Severe dehydration: Above are > 10% + drowsy, sweaty, cold, very dry mucous membranes, loss of skin turgor, sunken eyes and sunken fontanelle, low blood pressure, rapid, feeble pulse and minimal/no urine output. Need to be on a saline drip.

*Tara has been alert, but is irritable. She is breast fed three times a day and has solids three times a day. Mum says she doesn't seem to have a temperature. She usually does 1 or 2 poos a day.*

- We should ask what is normal for the baby, if she usually only does 1-2, it is not very dangerous, may be diahoerra and a slight infection. If it is 3 times more or less than normal, it becomes a concern

#### Diahoerra

- Increased frequency of liquid or semi-solid stools, results in loss of fluids and salts leading to dehydration
- Causes of diahoerra:
  - Inflammatory Bowel Disease; including Crohn's disease and ulcerative colitis
  - Irritable Bowel Syndrome –functional syndrome, do not know pathology causing symptoms
  - Medications: can adjust dose or check for secondary infections. Antibiotics, colchicine, magnesium and laxatives cause diahoerra as an ADR
  - Infections (viral/bacterial)
- Treatment principles: recognize signs, respond quickly, restore body fluid and electrolyte levels and rest
- Fluid replacement:
  - For non-dehydrated/mildly dehydrated child: correctly constituted oral rehydration fluids are optimal but not required
  - Low joule drinks are not appropriate as sugar needed to enhance water absorption
  - Undiluted fruit juice, carbonated drinks (10% sugar), cordial, sports drinks (15-23% sugar)
  - They may increase diahoerra and dehydration because of their high osmolality
  - Should not use full strength fruit, soft drinks or sports drinks
- Dilutions: addition of water to drinks if medication is not available:
  - Fruit juice is 1 in 4 dilutions (i.e. 50mL juice, 150mL water)
  - Cordial is 1 in 16 dilutions (i.e. 10mL cordial, 150mL water)
  - Carbonated drink is 1 in 4, (i.e. 50mL carbonated drink, 150mL water)
- Pharmacological management:
  - Fluid and electrolyte therapy (sodium, potassium, glucose and water)
  - Anti-diahoerral drugs reduce bowel movement by restricting muscle contraction –they are opioids that work on  $\mu$ -receptors to stop peristalsis
  - Drugs used for their side effect of constipation
  - Anti-motility drugs –short term to control of symptoms during periods of social inconvenience
    - Not to be used in children
    - Contraindicated in IBD, keeps feces in colon → toxic mega-colon (can perforate the bowel)
- Oral rehydration preparations: frozen preparations may have a higher hydration success and lower refusal rate. They are more acceptable to children, provide a self-limiting consumption rate
  - Objective = provide as much fluid as in a normal day –at least 5 mL/kg/hr
  - Given in small amounts frequently
- Breastfeeding: should be continued (breast milk has more water and less solids), it offers both fluids and comfort, accepted by children better than artificial fed nutrients. Other fluids offered between feeds
- Bottle feeding: give OHS and formula in small amounts but more frequently. Can use a lactose free formula for short period, then go back to normal formula
- Solids recommended within 24 hours –once vomiting ceases, easily digested foods should be offered
- Antibiotics (not recommended for infants):
  - Can aggravate viral gastroenteritis
  - Can prolong the carrier state without altering the course of the disease
  - Should only be considered in neonates or critically ill infants with toxic symptoms related to bacteremia or in proven shigellosis
- Medical advice should be sought if diahoerra persists more than:
  - 6 hrs in infants < 6 mo
  - 12 hrs in children < 3 yrs
  - 24 hrs in children between 3-6 yrs
  - 48 hrs in children > 6 yrs and adults
  - Children <5 yo and elderly are at highest risk of dehydration and should seek medical advice at the first signs of dehydration
  - Children <3 months old should be referred immediately to hospital
- Red flags:
  - Blood in stool

- Weight loss >10%
- Low BP
- Rapid pulse
- Prolonged dehydration
- No urine output

#### Constipation

- Defecation occurs less frequently, stools are harder than normal, defecation causes straining and sense of incomplete evacuation
- Contributing lifestyle factors: inadequate exercise, inadequate fiber intake, inappropriate bowel habits and mechanical obstruction
- Other causes: use of antacids, antihypertensives, opioids and anticholinergics
- Management: increase fiber (fruit, veg, legumes, seeds, nuts, wholegrain breads) and fluid -1.5 L of water/day (8 glasses) and exercise
  - Can use bulk forming laxatives –fiber (2-3 days) with sufficient water
  - 2<sup>nd</sup> line: osmotic laxatives –pull water into gut (1-2 days) e.g. duphalac, lac-dol, actilax, sorbilax
  - Last line: stimulant laxatives –used in severe constipation (6-8 hrs) continual use is not recommended e.g. senna, sennokot, bisalax, durolax

**Case:** *A young female (approx. 25) enters the pharmacy and requests Coloxyl with Senna*

- W –female, 25yo and looks very thin
- H –says she has not been to toilet for 4 days
- A –explains that she usually goes once a day but was travelling
- T –she used Coloxyl with Senna a few years ago when she had a problem and it worked well. She has no other medical conditions
- STOP –worried that she is young and thin and could be abusing the laxatives, however story seems plausible. Travel can upset the bowel and short term use of stimulant will help, she is not pregnant so stimulant is okay

**Case:** *A mother enters the pharmacy with her 6-month old baby. She tells you that her child has just started solids and hasn't done a poo for a day*

- W –patient is a 6-month old baby
- H –has not passed a motion for 1 day and usually does 2/day
- A –baby appears to be happy and not uncomfortable
- T –takes no medications other than occasionally Panadol, is breast fed and has just started solids
- STOP –common for babies to get constipation when started solids. Since no pain, could avoid using a laxative –increase water intake and fruit or veg. If problem continues, and pain appears, small doses of Duphalac.