

HSV-1 CLINICAL FEATURES, MANAGEMENT

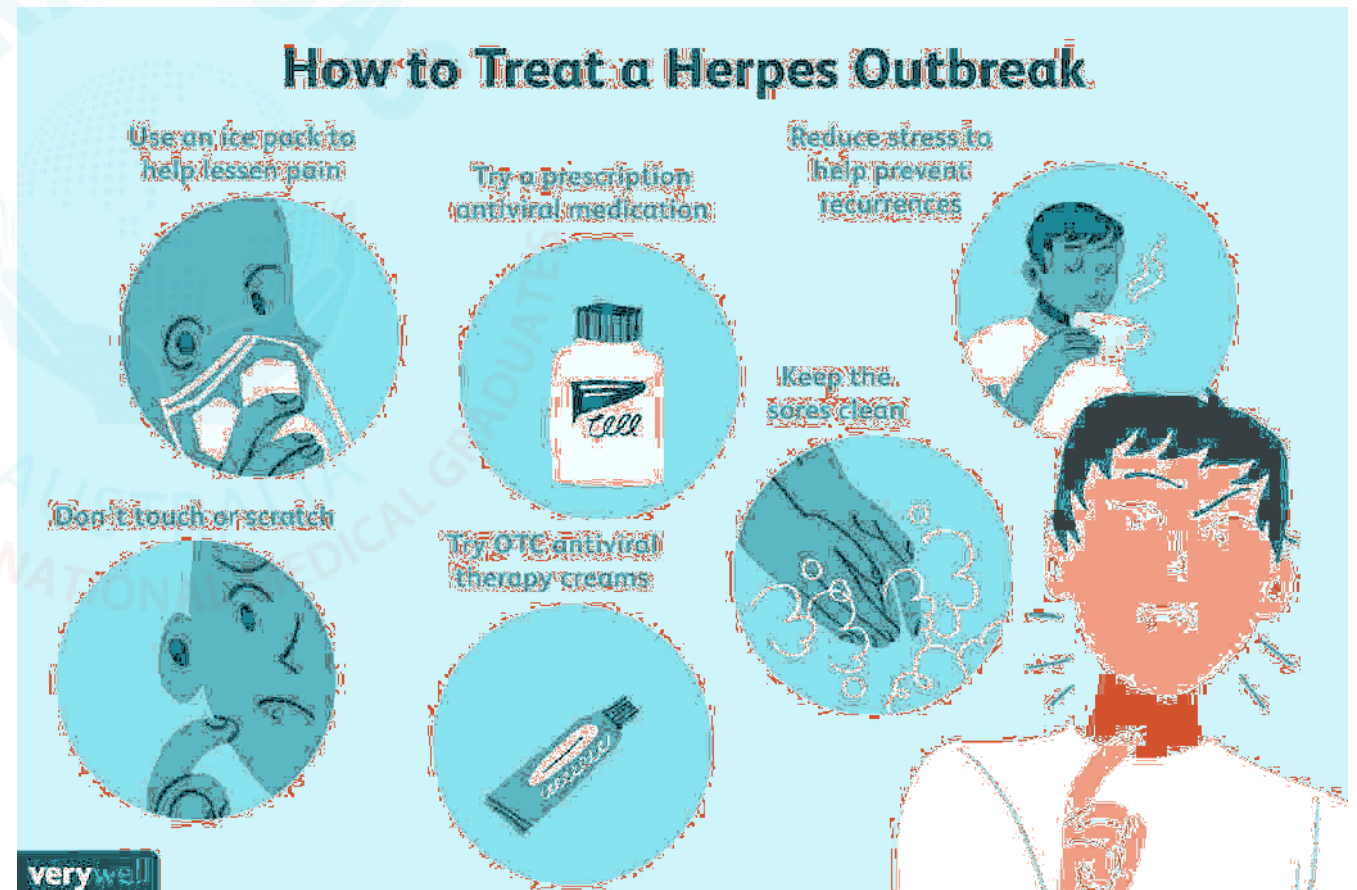
TABLE 1 Clinical manifestations of primary herpes infection

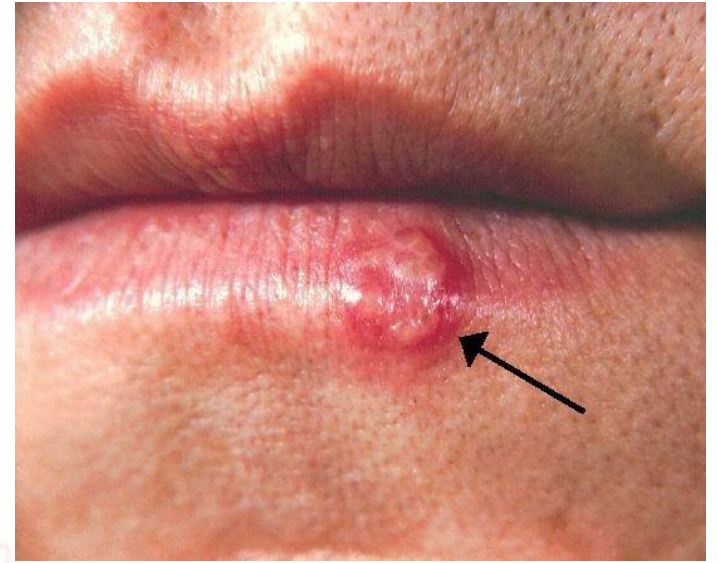
Genital findings

- Bilateral clusters of vesicles, papules, pustules, and ulcers on the external genitalia
- Genital pain, pruritus
- Dysuria
- Cervicitis
- Inguinal lymphadenopathy

Systematic and neurologic manifestations

- Fever
- Headache
- Myalgia
- Malaise
- Meningitis
- Acute urinary retention





HERPES VIRUS

HERPES SIMPLEX VIRUS-2

Herpes simplex virus-2:
Sexual contact,
perinatal

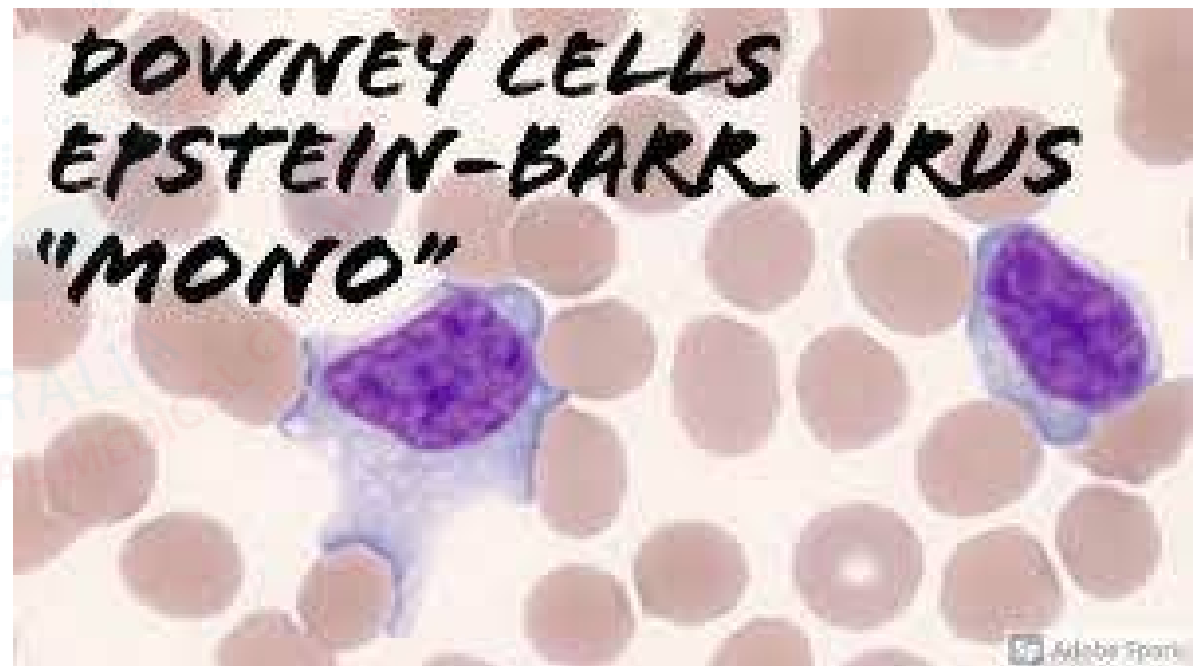
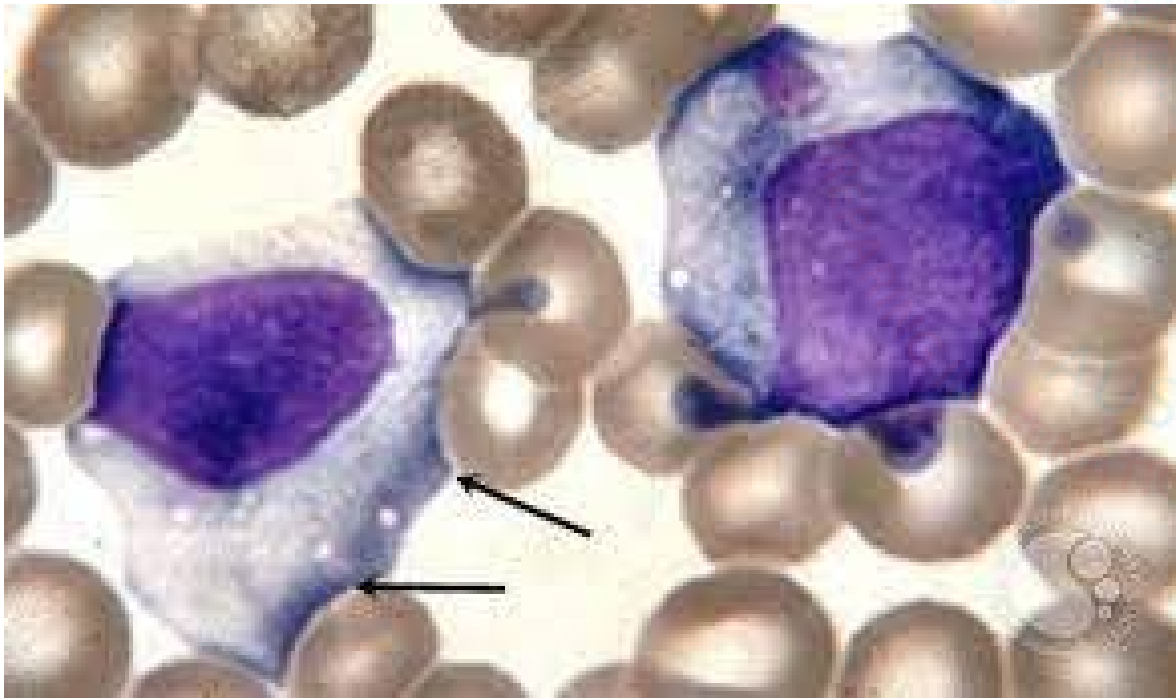
Can Causes Herpes
genitalis, neonatal
herpes.

Most commonly latent
in sacral ganglia and
Viral meningitis more
common with HSV-2
than with HSV-1

INFECTIOUS MONONUCLEOSIS

- Epstein-Barr virus (HHV-4): Spread through Respiratory secretions, saliva; also called “kissing disease,” (common in teens, young adults). Infects B cells.
- Mononucleosis—fever, hepatosplenomegaly , pharyngitis, and lymphadenopathy (especially posterior cervical nodes)
- Avoid contact sports until resolution due to risk of splenic rupture
- Associated with lymphomas (eg, endemic Burkitt lymphoma), nasopharyngeal carcinoma (especially Asian adults).
- Atypical lymphocytes on peripheral blood smear.
- ⊕ Monospot test—heterophile antibodies detected by agglutination of sheep or horse RBCs
- Use of amoxicillin (eg, for presumed strep pharyngitis) can cause maculopapular rash

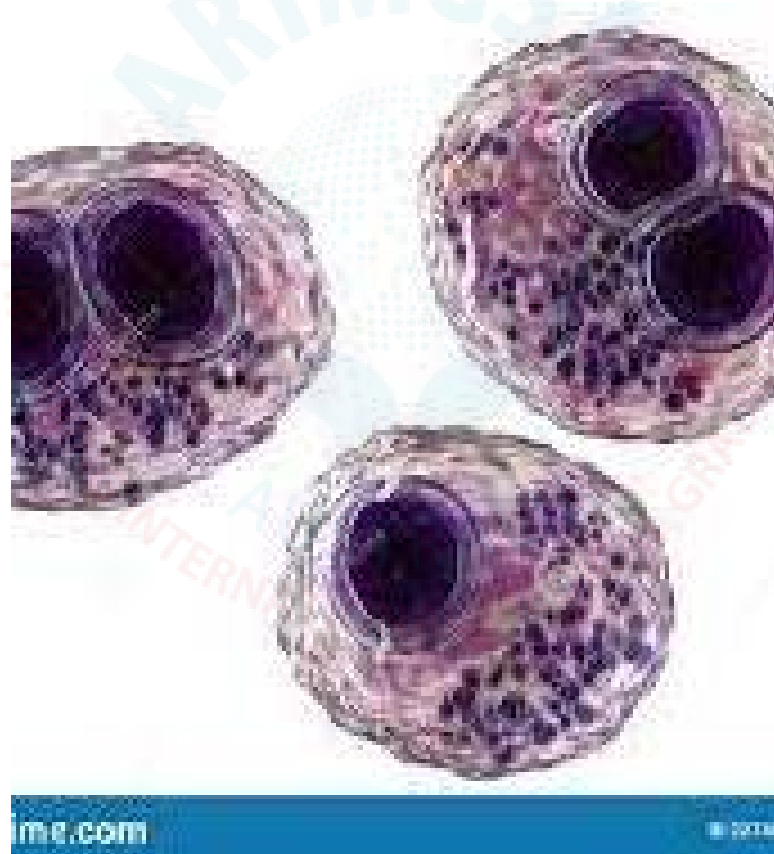
ATYPICAL LYMPHOCYTES



CYTOMEGALO VIRUS INFECTION

- Can spread through Congenital, transfusion, sexual contact, saliva, urine, transplant
- Mononucleosis ($\ominus$ Monospot) in immunocompetent patients; infection in immunocompromised, especially pneumonia in transplant patients; esophagitis; AIDS retinitis (“sightomegalovirus”): hemorrhage, cotton-wool exudates, vision loss, Congenital CMV
- Infected cells have characteristic “owl eye” intranuclear inclusions.
- **Congenital CMV:** Hearing loss, seizures, petechial rash, “blueberry muffin” rash, chorioretinitis, periventricular calcifications.
- Blueberry muffin baby is a term used to describe a purplish or bluish-red maculopapular rash present at birth, typically on the face, neck, and trunk. Traditionally, it has been used to describe the cutaneous findings of congenital rubella and Congenital CMV infection.

CMV INFECTION





PATHOGENESIS

- Caused by **DNA poxvirus**.
- Spreads through **fomites, autoinoculation, and skin-to-skin**.
- **Swimmers** are regularly exposed to public pools with the virus.



CLINICAL PRESENTATION

- Primarily occurs in young **school-aged children**.
- It presents with multiple **small, skin-colored or pink, dome-shaped, umbilicated papules** (75% are umbilicated).

MANAGEMENT

Watchful waiting is appropriate for the majority of patients as on average most lesions resolve by 13 months.

- First-line therapies include cantharidin (most common), cryotherapy, curettage.

Physical destruction



Curettage
Cryosurgery
Electrosurgery

Topical therapy



Alkali agent (eg: potassium hydroxide)
Blistering agent (eg: cantharidin)
Imiquimod (promotes immune response)
Retinoic acid
Salicylic acid

PREVENTION

- ✓ Minimize **shared items** (eg: towels, toys).
- ✓ To prevent spread, **wash hands, cover bumps, and avoid touching bumps**.

HENOCHE SCHONLEIN PURPURA

- Henoch-Schonlein purpura (HSP) is a short-term inflammation of certain blood vessels (vasculitis) thought to be triggered by a malfunction of the immune system.
- Symptoms include a purple spotted skin rash, abdominal pain and gastrointestinal upsets such as diarrhoea.
- Henoch-Schönlein purpura is typically a self-limiting illness; however, patients may develop life-threatening complications such as intussusception, massive gastrointestinal haemorrhage, and renal failure
- **Investigations**
 - Full blood examination (to exclude thrombocytopenia).
 - Urinalysis – haematuria/proteinuria.
 - Renal function – urea/creatinine and urinary protein estimation.

HENOCH-SCHONLEIN PURPURA



Table 5. Treatment Principles for Henoch-Schönlein Purpura

<i>Symptom severity</i>	<i>Treatment</i>
Minimal	Supportive care
Mild (mild arthralgias or abdominal pain)	Acetaminophen or nonsteroidal anti-inflammatory drug
Moderate (significant arthritis, abdominal pain, or early renal involvement)	Corticosteroids* Consider subspecialty consultation†
Severe (progressive renal disease, pulmonary hemorrhage)	Corticosteroids* plus adjunctive immunosuppressant (e.g., azathioprine [Imuran], cyclophosphamide [Cytoxan], intravenous immunoglobulin) or plasmapheresis Arrange subspecialty consultation†

*—Recommended pediatric dosage is prednisone 1 to 2 mg per kg daily for one to two weeks, followed by a taper.

†—Nephrology, gastroenterology, surgery, rheumatology, or other subspecialty as determined by presenting symptoms or organ systems involved.

Information from references 5, 16, 30, and 31.

BACTERIAL MENINGITIS

- Bacterial meningitis is basically also a childhood infection. Neonates and children aged 6–12 months are at the greatest risk.
- Meningococcal disease can take the form of either meningitis or septicaemia (meningococcaemia) or both.
- Most cases begin as septicaemia, usually via the nasopharynx.

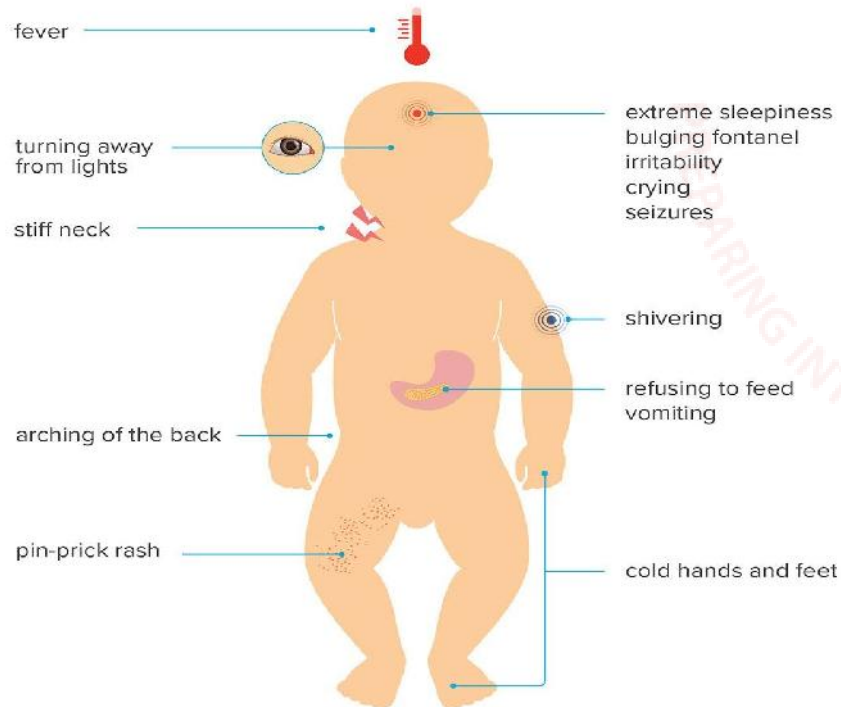
Table 1. Pathogens That Cause Bacterial Meningitis, Based on Patient Age⁹

Patient Age	Causative Agent (Percent of Cases)
≥ 1 month to < 3 months	• Group B <i>Streptococcus</i> (39%) • Gram-negative bacilli (32%) • <i>Streptococcus pneumoniae</i> (14%) • <i>Neisseria meningitidis</i> (12%)
≥ 3 months to < 3 years	• <i>S pneumoniae</i> (45%) • <i>N meningitidis</i> (34%) • Group B <i>Streptococcus</i> (11%) • Gram-negative bacilli (9%)
≥ 3 years to < 10 years	• <i>S pneumoniae</i> (47%) • <i>N meningitidis</i> (32%)
≥ 10 years to < 19 years	• <i>N meningitidis</i> (55%)

MENINGITIS CLINICAL FEATURES

MEDICALNEWS TODAY

Effects on the Body Meningitis in Infants



MENINGITIS SYMPTOMS



Fever



Neck pain



Sleepiness



Vomiting



Joints pain



Rash



Headache



Seizures



Light sensitivity

TREATMENT

Treatment for suspected meningitis:

- First—oxygen and IV access (interosseous if difficult):
- Take blood for culture (within 30 minutes of assessment)
- Give bolus of 10–20 mL/kg of N saline
- Admit to hospital for LP when patient is resuscitated and stable and without signs of raised ICP
- Dexamethasone 0.15 mg/kg up to 10 mg IV
- ceftriaxone or cefotaxime for 3-5 days
- **Neonates to 3 months:**
- ampicillin/amoxicillin (or benzylpenicillin) + cefotaxime

	Symptoms and signs
Meningococcal sepsis	Fever Reduced feeding Arthralgia/myalgia Petechiae/purpura Cold/dicoloured extremities Lethargy/drowsiness/confusion Shock
Meningococcal meningitis	Fever Headache Irritability Lethargy/drowsiness/confusion Vomiting Neck stiffness Photophobia Infants: high pitched cry; full or bulging fontanelle Positive Kernig sign (pain on flexing hip to 90 degrees and knee extended) Positive Brudzinski sign (flexing neck causes flexion of hips and knees)
Meningococcal sepsis and meningitis	Any or all of the above



MENINGOCOCC EMIA

- Treatment is urgent once sepsis suspected (e.g. petechial or purpuric rash on trunk and limbs). It should be given before reaching hospital according to the following plans.
- **Antibiotics:**
 - ceftriaxone or benzylpenicillin 3–5 days.
 - Give IM if IV access not possible
 - Admit to hospital
 - Continue antibiotics for 7–10 days
 - Consider corticosteroids in severe cases

CONTACTS TREATMENT

Treat contacts who:

- live in the household and <24 months
- have kissed patient in the previous 10 days
- have attended the same day-care centre

For prophylaxis—rifampicin dose:

- adult—600 mg bd for 3 days
- child <1 month—5 mg/kg
- child >1 month—10 mg/kg give bd for 2 days
- or (if unsuitable)
- ceftriaxone 1 g (child: 25 mg/kg up to 1 g) IM daily for 2 days
- ciprofloxacin 500 mg (o) as single dose (child 125 mg)
- Give meningococcus type C vaccine

6 COMMON CHILDHOOD EXANTHEMS

NUMBER	NAME	PATHOGEN	DESCRIPTION	COMPLICATIONS
①	- Rubeola - Measles	<i>Measles morbillivirus</i> (MeV)	Fever, malaise, cough, coryza, and conjunctivitis, followed by exanthem. Koplik spots (1 to 3 mm whitish, grayish, or bluish elevations with an erythematous base) → 	Diarrhea. Pneumonia. Immunosuppression. Encephalitis.
②	Scarlet Fever	<i>Streptococcus pyogenes</i>	Erythematous eruption in association with pharyngitis (erythrogenic toxin, usually types A, B, or C) Erythema that blanches with pressure. Papular elevations, "sandpaper" skin → 	Scarlet fever with pharyngitis can predispose to acute rheumatic fever.
③	- Rubella - German measles	<i>Rubella Virus</i>	Rash (begins on the face and spreads caudally, palms and soles are spared) fever, and lymphadenopathy 	Hemorrhagic complications. Postinfectious encephalitis. 
④	Staphylococcal Scalded Skin Syndrome	<i>Staphylococcus aureus</i>	Exfoliative toxin A and/or exfoliative toxin B. Rapidly progressive, extensive, cutaneous erythema progresses to flaccid, bullae; erosions; and sheet-like desquamation → 	Dehydration  @TheIDTrivia Shock Secondary infections
⑤	Erythema infectiosum	<i>Parvovirus B19</i>	Fever, coryza, headache, nausea, and diarrhea, followed by erythematous malar rash with circumoral pallor. (slapped cheek rash) → 	Arthralgias occur in a minority of cases
⑥	- Exanthem subitum - Roseola infantum	Human Herpes Virus 6B or Human Herpes Virus 7	Three to five days of fever that resolves abruptly and is followed by development of a rash (blanching macular or maculopapular, starting on the neck and trunk and spreading to the face and extremities) 	Seizures. Aseptic meningitis. Encephalitis. TTP

Table 86.3

Basic childhood infectious diseases: incubation periods, minimum exclusion periods from school, preschool and child care centres (times in days)^{1,2}

	Incubation period (days)	Patient exclusion (least time from onset of rash or symptoms) (days)	Contact exclusion (days)
Measles	10–14	5	14 in non-immunised
Glandular fever	?30–50	Nil	Nil
Mumps	12–25	9	Nil
Pertussis	7–20	5 (after starting antibiotics) or 21 from onset of cough	Non-immunised household contacts—until have had 5 days of antibiotics or 21 days after exposure finishes
Parvovirus B19 (erythema infectiosum)	4–20	Nil	Nil
Roseola infantum	7–17	Nil	Nil
Rubella	14–21	4	Nil
Scarlet fever	1–7	24 hours (after starting antibiotics and feeling well)	Nil
Impetigo	1–3 for strep, 4–10 for staph	Until treatment commenced (cover sores) *	Nil
Meningococcus	1–10 (commonly 3–4)	Until antibiotic therapy complete	Check with consultant
Varicella and zoster	10–21	Until blisters have dried	Only those immune deficient
Hepatitis			
A	15–50	7 or recovery	Nil
B	45–180	Nil	Nil
C	14–180	Nil	Nil
Infective diarrhoea	Varies	24 hours after cessation of diarrhoea	Nil

Two weeks after a viral syndrome, a 2-year-old child develops bruising and generalized petechiae, more prominent over the legs. No hepatosplenomegaly or lymph node enlargement is noted. The examination is otherwise unremarkable. Laboratory testing shows the patient to have a normal haemoglobin, haematocrit, and white blood cell (WBC) count and differential. The platelet count is 15,000/ μ L. Which of the following is the most likely diagnosis?

- a. Von Willebrand disease (vWD)
- b. Acute leukaemia
- c. Idiopathic (immune) thrombocytopenic purpura (ITP)
- d. Aplastic Anemia
- e. Thrombotic thrombocytopenic purpura

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A 4-year-old girl is brought into the General Practice by her concerned mother. She has been unwell for the last 5 days, with fever, cough, sore eyes and coryzal symptoms, but today her mother has noticed a rash developing behind her ears. On examination you find she has a fever of 39.8°C , and you can see there is a blanching, erythematous maculopapular rash behind her ears near the hairline. Further history reveals that this patient is unvaccinated and attends an independent Kindergarten that emphasises “natural living” and is opposed to vaccinating children. What is the most likely diagnosis?

- A. Croup
- B. Kawasaki disease
- C. Measles
- D. Mumps
- E. Scarlet fever



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A young 8-year-old boy presents with his mother with a skin lesion on his face for further investigation. A few days back the young boy developed a small pustule above his lip, which then had, began to grow and spread. The young boy states that he had an insect bite to upper lip. Apart from being feverish he has otherwise been well with no other systemic symptoms. Mum is very concerned, as she has heard that a few children at school have had similar presentations. On exam the lesion isn't tender.

What is your diagnosis?

1. Vitamin B deficiency
2. Cold sore
3. Impetigo
4. Contact dermatitis
5. Chicken Pox



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Impetigo otherwise known as school sores is a bacterial skin infection caused by either streptococcus pyogenes or staphylococcus aureus. It is highly contagious and commonly affects school children.

It often starts at a site of a minor skin injury then spreads. Typically appear as pustular patches, which may ooze and can continue to spread. The blisters may be clear (bullous impetigo) or have yellow golden crusts.

Common places of infection include hands, face and skin folds such as the arm pits.

A child is brought by her mother who complains of 2 round lesions on the face with a scaly appearance. The lesions appeared 2 days previously. There has been a history of contact with a case of chickenpox previously. The mother has already applied antibiotic cream, but the lesions are only spreading and red. What is your most appropriate management?

- A. Acyclovir
- B. Wet bandages
- C. Topical steroid cream
- D. Topical antifungal
- E. Topical dithranol



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What is the school exclusion criteria for the lesions in the image?

- A. No exclusion required
- B. Until scabs crust over
- C. Until full recovery
- D. After commencement of treatment
- E. Two weeks after full recovery



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A 4-year-old boy came with his mother with the shown lesion. She asks you when he can go back to school. What is the most appropriate advice?

- A. Immediately
- B. After complete healing
- C. After drying of all the lesions
- D. After 1 day of antibiotics
- E. After one week of antibiotic



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Exclude from school / daycare until lesions are healed and crusted over and no longer weeping, or until 24 hours after commencing antibiotic (topical or systemic) treatment



A 12-year-old patient presents with the complaints of swelling around his jaw for the past 3 days. Currently he is not going to school because of pain over the area. The picture is shown below. How long the patient should be excluded from the school.?

- A. No exclusion is needed
- B. Start antibiotics
- C. 24-hour isolation
- D. Isolate the kid for another 6 days
- E. Give some pain killers and send him to school



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A 6-year-old kid presents to your GP clinic complaining of eruptions over his face and on examination you see a vesicular eruption with central umbilication as shown in the picture. What is the advice that you are going to give him.?

- A. School exclusion for 5 days
- B. School exclusion for 1 day
- C. No exclusion is needed
- D. Give antivirals
- E. Advice not to share bathing clothes and towels and avoid swimming



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A 4 yo Somali child comes with his mother for vaccinations. He had 3 doses of OPV in his country. His mum wants to know about the next polio vaccine dose. You don't have oral – OPV, but IPV is available as required.

WOF is the next advisable step?

- A. Give IPV one dose
- B. Polio vaccine is not required
- C. Start his vaccination again with IPV
- D. Give IPV 2 doses
- E. call DHS

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OPV – oral – requires 4 dose for 100% effectiveness – OPV is not available in AUS

IPV – 3 dose guarantee 100% effectiveness

A 3-year-old boy is brought into ED with bruising over his trunk & limbs & fine petechial rash over his body. O/E looks unwell, is afebrile, no lymphadenopathy nor hepatosplenomegaly. He has fine non blanching petechiae over his trunk & legs & recent bruises on his body. He had a URTI few days ago. FBE shows platelets as low as 20,000. What is your next step in Mx?

- A. Intravenous immunoglobulin
- B. Platelets transfusion
- C. Oral steroids
- D. IV steroids
- E. No Tx, watchful waiting

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- B. Platelets transfusion
- C. **Oral steroids**
- D. IV steroids
- E. No Tx, watchful waiting

A 3-year-old child having neck stiffness, mild rhinorrhoea and high fever and is drowsy he looks toxic . He is up to date with all vaccinations. What is the most likely cause?

- A. Viral meningitis
- B. Group B Streptococci
- C. Chlamydia
- D. Viral encephalitis



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A. **Viral meningitis- most common**

B. Group B Streptococci

C. Chlamydia

D. Viral encephalitis

Which one of the following drugs taken by the mother during pregnancy has the highest incidence of the condition in picture shown.?

- A. Sodium valproate
- B. Phenytoin
- C. Carbamazepine
- D. Lithium
- E. Sertraline



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10 yrs old boy with normal growth & development. He is complaining of mood changes, lack of concentration ability & poor performance at school, sleeps well but snores. O/E, enlarged tonsils. What is the most appropriate mx?

- a. Methamphetamine
- b. Methylphenidate
- c. Loratidine
- d. Tonsillectomy



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- c. Loratidine
- d. **Tonsillectomy**

BOX 2

Complications of tonsillectomy

- Hemorrhage (anemia, transfusion, death)
- Airway obstruction (edema)
- Aspiration
- Velopharyngeal stenosis/insufficiency
- Emphysema, pneumomediastinum, pneumothorax
- Necrotizing fasciitis
- Disturbance of taste
- Hypoglossal nerve injury
- Lingual nerve injury
- Recurrent laryngeal nerve injury
- Meningitis
- Pharyngeal abscess
- Grisel syndrome (a rare type of torticollis)
- Dental injury, dislocation of the jaw

With regards to undescended testes, Which of the following is CORRECT?

- a) It is essential that the testes are returned to their normal position in the scrotum by the time the boy is five years old
- b) Bilateral undescended testes is a more common occurrence than unilateral undescended testes
- c) The lower the arrest in the line of descent of the testes the more hypoplastic it is
- d) Malignancy is 4-10 times more common
- e) Inguinal hernia occurs in <50% of cases of cryptorchidism

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- d) **Malignancy is 4-10 times more common**
- e) Inguinal hernia occurs in <50% of cases of cryptorchidism

Cryptorchidism	
Risk factors	• Prematurity • Small for gestational age • Low birth weight (<2.5 kg) • In utero exposure to diethylstilbestrol & pesticides • Genetic disorders • Neural tube defects
Clinical features	• Empty, hypoplastic, poorly rugated scrotum or hemiscrotum • +/- Inguinal fullness
Treatment	• Orchiopexy before age 1 year
Complications	• Inguinal hernia • Testicular torsion • Subfertility • Testicular cancer

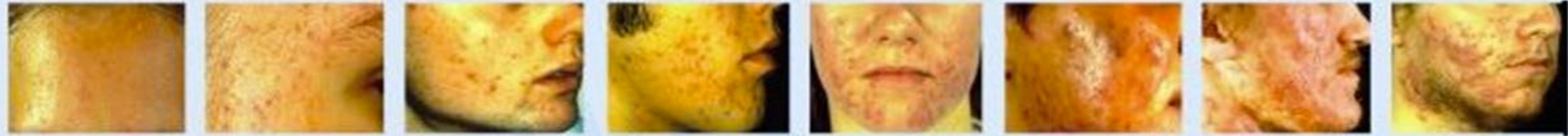
A 17-year-old male has severe acne which now makes him feel uncomfortable at school and he and his parents are concerned about school refusal as he has exams later in the year. He has tried topical therapies with no benefit. On examination, he has multiple pustules and nodules with some evidence of scarring. Which of the following is the most appropriate management?

- A. Benzyl peroxide
- B. Dietary and stress controls
- C. Doxycycline
- D. Isotretinoin
- E. Retinoid cream

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Acne treatment algorithm



Mild

Moderate

Severe

	Comedonal	Papular/pustular	Papular/pustular	Nodular [†]	Nodular/conglobate
First choice [‡]	Topical retinoid	Topical retinoid + topical antimicrobial	Oral antibiotic + topical retinoid +/- BPO	Oral antibiotic + topical retinoid +/- BPO	Oral isotretinoin [§]
Alternatives [‡]	Azelaic acid or salicylic acid	Alt. topical antimicrobial agent + alt. topical retinoid or azelaic acid [¶]	Alt. oral antibiotic + alt. topical retinoid +/- BPO	Oral isotretinoin or alt. oral antibiotic + alt. topical retinoid +/- BPA/azelaic acid [¶]	High-dose oral antibiotic + topical retinoid + BPO
Alternatives for females ^{‡,*}	See first choice	See first choice	Oral anti-androgen ^{††} + topical retinoid/ azelaic acid [¶] +/- BPO	Oral antiandrogen ^{††} + topical retinoid +/- oral antibiotic +/- alt. antimicrobial	High-dose oral anti-androgen ^{††} + topical retinoid +/- alt. topical antimicrobial
Maintenance therapy	Topical retinoid		Topical retinoid +/- BPO		

A 16-year-old girl who is the class president at her school has been prescribed isotretinoin for severe acne. On history she has no other medical conditions and does not smoke or drink. She informs you that she is not sexually active. What is the most important intervention for this patient whilst she is being treated with isotretinoin?

- A. Appropriate sun protection and skin hydration
- B. Discuss the benefits in avoiding chocolates and greasy foods
- C. Educate about contraceptives and consider prescribing oral contraceptives
- D. Encourage patient to seek counselling
- E. Prescribe adjuvant topical treatments

A 16-year-old girl who is the class president at her school has been prescribed isotretinoin for severe acne. On history she has no other medical conditions and does not smoke or drink. She informs you that she is not sexually active. What is the most important intervention for this patient whilst she is being treated with isotretinoin?

- A. Appropriate sun protection and skin hydration
- B. Discuss the benefits in avoiding chocolates and greasy foods
- C. **Educate about contraceptives and consider prescribing oral contraceptives**
- D. Encourage patient to seek counselling
- E. Prescribe adjuvant topical treatments

A mother brings her 7-year-old son 6 days after eruption of a generalized rash that, based on the history and clinical findings, is found to have been measles. She asks if her son is required to be excluded from school. She also mentions that according to the class teacher, all students in the class have complete vaccination against measles. Which one of the following would be the most appropriate advice regarding exclusion from school for this boy?

- A. No exclusion is required.
- B. Exclusion for 4 days.
- C. Exclusion until the rash completely disappears.
- D. Exclusion is required only if there is an immunocompromised child in the classroom.
- E. Exclusion for 6 days.

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A 2-year-old boy is brought to the emergency department, by his mother, after he developed a rash following a bee sting 20 minutes ago. The appearance of the rash is shown in the following photograph. On examination, there is no breathlessness, wheezing, abdominal pain, or hemodynamic instability. Which one of the following is the most appropriate management?

- A. Intravenous epinephrine.
- B. Intravenous diphenhydramine.
- C. Intramuscular epinephrine.
- D. Oral promethazine.
- E. Oral corticosteroids.



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Young girl present with pigmentation on her nape of neck and axilla. She is obese. Her menstrual cycle is regular. Her grandmother also has Type 2 DM. On examination, there is pigmentation on her neck and axillae. What is your diagnosis?

- (A) Cushing
- (B) PCOS
- (C) Metabolic syndrome
- (D) Hypothyroid
- (E) Addison disease

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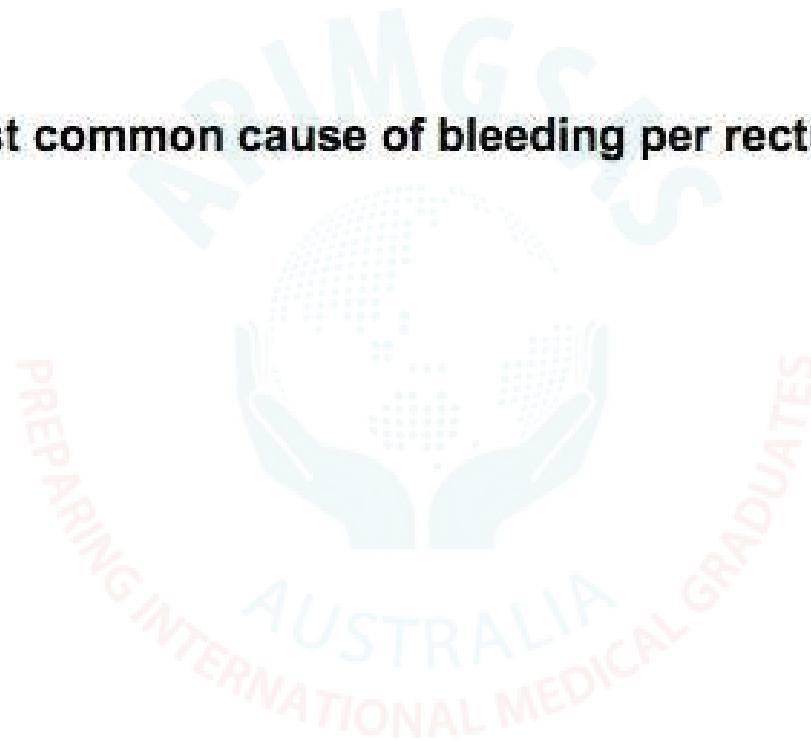
- (A) Cushing
- (B) PCOS
- (C) **Metabolic syndrome**
- (D) Hypothyroid
- (E) Addison disease

The Metabolic Syndrome is a cluster of risk factors comprising:

- excess abdominal weight
- lipid abnormalities
- hypertension
- elevated glucose levels.

Which of the following is the most common cause of bleeding per rectum in two and half-year-old child?

- ☐ a. Anal fistula
- ☐ b. Anal fissure
- ☐ c. Crohn's disease
- ☐ d. Ulcerative colitis
- ☐ e. Acute gastroenteritis



Correct Answer: b. Anal fissure

Answer Detail:

The correct answer is b.

An anal fissure is the most common cause of bleeding per rectum in children. Anal fistula and Crohn's disease do not cause bleeding per rectum in a majority of the cases.

Acute gastroenteritis and ulcerative colitis can cause bleeding per rectum, however, these are not the most common causes in paediatric age group.

An 18-month-old male child is brought to the emergency department with a history of increasing irritability, cough, and worsening breathing.

On examination, the child is alert, lethargic but responsive. The capillary refill is less than 2 seconds. There is some stridor at rest. The respiratory rate is 44 breaths per minute and oxygen saturation is 98% on room air. His heart rate is 126 beats per minute. The child is using accessory muscles and there is a tracheal tug. He is being given oxygen through the mask.

The child was seen by his GP the day before and was prescribed oral prednisolone. The mother has already given her today's dose of prednisolone.

What is the most appropriate next step in his management?

- ☐ a. Salbutamol
- ☐ b. Chest Xray
- ☐ c. Blood tests
- ☐ d. Nebulised adrenaline
- ☐ e. Intravenous antibiotics

Correct Answer: d. Nebulised adrenaline

Answer Detail:

The correct answer is d.

This patient has developed signs and symptoms of severe croup. The clinical features of severe croup include:

- Stridor presents at rest
- Croupy cough
- Increasing irritability and lethargy
- Tachypnea
- Tracheal tug
- Nasal flaring
- Use of accessory muscles
- Hypoxia

All the patient with severe croup should be given nebulised adrenaline (1 mL of 1% adrenaline solution mixed with 3ml of normal saline). The same dose can be repeated if needed. The child should be observed for 4 hours post-adrenaline and can be discharged if there is no stridor at rest.

The oral steroids should also be continued as they are the mainstay of treatment when the croup is mild and moderate.

The chest x-ray and blood tests are usually unnecessary. The salbutamol has no role in the treatment of croup.

A 15-year-old aboriginal girl from rural northern Australia presents with fever and joint pains for last two week. The joint pains initially involved both ankles and then it resolved on its own. Now she is complaining of both knee and right shoulder pain.

She had a sore throat four weeks ago and was treated with paracetamol only.

On examination, her temperature is 39 C, heart rate is 94 beats per minute, blood pressure is 110/80 mmHg, respiratory rate is 16 breaths per minute. The cardiovascular system examination is normal; however, her both knee joints are swollen. Initial ECG shows prolonged PR interval.

Preliminary investigations showed a raised ESR, CRP, and leukocytosis.

What is the most likely diagnosis?

- ☐ a. Reactive arthritis
- ☐ b. Gonococcal arthritis
- ☐ c. Rheumatic fever
- ☐ d. Juvenile idiopathic arthritis
- ☐ e. Septic arthritis

Correct Answer: c. Rheumatic fever

Answer Detail:

The correct answer is c.

This patient has developed clinical features of rheumatic fever.

Rheumatic fever is common in third world countries. In Australia, it is highly prevalent among Aboriginal and Torres Strait Islander people living in rural and remote areas, particularly in Northern Territory.

Acute rheumatic fever is an important and preventable cause of ill health and death. It is typically associated with overcrowding, poor sanitary conditions and other aspects of socioeconomic disadvantage.

Acute rheumatic fever is a sequela of group A streptococcal infection of the throat or skin (during scabies).

Diagnosis is based on the fulfillment of Jones criteria according to which two major or one major and two minor manifestations plus evidence of a preceding group A streptococcal infection.

Following are the major and minor criteria:

Major criteria:

- Carditis
- Polyarthrititis
- Chorea (abnormal involuntary movements)
- Erythema marginatum
- Subcutaneous nodules

Minor criteria:

- Fever above 38c
- Polyarthralgia or aseptic meningitis
- Previous rheumatic fever or rheumatic heart disease
- Raised ESR above 30 or C-reactive protein above 30
- Prolonged PR interval

In this scenario, the patient is from a high-risk population with preceding history of group A streptococcal throat infection. He has migratory polyarthrititis which is from major criteria and has a fever, raised ESR along with leukocytosis which is minor criteria.

In reactive arthritis, there is asymmetrical lower extremity oligoarthritis, noninfectious urethritis, and conjunctivitis. It is preceded by a history of gastrointestinal or genitourinary infection.

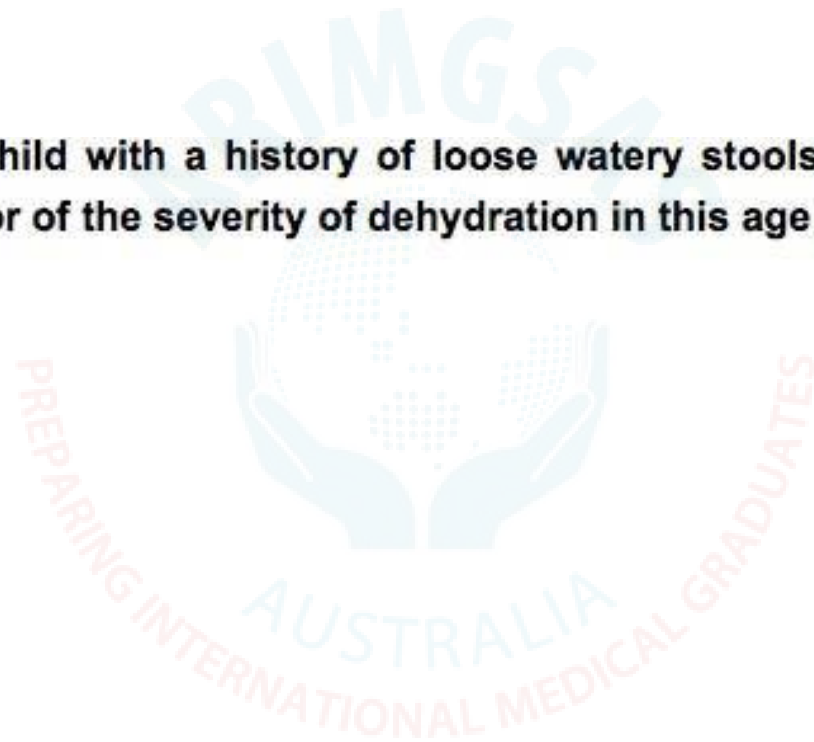
In gonococcal arthritis involves single joint, there is a history of unsafe sex and urethral discharge.

Septic arthritis affects a single joint with a high-grade fever.

Juvenile idiopathic arthritis is a common chronic disease of childhood. It presents with an at least six-week history of arthritis before diagnosis, often with morning stiffness and spiking fevers.

A mother brings her 12-month old child with a history of loose watery stools for the past few hours. Which of the following is the most specific indicator of the severity of dehydration in this age group?

- ☐ a. Sunken eyes
- ☐ b. Irritability and lethargy
- ☐ c. Increased respiratory rate
- ☐ d. Urine output
- ☐ e. Dry mucous membrane



Correct Answer: c. Increased respiratory rate

Answer Detail:

The correct answer is c.

Specific indicators of severity of dehydration include:

- Percentage of weight loss.
- Prolonged capillary refill time.
- Abnormal skin turgor
- Increased respiratory rate.

Following signs considered for assessment of dehydration, however, these are less reliable:

- Sunken eyes.
- Lethargy
- Dry mucous membranes.
- Irritability and lethargy.

Urine output is measured to monitor the response to fluid therapy in dehydration.

A 4-year-old child is being seen in your office with a history of 5 days of ongoing fever and rash. On examination, his temp is 38.2. Also, there are red injected conjunctiva , red cracked lips, maculopapular rash , redness of palms and soles and cervical lymphadenopathy.

What is the most likely diagnosis?

- ☐ a. Scarlet fever
- ☐ b. Kawasaki disease
- ☐ c. Respiratory tract infection
- ☐ d. Tonsillitis
- ☐ e. Non-specific viral illness

Correct Answer: b. Kawasaki disease

Answer Detail:

The correct answer is b.

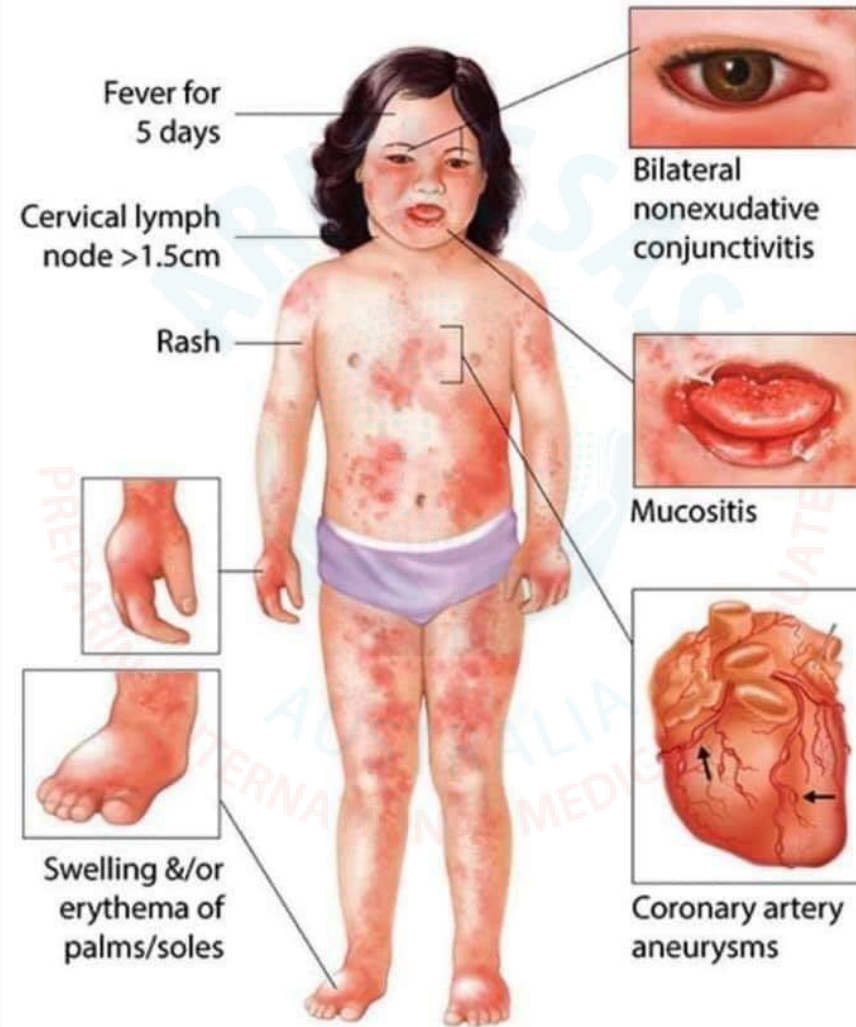
This child has developed clinical features of Kawasaki disease. It is self-limited vasculitis of unknown etiology. Around 80% cases occur before the age of 5 years.

The diagnosis of Kawasaki should be considered in any child who continues to have fever beyond five days. The other features include bilateral conjunctivitis, oral mucosal ulcers, cervical lymphadenopathy, redness of hands and feet and maculopapular generalized rash.

The other differential diagnosis is also a possibility however persistent fever beyond 5 days along with skin changes in peripheries suggest Kawasaki disease as top diagnosis here.

Kawasaki disease is associated with vasculitis which can lead to coronary artery aneurysm.

Kawasaki disease



A 9-year-old boy is brought into the local emergency department with left ankle pain. The boy fell from a height and twisted the left ankle.

On examination, there is swelling around the ankle joint and midfoot swelling. A fracture is suspected, and a request for x-ray has been sent to the local radiology department.

While waiting for Xray, which of the following can not be used to relieve pain?

- ☐ a. Paracetamol
- ☐ b. NSAIDS
- ☐ c. Fentanyl
- ☐ d. Codeine
- ☐ e. Oxycodone

Correct Answer: d. Codeine

Answer Detail:

The correct answer is d.

The acute severe pain management in children required adequate analgesics to be given in the emergency department.

It is safe to use paracetamol, anti-inflammatories, intranasal fentanyl and liquid form of oxycodone. The choice of analgesics depends on the severity of the pain.

The use of codeine is contraindicated in children under the age of 18 years.

The codeine is a weak opioid. It is metabolised to morphine which is primarily responsible for the analgesics effects.

Some children can have genetic tendency to do fast metabolism of codeine to morphine, and they are at risk for respiratory depression.

A young child is brought to your clinic with a chief complaint of itching, scaling and a patch of hair loss. On examination, there are circular, scaly, hairless patches with no significant inflammation.

What is the most likely diagnosis?

- ☐ a. Tinea capitis
- ☐ b. Psoriasis
- ☐ c. Alopecia areata
- ☐ d. Trichotillomania
- ☐ e. Systemic lupus erythematosus

Correct Answer: a. Tinea capitis

Answer Detail:

The correct answer is a.

This child has developed a fungal infection of the scalp, also known as tinea capitis. Scalp lesions in tinea capitis may be irregular or well-demarcated. Tinea capitis occurs almost exclusively in children. The chief presenting complaint is itching, scaling and hair loss in patches.

It can follow any of the following patterns:

- Black dot ringworm: hairs break off at base leaving "black dots" in hairless patches.
- Grey patch ringworm: circular, scaly, hairless patches develop.
- Seborrheic form: diffuse scale with minimal to no hair loss.

All other options are a differential diagnosis, however, this presentation is typical of tinea capitis.

A mother brings a 4-year-old boy due to progressive clumsiness, difficulty standing and walking on toes. On examination, you noticed that the kid is using his hands to push off the thighs when rising from the floor.

Which of the following best describes this condition?

- ☐ a. Affects the axial and distal muscles more than proximal muscle
- ☐ b. Mental retardation is uncommon
- ☐ c. An autosomal dominant disorder
- ☐ d. Deficiency of dystrophin
- ☐ e. Mortality is due to renal failure

Correct Answer: d. Deficiency of dystrophin

Answer Detail:

The correct answer is d.

This is a case of Duchenne Muscular Dystrophy (DMD). DMD is an X-linked recessive disorder resulting from a deficiency of dystrophin, a cytoskeletal protein.

Onset is usually at 3-5 years of age. This condition affects axial and proximal muscles more than distal muscles.

It may present with progressive clumsiness, fatigability, difficulty standing or walking, difficulty walking on toes and a positive Gowers' sign (using the hands to push off the thighs when rising from the floor), and waddling gait.

Pseudohypertrophy of the gastrocnemius muscles is also seen.

Mental retardation is common. Mortality is due to pulmonary congestion caused by high output cardiac failure.

You are working as GP in a busy clinic in Sydney. Michael and Michaela are worried about the short stature of their 14-year-old son. Which of the following method will help to assess mid-parental height?

- ☐ a. (Father height in cm plus mother height in cm)/2
- ☐ b. (Father height in cm plus mother height in cm)/10
- ☐ c. (Father height in cm plus mother height in cm/2) minus 6.5cm
- ☐ d. (Father height in cm plus mother height in cm/2) plus 6.5cm
- ☐ e. (Father height in cm plus mother height in cm/2) plus 13cm

Correct Answer: d. (Father height in cm plus mother height in cm/2) plus 6.5cm

Answer Detail:

The correct answer is d.

Both of the parents are in your clinic, so it is excellent opportunity to measure their heights and then calculate the mid-parent height.

Following formulas can be used to calculate mid-parental height:

Tanner method:

Girls: $[(\text{father's height in cm} + \text{mother's height in cm})/2] \text{ minus } 6.5$

Boys: $[(\text{father's height in cm} + \text{mother's height in cm})/2] \text{ plus } 6.5$

Alternatively:

Girls: father's height in cm minus 13.

Boys: mother's height in cm plus 13.

A 2-year-old male child is brought to the local rural emergency department by his mother with a history of tonic-clonic seizure lasting for 3 minutes when she called the ambulance. On examination his temperature is 39.5°C, heart rate is 120 beats /minute, blood pressure is 90/60 mmHg and respiratory rate is 24 breaths per minute. He is found to have upper respiratory tract infection on further examination.

The child is admitted to the ward for further observations. About 6 hours later, he developed another generalised tonic-clonic seizure.

Which of the following is correct about this presentation?

- ☐ a. Simple febrile convulsions
- ☐ b. Complex febrile convulsions
- ☐ c. Epilepsy
- ☐ d. Upper respiratory tract infection
- ☐ e. Tonsillitis

Correct Answer: b. Complex febrile convulsions

Answer Detail:

The correct answer is b.

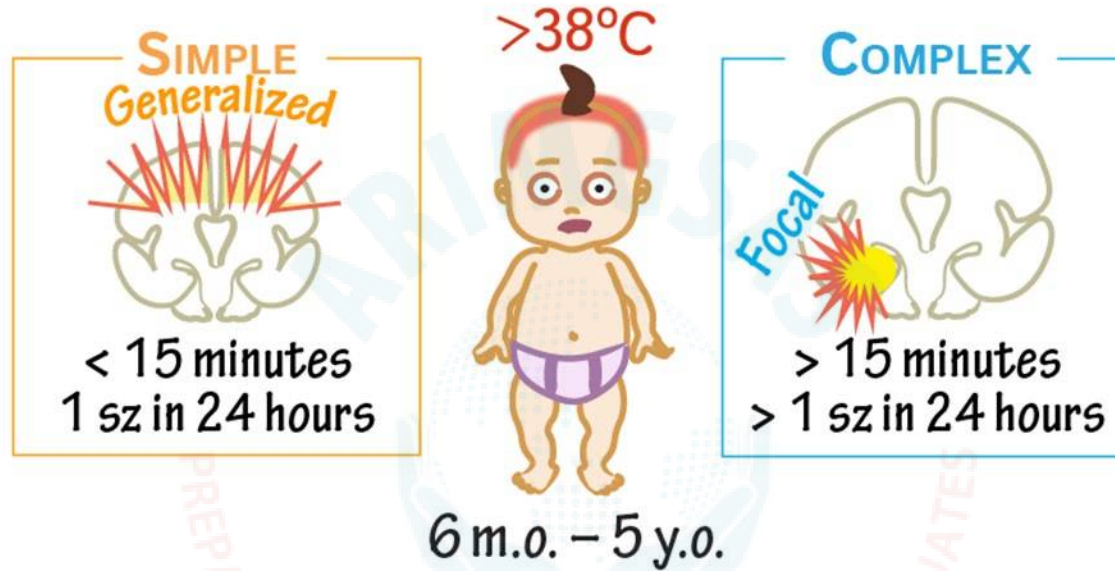
This patient has developed clinical features of complex febrile convulsions.

Complex seizures are focal in onset, may last for longer than 15 minutes and recur in the course of 24 hours.

As this child had 2 tonic-clonic seizures in the course of 24 hours, this would be classified as the complex partial convulsion.

The simple febrile convulsions are generalized, have duration of less than 15 minutes and do not occur more than once in 24 hours.

Febrile Seizures



EXCLUSIONS

The following conditions exclude a possible diagnosis of febrile seizures:

- CNS infection or inflammation
- Systemic metabolic abnormalities
- History of nonfebrile seizures

Which of the following is the most likely to increase the risk of developmental dysplasia of the hip?

- ☐ a. Being male
- ☐ b. Breech presentation
- ☐ c. Maternal smoking during pregnancy
- ☐ d. Asian origin
- ☐ e. Iron deficiency

Correct Answer: b. Breech presentation

Answer Detail:

The correct answer is b.

Developmental dysplasia of the hip is an abnormal development of the hip joint. The ball at the femoral head is not stable within the acetabulum. The ligaments of the hip joint which hold it all together may also be stretched and loose. The hips dislocate after birth and this may not be noticed until your child starts to walk.

The risk factors for the development of developmental hip dysplasia include being a girl, breech presentation and positive family history of hip dysplasia.

Being male, maternal smoking during pregnancy, being from Asian origin and iron deficiency has no significant association with the development of hip dysplasia.

Let us learn about breech presentation as well.

Complete breech: Here, the buttocks are pointing downward with the legs folded at the knees and feet near the buttocks.

Frank breech: In this position, the baby's buttocks are aimed at the birth canal with its legs sticking straight up in front of his or her body and the feet near the head.

Footling breech: In this position, one or both of the baby's feet point downward and will deliver before the rest of the body.

- First-born, Feet-first (breech), Female, Flexible (hyperlaxity syndromes), and a positive Family history of DDH.



Treatment (guidelines)

DDH must be referred to a specialist

0–6 months—Pavlik harness or abduction splint

3–18 months—reduction (closed or open) and cast (pelvic spica)

>18 months—open reduction and possible osteotomy

Slings are not recommended.

A 3-year-old child is brought to the emergency department by his parents with a history of fever, increasing lethargy, vomiting and drowsiness.

On examination, the airway is clear, and child is breathing normally. The oxygen mask is placed on the child and assessed further.

His hands and feet are warm and pink, and capillary refill is less than 2 seconds. His respiratory rate is 32/minute, oxygen saturation is 100% on room air, pulse rate is 164/minute, the temperature is 39.0 C and blood glucose level is 5.1 mmol/l.

During your assessment, the child starts convulsing. The convulsion lasts for only 30 seconds however he remains difficult to arouse. You are worried this child might have developed meningitis.

Which of the following is not included in the immediate management of meningitis?

- ☐ a. Blood cultures
- ☐ b. Intravenous dexamethasone
- ☐ c. Intravenous fluids
- ☐ d. Intravenous dextrose 2ml/kg of 5% dextrose
- ☐ e. Intravenous ceftriaxone

Correct Answer: d. Intravenous dextrose 2ml/kg of 5% dextrose

Answer Detail:

The correct answer is d.

This child has developed clinical features of acute meningitis. The immediate management of the child with suspected meningitis include:

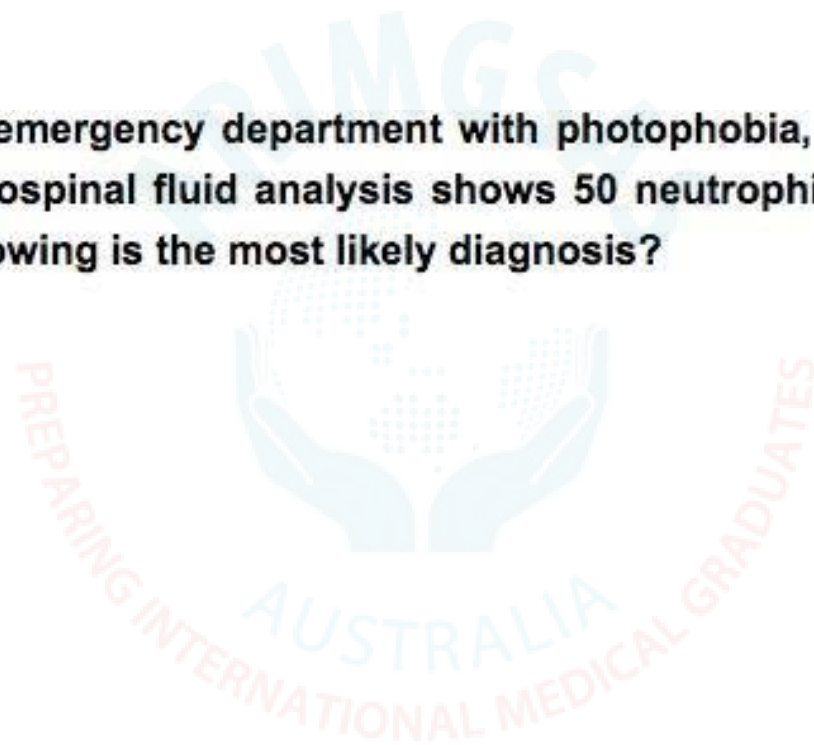
- Airway, Breathing, Circulation, Disability, Exposure (Primary Survey).
- Obtain immediate intravenous access (an intraosseous needle may be required).
- Administer intravenous dexamethasone (0.15 mg/kg).
- Intravenous ceftriaxone (100 mg/kg).
- Take blood cultures.

Other investigations including CT scan and Lumbar may be required but should not delay administration of antibiotics in the child with suspected meningitis.

Dextrose is only needed in the child with hypoglycaemia. It should not be given routinely to the child with suspected meningitis.

An 8-year-old boy is brought to the emergency department with photophobia, irritability and neck stiffness. Lumbar puncture was performed, and cerebrospinal fluid analysis shows 50 neutrophils, 100 lymphocytes, normal proteins and normal glucose. Which of the following is the most likely diagnosis?

- ☐ a. Tuberculosis meningitis
- ☐ b. Bacterial meningitis
- ☐ c. Viral meningitis
- ☐ d. Normal CSF findings
- ☐ e. Encephalitis



Correct Answer: c. Viral meningitis

Answer Detail:

The correct answer is c.

This patient has developed clinical symptoms of meningitis and CSF analysis shows it to be most likely viral meningitis. Please click on the image attached to find out diagnostics of CSF analysis.

	Neutrophils ($\times 10^6$ /L)	Lymphocytes ($\times 10^6$ /L)	Protein (g/L)	Glucose (CSF:Blood ratio)
Normal	0	Less than 5	Less than 0.4	More than 0.6
Bacterial Meningitis	100-10000	Below 100	More than 1.0, but may be normal	Less than 0.4 or may be normal
Viral Meningitis	Below 100	10-10000	0.4-1 or may be normal	Usually normal
Tuberculosis meningitis	Below 100	50-10000	1-5	Below 0.3

What is the most common cause of urinary tract obstruction in the newborn?

- ☐ a. Urinary tract infection
- ☐ b. Posterior urethral valves
- ☐ c. Horse-shoe kidney
- ☐ d. Vesico-urethral reflux
- ☐ e. Phimosis

Correct Answer: b. Posterior urethral valves

Answer Detail:

The correct answer is b.

The most common cause of urinary tract obstruction in a newborn is posterior urethral valves. These are commonly seen in male infants. So b is the correct response here. The obstruction is frequently associated with high intravesicular pressure which may damage the renal parenchyma if left untreated.

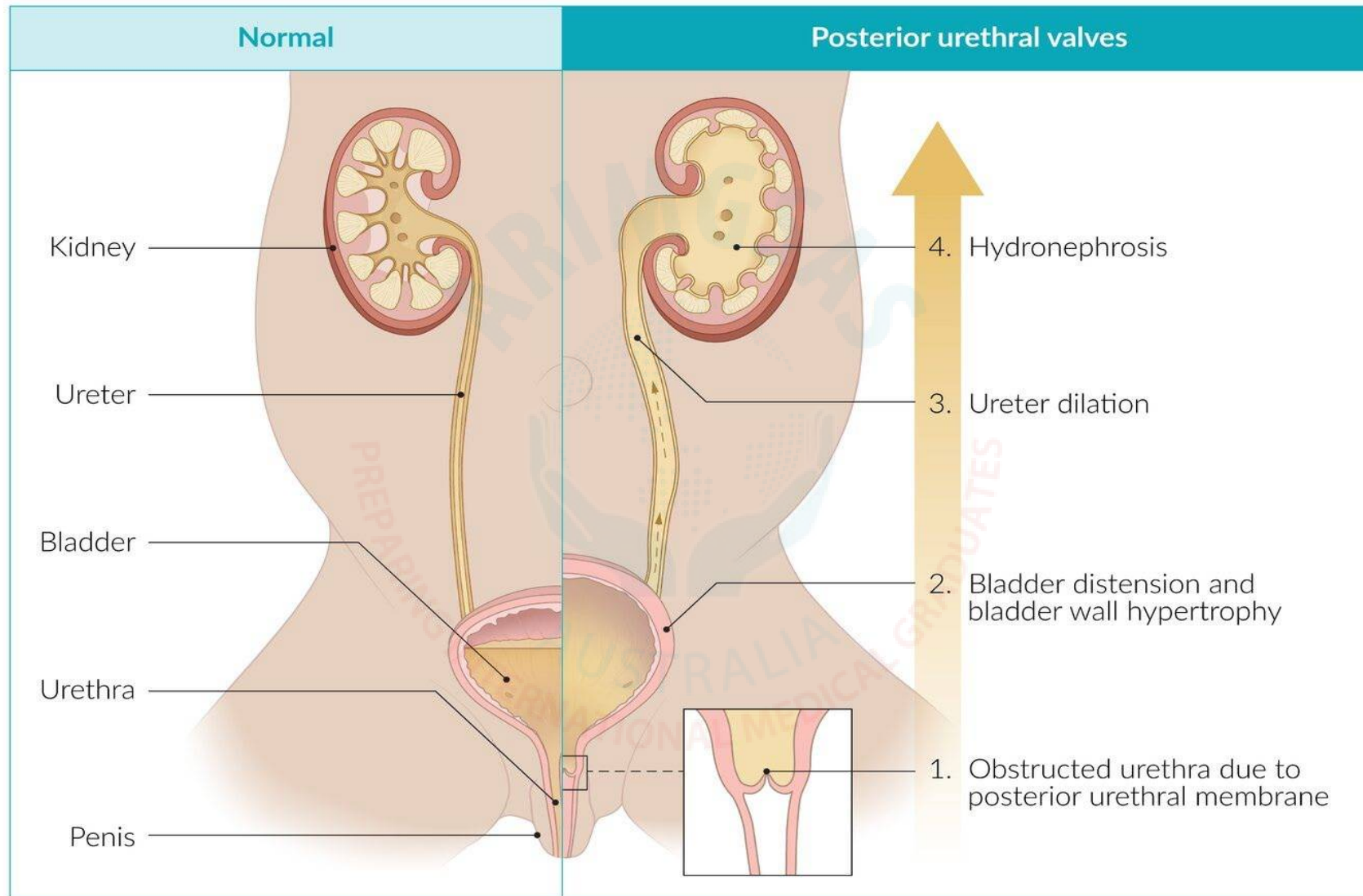
Urinary tract infection is not commonly seen at birth and less likely to cause urinary tract obstruction if there is no anatomical abnormality. Horse-shoe kidneys are associated with increased tendency to stone formation.

Vesicoureteral reflux is a congenital abnormality in which urine is pushed up to the ureter and cause kidney damage due to the poor valve mechanism.

Phimosis is the narrowing of the distal foreskin which prevents its retraction over the glans of the penis.

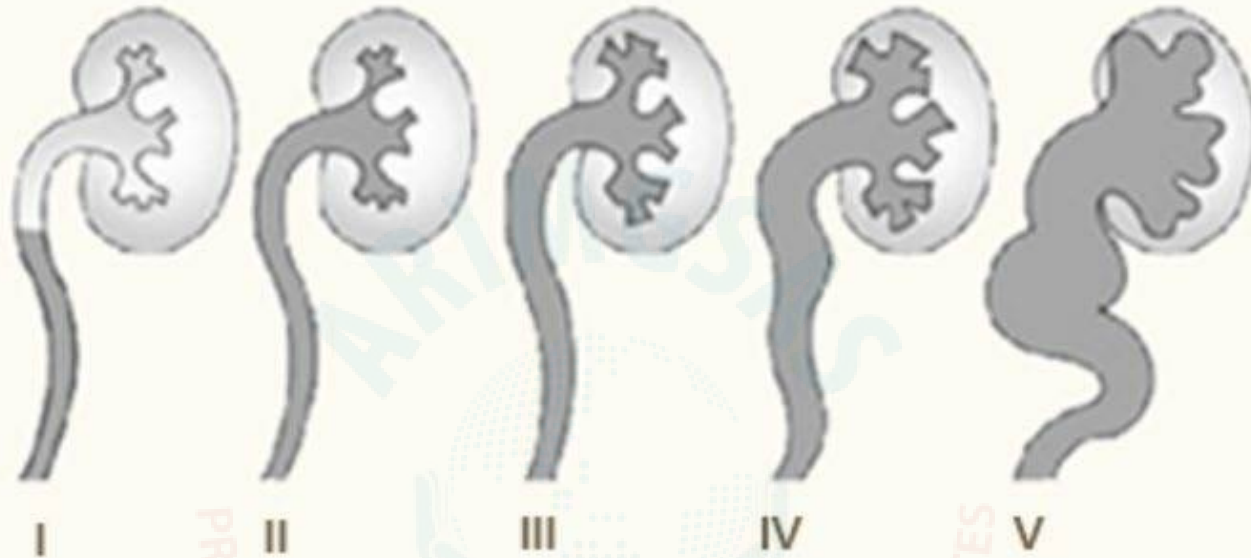
POSTERIOR URETHRAL VALVE

- Posterior urethral valves (PUV) are obstructive membranes that develop in the urethra (tube that drains urine from the bladder), close to the bladder.
- The valve can obstruct or block the outflow of urine through the urethra.
- It's still not clear what causes these disorders, but they are believed to occur early on in male fetal development and may have a genetic component.
- **Complications:** Vesicoureteral reflux, urinary retention, hydronephrosis, Recurrent UTI's, Reduced urine concentration capacity, Eventually renal failure.
- **TREATMENT:** In most cases, urethral valves are treated with a surgical procedure called endoscopic incision of the valves. Also known as valve ablation or urethral valve ablation, this is a surgical technique that trims down excessive tissue of the valves.



VESICoureTERAL REFLUX

- Vesicoureteral reflux (VUR) is a condition in which urine flows backward from the bladder to one or both ureters and sometimes to the kidneys. VUR is most common in infants and young children.
- Most children don't have long-term problems from VUR.
- **Complications:**
 - Kidney (renal) scarring. Untreated UTIs can lead to scarring, which is permanent damage to kidney tissue.
 - Atrophic kidneys
 - Proteinuria
 - High blood pressure.
 - Kidney failure.



Grade

Description

- I Into a nondilated ureter
- II Into the pelvis and calyces without dilation
- III Mild to moderate dilation of the ureter, renal pelvis, and calyces with minimal blunting of the fornices
- IV Moderate ureteral tortuosity and dilation of the pelvis and calyces
- V Gross dilation of the ureter, pelvis, and calyces; loss of papillary impressions; and ureteral tortuosity



TREATMENT

Diagnosis: Reflux is diagnosed using an x-ray called a voiding cystourethrogram (VCUG), or a nuclear cystogram.

TREATMENT OPTIONS FOR VESICoureTERAL REFLUX

Conservative Treatment

- For VUR Grade I–III in children < 5 years
- Close surveillance with urinalysis & renal imaging
- Long-term Antibiotic prophylaxis
 - Children > 3m: *Trimethoprim sulfamethoxazole, nitrofurantoin*
 - Infants < 3m: *amoxicillin*
- Correction of voiding dysfunction
 - *Behaviour modification (timed voiding, Prevention of constipation)*

Surgical Treatment

- Indications
 - VUR ≥ grade IV
 - Bilateral grade III VUR in children > 6 years
 - Worsening renal function/breakthrough urinary tract infections despite prophylactic antibiotics
- Subureteric Transurethral Injection (STING procedure)
- Surgery: Ureteral Reimplantation

An 18-month old female infant is brought to your clinic due to an onset of red maculopapular rash on her trunk. Symptoms reported by mother include high-grade fever and mild coryza for last 3 days however she has still been quite active. Her temperature has returned to normal today.

What is the most likely diagnosis?

- ☐ a. Roseola Infantum
- ☐ b. Rubella
- ☐ c. Measles
- ☐ d. Chicken pox
- ☐ e. Erythema Infectiosum

Correct Answer: a. Roseola Infantum

Answer Detail:

The correct answer is a.

Roseola infantum is a viral infection usually affecting children between the ages of 6-18 months.

The patient typically develops high fever up to 40 degrees Celsius but is otherwise not particularly unwell. There may be mild cervical lymphadenopathy and pharyngitis.

After three days, the temperature usually returns suddenly to normal and the patient develops a red macular or maculopapular non-desquamating rash which is truncal, usually sparing the face and limbs. The rash abates within two days.

Rubella (German measles) is a viral infection typically characterised by rash, fever, and lymphadenopathy. The rash is usually an erythematous, discrete maculopapular exanthema that begins on the face and spreads caudally. It usually disappears within three days but may persist for eight days.

The exanthema of measles is a maculopapular, blanching rash beginning on the face and spreading cephalocaudally and centrifugally to involve the neck, upper trunk, lower trunk, and extremities.

The clinical manifestations of varicella (chicken pox) in healthy children generally develop within fifteen days after the exposure and typically include a prodrome of fever, malaise, or pharyngitis, loss of appetite, followed by the development of a generalised vesicular rash, usually within 24 hours.

The vesicular rash of varicella, which is usually pruritic, appears in successive crops over several days. The patient with varicella typically has lesions in different stages of development on the face, trunk and extremities.

Erythema infectiosum (human parvovirus B19) also referred to as "fifth disease" since it represents one of six common childhood exanthems, each named in order of the dates they were first described.

The illness begins with nonspecific prodromal symptoms, such as fever, coryza, headache, nausea, and diarrhoea. These constitutional symptoms coincide with the onset of viremia.

Two to five days later, the classic erythematous malar rash appears (the so-called slapped cheek rash) with relative circumoral pallor. This facial rash is often followed by a reticulated or lacelike rash on the trunk and extremities.

Which of the following is not used to reduce iron overload in children who require frequent blood transfusions in patients with sickle cell anaemia?

- ☐ a. Subcutaneous deferoxamine
- ☐ b. Splenectomy
- ☐ c. Drinking tea with meals
- ☐ d. Erythrocytapheresis
- ☐ e. Doing regular evening exercise



Correct Answer: e. Doing regular evening exercise

Answer Detail:

The correct answer is e.

Chelation therapy with subcutaneous or intravenous deferoxamine has been standard therapy for transfusional iron overload. Oral iron chelators are also available and are in clinical use.

Splenectomy is done primarily in patients with thalassemia who have hypersplenism that results in a premature destruction of RBCs and increased transfusions requirements.

Drinking tea with a meal reduces dietary iron absorption and may be helpful in patients with diseases such as thalassemia intermedia.

Automated erythrocytapheresis rather than repeated simple transfusions may markedly reduce transfusional iron loading in a patient with sickle cell disease.

Doing regular exercise might be good for patient's general well-being of the patient, it does not reduce iron overload.

A 12-month-old male baby is given a juice feeding whenever he wakes up at night. Which of the following is the long-term complication associated with juice feeding in babies?

- ☐ a. Dental caries
- ☐ b. Otitis media
- ☐ c. Chest infections
- ☐ d. Growth acceleration
- ☐ e. Polycythemia



Correct Answer: a. Dental caries

Answer Detail:

The correct answer is a.

Juice feeding is not recommended for infants under 12 months of age. Sweetened drinks are associated with dental caries.

Other complications of frequent fruit juice include:

- Malnutrition and anaemia.
- Diarrhea.
- Short stature.
- Obesity.

Frequent fruit juice feeding in infants do not increase the risk of otitis media, chest infections and growth acceleration.

A newborn baby is found to have ambiguous genitalia on examination. Gonads are not palpable. Parents are worried about the sex of the baby. There is no family history of any congenital problems. Karyotype analysis confirmed 46xx genetic makeup.

Which of the following is the next appropriate investigation?

- ☐ a. X- ray abdomen
- ☐ b. 17 Hydroxy-progesterone
- ☐ c. CT pelvis
- ☐ d. Pelvic ultrasound
- ☐ e. Testosterone level

Correct Answer: b. 17 Hydroxy-progesterone

Answer Detail:

The correct answer is b.

This patient has developed ambiguous genitalia with no palpable gonads. On initial evaluation, a chromosomal analysis should be performed.

In the absence of palpable gonads, the most likely diagnosis is congenital adrenal hyperplasia secondary to 21-hydroxylase deficiency. So 17-hydroxyprogesterone levels should be obtained and will be markedly elevated.

Also check for all serum electrolytes, blood glucose level and manage the situation according to the results.

Further investigations are performed in all patients depending on palpability of gonads.

1-Palpable gonads:

- Pelvic ultrasound
- Testosterone and dihydrotestosterone (DHT) ratio.
- LH and FSH.
- ACTH stimulation test.
- hCG stimulation test.

2-No palpable gonads:

- 17-hydroxyprogesterone.
- Serum electrolytes.
- Plasma renin activity

A mother of a one-week-old neonate is on the methadone programme. She is concerned about the risk of methadone to her baby as she plans to breastfeed her baby. Which of the following is the most appropriate advice?

- ☐ a. Breast feeding is contraindicated
- ☐ b. She should breastfeed the baby before taking methadone dose
- ☐ c. She should use formula milk mixed with breast milk
- ☐ d. Leave methadone program for four months and then rejoin
- ☐ e. Continue methadone program and continue breastfeeding

Correct Answer: e. Continue methadone program and continue breastfeeding

Answer Detail:

The correct answer is e.

Various studies have shown that the amount of methadone transferred through milk is low even at higher doses of methadone.

So it is unlikely to result in toxicity to the infant.

Also, it may help to lessen the symptoms of neonatal abstinence if the mother was on methadone before delivery of the baby.

A 16-year-old male is brought to your clinic by her mother with fever, lethargy and mild headache for 1 week. He reports discomfort on eating and dryness of mouth. Mother is unsure of the immune status of the child. On examination, bilateral parotid swelling is noted along with pre-sternal oedema.

Which of the following statement is true regarding child condition?

- ☐ a. Orchitis develops 3-4 weeks after parotitis
- ☐ b. After bilateral orchitis, subsequent sterility is very common
- ☐ c. Aseptic meningitis is one of the very rare complication
- ☐ d. Isolation is generally very effective
- ☐ e. Paramyxovirus can be isolated from cerebrospinal fluid in mumps meningitis

Correct Answer: e. Paramyxovirus can be isolated from cerebrospinal fluid in mumps meningitis

Answer Detail:

The correct answer is e.

This patient has clinical symptoms of mump with fever, lethargy, bilateral parotid swelling and presternal oedema. A common complication of mumps is involvement of testes causing orchitis.

It is usually unilateral, occurs in 25 percent of the post-pubertal male. It develops three to four days after parotitis.

Subsequent sterility is rare even if both testes are involved. Aseptic meningitis is one of the common complications of mumps.

Isolation of the patient is usually ineffective. Paramyxovirus can be isolated from CSF, saliva and nasopharynx

A 10-year-old female is admitted to the emergency department with a swollen thigh and leg after being stung by a bee. She is complaining of abdominal pain and nausea.

What is the best initial treatment?

- ☐ a. Topical corticosteroid
- ☐ b. Promethazine oral
- ☐ c. Intravenous promethazine
- ☐ d. Intramuscular adrenaline
- ☐ e. Subcutaneous adrenaline



Correct Answer: d. Intramuscular adrenaline

Answer Detail:

The correct answer is d.

According to Australian and New Zealand Immunology guidelines, abdominal pain or vomiting are very important signs of anaphylaxis in insect bite allergy. So, this patient should be treated with intramuscular adrenaline.

Antihistamines (promethazine) and topical steroids can be considered once the anaphylaxis symptoms (in this case, abdominal pain) are improved.

A 29-year-old lady is planning to get pregnant however she is concerned about Rubella infection as her elder sister had a baby who suffered from congenital rubella syndrome. She remembers that she was vaccinated for measles, mumps and rubella when she was a child. Which of the following statement is correct regarding rubella?

- ☐ a. A history of immunization for rubella is enough and no further rubella testing needed
- ☐ b. Rubella vaccine can be given safely during pregnancy
- ☐ c. In Australia, 25 percent of women aged 15-40 are immune to rubella
- ☐ d. Serology testing of rubella antibodies titre should be ordered now
- ☐ e. Infection of the mother in second trimester can lead to still birth

Correct Answer: d. Serology testing of rubella antibodies titre should be ordered now

Answer Detail:

The correct answer is d.

A history of immunisation for rubella is not enough and formal serology testing of rubella antibodies titre should be performed. Rubella vaccine can not be given during pregnancy as this is a live vaccine and there is a risk of harm to the developing fetus. Rubella vaccine has not been proven to be embryopathic however.

In Australia, 95 percent of women aged 15-40 years of age are immune to rubella. Infection of the mother in the first trimester can lead to abortion and still birth.

A mother brings a 2-year-old male child for assessment. The child fell from the bench top and injured his teeth. She brought an avulsed tooth wrapped in a paper fold. On examination, you find the mandibular central incisor is missing.

What is the most appropriate next management?

- ☐ a. Re-implant the tooth under local anaesthesia
- ☐ b. Immerse the tooth in the milk and referral to dentist for urgent review
- ☐ c. Immerse the tooth in the milk and referral to dentist for review in next couple of days
- ☐ d. Reassure the mother that permanent teeth will grow in the same location at an appropriate age
- ☐ e. Throw the tooth into medical waste

Correct Answer: d. Reassure the mother that permanent teeth will grow in the same location at an appropriate age

Answer Detail:

The correct answer is d.

This patient has presented with completed disarticulation of the tooth from its bony socket. This is called avulsion. This child is two years old, and this is the age of maturation of the primary dentition.

Primary teeth should not be replanted or repositioned as this may damage the adult tooth that is developing in the bone.

So this mother should be reassured, and the tooth re-implantation is not required.

A 3-year old male child is consulted in your GP clinic due to wet nappies at night time only. His father used to have the same issue until the age of 7. There is no history of diarrhea nor constipation.

What is the management?

- ☐ a. Reassure the mother
- ☐ b. Decrease liquid intake in the evening
- ☐ c. Bed alarm
- ☐ d. Refer for intravenous urogram
- ☐ e. Desmopressin acetate

Correct Answer: a. Reassure the mother

Answer Detail:

The correct answer is a.

This child is suffering from primary nocturnal enuresis. These are due to delayed development of bladder control. Reassure the mother and offer support if the problem continues to be there.

Secondary enuresis is wetting after normal continence of at least 3 months and can be due to psychological causes.

After the age of 6, intravenous urogram or ultrasound are necessary to exclude urinary tract abnormalities.

Treatment includes conditioning therapy such as pad or bed alarm, Desmopressin acetate and planned waking.

A 16-year-old male is admitted to hospital with MRSA positive wound culture. Vancomycin is started, however, the patient developed an itchy rash and flushing of the upper neck, body and face.

What will you do next?

- ☐ a. Give dilute infusion
- ☐ b. Slow infusion rate
- ☐ c. Continue infusion
- ☐ d. Give epinephrine
- ☐ e. Check vancomycin level



Correct Answer: b. Slow infusion rate

Answer Detail:

The correct answer is b.

This patient has developed red man syndrome. Red man syndrome is characterized by flushing, erythema, and pruritus, usually affecting the upper body, neck, and face more than the lower body. Pains and muscle spasms in the back and chest, dyspnea, and hypotension may also occur.

For mild to moderate reactions (pruritus or flushing but the patient is hemodynamically stable), interrupt the infusion and restart at lower infusion rate. Use antihistamine (diphenhydramine and ranitidine) to help with itching and flushing.

Hives, laryngeal edema, and wheezing are suggestive of anaphylaxis and patients with these signs and symptoms should be treated with intramuscular epinephrine. However, this patient does not have these symptoms.

Red Man Syndrome

→ A rate-dependent infusion reaction (*not a true allergic reaction*)

Clinical

- Flushing
- Erythema
- Pruritus
- Affecting upper body, neck and face > lower body
- Myalgia, dyspnea, hypotension

Management

- Stop infusion
- Administer antihistamine (diphenhydramine)
- Can restart at slower rate once symptoms resolve

Vancomycin

Directly activates mast cells



Histamine release →

A 4-year-old girl was brought by her mother with vulval pruritus. On the examination, there is a well-demarcated white plaque with a wrinkled surface and scattered telangiectasia in the vulval area. Histopathology report confirmed the diagnosis of lichen sclerosus.

Which of the following is the most appropriate treatment?

- ☐ a. Potent topical steroids
- ☐ b. Surgical excision
- ☐ c. Antibiotics
- ☐ d. Antifungals
- ☐ e. Referral to dermatologist

Correct Answer: a. Potent topical steroids

Answer Detail:

The correct answer is a.

Lichen sclerosus is chronic inflammatory condition of the skin which is seen both in pre-pubertal and perimenopausal women.

The diagnostic triad consists of genital itching, soreness and white wrinkled plaques in the genital area. Pruritis in the vulval region is the main symptom. Diagnosis is usually confirmed by biopsy.

Treatment is with potent topical steroids for 3 to 6 months. Lifelong surveillance with 6-monthly check up is required to monitor for the occurrence of squamous cell carcinoma.

Untreated cases can develop complications such as a vulval atrophy, labial fusion, and squamous cell carcinoma. Lifelong risk of squamous cell carcinoma in a patient with untreated lichen sclerosus is 2 to 6%.

Referral to a dermatologist is not required in the presence of histological diagnosis.

Which of the following is correct regarding secondary nocturnal enuresis in children?

- ☐ a. This is most common form of bed wetting
- ☐ b. It can be caused by bladder infection
- ☐ c. It has strong genetic component
- ☐ d. Most common cause is neurological developmental delay
- ☐ e. Children with ADHD are more likely to suffer from enuresis

Correct Answer: b. It can be caused by bladder infection

Answer Detail:

The correct answer is b.

Nocturnal enuresis is called secondary when a child has been dry for six months or more and then restarts bed wetting.

The only option related to secondary nocturnal enuresis, in this case, is a bladder infection.

Primary nocturnal enuresis is the most common cause of bedwetting in children.

It has a strong genetic link with high incidence in families having one or two parents with nocturnal enuresis.

The neurological developmental delay is the most common cause of primary nocturnal enuresis.

Children with ADHD are 2.5 times more likely to suffer from primary nocturnal enuresis.

A 14-year old female was sent to the hospital by her GP because of severe anaemia (Hb 57 g/L). She complained of weakness, poor appetite, weight loss and feeling unwell. She has been a vegan vegetarian and admitted being 'picky' about her food. There is no intrinsic factor deficiency and no evidence of malabsorption.

Which dietary deficiency would you predict with most certainty in this patient?

- ☐ a. Iron deficiency
- ☐ b. Folic acid deficiency
- ☐ c. B12 deficiency
- ☐ d. Vitamin D deficiency
- ☐ e. Vitamin K deficiency

Correct Answer: c. B12 deficiency

Answer Detail:

The correct answer is c.

Any of the above dietary deficiencies are possible. However, vitamin B12 deficiency is the most certain due to a vegetarian diet.

As she did not have intrinsic factor deficiency or terminal ileal malabsorption, the likely dietary deficiency of vitamin B12 is the most likely to be present.

Vitamin B12 is not found in plants, so a strict vegetarian diet excluding dairy products will lack B12. This can cause a severe anaemia, it usually also causes a low white cell count.

In the case of vitamin B12 or folate deficiency, the patient presents with severe anaemia and macrocytic red cells (mean corpuscular volume more than 100 fL) with or without varying neurologic disturbances.

Hypersegmentation of neutrophils, if present, should suggest the diagnosis of B12 or folate deficiency, particularly in patients who also have neurologic symptoms, even in the absence of anaemia.

Topic review:

In Australia, the most common presentation of iron deficiency anaemia is an otherwise asymptomatic, well-nourished child who has a mild to moderate microcytic, hypochromic anaemia.

Much less frequent are children with severe anaemia, who present with lethargy, pallor, irritability, cardiomegaly, poor feeding, and tachypnoea. It may be caused by nutritional deficiency, gastrointestinal blood loss or chronic diseases.

Vitamin D and K, both are fat soluble and are also present in the vegetarian diet.

Deficiency of vitamin D causes rickets and hypocalcaemia in infants and children and osteomalacia in adults or adolescents after epiphyseal closure.

Severe vitamin D deficiency may also be associated with hypocalcaemia, which may cause tetany or seizures.

Vitamin K is essential for the activity of several carboxylase enzymes within the hepatic cells and therefore is necessary for the activation of coagulation factors VII, IX, X, and prothrombin.

Vitamin K is the active coenzyme in this process, providing energy for the reaction through oxidation.

Which of the following features if present favours the diagnosis of torsion of testes?

- ☐ a. Fever and rigors
- ☐ b. Absent cremasteric reflex
- ☐ c. Tender upper pole of testis
- ☐ d. Positive Prehn's sign
- ☐ e. Lower urinary tract symptoms

Correct Answer: b. Absent cremasteric reflex

Answer Detail:

The correct answer is b.

Clinical features favouring the diagnosis of testicular torsion include:

- Sudden onset of severe testicular pain.
- Associated nausea and vomiting.
- Absent cremasteric reflex.
- Negative Prehn's sign (Elevation of the scrotum relieve the pain in positive Prehn's sign).
- Asymmetric high riding testes.

Other features mentioned in the above case (fever, rigors, the tender upper pole of the testes, positive Prehn's sign and lower urinary tract symptoms all favour the diagnosis of epididymitis.

A 4-year-old child is brought to your clinic by Aboriginal parents for assessment. He developed cold symptoms two months ago and now developed a profuse yellow colour discharge from the left ear over last few weeks.

On examination, the temperature is 36c and left ear drum is perforated with yellow discharge. The review of throat and chest is unremarkable.

What is the most appropriate next step?

- ☐ a. Soframycin ear drops
- ☐ b. Oral amoxicillin
- ☐ c. Ear toilet with povidone-iodine solution
- ☐ d. Oral steroids
- ☐ e. Oral amoxicillin-clavulanic acid

Correct Answer: c. Ear toilet with povidone-iodine solution

Answer Detail:

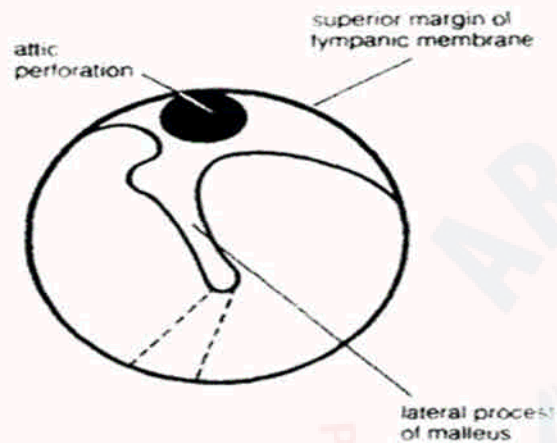
The correct answer is c.

This patient has developed clinical features of chronic suppurative otitis media. It is very common in preschool children and can lead to significant hearing impairment.

The initial treatment involved ear toilet with povidone-iodine solution, followed by dry mopping with rolled toilet papers. It can be done 2 to 3 times a day using a 20ml syringe with plastic tubing.

In addition to this, ciprofloxacin ear drops can be tried to treat the ongoing infection effectively.

(a)



(b)



Infected ear: (a) unsafe perforation; (b) safe perforation

Remember what I said:

Unsafe perforations are

- a) In the attic or
- b) In the posterior region
- c) Or involve the eardrum margin

Anything else is generally safe.

i.e.

- a) In the anterior region or
- b) In the inferior region
- c) AND NOT INVOLVING THE EARDRUM MARGIN

A 6-weeks old baby is brought to the hospital with a history of gradually worsening non-bilious vomiting over last 2 weeks. It has been becoming more forcible and the baby is eager to have his formula feed after each vomiting. There is no history of diarrhea.

On examination, the capillary refill is 3 seconds. The baby has not gained any weight over last 2 weeks. There is no jaundice. On abdominal examination, there is an olive size mass palpable at right upper quadrant when the baby is supine. There is no rash. Rest of the examination is normal.

Which of the following metabolic abnormality is commonly seen in this clinical situation?

- ☐ a. Hyperkalemia
- ☐ b. Hypoxia
- ☐ c. Hypochloraemic Hypokalaemic Metabolic Alkalosis
- ☐ d. Hyperchloremic acidosis
- ☐ e. All of the above

Correct Answer: c. Hypochloraemic Hypokalaemic Metabolic Alkalosis

Answer Detail:

The correct answer is c.

This child has presented with clinical features of hypertrophic pyloric stenosis. Hypertrophic Pyloric Stenosis is due to progressive thickening of the circular muscle of the pylorus. This leads to gastric outlet narrowing. The condition usually presents between 2 and 6 weeks of age.

Hypochloraemic Hypokalaemic Metabolic Alkalosis is the most commonly seen abnormality in these cases due to loss of a large amount of gastric hydrochloride acid.

In congenital adrenal hyperplasia, hyperkalemic hyperchloremic acidosis is seen.

All other options are incorrect.

Which of the following is the most common cause of jaundice in a neonate within 24 hours after birth?

- ☐ a. Hemolysis due to blood group incompatibility
- ☐ b. Sepsis
- ☐ c. Glucose-6-phosphate dehydrogenase deficiency
- ☐ d. Hereditary spherocytosis
- ☐ e. Gilbert's syndrome

Correct Answer: a. Hemolysis due to blood group incompatibility

Answer Detail:

Onset of jaundice in a neonate within first 24 hours is always pathological.

Most common cause of pathological jaundice is ABO incompatibility. However other causes of pathological jaundice must be considered as a part of differential diagnosis.

These include sepsis, red cell enzyme defects (glucose-6-phosphate dehydrogenase deficiency) and red cell membrane defects (hereditary spherocytosis).

Gilbert syndrome is congenital defect resulting in persistence of mild unconjugated hyperbilirubinemia. It does not cause very high level of bilirubin in blood and is relatively rare.

An 18-year-old boy is brought to your clinic due to episodes of epistaxis at home. Upon arrival in your office, the boy was noted to have an active epistaxis.

What is the first step in management?

- ☐ a. Application of topical local anaesthetics
- ☐ b. Refer to the hospital immediately
- ☐ c. Direct pressure to the lower nose for two minute intervals
- ☐ d. Position the patient so that he is sitting and leaning forward
- ☐ e. Nasal packing with gauze

Correct Answer: d. Position the patient so that he is sitting and leaning forward

Answer Detail:

The correct answer is d.

The initial steps in the management of active epistaxis are:

1-To position the patient sitting forward to prevent blood dripping down the throat.

2-To compress the cartilaginous portion of nose (Little's area) for 5 -10 minutes without interruption (constant checking is likely to interfere with haemostasis and restart bleeding).

If this is ineffective, application of local anaesthetic (traditional cocaine for its vasoconstrictive properties) will facilitate packing of the nose with ribbon gauze, Foley's catheter or similar devices.

Only in extreme cases would surgery be needed, thus referral to the hospital may be necessary.

AT HOME TREATMENT

- * SIT UP
- * SLIGHTLY LEAN FORWARD and TILT HEAD FORWARD



- * PINCH TIP of NOSE with TWO FINGERS for 15-20 MINS

IF BLEEDING CONTINUES

**TOPICAL
NASAL SPRAYS**



- * VASOCONSTRICTIVE
- * LOCAL ANESTHETICS

IN CASE of:
* RECURRENT EPISODES
* NON-STOP BLEEDING

HOSPITAL SETTING TREATMENT



NASAL PACKING

- * INSERT GAUZE-LIKE MATERIAL or NASAL TAMPON in NASAL CAVITY

IF:
* MEDICATION doesn't WORK
* POSTERIOR EPISTAXIS

A 6-year-old male Aboriginal child ingested two lithium batteries 2 hours ago. Chest and abdominal X-rays confirmed the position of the batteries in the oesophagus. His Parents are quite anxious. What will you consider next?

- ☐ a. Emergency endoscopic removal
- ☐ b. Watch for the passage for 3 days
- ☐ c. Serial chest and abdominal x-rays
- ☐ d. Urgent laparotomy
- ☐ e. Reassure the parents

Correct Answer: a. Emergency endoscopic removal

Answer Detail:

The correct answer is a.

If a child is ingested lithium batteries and if these are in the oesophagus, it requires emergency endoscopic removal within 6 hours (as soon as possible).The electrical current generated by these batteries can lead to the destruction of mucus membrane and perforation of the oesophagus in less than 6 hours.

All other options are incorrect.

A 4-year-old girl has a deep wound on her right index finger with a wood splinter. Her mother tells you she was planting some pots in the garden when she cut her finger. Her mother tells you that she received all immunisations required for her age.

What of the following statement is false?

- ☐ a. The wound must be cleaned
- ☐ b. She does not need a Tetanus prophylaxis
- ☐ c. The wound must be disinfected
- ☐ d. She does need a Tetanus prophylaxis
- ☐ e. Her wound is tetanus-prone

Correct Answer: d. She does need a Tetanus prophylaxis

Answer Detail:

The correct answer is d.

This child has presented a dirty deep wound while planting some pots in the garden. Her wound is tetanus prone. Her vaccination status is up to date, so she does not need a tetanus prophylaxis.

Wounds must be cleaned, disinfected and treated surgically if necessary.

All wounds, other than clean minor wounds, should be considered tetanus-prone. Types of injuries likely to favour the growth of tetanus organisms include:

- Compound fractures.
- Wounds complicated by pyogenic infections.
- Wounds with extensive tissue damage (e.g., contusions or burns).
- Any wound apparently contaminated with soil, dust or horse manure (especially if topical disinfection is delayed more than 4 hours).
- Re-Implantation of avulsed tooth (minimal washing and cleaning of the tooth is conducted to increase the likelihood of successful reimplantation).
- Deep penetrating wounds.
- Wounds containing foreign bodies (especially wood splinters).

An unvaccinated 3-year-old child develops a severe paroxysmal cough with inspiratory whoop and cough is followed by vomiting for last four weeks. Coughing bouts occur more at night.

Physical examination is normal. Laboratory investigations indicate lymphocytosis.

Which of the following is not true regarding this condition?

- ☐ a. Antibiotics if given, reduce the communicability of the disease
- ☐ b. Antibiotics do not improve the symptoms of the patient
- ☐ c. School exclusion is necessary until at least five days of antibiotic use
- ☐ d. A seven day course of antibiotics is recommended for all household and other close contacts who are not immunized
- ☐ e. A seven day course of antibiotics is recommended for all household and other close contacts regardless of the immunization status

Correct Answer: d. A seven day course of antibiotics is recommended for all household and other close contacts who are not immunized

Answer Detail:

The correct answer is d.

This child has signs and symptoms of a whooping cough or pertussis. This is a respiratory infection caused by *Bordetella pertussis*.

The clinical illness is divided into three stages- catarrhal, paroxysmal, and convalescent.

1-The catarrhal phase-mild cough and coryza, and lasts one to two weeks. Fever is uncommon, and if present, it is usually low grade. Instead of improving, the cough gradually increases, unlike a typical upper respiratory infection.

2- In the paroxysmal stage, coughing persists and severity increases, occurring in paroxysmal attacks. The classic cough of pertussis is distinctive. The paroxysm is a long series of coughs, during which the child may develop gagging and cyanosis, and appear to be struggling for breath. Whooping, which is characterised by the noise of the forced inspiratory effort, may be observed following a coughing attack during the paroxysmal phase. Post-tussive emesis occurs frequently.

3- In convalescent phase- the cough begins to subside, and the child enters the convalescent stage. A cough continues to decrease gradually over several weeks to months.

Antibiotics are usually given to reduce the spread of the disease to others. However, there is little evidence of improvement in symptoms of the patient with antibiotics.

School exclusion is necessary for five days post-antibiotics treatment to minimise the spread of pertussis.

A 7-day course of antibiotics is recommended for all household and other close contacts regardless of immunisation status.

So option d is the right choice here and is not true.

A woman brought her 9-month old baby with dyspnea and poor feeding. On examination, his chest is hyperinflated with sub-costal recessions. On auscultation, there are widespread fine inspiratory crackles and expiratory wheezes.

What is the most appropriate next step in his management?

- ☐ a. Nebulized adrenaline
- ☐ b. 100% oxygen via nasal prongs
- ☐ c. Intravenous steroids
- ☐ d. Intravenous ceftriaxone
- ☐ e. Reassure and discharge home

Correct Answer: b. 100% oxygen via nasal prongs

Answer Detail:

The correct answer is b.

This child has developed clinical features of bronchiolitis. It is an acute viral illness caused by a respiratory syncytial virus. The usual age of onset is between 2 weeks to 9 months.

The child may develop prodromal symptoms (a cough, coryza) with wheezy breathing, tachypnea and hyperinflated chest with sub-costal recessions.

The most appropriate treatment is 100% oxygen by nasal prongs to maintain PaO₂ above 94%. Dehydration is a serious problem in children with severe bronchiolitis and requires intravenous fluids or nasogastric tube.

Antibiotics are not indicated until and unless a bacterial infection is suspected.

There is no evidence to support the use of nebulized adrenaline, bronchodilators or corticosteroids in children with bronchiolitis.

A 6-month-old male is brought to your office by his mother with persistence bouts of a cough for last 2 weeks. There is a history of vomiting after coughing episodes. The child develops cyanosis during coughing.

What is the most appropriate next step?

- ☐ a. Nasopharyngeal aspirate and review in 24 hours
- ☐ b. Immunisation at this visit with dTP and review in 24 hours
- ☐ c. Erythromycin syrup and review in 24 hours
- ☐ d. Trial of Salbutamol by mask
- ☐ e. Admission to hospital

Correct Answer: e. Admission to hospital

Answer Detail:

The correct answer is e.

The clinical picture suggests respiratory infection with *Bordetella pertussis*. The history of cyanosis associated with the coughing suggests the need for admission to hospital.

In addition, children under 6 months of age usually require admission for pertussis because of the risk of complications like respiratory arrest, bacterial pneumonia and encephalitis.

Salbutamol has not been shown to be helpful in a child with pertussis. Immunisation at a later date should be encouraged even if the child has had pertussis.

Erythromycin is not curative but may reduce infectivity.

Which one of the following patients with urinary tract infection will require hospitalisation?

- ☐ a. An infant less than 12-months
- ☐ b. A 6-year old male child with family history of urinary tract infection
- ☐ c. A 5-year old female child with family history of urinary tract infection
- ☐ d. An infant less than 2-month of age
- ☐ e. A 2-year old child with allergy to penicillin

Correct Answer: d. An infant less than 2-month of age

Answer Detail:

The correct answer is d.

As any infant younger than 2-month of age is at increased risk of urosepsis or other serious concomitant infections and so requires treatment as an inpatient.

The family history of urinary tract infection is significant only when there is suspected urinary tract anatomical abnormality suspected in a patient and can be managed in the outpatient department.

Any allergy to penicillin is not an indication of hospital admission. It requires giving the alternative oral antibiotics as an outpatient.

The patients with UTI who are toxic, dehydrated and unable to tolerate oral antibiotics will require admission to hospital.

A couple comes to your office as they are worried about their daughter who is 14 years of age. She has not started breast development and has short stature. Mother reports that most of her daughter peers have begun developing breast and are taller than her daughter. On further history, you found that mother of the child had late thelarche at the age of 15 and had a late growth spurt.

Which of the following is the most common cause of short stature?

- ☐ a. Hypothyroidism
- ☐ b. Growth hormone deficiency
- ☐ c. Inhalational steroid use for asthma
- ☐ d. Constitutional delay of growth and puberty
- ☐ e. Coeliac disease

Correct Answer: d. Constitutional delay of growth and puberty

Answer Detail:

The correct answer is d.

Short stature is defined as a height of the child below 1st percentile for the age, or the growth rate is abnormally slow below the 10th percentile for bone age.

The most common causes of short stature are the constitutional delay for growth and puberty and familial short stature.

In familial short stature, the child is short when compared to their peers, and they are at their appropriate height for their family.

The diagnosis of constitutional delay of growth and puberty is made when there is lack of breast development-thelarche in girls above 13 years of age and testicular volume less than 4ml by the age of 14 years of age. Often there is a family history of late onset of puberty in parents or older siblings.

Growth monitoring is recommended in these conditions.

A 2-week-old neonate is found to have discharge and redness in both eyes. On examination, there is mild hyperemia with a thick mucopurulent discharge.

What is the most likely diagnosis?

- ☐ a. Chemical conjunctivitis
- ☐ b. Chlamydia conjunctivitis
- ☐ c. Gonococcal conjunctivitis
- ☐ d. Meningitis
- ☐ e. Viral infection



Correct Answer: b. Chlamydia conjunctivitis

Answer Detail:

The correct answer is b.

Chemical conjunctivitis due to ocular prophylaxis usually occurs on the first day of life. Gonococcal conjunctivitis generally has its peak time of onset between 3 and 7 days after birth.

By the end of the first week of life and throughout the first month of life, Chlamydia becomes the most frequent cause of conjunctivitis.

So at 2 weeks of life, this neonate has developed signs and symptoms of chlamydia conjunctivitis.

Chlamydial conjunctivitis can vary in severity, ranging from mild to severe hyperemia with a thick mucopurulent discharge and pseudomembrane formation.

Gonococcal conjunctivitis usually presents at 2 to 7 days of life with intense bilateral bulbar conjunctival erythema, chemosis, and a copious purulent discharge. All infants with gonococcal conjunctivitis require admission and evaluation for disseminated disease.

Intravenous third generation cephalosporin antibiotics are the first line of management.

A 6-weeks old baby is brought to the hospital with a history of gradually worsening non-bilious vomiting over last 2 weeks. It has been becoming more forcible and the baby is eager to have his formula feed after each vomiting. There is no history of diarrhea.

On examination, the capillary refill is 3 seconds. The baby has not gained any weight over last 2 weeks. There is no jaundice. On abdominal examination, there is an olive size mass palpable at right upper quadrant when the baby is supine. There is no rash. Rest of the examination is normal.

Blood tests show hypochloremic hypokalemic metabolic alkalosis and the abdominal ultrasound confirms the diagnosis of infant hypertrophic pyloric stenosis.

Which of the following is the best initial step for management of this patient?

- ☐ a. Fluid resuscitation
- ☐ b. Ramstedts Pyloromyotomy
- ☐ c. Continue oral feeds
- ☐ d. Normal saline is contraindicated due to metabolic acid-base abnormality
- ☐ e. Keep baby warm to improve capillary refill

Correct Answer: a. Fluid resuscitation

Answer Detail:

The correct answer is a.

This patient has confirmed the diagnosis of infant hypertrophic pyloric stenosis. As this patient has delayed capillary refill (more than 2 seconds) and there is a moderate degree of dehydration. Also, there is need to correct the acid-base abnormality before any surgical intervention can be considered.

Fluid resuscitation is priority number one here. Normal saline can be given with 10-20ml/kg boluses. Stop oral feeds and insert a nasogastric tube if vomiting continues despite stopping feeds. Replace nasogastric losses with IV normal saline.

Once the patient is clinically improved, Ramstedts Pyloromyotomy can be considered as the procedure of choice to treat this condition.

A mother brings her 11-year-old son who passed bright red blood at the end of clear urine stream previously. All other findings on examination are normal.

Which of the following is the most likely cause?

- ☐ a. Good Pasture syndrome
- ☐ b. Post-streptococcal glomerulonephritis
- ☐ c. Idiopathic hematuria
- ☐ d. A benign condition associated with hormonal changes leading to engorged vessels
- ☐ e. Berger's nephropathy

Correct Answer: d. A benign condition associated with hormonal changes leading to engorged vessels

Answer Detail:

The correct answer is d.

In early adolescent males, terminal hematuria reflects a benign condition associated with hormonal changes leading to engorged vessels around the entry of prostate duct into the urethra. This resolves spontaneously in weeks to months and does not require cystoscopy or other investigations.

A 12-month-old female child developed labial fusion with background history of vulvovaginitis. Mother noticed voiding difficulties. What is the most appropriate management?

- ☐ a. Local anaesthetic cream and separation with a blunt instrument
- ☐ b. Reassurance
- ☐ c. Separate adhesions under general anaesthesia
- ☐ d. Encourage hygiene
- ☐ e. Antibiotics

Correct Answer: a. Local anaesthetic cream and separation with a blunt instrument

Answer Detail:

The correct answer is a.

This child has developed labial fusion secondary to vulvovaginitis and now she also developed voiding difficulties. If the child has no voiding difficulties, reassure the parents that it is a normal variant and usually resolves spontaneously.

If the child develops voiding difficulties (age less than 18 months), apply local anaesthetic cream and separate the labia minora with a blunt instrument. This technique has high recurrence rate.

So this child would need the application of local anaesthetic cream and separation of labia minora with a blunt instrument.

You are resident in a neonatal unit and looking after a 6 hours old baby of a 25-year-old mother. Mother has been on escitalopram 10 mg daily for last three years for her depression, and she did not stop it during her pregnancy. She is keen to know when she can take her baby home.

What is most appropriate advice?

- ☐ a. A minimum period of 3 days observation after birth
- ☐ b. A minimum period of 24 hours observation after birth
- ☐ c. She can take her baby home after 12 hours
- ☐ d. Involve child protection services as baby is at risk of harm
- ☐ e. Call the police to monitor the situation

Correct Answer: a. A minimum period of 3 days observation after birth

Answer Detail:

The correct answer is a.

A minimum period of 3 days of observation after birth is recommended by the Royal Australian and New Zealand College of Psychiatrists (RANZCP) for babies after in-utero exposure to selective serotonin re-uptake inhibitors like escitalopram, citalopram, fluoxetine or SNRI like venlafaxine.

So baby needs to be observed at least for 3 days and then discharged home safely.

She did not express suicidal or homicidal intentions, so involving child protection services is not indicated. Calling police is not needed as well as she is not threatening and is not violent or aggressive.

You are working as a resident medical officer at a local children hospital in Adelaide. You are doing the neonatal checks and doing a thorough examination. Physical examination is unremarkable except that you note the knees were at different heights when the hips and knees were flexed. Asymmetric skin folds and limited abduction of the affected hip were also seen.

What is the most likely diagnosis?

- ☐ a. Osgood-Schlatter disease
- ☐ b. Slipped capital femoral epiphysis
- ☐ c. Developmental dysplasia of the hip
- ☐ d. Femoral head fracture
- ☐ e. Legg-Calve-Perthes disease

Correct Answer: c. Developmental dysplasia of the hip

Answer Detail:

The correct answer is c.

This neonate has got all clinical features of developmental dysplasia of the hip.

Developmental dysplasia of the hip, also called congenital hip dislocation can result in subluxed, dislocatable or dislocated femoral heads which will lead to early degenerative joint disease of the hips.

It is commonly found in first-born females with breech delivery. The knees are at unequal heights when the hips and knees are flexed (the dislocated side is lower) and asymmetric skin folds and limited abduction of the affected hips are also seen.

Early detection is critical to allow for proper hip development.

Osgood-Schlatter disease is the overuse apophysitis of the tibial tubercle causing localized pain, especially with quadriceps contraction in active young boys.

Slipped capital femoral epiphysis is the separation of the proximal femoral epiphysis through the growth plate may be due to imbalance between growth hormone and sex hormones.

Legg-Calve-Perthes Disease is an idiopathic avascular necrosis of the femoral head most commonly found in boy 4-10 years of age.

Which of the following is not a contraindication to breastfeeding?

- ☐ a. Galactosemia
- ☐ b. Treated tuberculosis
- ☐ c. HIV infection
- ☐ d. Lithium use by mother
- ☐ e. Cocaine abuse

Correct Answer: b. Treated tuberculosis

Answer Detail:

The correct answer is b.

Breastfeeding is contraindicated in following circumstances:

- Galactosemia in infant
- Maternal HIV infection
- Lithium use by mother and cocaine abuse.
- Tuberculosis before treatment is a contraindication to breastfeeding. However, it is not a contraindication after successful treatment.

A mother brings her 6-year-old son to the emergency department. She and her son visited a botanical garden, and he was scratched by a bat 30 minutes ago. The child looks well and has a little scratch mark on his left arm.

His examination is normal. His immunisation status is up to date, and he has no relevant medical history.

What of the following statement is correct?

- ☐ a. Bats cannot transmit rabies
- ☐ b. Give rabies vaccine and rabies immunoglobulin now
- ☐ c. Advise the mother that she should come back when the boy shows any symptoms
- ☐ d. If the son is infected, he had to be isolated, so the infection doesn't spread to other people
- ☐ e. The incubation period is 1 to 5 days

Correct Answer: b. Give rabies vaccine and rabies immunoglobulin now

Answer Detail:

The b is the correct answer.

Rabies is a virus which results in a disease with a variety of symptoms. It is spread by wild or domestic animals such as dogs. It is not endemic in Australia.

A bat has bitten this patient in Australian Botanical Garden. The bats contain Australian Bat Lyssavirus which causes rabies. These viruses are shed in the saliva of animals. The transmission of the virus occurs from animals to humans as a result of bites and scratches from animals.

The incubation period varies from 5 days to many years.

The virus infects the nervous system and infection eventually results in encephalitis and brain stem dysfunction. This is invariably fatal.

The management of bat bite includes a thorough history, history of any rabies immunisation overseas and management of the wound.

- Thoroughly wash the wound- clean and debride if indicated.
- Post-exposure prophylaxis.

Post-exposure prophylaxis regime for rabies:

The patient will need the first dose of rabies vaccines as soon as possible after the exposure. The schedule of vaccinations should be 0, 3, 7 and 14 day.

The 5th dose at 28-day post exposure should be given to immunocompromised patients.

Rabies immunoglobulins should also be given at the same time.

Transmission between humans has not been proven, so option d is incorrect.

The incubation period is between 5 days to many years. So option e is also incorrect.

Infection via:

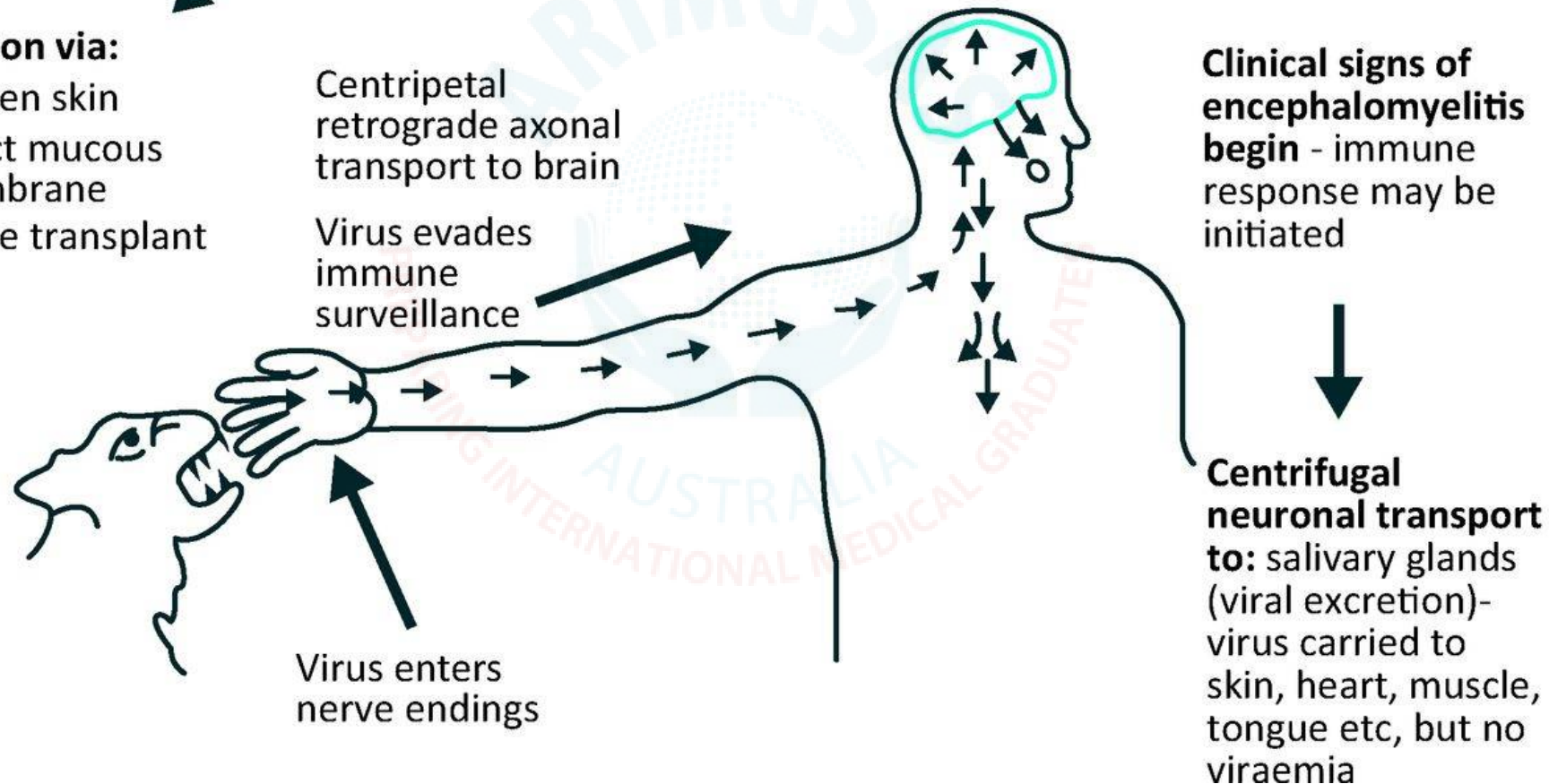
- > broken skin
- > intact mucous membrane
- > tissue transplant

Incubation period

days to years usually
20–90 days

CNS infection:

- > transynaptic spread
- > viral replication
- > inclusion (Negri) body formation
- > neurons intact but dysfunctional



SIGN & SYMPTOMS

- Bizarre behavior.
- Agitation
- Seizures.
- Difficulty in drinking.
- **Patients will be able to eat solids**
- **Afraid of water - Hydrophobia.**
- **Even sight or sound of water disturbs the patient.**
- But suffer with intense thirst.
- Spasms of Pharynx produces choking
- **Death in 1 -6 days.**
- Respiratory arrest / Death / **Some may survive.**



Her mother brought a 3-month-old baby due to unequal inguinal fold crease. Since the baby was born breech, you performed Ortolani and Barlow test but both tests were negative.

What is your next step?

- ☐ a. Reassure the mother
- ☐ b. Ask the mother to bring back the child when he is walking
- ☐ c. Request an X-ray
- ☐ d. Request an ultrasound
- ☐ e. Put on abduction splint and reassess

Correct Answer: d. Request an ultrasound

Answer Detail:

The correct answer is d.

The baby presents with developmental dysplasia of the hip (DDH). It is diagnosed early by Ortolani and Barlow tests but is usually negative after two months.

Ultrasound is excellent especially up to 3-4 months and is more sensitive than clinical examination. It is recommended for high-risk babies (e.g. breech, family history of DDH).

X-ray is hard to interpret up to 3 months.

A 13-year-old boy who is currently in a special school is now on the verge of expulsion due to sudden outbursts of anger in school and at home over a period of last three months.

What would be the most appropriate drug management for this situation?

- ☐ a. Sodium valproate
- ☐ b. Lithium
- ☐ c. Haloperidol
- ☐ d. Risperidone
- ☐ e. Olanzapine

Correct Answer: d. Risperidone

Answer Detail:

The correct answer is d.

This child is a special child and most likely suffers from autism considering his behaviour and requirement of a special school. Aggression and irritability can be a feature of autism, especially during adolescence.

Atypical antipsychotics have been seen to improve behavioural symptoms such as repetitive behaviour, hyperactivity, irritability and aggression.

Risperidone, an atypical antipsychotic is the drug of choice for management of anger outbursts in children with autism in Australia and is approved under patient benefit scheme (PBS).

Typical antipsychotics like haloperidol can cause extrapyramidal symptoms and restlessness which can further exaggerate the symptoms in children with autism. Long-term use can result in tardive dyskinesia.

Olanzapine is not considered as the first-line drug for the management of aggressive behaviour in children with autism due to side-effects like weight gain and development of type 2 diabetes mellitus.

Lithium and sodium valproate both are mood stabilisers and should be used in bipolar disorder. This patient does not have signs or symptoms of bipolar disorder.

A 10-year-old child is brought to the emergency department by his parents. The parents are concerned if the child might have ingested his grandmother's tablets. They are not sure about the exact quantity of the ingested substance.

Her grandmother's regular medications include Frusemide, Digoxin, Potassium tablets, Metoprolol, and Keflex.

On exam, the child appears well and hemodynamically well except mild sinus bradycardia (heart rate-48/min) on ECG. The close observation of the ECG showed wide QRS complexes and peaked T waves.

Which of the following medication he has most likely ingested?

- ☐ a. Frusemide
- ☐ b. Digoxin
- ☐ c. Potassium tablets
- ☐ d. Metoprolol
- ☐ e. Keflex

Correct Answer: c. Potassium tablets

Answer Detail:

The correct answer is c.

The child has ingested an unknown substance. The ECG findings suggest the possibility of hyperkalemia secondary to ingestion of potassium tablets.

ECG findings suggesting hyperkalemia include bradycardia, peaked T waves and broadened QRS complex.

This is a medical emergency and requires urgent treatment of high potassium. The management of hyperkalemia is discussed in AMC QBank elsewhere.

Hyperkalemia EKG Changes

Arrow Trick	EKG Change	Potassium Level	Mechanism
1 	Peaked T Waves	5.5-6.5 mEq/L	Repolarization Abnormalities
2 	Prolonged PR Interval Widening P Wave	6.5-7.0 mEq/L	Progressive Atrial Paralysis
3 	Dropped P Wave	7.0 mEq/L	Progressive Atrial Paralysis
4 	Widening QRS Complex Arrhythmias/Heart Blocks Sine Wave Pattern	7.0-9.0 mEq/L > 9.0 mEq/L	Conduction Abnormalities

A 12-year-old girl presented with an upper arm fracture. A plaster cast is applied around the whole circumference. What is the initial finding which will show that the plaster is too tight?

- ☐ a. Pain
- ☐ b. Numbness
- ☐ c. Swelling
- ☐ d. Cyanosis
- ☐ e. Burning and stinging sensation

Correct Answer: a. Pain

Answer Detail:

The correct answer is a.

A serious complication that can occur after cast application is known as compartment syndrome. This occurs when a cast is too tight. As the affected limb swells, the cast acts as a closed compartment, tightly compressing the nerves and blood vessels.

Compartment syndrome can cause permanent nerve damage or loss of limb due to decreased circulation and oxygen to the tissue.

The most important and often the earliest finding is an increase in pain, which may be described as a throbbing pain. The pain often increases further if you wiggle the patient's fingers or toes.

The child may also complain of feeling numbness, burning and stinging sensation and inability to actively move the toes and fingers.

Absorption of which of the following is most commonly impaired in untreated coeliac disease?

- ☐ a. Vitamin K
- ☐ b. Iron
- ☐ c. Vitamin B12
- ☐ d. Folate
- ☐ e. Calcium



Correct Answer: b. Iron

Answer Detail:

The correct answer is b.

Malabsorption in coeliac disease can result in iron, folic acid and vitamin B12 deficiency. But iron deficiency is seen more frequently in patients with coeliac disease than megaloblastic anaemia due to folic acid and vitamin B12 deficiency.

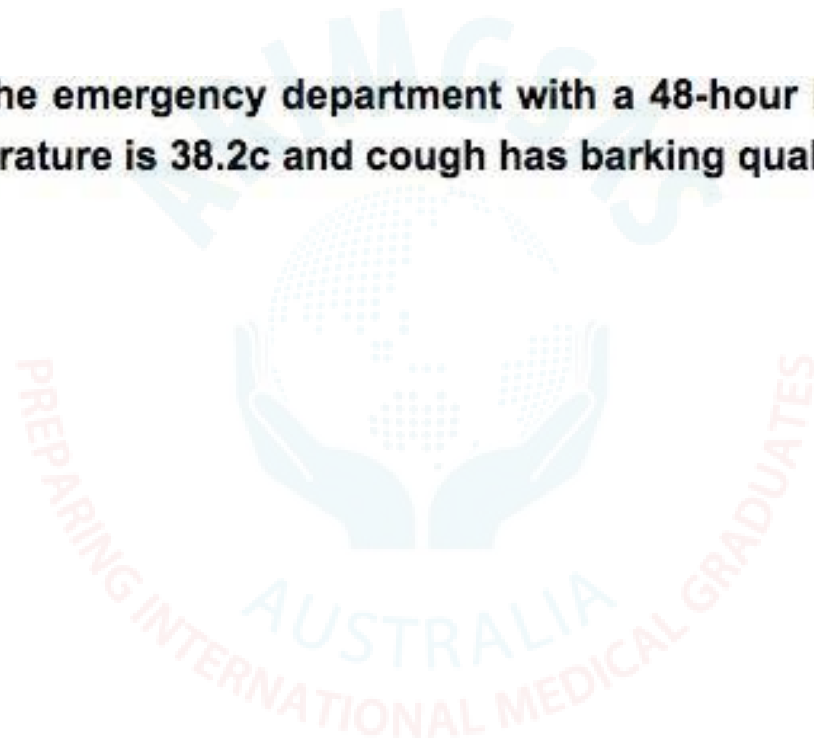
Absorption of fat-soluble vitamins A, D, E, and K is also affected resulting in their deficiency. Calcium and vitamin D malabsorption may cause osteopenia (decreased mineral content of the bone) or osteoporosis (bone weakening and risk of fragility fractures).

Iron deficiency anaemia is, however, most common finding amongst all of these.

A 5-year-old male child presents to the emergency department with a 48-hour history of a cough, inspiratory stridor and intercostal retractions. His temperature is 38.2c and cough has barking quality.

What is the most likely diagnosis?

- ☐ a. Foreign body at level of trachea
- ☐ b. Epiglottitis
- ☐ c. Asthma
- ☐ d. Croup
- ☐ e. Whooping cough



Correct Answer: d. Croup

Answer Detail:

The correct answer is d.

This patient has clinical symptoms of croup. The croup is a viral illness and is characterised by following symptoms:

- Barking cough**
- Inspiratory stridor**
- Widespread wheeze**
- Work of breathing is increased**
- Fever with no signs of toxicity**

It is most common in 1 to 3-year-old children and has the duration of 2 to 5 days. Parainfluenza viruses are the most common cause of croup, and antibiotics are not indicated.

The severity of croup is defined in research studies by the Westley score but key features are:

1-Mild airway obstruction: mild chest wall retractions and tachycardia, but no stridor at rest.

2-Moderate airway obstruction: stridor at rest, chest wall retractions, use of accessory respiratory muscles and tachycardia.

3-Severe airway obstruction: persistent stridor at rest, increasing fatigue, markedly decreased air entry, marked tachycardia.

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THANK YOU