Applied Knowledge Test Practice Exam – 2023.2

Question Booklet

Please refer to the answer booklet for the exam instructions.

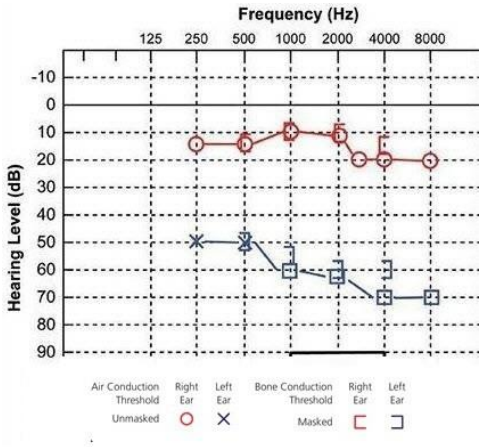
You MUST use the answer booklet to submit your responses.

PLEASE NOTE: All stated patient temperatures are measured tympanically and medication doses are all oral unless otherwise stated. Abnormal results appear in **bold** text with an asterisk (*) after the unit result and includes results that are not presented in a table.

Q1

Jenny Pinkus, aged 54 years, presents to your rural clinic after she woke up yesterday morning with a feeling of ‘cotton wool’ in her left ear. On examination, her temperature is 36.6°C, blood pressure 128/72 mmHg. Bilateral otoscopy reveals normal tympanic membranes and external auditory canals. Weber test localises sound towards the right ear. On Rinne testing for the right ear, air conduction is better than bone conduction. On Rinne testing for the left ear, air conduction is better than bone conduction, but both are reduced.

The practice nurse performs an audiogram (see image).



What is the **MOST** appropriate next step?

A. Amoxicillin 500 mg three times daily for five days
B. Naproxen 275 mg three times daily
C. Oxymetazoline 0.05% nasal spray instilled twice daily for three days
D. Prednisolone 60 mg daily for 7–14 days
E. Valaciclovir 1 g three times daily for seven days

Q2

Brian Handley, aged 48 years, was diagnosed two days ago with left-sided renal colic, which settled within one hour after a dose of naproxen sustained-release 750 mg. He has returned today for test results. Since you last saw him, Brian has had intermittent mild left loin pain and reduced appetite but is drinking normally. His pain has been relieved with naproxen 250 mg twice daily. Brian has hypercholesterolaemia, which is well controlled on simvastatin 20 mg daily. His examination is unremarkable.

Relevant test results taken two days ago are as follows:

Urine dipstick: ++ blood. Nil else.
Mid-stream urine: No growth after 48 hours.

Test	Results	Normal range
Urea	**12.0 mmol/L***	3–10
Creatinine	**118 µmol/L***	45–90
Estimated glomerular filtration rate	**68 mL/min/1.73 m^2***	>90

CT scan kidneys, ureters and bladder: A 4 mm diameter calculus is seen in the upper third of the left ureter. There is mild dilatation of the ureter proximal to the stone, and of the left renal pelvis.

What is the **MOST** appropriate next step?

A. Add tamsulosin 400 mcg daily
B. Change from naproxen to oxycodone 5 mg four-hourly when required
C. Measure serum calcium, phosphate and parathyroid hormone
D. Refer to hospital urgently for intravenous fluids and renal decompression
E. Refer to urologist for laser lithotripsy as soon as possible

Q3

Grace Newell, aged 33 years, has had two days of worsening nausea and increasing agitation. She has also noticed a tremor in her hands. She initially thought she was developing a migraine. She took sumatriptan 10 mg intranasally and metoclopramide 10 mg. Unfortunately, her symptoms persisted and she had a second dose of sumatriptan 10 mg intranasally two hours later.

She takes paroxetine 40 mg daily for moderate anxiety. The dose was increased from 20 mg two weeks ago due to suboptimal control of symptoms.

On examination, she has a fine tremor at rest. Her temperature is 37.8°C, heart rate 109/min, blood pressure 148/82 mmHg, respiratory rate 20/min and oxygen saturations 99% on room air. Her neurological examination reveals hyperreflexia in her patellar and Achilles tendons with clonus. Further examination is unremarkable.

What is the **MOST** appropriate provisional diagnosis?

A. Hyperthyroidism
B. Intracranial space occupying lesion
C. Malignant hyperthermia
D. Meningitis
E. Serotonin syndrome

Q4

Winifred Smith, aged 79 years, is accompanied by her son, Michael, who is concerned that Winifred has seemed increasingly confused and lethargic for the past three weeks. Winifred explains she has not been eating as she has been feeling nauseated. Winifred has a slim build but has not lost any weight. Following the death of her husband several months ago, Winifred was diagnosed with major depression.

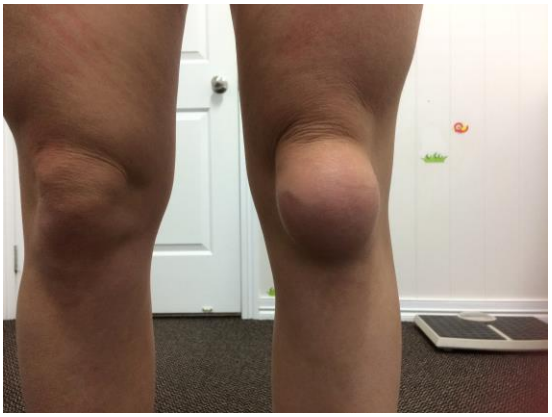
She was commenced on sertraline 50 mg daily five weeks ago. She takes no other regular medication. You suspect she is experiencing an adverse reaction to her medication.

Given the provisional diagnosis, what is the **MOST** likely expected investigation finding?

A. Elevated creatinine
B. Hypercalcaemia
C. Hyperglycaemia
D. Hyperkalaemia
E. Hyponatraemia
F. Hypothyroidism
G. Vitamin B12 deficiency
H. Vitamin D deficiency

Q5

Pattie Dawson, aged 42 years, has had a swelling around her left knee for the past four weeks. The swelling was painful initially, but the pain has now resolved. She works as a mural artist and has recently been kneeling a lot because she is painting a mural on the floor of a local art gallery. She has tried taking ibuprofen 400 mg three times daily, wearing a protective knee pad and icing the knee, but it has not improved. On examination, her temperature is 36.7°C and she has a full range of movement through the knee. There is a non-tender, fluctuant, clearly demarcated swelling over the knee (see image).



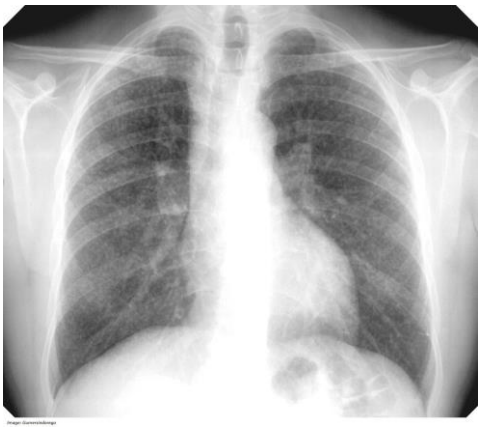
What is the **MOST** appropriate next step?

A. Cefalexin 500 mg four times daily
B. Change ibuprofen to diclofenac 50 mg twice daily
C. Compression bandage
D. Microscopy, culture and sensitivity of fluid aspirate
E. Ultrasound of the knee

Q6

Alastair Saxton, aged 34 years, has had progressively worsening shortness of breath, an intermittent dry cough and fatigue for the past three months. He has a 10 pack-year history of smoking but quit three weeks ago. For the past 10 years, he has worked for a glass manufacturing company. COVID-19 has been definitively excluded.

On examination, his heart rate is 70/min regular, respiratory rate 18/min and blood pressure 125/70 mmHg. Respiratory examination reveals bilateral fine inspiratory crackles on auscultation. A chest X-ray is performed (see image).



What is the **MOST** appropriate provisional diagnosis?

A. Allergic pulmonary aspergillosis
B. Asthma
C. Bronchiectasis
D. Cystic fibrosis
E. Human immunodeficiency virus
F. Immunoglobulin A deficiency
G. Lung cancer
H. Pneumoconiosis
I. Sarcoidosis
J. Tuberculosis

Q7

James Forde, aged 56 years, wants to improve his cholesterol profile to reduce his risk of a heart attack. His father and paternal uncle both had heart attacks in their mid-70s. He exercises five days per week and follows a largely plant-based, Mediterranean-style diet. His fasting lipid results are shown below.

Lipid studies	**Result**	**Desirable range (fasting)**
Total cholesterol	**6.7 mmol/L***	<5.6
High-density lipoprotein	1.0 mmol/L	>1.0
Low-density lipoprotein	**4.9 mmol/L***	<2.5
Triglyceride	0.8 mmol/L	<1.5
Cholesterol/High density lipoprotein ratio	**6.7***	<4.5

What is the **MOST** appropriate next step in dietary management?

A. Betacarotene 1.5 mg daily
B. Change to a ketogenic diet
C. Decrease soluble fibre intake
D. Increase dietary intake of trans-unsaturated fats
E. Introduce plant sterol-enriched milk, margarine or cheese products

Q8

Ted Wall, aged 54 years, presents for his regular diabetes management review. Ted was diagnosed with type 2 diabetes one year ago and has been treated with lifestyle modification, metformin extended-release 2000 mg daily, and gliclazide modified-release 60 mg daily. He has been feeling occasionally lightheaded with some shaking and weakness followed by a feeling of being about to faint while at work. It is often worse when his work is very busy and he does not get time for breaks. His HbA1c was **7.8%*** (normal range <6.5%) two weeks ago and the remainder of his investigations were within acceptable ranges.

What is the **MOST** appropriate next step?

A. Arrange 24-hour Holter monitor
B. Cease gliclazide
C. Commence insulin glargine 0.2 units/kg (up to 30 units) subcutaneously daily
D. No change to medications required
E. Replace gliclazide with sitagliptin 100 mg daily

Q9

Sally Hines, aged 38 years, has had intermittent urinary incontinence for the past six months. She often urgently needs to go to the bathroom and sometimes wets her clothing if she cannot reach the bathroom in time. She does not lose urine with any particular activity.

She has seen a physiotherapist, avoids caffeine and has reduced her oral fluid intake when out of the house, but her symptoms continue. She tried oxybutynin 5 mg daily, which initially improved her symptoms, but she had a dry mouth and ceased the medication.

Her clinical examination is unremarkable. Urine microscopy, culture and sensitivity, and a recent ultrasound of kidneys, ureters and bladder, are all normal.

What is the **MOST** appropriate next step in pharmacological management?

A. Oxybutynin 3.9 mg/24-hour transdermal patch twice weekly
B. Prazosin 1 mg daily
C. Propranolol 10 mg twice daily
D. Vaginal oestrogen 0.5 g cream intravaginally nightly for two weeks and then twice weekly
E. Venlafaxine 37.5 mg daily

Q10

Karen Blake, aged 28 years, is seven weeks pregnant. She previously requested specific testing for genetic risks for her unborn child. She has no family history of any genetic disorders. She has returned for her results today, which suggest that she is a carrier for spinal muscular atrophy.

What is the **MOST** appropriate next step regarding her genetic results?

A. Advise that if the child is male he will likely have spinal muscular atrophy
B. Carrier testing of reproductive partner
C. Chorionic villus sampling
D. Discuss termination of pregnancy options with Karen
E. Extended carrier screening
F. No further testing is required
G. Non-invasive prenatal testing
H. Nuchal translucency scan

Q11

Danika Drury, aged 26 years, has been passing some blood with her bowel motions. She first saw blood in the toilet bowl a month ago, which was associated with a severe pain in her anal area during a bowel movement. The pain has been recurring during every bowel movement and can last up to one hour. She has made dietary changes, but her symptoms have continued. The skin around her anus feels itchy and irritated. She has noticed bright red blood on the toilet paper and sometimes she sees blood dripping into the toilet bowl. Clinical examination supports your provisional diagnosis.

What is the **MOST** appropriate initial management for the provisional diagnosis?

A. Cinchocaine-prednisolone 1 mg/1.3 mg suppository rectally
B. Glycerol 2.8 g suppository rectally
C. Glyceryl trinitrate 0.2% ointment topically
D. Hydrocortisone 1% cream topically
E. Loperamide 4 mg as required
F. Low-fibre diet
G. Mesalazine 1 g suppository rectally daily
H. Refer for botulinum toxin injection
I. Refer for rubber band ligation
J. Sulfasalazine 500 mg twice daily

Q12

Stephanie Thomas, aged 26 years, saw one of your colleagues a few weeks ago when she was unwell with a cough, rhinorrhoea and fatigue. On examination at that time, your colleague noted her to be mildly jaundiced. Several days later, Stephanie had some blood tests done (refer to results below). COVID-19 has been definitively excluded.

On review today, Stephanie feels well apart from some mild residual fatigue. Examination is unremarkable. Stephanie thinks she has had similar episodes of having yellow skin like this in the past.

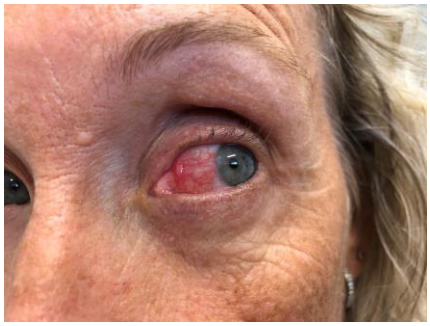
Test	**Result**	**Normal range**
Full blood examination	All values within normal range	
Bilirubin	**33 µmol/L***	0–25
Alkaline phosphatase	52 U/L	30–120
Alanine transaminase	24 U/L	0–41
Aspartate aminotransferase	32 U/L	0–41
Gamma-glutamyl transferase	41 U/L	0–51

What is the **MOST** appropriate provisional diagnosis?

A. Acute hepatitis A infection
B. Alpha-1 antitrypsin deficiency
C. Anorexia nervosa
D. Chronic hepatitis C infection
E. Epstein–Barr virus infection
F. Gilbert syndrome
G. Haemochromatosis
H. Non-alcoholic fatty liver disease
I. Primary biliary cirrhosis
J. Wilson disease

Q13

Brenda Bonnard, aged 62 years, is concerned that the inner part of her left eye has become red and inflamed (see image). She has just returned from a holiday on a cruise and explains that her left eye became increasingly irritated during her trip.

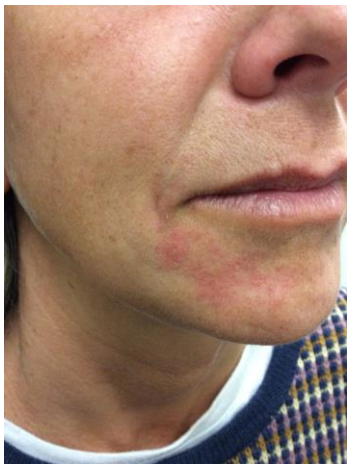


What is the **MOST** appropriate next step?

A. Chloramphenicol 1% ointment 1.5 cm along everted bottom eyelid every three hours
B. Hypromellose 0.3% drops, two drops four times daily
C. Loratadine 10 mg daily
D. Olopatadine 0.1% drops, two drops twice daily
E. Prednisolone 50 mg daily for five days

Q14

Anna Meales, aged 38 years, has had a burning rash on her chin over the past month (see image). Initially, she wondered whether it was due to a new makeup she used, but she has stopped using all makeup now and the rash is persisting. She is not keen on taking any tablets for this but is willing to try a cream.



What is the **MOST** appropriate next step?

A. Benzoyl peroxide 5% cream topically twice daily
B. Brimonidine 0.33% gel topically once daily
C. Hydrocortisone 1% cream topically twice daily
D. Hydrocortisone-clotrimazole 1%/1% cream topically twice daily
E. Metronidazole 0.75% cream topically twice daily
F. Mometasone 0.1% cream topically once daily
G. Mupirocin 2% cream topically twice daily
H. Terbinafine 1% cream topically twice daily

Q15

Samara Mastakov, aged 28 years, has been bothered by intermittent vaginal spotting between her menstrual periods for the past four months. She does not have any children and has not been in a sexual relationship for the past 12 months. She had a normal cervical screening test and negative sexually transmitted infection screen seven months ago. Urine human chorionic gonadotropin is negative. You arrange a transvaginal pelvic ultrasound, which is reported as normal.

What is the **MOST** appropriate next step?

A. Advise Samara to keep a 'period diary' and review in three months
B. Arrange insertion of levonorgestrel 52 mg intrauterine device
C. Commence levonorgestrel-ethinyloestradiol 100 mcg/20 mcg daily
D. Commence medroxyprogesterone 2.5 mg twice daily for 5–10 days
E. Iron studies
F. Refer for colposcopy
G. Repeat cervical screening test with co-test
H. Thyroid-stimulating hormone

Q16

Sarah Jeffries, aged 36 years, has been advised to see you by her nutritionist to discuss management of her frequent migraines. She is trying to lose weight and her headaches are interfering with her ability to exercise. Sarah has had episodes of nausea, light sensitivity and a severe, throbbing headache behind her eyes at least once per week for the past year. She is taking regular magnesium supplements and attends a massage therapist twice per week.

Sarah takes paracetamol 1 g and ibuprofen 400 mg at the onset of her headache. She has a levonorgestrel 52 mg intrauterine device and uses budesonide-formoterol 200 mcg/6 mcg inhaled as required for mild asthma. On examination, her temperature is 36.2°C, heart rate 60/min regular, blood pressure 112/78 mmHg and body mass index 32 kg/m^2. Neurological examination is unremarkable.

What is the **MOST** appropriate pharmacological management?

A. Gabapentin 300 mg daily
B. Oestradiol 1 mg daily
C. Pizotifen 0.5 mg daily
D. Sodium valproate 200 mg daily
E. Topiramate 25 mg daily

Q17

Marco Romero, aged 4 years, presents with his mother Gina. Gina is concerned about Marco's behaviour. He has difficulty concentrating, 'never sits still', and is behind most of his peers with skills such as counting and drawing. Gina also mentions that over the past six months Marco has not been eating well and sometimes seems to choke on his food. Marco snores and is a very restless sleeper.

On examination, Marco’s temperature is 36.9°C. The rest of his physical examination is normal apart from enlarged tonsils, which occupy about 70% of the pharyngeal diameter. Marco's height is on the 50th percentile; his weight is on the 20th percentile.

What is the **MOST** appropriate next step?

A. Cetirizine 2.5 mg daily
B. Dexamphetamine 2.5 mg twice daily
C. Full blood examination
D. Melatonin 1 mg at night
E. Mometasone 50 mcg intranasally daily
F. Phenoxymethylpenicillin 10 mg/kg (maximum 500 mg) twice daily for 10 days
G. Promethazine 12.5 mg at night
H. Refer to ear, nose and throat surgeon for adenotonsillectomy
I. Refer for titration of continuous positive airway pressure
J. Refer to child psychologist for behavioural therapy

Q18

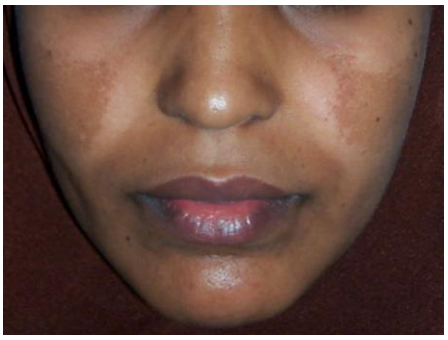
Jason Crompton, aged 42 years, has moderately severe plaque psoriasis. His dermatologist has advised him to see you to discuss any needed vaccinations before he starts using adalimumab (Humira). He was fully immunised as a child and had a dose of acellular diphtheria, tetanus and pertussis vaccine seven years ago when his son was born. He has had his annual influenza vaccine and is up to date with COVID-19 vaccinations.

What is the **MOST** appropriate vaccine to recommend today?

A. Acellular diphtheria, tetanus and pertussis vaccine
B. Bacille Calmette–Guérin vaccine
C. Hepatitis A vaccine
D. Live-attenuated varicella-zoster virus vaccine
E. Pneumococcal vaccine

Q19

Katie Pole, aged 24 years, is concerned about brown marks on her face (see image). The marks have become more prominent over time. She had difficulties with irregular periods when she was 15 years of age, but since she was placed on the combined oral contraceptive pill, her periods have been regular and light.



What is the **MOST** appropriate next step?

A. 2 mm punch biopsy of lesion
B. Advise Katie to get more daily sunlight
C. Discuss ceasing combined oral contraceptive pill
D. Doxycycline 100 mg daily
E. Econazole 1% cream topically daily for three nights
F. Mometasone furoate 0.1% cream topically daily
G. Refer to dermatologist for laser therapy
H. Refer to plastic surgeon for excision
I. Serum cortisol
J. Serum ferritin

Q20

Petal Wilson-Spencer, aged 11 years, is brought in by her mother, Nova, with concerns about her asthma. Petal's asthma has been well controlled on fluticasone propionate accuhaler 100 mcg inhaled twice daily and salbutamol metered-dose inhaler 100 mcg inhaled as required. Petal recently joined the school choir but has noticed her voice sounds rough at times during singing practice and she has had some difficulty reaching the high notes. She has an upcoming concert and is worried she will not be able to participate if her asthma is playing up.

What is the **MOST** appropriate next step?

A. Change to fluticasone propionate metered-dose inhaler 50 mcg two puffs twice daily via spacer device
B. Change to budesonide-eformoterol 50 mcg/3 mcg metered-dose inhaler one puff twice daily via spacer device
C. Change to montelukast 5 mg at night
D. Change to nedocromil 2 mg metered-dose inhaler two puffs four times daily via spacer device
E. Increase fluticasone to 250 mcg inhaled twice daily
F. Prednisolone 1 mg/kg (up to 50 mg) the night before the performance
G. Refer to speech therapist for voice exercises
H. Salbutamol 100 mcg metered-dose inhaler four puffs 15 minutes prior to the performance

Q21

Brad Billing, aged 18 years, has been sleeping poorly since starting university two months ago. He has missed some lectures and has made only a few friends since moving away from home. He feels his heart races whenever he sits down to study and does not feel he has much of an appetite. His bowel motions are more loose than usual, but never wake him from sleep. He saw a general practitioner one week ago who arranged appropriate investigations which were normal and commenced Brad on escitalopram 10 mg daily. He has seen a psychologist twice for cognitive behavioural therapy. He is seeing you today because he is not feeling any better. He has not had any thoughts of self-harm.

What is the **MOST** appropriate next step in management?

A. Add diazepam 5 mg daily
B. Add temazepam 10 mg at night
C. Advise Brad to defer university for six months
D. Change cognitive behavioural therapy to interpersonal psychotherapy
E. Change escitalopram to fluoxetine 20 mg daily
F. Continue with current management and review him in 2–3 weeks
G. Increase escitalopram to 20 mg daily
H. Recommend a change of psychologist

Q22

Robert Fairbairn, aged 89 years, has had difficulty walking for the past three months due to pain in his left hip. His hip aches constantly and it is worse at the end of the day. On examination, his temperature is 37.4°C. He has limitation of internal and external rotation of the left hip. An X-ray is performed (see image). Blood tests reveal a normal full blood count and urea, electrolytes and creatinine. Further results are as follows.

Test	**Result**	**Normal range**
Total bilirubin	9 µmol/L	2–20
Alkaline phosphatase	**243 U/L***	30–115
Gamma-glutamyl transferase	12 U/L	0–45
Alanine aminotransferase	14 U/L	0–45
Aspartate aminotransferase	17 U/L	0–41
Lactate dehydrogenase	121 U/L	80–250
Calcium	2.65 mmol/L	2.25–2.65
Corrected calcium	2.65 mmol/L	2.25–2.65
Phosphate	1.4 mmol/L	0.8–1.5
Total protein	61 g/L	60–82
Albumin	35 g/L	35–50
Globulin	26 g/L	20–40

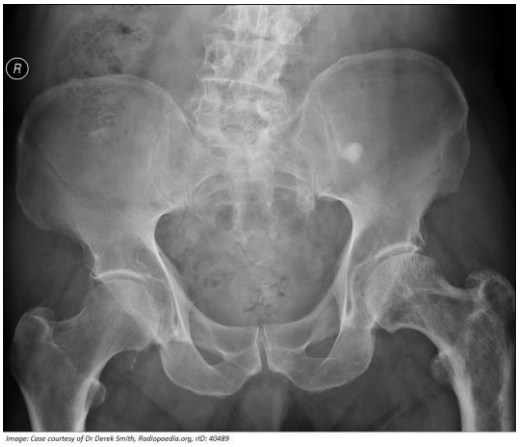


Image: Case courtesy of Dr Derek Smith, Radiopaedia.org, rID: 40489

What is the **MOST** appropriate provisional diagnosis?

A. Ankylosing spondylitis
B. Avascular necrosis of the femoral head
C. Bone metastases
D. Osteoarthritis
E. Osteomyelitis
F. Osteoporosis
G. Paget's disease
H. Polymyalgia rheumatica
I. Rheumatoid arthritis
J. Scheuermann's disease

Q23

Shenayah Ah See, aged 12 years, an Aboriginal girl, is brought in by her mother because Shenayah has had fevers and a lumpy rash on her arms for one week. She has felt sore all over, especially in different joints. After a day or two a joint feels better, but then the pain begins in another joint. Shenayah is normally well although her mother states she had school sores a month ago, which resolved without treatment. On examination, her temperature is 39.0°C. Her left knee and ankle are swollen and are tender when palpated. COVID-19 has been definitively excluded.

What is the **MOST** appropriate initial investigation to support the provisional diagnosis?

A. Dengue virus serology
B. Epstein–Barr virus serology
C. Joint aspiration of left knee
D. Serum antistreptolysin O titre
E. Serum rheumatoid factor

Q24

Chrissie Jenkins, aged 52 years, has a painless right-sided neck lump. Chrissie has cerebral palsy and lives in shared supported accommodation. On examination, her heart rate is 70/min regular and blood pressure 134/72 mmHg. Her thyroid gland is mildly enlarged with prominence of the right lobe. A neurological examination does not reveal any new abnormalities.

Investigations are performed with relevant findings as follows.

Test	**Result**	**Normal range**
Thyroid-stimulating hormone	**<0.03 mIU/L***	0.5–4.0
T4	11.1 pmol/L	10.0–19.0
T3	**6.9 pmol/L***	3.5–6.5
Anti-thyroid peroxidase antibodies	42 kIU/L	<60
Anti-thyroglobulin antibodies	<30 kIU/L	<60

Thyroid nuclear scan report: ‘Scintographic evidence in keeping with a multinodular goitre with a dominant toxic nodule in the right upper pole.'

What is the **MOST** appropriate initial step in management?

A. Carbimazole 10 mg daily
B. Propranolol 50 mg twice daily
C. Radioactive iodine
D. Right thyroid nodule fine needle aspirate
E. Thyroidectomy

Q25

Brenda King, aged 38 years, has developed heavy irregular vaginal bleeding over the past five weeks. Her first episode of bleeding lasted 10 days followed by two weeks of no blood loss. The bleeding recommenced 13 days ago and has been continuous. She currently soaks a large sanitary pad with blood every three hours.

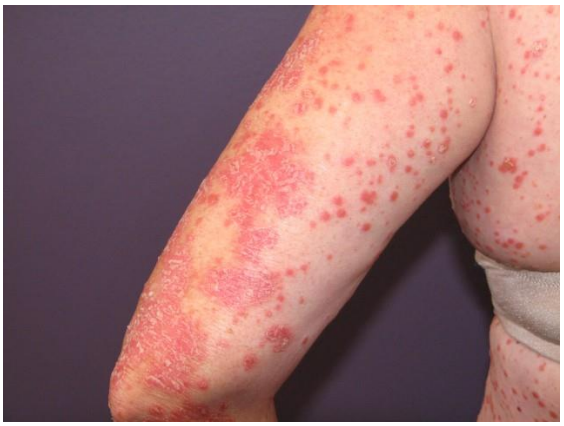
Prior to this recent heavy bleeding her menstrual cycle was infrequent, usually twice per year. A cervical screening test and sexually transmitted infection screen performed two months ago were normal. She is currently not in a relationship, has never been pregnant and has not been sexually active for 12 months. On examination, her body mass index is 38 kg/m^2, heart rate 80/min, blood pressure 128/73 mmHg (sitting) and 122/81 mmHg (standing).

What is the **MOST** appropriate initial investigation to determine the cause of the bleeding?

A. First-pass urine chlamydia polymerase chain reaction
B. Follicle-stimulating hormone
C. Oestradiol
D. Screening for factor VIII deficiency
E. Transvaginal pelvic ultrasound

Q26

Yolanda Grayson, aged 24 years, has a progressively worsening rash that started two days earlier. The rash developed quickly and has spread over her trunk and limbs (see image). You note that she presented three weeks earlier to your clinic with an upper respiratory tract infection that was treated symptomatically. Apart from the rash, she now feels well. On examination, her temperature is 37.2°C.



What is the **MOST** appropriate next step?

A. Cefalexin 500 mg twice daily for five days
B. Coal tar solution-salicylic acid 4%/3% cream topically twice daily for 1 month
C. Epstein–Barr virus serology
D. Phenoxymethylpenicillin 500 mg twice daily for 10 days
E. Prednisolone 50 mg daily for five days
F. Punch biopsy of rash for histopathology
G. Syphilis serology
H. Valaciclovir 1 g three times daily for seven days

Q27

James Bradbury, aged 18 years, presented last week embarrassed about his enlarging breasts. James has been overweight since puberty and has gained 6 kg in the past 18 months. On examination, his body mass index is 30.2 kg/m^2, waist circumference 98.5 cm. He has moderate gynaecomastia, sparse body hair and symmetrical firm testes of approximately 3 mL each.

Investigation results are as follows.

Full blood count, urea and electrolytes, fasting glucose and thyroid-stimulating hormone are all normal.

Test	**Result**	**Normal range**
Total cholesterol	**5.9 mmol/L***	<5.5
Triglycerides	**2.9 mmol/L***	<2.0
Follicle-stimulating hormone	**29 IU/L***	1–8
Luteinising hormone	**21 IU/L***	1–8
Serum total testosterone	**7.1 nmol/L***	9–29

What is the **MOST** appropriate provisional diagnosis?

A. Acromegaly
B. Congenital adrenal hyperplasia
C. Cushing's disease
D. Exogenous anabolic steroid use
E. Fragile X syndrome
F. Haemochromatosis
G. Insulinoma
H. Klinefelter syndrome
I. Leydig cell testicular tumour
J. Mosaic Down syndrome
K. Prolactinoma
L. Testicular teratoma

Q28

Bill Devon, aged 57 years, is brought in by ambulance to your rural emergency department after a tractor accident. He has severe pain in his right hip and leg and is unable to mobilise. On examination, the right leg appears shortened and externally rotated. He is given appropriate analgesia, a catheter is placed, and an X-ray is performed (see image). As part of the transfer, you call the nearest tertiary orthopaedic service for handover.

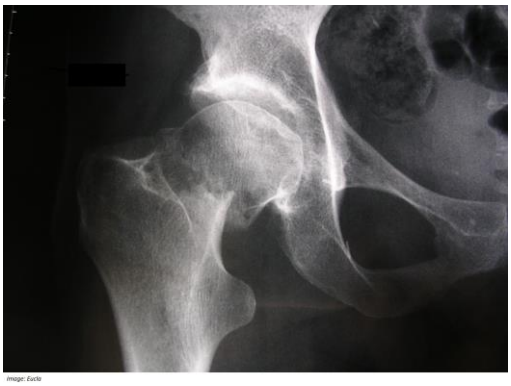


Image: Eucla

What is the **MOST** appropriate description of Bill's injury?

A. Fracture of the right femoral head
B. Fracture of the right pelvis with superior displacement of the acetabular socket
C. Intertrochanteric fracture of the right femur
D. Subcapital fracture of the right femur
E. Subtrochanteric fracture of the right femur

Q29

Adisa Abara, aged 34 years, presents to your clinic six weeks after self-discharging from hospital. He presented to emergency and was diagnosed with diabetic ketoacidosis and commenced on insulin. He self-discharged against medical advice as he wanted to go home.

Adisa has blood sugar levels regularly as low as 2.8 mmol/L despite self-reducing his insulin glargine dose from 30 units to three units at night and his insulin aspart from eight units three times daily to one to two times daily. Adisa wants to stop his insulin as he feels he doesn't need it and the hypoglycaemic episodes are scaring him.

You obtain the hospital discharge letter that states that his glutamic acid decarboxylase and insulinoma-associated protein-2 autoantibodies were negative. You wish to further evaluate his need for insulin.

What investigation is **MOST** appropriate to guide Adisa's insulin management?

A. Anti-endomysial antibody
B. Anti-gliadin antibody
C. Antithyroid antibodies
D. Beta-hydroxybutyrate level
E. C-reactive protein
F. Caeruloplasmin
G. Calprotectin
H. Fasting C-peptide
I. Ferritin
J. HbA1c
K. Human leukocyte antigen DQ2/DQ8
L. Serum cortisol level

Q30

Jessie Evans, aged 9 years, presents with her father for renewal of Jessie's asthma action plan for school. Jessie was diagnosed with asthma three years ago. She takes salbutamol 100 mcg/inhalation 4–6 inhalations via metered dose inhaler and spacer as needed. She experiences an exacerbation of asthma symptoms approximately every two months. During these episodes she coughs in the morning and night and increases the frequency of her salbutamol temporarily. Between these times she is asymptomatic. Her routine immunisations are up to date.

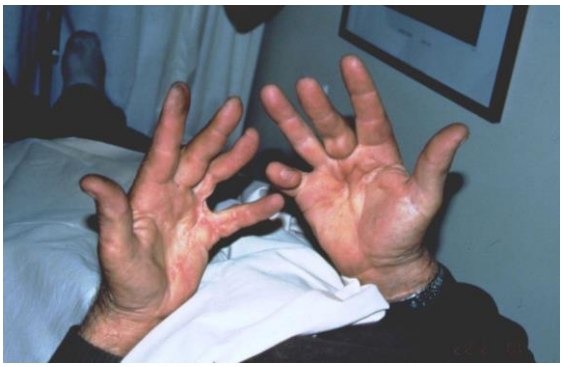
On examination, her heart rate is 90/min regular, respiratory rate 24/min, temperature 36.2°C, ear, nose and throat examination is unremarkable. Chest auscultation reveals normal, symmetric air entry bilaterally with no wheeze.

What is the **MOST** appropriate next step?

A. Change salbutamol to budesonide-formoterol 200 mcg/6 mcg maintenance and reliever therapy
B. Commence fluticasone 50 mcg twice daily inhaled via spacer
C. Commence montelukast 5 mg daily
D. Continue with current asthma plan
E. Recommend five-yearly pneumococcus immunisation

Q31

Howard Hart, aged 66 years, is frustrated about progressive stiffness in his hands. He recently had to stop playing golf as he is unable to hold the clubs properly. He recalls having painful lumps on his palms several years ago. The pain resolved but he has developed progressive stiffness in his fingers since then. He has reduced movement in both hands and has difficulty extending his right 5th finger (see image).



What is the **MOST** appropriate next step?

A. Anti-cyclic citrullinated peptide antibody titre
B. Arrange X-ray of both hands
C. Celecoxib 200 mg daily
D. Paracetamol 665 mg two tablets three times daily
E. Platelet-rich plasma injections into palm tendons
F. Referral to hand surgeon for fasciectomy
G. Referral to hand therapist for strengthening program
H. Ultrasound-guided steroid injection around lumps within his palms

Q32

Ryan Kratz, aged 24 years, has experienced worsening urinary dribbling over the past six months. His urinary stream has weakened, and it sometimes feels like he cannot completely empty his bladder. He had appropriate treatment and follow up for chlamydia urethritis 18 months earlier. He has not had sex since. He has no family history of relevant medical conditions. A complete physical examination and urinary dipstick are unremarkable. An ultrasound of his renal tract reveals normal kidneys, normal bladder and prostate with normal architecture 25 mL in size.

What is the **MOST** appropriate provisional diagnosis?

A. Bladder calculus
B. Bladder diverticulum
C. Chlamydia urethritis
D. Overactive bladder
E. Peyronie's disease
F. Prostatitis
G. Transitional cell carcinoma
H. Urethral stricture

Q33

Leah Wright, aged 32 years, asks if she should take a ‘break’ from her combined oral contraceptive pill. She has been taking the combined oral contraceptive pill for the past 10 years for contraception but some of her friends have suggested this is not a good idea as it may lead to infertility. She has also been taking escitalopram 10 mg daily for the past year and she is worried that the combined oral contraceptive pill may be worsening her mood. She also feels like she has gained weight in the past two months. She was told by a friend that she could 'skip' periods and continuously take the combined oral contraceptive pill for several months to avoid having a period. You explain you would like to address each of her concerns in turn.

What is the **MOST** appropriate evidence-based advice?

A. Depressive symptoms often become more severe when patients start taking the combined oral contraceptive pill
B. It is recommended to have a break from the combined oral contraceptive pill every 10 years
C. Long-term use of the combined oral contraceptive pill does not reduce fertility
D. Postponing hormone withdrawal bleeds periodically using the combined oral contraceptive pill causes medical harm
E. Weight gain of approximately 2 kg is common when taking the combined oral contraceptive pill

Q34

Natalie Elder, aged 32 years, is 11 weeks pregnant and returns for her blood test results. She has had mild nausea with occasional vomiting but is otherwise well. Her clinical examination is appropriate for her gestation, and her body mass index is 27.8 kg/m^2. She had an ultrasound scan last week; results were appropriate for gestational age. She does not want genetic screening.

Natalie has a history of long-term, stable subclinical hypothyroidism that has not required medication.

Blood test results completed yesterday are as follows.

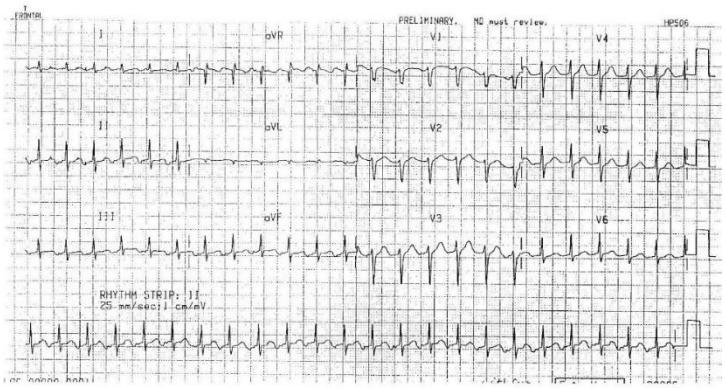
Test	**Result**	**Normal range**
Thyroid-stimulating hormone	**5.2 mIU/L***	0.1–2.5 (first trimester)
Free T4	**8 pmol/L***	10–20
Anti-thyroid peroxidase antibodies	25 IU/mL	<60

What is the **MOST** appropriate next step?

A. Foetal growth scan at 14 weeks' gestation
B. Increase dietary intake of iodine-rich foods
C. Nuclear thyroid scan
D. Reassure Natalie that she requires no further thyroid follow-up
E. Repeat Natalie's thyroid studies today, including T3
F. Repeat thyroid function tests in six weeks
G. Thyroxine 50 mcg daily
H. Ultrasound of the thyroid

Q35

Jacky Peterfield, aged 32 years, presents to your rural hospital with the sensation of palpitations. She has had several episodes of palpitations over the past few months, but this is the first time she has seen a doctor. The current episode began 10 minutes ago and is associated with a feeling of anxiety and mild breathlessness. On examination, her heart rate is 160/min regular, blood pressure 110/60 mmHg and respiratory rate 20/min. Her electrocardiogram is as shown (see image).



What is the **MOST** appropriate initial management?

A. Adenosine 6 mg intravenous bolus
B. Direct current cardioversion under sedation
C. Metoprolol 2.5 mg intravenously over five minutes
D. Vagal manoeuvres
E. Verapamil 5 mg intravenously over two minutes

Q36

Alexandra McCarthy, aged 39 years, has had intermittent abdominal cramps and diarrhoea for the past six months. She occasionally noticed small amounts of blood and mucus in her stools. Several times she has woken from sleep with an urgent need to go to the toilet. Alexandra has plaque psoriasis and is prescribed methylprednisolone aceponate 0.1% cream topically once daily for flares. Four weeks ago, she presented to a colleague at your practice who arranged stool testing. Blastocystis hominis was detected on polymerase chain reaction. She was prescribed metronidazole 2 g daily for three days; however, her symptoms have not changed.

What is the **MOST** appropriate next step?

A. Hydrogen breath test
B. Metronidazole 400 mg three times daily for five days
C. Refer to gastroenterologist for colonoscopy
D. Repeat faecal polymerase chain reaction
E. Trial low fermentable oligosaccharides, disaccharides, monosaccharides and polyols (FODMAP) diet

Q37

Tamika Edwards, aged 23 years, has a four-day history of fevers, runny nose, sore throat and a cough. She has had difficulty completing her university assignment because she has felt so tired. She has tried taking some over-the-counter cold and flu medications, but this has not helped. She wants to know if she can get something 'stronger' on prescription. She is a non-smoker and her only medication is an etonorgestrel 68 mg implant. COVID-19 has been definitively excluded.

On examination, her temperature is 37.5°C, heart rate 80/min regular and respiratory rate 20/min. She has clear rhinorrhoea, erythematous tympanic membranes bilaterally and pharyngeal erythema, but her chest is clear with equal breath sounds.

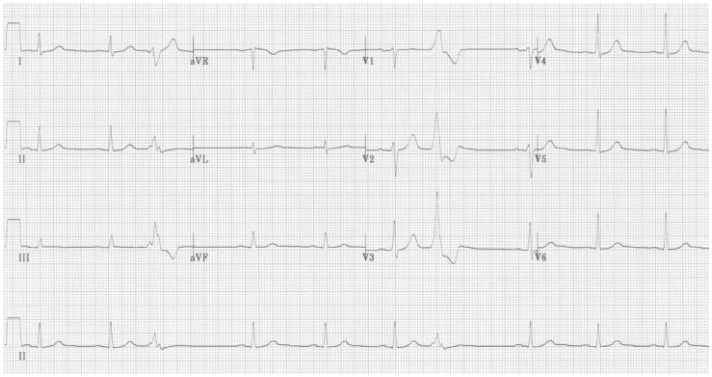
What is the **MOST** appropriate next step?

A. Amoxicillin 500 mg three times daily for five days
B. Amoxicillin-clavulanate 875 mg/125 mg twice daily for five days
C. Chest X-ray
D. Fexofenadine 180 mg daily
E. Oseltamivir 75 mg twice daily for five days
F. Pseudoephedrine 60 mg up to four times daily
G. Rest, oral fluids and paracetamol as required
H. Serology for Epstein–Barr virus
I. Throat swab for microscopy, culture and sensitivities

Q38

Annie Lim, aged 41 years, presents today for test results. For the past two weeks she has had infrequent, irregular heartbeats occurring at any time of the day. These heartbeats are associated with an uncomfortable sensation in her chest lasting one or two seconds. She has not felt lightheaded or breathless with these episodes. On examination, her heart rate is 72/min regular, blood pressure 122/78 mmHg and cardiovascular examination is normal.

Full blood examination, serum electrolytes and thyroid function tests performed two days ago were normal. An echocardiogram is normal. An electrocardiogram is performed while she experiences the irregular heartbeat (see image).



What is the **MOST** appropriate next step?

A. Apixaban 5 mg twice daily
B. Aspirin 100 mg daily
C. Exercise stress test
D. Flecainide 50 mg twice daily
E. Metoprolol 25 mg twice daily
F. Provide reassurance and lifestyle advice regarding the condition
G. Stress echocardiogram
H. Troponin

Q39

David Franklin, aged 38 years, reports increasing difficulty performing his job as a courier driver. He feels fatigued and has had increasing lower back stiffness and pain over the past five months, particularly at the start of his early morning shifts. He finds the pain is worse after sitting or lying down but improves when he gets moving again. On examination, his temperature is 36.8°C, heart rate 72/minute regular and blood pressure 115/69 mmHg. He has a normal gait and mild tenderness over his right sacroiliac joint. He has a reduced range of motion in forward flexion of the lumbar spine and normal hip flexibility. You arrange X-rays of his lumbar spine and pelvis, both of which are reported as normal.

What is the **MOST** appropriate investigation to support the provisional diagnosis?

A. Anti-nuclear antibody
B. Anti-tissue transglutaminase antibodies
C. CT scan lumbosacral spine
D. Human leucocyte antigen B27
E. Iron studies
F. Nerve-conduction studies of the lower limbs
G. Radionuclide bone scans
H. Serum B12 level
I. Urine for Bence Jones protein

Q40

Cassie Whelan, aged 17 years, fell off the high beam onto her left foot at gymnastics training today. She felt a ‘snap’ as she landed and has been unable to weight bear since then. On examination, she is unable to weight bear on her left foot and has tenderness and swelling over her mid-foot with visible bruising under her foot. While holding her mid-foot to assess her range of motion, a clunk is felt during passive dorsiflexion and plantar flexion, which causes significant pain.

You arrange an X-ray (see image).

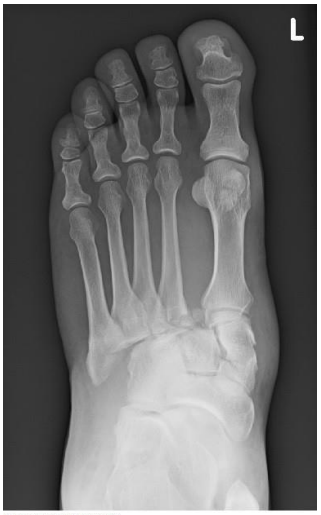


Image: James Heilman, MD

What is the **MOST** appropriate provisional diagnosis?

A. Anterior talofibular ligament tear
B. Deltoid ligament rupture
C. Fractured base of fifth metatarsal (Jones fracture)
D. Lateral malleolar avulsion fracture
E. Medial malleolar avulsion fracture
F. Navicular fracture
G. Syndesmosis injury
H. Tarsometatarsal fracture-dislocation (Lisfranc fracture)

Q41

Harvey Windsor, aged 13 years, presents with his mother, Melissa, because he has been unwell for three weeks. He feels lethargic, has not been playing his usual sports, and has a persistent dry cough day and night. He has also had headaches. One week ago, he was prescribed five days of amoxicillin 500 mg three times daily, but his symptoms have not improved. COVID-19 has been definitively excluded. On examination, his temperature is 38.2°C, heart rate 98/min regular and blood pressure 110/70 mmHg. He has crackles present in both lung fields and mild expiratory wheeze. You arrange appropriate further investigations.

What is the **MOST** appropriate management?

A. Amoxicillin-clavulanic acid 875 mg/125 mg twice daily for five days
B. Ciprofloxacin 750 mg twice daily for seven days
C. Doxycycline 100 mg twice daily for seven days
D. Fluticasone proprionate-salmeterol 100 mcg/50 mcg inhaled twice daily
E. Oseltamivir 75 mg twice daily for five days

Q42

Jacinta Perry, a veterinary nurse aged 26 years, has been feeling unwell for four days. She has been experiencing generalised fatigue, low-grade fevers, nausea and mild headaches. On examination, her temperature is 38.0°C, blood pressure 125/75 mmHg and she has enlarged, tender right axillary lymph nodes. The remainder of her examination is normal. COVID-19 has been definitively excluded.

What is the **MOST** appropriate provisional diagnosis?

A. Bird fancier's lung disease
B. Cat scratch disease
C. Infectious mononucleosis
D. Psittacosis
E. Pyogenic lymphadenitis

Q43

Charlotte Reid, aged 73 years, has had four months of diarrhoea. She has watery bowel motions, feels bloated and full and has had a large amount of flatus. Her past medical history includes hypertension, hypothyroidism and bilateral hip osteoarthritis. Her medications include irbesartan 300 mg daily, thyroxine 100 mcg daily, diclofenac 50 mg twice daily, paracetamol 665 mg two tablets three times daily and glucosamine sulfate 1500 mg daily.

Charlotte recently had a colonoscopy, which was reported as macroscopically normal; however, the biopsy demonstrated evidence of lymphocytic colitis.

Which medication is **MOS**T likely contributing to her symptoms?

A. Diclofenac
B. Glucosamine
C. Irbesartan
D. Paracetamol
E. Thyroxine

Q44

Peta Mason, aged 22 years, has had an ongoing itchy rash on both hands for the past two months (see image). She started her clinical placements for her Bachelor of Nursing degree three months ago and finds the rash is interfering with her work. She tried over-the-counter topical hydrocortisone 1% cream topically twice daily a few weeks ago, with no significant improvement.

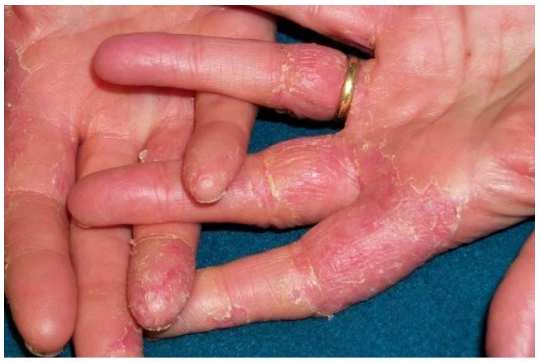


Image: dermnetnz.org

What is the **MOST** appropriate diagnosis?

A. Chronic mucocutaneous candidiasis
B. Discoid eczema
C. Hyperkeratotic hand dermatitis
D. Irritant dermatitis
E. Latex contact urticaria
F. Psoriasis
G. Staphylococcal superinfection
H. Tinea manuum

Q45

Jack Cruise, aged 22 years, is brought to your rural emergency department by his sister, Molly, because Jack has difficulty breathing. Molly states he began gasping for air while chopping wood about an hour ago. Jack indicates it hurts to take a deep breath. On examination, Jack is pale, his temperature is 37.2°C, heart rate 135/min regular, blood pressure 100/52 mmHg and respiratory rate 28/min. There is prominence of his jugular veins, hyper-resonance to percussion and absent breath sounds over the left lung field. His body mass index is 21 kg/m^2.

What is the **MOST** appropriate next step?

A. Arrange urgent chest X-ray
B. Electrocardiogram
C. Perform urgent needle thoracostomy
D. Salbutamol 100 mcg 12 actuations inhaled via metered-dose inhaler and spacer
E. Urgent arterial blood gas analysis

Q46

Debbie Johnstone, aged 57 years, presents accompanied by her husband, Tony. Debbie says she is having trouble sleeping. Six weeks ago, Debbie narrowly escaped a large fire in the kitchen of the restaurant she manages. Two kitchen staff are still receiving treatment for severe burns. Debbie is having difficulty sleeping because she cannot stop thinking about the fire. She wakes up during the night distressed by nightmares. Tony says she has seemed very irritable and jumpy since the incident. Debbie has not returned to work, despite the restaurant re-opening a week ago. She has done trauma-focused cognitive behavioural therapy with a psychologist, but her symptoms are not improving. She would like to know what else she can try.

What is the **MOST** appropriate next step in management?

A. Amitriptyline 50 mg at night
B. Dialectical behavioural therapy
C. Duloxetine 30 mg daily
D. Encourage Debbie to return to work
E. Eye movement desensitisation and reprocessing therapy
F. Psychological debriefing
G. Silexan 80 mg at night
H. Temazepam 10 mg at night

Q47

Fiona Fox, aged 50 years, has had a sore, stiff left shoulder for the past four months. The pain is dull and aching and involves her entire shoulder. It is often worse at night. Over the past few weeks, she has found that the pain has been improving but the stiffness seems to be worsening. She expresses frustration at being unable to do anything with her left shoulder. She has not had an injury to the shoulder in the past. She has type 2 diabetes, which has been well controlled with diet and exercise, but you note her most recent HbA1c performed yesterday is **8.1%*** (normal range < 6.0%).

Which examination finding would **MOST** support the provisional diagnosis?

A. Both active and passive ranges of motion of the glenohumeral joint are reduced
B. Diminished biceps reflex
C. Painful arc on abduction between 45 and 135 degrees
D. Positive apprehension test
E. Tenderness over acromioclavicular joint

Q48

Angela Brookes, aged 26 years, is brought to your rural hospital by her boyfriend, James, after she was found walking the streets naked at 1 am. Angela appears to be frightened and is talking very rapidly, pacing the room. She is oriented to person, place and time, but cannot explain why she was naked.

James reports that for the past three weeks, Angela has been very irritable and has not been sleeping much. He says that she has been convinced that she has special healing abilities, which has been creating discord in her work as a local physiotherapist. She has been waking most days at about 4 am and working on a research project, as well as fervently cleaning their house. James and Angela both deny any illicit drug use.

What is the **MOST** appropriate provisional diagnosis?

A. Bipolar I disorder
B. Bipolar II disorder
C. Borderline personality disorder
D. Delusional disorder
E. Schizophrenia

Q49

Mary Chan, aged 56 years, returns for results of blood tests that you ordered last week. Mary had a fasting blood glucose level of **7.2 mmol/L*** (normal range 3.0–5.4) two years ago. Since that time, she has worked overseas, has begun a regular exercise program, and has consulted a dietician leading to a loss of 5 kg of weight. Blood tests from last week showed a fasting blood glucose level of **7.0 mmol/L*** (normal range 3.0-5.4) and HbA1c **7.4%*** (normal range <6%).

On examination, Mary's blood pressure is 120/66 mmHg. Her body mass index is 28 kg/m^2.

What is the **MOST** appropriate immediate management?

A. Arrange oral glucose tolerance test
B. Continue with dietary and exercise modifications and review in three months
C. Gliclazide modified release 30 mg daily
D. Metformin slow-release 500 mg daily
E. Review Mary in six months following repeat HbA1c

Q50

James Bradshaw, aged 38 years, would like help to abstain from alcohol. He normally drinks 20 standard drinks per day but has just come out of a drug and alcohol detoxification program and has not consumed any alcohol for two weeks. He is concerned he may start drinking again and would like medication to help him remain abstinent from alcohol. His only current medication is methadone 80 mg daily for opiate addiction that is currently under control.

What is the **MOST** appropriate pharmacological management?

A. Acamprosate 666 mg three times daily
B. Diazepam 5 mg three times daily
C. Disulfiram 250 mg daily
D. Increase methadone to 100 mg daily
E. Naltrexone 50 mg daily

Q51

Catherine Collins, aged 60 years, is a new patient presenting for a pertussis vaccination because she is about to become a grandmother. Catherine's blood pressure today is 174/100 mmHg. She tells you that her previous general practitioner said she has white coat hypertension.

You organise appropriate investigations.

One week later Catherine returns for her results. Her 24-hour ambulatory blood pressure monitoring reports an average daytime blood pressure of 154/92 mmHg, and her night-time average is 142/88 mmHg. Her lipid profile is shown in the table below. Her other investigations reveal no abnormalities. Her absolute cardiovascular risk is calculated at 6%.

Test	**Result**	**Normal range**
Total cholesterol	4.2 mmol/L	<5.6
High-density lipoprotein	1.2 mmol/L	>1.0
Low-density lipoprotein	**2.7 mmol/L***	<2.5
Triglycerides	1.4 mmol/L	<1.5

What is the **MOST** appropriate next step?

A. Atorvastatin 10 mg daily
B. Hydrochlorothiazide 12.5 mg once daily
C. Metoprolol 50 mg twice daily
D. Perindopril 2.5 mg once daily
E. Provide lifestyle advice and review in two months

Q52

John Gerard, aged 68 years, has had increasing shortness of breath on exertion over the past few months. He has stopped going to his usual aqua aerobics class as he is finding it too difficult. He ceased smoking at the age of 45 years and has a 25 pack-year history. He is currently taking tiotropium 18 mcg inhaled once daily and salbutamol 100 mcg two actuations as required. Spirometry is as follows.

Test	**Actual (pre-bronchodilator)**	**Predicted**	**% Predicted (pre-bronchodilator)**	**% Change (post-bronchodilator)**
Forced expiratory volume in one second (L)	1.70	2.35	72.3	7.60
Forced vital capacity (L)	2.57	3.36	76.5	2.70
Forced expiratory volume in one second/forced vital capacity (%)	66.16	71.33	92.7	3.25

What is the **MOST** appropriate additional pharmacological management?

A. Aclidinium-formoterol 340 mcg/12 mcg inhaled twice daily
B. Doxycycline 100 mg twice daily for 14 days
C. Fluticasone propionate 250 mcg inhaled twice daily
D. Indacaterol 150 mcg inhaled once daily
E. Ipratropium 21 mcg, two actuations inhaled when required
F. Montelukast 10 mg daily
G. Nedocromil 4 mg inhaled four times daily
H. Prednisolone 50 mg daily for seven days

Q53

Kayla Bethaniel, aged 20 months, presents with her mother, Tracey, after seeming unwell for the past two weeks with an occasional runny nose. Tracey has also noticed that Kayla has prominent lumps in her neck. Kayla is up to date with her immunisations. On examination, her temperature is 37.4°C, heart rate 86/min regular, and she has bilateral, slightly tender posterior cervical lymph nodes each less than 1 cm in diameter. The overlying skin is normal. COVID-19 has been definitively excluded.

What is the **MOST** appropriate next step?

A. Amoxicillin-clavulanate 22.5 mg/3.2 mg/kg (max 875 mg/125 mg) twice daily for five days
B. Full blood count
C. Mumps serology
D. Return for review if symptoms worsen
E. Ultrasound of neck

Q54

Brian Henderson, aged 42 years, has had gradually worsening symptoms of fatigue, generalised weakness, nausea, anorexia and weight loss over the past year. He has also noticed a dark colouring within his axillae bilaterally. On examination, his blood pressure is 95/50 mmHg and his random blood sugar level is 3 mmol/L.

Investigations are completed and results are as follows.

Adrenocorticotropic hormone **19 pmol/L*** (normal range <10).

Serum chemistry

Test	**Result**	**Normal range**
Sodium	**130 mmol/L***	135–145
Potassium	**5.4 mmol/L***	3.5–5.2
Chloride	103 mmol/L	95–110
Bicarbonate	25 mmol/L	22–32
Urea	3.7 mmol/L	2.5–8.0
Creatinine	72 µmol/L	45–90
Estimated glomerular filtration rate	99 mL/min/1.73 m^2	>90

Which finding on investigation would **MOST** likely confirm the provisional diagnosis?

A. Anti-nuclear antibody positive
B. Creatinine kinase titre greater than five times normal range
C. Elevated anti-citrullinated protein antibody
D. High mean corpuscular volume
E. High thyroid-stimulating hormone
F. Low early morning cortisol
G. Low ferritin
H. Low vitamin B12

Q55

Oliver James, aged 2 years, was brought in by his mother, Amanda, yesterday to your rural emergency department with a runny nose and barking cough that he had had for three days. You prescribed prednisolone 1 mg/kg.

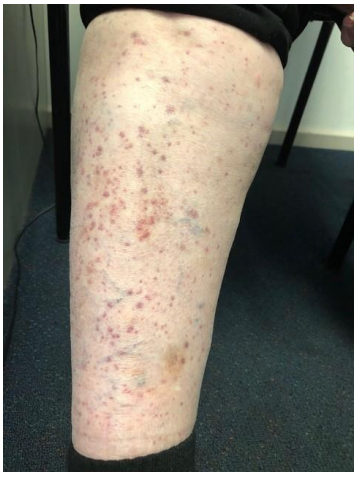
Today he returns to the emergency department as his symptoms have worsened, he is mildly agitated, and he now has persistent stridor at rest. On examination, his temperature is 37.4°C, heart rate 190/min, respiratory rate 58/min, oxygen saturation 95% on room air, and there are marked chest wall retractions. You administer dexamethasone 0.3 mg/kg (max 12 mg). COVID-19 has been definitively excluded.

What is the **MOST** appropriate next step?

A. Adrenaline 0.5 mL/kg of 1:1000 (max 5 mL) nebulised
B. Amoxicillin 15 mg/kg (max 500 mg) three times daily for seven days
C. Chest X-ray
D. Establish intravenous access
E. Nasopharyngeal aspirate for respiratory viruses
F. Oseltamivir 30 mg twice daily for five days
G. Oxygen 15 L/min via non-rebreather mask
H. Salbutamol 100 mcg six puffs inhaled via spacer

Q56

Jane Fox, aged 62 years, is concerned about a rash that has appeared on both of her lower legs over the past week. The rash is not itchy but has been spreading. She has type 2 diabetes, mild renal impairment and gout. Her diabetes is well controlled with metformin sustained release 1 g daily and she recently began taking allopurinol 50 mg daily and colchicine 500 mcg daily for gout prophylaxis. On examination, her temperature is 37.2°C, heart rate 89/min and blood pressure 138/75 mmHg. There is a diffuse rash on both lower legs that is non-blanching (see image).

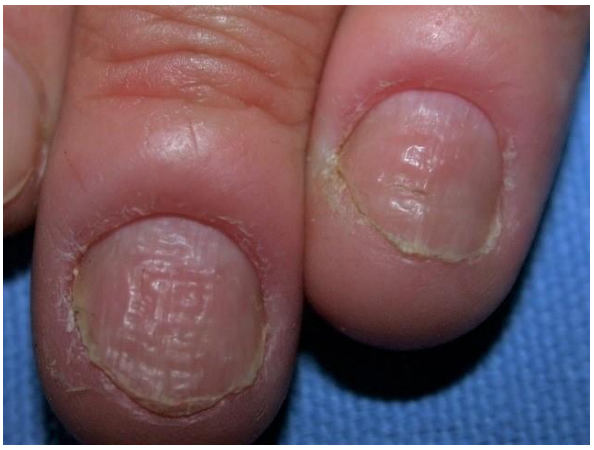


What is the **MOST** appropriate provisional diagnosis?

A. Bullous pemphigoid
B. Cutaneous vasculitis
C. Disseminated intravascular coagulation
D. Erythema multiforme
E. Erythema nodosum
F. Henoch–Schonlein purpura
G. Lichen simplex chronicus
H. Livedo reticularis
I. Meningococcal septicaemia
J. Myxoedema
K. Pemphigus vulgaris
L. Urticaria

Q57

Ellen Davies, aged 34 years, is concerned about the appearance of her nails (see image). Ellen is on maternity leave at present, breastfeeding her 3-month-old baby. She had no complications with her pregnancy or delivery. Her periods have not yet returned.



What is the **MOST** appropriate next step to manage her nail condition?

A. Betamethasone dipropionate 0.05% ointment topically daily
B. Biotin-zinc-selenium 10 000 mcg/25 mg/200 mcg daily
C. Ferrous sulfate 325 mg daily
D. Miconazole nitrate 2% cream topically three times daily
E. Terbinafine 250 mg daily for six weeks

Q58

Bernadette Brown, aged 45 years, has had left heel pain for the past six weeks. Three months ago she started running in an effort to lose weight. Her heel does not hurt while she is running but she finds that the pain occurs after her run. The pain is worse with the first few steps after getting out of bed in the morning but subsides after a few minutes of walking. She is wearing her running shoes at home because walking barefoot aggravates the pain.

What physical examination finding **MOST** supports the provisional diagnosis?

A. Pain on passive plantar flexion and compression of the ankle with patient prone (posterior impingement test)
B. Palpation of crepitus over Achilles tendon during active plantar flexion
C. Pain and a ‘click’ sound (Mulder’s click) on squeezing the metatarsal heads
D. Tingling on tapping over tibial nerve (Tinel’s sign)
E. Tenderness on palpating medial process of calcaneal tuberosity

Q59

Shauna O'Malley, aged 17 years, asks your advice about a lesion on the back of her left arm (see images). It does not bother her, but her boyfriend asked her to get it checked.

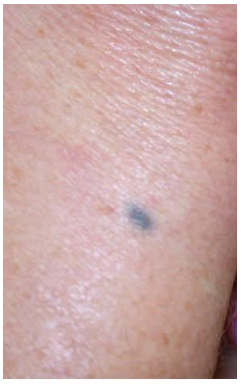


Image: dermnetnz.org

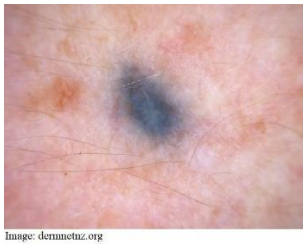


Image: dermnetnz.org

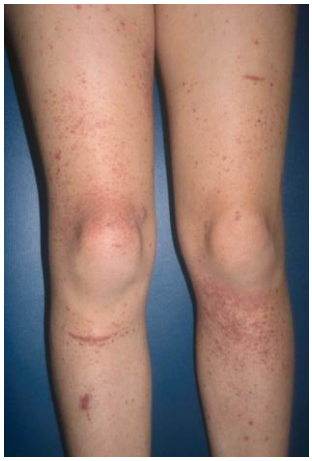
What is the **MOST** appropriate management?

A. 2 mm punch biopsy of area of deepest pigmentation
B. Cryotherapy with liquid nitrogen
C. Excision biopsy with 2 mm margins
D. Imiquimod 5% cream topically daily, five days per week for six weeks
E. Provide reassurance that no further treatment is required

Q60

Amelia Duff, aged 11 years, is brought to see you by her father, Michael, because she has had several unexplained bruises and small spots on her arms and legs (see image) over the past three days. She had a mild cold about a week ago but has now completely recovered. You order an urgent full blood count, and the results are as follows.

Test	**Result**	**Normal range**
Haemoglobin	123 g/L	115–165
White cell count	4.2 x 10^9/L	4.0–11.0
Platelets	**85 x 10^9/L***	150–450



What is the **MOST** appropriate provisional diagnosis?

A. Acute myeloid leukaemia
B. Aplastic anaemia
C. B12 deficiency
D. Drug-induced thrombocytopenia
E. Fanconi anaemia
F. Hypersplenism
G. Immune thrombocytopenic purpura
H. Lymphoma
I. Thrombotic thrombocytopenic purpura
J. Type II von Willebrand disease

Q61

Willow Tone, aged 74 years, presents for a routine wound review. She has had a wound on her left lower leg for the past two months. The wound occurred after she scraped her skin against a chair leg, leading to a skin tear 4 × 5 cm in size. The wound has been slowly healing. Last week, there was more discharge from the wound, and she had a wound swab taken due to concerns about possible infection. She was advised to come into the clinic to have the wound reviewed.

Today the wound appears to be healing well. It is pink, healthy and granulating with no surrounding erythema and minimal discharge.

Her wound swab result is as follows.

Wound swab (microscopy, culture and sensitivity): Staphylococcus aureus +. Sensitive to flucloxacillin, cephalosporins and ciprofloxacin.

What is the **MOST** appropriate next step?

A. Add silver sulfadiazine topically to the wound under the appropriate non-adherent dressing
B. Continue non-adherent wound dressings
C. Flucloxacillin 250 mg four times daily
D. Perform nasal swab for methicillin-resistant Staphylococcus aureus carriage
E. Re-swab the wound today for microscopy, culture and sensitivities

Q62

John Baker, aged 35 years, an Aboriginal man, is rushed into your rural emergency department in Far North Queensland after being found lying on the ground, vomiting and in severe distress. John had been spear fishing at the beach earlier today. On examination he is groaning that he is in pain and clutching his back. He appears agitated and is sweating profusely. His heart rate 110/min regular and blood pressure 180/100 mmHg. There are no obvious wounds or injuries.

What is the **MOST** appropriate provisional diagnosis?

A. Abdominal aortic aneurysm
B. Acute pancreatitis
C. Acute renal failure
D. Alcohol intoxication
E. Blue bottle sting
F. Brown snake bite
G. Diabetic ketoacidosis
H. Irukandji syndrome
I. Opioid overdose
J. Stingray barb injury

Q63

Jaxon McDonald, aged 18 months, is brought to see you by his father Julian because he has had intermittent abdominal pain that started overnight. When the pain starts, Jaxon is inconsolable and holds his stomach and cries. Today he has had five episodes of pain that lasted 10–20 minutes and has been very fatigued. His appetite is reduced, but he is drinking adequate fluids. Last week he was unwell with gastroenteritis. He has not had any vomiting or diarrhoea in the past four days, and he has not passed any stool today. On examination, he appears lethargic. His temperature is 37.0°C and his abdomen is soft and non-tender. He vomits while you are examining him.

What is the **MOST** appropriate management?

A. Advise avoidance of lactose for six weeks
B. Coeliac serology
C. Give oral rehydration solution in clinic and observe for two hours
D. Poloxamer drops 0.5 mL three times daily
E. Reassurance that no further treatment is required apart from simple analgesia
F. Stool sample for viral polymerase chain reaction, microscopy and culture
G. Urgent transfer to emergency department
H. X-ray abdomen

Q64

Sarah Matthews, aged 25 years, requests sexually transmitted infection testing. Over the past six weeks she has noticed an increasing malodorous grey, watery vaginal discharge. She has been in a sexual relationship with her current partner for six months. She has an etonogestrel 68 mg implant for contraception.

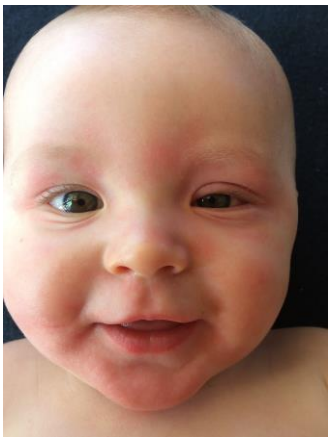
You arrange appropriate investigations. Her cervical screening test is negative and a high vaginal swab shows evidence of clue cells and cultures Gardnerella vaginalis.

What is the **MOST** appropriate management?

A. Acyclovir 200 mg five times daily for five days
B. Amoxicillin-clavulanic acid 875 mg/125 mg twice daily for five days
C. Azithromycin 1 g as a single dose
D. Boric acid 600 mg intravaginally daily for 14 days
E. Ceftriaxone 250 mg intramuscular injection plus doxycycline 100 mg twice daily for 10 days
F. Clotrimazole 1% intravaginally at night for six nights
G. Fluconazole 150 mg as a single dose
H. Metronidazole 0.75% intravaginally at night for five nights

Q65

Joshua Clarke, aged 6 months, is rushed into your clinic by his mother, Avril, because Joshua has a rash on his face that started 60 minutes ago. A few minutes after consuming peanut butter, Joshua started to rub at his eyes and she noticed a rash appearing on his face (see image). You observe several similar raised, erythematous lesions on his arms and legs. Joshua does not appear distressed and is breathing normally.



What is the **MOST** appropriate immediate management?

A. Adrenaline 10 mcg/kg intramuscular injection
B. Desloratadine syrup 1 mg
C. Dexchlorpheniramine syrup 1 mg
D. Hydrocortisone 5 mg/kg intravenous bolus
E. Promethazine 0.5 mg/kg (max 50 mg)

Q66

Harriet Gray, aged 45 years, is concerned about her risk of developing breast cancer. Her mother was diagnosed with breast cancer at age 39 years and developed ovarian cancer at age 63 years. Harriet's sister has just been diagnosed with breast cancer at age 52 years.

What is the **MOST** appropriate next step to manage her risk of breast cancer?

A. Aspirin 100 mg daily
B. Breast MRI every five years starting now
C. Cancer antigen 125 testing every 12 months starting now
D. Clinical breast examination every 12 months starting now
E. Contact Harriet's mother's oncologist to discuss gene expression profiling of her cancers
F. Mammography and breast ultrasound every 12 months starting now
G. Mammography every two years from age 50 years
H. Refer Harriet to a familial cancer clinic for genetic testing

Q67

Carol Knight, aged 42 years, is a competitive javelin thrower who tore her left calf muscle eight weeks ago. She has had significant pain and has spent most of her time in bed. For the past few days she has had increasing pain in her left calf, above the initial pain from her tear. She has no other medical conditions, feels otherwise well and has never had pain like this before. An ultrasound of her calf muscle is as follows.

‘Ultrasound calf muscle: Grade 2 tear within the belly of the gastrocnemius with evidence of healing. Lack of compressibility of her short saphenous vein into the popliteal vein confirms a 7 cm thrombus from 3 cm below the knee to just above the popliteal fossa.’

What is the **MOST** appropriate next step?

A. Apixaban 10 mg twice daily for seven days, then reduce to 5 mg twice daily
B. Aspirin 300 mg daily and re-ultrasound in seven days
C. Fit Carol for grade two compression stockings and re-ultrasound in three days
D. Refer Carol to the emergency department for alteplase intravenously
E. Warfarin 5 mg daily and check international normalised ratio in one week

Q68

Suzanne Rose, aged 39 years, has had irregular menstrual periods for the past two years. Her last normal period was 12 months ago and she has developed intermittent flushing symptoms at night. Sexual intercourse has been increasingly uncomfortable recently. On examination, her heart rate is 82/min, blood pressure 132/83 mmHg, temperature 37.1°C. The rest of her clinical examination is unremarkable. Her cervical screening test two years ago was normal.

Which investigation would **MOST** likely support the provisional diagnosis?

A. Fasting morning cortisol
B. Follicle-stimulating hormone
C. Luteinising hormone
D. Morning serum oestradiol
E. Morning serum progesterone
F. Serum prolactin
G. Serum testosterone
H. Short synacthen test
I. Ultrasound of the pelvis

Q69

Simone Rice, aged 45 years, is due for routine blood tests for monitoring the effects of methotrexate she takes for her recently diagnosed rheumatoid arthritis. She is finding all the tests distressing and asks if she needs to keep having tests now her symptoms have improved on the methotrexate. You explain the reasons for the tests, including monitoring her kidneys and checking her blood cell counts while she is taking methotrexate.

What further complication is the **MOST** appropriate reason for her regular blood tests?

A. Diabetes mellitus
B. Folate deficiency
C. Hypothyroidism
D. Liver dysfunction
E. Thrombocytosis

Q70

Jenna Warren, aged 28 years, is pregnant with her second child. Jenna's last normal menstrual period was 12 weeks ago. She has had mild nausea and fatigue but is managing well. Jenna is taking a pregnancy multivitamin daily. During her last pregnancy 18 months ago, she developed severe pre- eclampsia at 28 weeks' gestation and had an emergency caesarean section.

On examination, her body mass index is 23 kg/m^2 and blood pressure 122/76 mmHg. You arrange antenatal screening tests.

What is the **MOST** appropriate additional management to consider?

A. Aspirin 100 mg at night
B. Ferrous sulphate 325 mg daily
C. Folic acid 5 mg daily
D. Labetalol 100 mg three times daily
E. Metformin 500 mg twice daily
F. Methyldopa 250 mg three times daily
G. Norethisterone 5 mg twice daily
H. Vitamin B12 50 mcg daily
I. Vitamin D 1000 IU daily

Q71

Ryan Sherzinger, aged 38 years, is being investigated for secondary causes of hypertension. His recent home morning blood pressure readings are 156/101 mmHg, 151/99 mmHg and 153/102 mmHg. On examination, his heart rate is 70/min regular and blood pressure 155/105 mmHg. The rest of his physical examination is unremarkable.

His full blood examination and fasting lipid profile are within normal limits. Further relevant test results are as follows.

Test	**Result**	**Normal range**
Sodium	135 mmol/L	135–145
Potassium	**2.8 mmol/L***	3.5–5.2
Chloride	98 mmol/L	95–110
Bicarbonate	23 mmol/L	22–32
Urea	3.5 mmol/L	2.5–8.0
Creatinine	85 mmol/L	45–90
Estimated glomerular filtration rate	96 mL/min/1.73 m^2	>90
Urate	0.38 mmol/L	<0.42

What is the **MOST** appropriate investigation to support the provisional diagnosis?

A. 24-hour urinary catecholamines
B. Aldosterone-to-renin ratio
C. Echocardiography
D. Exercise stress test
E. HbA1c
F. Polysomnography
G. Renal artery Doppler ultrasound
H. Thyroid-stimulating hormone

Q72

Bill Andrews, aged 76 years, had an episode last night when moving from the toilet to the bath and he felt like he was going to 'pass out'. By the time his wife, Joan, was able to get to him, Bill was sitting on the floor and the sensation had passed. Bill felt back to normal within a minute and he remembers the entire event. Bill has type 2 diabetes and hypertension. He takes 36 units of insulin glargine subcutaneously daily and irbesartan-hydrochlorothiazide 300 mg/12.5 mg daily.

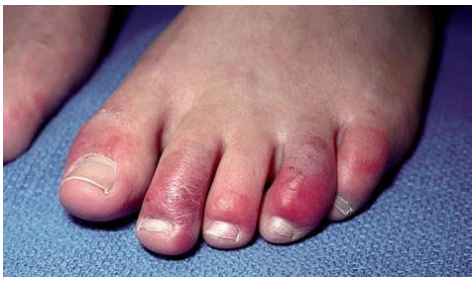
On examination, Bill’s blood pressure is 130/85 mmHg and heart rate 78/min when seated, and blood pressure 115/80 mmHg and heart rate 89/min when standing.

What is the **MOST** appropriate provisional diagnosis?

A. Cerebrovascular accident
B. Hypoglycaemia
C. Hypokalaemia
D. Orthostatic hypotension
E. Panic attack
F. Seizure disorder
G. Sick sinus syndrome
H. Transient ischaemic attack

Q73

Max Smart, aged 42 years, presents to your clinic in rural Tasmania with an itchy, painful rash on the toes of both feet. Max and his wife are visiting from Queensland and have spent the past five days on an overland trek. Max explains that despite wearing high-quality hiking boots and two pairs of socks his feet were still very cold. On examination his temperature is 36.9°C and he has no palpable lymph nodes in his groin. Pedal pulses are normal. The rash is as shown (see image).



What is the **MOST** appropriate diagnosis?

A. Cellulitis
B. Chilblains
C. Frostbite
D. Raynaud's phenomenon
E. Tinea pedis

Q74

Olive Beattie, aged 19 years, has returned for follow-up travel vaccinations for her trip to Uganda in eight weeks' time. Olive is up to date with all of the usual Australian childhood vaccinations and COVID-19 vaccinations. One week ago she had rabies, influenza and varicella vaccinations performed at another clinic. She had one hepatitis A vaccination two years ago and a second hepatitis A vaccination 18 months later. She would like to see you for the remainder of her vaccinations but has lost the schedule that the other doctor gave her. You advise that she requires a second dose of rabies vaccination today.

What is the **MOST** appropriate additional vaccination to administer today?

A. Bacille Calmette–Guérin
B. Hepatitis A
C. Hepatitis B
D. Japanese encephalitis
E. Measles, mumps and rubella
F. Pneumococcal
G. Polio
H. Typhoid
I. Yellow fever

Q75

Gemma Jennings, aged 76 years, presents for follow-up six weeks after she fractured the neck of her right humerus when she tripped and hit her shoulder heavily against a wall. Gemma is planning to travel around Australia for 12 months and is unsure when she will be able to see a doctor again. She eats two serves of calcium-containing dairy food daily and does weight-bearing exercise five days per week. She takes calcium carbonate 600 mg daily and vitamin D 1000 IU daily. She had a hysterectomy three years ago for vaginal prolapse and she has a severe needle phobia after a reaction to her previous pneumococcal vaccine.

Relevant investigations completed three months ago are as follows.

Test	**Result**	**Normal Range**
Dual-energy X-ray absorptiometry	T-score **-1.6*** (lumbar spine) **-1.9*** (left hip)	Normal greater than –1.0 Osteopenia –1 to –2.5 Osteoporosis less than –2.5
Calcium (corrected)	2.44 mmol/L	2.20-2.70
Vitamin D	81 nmol/L	>50

What is the **MOST** appropriate next step?

A. Conjugated oestrogens 0.625 mg daily
B. Increase calcium carbonate to 1200 mg daily
C. Measure coeliac antibodies
D. Measure serum parathyroid hormone
E. Repeat dual-energy X-ray absorptiometry
F. Repeat serum calcium and vitamin D levels
G. Risedronate 35 mg once weekly
H. Serum electrophoresis